H11404

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.

Registry No. H-11404

LOCALITY

State Alaska

General Locality Ernest Sound Eastern Passage

Sublocality Vicinty of Point Madan

2005

CHIEF OF PARTY
CDR John E. Lowell Jr, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H11404

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: Ernest Sound Eastern Passage

Sublocality: Vicinity of Point Madan

Scale: 1:10,000

Date of Survey: March 27 to April 21, 2005

Instructions Date: 1/4/2005

Project No.: OPR-O119-FA-05

Vessel: Vessels 1010, 1018, 1701 and 1803

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

Surveyed by: SST Froelich, CST Morgan, LT Wetzler and FAIRWEATHER personnel

Soundings taken by echo sounder

Graphic record scaled by

Graphic record checked by

Evaluation by: Megan Palmer, Russ Davies

Automated plot by: HP Designjet 1050C

Verification by: Physical Scientist Megan Palmer, Cartographer Russ Davies

Soundings in: Fathoms and tenths at MLLW

REMARKS: Time in UTC. UTM Projection Zone 8

Revisions and annotations appearing as endnotes were generated during office processing.

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

All separates are filed with the hydrographic data.

The UTM zone on the original Title Sheet was found to be incorrect. This Title Sheet has been updated with the correct UTM zone.

Katie J. Reser

Katie Reser
2008.12.05
14:05:12 -08'00'

Descriptive Report to Accompany Hydrographic Survey H11404

Project OPR-O119-FA
Eastern Passage, Alaska
Scale 1:10,000
March-April 2005
NOAA Ship FAIRWEATHER
Chief of Party: Commander John E. Lowell, Jr., NOAA

A. AREA SURVEYED

The survey area was located in Ernest Sound and Eastern Passage, within the sub-locality of Vicinity of Pt. Madan. This survey corresponds to Sheet B in the sheet layout provided with the Letter Instructions, as shown in Figure 1 below.

Data acquisition was conducted from March 27 to April 21, 2005 (DN 086 to DN 111).

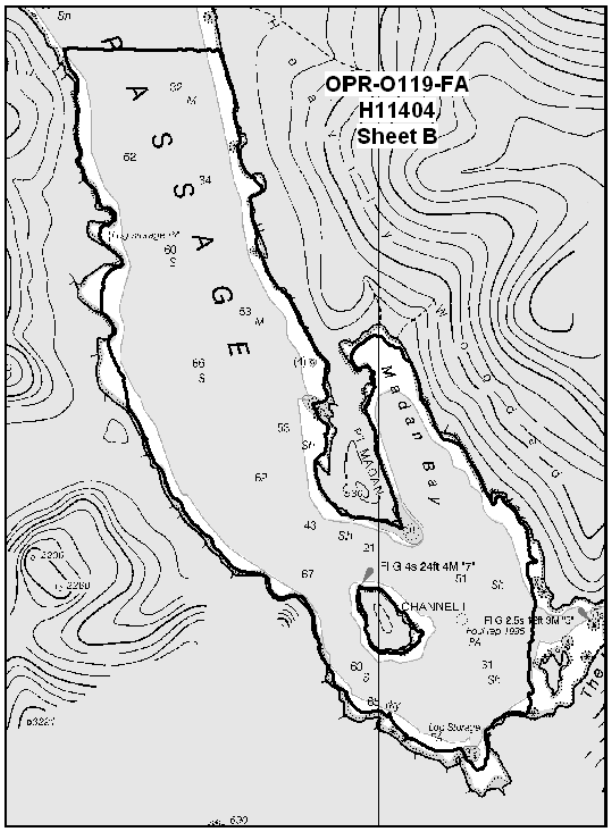

Figure 1: Survey H11404 Outline

One hundred percent multibeam echosounder (MBES) coverage was obtained in the survey area at least to depths of eight meters and often shoaler. Data were acquired as close to shore as safely possible. Additional coverage was obtained in order to determine least depths over features or shoals.

Shoreline data were acquired for survey H11404. These data were attributed as S-57 objects for submittal.

B. DATA ACQUISTION AND PROCESSING

A complete description of data acquisition and processing systems and survey vessels can be found in the *NOAA Ship FAIRWEATHER Hydrographic Systems Certification Report 2005,* submitted under a separate cover. [1] Quality control procedures and data processing methods are listed and described in the *OPR-O119-FA-05 Data Acquisition and Processing Report* (DAPR), submitted under separate cover. [2] Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Equipment and vessels used for data acquisition and survey operations during this survey are listed below in Table 1.

	Launch 1010	Launch 1018	MonArk	Ambar 550
Hull Registration Number	1010	1018	Not Assigned	1803
Builder	The Boat Yard, Inc.	The Boat Yard, Inc.	MonArk	Ambar Silverships. Inc
Length Overall	28' 10"	28' 10"	17'	18'
Beam	10' 8"	10' 8"	7'	8' 6"
Draft, Maximum	4' 0" DWL	4' 0" DWL	1' 3"	1'5"
Cruising Speed	24 knots	24 knots	20 knots	20 knots
Max Survey Speed	10 knots	10 knots		
Primary Echosounder	RESON 8101	RESON 8101		
Sound Velocity Equipment	SBE 19plus	SBE19plus		
Attitude & Positioning Equipment	POS/MV V3	POS/MV V3		
Type of operations	MBES, HORCON	MBES, Tide	Tide, Shoreline	HORCON

Table 1: Vessel Inventory

No vessel configurations used during data acquisition deviated from the DAPR.

B2. Quality Control

Internal consistency and integrity of data collected for survey H11404 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11404 were found to be very good.

Crosslines

Multibeam echosounder crosslines for this survey totaled 17.78 linear nautical miles (lnm), comprising 11.5% of the 153.57 lnm of mainscheme MBES hydrography.

Sound velocity issues with crossline data collected on DN 098 required the crossline data to be filtered 30/30 for that day. See Data Quality Factors, Sound Velocity section, for further details.

The Hydrographer has determined, through manual examination of the data, that the filtered crossline agreement of with main scheme data meet the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables.* [3]

Junctions

Survey H11404 junctions with H11403 and H11405, which is Sheet A and Sheet C of the same project respectively. The area of overlap between the Sheet A and Sheet B was approximately 800m wide. The area of overlap between the Sheet B and Sheet C was approximately 550m wide. Area surveyed for junction analysis will be reduced on later projects. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the 3 surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables.* [4] The sheet limits and area of overlap for Sheets A,B and C are shown in Figure 2.

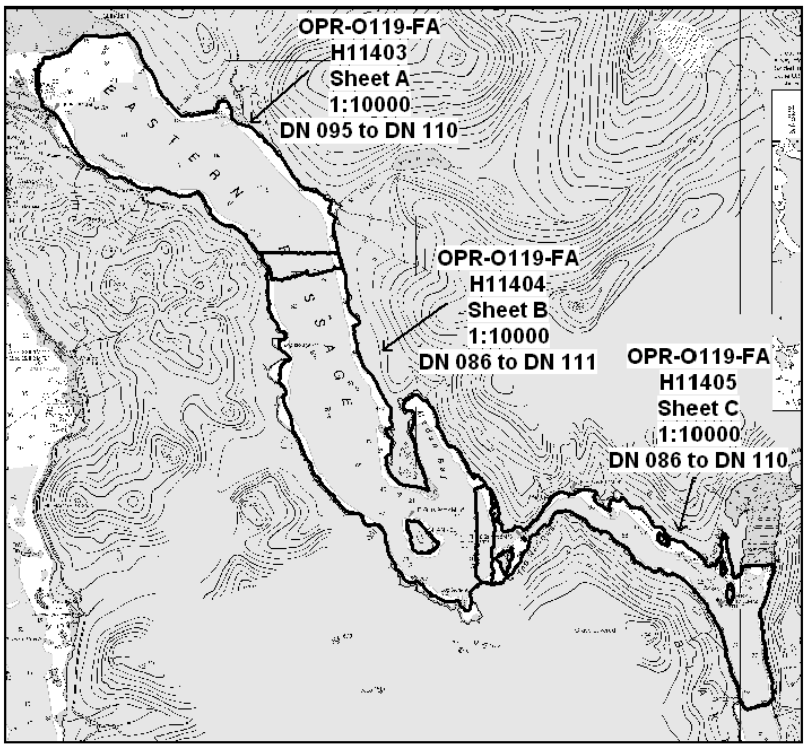

Figure 2: Junctions Between Surveys H11403, H11404 and H11405

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-O119-FA-05 Data Acquisition and Processing Report.*

Data Quality Factors

SOUND VELOCITY:
Only one sound velocity cast was taken during crossline data acquisition on DN 098. This led to characteristic smiles associated with sound velocity errors. The crossline data from that day were rejected from 30° off nadir outwards. The remaining data agreed well with mainscheme MBES.

ROLL:
Data on the western edge of Eastern Passage at the junction between DN 089 and DN 094 (Figure 3) show slight roll error (<1m at 100m depth) (Figure 4) and an error of unknown origin (~1m at 100m depth) (Figure 5). It is possible that the soft bottom shifted between DN 089 and DN 094 causing the discrepancy, or it is a combination of roll, tide and horizontal positioning error. The later is deemed to be highly unlikely however. Despite the errors, the data complies with the standards prescribed by *NOS Hydrographic Surveys Specifications and Deliverables*, as updated for March 2003. [5]

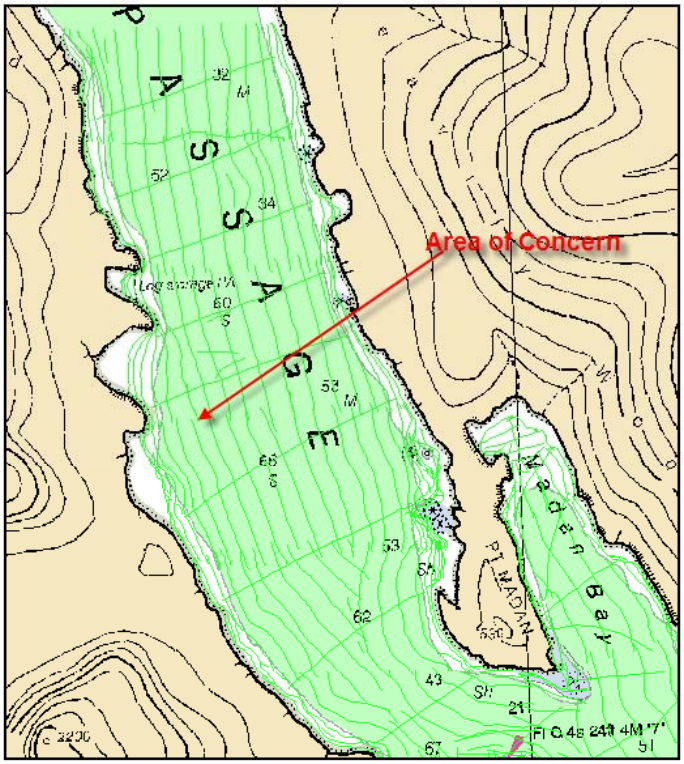

Figure 3: Area of Error

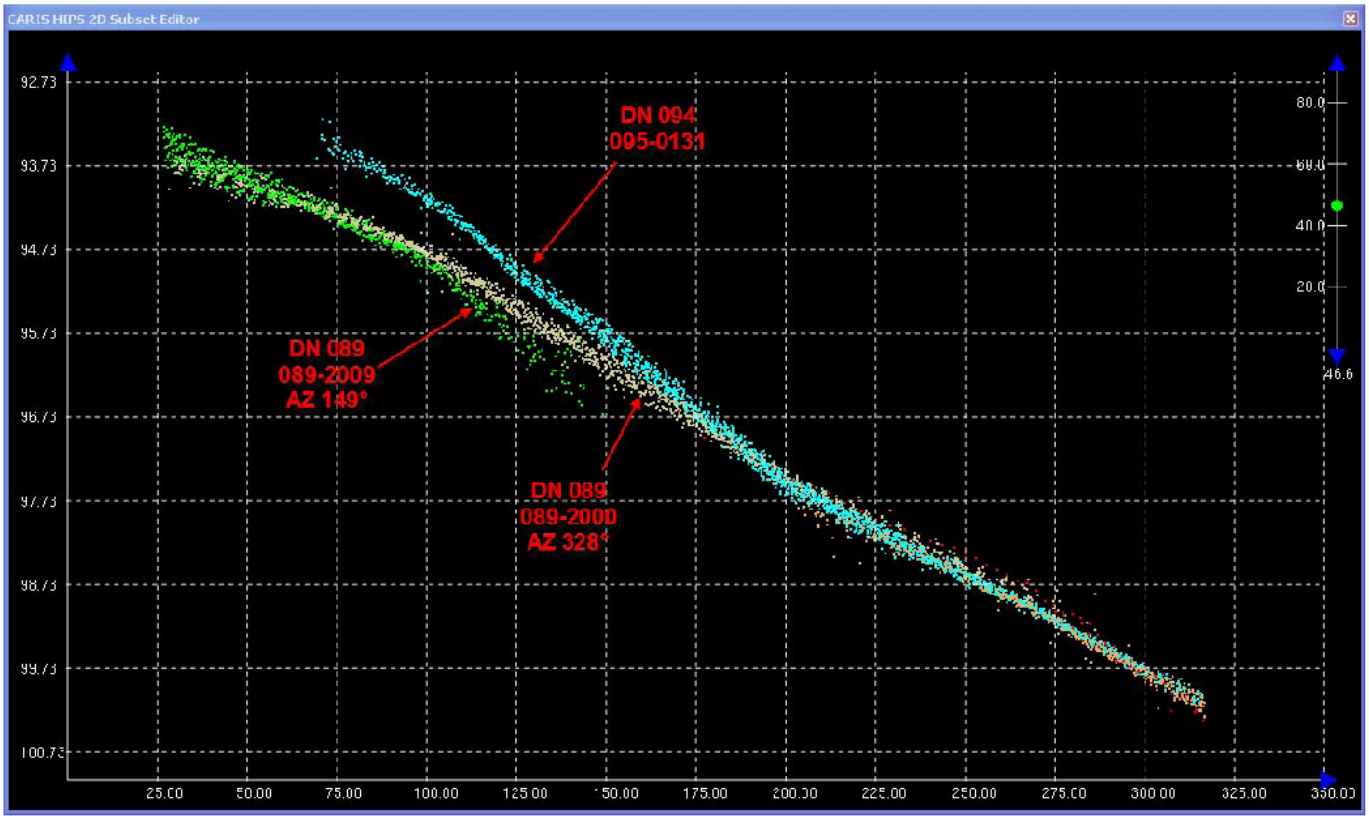

Figure 4: CARIS 2D Subset view of Roll and Unknown Error

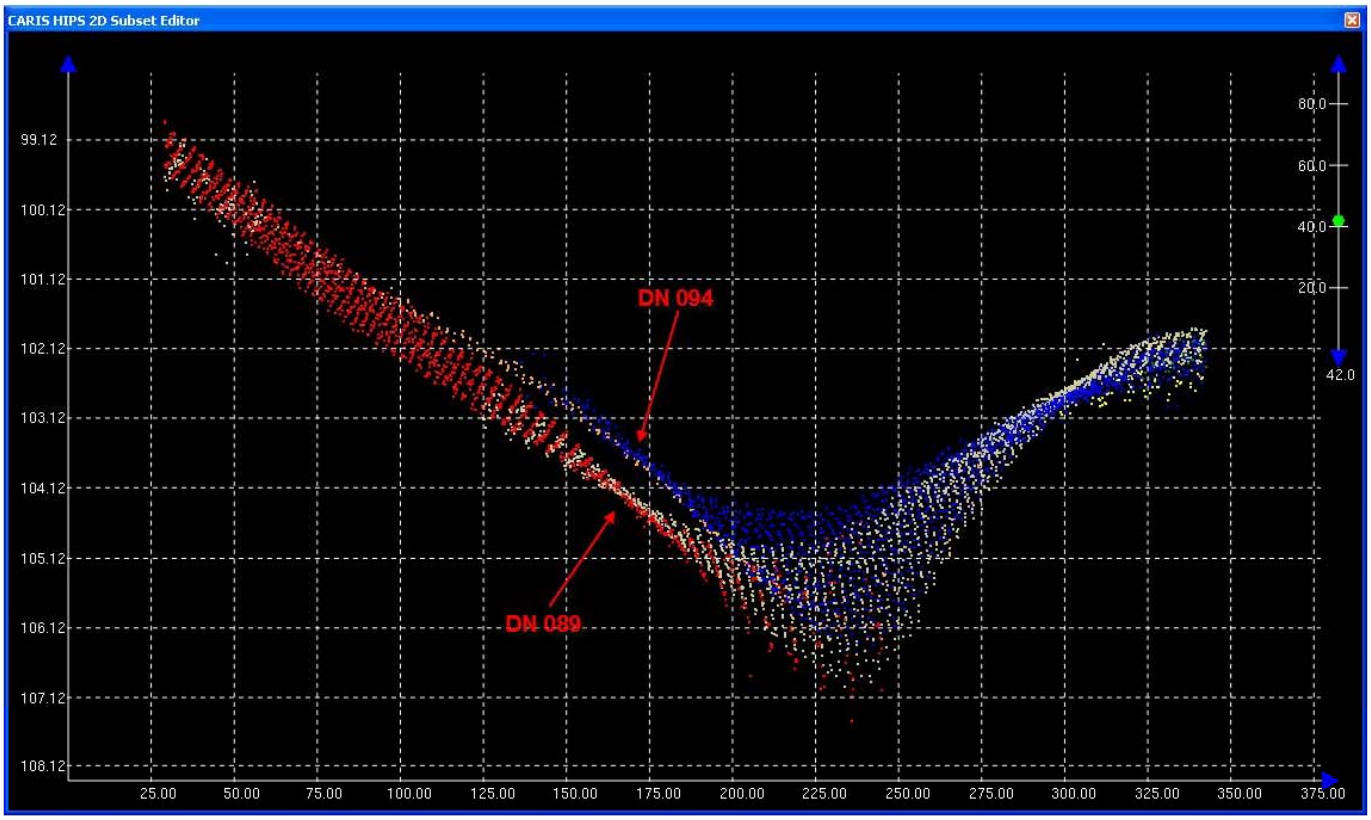

Figure 5: CARIS 2D Subset view of Unkown Error.

Accuracy Standards

Data from survey H11404 conforms to the standards prescribed by NOS Hydrographic Surveys Specifications and Deliverables, as updated for March 2003. [6]

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11404 conform to those detailed in the of the *OPR-O119-FA-05 Data Acquisition and Processing Report,* with the exceptions as discussed below.

During survey H11404 both Launch 1010 and Launch 1018 experienced mechanical instability with the drop down transducer mounts for the RESON 8101ERs. By conducting frequent patch tests, roll bias issues were minimized and adequately addressed. Refer to the *2005 FAIRWEATHER Systems Certification Report* for further details. [7]

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11404 can be found in the *OPR-O119-FA-05 Horizontal and Vertical Control Report*, submitted under separate cover. [8] A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from the U.S. Coast Guard beacons at Annette Island (323 kHz), Level Island (295 kHz) and Gustavus (288 kHz) were utilized. DGPS beacons were only switched when the previous beacon signal was lost and data logging had been temporarily halted.

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 Ketchikan, AK (945-0460) served as control for datum determination and as the primary source for water level reducers for survey H11404.

FAIRWEATHER personnel installed two Sutron 8210 "bubbler" tide gauges at the tertiary station listed below. Gauge #12 (S/N 023513) was the main gauge. Gauge #08 (S/N 002330) was installed for training and redundancy purposes. The gauges were installed in order to provide information to Center for Operational Oceanographic Products and Services (CO-OPS N/OPS1) for the determination of time and height correctors, in accordance with the Project Instructions.

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Madan Bay	945-1152	Tertiary 30 Day	March 15, 2005	April 21, 2005

CO-OPS does not provide calibration or quality assurance documentation to the FAIRWEATHER. FAIRWEATHER personnel are responsible for installation and removal of the water level gauges. CO-OPS is responsible for delivering final approved vertical correctors to the processing branch for application to the hydrographic data set.

Refer to the *OPR-O119-FA-05 Horizontal and Vertical Control Report* further information about the tide station.

All data were reduced to MLLW using verified tides from station Ketchikan, AK by applying tide file 9450460.tid and time and height correctors through the predicted zone corrector file O119FA2005CORP.zdf.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. [9] A request for delivery of final approved (smooth) tides for survey H11404 was forwarded to N/OPS1 on May 3, 2005 in accordance with the Preliminary Field Procedures Manual v1.1, dated March 2005 (FPM). A copy of the request is included in Appendix III. [10]

D. RESULTS AND RECOMMENDATIONS [11]

D.1 Chart Comparison

The appropriate resolution BASE dependant on the general depth of the survey was brought into Pydro by means of the Insert BASE/Weighted Grids function. The data was then excessed to survey scale and shoal biased. The affected charts in the survey area were brought into Pydro. The hydrographer manually compared the charted soundings to the shoal biased, excessed soundings in the Chart window.

Using the bathymetric depths inserted in Pydro, survey H11404 was compared with charts 17360 (33rd Ed.; May 01, 2003, 1:217,828), and 17385 (15th Ed.; February 01, 2005, 1:80,000). All charts have been updated with the Notice to Mariners through March 19, 2005. [12]

Due to the scarcity of soundings on chart 17385 and 17360 in the survey area only a limited number of comparisons can be made.

Chart 17360 [13]

Depths from survey H11404 generally agreed within a few fathoms with depths on chart 17360.

Chart 17385 [14]

Depths from survey H11404 generally agreed within a few fathoms with depths on chart 17385.

Chart Comparison Recommendations

The Hydrographer has determined that bottom coverage requirements have been met and data accuracy meets requirements specified by the *NOS Hydrographic Surveys Specifications and Deliverables* dated March 2003. The BASE surfaces and associated soundings are adequate to supersede prior surveys in their common areas. Final chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides. [15]

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There were 3 AWOIS items located within the limits of survey H11404. All AWOIS items are addressed in the H11404_Features.pdf in Appendix I. [16]

Dangers to Navigation

One (1) danger to navigation was found and reported to the Mapping and Charting Division for verification and final submission to the Seventeenth Coast Guard District on August 7th, 2005 and resubmitted on August 9th, 2005. A copy of the preliminary Danger to Navigation Report is included with the Pydro Preliminary Smooth Sheet (PSS). [17]

D.2 Additional Results

Shoreline Source

Source shoreline for this sheet was taken from photogrammetric survey AK9702E (NAD 83) GC-10547, at the scale of 1:20,000. The CFF shoreline was imported to CARIS Notebook 2.2 Beta as an editable layer named H11404_Edited_CFF_Shoreline.hob, with all objects having S57 attribution. In addition, features from charts 17360 (33rd Ed.; May 1, 2003, 1:217,828, corrected through NTM dated 12/18/2004) and 17385 (14th Ed.; February 01, 2003, 1:80,000, corrected through NTM dated 12/18/2004) that were not depicted by the source shoreline data were digitized with S57 attribution in CARIS Notebook into H11404_Charted_Shoreline.hob file, to be displayed for field verification.

Shoreline Verification

FAIRWEATHER personnel conducted shoreline verification at times near predicted low water, in accordance with the Standing Project Instructions. Detached positions (DPs) and generic positions (GPs) acquired during shoreline verification were recorded in TerraSync and on paper DP forms. Scanned copies of the DP forms are included in the digital Separates folder and hard copies can be found with the *Separates to be Included with Survey Data.* [18] In addition, annotations describing shoreline were recorded on hard copy plots of the digital shoreline.

Shoreline Data Processing

Positions acquired during shoreline verification operations were processed in GPS Pathfinder Office and inserted into Pydro using the Generic GPs/DPs Import tool. Features were entered as Detached Positions (DPs) when tide correctors were required, while Generic Positions (GPs) were used if no tide correction was needed. The DPs and GPs indicate new features, revisions to features, or features not found during shoreline verification. A Carto Action of Add, Modify or Delete was assigned to each item in Pydro, and all features were S57 attributed. [19]

All primary detached and generic positions were imported from the Pydro .xml to four separate stand alone .hob files in CARIS Notebook 2.2 Beta. These were named H11404_ADD_Features.hob, H11404_MODIFY_Features.hob, H11404_DELETE_Features.hob, and H11404_NONE_Features.hob.

Source Shoreline Changes, New Features and Charted Features

Items for survey H11404 associated with a detached or generic position that needed further discussion were flagged Report in Pydro. Investigation or survey methods were listed under the Remarks tab and, when appropriate, recommendations to the cartographer were included in the Recommendations tab. A survey feature report for shoreline items was generated and included as H11404_Features.pdf in Appendix I.[20]

Three .hob layers, named H11404_ADD.hob, H11404_MODIFY.hob and H11404_DELETE.hob, were created in CARIS Notebook for features without associated DPs. New items were digitized to the Add layer, while existing features from the CFF and chart were transferred to the Modify or Delete layers, depending on the cartographic action deemed appropriate by the Hydrographer. Features to be retained as

depicted by the source shoreline file were left in the H11404_Edited_CFF_Shoreline.hob file. Field notes made by the Hydrographer on the boat sheets and DP forms [21] were transferred to the remarks field for each feature.

Shoreline Recommendations

Subsequent to shoreline verification a new edition of chart 17385 was produced incorporating the CFF source. This new chart (16th Ed.) was not available to FAIRWEATHER personnel during shoreline verification.

The Hydrographer recommends that the shoreline depicted in the CARIS Notebook files and final sounding files supersede and complement shoreline information compiled on the CFF and charts supplied to FAIRWEATHER personnel. [22]

Aids to Navigation

Survey H11404 included one (1) aid to navigation (ATON). A detached position was taken on the ATON for check purposes only. The ATON was found to serve its intended purpose. [23]

The following fixed ATON was positioned using static GPS survey methods, see the *Horizontal and Vertical Control Report for OPR-O119-FA* for further information.

Light List Name	Light List Number	NAD83 (CORS 96) (EPOCH:2003.0000)		Ellipsoid Ht. (m) (Pk to Pk Err. (m))	NAVD88 Ortho Ht. (m) (Pk to Pk Err. (m))	Satellite Ephemeris File
		N. Latitude (Pk to Pk Err. (m))	W. Longitude (Pk to Pk Err. (m))			
LIGHT 7	22690	56° 22' 7.29458" (0.432)	132° 10' 17.74663" (0.269)	4.774 (0.761)	6.119 (0.761)	Precise

Bottom Samples

Bottom samples were collected on April 20, 2005 (DN 110) and are included as seabed classifications along with the other S57 features in the Pydro Preliminary Smooth Sheet. The bottom sample positions were also imported to the Notebook H11404_Add_Features.hob file. [24]

E. Supplemental Reports

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

Title	Date Sent	Office
Hydrographic Systems Certification Report 2005	April 18, 2005	N/CS34
OPR-O119-FA-05 Data Acquisition and Processing Report	August 22, 2005	N/CS34
OPR-O119-FA-05 Horizontal and Vertical Control Report	August 22, 2005	N/CS34, N/OPS1

Revisions Compiled During Office Processing and Certification

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[1] Filed with the project data.
[2] Filed with the project data.
[3] Concur
[4] Concur
[5] Concur
[6] Concur
[7] Filed with the project data.
[8] Filed with the project data.
[9] Final tides were applied during office processing at PHB. See attached Tide Note, Jan. 3, 2006.
[10] Filed with the hydrographic records.
[11] Because of the 100% multibeam coverage on this survey, it is recommended that the green tint area, wire drag area, should be removed from chart 17385 and superseded with depths from this survey within the common area.
[12] During evaluation of this survey, only chart 17385 16th Edition, dated Sept. 1, 2006 was used for comparison.
[13] Chart 17360 was not compared to this survey because chart 17385 covers the complete survey at a larger scale.
[14] With the limited number of soundings in the common area, the comparison is good with differences between one to four fathoms with extreme differences as great as 19 fathoms.
[15] See endnote 13
[16] Attached to this report.
[17] Danger to Navigation letter is attached to this report.
[18] Filed with the hydrographic records.
[19] See attached feature report.
[20] See attached feature report.
[21] Filed with the hydrographic records.
[22] Concur
[23] It is recommended to use the latest ATONIS information for the position and description of the aid to navigation.
[24] All bottom samples were transferred to the Hcell. There were several charted bottom samples which were blue noted to be retained.

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

September 11, 2005

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

FROM: CAPT John E. Lowell, Jr, NOAA
Commanding Officer

TITLE: Approval of Hydrographic Survey H11404,
OPR-O119-FA

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11404 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. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required. All data and reports are respectfully submitted to N/CS34, Pacific Hydrographic Branch.

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 Grant D. Froelich
Survey Manager

for LT Mark A. Wetzler
Field Operations Officer

CST Lynnette V. Morgan
Chief Survey Technician

Attachment

H-11404 H-Cell Report

Russ Davies, Cartographer
Pacific Hydrographic Branch

Introduction

The primary purpose of the H-Cell is to directly update NOAA ENCs with new survey information in International Hydrographic Organization (IHO) format S-57. H-Cell compilation of survey H-11404 utilized Office of Coast Survey H-Cell Specifications Version 2.0, April 2, 2007. H-Cell H-11404 will be used to update chart 17385, scale1:80,000, 16th Edition, Sep. 1, 2006 and two ENC, US4AK30M.000.

1. Compilation Scale

The density of soundings in the H-Cell is compiled as appropriate to emulate those soundings on Chart 17385. Position and density of non-bathymetric features included in the H-Cell have not been generalized from the scale of the hydrographic survey, 1:80,000.

2. Soundings

2.1 Source Data

A 5 meter resolution Combined BASE, **Final_Office_Combined,** surface was used as the basis for H-Cell production following Branch certification.

For multibeam data a survey-scale full density sounding (SOUNDG) feature object source layer was built from the **Final_Office_Combined** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:80,000 survey scale. The sounding feature object source layer was exported from BASE Editor as **soundings**, and imported into HOM.

2.2 Sounding Feature Objects

In CARIS BASE Editor, soundings were manually selected from the high density sounding layer and imported into new layer created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and distribution of soundings on chart 17385 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11404. The sounding feature object source layer was exported and imported into HOM.

3. Depth Areas

3.1 Source Data

The BASE surfaces were used to generate all encompassing depth areas, and, for survey evaluation and verification purposes only, sets of chart equivalent contours. No actual depth contours were delivered per OCS H-Cell Specifications version 2.0.

3.2 Depth Area Feature Objects

One all-encompassing depth range, 0 meters to 180 meters, was used for all depth area objects below MLLW. Upon conversion to NOAA charting units, this depth range is 0 fathoms to 97.12 fathoms.

4. Meta Areas

The following Meta object areas are included in H-Cell 11404:

M_QUAL M_NSYS
M_COVR

Meta area objects were constructed on the basis of perimeter lines delineating the surveyed limits, "islands of coverage" for point and line features surveyed outside the hydrographic limits, and extents of data gaps inside the survey area. These perimeters were first used to create the Skin of The Earth (SOTE) layer, then were duplicated to the Meta object layers and attributed per the H-Cell Specifications, version 2.0.

5. Survey Features

All features for survey H11404 are fully documented with attribution and action taken during compilation. These features can be found in the Descriptive Report under the Shoreline Report which is included in DR.

Dangers to Navigation

There was one danger to navigation reported during survey operations.

Aids to Navigation

H11403 did contain a federally maintained aid. See DR for additional information

6. Shoreline / Tide Delineation

Depth areas (DEPARE) and Seabed areas (SBDARE) were created for all SOTE features.

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 H-Cell Specifications, version 2.0.

8. Layout

8.1 CARIS HOM Layering Scheme

100	Survey scale soundings
101	Chart scale soundings
200	Group 1 objects (Skin of the Earth)
301	Bottom samples
302	Ramp
600	M_COVR
601	M_QUAL
602	M_NSYC
800	Blue Notes

8.2 Blue Notes

Notes regarding data sources are in CARIS HOM as layers 800 and as Shape file sets, **H11404_bluenotes** (with the appropriate extensions) for point and line figures, respectively.

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 in CARIS BASE Editor, and creation of the H-Cell in CARIS HOM, 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 H-Cell base cell file, at the end of the H-Cell compilation process.

A CARIS environment variable, uslXsounding round, controls the depth at which rounding occurs. Setting this variable to NOAA fathoms and feet displays all soundings from 0 to equal to or greater than 11 fathoms as whole units.

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. Drying heights are in feet and are rounded using arithmetic methods. In an ENC viewer, heights greater than 6 feet will register in fathoms and feet using the above stated rules.

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 (or fathoms and feet above 6 feet)
Positional Units (PUNI):	Meters

10. QA/QC

10.1 Data Processing Notes

Manual chart scale sounding selections were made for this survey. Experience has shown that in areas where bathymetry is steep sided, as in the case of this extremely steep edged fjord, automated sounding selection is impractical. None of the default sounding suppression options offered in CARIS BASE Editor or HOM yields an acceptable density and distribution of depths, generally bunching soundings nearshore with too sparse coverage seaward. While the customized options are more practical for this type of terrain, an inordinate amount of time must be spent in experimentation with variations on the algebraic terms in order to devise the most suitable formula, and manual adjustments are still required to the resulting sounding set.

10.2 ENC Validation Checks

H11404 was subjected to QA and Validation checks in HOM prior to exporting to the H-Cell 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 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 using 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 HSD, MCD and CGTP Deliverables

- H11404 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11404 Descriptive Report including end notes compiled during office processing and certification
- H11404 H-Cell Supplemental Report
- Blue Notes shape files
- H11404_ Features File

11.2 File Naming Conventions

HOM file set prefix: *H11404_hc*

MCD Chart units base cell file: *US411404_CU.000*

MCD Chart units base cell file, survey scale soundings: *US411404_SS.000*

Features File (for CGTP): *H11404_Features.000*

11.3 Software

HIPS 6.1:	Management and inspection of Combined BASE surfaces
BASE Editor 2.0:	Combination of Product Surfaces and initial creation of the S-57 bathymetry-derived features
BASE Editor 2.0:	Creation of BAG deliverable
HOM 3.3:	Assembly of the H-Cell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
Pydro v7.3 (r2014_TCfix)	Creation of AWOIS and DTON reports
dKart Inspector 5.0:	Validation of the base cell file

12. Contacts

Inquiries regarding this H-Cell content or construction should be directed to:
Russ Davies, Cartographer, PHB, Seattle, WA; 206-526-6843;
Russ.Davies@noaa.gov.

H11404 Survey Feature Report

Registry Number: H11404

State: Alaska

Locality: Ernest Sound and Eastern Passage

Sub-locality: Vicinity of Pt. Madan

Project Number: OPR-O119-FA

Survey Dates: 3/27/2005 - 4/21/2005

Charts Affected

Number	Version	Date	Scale
17385	15th Ed.	02/01/2005	1:80000
17360	33rd Ed.	05/01/2003	1:217828
16016	20th Ed.	11/01/2003	1:969756
531	22nd Ed.	03/01/2004	1:2100000
530	30th Ed.	03/23/2002	1:4860700
50	6th Ed.	06/01/2003	1:10000000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	10862	GP	[None]	56° 21' 01.413" N	132° 08' 02.890" W	---
1.2	10861	GP	[None]	56° 22' 07.328" N	132° 10' 17.730" W	---
1.3	10876	GP	[None]	56° 21' 35.075" N	132° 09' 38.210" W	---
1.4	10881	Sounding	0.98 m	56° 20' 39.454" N	132° 08' 21.647" W	---
2.1	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
2.2	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
2.3	OBSTRUCTION	AWOIS	[no data]	[no data]	[no data]	---
3.1	835/24	Shoal	16.39 m	56° 21' 32.906" N	132° 08' 46.187" W	---

1 - New Features

1.1) 10862

Survey Summary

Survey Position:	56° 21' 01.413" N, 132° 08' 02.890" W
Least Depth:	[None]
Timestamp:	2005-086.18:10:54.000 (03/27/2005)
GP Dataset:	TR1_086_SLCONS2.shp
GP No.:	1
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

BOAT RAMP WITH RAILS

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1:	Shoreline Construction (SLCONS)
Attributes:	CATSLC - 12:ramp
	INFORM - BOAT RAMP WITH RAILS
	NATCON - 2,7:concreted,metal
	RECDAT - 20050327
	STATUS - 1:permanent
	WATLEV - 4:covers and uncovers

Office Notes

Chart ramp according to this survey

1.2) 10861

Survey Summary

Survey Position:	56° 22' 07.328" N, 132° 10' 17.730" W
Least Depth:	[None]
Timestamp:	2005-086.17:42:03.000 (03/27/2005)
GP Dataset:	TR1_086_BCNLAT.shp
GP No.:	1
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

"LIGHT 7" LIGHT LIST #22685.

Hydrographer Recommendations

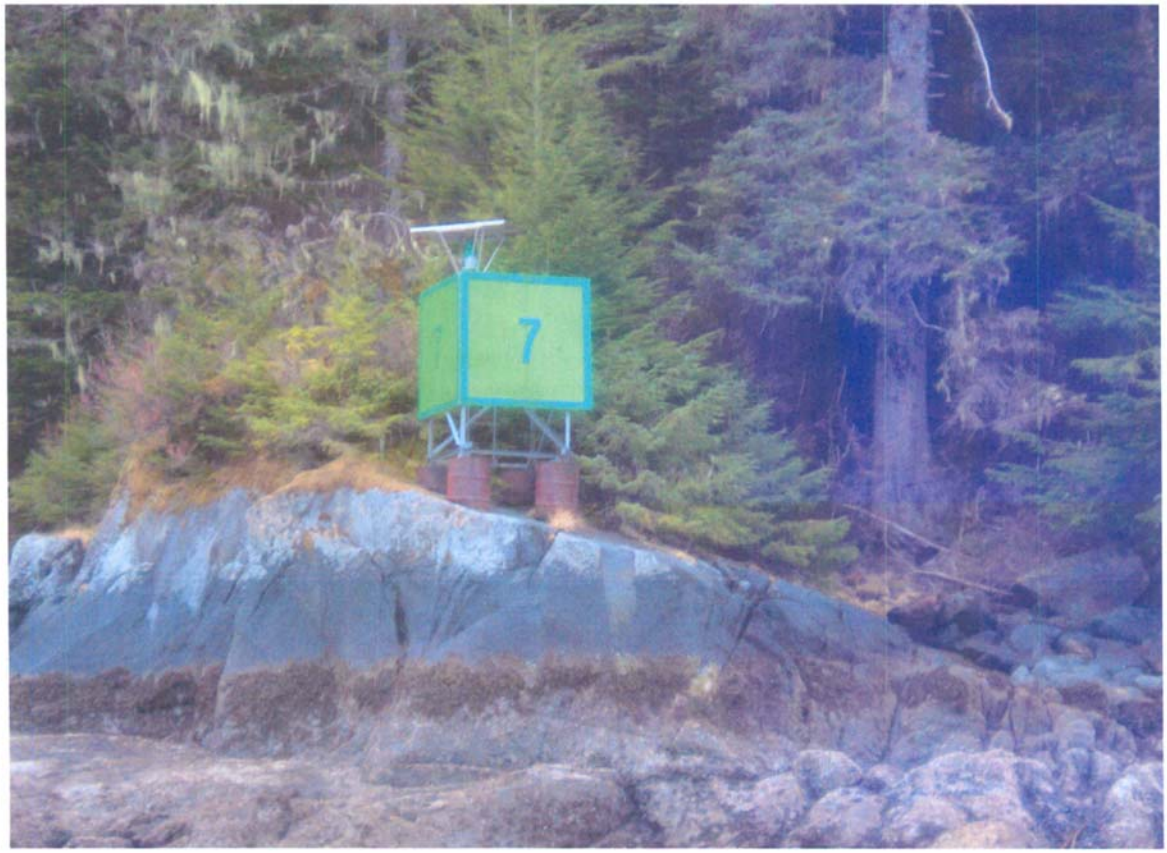
[None]

S-57 Data

Geo object 1:	Beacon, lateral (BCNLAT)
Attributes:	BCNSHP - 4:lattice beacon
	CATLAM - 1:port-hand lateral mark
	COLOUR - 7:grey
	INFORM - "LIGHT 7" LIGHT LIST #22685.
	PICREP - 10861_2.jpg
	RECDAT - 20050327
Geo object 2:	Daymark (DAYMAR)
Attributes:	COLOUR - 4:green
	COLPAT - 6:border stripes
	INFORM - "LIGHT 7" LIGHT LIST #22685.
	PICREP - 10861_2.jpg
	TOPSHP - 19:square
Geo object 3:	Light (LIGHTS)
Attributes:	COLOUR - 4:green
	INFORM - "LIGHT 7" LIGHT LIST #22685.
	PICREP - 10861_2.jpg

Office Notes

Use latest ATONIS position and description for charting this ATON.


7

1.3) 10876

Survey Summary

Survey Position:	56° 21' 35.075" N, 132° 09' 38.210" W
Least Depth:	[None]
Timestamp:	2005-087.19:23:26.000 (03/28/2005)
GP Dataset:	TR1_087_$CSYMB.shp
GP No.:	1
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF PILE IS STUMP.

Hydrographer Recommendations

[None]

S-57 Data

Geo object 1:	Cartographic symbol ($CSYMB)
Attributes:	INFORM - CFF PILE IS STUMP.
	PICREP - 10876_1.jpg
	RECDAT - 20050328

Office Notes

Remove charted pile it is a stump positioned above the MHWL.

1.4) 10875

Survey Summary

Survey Position:	56° 22' 43.892" N, 132° 10' 34.591" W
Least Depth:	1.19 m
Timestamp:	2005-087.17:11:44.000 (03/28/2005)
DP Dataset:	h11404 / trb1_dpne / 2005-087 / tr1_087_obstrn3.shp
Profile/Beam:	3/1
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

EXT CFF OBSTRN.

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 4ft (531_1)

1.2m (50_1)

S-57 Data

Geo object 1:	Obstruction (OBSTRN)
Attributes:	INFORM - EXT CFF OBSTRN.
	RECDAT - 20050328
	VALSOU - 1.190 m

Office Notes

Retain ledge as charted

1.4) 10881

Survey Summary

Survey Position:	56° 20' 39.454" N, 132° 08' 21.647" W
Least Depth:	0.98 m
Timestamp:	2005-088.17:57:05.000 (03/29/2005)
DP Dataset:	h11404 / trb1_dpne / 2005-088 / tr1_088_sbdare3.shp
Profile/Beam:	1/1
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF RK IS SANDY SHOAL 0.8M DEPTH.

Hydrographer Recommendations

[None]

Cartographically-Rounded Depth (Affected Charts):

0 ½fm (17385_1, 17360_1, 16016_1, 530_1)

0fm 3ft (531_1)

1.0m (50_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	INFORM - CFF RK IS SANDY SHOAL 0.8M DEPTH.
	TECSOU - 5:found by lead-line

Office Notes

Remove charted rock, chart area according to this survey.

2 - AWOIS Features

2.1) AWOIS #53191 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	56° 21' 51.000" N, 132° 08' 42.000" W
Historical Depth:	[None]
Search Radius:	150
Search Technique:	VS,ES,S2,MB,DI
Technique Notes:	[None]

History Notes:

LNM47/95--17TH CGD; A FOUL AREA REP. 1995 PA WAS CHARTED IN POSITION LAT. 56/21/51N LONG. 132/08/42W (NAD 83). (ENTERED 12/04 BY JCA)

Survey Summary

Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Item not found with 100% multibeam. DtoN to south is likely the item but does not fall within radius.

Hydrographer Recommendations

Remove the Foul area PA.

S-57 Data

[None]

Office Notes

Remove danger curve and foul note

2.2) AWOIS #53192 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	56° 20' 54.000" N, 132° 08' 42.000" W
Historical Depth:	[None]
Search Radius:	200
Search Technique:	VS,ES,S2,MB,DI
Technique Notes:	[None]

History Notes:

LNM7/92--17TH CGD; A "LOG STORAGE PA" WAS REPORTED FOR ADDITION TO THE CHART IN POSITION LAT. 56/20/54N LONG. 132/08/42W (NAD 83). (ENTERED 12/04 BY JCA).

Survey Summary

Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Item not found using 100% multibeam and visual search.

Hydrographer Recommendations

Remove Log Storage.

S-57 Data

[None]

Office Notes

Remove charted log storage PA note.

2.3) AWOIS #53193 - OBSTRUCTION

No Primary Survey Feature for this AWOIS Item

Search Position:	56° 25' 07.900" N, 132° 14' 09.100" W
Historical Depth:	[None]
Search Radius:	200
Search Technique:	VS,ES,S2,MB,DI
Technique Notes:	[None]

History Notes:

CL1369/77--PACIFIC MARINE CENTER, UNITED STATES DEPARTMENT OF COMMERCE. AN ARMY CORP OF ENGINEERS PUBLIC NOTICE IDENTIFIES A "LOG STORAGE" AREA IN APPROXIMATE POSITION LAT. 56/25/07.9N, LONG. 132/14/09.1W (NAD 83) SCALED FROM CHART 17385. (ENTERED 12/04 BY JCA)

Survey Summary

Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

Item not found using 100% multibeam and visual search.

Hydrographer Recommendations

Remove Log Storage.

S-57 Data

[None]

Office Notes

Remove charted log storage note and dashed line.

3 - Dangers to Navigation

3.1) 835/24

DANGER TO NAVIGATION

Survey Summary

Survey Position:	56° 21' 32.906" N, 132° 08' 46.187" W
Least Depth:	16.39 m
Timestamp:	2005-086.19:53:44.710 (03/27/2005)
Survey Line:	h11404 / 1010_8101 / 2005-086 / 086-1947
Profile/Beam:	835/24
Charts Affected:	17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

8.92 fathom shoal in charted (17385) 31 fathoms. AWOIS item to north is likely this feature although it does not fall within radius.

Hydrographer Recommendations

Chart as 8 fathoms. Submit as DTON to MCD.

Cartographically-Rounded Depth (Affected Charts):

9fm (17385_1, 17360_1, 16016_1, 530_1)

7fm 0ft (531_1)

16.4m (50_1)

S-57 Data

Geo object 1:	Sounding (SOUNDG)
Attributes:	INFORM - 8.92 fathom shoal in charted (17385) 31 fathoms. AWOIS item to north is likely this feature although it does not fall within radius.
	QUASOU - 1,6:depth known,least depth known
	TECSOU - 3:found by multi-beam
	VERDAT - 12:Mean lower low water

Office Notes

Remove charted 8 fathoms depth. Chart a 9 fathom depth according to this survey.

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : January 3, 2006

HYDROGRAPHIC BRANCH: Pacific Hydrographic Branch
HYDROGRAPHIC PROJECT: OPR-O119-FA-2005
HYDROGRAPHIC SHEET: H11404

LOCALITY: Vicinity of Pt. Madan, Ernest Sound and Eastern Passage, AK
TIME PERIOD: March 27 - April 21, 2005

TIDE STATION USED: 945-1152 Madan Bay, AK
Lat. 56 23.53' N Long. 132 10.14' W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.670 meters

EMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SA121 & SA122

Refer to attachments for zoning information.

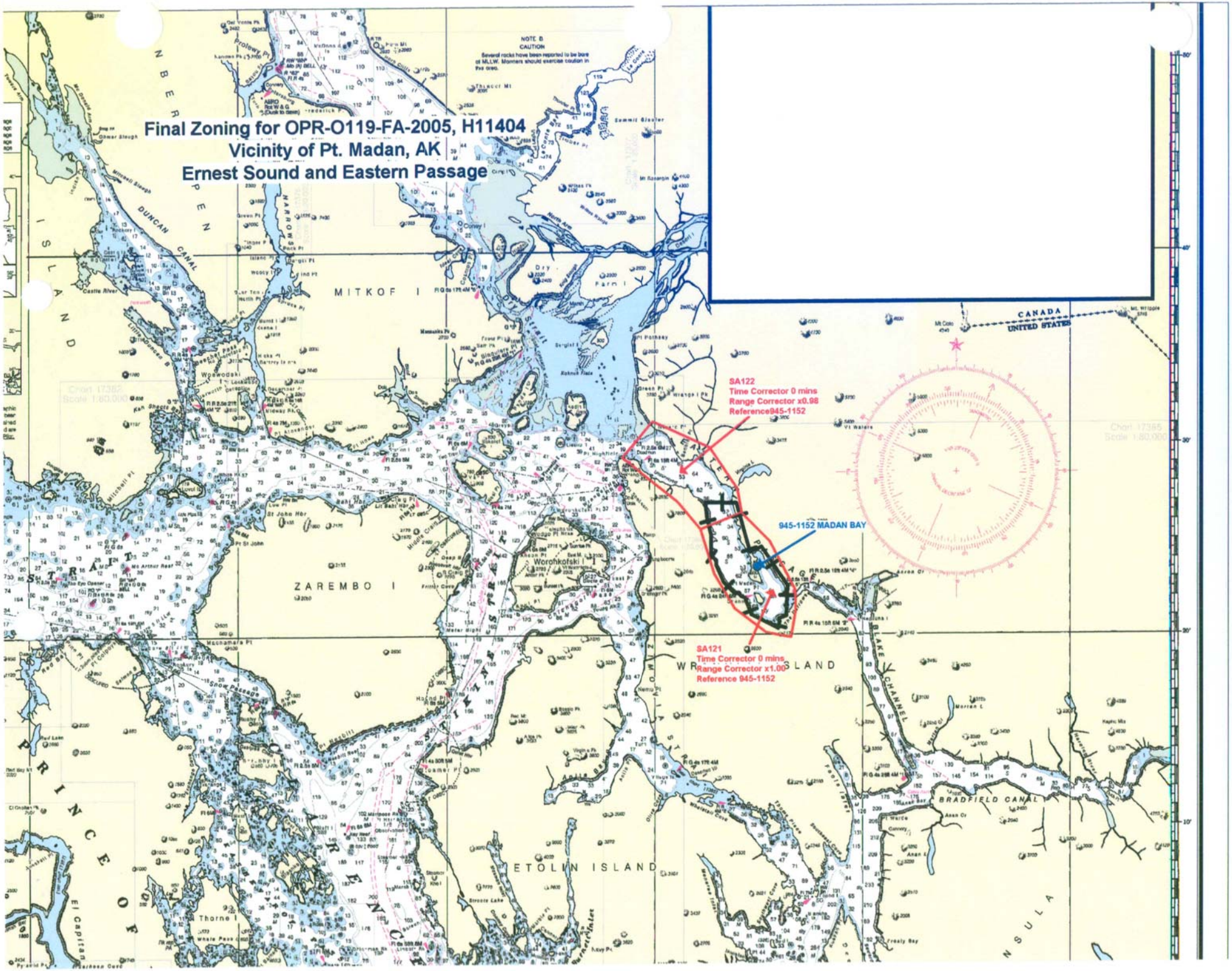
Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

CHIEF, PRODUCTS AND SERVICES DIVISION

Final tide zone node point locations for OPR-O119-FA-2005, H11404

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 SA121	945-1152	0	1.00
-132.194758 56.439468			
-132.148836 56.41392			
-132.109031 56.371645			
-132.108174 56.354054			
-132.115464 56.330751			
-132.155559 56.334711			
-132.205679 56.355659			
-132.238584 56.386356			
-132.260944 56.425084			
-132.194758 56.439468			
Zone SA122	945-1152	0	0.98
-132.386595 56.487683			
-132.298117 56.449197			
-132.260944 56.425084			
-132.194758 56.439468			
-132.201295 56.46038			
-132.245547 56.496045			
-132.337505 56.519025			
-132.386595 56.487683			


Final Zoning for OPR-O119-FA-2005, H11404
Vicinity of Pt. Madan, AK
Ernest Sound and Eastern Passage
SA122
Time Corrector 0 mins
Range Corrector x0.98
Reference945-1152
945-1152 MADAN BAY
SA121
Time Corrector 0 mins
Range Corrector x1.00
Reference 945-1152
MITKOF I
ZAREMBO I
WRANGELL ISLAND
ETOLIN ISLAND
PRINCE OF WALES I
CANADA
UNITED STATES
DUNCAN CANAL
BLAKE CHANNEL
BRADFIELD CANAL
NOTE B
CAUTION
Several rocks have been reported to be bare at MLLW. Mariners should exercise caution in the area.

APPROVAL SHEET
H-11404

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.

Charles R. Davies

The survey and associated records have been inspected with regard to survey coverage, 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.

Gary C. Nelson

Digitally signed by Gary C. Nelson
DN: cn=Gary C. Nelson, c=US, o=NOAA, ou=Pacific Hydrographic Branch, email=gary.nelson@noaa.gov
Date: 2008.05.29 08:02:08 -07'00'

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.

David Neander

David Neander
2008.05.29
09:43:18
-07'00'

Rachel Soraruf

Digitally signed by Rachel Soraruf
DN: cn=Rachel Soraruf, c=US, o=NOAA/NOS/OCS/HSD, ou=Operations Branch, email=Rachel.Sorasuf@noaa.gov
Date: 2008.06.02 11:45:58 -04'00'