

H11462

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. N/A
Registry No. H11462

LOCALITY

State Alaska
General Locality Southwestern Alaskan Peninsula
Sublocality Seal Bay

2005

CHIEF OF PARTY

Dean Moyles

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11462

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.

N/A

State Alaska

General Locality SW Alaska Peninsula

Sublocality Seal Bay

Scale 1:10,000

Date of Survey 7/17/2005 - 8/18/2005

Instructions Date 3/1/2005

Project No. OPR-P182-KR-05

Vessel R/V OCEAN GUARDIAN, R/V QUICKSILVER, Skiff (DPs)

Chief of Party Dean Moyles

Surveyed by Moyles, Orthmann, Reynolds, Gill, Mount, Stock, Busey, Briggs et al

Soundings taken by echo sounder, hand lead, pole Reson 8101 & 8111 (both Hull Mounted)

Graphic record scaled by N/A

Graphic record checked by N/A

Evaluation by G. Nelson

Automated plot by HP Designjet 1050C

Verification by G. Nelson

Soundings in Fathoms

at

MLLW

REMARKS: All times are recorded in UTC

Revisions and annotations appearing as endnotes were

generated during office processing.

All seperates are filed with the hydrographic data

As a result, page numbering may be interrupted or non-sequential

**A - Area Surveyed**

H11462 (Sheet AJ) is bound by the coordinates listed below, which encompass Seal Bay.

Hydrographic data collection began on July 17, 2005 and ended on August 18, 2005.¹

Table 1 - H11462 Sheet Limits²

Sheet Limits Task Order # 1 H11462 Sheet AJ Scale 1:10,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	55°56'20.40" N	158°31'21.72" W
2	55°56'20.40" N	158°24'01.80" W
3	55°02'55.32" N	158°24'01.80" W
4	55°02'55.32" N	158°31'21.72" W

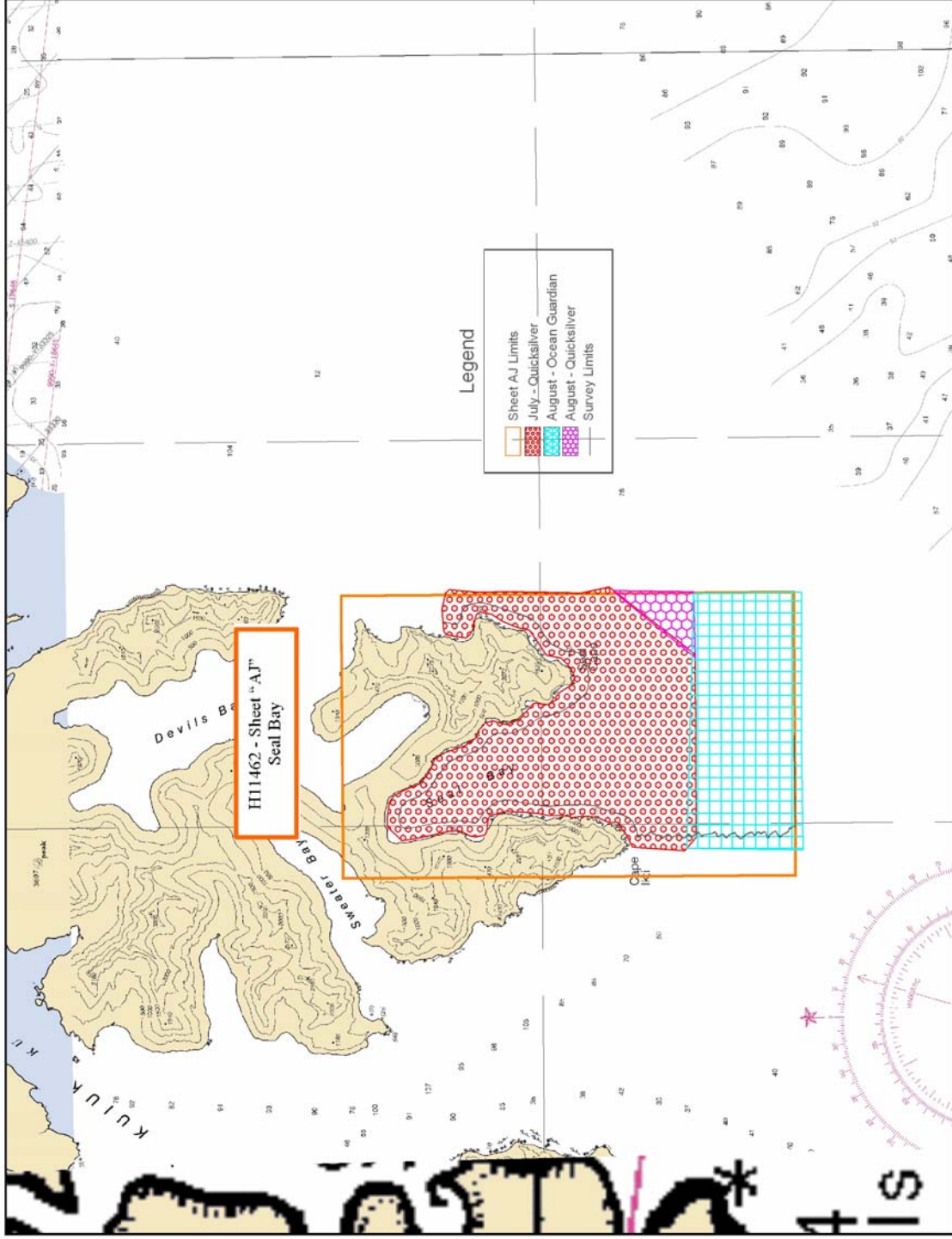


Figure 1 H11462 Area Surveyed



B – Data Acquisition & Processing

Refer to the OPR-P182-KR-05 Data Acquisition and Processing Report³ for a detailed description of all equipment, survey vessels, processing procedures and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.

Equipment & Vessels

The R/Vs Quicksilver and Ocean Guardian acquired all sounding data for H11462. The Quicksilver, which is 32 feet in length with a draft of 3 feet, was equipped with a Reson 8101 with option 033 (pseudo SideScan) for multibeam data acquisition. The vessel was also equipped with two AML sound velocity and pressure sensors for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessel (POS/MV) with XTF files logged in Triton ISIS V 6.9.

The Ocean Guardian, 177 feet in length, with a draft of 13 feet, was equipped with a Reson 8111 with option 033 (pseudo SideScan) for multibeam data acquisition and two AML sound velocity and pressure sensors for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessel (POS/MV) with XTF files logged in Triton ISIS V 6.9.

A 25 ft skiff, referred to as the DP Skiff, was used to perform item investigations and shoreline verification. The skiff was equipped with a CSI GBX-PRO DGPS receiver, WinFrog v3.4.0 data acquisition system (operated on a Panasonic laptop), laser range finder and a Sony digital camera. NOAA nautical charts & LIDAR Smooth Sheets were displayed as a layer in WinFrog for reference. All soundings on submerged features were collected by the Quicksilver. The DP skiff was utilized to mark locations of exposed rocks. A West Marine Single Beam Echosounder was used to aid the hydrographer on the skiff in locating the shoalest point of targets near the surf zone or areas of limited visibility.

Refer to OPR-P182-KR-05 Data Acquisition & Processing Report for a complete listing of equipment and vessel descriptions. No deviations from the report occurred.

Quality Control

Crosslines

Quality control tielines were planned to total at least five percent of the main scheme line length. Total crossline length surveyed was 28.0 km (15.1 nautical miles) or 5.7 percent of the total main scheme kilometers. Collected tielines were well distributed throughout the sheet to insure adequate crossline quality control. A total of 21 tie line crossings were examined using the CARIS HIPS Q/C report.

The majority of QC Reports fall well within the required accuracy specifications. However, beams that fall below the 95 percent confidence level in the QC Report are associated with specific areas and conditions illustrated below. It should be noted that data at these locations are in agreement with the surrounding offset lines and are considered well within the required specifications.

The majority of beams that fell outside of the 95 percent confidence level were located in areas having extreme steep slopes and/or rocks. The figure below shows an example of this.

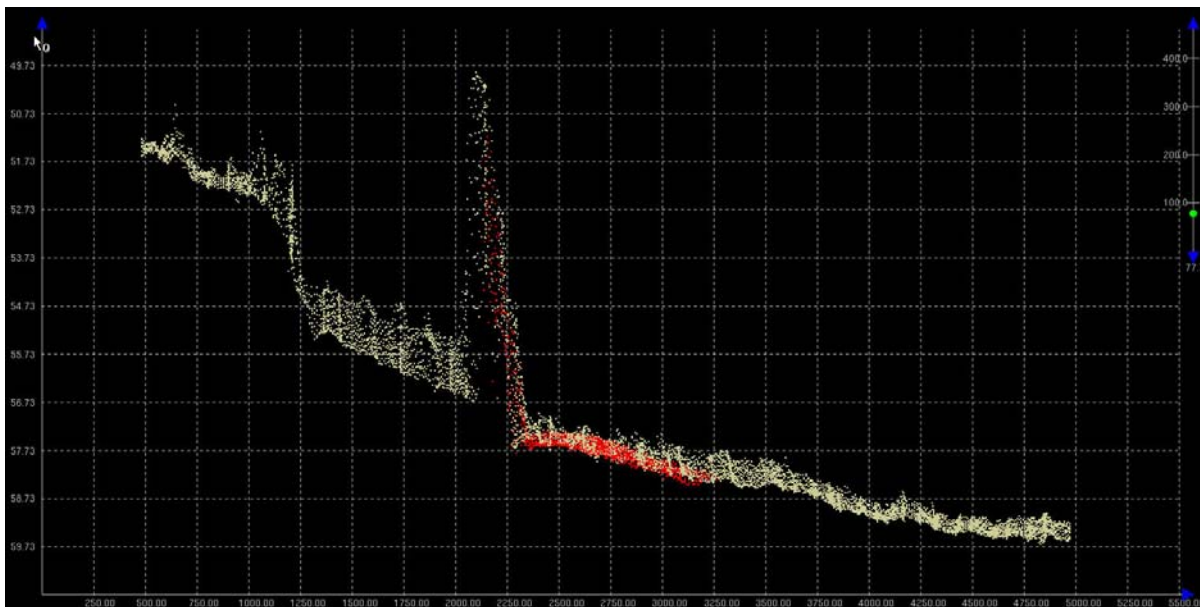


Figure 2 Profile of AJ03-QC001

Note: The QC reports were generated based on the given accuracy specification of:

$$\pm \sqrt{[a^2 + (b * d)^2]}$$

where, a = 0.5, b = 0.013 and d = depth.

However, since a variance of a difference, rather than a variance from a mean is being used, the a and b values defined in the makehist.cla file within CARIS will use:

$$a = 0.5 * \sqrt{2} = 0.707$$

$$b = 0.013 * \sqrt{2} = 0.018$$

Data Quality

In general, the multibeam data quality for H11462 was excellent. One notable problem follows:

- During data acquisition and routine processing, a general downward and/or upward cupping was noticed in the across track sounding profiles for certain areas. This is possibly due to the high volume of thermal layering and strong under currents in the water column. This problem was addressed by conducting SVP casts more frequently and reducing the line spacing interval. Even though this SVP error is noticeable on the sun illuminated images in Separate 6 the data are well within the required specifications.⁴

Survey Junctions

H11462 (Sheet AJ) junctions with:

Registry #	Scale	Date	Junction Side
H11461	1:10,000	2005	South ⁵
H11463	1:20,000	2005	West ⁶
H11464	1:20,000	2005	West ⁷

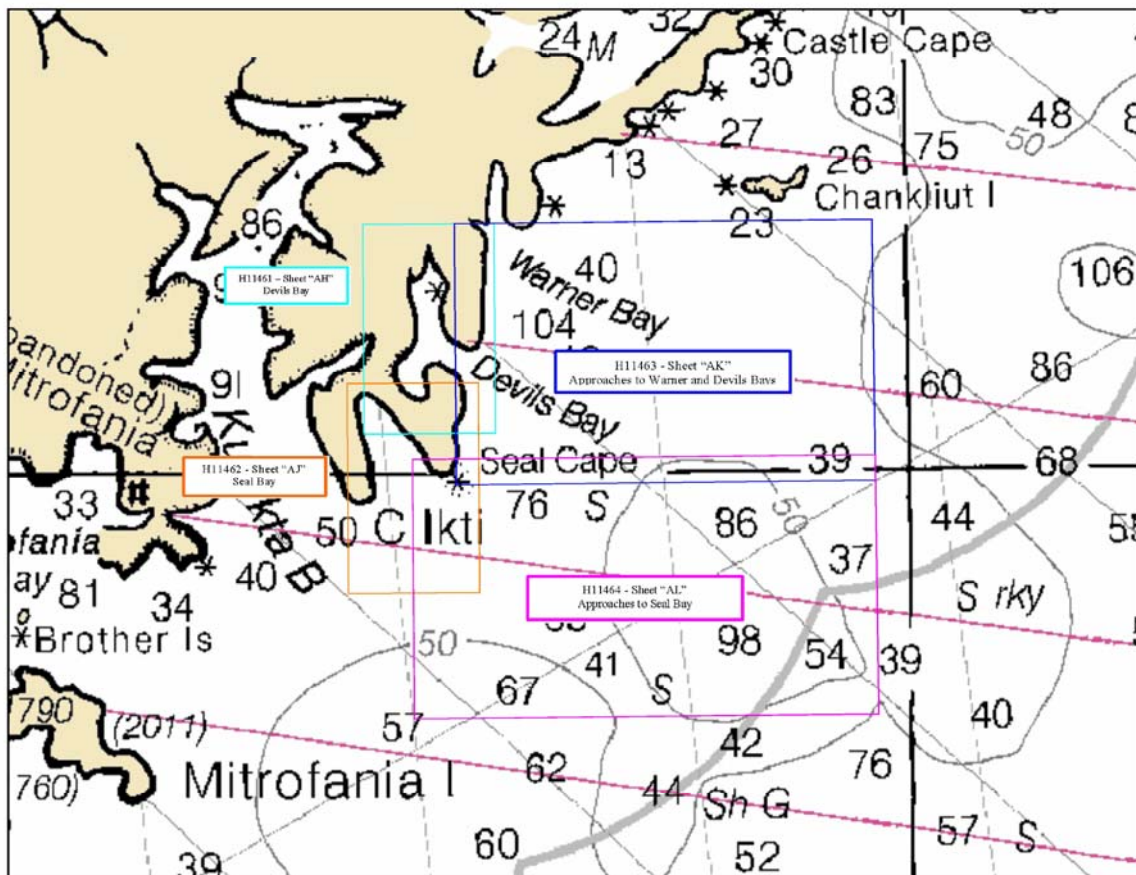


Figure 3 H11462 Survey Junctions

The surveys are in agreement along their common borders. The agreement was noted in the field using the 2 and 5 meter DTM's created for coverage verification. The conformity is also apparent in the preliminary smooth sheets.⁸

Smooth Sheet Histograms

The H11462 Quicksilver Histogram (Figure 4) illustrates the Reson 8101 data collected from July 17, 2005 to August 15, 2005 on the R/V Quicksilver. The histogram shows an increase on selected soundings from the outer beams (around beams 13 and 89). This is the result of surveying near the shoreline where the outer beams are mapping the shallowest areas. The majority of adjacent lines were run with port beams overlapped with port beams and starboard beams overlapped with starboard beams, which makes it possible to have higher density data per square meter on the outer edges, leading to a higher chance of sounding selection on the smooth sheet. The transition from phase to amplitude detection method of the sonar (around beams 33 and 69) is also apparent.

The spike at nadir, beams 48-53, is the early digitization at nadir, which is a common feature of the Reson sonar. The small dip in the histogram on either side of nadir spike is likely the result of a graphical zone created by the shoaler nadir soundings. Once these soundings are selected by the sounding suppression routine, the other soundings in the very densely sampled area around nadir are suppressed.

The decrease or lack of selected soundings on the outer beams is the result of deterioration of data quality on the outer beams. In most cases set filters were used to flag the outer beams as rejected, but in other cases, additional cleaning or filters were used on a line by line basis resulting in fewer selected soundings.

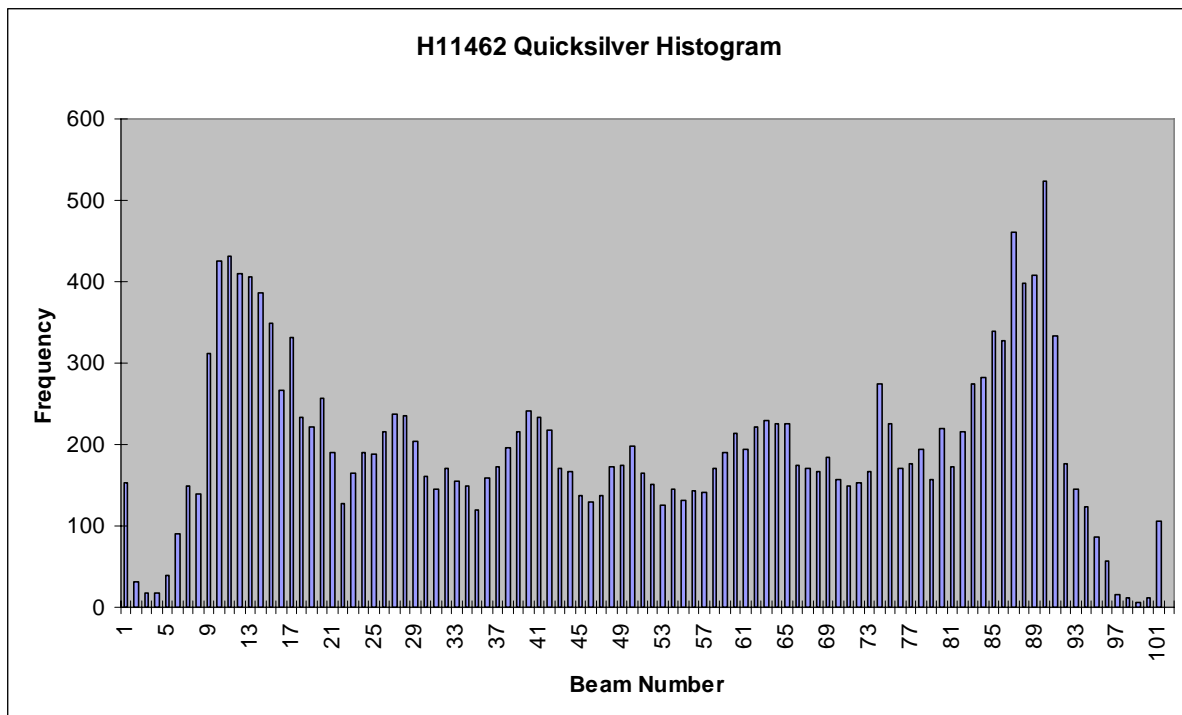


Figure 4 Histogram for 8101 (Quicksilver)

The H11462 Ocean Guardian Histogram (Figure 5) illustrates the Reson 8111 data, collected from August 13, 2005 to August 18, 2005 on the Ocean Guardian. The first features of note on this histogram are the large spikes either side of nadir, caused by nadir penetration, which is a common characteristic of Reson 8111 data. This penetration is a result of turning the power high enough to receive an accurate detection on the outer beams, as well as being a function of bottom type. The majority of lines collected had a noticeable sample of nadir beams with deeper depths than the surrounding soundings. These typically did not have any significant feature and were flagged as noise in HDCS. Since these were rejected, soundings from the adjacent beams were selected instead causing the spikes around beams 43 and 61.

The second feature of note is the increase in the number of selected sounding around beams 20 and 77. The majority of adjacent lines were run with port beams overlapped with port beams and starboard beams overlapped with starboard beams, which makes it possible to have higher density data per square meter on the outer edges, leading to a higher chance of sounding selection on the smooth sheet. This does not appear to be the result of equipment failure, survey or processing procedures. Inspection of the smooth sheet reveals trends where this beam is shoaler than the rest of the profiles simply because it is up slope from all other soundings. The crossline comparisons revealed that these beams were within IHO specifications; any differences were only a few centimeters. The transition from phase to amplitude detection method of the sonar (around beams 36 and 69) is also apparent.

The next feature is the decrease or lack of selected soundings on the outer beams, which is the result of deterioration of data quality on the outer beams, especially in deep water. In most cases set filters were used to flag the outer beams as rejected, but in other cases additional cleaning or filters were used on a line by line basis resulting in fewer selected soundings.

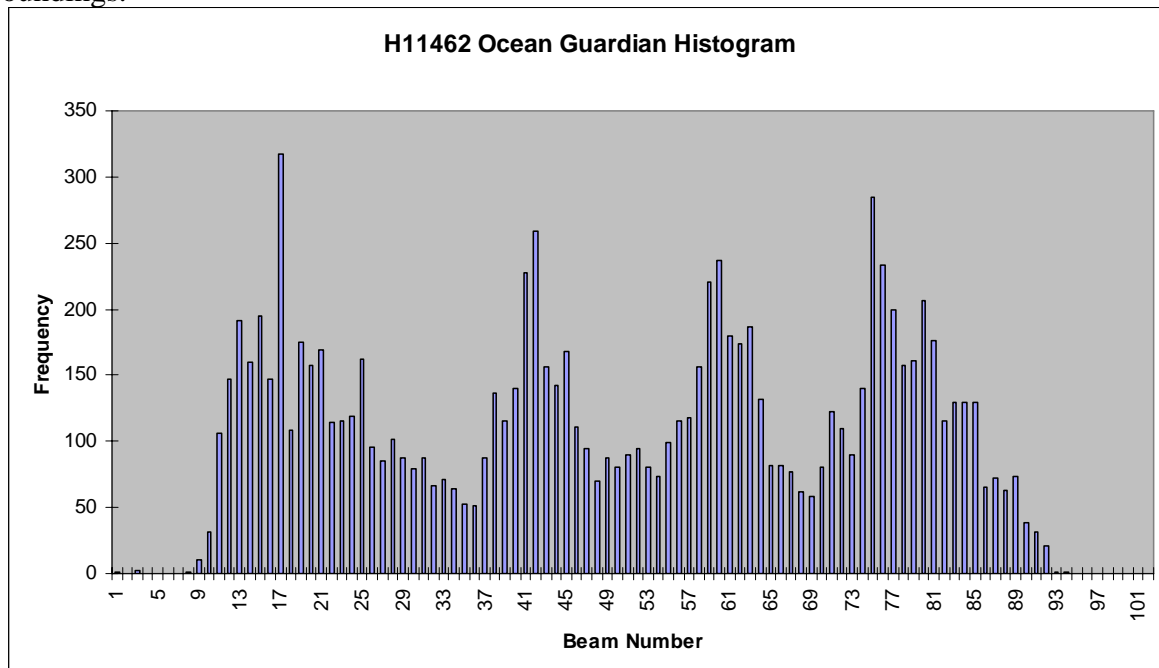


Figure 5 Histogram for 8111 (Ocean Guardian)



Quality Control Checks

During the hydrographic survey OPR-P182-KR-05 the R/Vs Quicksilver and Ocean Guardian conducted a number of bathymetry confidence checks. This usually consisted of the vessels running two lines in the opposite direction over a reference surface (normally the patch test site). The data sets collected with the Reson 8101 and 8111 systems that were installed on the Quicksilver and Ocean Guardian respectively, compared within 5 to 10 centimeters.

Positioning system confidence checks were conducted on a daily basis using the POS/MV controller software. The controller software had numerous real time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables (version March 2003) were achieved. These include, but are not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP) and Satellite Status. During periods of high HDOP and/or low number of available satellites survey operations were stopped.

Corrections to Echo Soundings

Refer to the OPR-P182-KR-05 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings and lead line measurements. No deviations from the report occurred.

C – Horizontal & Vertical Control

Refer to the OPR-P182-KR-05 Horizontal and Vertical Control Report⁹ for a detailed description of the horizontal and vertical control used on this Survey. A summary of the projects horizontal and vertical control follows. No deviations from the report occurred.

Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83). All raw positions were originally collected in WGS84 and transformed to NAD83 during the post-processed kinematic GPS (KGPS) routine.

It was necessary to acquire dual frequency GPS data at known locations on the ground so that a KGPS solution could be used for final positioning. John Oswald & Associates, LLC (JOA) established two local control points: station “849E” was located on the tidal bench mark 8849 E 2001, and station “Arm”, was located nearby on a piece of pipe extending off of station 849E.

Vessel position was determined in real time using a Trimble Zephyr L1/L2 GPS antenna, which was connected to a Trimble BD950 L1/L2 GPS card residing in the POS/MV. The POS/MV was setup via the Com 2 to accept USCG and/or Fugro Pelagos differential corrections, which were output from a CSI MBX-3S Coast Guard beacon receiver and/or the Fugro Pelagos L1 base station. Note: since the pseudorange corrections received by the



POS/MV are based on the NAD 83 position of the reference station antenna position, all DGPS-based final positions are NAD 83. However, nearly all final positions were determined using a post-processed KGPS solution using the POSpac 4.2 processing software, which also output a final solution in NAD 83. (Refer to the “2005-NOAAProcessingProcedures” document for KGPS processing procedure).

Vertical Control

All sounding data were initially reduced to mean lower low water (MLLW) using unverified tidal data from one tide station located on Chankliut Island, AK. A sub-contractor, John Oswald & Associates LLC (JOA), operated the gauge.

Table 2 - Tide Gauges

Gauge	Model	Gauge Type	Location	Latitude	Longitude	Operational
9458849	H350/355	Digital Bubbler	Chankliut Island, AK	56°08'40"N	158°06'47" W	05/26/05–08/25/05

Table 3 - Final Tide Zones

Zone	Primary			
	Site	Number	Time	Range Ratio
JOA001	Chankliut Island, AK	9458849	0	1.00
JOA002	Chankliut Island, AK	9458849	0	0.95
JOA003	Chankliut Island, AK	9458849	-6	0.95
JOA004	Chankliut Island, AK	9458849	-6	1.00
JOA005	Chankliut Island, AK	9458849	-6	1.06
JOA006	Chankliut Island, AK	9458849	-12	1.06
JOA007	Chankliut Island, AK	9458849	-12	1.00

JOA assembled tidal data for a twenty-four hour period UTC (Alaska Daylight Time to UTC was +8 hours) and e-mailed these data to the R/V Ocean Guardian at the end of every Julian Day. A cumulative file for the gauge was updated each day by appending the new data.

On October 10, 2005, JOA issued verified tidal data and final zoning for OPR-P182-KR-05. The tidal zoning was modified by JOA, providing a simpler zoning scheme from those issued in the Statement of Work (for additional information refer to JOA’s Final Technical Report). From October 10, 2005 to November 5, 2005 all sounding data were re-merged using CARIS HIPS and SIPS tide routine. Verified tidal data were used for the Preliminary Smooth Sheet.¹⁰

Refer to the Vertical and Horizontal Control Report for additional tidal information and station descriptions.



D – Results and Recommendations

Chart Comparison

Since no hydrographic data exist on the current charts no comparison could be conducted.¹¹

Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11462.¹²

Charted Features

There were no charted features labeled PA, ED, PD, or Rep within the limits of H11462.¹³

Dangers to Navigation

No dangers to navigation were located during the hydrographic survey of H11462.¹⁴

Additional Results

Additional Item Investigations

None were assigned for this sheet.¹⁵

LIDAR Investigations¹⁶

H11462 included LIDAR item investigations. These items, provided by NOAA, were features from the TENIX LADS (H11260) data set that required further action to be proved or disproved. The table below lists these items with their depth, position, and recommended course of action.

Most features were in water deep enough to allow investigation with the multibeam echosounder on the R/V Quicksilver. Those in shallower water were investigated with the shoreline vessel.



Table 4 - H11462 LIDAR Investigation List (TENIX LADS – H11260)

Sequence No	Shoal No	Surveyed Depth (decimal fms / whole feet)	Surveyed NAD 83 Latitude (degrees)	Surveyed NAD 83 Longitude W (degrees)	Remarks	Review Comments
6	AJ6	4.5	56.00520593	-158.53892686	All items covered by 4x4m laser spot spacing at 200% lidar coverage. Sparse data in kelp area.	Confirm least depth on submerged rock
12	AJ12	2.5	55.99807111	-158.52832446	Possible rock in kelp. Note: Many drying rocks and islets to N.	Confirm least depth on submerged rock
14	AJ14	5.0	55.99471475	-158.52426947	Sparse data in kelp area.	Confirm least depth on submerged rock
15	AJ15	5.0	55.99312953	-158.52265798	Kelp area. Note: 6.4 Rk 70m SE.	Confirm least depth on submerged rock
16	AJ16	6.0	55.99173346	-158.52005656	Possible rock in kelp.	Confirm least depth on submerged rock
17	AJ17	6.4	55.97926565	-158.51068247	Sparse data in kelp. Note: 0.6 Rk 120m NW, 8.5 Rk 45m ESE.	Confirm least depth on submerged rock
18	AJ18	6.4	55.97870538	-158.50851558	Sparse data in kelp. Note: 7.6 Rk 60m E.	Confirm least depth on submerged rock
19	AJ19	6.0	55.97943889	-158.50597821	Possible rock in kelp. Note: Many islets inshore.	Confirm least depth on submerged rock
20	AJ20	6.2	55.97944961	-158.50384830	Sparse data in kelp.	Confirm least depth on submerged rock
23	AJ24	6.8	55.98958304	-158.49617881	On edge of coverage in sparse data.	Confirm least depth on submerged rock
24	AJ25	3.1	55.99430039	-158.49558517	Sparse data in kelp.	Confirm least depth on submerged rock
26	AJ27	2.5	55.99815935	-158.49657688	Sparse data in kelp. Note: 3.4 Rk 60m S.	Confirm least depth on submerged rock
30	AJ31	4.5	56.00765502	-158.49425827	Sparse data on edge of coverage. Note: -0.8 drying rock 90m SW.	Confirm least depth on submerged rock
44	AJ45	-0.6	55.99314447	-158.42702126	Sparse data in kelp. Note: 8.9 Rk 60m ESE.	Confirm height of exposed charted rock



Sequence No	Shoal No	Surveyed Depth (decimal fms / whole feet)	Surveyed NAD 83 Latitude N (degrees)	Surveyed NAD 83 Longitude W (degrees)	Remarks	Review Comments
45	AJ46	3.7	55.99390514	-158.42857408	All items covered by 4x4m laser spot spacing at 200% lidar coverage. Sparse data in kelp. Note: Many rocks in vicinity.	Confirm least depth on submerged rock
52	AJ53	5.2	56.01088488	-158.41054508	Sparse data on edge of kelp area. Note: 3.6 Rk 55m WNW.	Confirm least depth on submerged rock
53	AJ54	5.2	56.01187716	-158.40938049	Sparse data in kelp.	Confirm least depth on submerged rock
54	AJ55	4.2	56.01501628	-158.40888181	Sparse data in kelp. Note: 6.9 Rk 60m SSW, 5.5 Rk 100m N.	Confirm least depth on submerged rock
60	AJ63	4.1	56.03761681	-158.41898982	Sparse data in kelp. Note: 2.7 Rk 60m NNW.	

LIDAR Item Results and Recommendations

Item investigations that result in a recommendation that contradicts the TENIX LADS LIDAR (H11260) data set appear on the preliminary smooth sheet. For example, a previously charted rock that was not observed by LIDAR but was found during item investigations will appear on the preliminary smooth sheet, as do rocks with heights that differ significantly from the LIDAR data set.

Investigations that result in a confirmation of the LIDAR data set do not appear on the preliminary smooth sheet. For example, a rock in the LIDAR data set whose position and height were confirmed during investigations would not appear on the smooth sheet.

Remote Sensing Division (RSD) provided the shoreline detail for this sheet. Since the RSD shoreline was the official shoreline source provided by NOAA, primary focus was given to its verification during this survey. Visual inspection during shoreline verification deemed the RSD shoreline very accurate and the Hydrographer recommends that it supersede the TENIX LADS (H11260) shoreline if any discrepancies occur.¹⁷

Rocks present in the RSD data that were already adequately positioned and presented on the LIDAR smooth sheet will appear again on this smooth sheet in black.

Most results and recommendations below refer to a Detached Position (DP) form. The DP form, created in ArcMap as described in the Shoreline Correlator Sheet section of this report, contains most of the information used in forming the recommendation including digital field notes, zoned verified tide at time of observance, and photos (if available or applicable). The DP forms can be found on the Project DVD under the Reports Directory.¹⁸

Note that item numbers listed below refer to the “Shoal No” in the above table.

Item AJ6:

Item was outside of the survey limits for OPR-P182-KR-05.¹⁹

Item AJ12:

Item was outside of the survey limits for OPR-P182-KR-05.²⁰

Item AJ14:

Item was outside of the survey limits for OPR-P182-KR-05.²¹

Item AJ15:

Item was outside of the survey limits for OPR-P182-KR-05.²²

Item AJ16:

Item was outside of the survey limits for OPR-P182-KR-05.²³

Item AJ17:

Item was outside of the survey limits for OPR-P182-KR-05.²⁴

Item AJ18:

6.4 fm LIDAR Rk not confirmed. Site received full multibeam coverage – found that the Rk is not a distinct feature but instead is part of a gradual shoaling. Recommend do not chart LIDAR Rk. DP form # JD225_01.²⁵

Item AJ19:

6.0 fm LIDAR Rk confirmed. Site received full multibeam coverage – found the Rk but also found a shoaler Rk (3.2 fms) approximately 10m north. Recommend do not chart 6.0 fm LIDAR Rk, and recommend charting 3.2 fm Rk as depicted on the preliminary smooth sheet. DP form # JD225_02.²⁶

Item AJ20:

6.2 fm LIDAR Rk confirmed. Site received full multibeam coverage. Recommend charting 6.2 fm Rk as depicted on LIDAR smooth sheet. DP form # JD225_03.²⁷

Item AJ24:

6.8 fm LIDAR Rk not confirmed. Site received full multibeam coverage – found that the Rk is not a distinct feature but instead is part of a gradual shoaling. Recommend do not chart LIDAR Rk.²⁸

Item AJ25:

3.1 fm LIDAR Rk not confirmed. Site received partial multibeam coverage – found that the Rk is not a distinct feature but instead an extension of a shoaler feature (1.5 fm) located 20m north. Recommend do not chart 3.1 fm LIDAR Rk, and recommend charting 1.5 fm Rk as depicted on the preliminary smooth sheet. DP form # JD225_05.²⁹

Note that the 1.5 fm feature located by multibeam was on the edge of the coverage – 1.5 fm may not be the shoalest depth here. Recommend for further investigation.³⁰

Item AJ27:

2.5 fm LIDAR Rk confirmed. Site received full multibeam coverage. Recommend charting 2.5 fm Rk as depicted on LIDAR smooth sheet. DP form # JD225_06.³¹

Item AJ31:

4.5 fm LIDAR Rk confirmed. Site received full multibeam coverage. Recommend charting 4.5 fm Rk as depicted on LIDAR smooth sheet. DP form # JD225_07.³²

Item AJ45:

-0.6 fm (4 ft above MLLW) LIDAR rock confirmed, but with shoaler height. Multibeam coverage isolated rock while the DP skiff fixed the height (7 ft above MLLW). Skiff did not approach directly but noted LIDAR position was reasonably accurate, though partial multibeam coverage at LIDAR position suggests shoalest point is actually 9m SE of LIDAR position. Recommend charting at center of multibeam data hole (55-59-35.05 N, 158-25-36.99 W) with a height of 7 ft above MLLW, and appears as such on the preliminary smooth sheet. DP form JD227_34.³³

Note this also constitutes a change from chart 16561, on which this rock appears 35m NE of the actual position, with a height of 2 ft MLLW.³⁴

Item AJ46:

3.7 fm LIDAR Rk confirmed, but with shoaler least depth. Site received full multibeam coverage and revealed the shoalest point on the feature (3 fms) to be 7m south of the LIDAR position. Recommend charting Rk at 3 fm multibeam sounding position (55-59-37.823 N, 158-25-42.869 W).³⁵ It appears as such on the preliminary smooth sheet.

Item AJ53:

5.2 fm LIDAR Rk not confirmed. Site received full multibeam coverage – found that the Rk is not a distinct feature but instead is part of a gradual shoaling. Recommend do not chart LIDAR Rk.³⁶

Item AJ54:

5.2 fm LIDAR Rk confirmed. Site received full multibeam coverage. Recommend charting 5.2 fm LIDAR Rk as depicted on the LIDAR smooth sheet.³⁷

**Item AJ55:**

4.2 fm LIDAR Rk confirmed. Site received full multibeam coverage. Recommend charting 4.2 fm LIDAR Rk as depicted on the LIDAR smooth sheet.³⁸

Item AJ63:

See the Descriptive Report for H11461 (sheet AH). After laying out survey blocks for OPR-P182-KR-05 this item landed within the bounds of H11461.³⁹

Tidal Range

JOA established the tidal range for OPR-P182-KR-05 to be 2.351 meters (7.713 feet or 1.286 fathoms). This value was used in determining height above mean high water (MHW).

Bottom Samples

On August 13, 2005 the R/V Quicksilver was fitted to obtain bottom samples as specified in the Statement of Work. The purpose of this was to characterize the bottom for possible anchorages.

Bottom samples were conducted in areas that appeared suitable for anchorage. Samples were taken with a grab sampler and position was recorded with WinFrog V3.5.0. Sediment retrieved from the sampler were analyzed and then categorized as specified in Appendix 2 (Table A-4) of the NOS Hydrographic Surveys Specifications and Deliverables (March, 2003). Positions and descriptions of all samples are found in Appendix G and a graphical plot in Separate 6.⁴⁰

Aids to Navigation

There were no charted aids to navigation in the survey area. No uncharted aids to navigation were found in the survey area.⁴¹

Shoreline Correlator Sheet

ArcMap v9.0 with the Shoreline Correlator add-on, written by the Fugro Pelagos Inc. GIS department, aided in the processing of the investigation results. The Correlator utilized the WinFrog Log files to create an individual DP form for all acquired DP's. The Correlator was mapped to the Log, Tide, Photos, NOAA Chart (largest scale available), LIDAR Data, Smooth Sheet Soundings and Multibeam Coverage files to calculate and display the desired information for each DP. Figure 6 shows an example of a DP form produced from the Correlator. The DP forms and the raw field notes can be found in Appendix F. ⁴²

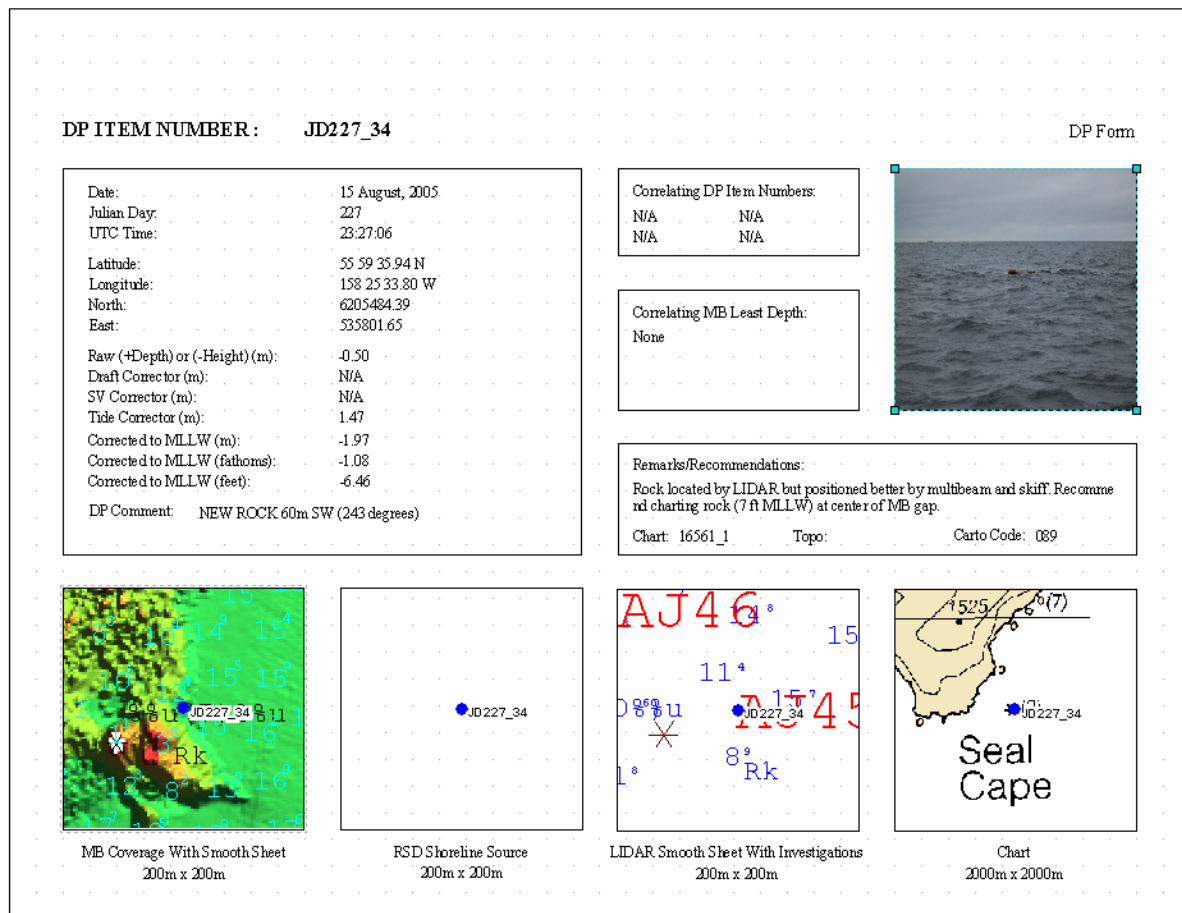


Figure 6 DP Correlator Sheet



E – Approval Sheet

Approval Sheet

For

H11462

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-P182-KR-05 statement of work and hydrographic manual;
Fugro Pelagos, Inc. Acquisition Procedures (2005- NOAAAcquisitionProcedures);
Fugro Pelagos, Inc. Processing Procedures (2005-NOAAProcessingProcedures);
Technical Report for Tides, Chankliut Island Tide Station Report

The data were reviewed daily during acquisition and processing.

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

Approved and forwarded,

A handwritten signature in dark ink, appearing to read "Dean Moyles".

Dean Moyles, Fugro Pelagos, Inc.
Lead Hydrographer
Fugro Pelagos, Inc. Survey Party



Revisions Compiled During Office Processing and Certification

¹ The month was shown incorrectly as “June” on the smooth sheet. The month was changed by hand in ink to July on the smooth sheet.

² Revise sheet limits to the following:

- 56/02/18N, 158/30/50W
- 55/56/10N, 158/30/50W
- 55/56/10N, 158/23/47W
- 56/02/18N, 158/23/47W

The survey area encompasses Seal Bay. The revised survey limits listed above delineate the physical layout of the smooth sheet and not the specific limits of hydrography. The evaluator recommends using the survey index (SURDEX) to evaluate hydrographic coverage.

³ Filed with the project records.

⁴ Concur with the hydrographer’s comments above. The survey is adequate to supersede prior surveys and charted miscellaneous source data within the common area.

⁵ Strike “~~South~~” and insert North.

⁶ Strike “~~West~~” and insert East.

⁷ Strike “~~West~~” and insert East.

⁸ Concur with the hydrographer’s comments above.

⁹ File with the project records.

¹⁰ See Appendix D – attached to this report.

¹¹ Concur

¹² Concur

¹³ Concur

¹⁴ Concur

¹⁵ Concur with clarification. Verification of some LIDAR features was requested. See Below.

¹⁶ LIDAR data from H11260 have been compiled on the Hdrawing where warranted. All LIDAR features from H11260 shown on the Hdrawing have been “blue-noted” and are assigned to level 7. LIDAR survey H11260 encompasses areas outside the survey area of H11462 and will be compiled with other multibeam surveys in the area. H11260 will be submitted at a later date.

¹⁷ Concur with clarification. Chart area as shown on the Hdrawing.

¹⁸ Filed with the hydrographic records.

¹⁹ Concur

²⁰ Concur

²¹ Concur

²² Concur

²³ Concur

²⁴ Concur

²⁵ Concur

²⁶ Do not concur. Chart the area as shown on the Hdrawing.

²⁷ Do not concur. Chart the area as shown on the Hdrawing.

²⁸ Concur



- ²⁹ Concur
- ³⁰ Do not concur. The area is adequately surveyed at the scale of the chart.
- ³¹ Do not concur. Chart the area as shown on the Hdrawing.
- ³² Do not concur. Chart the area as shown on the Hdrawing.
- ³³ Concur
- ³⁴ Concur
- ³⁵ Do not concur. Chart the area as shown on the Hdrawing.
- ³⁶ Do not concur. Chart the area as shown on the Hdrawing.
- ³⁷ Do not concur. Chart the area as shown on the Hdrawing.
- ³⁸ Do not concur. Chart the area as shown on the Hdrawing.
- ³⁹ Concur
- ⁴⁰ Filed with the hydrographic records. Bottom characteristics are portrayed on the smooth sheet and compiled to the Hdrawing based on charting specifications. Bottom sample descriptions were not fully shown on the smooth sheet in all cases as described in Appendix G.
- ⁴¹ Concur
- ⁴² Filed with the hydrographic records.



Appendix A - Danger to Navigation

No dangers to navigation were located during the hydrographic survey of H11462.



Appendix B - List of Geographic Names

No new geographic names in the survey were discovered.

**Appendix D - Tides and Water Levels**

Abstract of Times of Hydrography for Smooth Tides

Project Number: OPR-P182-KR-05

Registry Number: H11462

Contractor Name: Fugro Pelagos Inc.

Date: December 15, 2005

Sheet Letter: AJ

Inclusive Dates: July 17, 2005 to August 18, 2005

Fieldwork is complete and verified tides were applied for the production of the smooth sheet.

Refer to JOA's final verified tides report for additional information.

Table 5 Abstract of Times of Hydrography for R/V Quicksilver

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2005	198	15:44:05	23:43:14	
2005	199	0:19:30	1:21:30	
2005	199	15:54:27	23:53:59	
2005	200	0:10:58	1:53:51	
2005	200	16:04:16	23:52:26	
2005	201	0:15:47	1:55:33	
2005	204	21:06:34	23:45:14	
2005	205	0:09:16	2:00:34	
2005	210	18:35:26	23:17:12	
2005	212	21:55:13	23:50:03	
2005	213	0:00:17	1:14:51	Also worked in Sheet AF
2005	215	23:56:21	23:59:40	
2005	216	0:03:59	1:49:34	
2005	225	16:42:16	23:54:20	Also worked in Sheet AH
2005	227	22:40:12	22:50:38	

Table 6 Abstract of Times of Hydrography for R/V Ocean Guardian

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2005	225	22:07:19	23:55:48	
2005	226	0:02:16	1:32:41	
2005	227	18:42:20	23:57:54	
2005	228	0:01:17	2:01:46	
2005	228	18:52:34	22:29:55	
2005	230	10:39:43	10:41:53	



Appendix E - AWOIS

No AWOIS items were assigned for H11462.


**Appendix G – Grab Sample Positions and Descriptions**

Grab Sample ID	Date	Time	Latitude	Longitude	Northing	Easting	Appr. Depth (m)	Description
JD225_01_AJ	13-Aug-05	16:47:44	N56 01.2822	W158 24.8107	6208613.10	536557.61	30	Gravel (G)
JD225_02_AJ	13-Aug-05	17:46:36	N55 59.4393	W158 26.1575	6205183.14	535186.32	34	Gravel (G)
JD225_03_AJ	13-Aug-05	20:04:45	N56 00.3815	W158 29.5445	6206903.49	531652.03	32	Gravel (G)
JD225_04_AJ	13-Aug-05	20:45:45	N56 01.0030	W158 29.9693	6208053.11	531202.16	24	Fine Brown Sand (S-fne-br) with Shells (Sh)
JD225_05_AJ	13-Aug-05	22:28:35	N56 02.0297	W158 29.8345	6209958.53	531328.39	36	Fine Brown Sand (S-fne-br)
JD225_06_AJ	13-Aug-05	23:47:30	N56 00.6782	W158 27.4272	6207470.51	533848.20	32	Fine Black Sand (S-fne-bk) with Shells (Sh)

APPROVAL SHEET
H11462

Initial Approvals:


The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.



Bruce Olmstead
Cartographic Team
Pacific Hydrographic Branch

Date: 7/26/2006

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



Donald W. Haines
CDR, NOAA
Chief, Pacific Hydrographic Branch

Date: 27 July 2006

