

H11509

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. H11509

LOCALITY

State Alaska

General Locality Ernest Sound and Eastern Passage

Sublocality Eastern Portion of Bradfield Canal

2005

CHIEF OF PARTY

Captain John E. Lowell, Jr., NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET

H11509

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 AlaskaGeneral Locality Ernest Sound and Eastern PassageSublocality Eastern Portion of Bradfield CanalScale 1:10,000Date of Survey October 10, 2005-November 4, 2005Instructions Dated 1/4/2005Project No. OPR-O119-FA-05Vessel Launch 1010, Launch 1018Chief of Party CAPT John E. Lowell, Jr., NOAASurveyed by CST Morgan, LTjg Higgins, Ens FrenchSoundings taken by echo sounder RESON 8101ERGraphic record scaled by N/AGraphic record checked by N/AEvaluation by K. ReserAutomated plot by HP Designjet 1050CVerification by K. Reser, C. BarrySoundings in Fathoms and Feet

at

MLLWREMARKS: Time in UTC. UTM Projection Zone 9Revisions and annotations appearing as endnotes were
generated during office processing.As a result, page numbering may be interrupted or non-sequentialAll separates are filed with the hydrographic data.

B. DATA ACQUISITION 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 separate cover.³ Quality control procedures and data processing methods are listed and described in the *OPR-0119-FA-05 Fall Data Acquisition and Processing Report (DAPR)*, submitted under separate cover.⁴ 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 during this survey are listed in Table 1.

	Launch 1010	Launch 1018	Fast Rescue Boat	Ambar 700
Hull Registration Number	1010	1018	2301	2302
Builder	The Boat Yard, Inc.	The Boat Yard, Inc.	Zodiac of North America	Marine Silverships, Inc
Length Overall	28' 10"	28' 10"	22'	23'
Beam	10' 8"	10' 8"	8' 6"	9' 4"
Draft, Maximum	4' 0" DWL	4' 0" DWL	1' 10"	1' 4"
Cruising Speed	24 knots	24 knots	20 knots	22 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	MBES	Shoreline	Shoreline

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 H11509 were manually examined by the Hydrographer in CARIS subset mode. The internal consistency and integrity of data collected for survey H11509 were found to be very good.⁵

Crosslines

Shallow water multibeam crosslines for this survey totaled 7.15 linear nautical miles (lnm), comprising 10% of the 71.47 lnm of total SWMB hydrography.

The Hydrographer determined through manual examination of the data that the crossline agreement with main scheme data which meets the vertical accuracy requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁶

Junctions

Survey junctions with H11508, which is Sheet F of the same project. The area of overlap between the sheets was approximately 250 meters wide. Data were reviewed in CARIS Subset Editor and depths were found to be consistent between the two surveys, meeting the requirements as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁷ The sheet limits and area of overlap for Sheets G and F are shown in Figure 2.

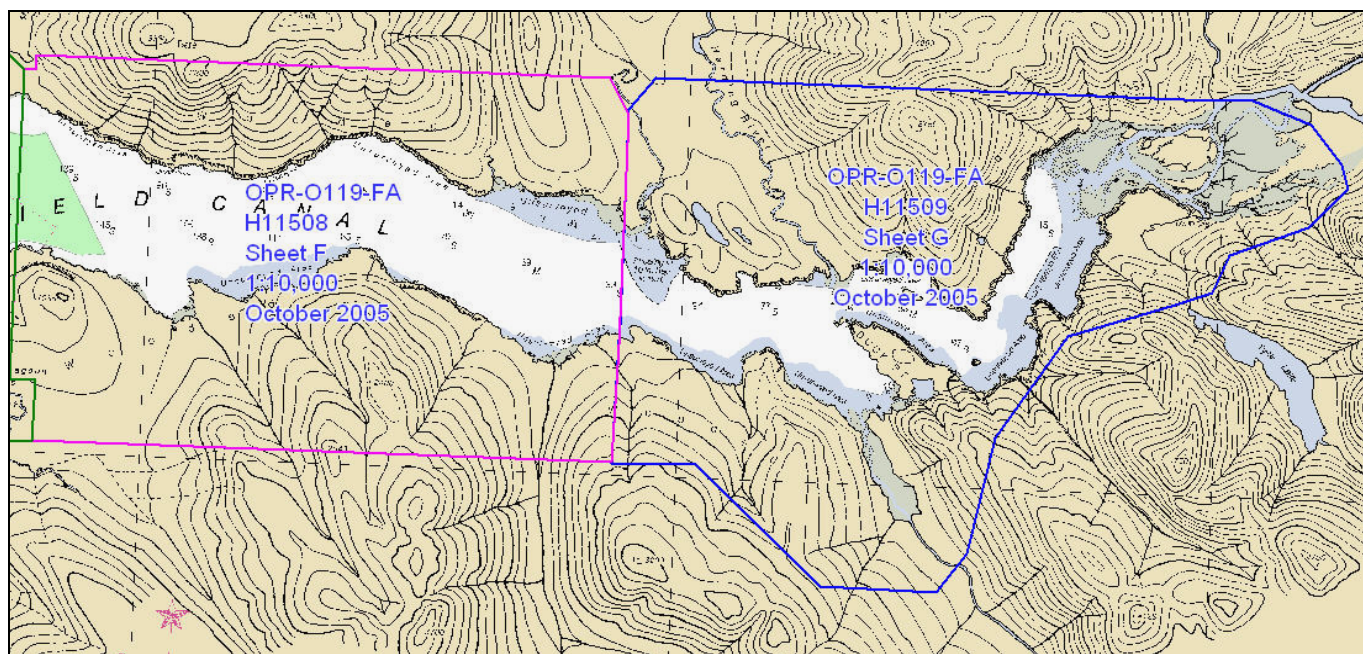


Figure 2: Junction Between H11508 and H11509

Quality Control Checks

MBES quality control checks were conducted as discussed in the quality control section of the *OPR-0119-FA-05 Fall Data Acquisition and Processing Report*.

Data Quality Factors

COVERAGE ASSESSMENT:

Coverage assessment was determined using the following base surface resolutions listed below in Table 2.

Depth Ranges (m)		Resolution (m)
0	40	0.8
20	80	2
50	160	5
130	300	12

Table 2: Depth Ranges and Resolutions

POSITIONING:

During acquisition on launch 1018, day number 308, line 308-1837, time 18:38.23, the DGPS position was lost due to the surrounding topography. The soundings after this time do not meet specifications and were deleted in subset editor. Positions collected prior to time 18:38.23 are consistent with parallel lines and meet specification. Subsequently, soundings should be used for determining the base surfaces. Deleting this portion of the line does not create a loss in coverage.⁸

SOUND VELOCITY:

Sound velocity errors are evident in one localized area 0.7mi northeast of Duck Pt.. Specifically lines 286-1944, 286-1953, 286-1959, 286-2052, and 286-2058 which were run on day number 286 in vessel 1010. This was caused by the large amount of fresh water runoff. Data in this area were filtered to reject data beyond 55° from nadir, which reduced the effects of the sound velocity error and brought the data within the specifications outlined in the *NOS Hydrographic Surveys Specifications and Deliverables*.⁹

Accuracy Standards

All data meet the data accuracy specifications as stated in the *NOS Hydrographic Surveys Specifications and Deliverables*, dated March 2003.¹⁰

B3. Corrections to Echo Soundings

Data reduction procedures for survey H11509 conform to those detailed in the of the *Fall OPR-O119-FA-05 Data Acquisition and Processing Report*.

C. HORIZONTAL AND VERTICAL CONTROL

A complete description of horizontal and vertical control for survey H11509 can be found in the *OPR-O119-FA-05 Fall Horizontal and Vertical Control Report*, submitted under separate cover.¹¹ 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 came from the U.S. Coast Guard beacons at Annette Island (323kHz) and Level Island (295 kHz).

Distances from the U.S. Coast Guard beacons combined with fjord-like topography created weak signal to noise ratios for the DGPS corrections within the project area. Occasionally the corrector signal from a beacon would be lost. When that occurred a launch would move away from the shoreline to re-acquire the signal or switch to another corrector station. Switching stations is known to shift the relative horizontal position by a few meters, which causes vertical errors in regions with steep slope. Data affected by this issue has been reviewed and it meets the horizontal accuracy required by the *NOS Hydrographic Surveys Specifications and Deliverables* dated March 2003. ¹²

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 H11509.

FAIRWEATHER personnel installed one Sutron 8210 “bubbler” tide gauge (Gauge #12 S/N 023512) at the tertiary station listed below. The gauge was 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
Bradfield Canal, AK	945-1012	Tertiary 30 Day	October 8, 2005	November 7, 2005

A request for delivery of approved water level data (smooth tides) for survey H11509 was forwarded to N/OPS1 on November 14, 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. ¹³

FAIRWEATHER received verified water level data for NWLON tertiary 30 day tide station Bradfield Canal, AK (945-1012) and the Tide Note for Hydrographic Survey H11509 on December 22, 2005. The Tide Note included a new zone file which was applied to the data. Application of smooth tides and the new zone file by FAIRWEATHER were not required in Project Instructions, but because they were made available by CO-OPS they were applied. The Tide Note for Hydrographic Survey H11509 and ancillary correspondence are included in Appendix IV. ¹⁴

As per the letter instructions, all data were reduced to MLLW using the observed water level data from station Ketchikan, AK by applying tide file 9450460.tid and time and height correctors through the zone corrector file O119FA2005CORP.zdf during acquisition. Once verified tides and final zoning were available, all data were reduced to MLLW using the verified water level data (smooth tides) from station Bradfield Canal, AK by applying tide file 9451012.tid and time and height correctors through the revised

zone corrector file H115092005CORF.zdf. It will not be necessary for the Pacific Hydrographic Branch to apply the verified water level data (smooth tides) to the survey data during final processing.

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

The appropriate resolution BASE surface was brought into Pydro by means of the Insert BASE/Weighted Grids function. The BASE surface soundings were 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 BASE soundings in the Chart window.

Survey H11509 was compared with charts 17360 (33rd Ed.; May 01, 2003, 1:217,828) updated with the Notice to Mariners through December 18, 2005, and 17385 (15th Ed.; February 01, 2005, 1:80,000) corrected through Notice to Mariners September 24, 2005.

Chart 17385

Survey H11509 effected ten soundings from chart 17385. Depths from survey H11509 generally agreed within five fathoms with soundings on the chart. Exceptions are as follows:

Survey depths in the area of the charted forty six fathom sounding at 56°11'55.236"N, 131°37'06.918"W (337544.72E , 6231277.85N) range from sixteen to twenty four fathoms.¹⁵

The depths surrounding the charted thirty three fathoms sounding at 56°12'02.054"N , 131°41'19.317"W (333204.52E , 6231656.03N) ranged between thirty nine to sixty two fathoms.¹⁶

The forty fathoms sounding at 56°11'04.149"N, 131°36'05.735"W (338539.20E , 6229659.09N) is in an area of surveyed depths of zero to sixteen fathoms.¹⁷

The two fathoms sounding at 56°10'56.619"N, 131°36'26.486"W (338172.76E , 6229439.88N) is in an area of surveyed depths of nineteen to thirty fathoms.¹⁸

It is also recommended that a charted island 2500 meters southeast of Duck Pt. be removed from Chart 17385. This charted island was disproved by obtaining 100% multibeam over the area.¹⁹

Chart 17360

The comparison of chart 17360 could not be completed due to the age and scale of the chart.²⁰

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 2003.²¹ The BASE surfaces with the application of designated soundings²² and associated HDCS data are adequate to supersede prior surveys in common areas.²³ Based on the application of verified

water level data (smooth tides) by FAIRWEATHER, final chart comparisons are not required by the Pacific Hydrographic Branch.

Automated Wreck and Obstruction Information System (AWOIS) Investigations

There was one AWOIS item located within the limits of H11509. This AWOIS item is addressed in the H11509_Features.pdf in Appendix I.²⁴

Dangers to Navigation

There were no dangers to navigation found within the survey limits.²⁵

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 into CARIS Notebook 2.2 as an editable layer named H11509_Edited_CFF_Shoreline.hob, with all objects having S57 attribution. In addition, features from the current editions of charts 17360 and 17385 that were not depicted by the source shoreline data were digitized in Mapinfo and then imported into in CARIS Notebook attributed with S57 into H11509_Charted_Shoreline.hob file.

Shoreline Verification

FAIRWEATHER personnel conducted limited shoreline verification at times near predicted low water, in accordance with the Standing Project Instructions.²⁶ 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*.²⁷ In addition, annotations describing shoreline were recorded on hard copy plots of the digital shoreline.

The shoreline features in the northeastern end of Bradfield Canal could not be verified due to shoaling. Marker text was used to flag this area in CARIS Notebook.

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, Delete, or None was assigned to each item in Pydro, and all features were S57 attributed.

All accepted and primary detached and generic positions were imported from the Pydro .xml to three separate stand alone .hob files in CARIS Notebook 2.2. These were named H11509_Add_Pydro.hob, H11509_Modify_Pydro.hob, and H 11509_Delete_Pydro.hob.

Source Shoreline Changes, New Features and Charted Features

Items for survey H11509 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 H11509_Features.pdf in Appendix I.²⁸

Three additional .hob layers, named H11509_Add_Ntbk.hob, H11509_Modify_Ntbk.hob and H11509_Delete_Ntbk.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 _Edited_CFF_Shoreline.hob file. Field notes made by the Hydrographer on the boat sheets and DP forms²⁹ were transferred to the remarks field for each feature.

Shoreline Recommendations

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.³⁰

Aids to Navigation

There were no aids to navigation within the survey limits.³¹

Bottom Samples

Bottom samples were collected on October 13 (DN 286), and October 25 (DN 298) 2005 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 _Add_Features.hob file.³²

E. Supplemental Reports

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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Hydrographic Systems Certification Report 2005	April 18, 2005	N/CS34
OPR-O119-FA-05 Fall Data Acquisition and Processing Report	April 24, 2006	N/CS34
OPR-O119-FA-05 Fall Horizontal & Vertical Control Report	Nov 17, 2005	N/CS34, N/OPS1



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

April 10, 2006

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

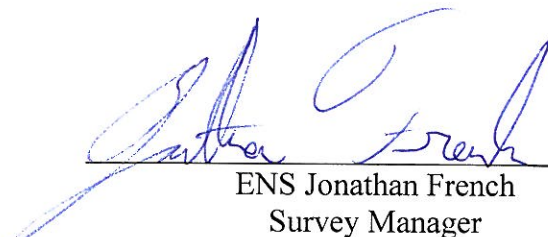
FROM: CAPT John E. Lowell, Jr, NOAA
Commanding Officer, NOAA Ship FAIRWEATHER

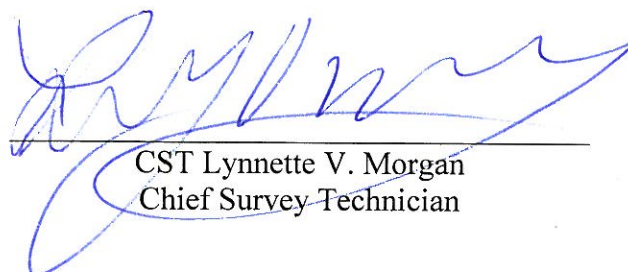
TITLE: Approval of Hydrographic Survey H11509,
OPR-O119-FA

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during acquisition and processing of hydrographic survey H11509 in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, March 2005 Version 1.1; 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:


ENS Jonathan French
Survey Manager


CST Lynnette V. Morgan
Chief Survey Technician

Attachment



¹ Do not concur. Survey extents are: North: Lat. 56°13'00.6" N, Long. 131°33'25.1" W; South: Lat. 56°10'44.0" N, Long. 131°36'15.5" W; East: Lat. 56°12'36.8" N, Long. 131°32'19.5" W; West: Lat. 56°11'50.5" N, Long. 131°41'33.0" W.

² Do not concur. See end note 26.

³ Filed with the Project Records.

⁴ Filed with the Project Records.

⁵ Concur

⁶ Concur.

⁷ Concur.

⁸ Concur.

⁹ Do not concur. In a few places where sound speed issues were noted in the Descriptive Report, the data exceeds the error budget by approximately 0.2m. Despite the vertical errors, the data does not appear to significantly alter the shape and depth of the BASE surfaces and is adequate to supersede prior survey data within the common area.

¹⁰ Do not concur. See end note 9.

¹¹ Filed with the Hydrographic Records.

¹² Concur

¹³ Filed with the Hydrographic Records.

¹⁴ See attached Tide Note dated December 22, 2005.

¹⁵ Concur.

¹⁶ Concur.

¹⁷ Concur. This was not reported as an office Danger to Navigation because of the close proximity of the charted 40 fm sounding to the charted "Unsurveyed Area".

¹⁸ Concur.

¹⁹ The absence of the island was also visually noted.

²⁰ Do not concur. Age and scale were not an issue and comparison to chart 17360 was conducted during office processing. Differences ranging from 2 to 5 fathoms were common. With the exception of a 5 fm sounding generalized offshore to 38 fm depth, (Lat. 56°11'05"N, Long. 131°36'21"W), the same discrepancies noted for chart 17385 are also noted for the smaller scale 17360, but with greater differences due to greater generalization of soundings offshore. In the area where chart 17385 shows a note, "Shoaling to 10 fm Rep in 1976", chart 17360 shows a 10 fm shoal in water depths of 96-106 fm.

²¹ While the surfaces indicate that data meets accuracy requirements as specified in the HSSDM, also noted during the SAR (Survey Acceptance Review) were instances not in compliance with the NOAA accuracy standards: (1) A small patch of Order 2 data identified in 40-54m of water in the northwest corner of the survey area. Despite being out of spec, the data agrees well with the surrounding data. (2) A 2-2.5m difference between the outer beams of lines 283-2001 and 293-2247 collected by vessel 1010. (3) An associated artifact in the 5 and 12m BASE surfaces that is rectangular and looks like a possible data cleaning error. (4) Evidence of artifacts where outer beams overlap in the 2m and 5m BASE Surfaces. The depth of the water here is 155-160m, so the data may be used to supersede existing data.

²² No soundings were designated in this survey.

²³ Concur.

²⁴ Concur. However, note that the year given for AWOIS investigation #53305 is incorrect in the Survey Features Report, H11509_Features.pdf, in Appendix I. The year shown in the Survey Summary, Remarks section, is given as 2006; the investigation was conducted in 2005.

²⁵ Concur.

²⁶ Examination of the BASE Surfaces revealed a few instances where the inshore limits of hydrography and shoreline verification fail to reach the 8 meter curve. However, these are areas of the survey that lead abruptly to mud flats on the chart.

²⁷ Filed with the Hydrographic Records.

²⁸ See attached Features Report.

²⁹ Filed with the Hydrographic Records.

³⁰ Concur with clarification. There were numerous instances of conflicts between hydrography and GC shoreline. These have been rectified for compilation to the HCell. See the HCell Report, Sec. 9.2, Conflicts Between Shoreline and Hydrography.

³¹ Concur.

³² Bottom samples were collected with H11509 and are included in the HCell. Four additional bottom characteristics in areas not sampled for this survey were imported from the ENC to be retained.

Registry Number: H11509
State: ALASKA
Locality: Ernest Sound and Eastern Passage
Sub-locality: Eastern Portion of Bradfeld Canal
Project Number: OPR-O119-FA
Survey Dates: 11/03/2005 - 04/07/2006

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.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	AWOIS	[no data]	[no data]	[no data]	---
1.2	GP	[None]	56.18048924° N	131.60444056° W	---
1.3	GP	[None]	56.19571912° N	131.61524950° W	---
1.4	GP	[None]	56.18911864° N	131.57456418° W	---

1 - New Features

1.1 AWOIS #53305 - #53305

Search Position: 56.20497222° N, 131.55444444° W
Historical Depth: [None]
Search Radius: 750
Search Technique: VS
Technique Notes: [None]

History Notes:

CL1369/77--CofE REPORTED CONSTRUCTION OF A LOG RAFT STORAGE AREA IN BRADFIELD CANAL IN SCALED POSITION LAT. 56/12/17.9N LONG. 131/33/16W (NAD83). USE OF THIS AREA SCHEDULED FOR TERMINATION IN 1980. (ENTERED 10/05 BY JCA)

Survey Summary

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

Remarks:

LOG STORAGE ED DISPROVAL
 INVESTIGATION

VESSEL: 1010 DATE(S) TIME(S): 10/10/06 (DN:283) TIME 1850-2231, 10/13/06 (DN:286) TIME 1714-2216, 10/20/06 (DN:293) TIME 2050-0012.

VESSEL: 1018 DATE(S) TIME(S): 11/02/06 (DN:306) TIME 2000-0059, 11/04/06 (DN:308) TIME 1814-1959.

INVESTIGATION METHODS USED: 200% MBES, VISUAL

POSITION DETERMINED BY: DIFFERENTIAL GPS

INVESTIGATION SUMMARY: During a MBES and visual search of the area over a number of days no evidences of a Log Storage ED was found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
H11509_AWOIS	AWOIS # 53305	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends removal of log storage area from chart (17385). Office Processing Notes: **Concur**

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)

1.2) GP No. - 1 from TR2_307_\$CSYMB_P.shp

Survey Summary

Survey Position: 56.18048924° N, 131.60444056° W
Least Depth: [None]
Timestamp: 2005-307.18:22:17.000 (11/03/2005)
GP Dataset: TR2_307_\$CSYMB_P.shp
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CFF RK DISPROVAL

A visual search was conducted for 10 minutes with visibility of 2 meters in depth. The sea state was calm, in a search radius of 80 meters. One hundred percent multibeam was also acquired over the area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
TR2_307_\$CSYMB_P.shp	1	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends removal of this rock from chart (17385). Office Processing Notes: **Concur**

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: RECDAT - 20051103

1.3) GP No. - 2 from TR2_307_\$CSYMB_P.shp

Survey Summary

Survey Position: 56.19571912° N, 131.61524950° W
Least Depth: [None]
Timestamp: 2005-307.18:36:46.000 (11/03/2005)
GP Dataset: TR2_307_\$CSYMB_P.shp
GP No.: 2
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHD (17385) RK DISPROVAL

A visual search was conducted for 4 minutes with visibility of 2 meters in depth. The sea state was calm, in a search radius of 50 meters. One hundred percent multibeam was also acquired over the area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
TR2_307_\$CSYMB_P.shp	2	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends removal of this rock from chart (17385). Office Processing Notes: **Concur**

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)
Attributes: RECDAT - 20051103

1.4) GP No. - 1 from ChartGPs - Digitized

Survey Summary

Survey Position: 56.18911864° N, 131.57456418° W
Least Depth: [None]
Timestamp: 2006-097.08:33:29 (04/07/2006)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 17385_1, 17360_1, 16016_1, 531_1, 530_1, 50_1

Remarks:

CHARTED ISLAND DISPROVAL
 INVESTIGATION
 VESSEL: 1010 DATE(S) TIME(S): 10/20/06 (DN:293) TIME 2152 AND 2247, LINE NUMBERS 293-2152, AND 293-2247
 INVESTIGATION METHODS USED: 100% MBES, VISUAL
 POSITION DETERMINED BY: DIFFERENTIAL GPS
 INVESTIGATION SUMMARY: During a MBES and visual search of the area, no evidence of an island was found.

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

The Hydrographer recommends removal of the island from chart (17385). Office Processing Notes: **Concur**

S-57 Data

Geo object 1: Cartographic symbol (\$CSYMB)



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : December 22, 2005

HYDROGRAPHIC BRANCH: Pacific Hydrographic Branch
HYDROGRAPHIC PROJECT: OPR-O119-FA-2005
HYDROGRAPHIC SHEET: H11509

LOCALITY: Eastern Portion of Bradfield Canal, Ernest Sound and Bradfield Canal, AK
TIME PERIOD: October 10 - November 6, 2005

TIDE STATION USED: 945-1012 Bradfield Canal, AK
Lat. 56 11.75' N Long. 131 33.47' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.770 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SA119A

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).

FA


CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

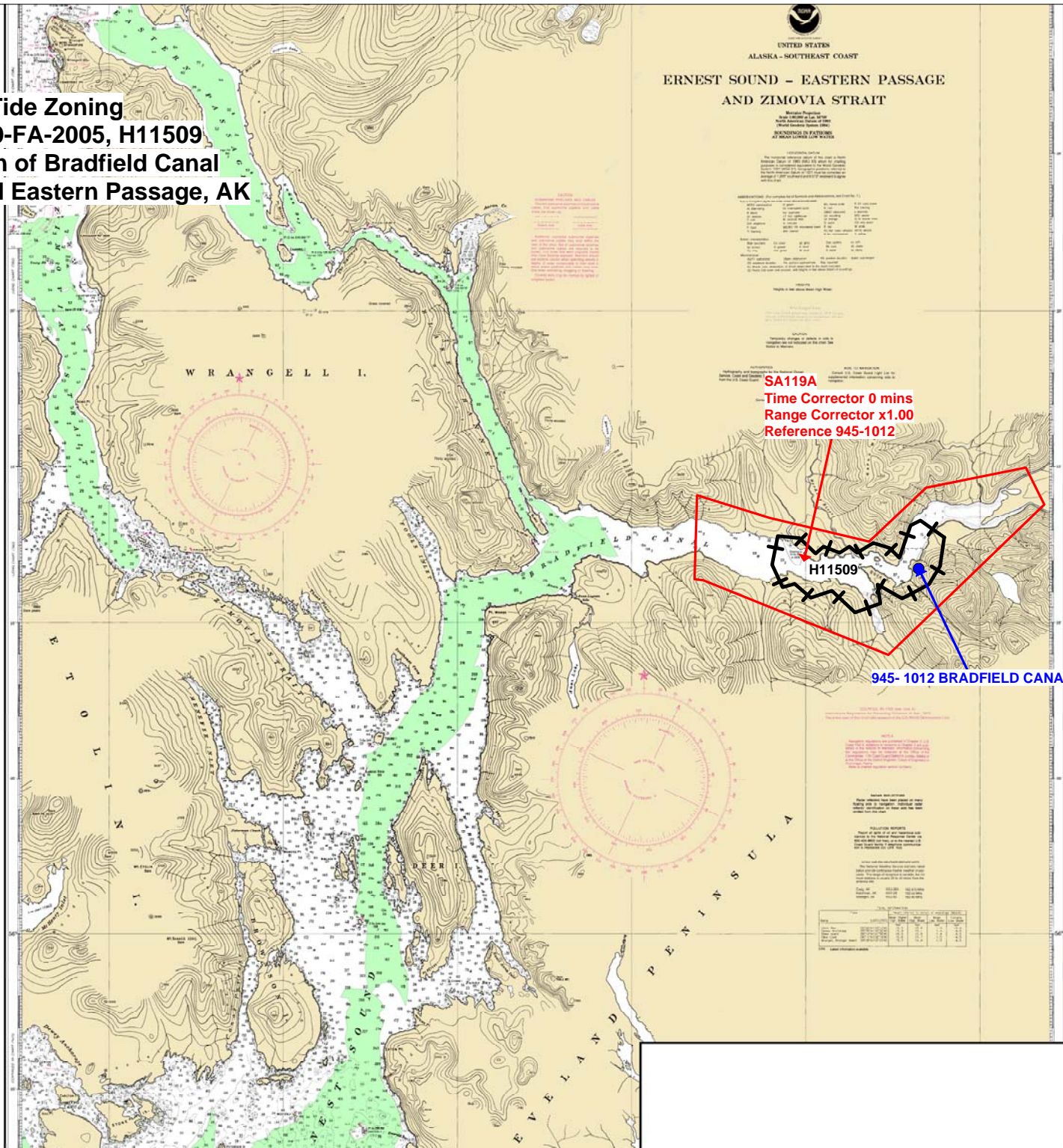


Final tide zone node point locations for OPR-O119-FA-2005, H11509

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 SA119A	945-1012	0	1.00
-131.7643 56.189578			
-131.586935 56.149695			
-131.437623 56.229946			
-131.455325 56.249661			
-131.550761 56.238948			
-131.605406 56.210221			
-131.700851 56.222866			
-131.77009 56.234928			
-131.772496 56.190087			
-131.7643 56.189578			

**Final Tide Zoning
for OPR-O119-FA-2005, H11509
Eastern Portion of Bradfield Canal
Ernest Sound and Eastern Passage, AK**



H11509 HCell Report
Cathleen Barry, Cartographer
Pacific Hydrographic Branch

Introduction

The primary purpose of the HCell is to provide new survey information in International Hydrographic Organization (IHO) format S-57 to update the largest ENC and RNC in the region: NOAA ENC, US4AK3OM, and NOAA RNC, 17385.

HCell compilation of survey H11509 utilized Office of Coast Survey HCell Specifications Version 3.0, with approved modifications to better meet MCD needs.

1. Compilation Scale

Depths for HCell H11509 were compiled to the largest scale chart in the region, 17385, 1:80,000. Much of the chart coincident with H11509 was previously unsurveyed, so density and distribution of soundings emulate more fully surveyed chart areas west of H11509. Non-bathymetric features have not been generalized to chart scale; their position, characterization and density are as delivered from the field.

2. Soundings

A survey-scale sounding (SOUNDG) feature object layer was built from the 12-meter Combined Surface, **H11509_Combined**, in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below. The resultant sounding layer contains 6,076 depths ranging from 0 to 195.015 meters.

Upper limit (m)	Lower limit (m)	Radius (mm)
-4.7	10	3
10	20	4
20	50	4.5
50	200	5

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

3. Depth Areas and Depth Contours

3.1 Depth Areas

The extents of the highest resolution BASE Surface together with the extents of the soundings layer were used to digitize the hydrographic extents, which were then used to create the single, all encompassing depth area (DEPARE). A single depth range, from 0 to 200 meters, was used for the depth area object. Upon conversion to NOAA charting units, this depth range is 0 to 109 fathoms.

3.2 Depth Contours

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

Chart Contours in Fathoms	Metric Equivalent of Chart Contours	Metric Equivalent of Chart Contours Generalized	Actual Value of Chart Contours
0	0	0.2286	0
3	5.4864	5.715	3.125
10	18.288	18.5166	10.125
50	91.44	92.8116	50.750

Contours delivered in the *_SS file have not been deconflicted against shoreline features, soundings and hydrography as all other features in the *_CS file and soundings in the *_SS have been. This results in conflicts between the *_SS file contours and HCell features at or near the survey limits. Conflicts with M_COVR, M_QUAL, DEPARE, COALNE and SBDARE objects, and with DEPCNT objects representing MLLW, should be expected. HCell features should be honored over *_SS.000 file contours in all cases where conflicts are found.

Some modifications made to GC shoreline MLLW contours, to bring the GC shoreline into agreement with H11509 hydrography, necessitated inclusion of several DEPCNT features in the HCell. These 0 value contours have not been generalized. See 9.2 *Conflicts between Shoreline and Hydrography*.

4. Meta Areas

The following Meta object areas are included in HCell 11509:

M_QUAL
M_COVR

Meta area objects were constructed on the basis of the limits of the hydrography. (See 3.1 *Depth Areas*.)

5. Features

Shoreline features for H11509 were delivered from the field in nine different hob files defining new features, modification to GC or charted features, and disprovals. These were deconflicted against GC shoreline, the chart and hydrography during office processing.

During office processing, several submerged rocks, a single obstruction area and numerous rocky seabeds were digitized from the high resolution BASE Surfaces.

The source of all features included in the H11509 HCell can be determined by the SORIND field.

6. S-57 Objects and Attributes

The *_CS HCell contains the following Objects:

\$CSYMB	Blue notes
COALNE	Modified GC coastline
DEPARE	The all-encompassing depth area
DEPCNT	Modified GC MLLW
M_COVR	Data coverage Meta object
M_QUAL	Data quality Meta object
OBSTRN	Obstruction area object
SBDARE	Modified GC ledges and reefs, bottom samples, and rocky seabed areas
SOUNDG	Soundings at the chart scale density
UWTROC	Rock features

The *_SS HCell contains the following Objects:

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

All S-57 Feature Objects in the *_CS HCell have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with current guidance and the OCS HCell Specifications.

7. Blue Notes

Notes to the RNC and ENC chart compilers are included in the HCell as \$CSYMB features with the Blue Note information located in the INFORM field. By agreement with MCD, the NINFOM field is populated with an abbreviated version of the Blue Note (30 characters or less), describing the chart disposition, to be used by MCD in generating their Chart History spreadsheet.

8. Spatial Framework

8.1 Coordinate System

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

8.2 Horizontal and Vertical Units

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

Chart Unit Base Cell Units:

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

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

BASE Editor and S-57 Composer Units:

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

Conversion to charting units and application of NOAA rounding is completed in the same step, at the end of the HCell compilation process.

Conversion to fathoms and feet charting units with NOAA rounding ensures that:

- All depths deeper or equal to 11 fathoms display as whole fathoms.
- All depth units between 0 fathoms (MLLW) and 11 fathoms display as fathoms and whole feet.
- All depth units skyward of 0 fathoms (MLLW) to 2.0 feet above MHW display in feet for values that round to 5 feet or less, and in fathoms and feet skyward of that.
- All height units (HUNI) which have been converted to charting units, and that are 2.00 feet above MHW and greater, are shown in feet.

In an ENC viewer fathoms and feet depth units (DUNI) display in the format X.YZZZ, where X is fathoms, Y is feet, and ZZZ is decimals of the foot. In an ENC viewer, heights (HUNI) display as whole feet.

9. Data Processing Notes

9.1 Junction with H11508

H11509 junctions with H11508, submitted in December 2008. A common junction was not made between the two surveys during the earlier compilation. During compilation of H11509 a logical boundary honoring shoal soundings and selected depths was created for the western extent of H11509. The H11509 HCell should supersede H11508 in the common area.

9.2 Conflicts between Shoreline and Hydrography

There are numerous instances of GC shoreline in conflict with hydrography. These were examined using the highest resolution Surfaces. CARIS HIPS and Google Earth were also used to resolve ambiguities in some cases. Many of the conflicts were determined to result from overhanging vegetation in the steep nearshore terrain. Conflicts were resolved by either rejecting the hydrography and adjusting the survey limits accordingly, or by making modifications to the GC shoreline. Approximately 45 adjustments were made to COALNE, DEPCNT (MLLW) and SBDARE (ledge) line objects. These objects are outside the M_COVR area, but included in the HCell.

10. QA/QC and ENC Validation Checks

H11509 was subjected to QA checks in S-57 Composer prior to exporting to the HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to a chart units and NOAA rounding applied. dKart Inspector was then used to further check the data set for conformity with the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and warnings and errors investigated and corrected unless they are MCD approved as inherent to and acceptable for HCells.

11. Products

11.1 HSD, MCD and CGTP Deliverables

- H11509 Base Cell File, Chart Units, Soundings compiled to 1:80,000
- H11509 Base Cell File, Chart Units, Soundings compiled to 1:10,000
- H11509 Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items

11.2 File Naming Conventions

- Chart units base cell file, chart scale soundings H11509_CS.000
- Chart units base cell file, survey scale soundings H11509_SS.000
- Descriptive Report H11509_DR.pdf

11.3 Software

CARIS HIPS Ver. 6.1	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.1	Creation of soundings and bathy-derived features, creation of the depth area, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
Google Earth EC, Ver. 5.0	Assistance in resolving ambiguities where GC shoreline overlaps bathymetry.
CARIS S-57 Composer Ver. 2.0	Final compilation of the HCell, correct geometry and build topology, apply final attributes, export the HCell, and QA.
CARIS GIS 4.4a	Setting the sounding rounding variable for conversion of the metric HCell to NOAA charting units with NOAA rounding.
CARIS HOM Ver. 3.3	Perform conversion of the metric HCell to NOAA charting units with NOAA rounding.
HydroService AS, dKart Inspector Ver. 5.1	Validation of the base cell file.
Newport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

12. Contacts

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

Cathleen Barry, Cartographer, PHB, Seattle, WA; 206-526-6841; Cathleen.Barry@noaa.gov.

APPROVAL SHEET
H11509

The survey evaluation and verification has been conducted according to branch processing procedures and the HCell 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 HCell, accompanying data, and reports. This survey and accompanying digital data meet or exceed OCS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.