H11902

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-10-13-08

Registry No. H11902

LOCALITY

State Alaska

General Locality Pavlof Island

Sublocality Goloi Island and Vicinity

2008

CHIEF OF PARTY
Commander Donald W. Haines, NOAA

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DATE

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

H11902

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-10-13-08**

State **Alaska**

General Locality **Pavlof Island**

Sub-Locality **Goloi Island and Vicinity**

Scale **1:10,000** Date of Survey **6/25/2008 - 8/5/2008**

Instructions dated **6/4/2008** Project No. **OPR-P184-RA-08**

Vessel **RA6 (1015_Reson 8101), RA3 (1021), RA1 (1101), RA2 (1103), RA4 (2801), RA5 (2802) RA9 (915 Ceeducer), RAINIER (S221)**

Chief of party **Commander Donald W. Haines, NOAA**

Surveyed by **RAINIER Personnel**

Soundings by **Reson 8101, Tilted 8125, Knudsen 320M, Reson 7125, Ceeducer, Seabeam/Elac**

SAR by **Fernando Ortiz** Compilation by **Peter Holmberg**

Soundings compiled in **Fathoms**

REMARKS: **All times are UTC. UTM Projection zones 3 & 4**

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 H11902

Project OPR-P184-RA-08
Pavlov Islands, Alaska
Goloi Island and Vicinity
Scale 1:10,000
June – August, 2008
NOAA Ship *Rainier* (s221)
Chief of Party: Commander Donald W. Haines, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P184-RA-08 dated 04 June 2008 and all other applicable direction[1], with the exception of deviations noted in this report. The survey area is Pavlof Islands, AK and the sub locality is Goloi Island and Vicinity. This survey corresponds to sheet "C" in the sheet layout provided with the Letter Instructions. OPR-P184-RA-08 has been assigned to provide contemporary surveys to update National Ocean Service (NOS) nautical charts and reduce the critical survey area backlog. Many charted features in the area originate from observations made prior to 1930. The Southwestern Alaska Pilots have indicated that this area is seeing increased freighter and passenger traffic.

With the exceptions noted in this report, complete multibeam echosounder (MBES) coverage was achieved in the survey area in waters 4 meters and deeper up to the assigned LIDAR survey junction. Total mileage acquired by each vessel and system is referenced in Table 1.

Limited Shoreline Verification was performed for the survey area.

Data Acquisition Type	Hull Number with Mileage (nm)								Total
	1101	1103	1015	1021	2801	2802	S221	915	
MBES (mainscheme)	8.82	-	40.37	38.86	184.66	59.32	-	-	332.03
Crosslines	-	-	-	-	28.67	-	-	-	28.67
Developments/Holidays	4.61	17.28	-	-	6.53	1.98	-	-	30.40
Shoreline	-	-	-	-	-	-	-	-	-
Bottom Samples	-	-	-	-	-	-	14	1	15
Total Number of Items Investigated	-	2	-	-	-	-	-	-	2
Total Area Surveyed (sq. nm)	-	-	-	-	-	-	-	-	11.72

Table 1. Statistics for survey H11902

Data acquisition was conducted from 25 June to 05 August 2008 (DN 177 DN 218).

[1] NOS Hydrographic Surveys Specifications and Deliverables (April 2008), OCS Field Procedures Manual for Hydrographic Surveying (May 2008), and all Hydrographic Surveys Technical Directives issued through the dates of data acquisition.

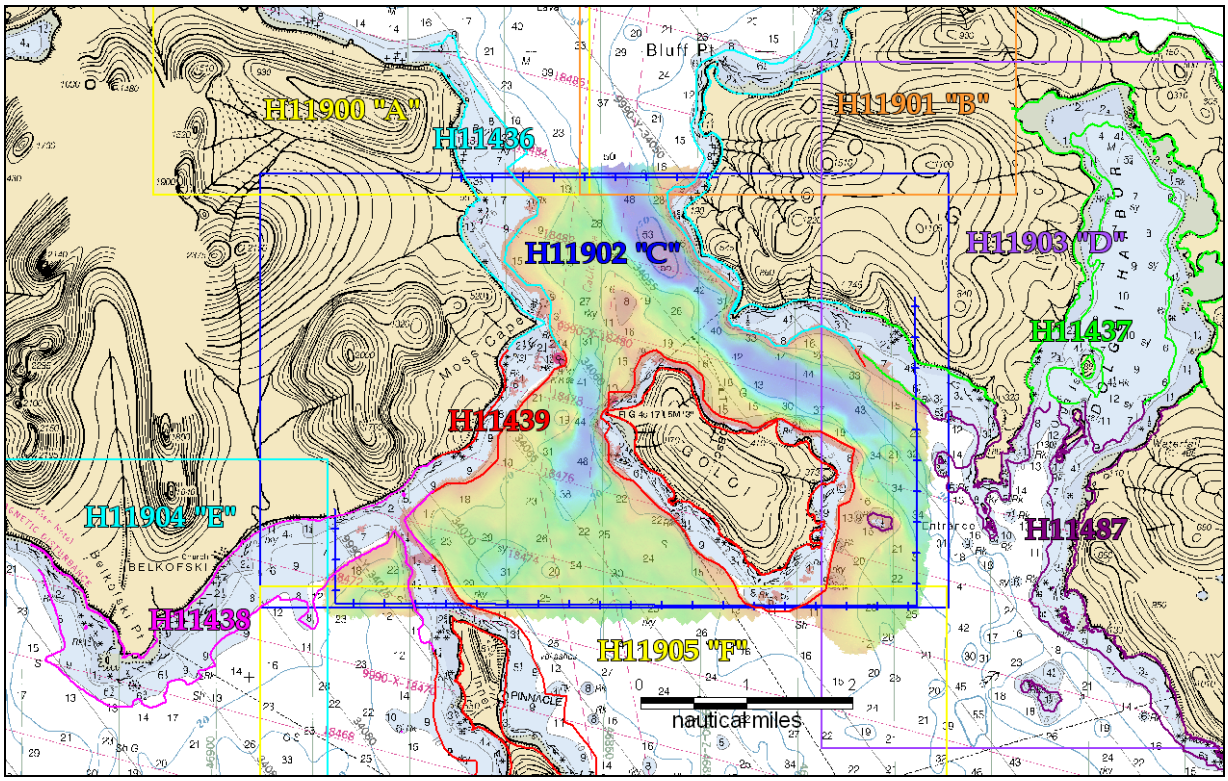


Figure 1. H11902 Survey Limits and Junctions overlaid on Chart 16549

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-P184-RA-08 Data Acquisition and Processing Report*[1] (DAPR), submitted under separate cover. Items specific to this survey, and any deviations from the DAPR are discussed in the following sections.

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
S-221	*Rainier*	Bottom Samples
1101	RA-1	Tilted Multibeam Echosounder
1103	RA-2	Vertical Beam Echosounder Detached Positions
1021	RA-3	Multibeam Echosounder
2801	RA-4	Multibeam Echosounder
2802	RA-5	Multibeam Echosounder
1015	RA-6	Multibeam Echosounder
915	RA-9	Bottom Samples

Table 2. Data Acquisition Vessels for H11902

Sound speed profiles were measured with SEACAT SBE-19+ profilers in accordance with the Specifications and Deliverables. Additional sound speed profiles were recorded with a Brooke Ocean MVP-30 (Moving Vessel Profiler).

No unusual vessel configurations were used for data acquisition.

B2. Quality Control

Crosslines

MBES crosslines totaled 28.67 nautical miles, comprising 9.8% of main scheme MBES hydrography. The mainscheme bathymetry was manually compared to the XL nadir beams in CARIS subset mode and agreed well with typical differences of approximately 0.1 meter and, with one exception, not larger than 0.25 meters. That exception is 0.3 meters and is detailed under Data Quality Factors, Vertical Offset Error.[2]

A statistical Quality Control Report has been conducted on representative data acquired with each system used on this survey. Results of these tests are included in the updated 2008 *Rainier* Hydrographic System Readiness Review package submitted with this survey.

Junctions

The following contemporary surveys junction with H11902[3] (See Figure 1):

Registry #	Scale	Date	Junction side
H11436	1:10,000	2005	LIDAR Survey
H11437	1:10,000	2005	LIDAR Survey
H11438	1:10,000	2005	LIDAR Survey
H11439	1:10,000	2005	LIDAR Survey
H11487	1:10,000	2005	LIDAR Survey
H11900	1:10,000	2008	Northwest
H11901	1:10,000	2008	Northeast
H11903	1:10,000	2008	Southeast
H11904	1:10,000	2008	Southwest
H11905	1:10,000	2008	South

LIDAR Surveys

CARIS BASE surfaces for all LIDAR surveys were provided by Pacific Hydrographic Branch for junction comparison. These BASE surfaces were compared to H11902 CUBE surfaces in CARIS HIPS/SIPS and were found to agree well with differences averaging approximately 0.2 to 0.5 meters. Some areas did exhibit larger differences of up to 1.0 meter, with the LIDAR surface typically deeper than the H11902 surface.. These larger differences were seen in areas of sparse LIDAR coverage, especially within the inshore areas where kelp is prominent.[4]

2008 Junction Surveys

All contemporary 2008 junction surveys were run concurrently within project OPR-P184-RA-08. Data were compared in CARIS subset mode and all agreed well. Observed offsets were typically within 0.10 to 0.25 meters, and did not exceed 0.35 meters. The areas of higher offset were caused by sound speed errors in the outer beams. Nadir to nadir comparisons showed little offset.[5]

Data Quality Factors

Sound Speed Artifacts

Sound speed artifacts were often observed within survey H11902. After applying sound speed corrections in CARIS HIPS, some lines still exhibited the characteristic "smiles" and “frowns” indicative of inaccurate sound speed corrections (see Figure 2 below). Sound speed casts were often taken more frequently than the standard 4 hour time interval. All cast data were compiled into a sheet-wide concatenated SVP file and applied using “Nearest in Distance within Time.” A minimum of 4 hours was typically used with this method. Despite

the best efforts of the Hydrographer to conduct sufficient sound speed casts distributed both spatially and temporally, and to correct for sound speed errors in post processing through methods previously mentioned, sound velocity errors were still noticeable in several regions. To compensate, the Hydrographer, where possible, rejected soundings obviously in error on the outer beams. Despite some remaining artifacts, the acquired data is within specification and is adequate to supersede charted depths.[6]

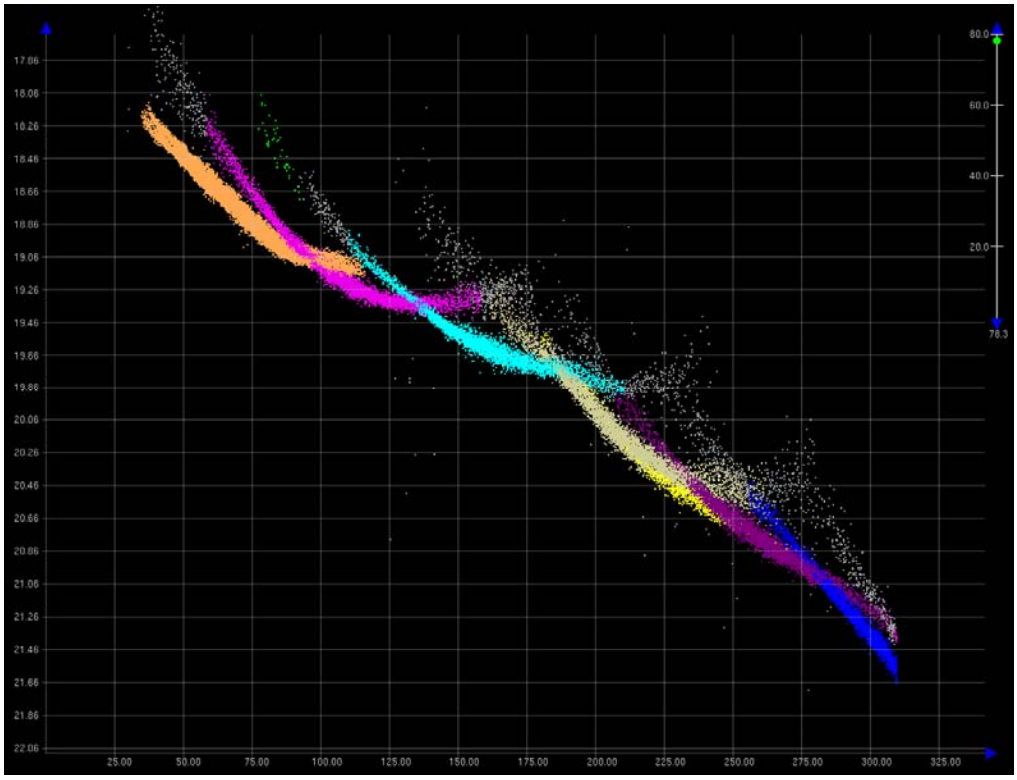


Figure 2. H11902 Sound Velocity Errors (vertical exaggeration is 78)
Data is from Launch 1021 DN 178 close inshore

POS MV Heading Accuracy

During the course of data acquisition, survey personnel on Launches 2801 and 2802 (RA-4 and RA-5) noted occasional instances when POS MV heading accuracy decreased from the normal level of ≤ 0.05 degrees to a maximum of 0.078 degrees. This phenomenon was seen almost daily but was always self correcting after a period of approximately 15 to 20 minutes. The most likely cause of these incidents was less than optimal satellite geometry and narrower GPS antenna separation on these two new launches compared with older survey launches on *Rainier*.

Roll Error Caused by Unstable Swing Arm Mount

Data acquired with Launch 1021 (RA-3) on DN 178 were found to have minor roll offsets in the data. The lines were viewed in CARIS calibration editor and a separate roll error value was calculated for the HVF for this day. The data were reprocessed using the new values and were found to be much improved and within specifications. Original HVF values from 2008

patch tests were used for the remaining data acquired with Launch 1021. The Hydrographer believes that the variability of roll offsets seen on different days of acquisition can be attributed to the retractable mount of the Reson 8101. The sonar head is mounted on an extendable arm that is retracted and extended for use on each survey day. The survey team on board *Rainier* is working to create a new standard so that positioning of the swing arm can become more constant and predictable.

Holidays

Two holidays appear in the data. The first is in an area of LIDAR coverage and the second is in an area of dense kelp.

On the east side of H11902 is a gap in the MBES coverage. This gap occurs over a rock awash with a least depth of ¼ fathom. This rock is within approved LIDAR coverage, as seen in Figure 3. A lead line was used to take a sounding of the rock and was recorded with a Detached Position.[7]

Just southwest of Goloi Island Sandspit is an area of dense kelp (see Figure 4). This prevented bathymetry coverage by both H11902 and LIDAR surveys. The Hydrographer recommends charting this as a kelp area as identified in the Notebook file H11902_Field_Verified.hob (See Section D.2.b)[8]

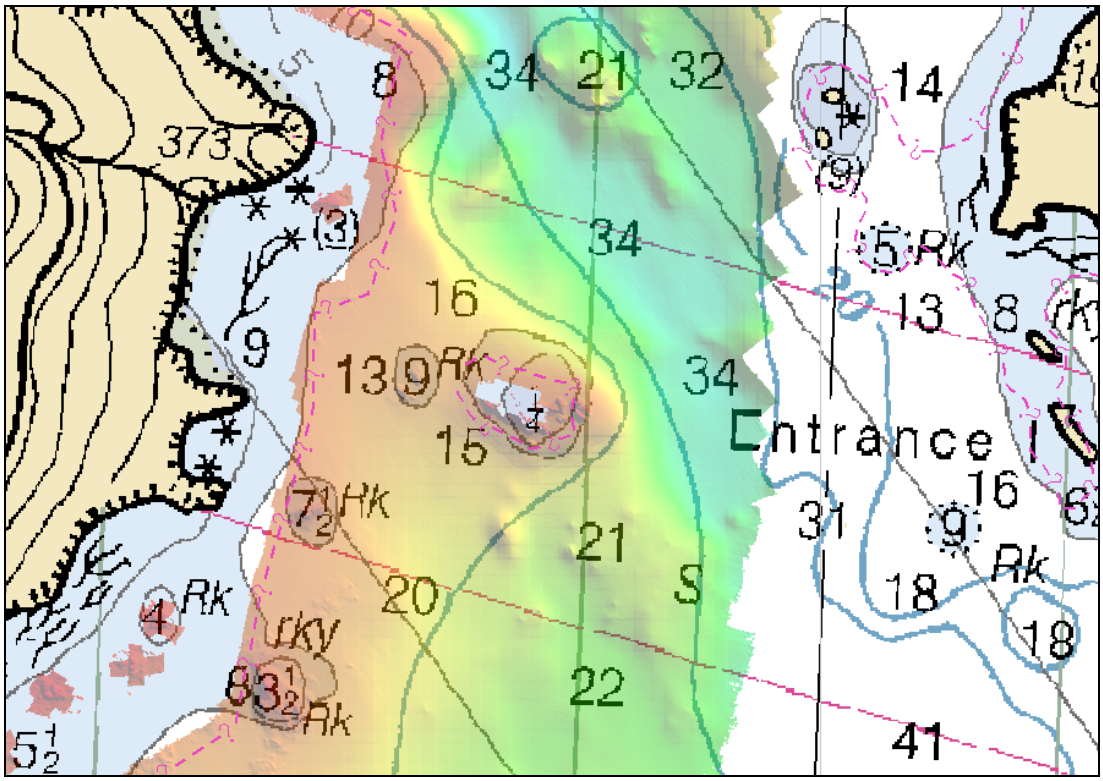


Figure 3. H11902 ¼ Fathom Sounding (Chart 16549)
Pink dotted line is approved extents of LIDAR coverage

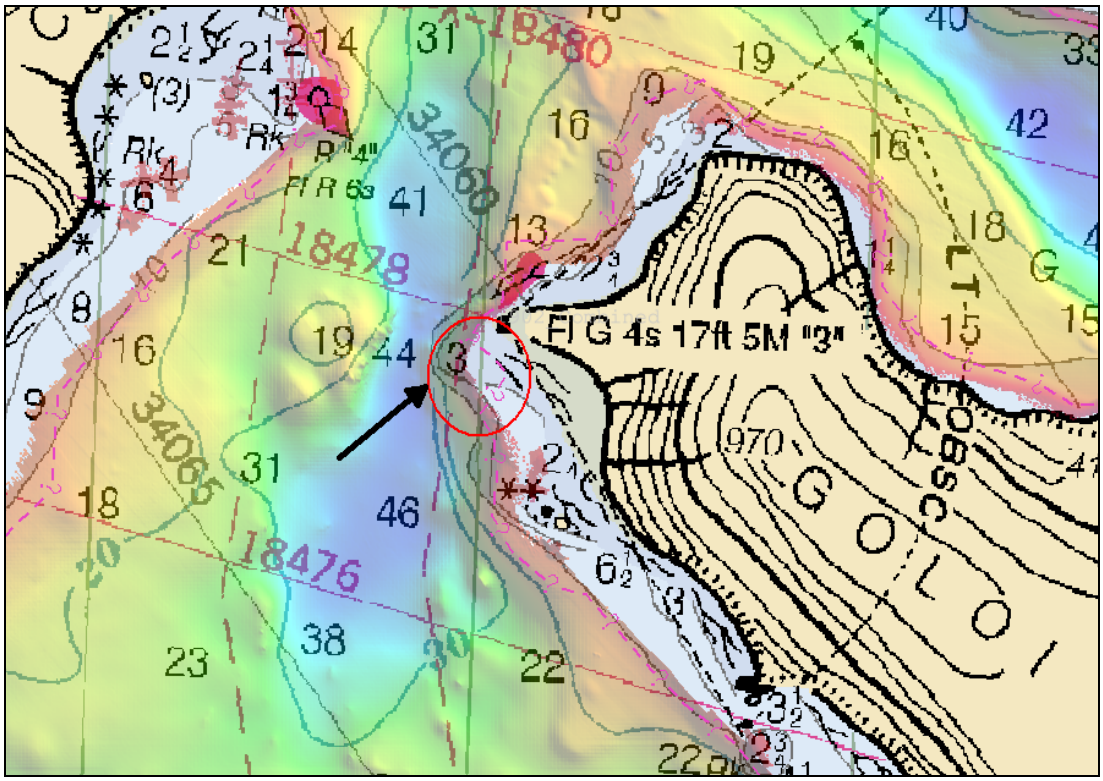


Figure 4. H11902 Kelp area off Goloi Island Sandspit
Pink dotted line is approved extents of LIDAR coverage

B3. Data Reduction

Data reduction procedures for survey H11902 conform to those detailed in the *OPR-P184-RA-08 DAPR.*

B4. Data Representation

Many BASE surfaces were used in processing H11902. Final BASE surface resolutions and depth ranges were set in accordance with *Rainier's* standard in Table 3. These BASE surfaces were contained in three field sheets with a maximum number less than 26.6×10^6 nodes. The submission Field Sheet and BASE Surface structure is shown in Figure 5. The layout of field sheets is shown in Figure 6.

Depth Range (m)	Resolution (m)	CUBE Parameter Disambiguation Method Advanced Option
0-21.5	1	Shallow
18.5-52	2	Deep
46-115	4	Deep

Table 3. Depth range and surface resolutions for H11902

Soundings and contours were generated in CARIS HIPS from the final combined BASE surface for field unit review purposes. They are included for reference only and are not intended as a deliverable.

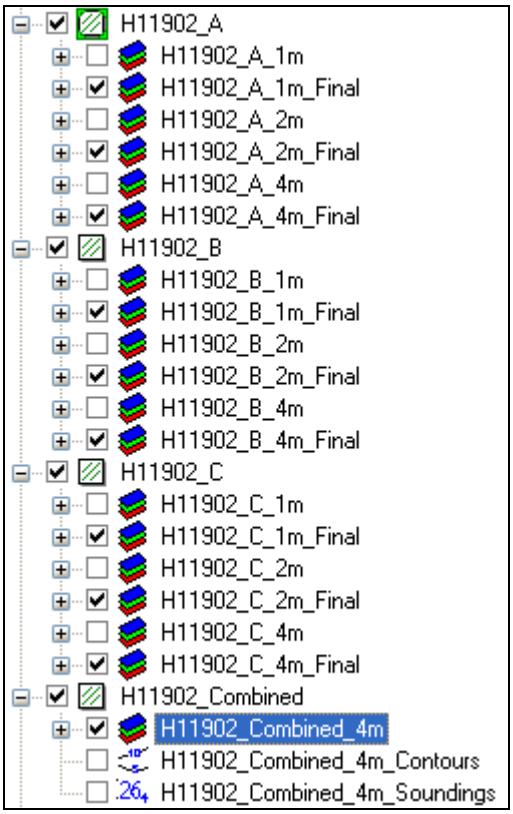


Figure 5. Field sheets and BASE surfaces submitted with H11902

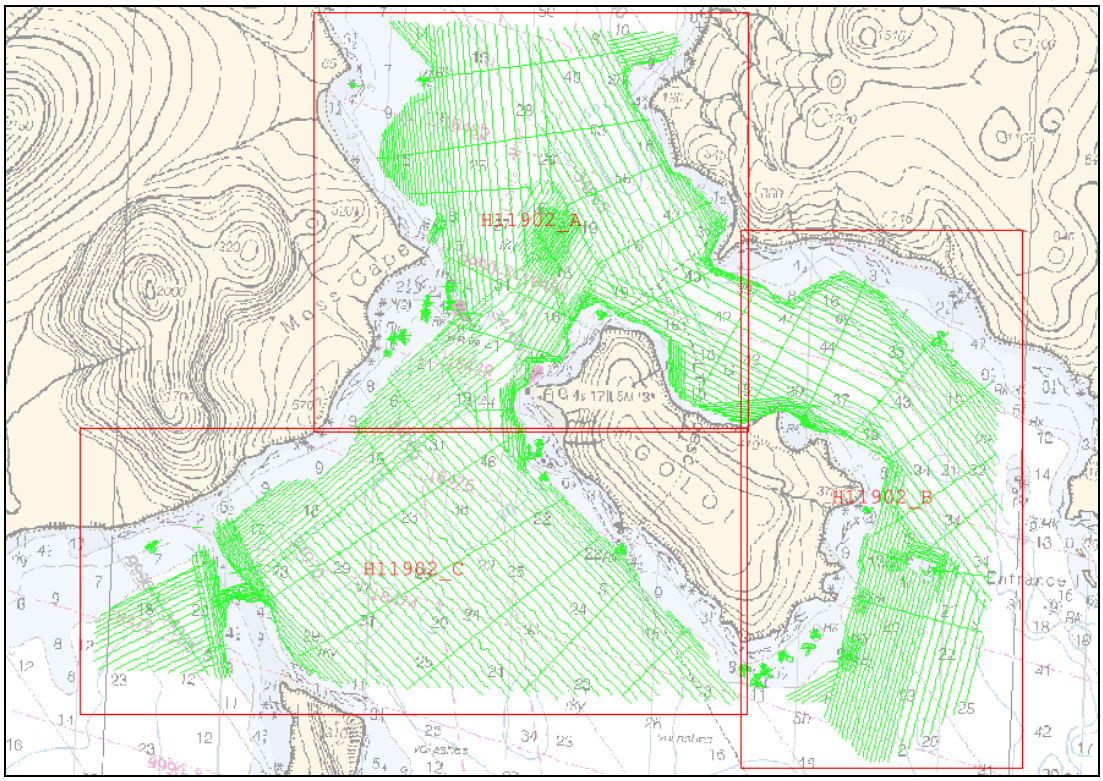


Figure 6. Layout of field sheets for H11902, overlaid on NOAA Chart 16549

C. VERTICAL AND HORIZONTAL CONTROL

Project OPR-P184-RA-08 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.

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. The differential corrector beacons utilized for this survey are given in Table 4.

Location	Frequency	Operator	Distance	Priority
Cold Bay	289 kHz	USCG	28 nm	Primary

Table 4. Differential Corrector Source for H11902

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide stations at Sand Point, AK (945-9450) and King Cove, AK (945-9881) served as control for datum determination and as the primary sources for water level reducers for survey H11902.

No tertiary gauges were required.

All data were reduced to MLLW using final approved water levels from stations Sand Point, AK (945-9450) using the tide file 9459450.tid and King Cove, AK (945-9881) using the tide file 9459881.tid. Final time and height correctors were applied using the zone corrector file P184RA2008CORP.zdf.

The request for Final Approved Water Levels for H11902 was submitted to CO-OPS on 05 August 2008. The Final Tide Note was sent but not received on 14 August 2008. The Final Tide Note was resent and received on 09 October 2008. This documentation is included in Appendix IV.[9]

RESULTS AND RECOMMENDATIONS

D.1. Chart Comparison

D.1.a. Survey Agreement with Chart

Survey H11902 was compared with the following charts:

Chart	Scale	Edition and Date	Local Notice to Mariners Applied Through
16549	1:80,000	15th Ed, Jul 2003	11/22/2008

Table 5. Charts compared with H11902

Depths from survey H11902 agreed well with differences usually less than two fathoms. Larger differences of four to seven fathoms were noted, with the deep areas tending to be deeper than charted and the shoal areas shoaler than charted. This can be attributed to increased bottom coverage using MBES methods. All these larger difference were in water deeper than fifteen fathoms.

The Hydrographer recommends that survey soundings supersede all prior survey and charted depths in the common area.[10]

<u>Charted Fish Trap</u>

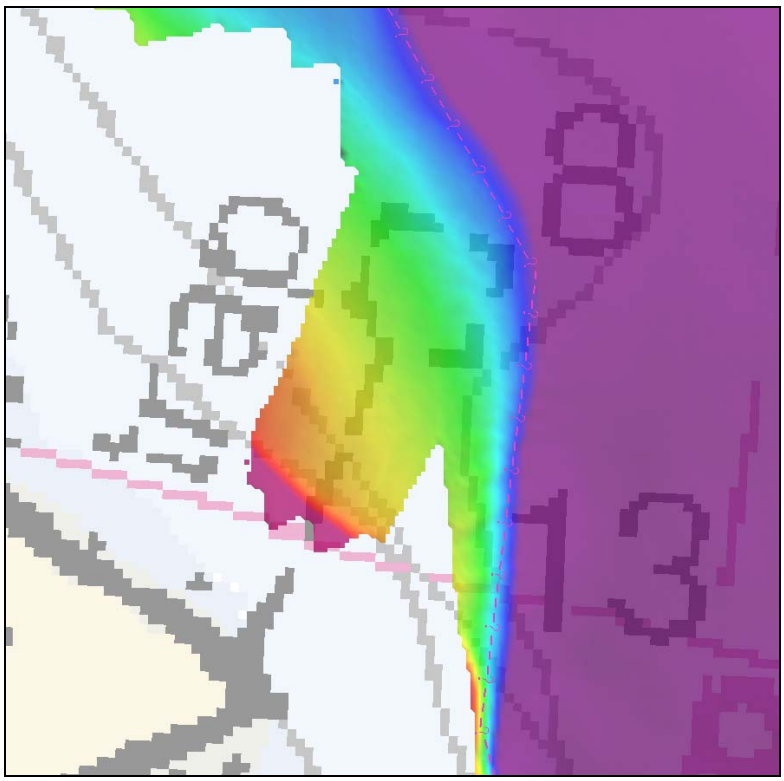


Figure 7. H11902 Charted Trap (Chart 16549)
Color map range is 5 to 10 fathoms

A fish trap is charted just north of Moss Cape. Full bottom coverage was obtained over the charted area with SWMB. This trap was not seen in either the bathymetry or the pseudo-sidescan imagery. The Hydrographer recommends removing the trap from the chart.[11]

Secondary Channel

Although the main channel for vessels is Iliasik Passage between Inner and Outer Iliasik Islands, *Rainier* observed many smaller vessels (approximately 60 feet in size and smaller) transiting through a secondary channel north of Inner Iliasik Island. This channel is not indicated on the chart, although it can be seen in both H11902 and LIDAR coverage. The Hydrographer recommends charting this area in such a way as to indicate the channel, as well as charting the kelp just south of the channel (as indicated in H11902_Field_Verified.hob).[12]

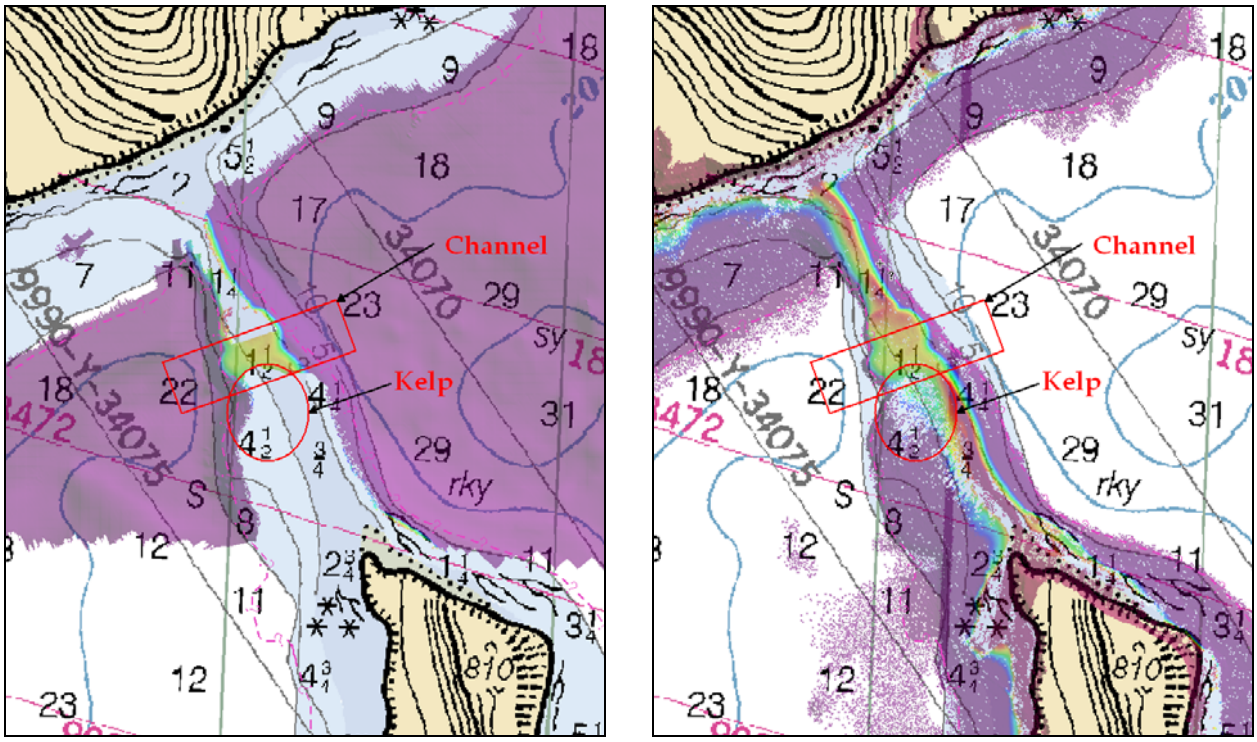


Figure 8. Inner Iliasik Island Secondary Channel (Chart 16549)
H11902 SWMB (left) and H11438 and H11439 LIDAR (right)
Color map range is 1.5 to 4 fathoms

D.1.b. Dangers to Navigation

Two (2) Dangers to Navigation (DTONs) were found on survey H11902, and reported to the Marine Chart Division via email on 07 January 2009.

The original DTON submission package is included in Appendix I. Descriptions of each DTON are included in the Survey Feature Report in Appendix II.[13]

D.1.c. Other Features

Automated Wreck and Obstruction Information System (AWOIS) Investigations

No AWOIS items fall within the survey limits of H11902.[14]

Additional Items

Additional features investigated within the limits of H11902 are described in the Survey Feature Report in Appendix II.

D.2. Additional Results

D.2.a. Prior Survey Comparison

Prior survey comparison was not performed.

D.2.b. Shoreline Verification

Shoreline Source

The Pacific Hydrographic Branch provided *Rainier* with .HOB files containing features from LIDAR surveys H11436, H11437, H11438, H11439, and H11487 selected for further investigation. These features fell into two categories:

- "H114XX_LI_Investigations.hob": Features poorly resolved in LIDAR data and areas of possible features with sparse coverage.
- "H114XX_LI_Undetected.hob": Charted features not found in LIDAR survey data and recommended for removal from the chart.

In addition, a composite source file was provided using data from the latest ENCs as well as prior survey features. Photogrammetric survey project GC10645 has been adequately applied to ENCs used in the composite source file. This source shoreline was used for orientation purposes in Hypack and Notebook and on printed boat sheets utilized for investigation of the LIDAR items discussed above.

Shoreline Verification

Traditional "limited shoreline verification" was not required for this survey, since much of the nearshore area was covered by junction LIDAR surveys and thus outside the limits of H11902. The following field procedures were followed:

- H11902 LIDAR items selected for further investigation were addressed by visual, Detached Position (DP), VBES, or MBES techniques as appropriate and feasible, near predicted low water. Note that some of these features were located in areas unsafe to

approach and/or were considered insignificant to navigation, and were not further investigated.

- The composite source shoreline was used for orientation and navigation while transiting between assigned H11902 items.
- All new, charted, and AWOIS items within the limits of H11902 (i.e., offshore of the limits prescribed in the Project Instructions and discussed in Section A.) were addressed.

Detached positions (DPs) were recorded in HYPACK, processed in Pydro, and then translated into CARIS Notebook. These DPs indicate revisions to features. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline, and transferred to the "remrks" attribute on the corresponding features in Notebook.

Investigation methods and recommendations are described in the Pydro "Remarks" and "Recommendations" tabs. Additional information can also be found in the Pydro Feature Report included in Appendix II.

All shoreline data is submitted in Caris Notebook .hob files. The session H11902_Notebook.wrk contains the following:

HOB File	**Purpose and Contents**
H11902_Reference	Contains the survey sheet limits, LIDAR coverage extents, and LIDAR shoreline from all LIDAR junction surveys
H11902_Comp_Source	The original composite HOB contains the features from the Composite source as well as features from the LIDAR_features HOB and LIDAR_Investigations HOB all clipped to the limits of the survey sheet. This file remained unaltered through delivery to the processing branch, barring the addition of the LIDAR features.
H11902_Field_Verified.hob	The Field verified layer contains the Comp_Source HOB with LIDAR features and survey updates. Features contained in the Field_Verified HOB include (a) new features. (b) modification due to attribution, geometry, feature object class, or position. (c) features from multiple sources (i.e. deconfliction). (d) features not addressed by the field. This includes features inshore of the NALL and features from multiple sources which cannot be deconflicted.
H11902_Disprovals.hob	Features from Composite Source or LIDAR surveys that have been disproved are in this layer. These include (a) features that no longer exist (b) features that have been modified

Table 6. List and Description of H11902 Notebook HOB files

Source Shoreline Changes and New Features

Items for survey H11902 that require further discussion and are associated with a detached position, have been flagged "Report" in Pydro in H11902.pss. Investigation methods and recommendations are listed in the Remarks and Recommendation tabs. These features are included in the Survey Feature Report in Appendix II.

Recommendations

The Hydrographer recommends that the shoreline as depicted in the Notebook .HOB files supersede and complement shoreline information compiled in the Composite Source and charts as described above.[15]

D.2.c. Aids to Navigation

Survey H11902 included two (2) aids to navigation (ATONs). Each ATON's position was visually checked in the field against the digital raster chart or verified by detached position. Each of the ATONs was found to serve its intended purpose. Detached positions were taken for check purposes only. No GPS static surveys were conducted for Survey H11902.[16]

LL #	ATON	Position	Characteristic	Ht	R	Structure	Remarks
27150	Moss Cape Lighted Buoy 4	55 07 07 N 161 56 17 W	Fl R 6s		4	Red	
27155	GOLOI SANDSPIT LIGHT 3	55 06 36 N 161 55 29 W	Fl G 4s	17	5	SG on steel skeleton tower	Obscured from 229° to 328°

Table 7. H11902 Aids to Navigation

D.2.d. Overhead Features

There are no overhead features within the limits of survey H11902.[17]

D.2.e. Submarine Cables and Pipelines

Survey H11902 includes one charted cable area, as shown in Figure 9. No trenches or other indications of cables were seen in the bathymetry or available backscatter imagery. The Hydrographer recommends retaining the cable areas as charted.[18]

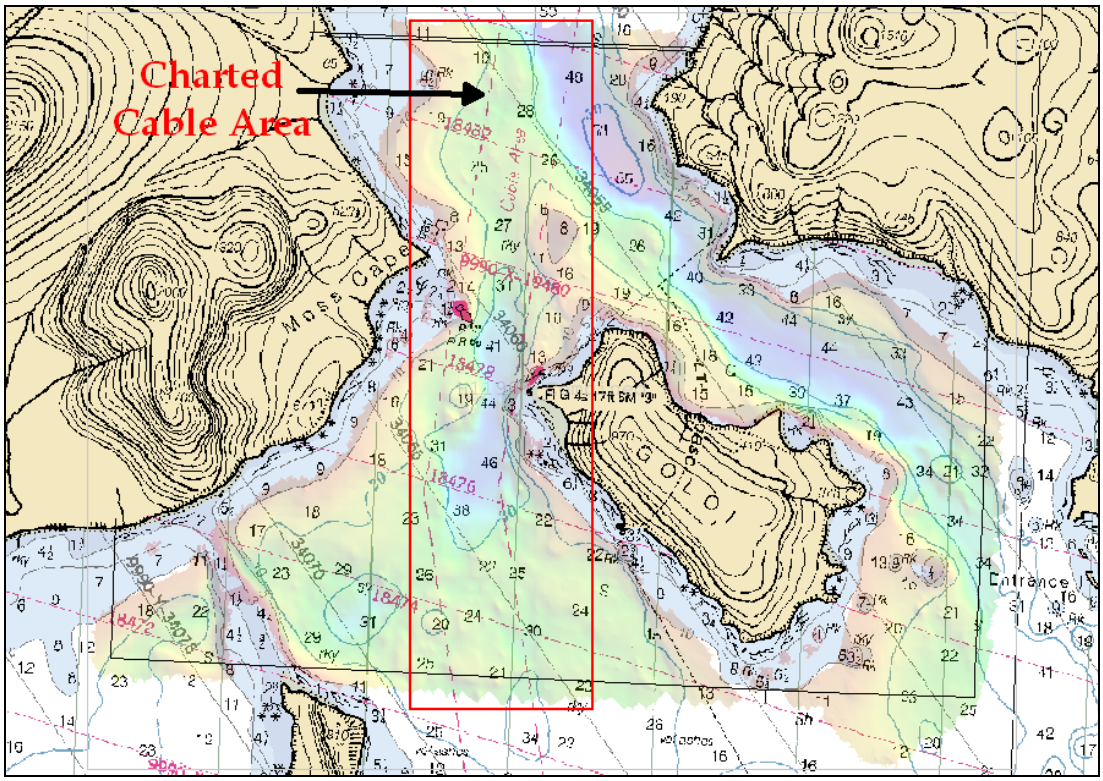


Figure 9. H11902 Cable Area (Chart 16549)

D.2.f. Ferry Routes

There are no ferry routes charted within the limits of survey H11902, and none were observed to be operating in the area.[19]

D.2.g. Bottom Samples

Fifteen (15) bottom samples were collected during survey H11902. Of these, two samples correctly matched current charted bottom type. Six samples did not match current charted bottom, and seven samples were collected in areas without prior data. Bottom samples were collected with *Rainier* and logged into CARIS Notebook. The data is included in the submitted H11902_Field_Verified.hob layer.[20]

D.2.h. Other Findings

There are no other findings to report for survey H11902.

E. APPROVAL

As Chief of Party, Field operations for hydrographic survey H11902 were conducted under my direct supervision, 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 (April 2008 edition), Field Procedures Manual (May 2008 edition), Standing and Letter Instructions, and all HSD Technical Directives issued through August 2008. 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.

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

Title	Date Sent	Office
Data Acquisition and Processing Report for OPR-O-RA-08	26 Nov. 2008	N/CS34
Coast Pilot Report for OPR- P184-RA-08	TBD	N/CS26

Approved and Forwarded: CAPT/NOAA

CAPT Donald W. Haines, NOAA
2009.02.24 13:03:54 -08'00'

Captain Donald W. Haines, NOAA
Commanding Officer

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

Survey Sheet Manager:

I am the author of this document
2009.02.13 21:32:29 Z

Ensign Anna-Elizabeth Villard-Howe, NOAA
Junior Officer

Chief Survey Technician:

James B Jacobson
I have reviewed this document
2009.02.23 13:48:12 -08'00'

James B. Jacobson
Chief Survey Technician, NOAA Ship *Rainier*

Field Operations Officer: LT/NOAA

I have reviewed this document
2009.02.23 11:01:17 -08'00'

Lieutenant Charles J. Yoos, III, NOAA
Field Operations Officer

Revisions and Corrections During Office Processing and Certification

[1] Filed with project records.
[2] All data are deemed adequate for charting.
[3] Of the five multibeam surveys H11902 junctions with H11900 and H11901 have already been complied. For H11903, H11904, and H11905 a common junction was made.
[4] Discrepancies between the Lidar surveys and data from H11902 are minor where lidar data was chosen for compilation. No lidar data in areas of thick kelp were selected for charting. Retain all charted kelp notations.
[5] Concur.
[6] Concur.
[7] Despite full Lidar coverage in this gap of multibeam data the least depth acquired from the lead line (via survey H11902) at 55-05-34.7N, 161-51-01-.1W was found to be the shoalest reading among all survey data. A 0 fathom 4 foot rock is recommended for charting at this position.
[8] Concur with clarification. Recommend retaining the kelp symbol located in this region and recommend charting a 0fathom 5foot rock located by lidar at 55-06-29.7N, 161-55-30.29W.
[9] Tide note is appended to this report.
[10] Concur.
[11] Concur.
[12] Do not concur, a channel is not necessary. Chart as shown in H11902_CS.000.
[13] DTON report is appended to this report.
[14] Concur.
[15] Concur with clarification; the submitted .HOB files were used in the compilation of H11902_CS.000. During compilation some modifications were made due to chart scale. Chart as per H11902_CS.000.
[16] Chart per latest ATONIS information.
[17] Concur.
[18] Concur.
[19] Concur.
[20] Chart bottom samples per H11902_CS.000.

H11902 Dangers to Navigation

Registry Number: H11902

State: Alaska

Locality: Pavlov Island

Sub-locality: Goloi Island and Vicinity

Project Number: OPR-P184-RA-08

Survey Date: 20080625

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
16549	15th	07/01/2003	1:80,000 (16549_1)	[L]NTM: ?
16540	12th	01/01/2005	1:300,000 (16540_1)	[L]NTM: ?
16011	36th	08/01/2004	1:1,023,188 (16011_1)	[L]NTM: ?
16006	34th	05/01/2006	1:1,534,076 (16006_1)	[L]NTM: ?
513	7th	06/01/2004	1:3,500,000 (513_1)	[L]NTM: ?
500	8th	06/01/2003	1:3,500,000 (500_1)	[L]NTM: ?
530	31st	06/01/2005	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	11.89 m	55° 07' 17.0" N	161° 52' 50.3" W	---
1.2	Shoal	7.96 m	55° 07' 22.4" N	161° 53' 08.1" W	---

1 - Danger To Navigation

1.1) Profile/Beam - 890/116 from h11902 / 2801_reson7125_hf_512beams / 2008-177 / 340_2356

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 07' 17.0" N, 161° 52' 50.3" W

Least Depth: 11.89 m (= 39.02 ft = 6.504 fm = 6 fm 3.02 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.966 m ; **TVU (TPEv)** ±0.281 m

Timestamp: 2008-177.23:58:05.969 (06/25/2008)

Survey Line: h11902 / 2801_reson7125_hf_512beams / 2008-177 / 340_2356

Profile/Beam: 890/116

Charts Affected: 16549_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11902/2801_reson7125_hf_512beams/2008-177/340_2356	890/116	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

6 ½fm (16549_1, 16540_1, 16011_1, 16006_1, 530_1)

11.9m (500_1, 513_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: SORDAT - 20080805

SORIND - US,US,survy,H11902

Feature Images

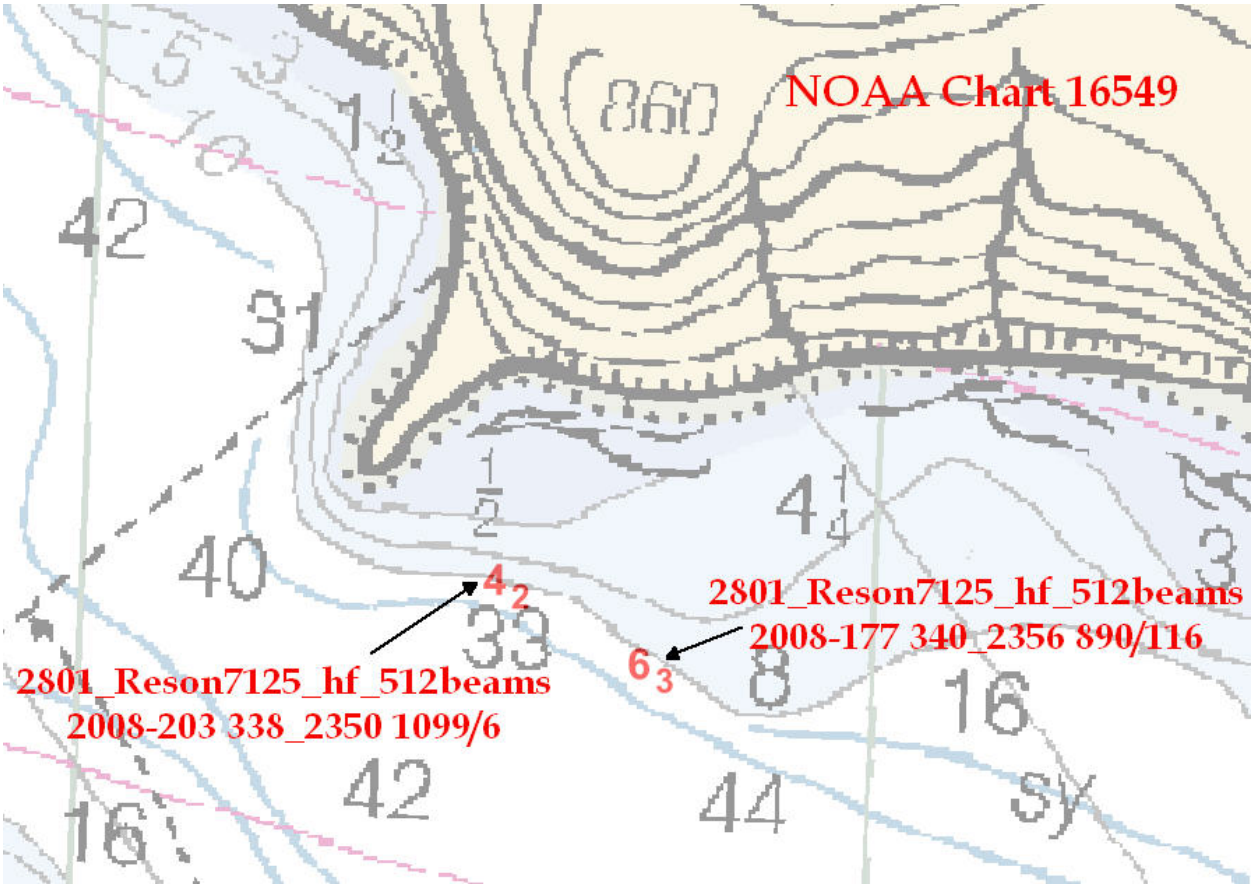


Figure 1.1.1

1.2) Profile/Beam - 1099/6 from h11902 / 2801_reson7125_hf_512beams / 2008-203 / 338_2350

DANGER TO NAVIGATION

Survey Summary

Survey Position: 55° 07' 22.4" N, 161° 53' 08.1" W

Least Depth: 7.96 m (= 26.13 ft = 4.354 fm = 4 fm 2.13 ft)

TPU (±1.96σ): **THU (TPEh)** ±1.968 m ; **TVU (TPEv)** ±0.293 m

Timestamp: 2008-203.23:51:58.029 (07/21/2008)

Survey Line: h11902 / 2801_reson7125_hf_512beams / 2008-203 / 338_2350

Profile/Beam: 1099/6

Charts Affected: 16549_1, 16540_1, 16011_1, 16006_1, 500_1, 513_1, 530_1, 50_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11902/2801_reson7125_hf_512beams/2008-203/338_2350	1099/6	0.00	000.0	Primary

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

4 ¼fm (16549_1, 16540_1, 16011_1, 16006_1, 530_1)

8.0m (500_1, 513_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: SORDAT - 20080805

SORIND - US,US,survy,H11902

Feature Images

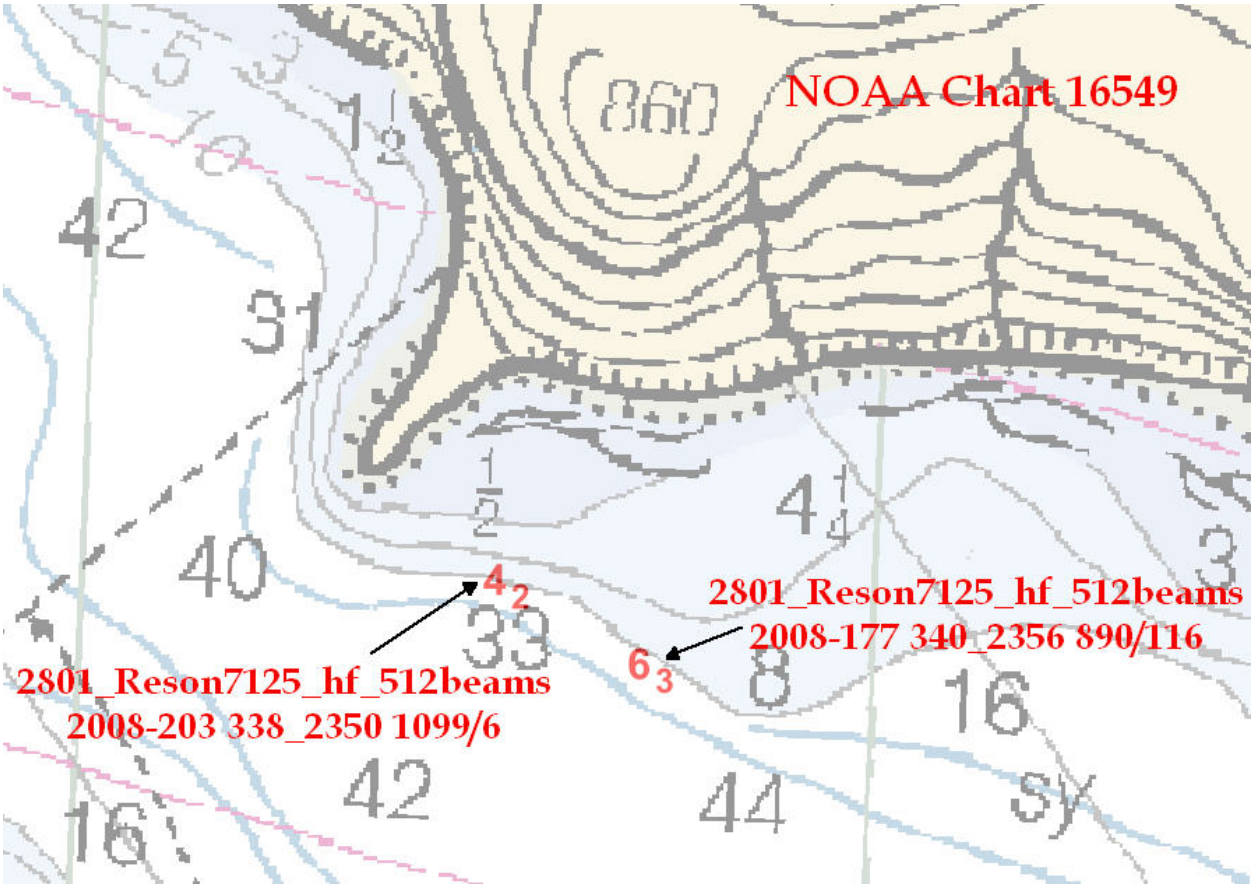


Figure 1.2.1

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : August 12, 2008

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P184-RA-2008
HYDROGRAPHIC SHEET: H11902

LOCALITY: Goloi Island and Vicinity, Pavlof Islands, AK
TIME PERIOD: June 25 - August 5, 2008

TIDE STATION USED: 945-9881 King Cove, AK
Lat. 55° 3.6'N Long. 162° 19.6' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.876 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-P184-RA-2008, H11902, during the time period between June 25 and August 5, 2008.

Please use the zoning file "P184RA2008CORP" submitted with the project instructions for Pavlof Islands, AK. Zone SWA218 is the applicable zone for H11902.

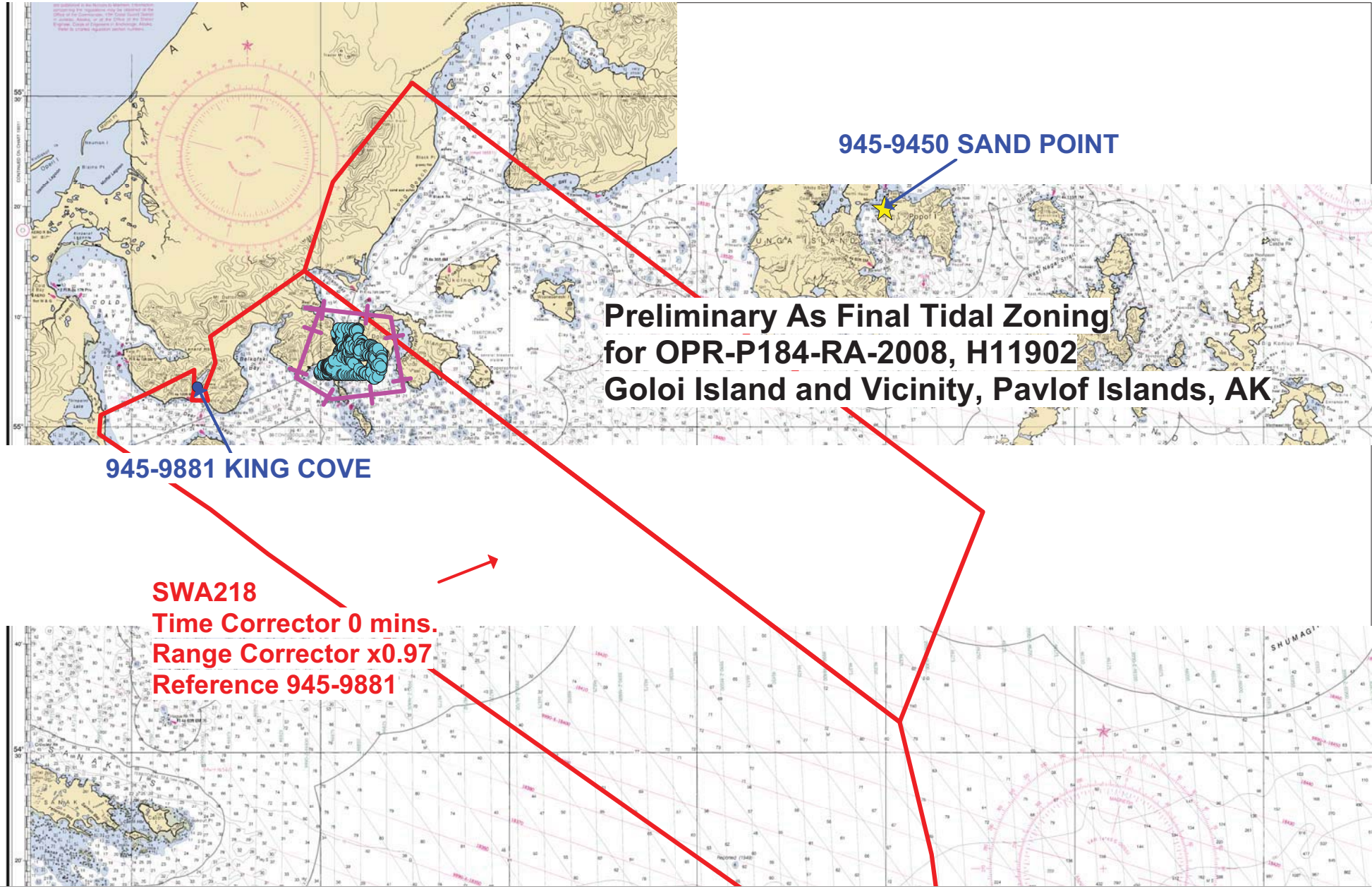
Refer to attachments for zoning information.

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

Peter J. Stone

Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/NOS, email=peter.stone@noaa.gov, c=US
Date: 2008.06.30 15:50:08 -04'00'

CHIEF, PRODUCT AND SERVICES DIVISION


945-9450 SAND POINT
Preliminary As Final Tidal Zoning
for OPR-P184-RA-2008, H11902
Goloi Island and Vicinity, Pavlof Islands, AK
945-9881 KING COVE
SWA218
Time Corrector 0 mins.
Range Corrector x0.97
Reference 945-9881

H11902 HCell Report

Peter Holmberg, Physical Scientist
Pacific Hydrographic Branch

1. Specifications, Standards and Guidance Used in HCell Compilation

HCell compilation of survey H11902 used:

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

2. Compilation Scale

Depths and features for HCell H11902 were compiled to the largest scale raster chart shown below:

Chart	Scale	Edition	Edition Date	NTM Date
16549	1:80,000	16th	03/01/2010	05/01/2010

The following ENCs were also used during compilation:

Chart	Scale
US4AK55M	1:80,000

3. Soundings

In CARIS BASE Editor a survey-scale sounding (SOUNDG) feature object layer was built from a 4-meter Combined Surface from multibeam and singlebeam data from H11902 and 3-meter Surfaces from lidar data from H11436, H11437, H11438, H11439, and H11487. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	100	5

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

4. Depth Contours

Depth contours at the intervals on the largest scale chart are included in the *_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in Fathoms from Chart 16549	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H11902_SS.000
0	0.000	0.000	0.000	0
3	5.4864	5.715	3.125	3
5	9.144	9.3726	5.125	5
10	18.288	18.517	10.125	10
20	36.576	37.9476	20.750	20
30	54.864	56.236	30.750	30
50	91.44	92.8116	50.750	50

With the exception of zero contours included in the *_CS file, contours 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 may result in conflicts between the *_SS file contours and HCell features at or near the survey limits. Conflicts with M_QUAL, 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.

5. Meta Areas

The following Meta object areas are included in HCell H11902:

M_QUAL

Due to the numerous number of M_QUALs included in this survey it was requested from MCD that a single area object depicting the full extents of the survey area be created. A single $AREAS object has been included to fulfill that request.

6. Features

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

7. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

$AREAS	Single area object depicting total coverage
$CSYMB	Notes to the MCD chart Compiler
LNDARE	Islets retained from Lidar
LNDELV	Elevation of islands
M_QUAL	Data quality Meta objects
OBSTRN	Obstruction areas
SBDARE	bottom samples and rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features
WEDKLP	New and retained kelp

The *_SS HCell contains the following Objects:

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

8. Spatial Framework

8.1 Coordinate System

All spatial map and base cell file deliverables are in an LLDG geographic coordinate system, with WGS84 horizontal, MHW vertical, and MLLW (1983-2001 NTDE) sounding datums.

8.2 Horizontal and Vertical Units

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

Chart Unit Base Cell Units:

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

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

BASE Editor and S-57 Composer Units:

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

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

9. Data Processing Notes

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

10. QA/QC and ENC Validation Checks

H11902 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

H11902_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000
H11902 _SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000
H11902 _DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H11902 _outline.gml	Survey outline
H11902 _outline.xsd	Survey outline

11.2 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.3	Creation of soundings and bathy-derived features, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.1	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

Peter Holmberg
Physical Scientist
Pacific Hydrographic Branch
Seattle, WA
206-526-6843
Peter.Holmberg@noaa.gov

APPROVAL SHEET
H11902

Initial Approvals:

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

Digitally signed by Pete Holmberg
DN: cn=Pete Holmberg, o=NOAA, ou=PHB, email=peter.holmberg@noaa.gov, c=US
Date: 2010.06.17 13:20:52 -07'00'

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, S-57 classification and attribution of soundings and features, cartographic characterization, and verification or disproval of charted data within the survey limits. The survey records and digital data comply with OCS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

Digitally signed by Russ Davies
Date: 2010.06.17 13:26:23 -07'00'

I have reviewed the HCell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.

Gary C. Nelson
2010.06.17
13:34:08 -07'00'

Lucy Hick
AWOIS & SURF
Check Complete
2010.06.29
11:45:45 -04'00'