

H11465

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. H11465

LOCALITY

State Alaska

General Locality Southwestern Alaskan Peninsula

Sublocality 20 NM SE of Castle Cape

2005

CHIEF OF PARTY

Dean Moyles

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET**H11465**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/AState AlaskaGeneral Locality SW Alaska PeninsulaSublocality 20 NM Southeast of Castle CapeScale 1:40,000Date of Survey 6/12/2005 - 8/18/2005Instructions Date 3/1/2005Project No. OPR-P182-KR-05Vessel R/V OCEAN GUARDIANChief of Party Dean MoylesSurveyed by Moyles, Orthmann, Reynolds, Gill, Mount, Stock, Busey, Briggs et alSoundings taken by echo sounder, hand lead, pole Reson 8111 (Hull Mounted)Graphic record scaled by N/AGraphic record checked by N/AEvaluation by G. NelsonAutomated plot by HP Designjet 1050CVerification by G. NelsonSoundings in Fathoms

at

MLLWREMARKS: All times are recorded in UTC**Revisions and annotations appearing as endnotes were****generated during office processing.****All separates are filed with the hydrographic data****As a result, page numbering may be interrupted or non-sequential**



A - Area Surveyed

H11465 (Sheet AU) is bound by the coordinates listed below, which encompass the area 20 NM SE of Castle Cape.

Hydrographic data collection began on June 12, 2005 and ended on August 18, 2005.

Table 1 - H11465 Sheet Limits¹

Sheet Limits		
Task Order # 1		
H11465		
Sheet AU		
Scale 1:40,000		
Point #	Positions on NAD83	
	Degrees Latitude (N)	Degrees Longitude (W)
1	56°10'14.22" N	158°05'27.18" W
2	55°53'50.01" N	158°05'27.18" W
3	55°53'50.01" N	157°19'05.67" W
4	56°10'14.22" N	157°19'05.67" W

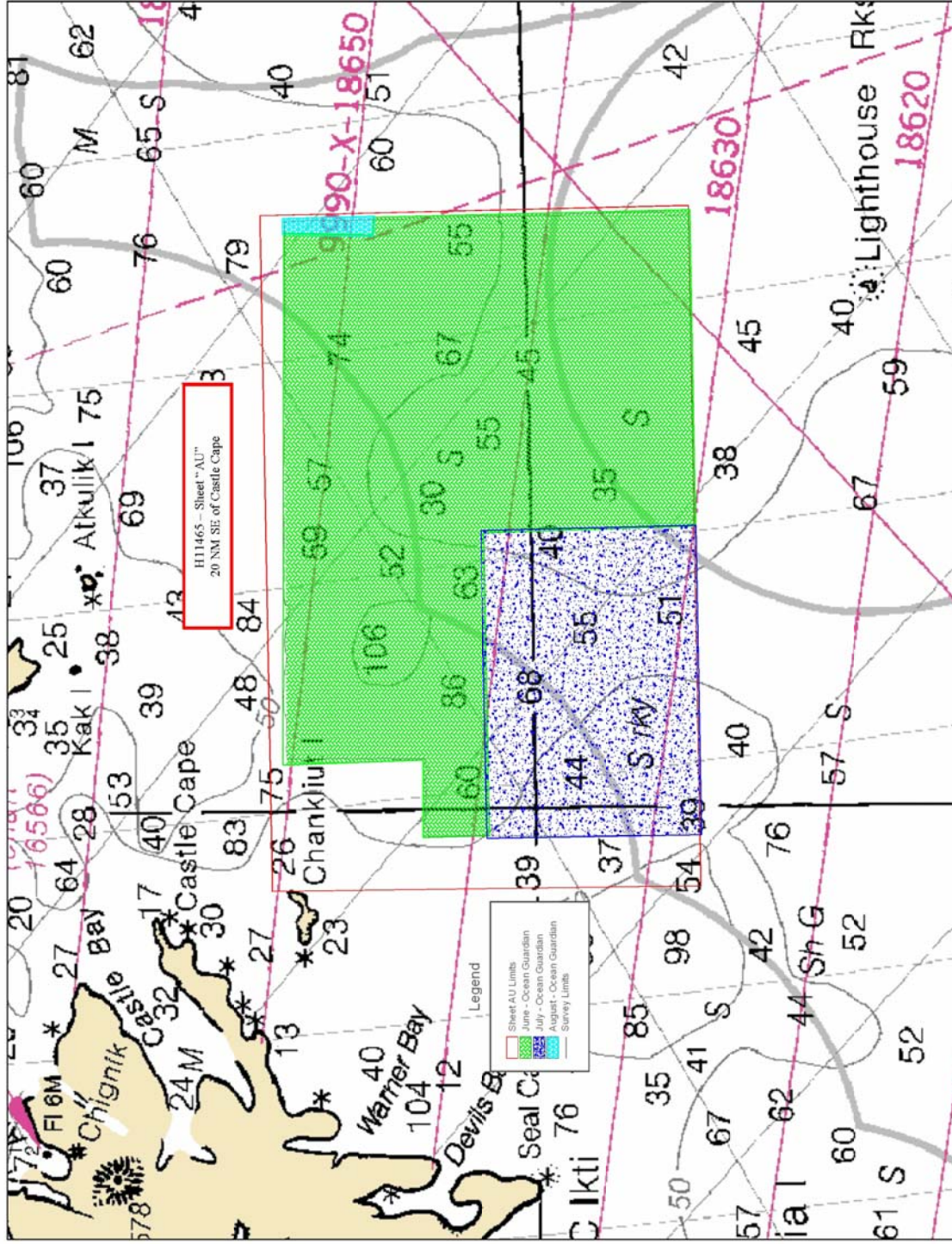


Figure 1 H11465 Area Surveyed

B – Data Acquisition & Processing

Refer to the OPR-P182-KR-05 Data Acquisition and Processing Report² 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/V 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.

Refer to OPR-P182-KR-05 Data Acquisition & Processing Report for a complete listing of equipment and vessel descriptions.

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 321.9 km (173.8 nautical miles) or 6.2 percent of the total main scheme kilometers. Conducted tielines were well distributed throughout the sheet to ensure adequate crossline quality control. A total of 138 tie line crossings were examined using the CARIS HIPS QC report routine, all within the 95 percent confidence level.

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 H11465 was excellent.³ 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 a 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 Junctions⁵

H11465 (Sheet AU) junctions with:

Registry #	Scale	Date	Junction Side
H11463	1:20,000	2005	East ⁶
H11464	1:20,000	2005	East ⁷

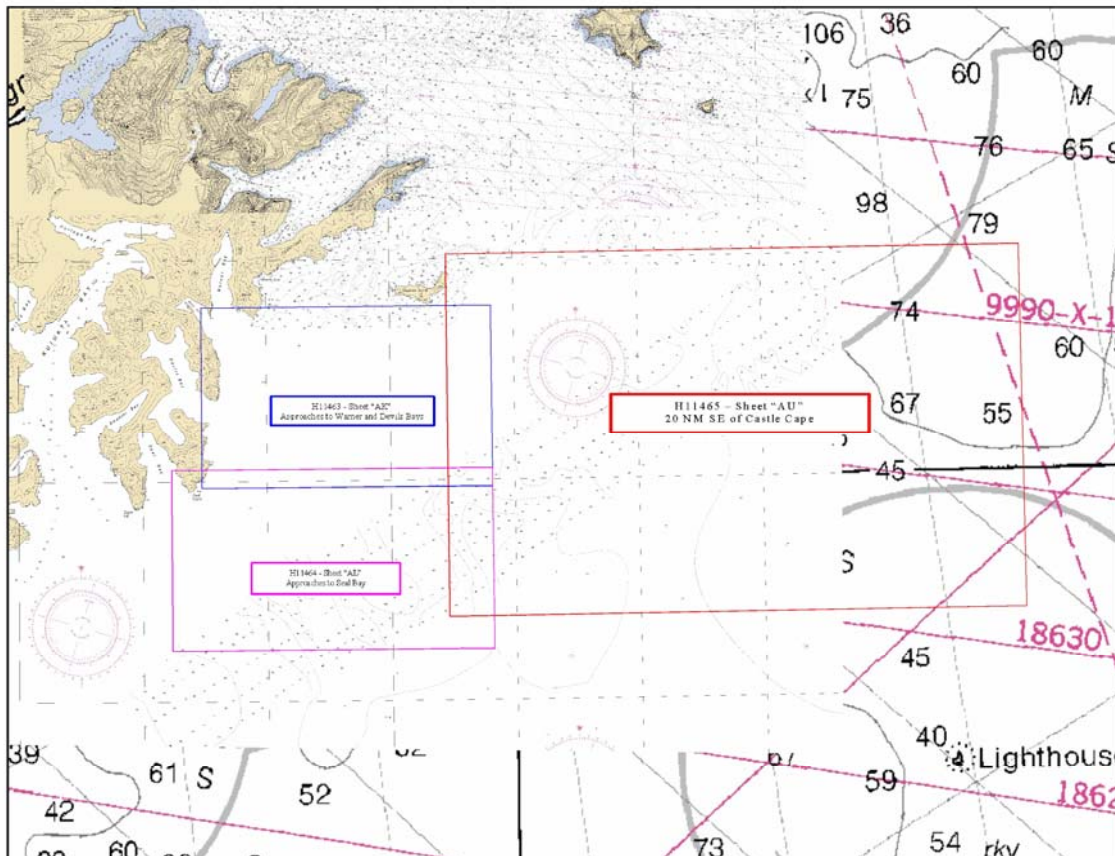


Figure 2 H11465 Survey Junctions

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 H11465 Ocean Guardian Histogram (Figure 3) illustrates the Reson 8111 data, collected from June 12, 2005 to August 18, 2005 on the R/V Ocean Guardian. The first notable features on this histogram are the large spikes either side of nadir caused by nadir penetration, which is a common feature with 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 41 and 61.

The second feature on the histogram is the increase in the number of selected sounding around beams 17 and 77. The majority of adjacent lines were run with port beams overlapped with port beams and starboard beams overlapped with starboard beams which make 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. The crossline comparisons revealed that these beams were within IHO specifications. The transition from phase to amplitude detection method of the sonar (around beams 36 and 66) is also apparent in these examinations.

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.

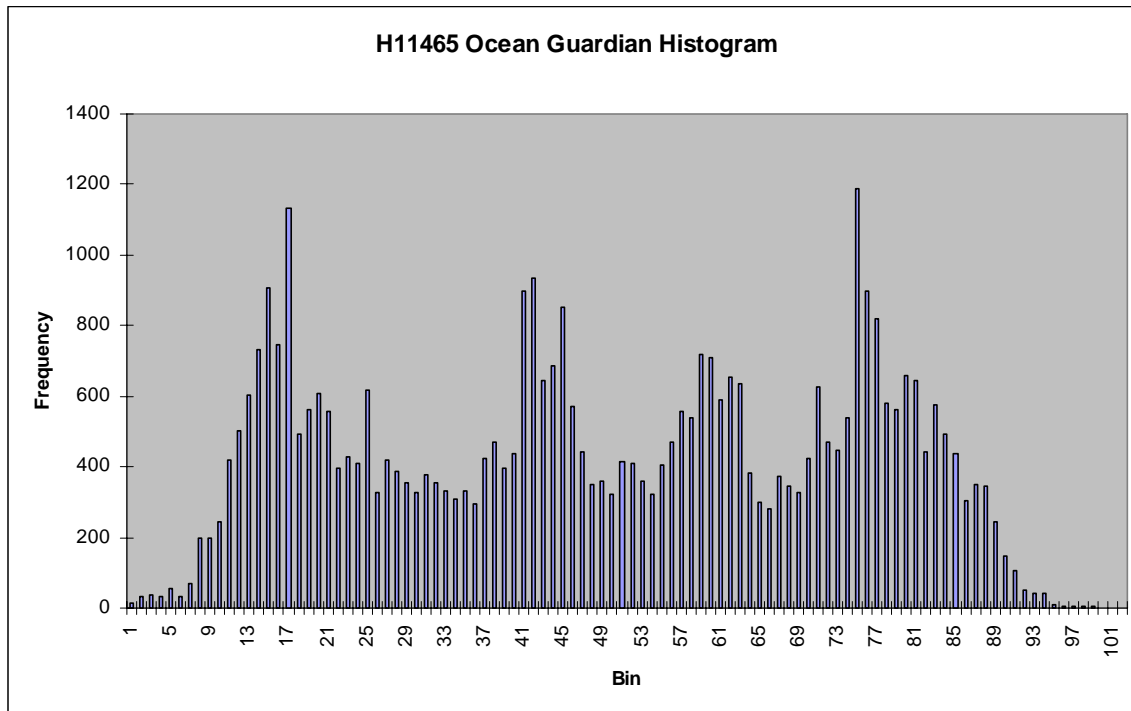


Figure 3 Histogram for 8111 (Ocean Guardian)

Quality Control Checks

During the hydrographic survey OPR-P182-KR-05 the R/Vs Quicksilver and Ocean Guardian conducted a number of 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 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 project’s 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 and 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. Refer to the Appendix B for Horizontal Control results and procedures.¹⁰

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 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 emailed 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).¹¹ 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.

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

D – Results and Recommendations

Chart Comparison

H11465 survey was compared with charts:¹²

Chart Number	Scale	Edition	Edition Date as of April 2005
OPR-P182-KR-05			
16006	1:1,534,076	33 rd	Dec. 2000
16011	1:1,023,188	36 th	Aug. 2004
16013	1:969,761	29 th	Nov. 2003
16561	1:80,000	2 nd	Mar. 2005
16566	1:77,477	10 th	Feb. 1999

Comparison of Soundings and Contours

The soundings and contours, in general, compare well with the existing charts, but since the existing charts have little to no hydrographic data overlapping within the survey limits of H11465, the comparison of soundings and contours was limited.¹³ Soundings from chart 16561 coincide with the soundings from H11465 to within 1 to 3 fathoms; areas that do vary to any degree are as follows:¹⁴

- Hydrographic survey H11465 revealed a depth of 49 fathoms in the vicinity of a 30 fathom sounding on chart 16561 located at 56°03'26.19" N, 157°38'54.35" W (584166.804 E, 6213277.816 N). This area was surveyed with 100% multibeam coverage.
- Hydrographic survey H11465 revealed a depth of 45 fathoms in the vicinity of a 35 fathom sounding on chart 16561 located at 55°56'51.56" N, 157°38'10.24" W (585170.573 E, 6201093.652 N). This area was surveyed with 100% multibeam coverage.
- Hydrographic survey H11465 revealed a depth of 43 fathoms in the vicinity of a 51 fathom sounding on chart 16561 located at 55°54'27.08" N, 157°46'40.84" W (576392.566 E, 6196461.658 N). This area was surveyed with 100% multibeam coverage.

Soundings that differ from hydrographic survey H11465 are highlighted in red on the chart comparison sheet included in Separate 6.¹⁵

Figure 4 illustrates that the contours from H11465 take on the same general shape, but certain areas do deviate from the existing contours on chart 16561. It should also be noted that since the contours on H11465 are derived from a very dense shoal biased multibeam data set and the existing charts are based on sparse single beam or lead line data sets, that deviations from the existing chart or charts should be expected.¹⁶

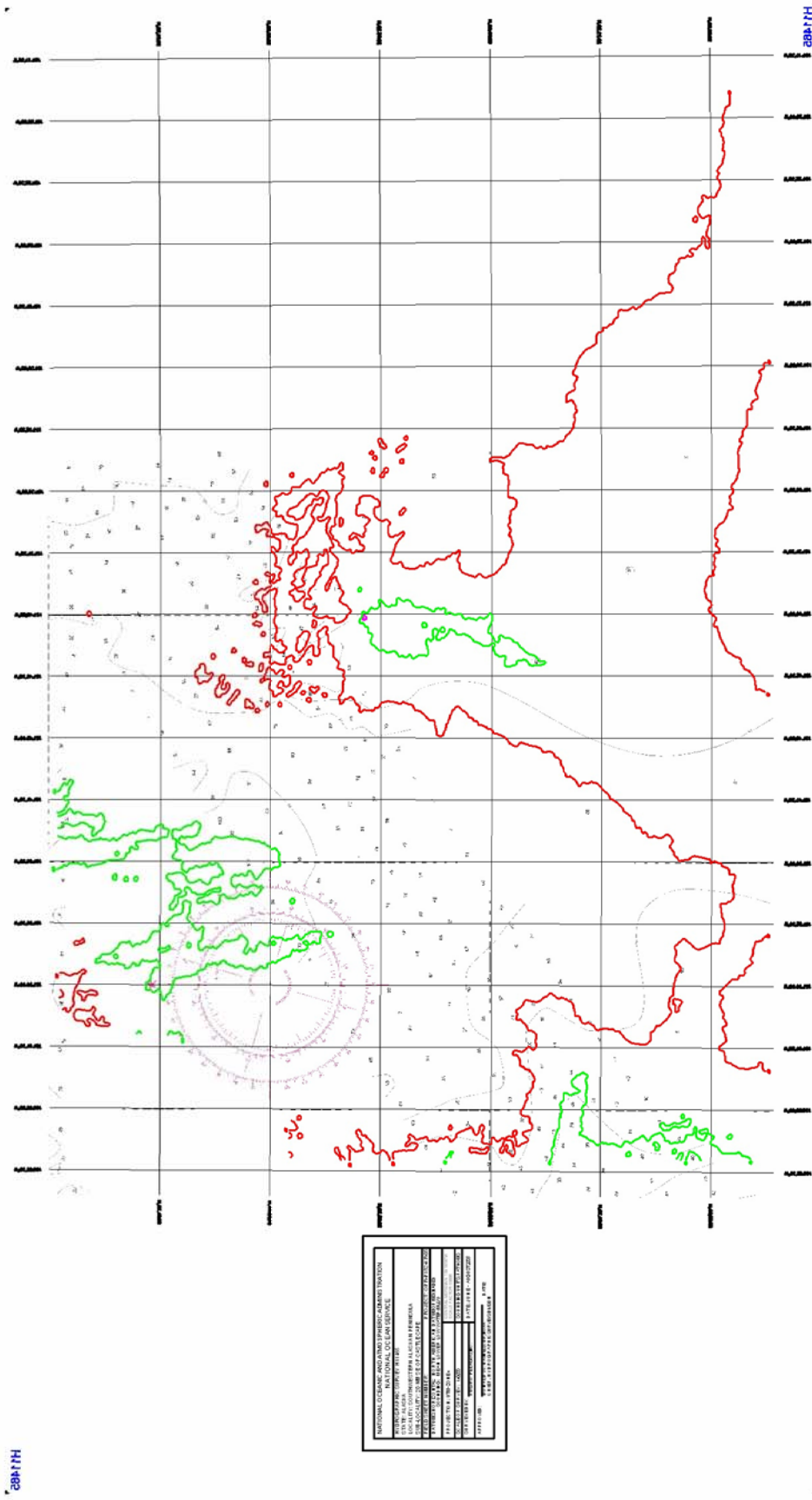


Figure 4 Comparison of Contours



Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11465.¹⁷

Charted Features

There were no charted features labeled PA, ED, PD, or Rep within the limits of H11465.¹⁸

Dangers to Navigation

No dangers to navigation were located during the hydrographic survey of H11465.¹⁹

Additional Results

Additional Item Investigations

None were assigned for this sheet.²⁰

Bottom Samples

Bottom samples were not conducted for H11465.²¹

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.²²



E – Approval Sheet

Approval Sheet

For

H11465

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 Revise sheet limits to the following:
56/09/50N, 158/02/00W
56/09/50N, 157/19/00W
55/54/00N, 157/19/00W
55/54/00N, 158/02/00W
- ² Filed with the project records.
- ³ Concur.
- ⁴ Concur.
- ⁵ In addition to the junction surveys listed below, H11465 adjoins H11021 (2002, 1:40,000) to the north and H11465 adjoins H11062 (2001, 1:40,000) to the east. The Hdrawing has been compiled in consideration for all junctional data sets within the common area.
- ⁶ Strike "~~East~~" and insert West.
- ⁷ Strike "~~East~~" and insert West.
- ⁸ Concur with the hydrographer's comments above.
- ⁹ Filed with the project records.
- ¹⁰ Concur with clarification. Appendix B of the Horizontal and Vertical Control Report.
- ¹¹ Filed with the hydrographic records.
- ¹² Comparisons with charts 16561 and 16566 (same editions as listed below) were conducted during office processing.
- ¹³ Concur.
- ¹⁴ Concur with hydrographer's comments below. Chart these areas based on the smooth sheet information.
- ¹⁵ Filed with the hydrographic records.
- ¹⁶ Concur with the hydrographer's comments above. Chart contours as shown on the Hdrawing. Survey H11465 is adequate to supersede charted soundings and features within the common area.
- ¹⁷ Concur.
- ¹⁸ Concur.
- ¹⁹ Concur.
- ²⁰ Concur.
- ²¹ Concur with clarification. No bottom samples were required for this survey. Charted bottom samples have been retained.
- ²² Concur.



Appendix A - Dangers to Navigation

No dangers to navigation were located during the hydrographic survey of H11465.



Appendix B - List of Geographic Names

No new geographic names in the survey were discovered.



Appendix C – Progress Sheet

**Appendix D - Tides and Water Levels**

Abstract of Times of Hydrography for Smooth Tides

Project Number: OPR-P182-KR-05

Registry Number: H11465

Contractor Name: Fugro Pelagos Inc.

Date: December 15, 2005

Sheet Letter: AU

Inclusive Dates: June 12, 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 4 - Abstract of Times of Hydrography for R/V Ocean Guardian

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2005	163	9:40:27	23:56:54	
2005	164	0:19:20	23:52:45	
2005	165	0:24:50	19:43:50	
2005	167	0:25:51	23:43:13	
2005	168	0:55:46	11:33:32	
2005	169	16:20:40	23:22:10	
2005	171	5:53:00	23:52:22	
2005	172	0:08:18	23:58:07	
2005	173	0:10:26	10:49:28	
2005	174	6:16:31	23:49:27	
2005	175	0:13:16	23:56:20	
2005	176	1:07:23	23:55:48	
2005	177	0:05:22	23:52:47	
2005	178	0:07:41	23:54:42	
2005	179	0:25:45	23:59:13	
2005	180	0:33:46	23:53:41	
2005	181	0:17:43	10:33:55	
2005	182	12:08:12	23:46:49	
2005	183	0:12:25	23:57:06	
2005	184	0:24:19	23:47:32	
2005	185	0:12:39	23:48:32	
2005	186	0:03:19	23:58:16	
2005	187	0:04:43	23:04:19	
2005	188	0:03:01	6:34:05	
2005	229	3:09:39	23:58:48	
2005	230	0:04:57	5:13:47	



Appendix E - AWOIS

No AWOIS items were assigned for H11465.

APPROVAL SHEET
H11465

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

Date: 3/28/2006

Bruce Olmstead
Cartographic Team
Pacific Hydrographic Branch

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.

 CDR/NOAA

Date: 30 MARCH 2006

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 411465

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16561	3/24/06	GARY NELSON	<input checked="" type="radio"/> Full Part Before After Marine Center Approval Signed Via <u>FULL APPLICATION OF</u> Drawing No. <u>SOUNDINGS, CURVES + FEATURES FROM THE</u> <u>SMOOTH SHEET</u>
16566	3/24/06	GARY NELSON	<input checked="" type="radio"/> Full Part Before After Marine Center Approval Signed Via <u>FULL APPLICATION OF</u> Drawing No. <u>SOUNDINGS, CURVES + FEATURES FROM THE</u> <u>SMOOTH SHEET</u>
16587	3/24/06	GARY NELSON	<input checked="" type="radio"/> Full Part Before After Marine Center Approval Signed Via <u>FULL APPLICATION OF</u> Drawing No. <u>SOUNDINGS, CURVES + FEATURES FROM THE</u> <u>SMOOTH SHEET</u>
			<input type="radio"/> Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			<input type="radio"/> Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			<input type="radio"/> Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.