

H11362

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. N/A

Registry No. H11362

LOCALITY

State Alaska

General Locality Cape Decision

Sublocality Decision Pass

2004

CHIEF OF PARTY

..... Commander John Lowell, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11362

INSTRUCTIONS — The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD No

State Alaska

General Locality Cape Decision

Sub-Locality Decision Pass

Scale 1:10,000 Date of Survey 9/9/2004-9/26/2004

Instructions dated 8/10/2004 Project No. OPR-O167-FA

Vessel FAIRWEATHER S-220, 1010, 1018, 1701

Chief of party CDR John E. Lowell, Jr., NOAA

Surveyed by SST Abrams, CST Morgan, LT Wetzler

Soundings by echo sounder, hand lead, pole RESON 8111ER, RESON 8101ER

Graphic record scaled by FAIRWEATHER Personnel

Graphic record checked by FAIRWEATHER Personnel Automated Plot N/A

Verification by Sarah Wolfskehl Evaluation By LTJG Abigail Higgins

Soundings in Fathoms at MLLW (data collected in Meters)

REMARKS: All times are UTC

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were generated during office processing. Page numbering may be interrupted or non sequential.

Descriptive Report to Accompany Hydrographic Survey H11362

Project OPR-O167-FA

H11362 Alaska

Scale 1:10,000

September 2004

NOAA Ship FAIRWEATHER

Chief of Party: CDR John E. Lowell Jr., NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-O167-FA, dated August 10, 2004, and the Draft Standing Project Instructions dated March 21, 2002¹. The survey area is located in Cape Decision, sub-locality Decision Pass. This survey corresponds to sheet "A" in the sheet layout provided with the Letter Instructions.

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area to the 8 meter curve, except where noted in section B2.1 Data Quality Factors². From the 4 to 8 meter curve, MBES data were acquired where possible considering the safety of crew and vessels as well as time and equipment limitations.

Shoreline data were acquired for H11362. These data were S57 attributed for submittal. In the northwest portion of Kuiu Island covered by the survey, shoreline data could not be acquired because of equipment limitations and/or the risk to the safety of crew and vessels.

Data acquisition was conducted from September 9 to 26, 2004 (DN 253 to 270).

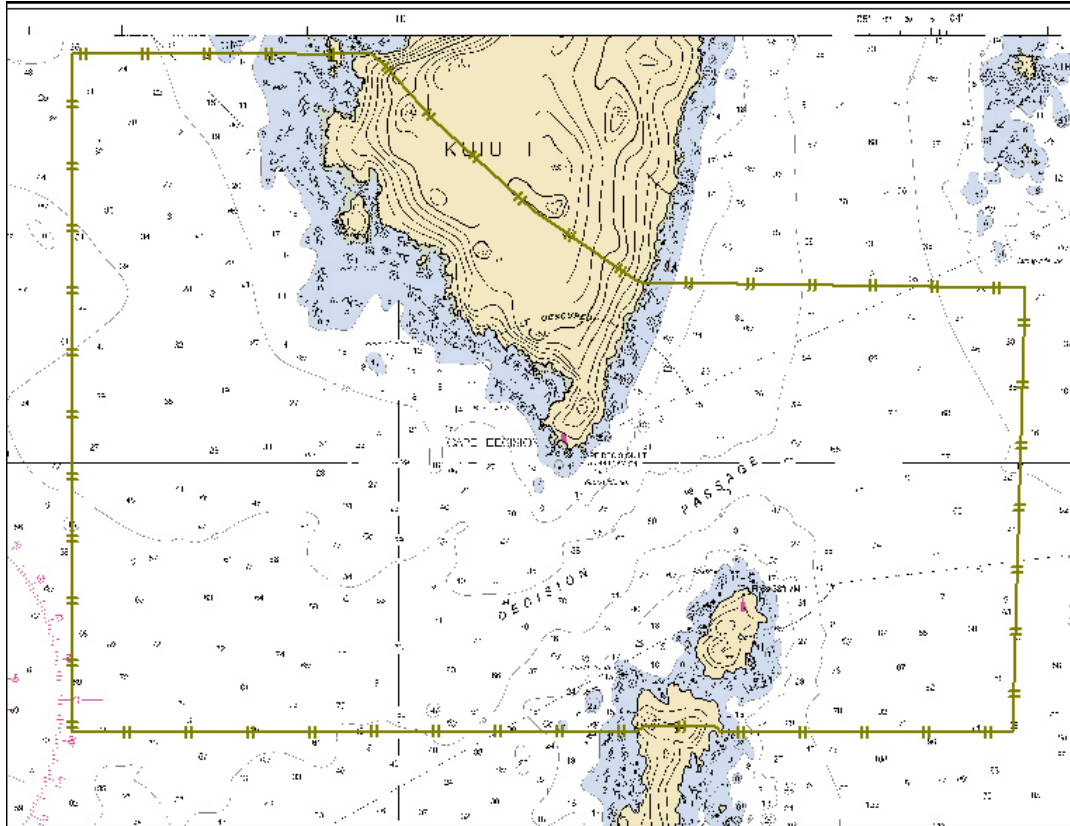


Figure 1. H11362 Survey Limits.

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 *FAIRWEATHER Data Acquisition and Processing Report – 2004 (DAPR)*³, submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

NOAA Ship FAIRWEATHER (S220) is a 231' hydrographic survey vessel, equipped with a Reson 8111ER multibeam echosounder (MBES) system. The FAIRWEATHER's survey launches 1010 and 1018 are high speed, 29' aluminum Jensen survey launches. Both survey launches are equipped with Reson 8101ER MBES systems. Skiff 1701 is a 17' MonArk built by SeaArk, and was used during shoreline acquisition.

FAIRWEATHER (S220), Launch 1010 and Launch 1018 are each equipped with an Applanix Position and Orientation System for Marine Vessels (POS/MV) 320 version 3. They are also equipped with Applanix TrueHeave and Precise Timing. Sound velocity correctors were acquired on all platforms with a SeaBird SeaCat SBE 19plus sound velocity profiler.

The DAPR indicates that the “MRU Align StdDev Gyro” and “MRU Align StdDev Roll/Pitch” values are unknown, but these fields are defined as 0.000 in 1010_8101.hvf and 1018_8101.hvf, and S220_8111.hvf. The values are unknown and also undocumented in the Caris Vessel Editor Help Manual.

According to Dr. Brian Calder from UNH, the error values stated above are defined as the standard deviation of the error estimates for the “gyro” and “roll/pitch” patch test values, as calculated from the compilation of these values from all of the individuals evaluating the patch test data. These standard deviations were not documented when processing the patch tests used for this project. Future patch test processing will include documentation and reporting of the standard deviation of the error estimates for the “gyro” and “roll/pitch” patch test values.

Initial entry dates in the vessel HVFs do not correspond with the dates noted in the vessel reports. The dates entered in the HVFs precede the actual dates of the patch tests. As no project data were collected before the patch tests by any FAIRWEATHER vessels, project data quality is not affected.

The sensor latency value noted in the vessel reports can either be entered into each sensor (Navigation, Gyro, Heave, Pitch and Roll) Time Error field or the inverse value can be entered once into the Swath Time Error field. This is seen in both 1018_8101.hvf and S220_8111.hvf.

No other unusual vessel configurations were encountered during this survey.

B2. Quality Control

Crosslines

No crosslines were acquired on H11362. Time constraints and mechanical failures made it necessary that FAIRWEATHER (S220) leave the survey area before crosslines were acquired⁴.

Quality control was monitored through the BASE surface layers, especially the standard deviation layer.

A set of coincident reference lines was run by FAIRWEATHER (S200) and 1018. The lines were compared in CARIS subset mode and in the CARIS BASE surface layers. The nadir beams were within 0.5 meters of each other in 80 meters of water.

Junctions

Lidar survey H11209 junctions with survey H11362. H11209 was completed in 2003 by Tenix LADS⁵.

In areas where there was adequate overlap between the H11209 lidar and H11362 multibeam data, agreement between project soundings were generally within 0.25 m in areas with flat sloping bottoms. In areas containing rock outcroppings on the east side of Kuiu Island multibeam was generally 0.5 to 2 meters shoaler than the lidar⁶.

In near shore areas some lidar soundings are shoaler than multibeam soundings by up to 3 meters. These lidar soundings generally have depths of 0 to 2 meters⁷.

The lidar data were sparse in areas with kelp beds and high surf conditions. The lidar data were most sparse on the southwest side of Kuiu Island and around the two northernmost Spanish Islands. Field observation by FAIRWEATHER personnel confirmed that those were areas of either or both high surf and kelp. Because of the poor data density and numerous gaps in coverage, the lidar data was not compared with multibeam data in those areas.

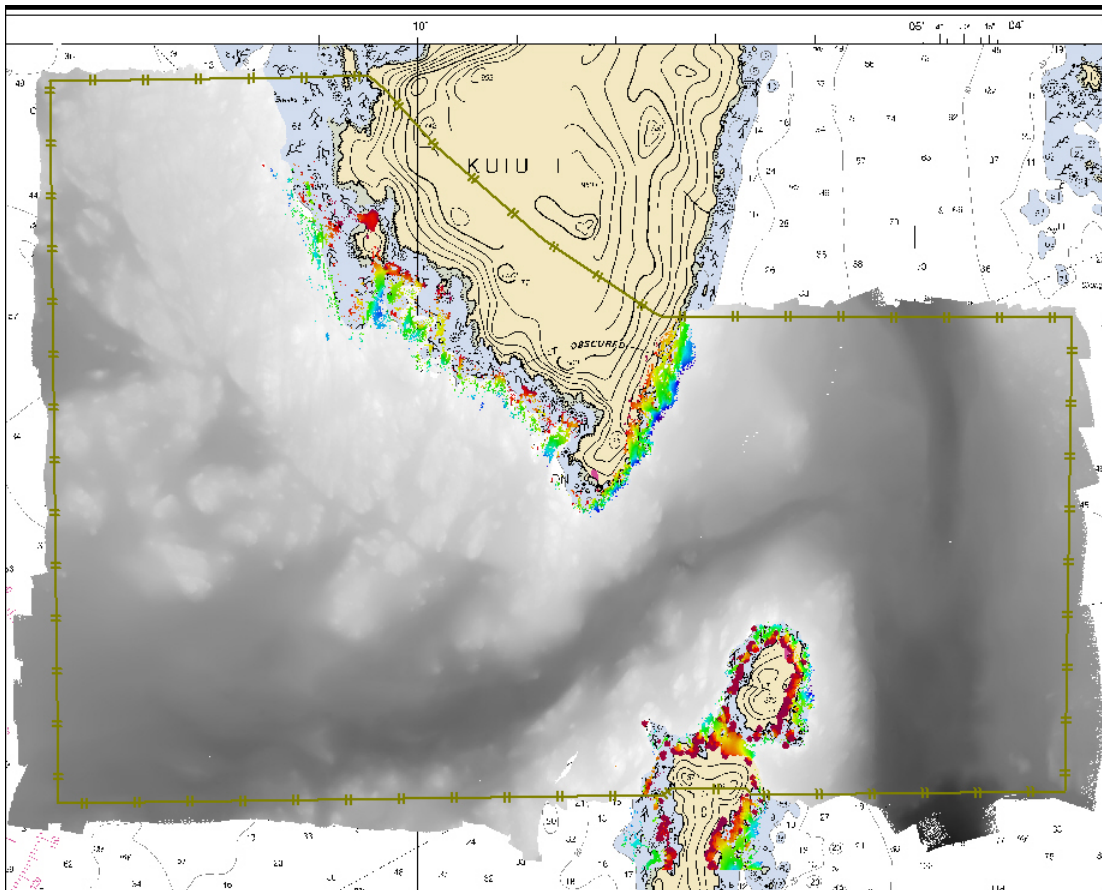


Figure 2. H11362 and H11209 Junction Surfaces.

In general, there was minimal overlap between the H11209 lidar and H11362 multibeam data. Especially in the areas discussed above, the lidar data did not cover to the 8 meter curve. The descriptive report for H11209 notes the presence of large areas of kelp in the survey area:

“Around the Spanish Islands a large number of islets and rocks were surveyed. Coverage was significantly reduced due to the existence of kelp. It is recommended

that additional boatwork is required around the islands from offshore up to the 5 fathom isobath. In areas where the 5 fathom isobath is not shown on the smooth sheet, it is recommended the overlap be extended up to the 3 fathom isobath.” *OPR-O167-KR-03 H11209 Descriptive Report Section D.1.2.*

During data acquisition for H11362, FAIRWEATHER tried to follow this recommendation as much as possible. However, it was not deemed safe for the launches or skiffs to survey in to the 3 or 5 fathom curve in most of these problem areas because of swell and kelp. These areas have been delineated foul. The hydrographer cannot make recommendations on how to handle lidar data inside of the field delineated foul areas⁸.

In areas where multibeam data and lidar data overlap, multibeam data should supercede the lidar data⁹.

Accuracy Standards

There were several known systematic errors associated with some of the data that affect accuracy. These problems are discussed individually in the Data Quality Factors and Corrections to Echo Sounding sections of this descriptive report. The Accuracy Standards section is intended to explain how the problem data were processed and why the Hydrographer believes that the data still meet accuracy requirements.

Total propagated error (TPE) filters were applied in CARIS HIPS to all HDCS data from the survey. Only those soundings that satisfied the International Hydrographic Organization (IHO) requirements for horizontal and vertical accuracy were accepted, as specified in the *NOS Hydrographic Surveys Specifications and Deliverables Section 5.2.*

The function of TPE is to track the effect of systematic errors on individual soundings. Soundings that pass through the TPE filter have a calculated error value that is within IHO specifications. Physical errors, such as changing water mass, are not accounted for within the TPE model. Therefore, soundings with acceptable systematic error values may not be in agreement with soundings on adjacent lines, because physical errors in the measurements were not accounted for.

The main sources of error in the data from this survey were roll bias and sound velocity (SV). The SV error is most visible at depths greater than 60 meters on outer beams. Areas of this depth are not navigationally significant. Lines exhibiting SV error were swath filtered to at least 60 degrees port and starboard, and in some cases up to 45 degrees port and starboard to reduce the impact of SV error on the outer beams.

The roll bias intensified over time as the sonar mount bolts loosened. The bias is most visible in the later launch survey data in the outer beams and areas with steep slopes.

In some near shore areas, surveyed by the launches, with depths of 30 meters or less, the roll bias between lines has created a discrepancy of as much as 1.2 meters. Again, this is predominantly for launch data late in the survey. The data were not rejected. Because of the nature of SV and roll bias errors the largest errors for a given swath exist in the outer beams.

The vertical error for the outer beams exceeds IHO Order 1 accuracy standards for these depths, but it meets or exceeds IHO Order 2¹⁰.

The algorithms used to generate BASE surfaces weigh nadir soundings more heavily than those from outer beams. The hydrographer has determined, through reviewing the BASE surface in subset editor, that the BASE surface improves the representation of the bottom. There are a limited number of circumstances where areas of coverage are composed of data affected by roll and SV errors and are composed of outer beam data exhibiting depth discrepancies. Therefore, the BASE surface for the launch data cannot be defended as meeting IHO Order 1 for the entirety of the survey. Through visual inspection of the BASE surface generated from launch multibeam data it is estimated that a minimum of 90% of that surface meets IHO Order 1 specifications¹¹.

Multibeam data acquired by NOAA Ship FAIRWEATHER (S220) for survey H11362 meets IHO Order 1. Multibeam data acquired by Launch 1010 and Launch 1018 meet IHO Order 2¹².

B2.1. Data Quality Factors

Roll Error

Launches 1010 and 1018 each have a swing-arm sonar mount for the Reson 8101. It was discovered after the completion of H11362 that the swing-arm sonar mount securing pins had experienced slipping or loosening over the duration of data acquisition on the survey. This resulted in a progressive roll error. This roll error is more pronounced in the later days of the survey, with the worst error visible on launch 1018 on September 25, 2004 (DN 269).

Most lines in the survey were filtered to 60° on the port and starboard beams. Where possible, lines exhibiting roll error were filtered to 45° on the port and starboard beams. Some lines exhibiting roll error too severe to meet data accuracy standards were deleted from the survey. See the H11362 Survey Log in Separates I for line details.

All data affected by the roll error were examined in CARIS Subset editor and were found to meet IHO Order 2 as defined in the *NOS Hydrographic Surveys Specifications and Deliverables Section 5.2* and can supersede charted depth¹³.

Holidays

Both filtering and deleting data from the survey left multiple holidays. The largest of these include a holiday of 168 by 61 meters at approximately 56°00'59.08"N, 134°07'05.85"W, and a holiday of 500 by 68 meters at approximately 55°58'32.46"N, 134°08'22.41"W. The data in these areas were examined before filtering and no navigationally significant features were observed¹⁴.

Because the roll error was discovered after data acquisition was complete and FAIRWEATHER had left the survey area, no data were reacquired over holidays.

True Heave

Multiple lines do not have True Heave applied because the True Heave files were corrupted. See TrueHeaveNotApplied.xls in Separates I for specifics. The data from these lines were examined in CARIS Subset editor. Lines with data that did not meet accuracy standards were deleted from the survey. The remaining data were found to meet the data accuracy requirements defined in the *NOS Hydrographic Surveys Specifications and Deliverables Section 5.2* and can supersede charted depths¹⁵.

Swell, Surf and Kelp

The near shore areas around the northernmost two Spanish Islands and the southern end of Kuiu Island were largely foul with kelp. The west side of Kuiu Island had especially high concentrations of kelp. In these areas, multibeam coverage to the 4 meter curve and sometimes the 8 meter curve was not feasible. These areas are delineated foul.

Surf and swell also affected the near shore areas, most notably the west side and south tip of Kuiu Island. Shoreline verification in these areas was problematic and in some cases impossible. Some shoreline and features in these areas were not investigated due to safety risks to personnel and equipment.

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11362 conform to those detailed in the *2004 FAIRWEATHER Data Acquisition and Processing Report*.

B4. BASE Surfaces

BASE surfaces were created and examined on a daily basis during acquisition. All child layers were checked for flyers, systematic errors, and significant features. When data acquisition was complete, BASE surfaces with the appropriate resolutions were created. These BASE surfaces were named to include the survey registry number, depth range, and resolution. The surfaces were finalized in the field to include designated soundings and allow the hydrographer to examine coverage at the appropriate resolution. The finalized surfaces will be recreated at the Pacific Hydrographic Branch after verified (smooth) tides have been applied. Overlap was included in the finalized surfaces to show BASE surface coverage in areas of steep slope. These values should be used in finalization.

BASE surface	Resolution (m)	Range (m)
H11362_0to15_1m_Field	1	0 to 15
H11362_10to50_2m_Field	2	10 to 50
H11362_40to70_3m_Field	3	40 to 70
H11362_60to155_5m_Field	5	60 to 155
H11362_150_up_10m_Field	10	150 and up

Designated soundings were selected in subset for Dangers to Navigation and significant features that had soundings more than one meter shoaler than the BASE surface.

C. VERTICAL AND HORIZONTAL CONTROL

A vertical and horizontal control report for OPR-O167-FA-04 was not generated. A summary of horizontal and vertical control information for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacon at Biorka Island (305 kHz) were utilized during this survey.

No launch to launch checks were performed because no launch to launch check procedure had been developed. This is a deviation from the *NOS Hydrographic Surveys Specifications and Deliverables Section 5.5.2*.

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Sitka, AK (945-1600) served as control for datum determination and as the primary source for water level reducers for survey H11362.

FAIRWEATHER personnel installed Sutron 8210 “bubbler” tide gauges at the following subordinate stations to provide information for N/OPS1 to determine time and height correctors in accordance with the Project Instructions:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Cape Decision	945-8901	30-day	September 8, 2004	October 30, 2004

Due to a hardware failure in the tide gauge, tide data from the Cape Decision station were not usable for hydrography. See Appendix VI, Supplemental Correspondence, for further information.

All data were reduced to MLLW using verified tides from station Sitka, AK using the tide file 9451600.tid and time and height correctors from the zone corrector file 0167FA2004CORP.zdf. Six-minute verified tides for the primary gauge at Sitka, AK (945-1600) were obtained from the CO-OPS website at <https://www.co-ops.nos.noaa.gov/>.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing¹⁶. A request for delivery of final approved (smooth) tides for survey H11362 was forwarded to N/OPS1 on Oct 18, 2004. A copy of the request is included in Appendix V.

D. RESULTS AND RECOMMENDATIONS

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were no AWOIS investigations assigned within the H11362 survey limits.

D.2 Chart Comparison

Survey H11362 was compared with charts 17320 (16th Ed.; December 1, 2003, 1:217,828), 17360 (33rd Ed.; April 1, 2003, 1:217,828), 17386 (3rd Ed.; April 12, 2001, 1:40,000), and 17402 (10th Ed.; August 1, 2002, 1:40,000).

Charts 17320, 17360, and 17402 have U.S. Notice to Mariners 52/2004 applied from December 25, 2004. Chart 17386 has U.S. Notice to Mariners 52/2003 applied from December 27, 2003. (MapTech)

Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides¹⁷.

In many cases this survey found shoaler soundings between charted depths even though agreement at the position of the charted depths was good. This can be attributed to increased bottom coverage using SWMB methods.

Chart 17402

On the east side of the northernmost Spanish Islands, soundings from survey H11362 generally agreed within one to two fathoms with depths on chart. On the west side of the northernmost Spanish Islands, the soundings were generally shoaler by 1 to 3 fathoms than the charted depths. On both sides of Kuiu Island, the soundings are generally 1 to 3 fathoms shoaler than charted. In Decision Passage, the soundings generally agree within 1 to 2 fathoms of the charted depths. The charted 10 and 20 fathoms curves do not match survey soundings in most areas¹⁸.

The ½ fathom depth off the southern point of Kuiu Island is the 0₃ fathom rock on Chart 17386, and should be charted as such¹⁹.

Chart 17386

On the east side of Kuiu Island, survey soundings are generally within 1 fathom of the charted depths. On the west side of Kuiu Island, the soundings are generally 1 to 3 fathoms shoaler than the charted depths. In Decision Passage, the soundings are generally within 1 fathom of the charted depths. Off the tip of the northernmost Spanish Island, the soundings generally agree to within 1 fathom with the charted depths. The charted 10 and 20 fathom curves do not match survey soundings around Kuiu Island²⁰.

The 0₃ fathom rock off the southern point of Kuiu Island could not be DP'd and should be retained as charted²¹.

Chart 17360

The centers of the charted depths were the points compared with survey soundings. Survey soundings are generally within 2 fathoms of the charted depths at chart scale. Any larger discrepancies can be attributed to the small chart scale versus the larger survey scale²².

The charted 10 fathom curve does not match survey soundings in most areas around Kuiu Island and the Spanish Islands.

Chart 17320

The centers of the charted depths were the points compared with survey soundings. Survey soundings are generally within 2 fathoms. Any larger discrepancies can be attributed to the small chart scale versus the larger survey scale²³.

The charted 10 fathom curve does not match survey soundings in most areas around Kuiu Island and the Spanish Islands. The charted 50 fathom curve west of Decision Pass does not match survey soundings.

Recommendations

Multibeam data acquired by NOAA Ship FAIRWEATHER (S220) for survey H11362 meets IHO Order 1. Multibeam data acquired by Launch 1010 and Launch 1018 meet IHO Order 2. The Hydrographer has determined that bottom coverage requirements have been met and survey data are adequate to supersede charted depths in their common areas²⁴.

D.3 Shoreline

Shoreline Source

Source shoreline for this project was supplied by Remote Sensing Division (RSD) from photogrammetric survey AK0202 (NAD 83), GC-10546 at the scale of 1:30,000. FAIRWEATHER conducted limited shoreline verification on the CFF shoreline and features. The CFF data were considered the primary shoreline source for the survey.

Limited shoreline verification was also done on H11209 Lidar features and near shore lidar investigations. The Lidar data were considered the secondary shoreline source for the survey. The Lidar investigation spreadsheet supplied is included with the PSS.

Features shown on the current edition of chart 17402 that were not depicted on the shoreline source document were digitized in MapInfo by FAIRWEATHER personnel and displayed in Terrasync for field verification. The charted digitized features data were considered the tertiary shoreline source for the survey.

Shoreline Verification

Limited shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM sections 2.4.1 and 2.4.2.

Detached positions (DPs) taken during shoreline verification were recorded digitally in Terrasync and analog on DP forms. Distance and bearing values were input directly into Terrasync and so were not required in Pydro. DPs were processed in GPS Pathfinder, Pydro and CARIS Notebook. These DP's indicate revisions to features and features not found on the verified shoreline. Annotations describing shoreline were recorded on hard copy plots of the digital shoreline. Scanned copies of the DP forms²⁵ are included in the digital Separates folder, and the hard copies are included with the analog Separates to be Included with Survey Data.

Specific shoreline terminology was used during verification. Field abbreviations are in parentheses. The term "noted" (ntd) indicates existence confirmed from a distance where the feature is correctly located within the scale of the chart or source. The term "verified" (vrd) indicates existence confirmed in close proximity where feature is correctly located within the scale of the survey. Field abbreviations include; chd (charted), Ldr (Lidar), rk (rock), ldg (ledge), ext (extent), hp (high point), LW (low water), HW (high water), subm (submerged), pos (position), and disp (disproval).

Results of Lidar investigations are in the Pydro PSS.

Shoreline Processing

In an effort to streamline the data pipeline from the field to the processing branch, FAIRWEATHER attempted to eliminate the use of Mapinfo tables and workspaces from shoreline processing and deliverables. Pydro and CARIS Notebook were utilized in place of MapInfo. Several versions of CARIS Notebook and Pydro were used to process the shoreline, with varying levels of success.

CFF and Lidar line features shoreline files were exported from MapInfo as shape files using Universal Translator. They were then imported into CARIS Notebook as .hob files and S57 attributed. The exception was the CFF Kelp Line, the Remote Sensing Division sent the kelp information as a line, and it must be an area or point to be imported into Notebook as a S57 object type WEDKLP. It was imported into Notebook as VEGATN instead of WEDKLP to circumvent this problem. CFF_Foul was attributed as OBSTN (obstruction), CFF_HW as COALNE (coastline), and CFF_Ldg as DEPCNT (depth contour) and SBDARE (seabed area). Lidar_Foul was attributed as OBSTN, Lidar_HW as COALNE, Lidar_Ldg_Reef as DEPCNT and SBDARE, and Lidar_LW as DEPCNT. Lidar low water (LW) in many areas of the survey has been reclassified as ledge/reef to better represent the near shore area. Charted line features were digitized directly in CARIS Notebook. Additional comments were added to the marker layers.

Point features from the CFF, Lidar, and Charted shoreline source files could not be directly imported into CARIS Notebook due to problems with the program. Instead, CFF and Lidar point features from source shoreline files were exported from MapInfo as shape files using Universal Translator, then imported into Pydro as GP's using Generic Data Parser. In Pydro the features were S57 attributed. From Pydro, the files were exported as .xml and imported into Notebook as .hob files. Comments from the boatsheets were entered as remarks in Pydro, or as marker text in CARIS Notebook. Charted features were digitized directly into CARIS Notebook and comments were added to the remarks field.

DP's and the GP's from shoreline source files were S57 attributed in Pydro. CFF, Lidar, charted, and new rocks were attributed as UWTRC. CFF, Lidar, and charted rocks that were high points or extents of ledges, reefs, foul areas, or islets were attributed \$CSYMB.

DP's and GP's were further classified in Pydro by Carto Action Code. Features classified "Add" were entirely new features or bottom samples. Features that were disproved were classified "Delete". Features that were verified or for which a DP was obtained for height purposes only were classified "None", indicating that the feature be retained. Features that were reclassified, DP'd for new position, or in any way represented a change to the shoreline source files were classified "Modify". See Appendix VI for correspondence about the field use of Carto Action Codes.

All detached positions were exported from Pydro as separate .xml files by Carto Action Code and imported into CARIS Notebook as the files H11362_none_features.hob, H11362_add_features.hob, H11362_modify_features.hob, and H11362_delete_features.hob. Verified/commented CFF shoreline that did not require revision is in the H11362_CFF_Shoreline.hob file. Verified/commented lidar shoreline that did not require revision is in the H11362_Lidar_Shoreline.hob file. Verified/commented charted shoreline that did not require revision is in the H11362_Chd_Shoreline.hob file. New MHW/MLLW features and changes to the MHW/MLLW shoreline, including ledges, reefs and foulds were digitized with S57 attribution in the H11362_Shoreline_Updates.hob file. Ledges and reefs had to be digitized as SBDARE, rock.

Source Shoreline Changes, New Features and Charted Features

Items for survey H11362 that needed further discussion and are associated with a DP or GP have been flagged "Report" in Pydro. Investigation/survey methods and recommendations are listed in the Remarks and Recommendation tabs. A report with these items was generated, H11362_Shoreline_Report.pdf and is stored digitally in Appendix IV of the descriptive report folder²⁶.

Recommendations

The Hydrographer recommends that the shoreline as depicted in H11362 and final field product files supersede and complement shoreline information compiled on the CFF and charts as noted²⁷.

D.4 Dangers to Navigation

Three (3) dangers to navigation were found and reported to the Mapping and Charting Division for verification and final submission to the Seventeenth Coast Guard District on November 24, 2004. A copy of the Danger to Navigation Report is included in Appendix II²⁸.

D.5 Aids to Navigation

Survey H11362 included two (2) aids to navigation (ATONs)²⁹. A detached position (DP) was taken on the Spanish Island Light. The position of the Cape Decision Light is as noted from the Cartographic Feature File (CFF) supplied by the Remote Sensing Division (RSD). Each of the ATONs was found to serve its intended purpose.

Light List Name	Light List Number	N Lat (DMS)			W Long (DMS)			DP Number
		56	00	05.299	134	08	09.362	
Cape Decision Light	23440	56	00	05.299	134	08	09.362	N/A
Spanish Island Light	23445	55	59	13.090	134	06	16.521	125921

D.6 Bottom Samples

Bottom samples were not collected due to mechanical failures, weather and time constraints.

D.7 Supplemental Reports

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
2004 FAIRWEATHER Data Acquisition and Processing Report	05/03/05	N/CS34
Horizontal and Vertical Control Report for OPR-O167-FA	N/A	N/CS34
Tides and Water Levels Package for OPR-O167-FA	N/A	N/OPS1

Revisions Compiled During Office Processing and Certification

¹ Filed with Project Record

² Concur

³ Filed with Project Record

⁴ Crossline requirements were not met for this survey, however through manual examination of the data, internal data quality was found consistent and the survey is sufficient for compilation

⁵ Lidar survey H11209 was compiled to HCell H11362

⁶ Concur

⁷ Do not concur. The multibeam data does not go inshore of the 8m curve and does not overlap with lidar data in areas shoaler than 2 meters. There is lidar and multibeam data over one rock shoaler than 2 meters; however the multibeam data is shoaler.

⁸ PHB recommends charting the areas foul, as depicted in the HCell.

⁹ Concur

¹⁰ Concur

¹¹ Concur with clarification. There are systematic roll bias errors present in the data, however there is significant overlap between adjacent swaths in these areas and nadir or near nadir beams are represented in the base surface, rendering the surface unaffected by the roll bias errors. The surface is sufficient for compilation.

¹² Concur

¹³ Concur

¹⁴ Concur

¹⁵ Concur

¹⁶ Final Approved tides were applied by PHB on 12/12/2005. The Tide Note is attached.

¹⁷ Chart comparisons were performed with the most recent edition of charts 17402, 1:40,000 (11th Ed., Dec. 1, 2005, NM 10/12/05) and chart 17386, 1:40:000 (4th. Ed., May 1, 2006, NM 27/5/06). ENC US2AK30M (7th Ed) covers the area of the survey, however was not used for comparison due to compilation scale. General agreement was found between the field comparison and office comparison except where noted below.

¹⁸ Concur

¹⁹ Concur

²⁰ Concur

²¹ Concur

²² Concur with clarification. Survey soundings were generally within two fathoms. Soundings found to be in disagreement were close to shore and charted soundings were shoaler than survey soundings. This may be because the charted soundings were moved off shore to fit on the chart and not a result of contrasting scale

²³ Concur with clarification. Survey soundings were generally within two fathoms. Soundings found to be in disagreement were close to shore and charted soundings were shoaler than survey soundings. This may be because the charted soundings were moved off shore to fit on the chart and not a result of contrasting scale

²⁴ Concur

²⁵ Filed with Hydrographic Record

²⁶ Filed with Hydrographic Record

²⁷ Concur. Due to the limited shoreline verification the charted foul area in the northwest area of chart 17402 is to be retained, as well as other charted features as recommended in the blue notes

²⁸ Filed with Hydrographic Record

²⁹ These lights have not been included in the HCell



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
NOAA Ship FAIRWEATHER S-220
1010 Stedman Street
Ketchikan, AK 99901

August 19, 2005

MEMORANDUM FOR: LCDR Don Haines, NOAA
Chief, Pacific Hydrographic Branch

FROM: CDR John E. Lowell, Jr, NOAA *JEL*
Commanding Officer

TITLE: Approval of Hydrographic Survey H11362,
OPR-O167-FA-04

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11362 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, January 2005 Preliminary Version 1.0; and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for March, 2003. Additional guidance was provided by applicable Hydrographic Technical Directives. This survey is complete and no additional work is required with the exceptions noted in the Descriptive Report. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

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

SST Jessica L. Abrams
Survey Manager

LT Mark A. Wetzler
Field Operations Officer

CST Lynette V. Morgan
Chief Survey Technician

Attachment



H11362 Shoreline Features Report

Registry Number: H11362
State: AK
Locality: Cape Decision
Sub-locality: Decision Pass
Project Number: OPR-O167-FA
Survey Dates: 9/9/04 - 9/26/04

Items for survey H11632 with a detached or generic position requiring further discussion were flagged Report in Pydro. Investigation methods and recommendations were provided in the Remarks and Recommendations tabs.

Charts Affected

Number	Version	Date	Scale
17386	3rd Ed.	05/12/2001	1:40000
17402	10th Ed.	08/01/2002	1:40000
17320	16th Ed.	12/01/2003	1:217828
17360	33rd Ed.	05/01/2003	1:217828
17400	16th Ed.	06/02/2001	1:229376
16016	20th Ed.	11/01/2003	1:969756
531	22nd Ed.	03/01/2004	1:2100000
500	8th Ed.	06/01/2003	1:3500000
530	30th Ed.	03/23/2002	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude
12571	Sounding	-5.38 m	56° 00' 49.097" N	134° 07' 27.827" W
12581	Sounding	-2.88 m	56° 00' 35.660" N	134° 08' 42.281" W
12582	Sounding	-4.89 m	56° 00' 55.026" N	134° 09' 37.402" W
12583	Sounding	0.17 m	56° 00' 46.390" N	134° 09' 47.914" W
12591	Sounding	-1.64 m	55° 58' 21.372" N	134° 07' 35.224" W
12592	Sounding	-1.04 m	55° 58' 46.118" N	134° 07' 36.373" W
12593	Sounding	-0.53 m	55° 58' 44.118" N	134° 07' 34.813" W

12595	Sounding	-5.43 m	55° 59' 08.773" N	134° 06' 41.531" W
12596	Sounding	-2.43 m	55° 59' 09.229" N	134° 06' 38.116" W
12598	Sounding	-1.42 m	55° 59' 18.396" N	134° 06' 30.259" W
12599	Sounding	-0.11 m	55° 59' 06.545" N	134° 05' 59.474" W
125911	Sounding	-0.43 m	55° 58' 41.697" N	134° 06' 02.934" W
125912	Sounding	-0.74 m	55° 58' 38.972" N	134° 06' 10.406" W
125919	Sounding	-4.75 m	55° 58' 46.013" N	134° 06' 10.155" W
125910	Sounding	6.09 m	55° 58' 49.731" N	134° 06' 10.058" W
125913	Sounding	0.15 m	55° 58' 41.898" N	134° 06' 07.749" W
125915	Sounding	9.36 m	55° 58' 42.439" N	134° 06' 21.507" W
125916	Sounding	14.50 m	55° 58' 39.393" N	134° 06' 08.497" W
125917	Sounding	11.93 m	55° 58' 39.361" N	134° 06' 02.043" W
125918	Sounding	-9.47 m	55° 58' 47.321" N	134° 06' 11.744" W
125920	Sounding	4.64 m	55° 58' 47.991" N	134° 06' 07.082" W
12594	Sounding	-0.07 m	55° 58' 42.760" N	134° 06' 49.406" W
12597	Sounding	0.57 m	55° 59' 14.563" N	134° 06' 33.403" W
125914	Sounding	1.64 m	55° 58' 40.463" N	134° 06' 34.463" W
125921	Sounding	-14.65 m	55° 59' 13.090" N	134° 06' 16.521" W
---	GP	[None]	55° 59' 18.308" N	134° 06' 16.786" W
---	GP	[None]	55° 59' 17.138" N	134° 06' 09.945" W
401/96	Sounding	1.35 m	56° 01' 57.762" N	134° 11' 22.916" W
277/91	Sounding	6.38 m	56° 00' 38.882" N	134° 07' 18.762" W
275/5	Sounding	4.36 m	56° 01' 01.425" N	134° 11' 02.476" W

1 - New Features

1.1) 12571

Survey Summary

Survey Position: 56° 00' 49.097" N, 134° 07' 27.827" W
Least Depth: -5.38 m
Timestamp: 2004-257.16:53:42.000 (09/13/2004)
DP Dataset: h11362 / trb1_dpne / 2004-257 / 257_\$csymb.shp
Profile/Beam: 1/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12571 CFF rk is hp Ldr islet

The GP position was taken on the outside southern lidar islet. The area is accurately represented with two islets connected at LW as depicted by the Lidar HW LW rather than as charted. Both Ldr islets and the Ldr LW line were verified in the field.

Hydrographer Recommendations

The Hydrographer recommends charting Lidar High Water and Low Water on charts 17402, 17386, 17360, and 17320.

Cartographically-Rounded Depth (Affected Charts):

-1fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-2fm 5ft (17386_1, 531_1)
-5.4m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12571 CFF rk is hp Ldr islet The GP position was taken on the outside southern lidar islet. The area is accurately represented with two islets connected at LW as depicted by the Lidar HW LW rather than as charted. Both Ldr islets and the Ldr LW line were verified in the field.

Office Notes

Chart lidar islet with height from DP

1.2) 12581

Survey Summary

Survey Position: 56° 00' 35.660" N, 134° 08' 42.281" W
Least Depth: -2.88 m
Timestamp: 2004-258.15:08:07.000 (09/14/2004)
DP Dataset: h11362 / trb1_dpne / 2004-258 / 258_\$csymb.shp
Profile/Beam: 1/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12581 hp CFF rk

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-1 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-1fm 3ft (17386_1, 531_1)
-2.9m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 12581 hp CFF rk
VALSOU - -2.875 m

Office Notes

Chart islet as rock

1.3) 12582

Survey Summary

Survey Position: 56° 00' 55.026" N, 134° 09' 37.402" W
Least Depth: -4.89 m
Timestamp: 2004-258.15:43:44.000 (09/14/2004)
DP Dataset: h11362 / trb1_dpne / 2004-258 / 258_\$csymb.shp
Profile/Beam: 2/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12582 hp CFF rk is Ldr islet, DP'd for height.

Hydrographer Recommendations

The Hydrographer recommends charting the Lidar islet on charts 17402, 17386, 17360, and 17320..

Cartographically-Rounded Depth (Affected Charts):

-2 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-2fm 4ft (17386_1, 531_1)
-4.9m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12582 hp CFF rk is Ldr islet, DP'd for height.

Office Notes

Chart DP as islet within Lidar reef

1.4) 12583

Survey Summary

Survey Position: 56° 00' 46.390" N, 134° 09' 47.914" W
Least Depth: 0.17 m
Timestamp: 2004-258.15:56:39.000 (09/14/2004)
DP Dataset: h11362 / trb1_dpne / 2004-258 / 258_\$csymb.shp
Profile/Beam: 3/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12583 Chd rk (17402, 17386, 17360, 17320) is Ldr rk

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

0fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 0ft (17386_1, 531_1)

.1m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 12583 Chd rk (17402, 17386, 17360, 17320) is Ldr rk
VALSOU - 0.170 m
WATLEV - 5:awash

Office Notes

Chart new position of rock

1.5) 12591

Survey Summary

Survey Position: 55° 58' 21.372" N, 134° 07' 35.224" W
Least Depth: -1.64 m
Timestamp: 2004-259.14:50:38.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 1/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12591 Chd rk (17402, 17386, 17320) vrd

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 5ft (531_1)

-1.7m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 12591 Chd rk (17402, 17386, 17320) vrd
VALSOU - -1.637 m
WATLEV - 4:covers and uncovers

Office Notes

Chart rock

1.6) 12592

Survey Summary

Survey Position: 55° 58' 46.118" N, 134° 07' 36.373" W
Least Depth: -1.04 m
Timestamp: 2004-259.15:05:28.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 2/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12592 Chd (17402) rk is CFF rk vrd. DP'd for height, use CFF position.
Ldr rk in agreement. Correlate w/ldr invst #4

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 3ft (531_1)
-1.1m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12592 Chd (17402) rk is CFF rk vrd. DP'd for height, use CFF position. Ldr rk in agreement. Correlate w/ldr invst #4

Office Notes

Chart CFF rock with DP for height

1.7) 12593

Survey Summary

Survey Position: 55° 58' 44.118" N, 134° 07' 34.813" W
Least Depth: -0.53 m
Timestamp: 2004-259.15:07:22.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 3/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12593 Chd rk (17402, 17386, 17360, 17320) vrd

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 1ft (531_1)
-.6m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 12593 Chd rk (17402, 17386, 17360, 17320) vrd
VALSOU - -0.531 m
WATLEV - 4:covers and uncovers

Office Notes

Chart new position of rock

1.8) 12595

Survey Summary

Survey Position: 55° 59' 08.773" N, 134° 06' 41.531" W
Least Depth: -5.43 m
Timestamp: 2004-259.15:34:24.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 4/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12595 CFF rk hp ldr islet

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-1fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-3fm 0ft (17386_1, 531_1)
-5.5m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12595 CFF rk hp ldr islet

Office Notes

Chart hp as islet within lidar reef

1.9) 12596

Survey Summary

Survey Position: 55° 59' 09.229" N, 134° 06' 38.116" W
Least Depth: -2.43 m
Timestamp: 2004-259.15:38:15.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 5/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12596 Chd (17402) islet/CFF rk is hp reef, DP'd for height.
Correlate to Ldr invst #17.

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-1 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-1fm 2ft (17386_1, 531_1)
-2.5m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12596 Chd (17402) islet/CFF rk is hp reef, DP'd for height. Correlate to Ldr invst #17.

Office Notes

Chart rock as high point of reef from lidar

1.10) 12598

Survey Summary

Survey Position: 55° 59' 18.396" N, 134° 06' 30.259" W
Least Depth: -1.42 m
Timestamp: 2004-259.15:45:05.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 6/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12598 CFF rk vrd, DP'd for height, use CFF position

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 4ft (17386_1, 531_1)
-1.4m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 12598 CFF rk vrd, DP'd for height, use CFF position

Office Notes

Chart CFF rock position with height from DP

1.11) 12599

Survey Summary

Survey Position: 55° 59' 06.545" N, 134° 05' 59.474" W
Least Depth: -0.11 m
Timestamp: 2004-259.15:56:18.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 7/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12599 Ldr rk vrd

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 0ft (17386_1, 531_1)

-.1m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: INFORM - 12599 Ldr rk vrd

VALSOU - -0.108 m

WATLEV - 4:covers and uncovers

Office Notes

Chart rock

1.12) 125911

Survey Summary

Survey Position: 55° 58' 41.697" N, 134° 06' 02.934" W
Least Depth: -0.43 m
Timestamp: 2004-259.16:14:27.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 8/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125911 hp new reef, ext foul

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 1ft (531_1)
-.5m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 125911 hp new reef, ext foul

Office Notes

Chart rock as high point of reef

1.13) 125912

Survey Summary

Survey Position: 55° 58' 38.972" N, 134° 06' 10.406" W
Least Depth: -0.74 m
Timestamp: 2004-259.16:18:18.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 9/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125912 Ldr rk vrd, ext foul, corr w/Ldr invest #21

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 2ft (531_1)
-.8m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 125912 Ldr rk vrd, ext foul, corr w/Ldr invest #21
QUASOU - 1:depth known
VALSOU - -0.736 m
WATLEV - 4:covers and uncovers

Office Notes

Chart rock

1.14) 125919

Survey Summary

Survey Position: 55° 58' 46.013" N, 134° 06' 10.155" W
Least Depth: -4.75 m
Timestamp: 2004-259.17:53:24.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_uwtroc.shp
Profile/Beam: 10/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125919 Chd islet (17402) is CFF rk, DP'd for height, use CFF rk position

Hydrographer Recommendations

The Hydrographer recommends removing the charted islet from chart 17402 and charting the CFF rock on charts 17402, 17386, 17360, and 17320.

Cartographically-Rounded Depth (Affected Charts):

-2 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-2fm 3ft (531_1)
-4.8m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 125919 Chd islet (17402) is CFF rk, DP'd for height, use CFF rk position

Office Notes

Chart position of CFF rock as islet

1.15) 125910

Survey Summary

Survey Position: 55° 58' 49.731" N, 134° 06' 10.058" W
Least Depth: 6.09 m
Timestamp: 2004-259.16:07:21.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 1/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125910 Ldr islet vrd, CFF rk hp. DP'd for height.

Hydrographer Recommendations

Chart Ldr HW

Cartographically-Rounded Depth (Affected Charts):

3 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

3fm 2ft (531_1)

6.1m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 125910 Ldr islet vrd, CFF rk hp. DP'd for height.

Office Notes

Chart Lidar HW as islet. Use Lidar height of 9 feet for land elevation. Do not chart CFF rock or DP.

1.16) 125913

Survey Summary

Survey Position: 55° 58' 41.898" N, 134° 06' 07.749" W
Least Depth: 0.15 m
Timestamp: 2004-259.16:23:11.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 2/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125913 CFF rk is Ldr HW vrd, Ldr islet same as Chd islet (17402), Ldr LW is ldg

Hydrographer Recommendations

The Hydrographer recommends charting the Lidar High Water and Low Water on charts 17402, 17386, 17360, and 17320.

Cartographically-Rounded Depth (Affected Charts):

0fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 0ft (531_1)
.1m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 125913 CFF rk is Ldr HW vrd, Ldr islet same as Chd islet (17402), Ldr LW is ldg

Office Notes

Chart DP as high point on reef

1.17) 125915

Survey Summary

Survey Position: 55° 58' 42.439" N, 134° 06' 21.507" W
Least Depth: 9.36 m
Timestamp: 2004-259.17:27:18.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 3/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125915 Chd rk disp

The charted rock was not located within a 60m search radius using Ceeducer echosounder at low water during shoreline verification.

Hydrographer Recommendations

The Hydrographer recommends removing the charted rock from chart 17402.

Cartographically-Rounded Depth (Affected Charts):

5fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

5fm 0ft (531_1)

9.3m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: INFORM - 125915 Chd rk disp The charted rock was not located within a 60m search radius using Ceeducer echosounder at low water during shoreline verification.

Office Notes

Remove charted rock

1.18) 125916

Survey Summary

Survey Position: 55° 58' 39.393" N, 134° 06' 08.497" W
Least Depth: 14.50 m
Timestamp: 2004-259.17:33:30.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 4/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125916 Chd rk (17402) disp

The charted rock was not located in a 100m radius search using Ceeducer echosounder at low water during shoreline verification.

Hydrographer Recommendations

The Hydrographer recommends removing the charted rock from chart 17402.

Cartographically-Rounded Depth (Affected Charts):

7 ¾fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

7fm 5ft (531_1)

14.5m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: INFORM - 125916 Chd rk (17402) disp The charted rock was not located in a 100m radius search using Ceeducer echosounder at low water during shoreline verification.

Office Notes

Remove charted rock

1.19) 125917

Survey Summary

Survey Position: 55° 58' 39.361" N, 134° 06' 02.043" W
Least Depth: 11.93 m
Timestamp: 2004-259.17:39:13.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 5/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125917 Chd rk (17402) disp

The charted rock was not located in a 100m radius search using Ceeducer echosounder at low water during shoreline verification.

Hydrographer Recommendations

The Hydrographer recommends removing the charted rock from chart 17402.

Cartographically-Rounded Depth (Affected Charts):

6 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

6fm 3ft (531_1)

11.9m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: INFORM - 125917 Chd rk (17402) disp The charted rock was not located in a 100m radius search using Ceeducer echosounder at low water during shoreline verification.

Office Notes

Remove charted rock

1.20) 125918

Survey Summary

Survey Position: 55° 58' 47.321" N, 134° 06' 11.744" W
Least Depth: -9.47 m
Timestamp: 2004-259.17:46:58.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 6/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125918 CFF islet vrd

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

-5fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-5fm 1ft (531_1)
-9.5m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - 125918 CFF islet vrd

Office Notes

Chart islet as per CFF shoreline

1.21) 125920

Survey Summary

Survey Position: 55° 58' 47.991" N, 134° 06' 07.082" W
Least Depth: 4.64 m
Timestamp: 2004-259.18:02:02.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_\$csymb.shp
Profile/Beam: 7/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125920 CFF rk disp

The CFF rock was not located within a search rectangle of 50m E-W, 100m N-S by Ceeducer echosounder and visual inspection during low water shoreline verification.

Hydrographer Recommendations

The Hydrographer recommends not charting the CFF rock on charts 17402, 17386, 17360, or 17320.

Cartographically-Rounded Depth (Affected Charts):

2 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

2fm 3ft (531_1)

4.6m (500_1, 50_1)

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

Attributes: INFORM - 125920 CFF rk disp The CFF rock was not located within a search rectangle of 50m E-W, 100m N-S by Ceeducer echosounder and visual inspection during low water shoreline verification.

Office Notes

Remove charted rock

1.22) 12594

Survey Summary

Survey Position: 55° 58' 42.760" N, 134° 06' 49.406" W
Least Depth: -0.07 m
Timestamp: 2004-259.15:21:58.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / tr1_259.txt
Profile/Beam: 1/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12594 New position Chd rk (17402)

During shoreline verification the charted rock from chart 17402 at position 55°58'41.579"N , 134°06'49.154"W (555309.74E , 6204009.74N) was located at the DP position.

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

0fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 0ft (531_1)

-.1m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: INFORM - 12594 New position Chd rk (17402) During shoreline verification the charted rock from chart 17402 at position 55°58'41.579"N , 134°06'49.154"W (555309.74E , 6204009.74N) was located at the DP position.

VALSOU - -0.070 m

WATLEV - 5:awash

Office Notes

Chart new position of rock

1.23) 12597

Survey Summary

Survey Position: 55° 59' 14.563" N, 134° 06' 33.403" W
Least Depth: 0.57 m
Timestamp: 2004-259.15:41:40.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / tr1_259.txt
Profile/Beam: 2/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

12597 new rk

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

0 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
0fm 2ft (17386_1, 531_1)
.5m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)
Attributes: INFORM - 12597 new rk
QUASOU - 1:depth known
TECSOU - 5:found by lead-line
VALSOU - 0.571 m
WATLEV - 3:always under water/submerged

Office Notes

Chart new rock

1.24) 125914

Survey Summary

Survey Position: 55° 58' 40.463" N, 134° 06' 34.463" W
Least Depth: 1.64 m
Timestamp: 2004-259.17:19:58.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / tr1_259.txt
Profile/Beam: 3/1
Charts Affected: 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125914 New pos Chd rk (Charts 17402, 17360, 17320)

Correlate w/Ldr invest #22

During shoreline verification the rock charted at position 55°58'40.171"N , 134°06'35.270"W (555550.95E , 6203969.29N) was located at the new DP position.

Hydrographer Recommendations

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 5ft (531_1)

1.6m (500_1, 50_1)

S-57 Data

Geo object 1: Underwater rock / awash rock (UWTROC)

Attributes: INFORM - 125914 New pos Chd rk (Charts 17402, 17360, 17320) Correlate w/Ldr invest #22
During shoreline verification the rock charted at position 55°58'40.171"N , 134°06'35.270"W (555550.95E , 6203969.29N) was located at the new DP position.

QUASOU - 1:depth known

TECSOU - 5:found by lead-line

VALSOU - 1.639 m

WATLEV - 3:always under water/submerged

Office Notes

Chart new position of rock

1.25) 125921**Survey Summary**

Survey Position: 55° 59' 13.090" N, 134° 06' 16.521" W
Least Depth: -14.65 m
Timestamp: 2004-259.20:02:39.000 (09/15/2004)
DP Dataset: h11362 / trb1_dpne / 2004-259 / 259_bcnspp.shp
Profile/Beam: 1/1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

125921 Spanish Island Light (LL#23445)

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

-8fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)
-8fm 0ft (17386_1, 531_1)
-14.7m (500_1, 50_1)

S-57 Data

Geo object 1: Beacon, special purpose/general (BCNSPP)
Attributes: BCNSHP - 4:lattice beacon
CATSPM - 27:general warning mark
COLOUR - 1,3:white,red
COLPAT - 4:squared
CONRAD - 1:radar conspicuous
HEIGHT - 12.0 m
INFORM - 125921 Spanish Island Light (LL#23445)
STATUS - 1:permanent
Geo object 2: Light (LIGHTS)
Attributes: COLOUR - 1:white
INFORM - 125921 Spanish Island Light (LL#23445)

LITCHR - 2:flashing
SIGGRP - 6
STATUS - 1:permanent

Office Notes

1.26) GP No. - 1 from ChartGPs - Digitized

Survey Summary

Survey Position: 55° 59' 18.308" N, 134° 06' 16.786" W
Least Depth: [None]
Timestamp: 2005-138.14:31:58 (05/18/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Chd (17402) rk is CFF rk

The charted rock position was disproved a Ceeducer echosounder search during shoreline verification. The depth in area was found to be 10.3m.

Hydrographer Recommendations

The Hydrographer recommends removing the charted rock from chart 17402.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - Chd (17402) rk is CFF rk The charted rock position was disproved a Ceeducer echosounder search during shoreline verification. The depth in area was found to be 10.3m.

Office Notes

Remove charted rock

1.27) GP No. - 2 from ChartGPs - Digitized

Survey Summary

Survey Position: 55° 59' 17.138" N, 134° 06' 09.945" W
Least Depth: [None]
Timestamp: 2005-138.14:35:03 (05/18/2005)
GP Dataset: ChartGPs - Digitized
GP No.: 2
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Chd (17402) rk is new ldg to South

The position was disproved with a Ceeducer echosounder search during shoreline verification. The depth in area was found to be 8.6m.

Hydrographer Recommendations

The Hydrographer recommends removing the charted rock from chart 17402.

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: INFORM - Chd (17402) rk is new ldg to South The position was disproved with a Ceeducer echosounder search during shoreline verification. The depth in area was found to be 8.6m.

Office Notes

Remove charted rock

2 - Dangers to Navigation

2.1) 401/96

DANGER TO NAVIGATION

Survey Summary

Survey Position: 56° 01' 57.762" N, 134° 11' 22.916" W
Least Depth: 1.35 m
Timestamp: 2004-254.23:34:38.824 (09/10/2004)
Survey Line: h11362 / 1010_8101 / 2004-254 / 254-2333
Profile/Beam: 401/96
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Multibeam sounding.

Hydrographer Recommendations

Chart 0.74 fathom depth at this location.

Cartographically-Rounded Depth (Affected Charts):

0 ¾fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

0fm 4ft (17386_1, 531_1)

1.3m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: INFORM - Multibeam sounding.
QUASOU - 6:least depth known
TECSOU - 3:found by multi-beam

Office Notes

Chart sounding

2.2) 277/91

DANGER TO NAVIGATION

Survey Summary

Survey Position: 56° 00' 38.882" N, 134° 07' 18.762" W
Least Depth: 6.38 m
Timestamp: 2004-255.23:44:12.477 (09/11/2004)
Survey Line: h11362 / 1018_8101 / 2004-255 / 255-2343
Profile/Beam: 277/91
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Multibeam sounding.

Hydrographer Recommendations

Chart 3.49 fathom depth at this location, redraw charted 10 fathom curve.

Cartographically-Rounded Depth (Affected Charts):

3 ½fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

3fm 3ft (17386_1, 531_1)

6.4m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: INFORM - Multibeam sounding.
QUASOU - 6:least depth known
TECSOU - 3:found by multi-beam

Office Notes

Chart Sounding

2.3) 275/5

DANGER TO NAVIGATION

Survey Summary

Survey Position: 56° 01' 01.425" N, 134° 11' 02.476" W
Least Depth: 4.36 m
Timestamp: 2004-256.18:21:04.626 (09/12/2004)
Survey Line: h11362 / 1018_8101 / 2004-256 / 256-1820
Profile/Beam: 275/5
Charts Affected: 17386_1, 17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 531_1, 500_1, 530_1, 50_1

Remarks:

Multibeam sounding.

Hydrographer Recommendations

Chart 2.38 fathom depth at this location.

Cartographically-Rounded Depth (Affected Charts):

2 ¼fm (17402_1, 17320_1, 17360_1, 17400_1, 16016_1, 530_1)

2fm 2ft (17386_1, 531_1)

4.3m (500_1, 50_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)
Attributes: INFORM - Multibeam sounding.
QUASOU - 6:least depth known
TECSOU - 3:found by multi-beam

Office Notes

Chart Sounding



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 27, 2005

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-0167-FA-2004
HYDROGRAPHIC SHEET: H11362

LOCALITY: Decision Pass, AK

TIME PERIOD: September 9 - 26, 2004

TIDE STATION USED: 945-1600 Sitka, AK
Lat. 57° 03.1'N Lon. 135° 20.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.791 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SA220, SA221, SA230, SA231 &
SA232

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 new 1983-2001 National Tidal Datum Epoch (NTDE).

Note 2: The subordinate tide gauge at Cape Decision (945-0891) installed for this project did not record valid data and cannot be used for final zoning. The control water level station at Sitka (945-1600) is used as the reference station for the purpose of providing tide correction. The resulting error of tidal zoning cannot be quantified.

Thomas V. Meier 5/3/05

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final tide zone node point locations for OPR-O167-FA-2004, H11362

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

	Tide Station Order	AVG Time Correction	Range Correction
Zone SA220	945-1600	-6	1.16
-134.125716 56.103848			
-134.161636 56.095349			
-134.189837 56.058248			
-134.157697 56.061355			
-134.133307 56.009351			
-134.105176 55.985391			
-134.002369 55.955109			
-133.930715 55.921888			
-133.914207 55.918249			
-133.892388 55.935043			
-133.928642 55.991789			
-133.985759 56.044713			
-134.048067 56.078408			
-134.094615 56.093882			
-134.125716 56.103848			
Zone SA221	945-1600	-6	1.13
-133.930715 55.921888			
-133.924482 55.879303			
-134.032039 55.911949			
-134.129838 55.946046			
-134.127483 55.956102			
-134.120182 55.968104			
-134.116446 55.974103			
-134.105176 55.985391			
-134.002369 55.955109			
-133.930715 55.921888			
Zone SA230	945-1600	-6	1.14
-134.105176 55.985391			
-134.116446 55.974103			
-134.152043 55.986887			
-134.1975 56.009473			
-134.225381 56.030552			
-134.234444 56.051619			

-134.229566 56.069165
-134.189837 56.058248
-134.157697 56.061355
-134.133307 56.009351
-134.105176 55.985391

Zone SA231

945-1600

-6

1.12

-134.127483 55.956102
-134.129838 55.946046
-134.134066 55.919173
-134.347886 56.051564
-134.523478 56.141033
-134.66511 56.206372
-134.660329 56.221471
-134.658677 56.2343
-134.229566 56.069165
-134.234444 56.051619
-134.225381 56.030552
-134.1975 56.009473
-134.152043 55.986887
-134.116446 55.974103
-134.120182 55.968104
-134.127483 55.956102

Zone SA232

945-1600

-6

1.09

-134.180977 55.897983
-134.262078 55.874672
-134.273112 55.929502
-134.396857 56.019466
-134.559311 56.120354
-134.668297 56.183267
-134.668297 56.183267
-134.665109 56.190378
-134.66511 56.206372
-134.523478 56.141033
-134.347886 56.051564
-134.134066 55.919173
-134.140478 55.91373
-134.180977 55.897983

H11362 HCell Report
Sarah Wolfskehl, Hydrographic Survey Intern
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11362 utilized Office of Coast Survey HCell Specifications Versions 3.0, in conjunction with the Field and Processing Branch Features Encoding Guide for West Coast US and Alaska Version 1.3. HCell H11362 will be used to update chart 17402, 1:40,000 (11th Ed., Dec. 1, 2005, NM 10/12/05) and chart 17386, 1:40:000 (4th. Ed., May 1, 2006, NM 27/5/06).

1. Compilation Scale

Contours and the density of soundings are compiled as appropriate to emulate those of Chart 17402 and 17386, 1:40,000. Position and density of features included in the HCell have not been generalized from the scale of the hydrographic survey, 1:10,000.

2. Soundings

2.1 Source Data

A 10 m resolution combined BASE surface, H11362_Combined.hns was used as the basis for HCell production following Branch certification.

A survey-scale full density sounding (SOUNDG) feature object source layer was built from the H11362_Combined.hns surface in CARIS BASE Editor. A shoal-biased selection was made at the 1:10,000 survey scale using a radius table with values shown in Table 1. The sounding feature object source layer was exported as H11362_SS.hob, and imported into CARIS HOM.

Upper Limit (m)	Lower Limit (m)	Radius (mm)
0	10	3
10	20	4
20	50	4.5
50	300	5

Table 1.

2.2 Sounding Feature Objects

In CARIS BASE Editor soundings were manually selected from the survey scale sounding set H11362_SS.hob to create a chart scale sounding set H11362_CS.hob. The H11362_CS.hob sounding selection emulates the density and distribution of soundings on chart 17402 and 17386, while more closely representing the seafloor

morphology. The soundings were selected with regard to the 10, 20 and 50 fathom contours.

3. Depth Areas

3.1 Source Data

The finalized Base Surface, H11362_Combined.hns, was used to generate a depth area, and for survey evaluation and verification purposes only, a set of contours. The contour set included the chart equivalent, 10, 20, and 50 fathom contour. The depth contours were not submitted as deliverables, as according to OCS HCell Specifications ver. 3.0. A second BASE Surface of higher resolution, H11362_5m_Office.hns, was used to generate the depth area that abuts the shoreline to precisely represent coverage along the shoreline.

H11362 junctions with LIDAR survey H11209. The depth area for survey H11362 incorporates the LIDAR survey H11209 between the multibeam extents and the MHW line from the GC shoreline.

3.2 Depth Area Feature Objects

One all-encompassing depth range, 0 meter to 225 meters, was used for all depth area objects below MLLW. Upon conversion to NOAA charting units, this depth range is 0 to 123 fathoms. Separate depth areas, -2.791 meters to 0 meters, were created for features above MLLW, such as ledges and reefs. Upon conversion to NOAA charting units this depth range is -1.526 to 0 fathoms.

4. Meta Areas

The following Meta object areas are included in HCell H11362:

M_QUAL
M_COVR

Meta area objects were constructed from filtered perimeter lines delineating the survey limits. The perimeter was first used to create the Skin of the Earth (SOTE) layer, then duplicated to the Meta object layers and attributed per the OCS HCell Specifications, Ver. 3.0.

5. Survey Features

Survey features for H11362 were delivered in Pydro and Notebook format. Three DtoNs were submitted with this survey and have been applied to charts 17402 and 17386 and have been retained in the HCell. The cartographic actions taken for each survey feature addressed by the field are noted in the Pydro file H11362_Office.pss under the office notes tab. The office notes are printed in red at the bottom of each page of the feature report exported from Pydro. For cartographic actions to be taken for features not included in the Pydro pss see blue notes. Features to be retained from chart 17402 and

17386, such as bottom samples, rocks and ledges that fall within the survey limits, were digitized to the HCell.

6. Shoreline / Tide Delineation

The Mean High Water value used to create the depth area defining the ledges, reefs and islets was taken from the Tide Note. The MHW value was 2.791 m and was used to populate the DRVAL1 of the DEPARE for these intertidal features. When converted to chart units the MHW value is 1 fathom 3 feet.

7. Attribution

All S-57 Feature Objects have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with OCS HCell Specifications ver. 3.0 and the Field and Processing Branch Features Encoding Guide for West Coast US and Alaska Version 1.3.

8. Layout

8.1 CARIS HOM Layering Scheme

100	Survey Scale Soundings
101	Chart Scale Soundings
200	Depth Area
300	Rocks / Islets
301	Digitized chart point features, such as bottom samples, kelp, etc.
400	Ledges
401	Reefs
402	Foul Areas
403	Land Areas
404	Kelp Areas
600	M_COVR
601	M_QUAL
800	Blue Notes (spatial only)
1001	Contours (spatial only)

8.2 Blue Notes

Notes regarding HCell feature compilation are on layer 800 and as shape file sets H11362_bluenotes_p.shp and H11362_bluenotes_l.shp for point and line figures, respectively. A copy of the survey perimeter is included in the line shape file set for orientation purposes.

9. Spatial Framework

9.1 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.

9.2 Horizontal and Vertical Units

During creation of sounding sets and contours, and creation of the HCell, units are maintained as metric with millimeter resolution. NOAA rounding is applied at the same time that conversion to chart units is made to the metric HCell base cell file, at the end of the HCell compilation process.

The CARIS environment variable, uslXsounding_round, controls the depth at which rounding occurs. Setting this variable to NOAA fathoms and feet displays all soundings equal to or greater than 11 fathoms as whole units. Depths shoaler than 11 fathoms are shown in fathoms and feet.

In an ENC viewer fathoms and feet display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. For fathoms and feet between 0 and 10 fathoms 4.5 feet (10.75 fms), soundings round to the deeper foot if the decimals of the foot are X.Y75000 or greater. For fathoms and feet deeper or equal to 11 fathoms, soundings round to the deeper fathom if feet and decimals of the foot are X.45000 (X.Y75000) or greater. In an ENC viewer, heights greater than 6 feet will register in fathoms and feet using the above stated rules. Drying heights are in feet and are rounded using arithmetic methods.

HOM Units

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

Chart Unit Base Cell Units

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

10. QA/QC

10.1 Data Processing Notes

H11362 junctions with LIDAR survey H11209. HCell H11362 includes the multibeam coverage area, plus the inshore Lidar coverage area between the multibeam extents and the GC10546 coastline. The HCell includes multibeam and Lidar soundings as well as features from the field, Lidar data, GC shoreline, and charts. Heights and depths for rocks and soundings from the Lidar data were taken from the DGN file and manually converted from decimal fathoms to meters using NOAA rounding rules. This was done

manually because of rounding errors between programs. Islets digitized from the chart do not have an associated LNDELV.

The depth threshold surfaces were used to digitize rocky seabed areas. These area features replace all charted bottom samples within the area. Charted bottom samples not within the rocky seabed areas were retained; however rky bottom samples were removed.

10.2 ENC Validation Checks

H11362 was subjected to QA and Validation checks in HOM prior to exporting to the HCell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was then converted to a chart unit 000 file. dKart Inspector 5.0 (Service Pack 1) was then used to further check the data set for conformity to the S-58 version 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

11. Products

11.1 MCD Deliverables

H11362 Base Cell File, Chart Units, Soundings compiled to 1:40,000
H11362 Base Cell File, Chart Units, Soundings compiled to 1:10,000
H11362 Descriptive Report including end notes compiled during office processing, certification, shoreline feature report, tide note and HCell report
Blue Note shape files

11.2 File Naming Conventions

HOM file set prefix: *H11362_hc*

MCD Chart units base cell file: *US511362_CS.000*

MCD Chart units base cell file, survey scale soundings: *US511362_SS.000*

11.3 Software

HIPS 6.1:	Management and inspection of combined BASE surfaces
BASE Editor 2.1:	Combination of product surfaces and initial creation of the S-57 bathymetry-derived features, examination of base cell files against the chart; chart density sounding selection
HOM 3.3:	Assembly of the HCell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
dKart Inspector 5.0:	S-58 Validation of the HCell base cell file

12. Contacts

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

Sarah Wolfskehl
Pacific Hydrographic Branch
Seattle, WA
206-526-6859
Sarah.Wolfskehl@noaa.gov.

APPROVAL SHEET
H11362

Initial Approvals:

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

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

I have reviewed the H-Cell, 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.