F00610

NOAA Form 76-35A

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Survey

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: F00610

LOCALITY

State: Oregon

General Locality: Approaches to Yaquina Bay

Sub-locality: Approaches to Yaquina Bay

2012

CHIEF OF PARTY
Commander Richard T. Brennan

LIBRARY & ARCHIVES

Date:

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

HYDROGRAPHIC TITLE SHEET

REGISTRY No

F00610

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

FIELD No: N/A

State **Oregon**

General Locality **Approaches to Yaquina Bay**

Sub-Locality **Approaches to Yaquina Bay**

Scale **1:5,000** Date of Survey **March, 17 - April 10, 2012**

Instructions dated **3/16/2012** Project No. **S-M917-FARA-12**

Vessel **NOAA Ship FAIRWEATHER & NOAA Ship RAINIER**

Chief of party **Commander Richard T. Brennan, NOAA**

Surveyed by **FAIRWEATHER & RAINIER personel**

Soundings by **Reson 8125, Reson 7125**

SAR by **Tyanne Faulkes** Compilation by **N/A**

Soundings compiled in **N/A**

REMARKS: **All times are UTC. UTM Zone 10**

Survey F00610 failed to meet specifications, as such data are not suitable for charting.

All separates are filed with the hydrographic data. Page numbering may be interrupted or non sequential.

All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via http://www.ngdc.noaa.gov/.

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Descriptive Report to Accompany Survey F00610

Project: S-M917-FARA-12

Locality: Approaches to Yaquina Bay

Sublocality: Approaches to Yaquina Bay

Scale: 1:5000

March 2012 - April 2012

NOAA Ship FAIRWEATHER & NOAA Ship RAINIER

Chief of Party: Commander Richard T. Brennan

A. Area Surveyed

The entrance to Yaquina Bay is protected by rock jetties 310 meters apart. The northern jetty, with the outer 120 meters submerged, extends out to the Yaquina Reef. The channels are marked by lighted ranges, lights, and buoys. Between the jetties, numerous submerged rocks lie along the outside of the charted entrance channel limits. During the summer months, the swell is approximately parallel with the coast, the bar is comparatively smooth, being partially sheltered by Yaquina Head. In winter, however, the heavy westerly swell makes the bar very rough.

A.1 Survey Limits

Data was acquired within the following survey limits:

Northeast Limit	Southwest Limit
44.6181502778 N 124.066363333 W	44.5940713889 N 124.111186667 W

Table 1: Survey Limits

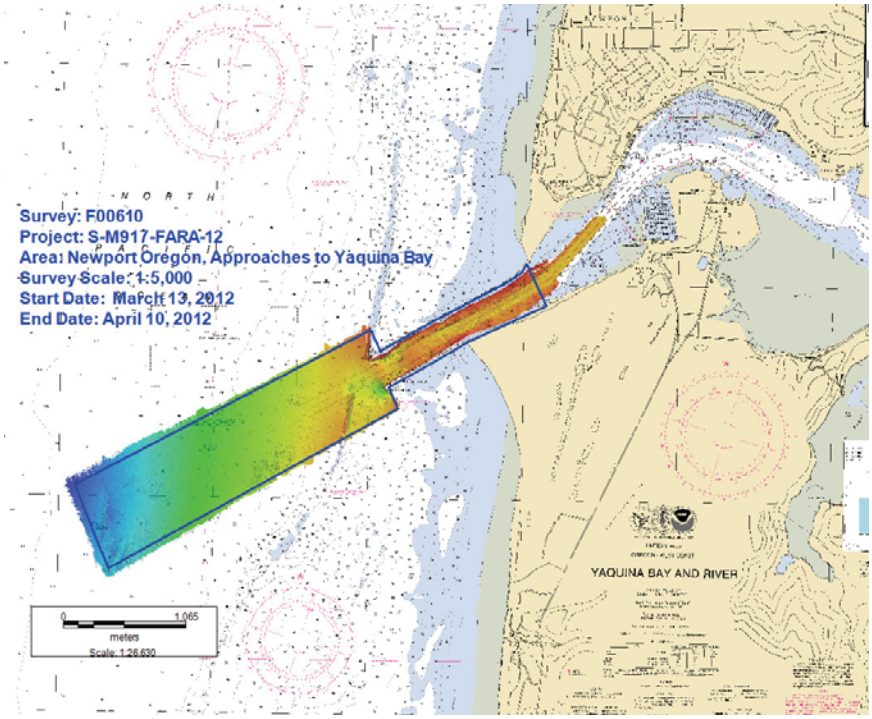


Figure 1: Yaquina River approaches

Survey Limits were acquired in accordance with the requirements in the Project Instructions and the HSSD.

A.2 Survey Purpose

The purpose of this project is twofold. First it is to provide a contemporary survey updating National Ocean Service (NOS) nautical charting products. Secondly, this project responds to requests from the US Coast Guard and the Army Corps of Engineers to find the location of the sunken F/V Chevelle which was last seen on March 11, 2012 aground on the southern edge of the northern jetty.

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

Data acquired on survey F00610 met the complete object detection requirements. Complete multibeam coverage was obtained in the survey area with few gaps in coverage found near the slopes of the breakers on the northern side of the jetty approaching Yaquina Bay. There are 3 holidays larger than 3 nodes across. Two are located in the northeast corner of the sheet extending towards the very end of the northernmost jetty at a depth of 5 and 10 m. The area was deemed unsafe at the time of acquisition causing the gaps in coverage. The holidays are results from heavy wave action introducing air into the water column. No navigationally significant items were found; additionally, the least depths were represented.

The third holiday is located inside the jetty at the very northeast corner. The 4 node holiday's corresponding multibeam backscatter data, as well as the 100% side scan data were examined and no navigationally significant items were found. The least depths were represented.

The locations of these holidays are shown below in Figure 2 and 3.

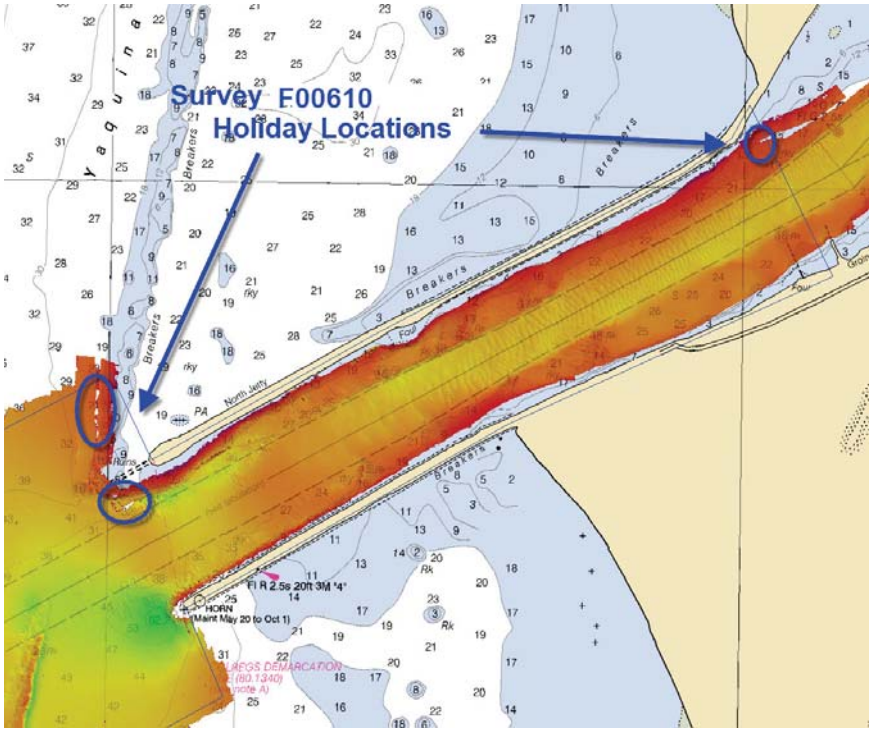


Figure 2: Survey F00610 holiday locations.

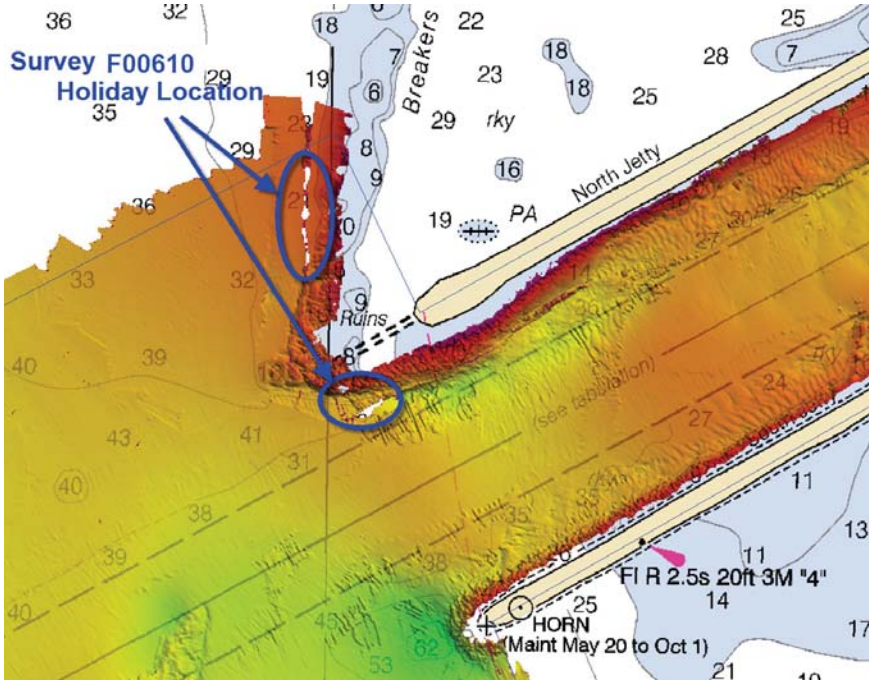


Figure 3: Survey F00610 holidays located at the northeast corner of survey area near the northern jetty.

A.4 Survey Coverage

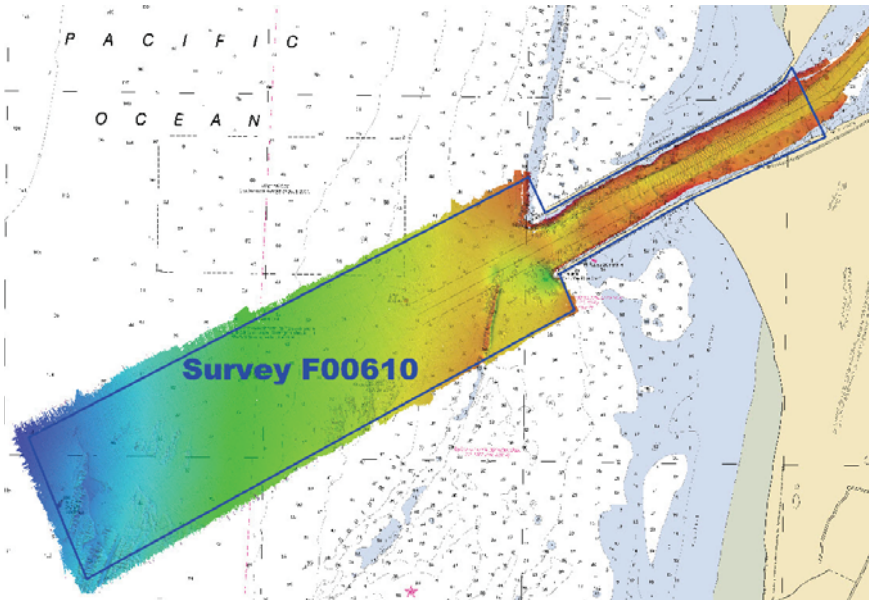


Figure 4: Survey F00610 coverage

Survey Coverage was in accordance with the requirements in the Project Instructions and the HSSD.

A.5 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*2804*	*2808*	*2803*	*Total*
LNM	**SBES Mainscheme**	0	0	0	0
	MBES Mainscheme	34.728	11.54	5.22	51.49
	Lidar Mainscheme	0	0	0	0
	SSS Mainscheme	0	0	0	0
	SBES/MBES Combo Mainscheme	0	0	0	0
	SBES/SSS Combo Mainscheme	0	0	0	0
	MBES/SSS Combo Mainscheme	0	14.04	0	14.04
	SBES/MBES Combo Crosslines	4.274	0	0	4.274
	Lidar Crosslines	0	0	0	0
Number of Bottom Samples					0
Number of DPs					0
Number of Items Items Investigated by Dive Ops					0
Total Number of SNM					1.2

Table 2: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates
03/13/2012
03/16/2012
03/17/2012
03/18/2012
03/26/2012
04/10/2012

Table 3: Dates of Hydrography

Side Scan Sonar was collected in the survey area but not used as the 100% shallow water multi-beam data was sufficient for coverage and object detection. The SSS was submitted for archival purpose only.

A.6 Shoreline

There is no shoreline verification requirement for this project.

A.7 Bottom Samples

There is no bottom sample requirement for this project.

B. Data Acquisition and Processing

B.1 Equipment and Vessels

Refer to the Data Acquisition and Processing Report (DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR are discussed in the following sections.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	***2803***	***2804***	***2808***
LOA	29 feet	29 feet	29 feet
Draft	3.5 feet	3.5 feet	3.5 feet

Table 4: Vessels Used

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Reson	8125	MBES
Reson	7125	MBES
POS M/V	V4	Positioning and Orientation System
Klein	5000	SSS
Seabird Seacat	SBE-19 plus	Conductivity, Temperature and Depth Sensor
Reson	SV-71	Sound Speed System

Table 5: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam echo sounder (MBES) crosslines totaled 4.27 nautical miles comprising 6.6% of mainscheme MBES hydrography. The mainscheme bathymetry was visually compared to the crossline nadir beams in CARIS subset mode. The comparison showed an agreement well within the IHO standards. In most areas outside the jetty, the crosslines show agreement within 0.1 meters for all vessels. Outside the jetty, mainscheme bathymetry depths ranged from 10 to 31 meters.

Inside the jetty, crossline comparison proved to be problematic due to a couple of factors. There's a constant deposit of sand at the mouth of the Yaquina river where it meets the jetty system. These shifting sand waves being deposited from the river grew especially as the spring thaw up in the mountains had begun. An additional contributing factor that ran concurrently with the spring run-off were the repetitive storms that had stationed off the central Oregon coast left surge deposits that were clearly measurable between each acquisition day, as seen in figure 8 below.

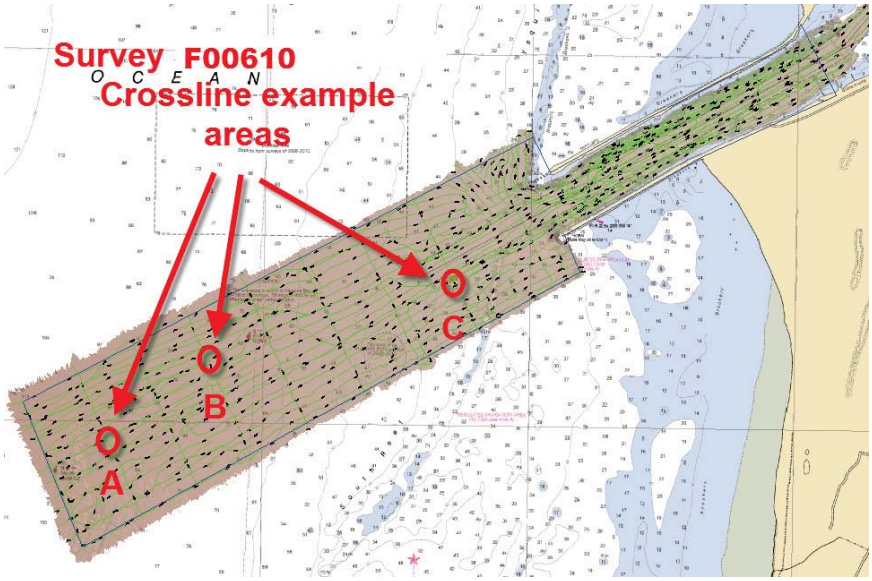


Figure 5: Survey F00610 crossline general locations.

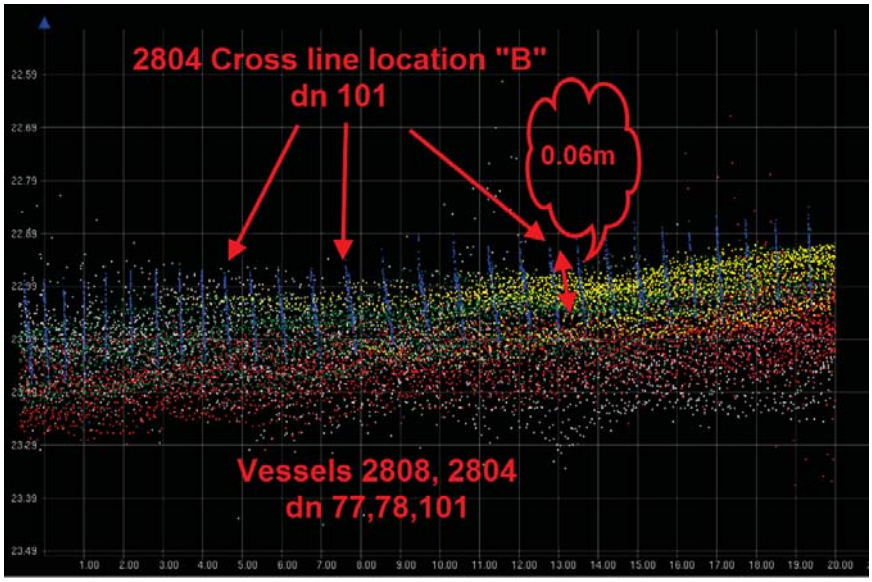


Figure 6: Survey F00610 crossline location "B".

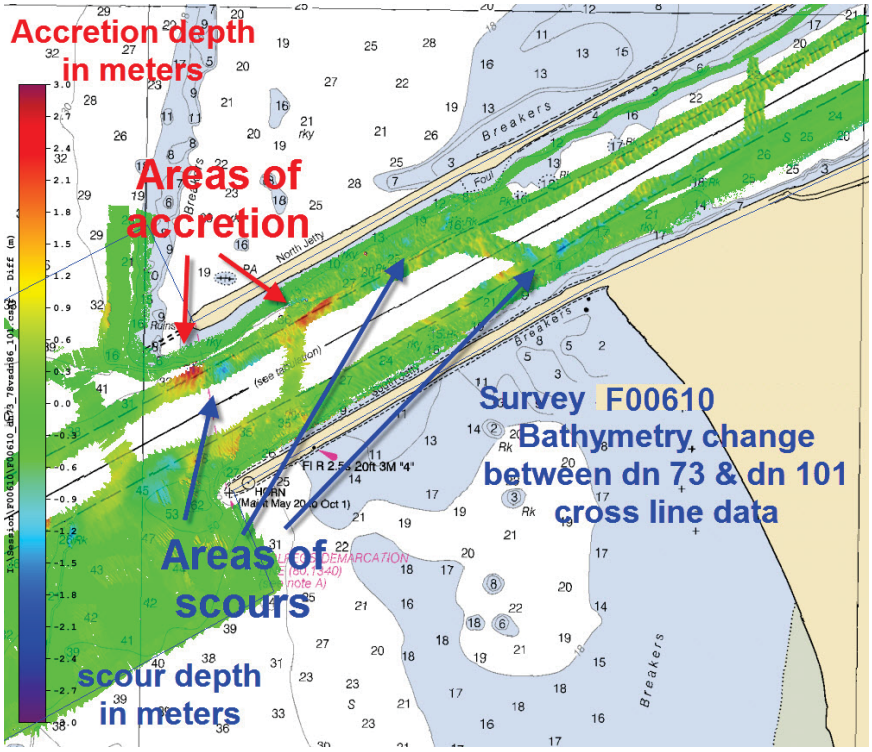


Figure 7: Survey F00610 sediment accretion locations.

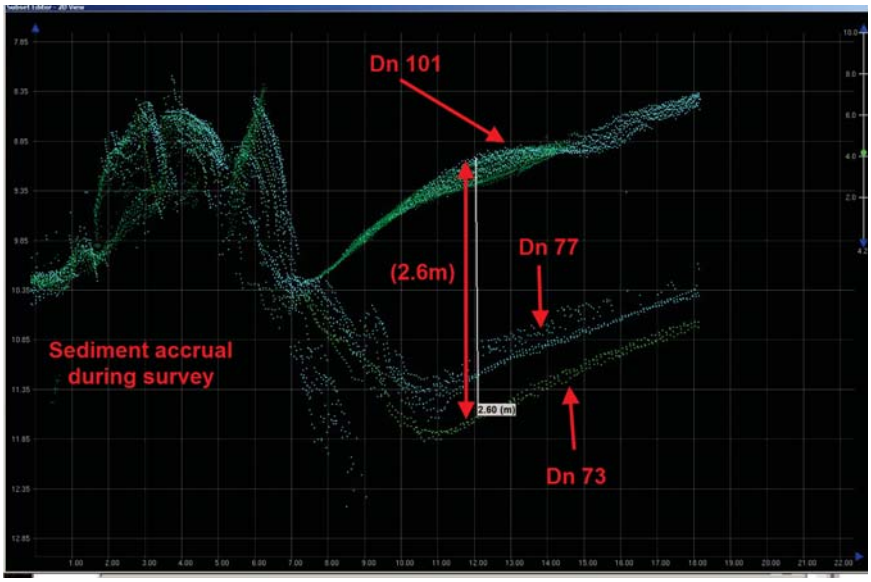


Figure 8: Survey F00610 cross line sedimentation accretion located at 44-36-42N 124-04-45W.

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Measured	Zoning
0meters	0.19meters

Table 6: Survey Specific Tide TPU Values

Hull ID	Measured - CTD	Measured - MVP	Surface
2803	3.0 meters/second	0 meters/second	.15 meters/second
2804	3.0 meters/second	0 meters/second	.15 meters/second
2808	3.0 meters/second	0 meters/second	.15 meters/second

Table 7: Survey Specific Sound Speed TPU Values

Tide uncertainty is not valid for this survey, since data was ellipsoidally referenced and reduced to MLLW using the local VDATUM separation model. The VDATUM separation uncertainty value, 0.194 meters (1 sigma), was placed in the tide zoning uncertainty entry space in the CARIS HIPS and SIPS compute TPU window. This will still be translated as vertical uncertainty, but it is attributed to the VDATUM transformation instead of a zoned tide file reduction to MLLW.

Real time uncertainty for position and attitude was acquired by the Applanix POS/MV, post processed using POSPac and applied to all data using CARIS HIPS and SIPS "Load Error Data" process. Real time error data was applied to all lines as outlined in the DAPR with the exception of the following two lines. Boat 2803_Reson8125, DN 086, line 2803_2012RA0861732 and Boat 2804_Reson7125_HF_512, DN 073, Line 2804_2012RA0732034. Both of these lines had an error in the RMS application, stating there was a data gap of 1.9 seconds. (See figure 9 below). Due to this, the allowable data gap between records was increased from 0.4 seconds to 4 seconds for these two lines. It was determined that an interpolation of real time uncertainty was more accurate information than what could be estimated in the HVF.

Uncertainty values of submitted, finalized grids are calculated in CARIS HIPS & SIPS using the "Greater of the Two" of Total Propagated Uncertainty (TPU) and standard deviation (scaled to 95%). IHO attribute layer F00610_50cm_IHOness_Order_1 was created for survey F00610 for analysis and the uncertainty of all finalized grids as outlined in section 5.2.2.1 of the HSSD 2011. Both the 1 meter and 50 cm surface met the IHO standard level 1.(refer to figure # 10.)

Evaluation of the density of soundings for survey F00610 found a depth band between 12 to 19 meters where there are spotty lanes containing less than the 5 pings per node. This can be attributed to the heavy sea state during the times of acquisition and that launch 2808 was towing a side scan sonar with the SWMB ping triggering set to the side scan. The external triggering averaged 3 pings per node. The 1 meter surface density met the IHO standard. See figure 11. below.

Figure 9: Errors applying RMS to two lines

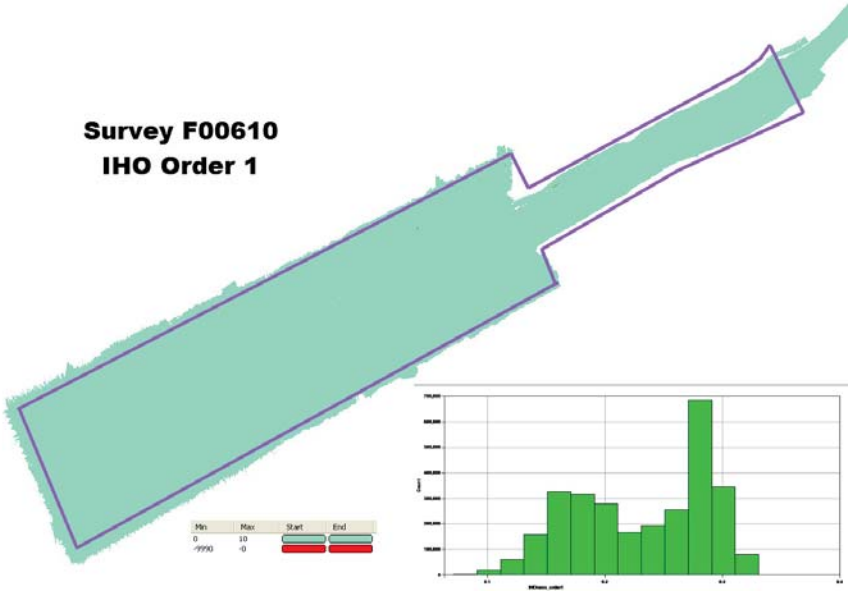
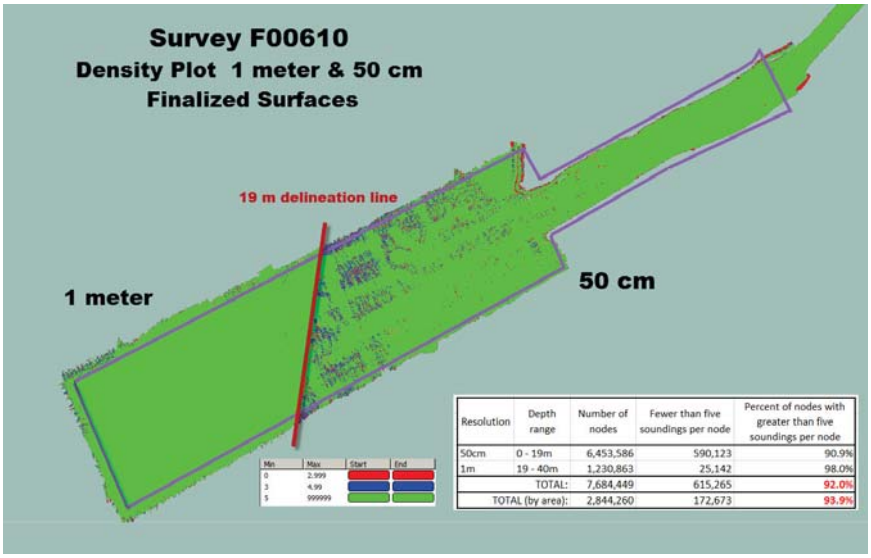


Figure 10: Survey F00610 IHO uncertainty level Order I.



Resolution	Depth range	Number of nodes	Fewer than five soundings per node	Percent of nodes with greater than five soundings per node
50cm	0 - 19m	6,453,586	590,123	90.9%
1m	19 - 40m	1,230,863	25,142	98.0%
	TOTAL:	7,684,449	615,265	92.0%
	TOTAL (by area):	2,844,260	172,673	93.9%

Figure 11: Survey F00610 density plot on 1 meter and 50 cm surface.

B.2.3 Junctions

Chart comparison procedures were followed as outlined in section 4.5 of the FPM and section 8.1.3-D.1 of the HSSD, utilizing CARIS HIPS and Notebook software programs.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H11989	1:5000	2008	Navigation Response Team 3	E

Table 8: Junctioning Surveys

H11989

Survey data were compared with survey H11989. Depths surveyed outside the channel were in good agreement with a difference of no more than 0.3m from previous survey. Inside the jetty channel the rocky outcrop features along the edge of the maintained channel are depicted correctly with soundings in good agreement to within 0.3m. The Yaquina River outflow, just outside the jetty, saw the most change. A large area just outside of the jetty extending westward to the reef saw accrual deposits as much as 2.5 meters north of the entrance. South of the entrance, saw deposits of an average of 1 meter. The southern edge of the jetty entrance saw an increase in the area of scouring. See figure 13 below.

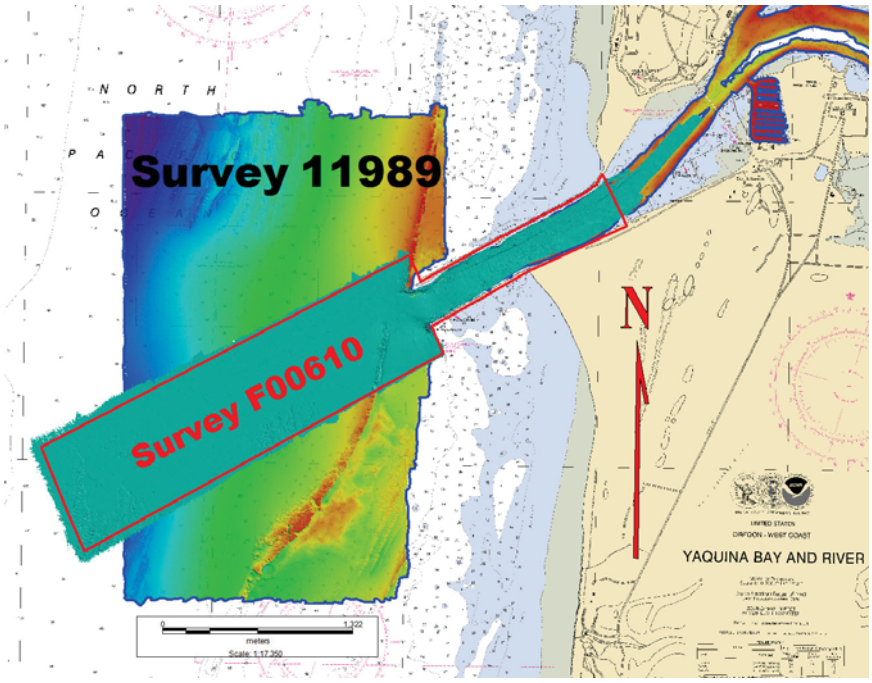


Figure 12: Survey F00610 survey H11989 junction

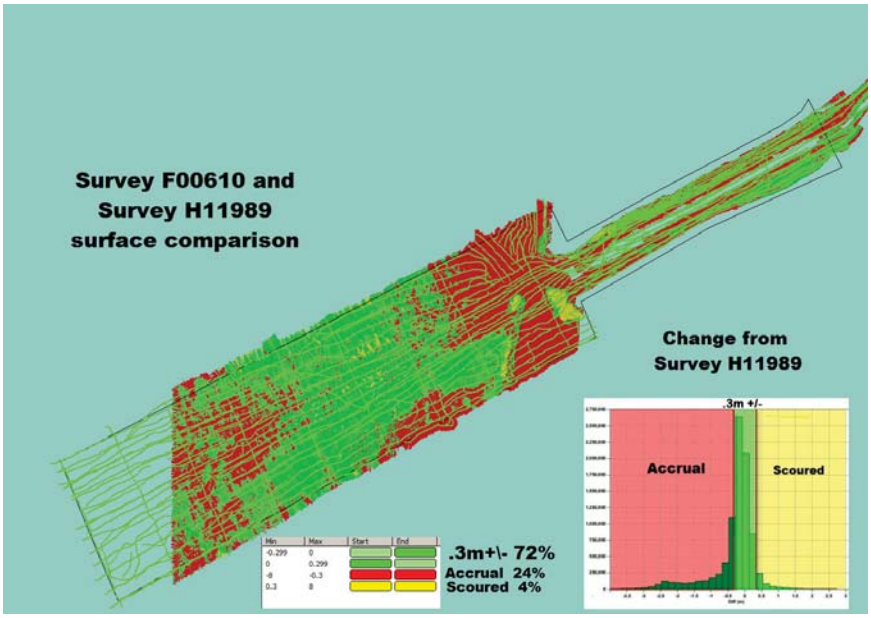


Figure 13: Survey F00610 an H11989 surface comparison.

B.2.4 Sonar QC Checks

Sonar system quality control checks were conducted as detailed in the quality control section of the DAPR.

B.2.5 Equipment Effectiveness

B.2.5.1None Exist

There were no conditions or deficiencies that affected equipment operational effectiveness.

B.2.6 Factors Affecting Soundings

B.2.6.1 Seafloor Accretion and Errosion during acqusition dates.

Due to the adverse weather during and between the dates of acquisition, the sea floor at the jetty entrance and mouth of the Yaquina river saw remarkable changes in bathymetry due to effects of accretion and scouring from the ensuing currents from storm surge. The time interval between safe acquisition dates were approximately 15 days apart.

The depths varied in range from scours of 1.4 meters to accretions of more than 2.5 meters along the the outermost channel edges along the jetty. Average deposits from the seasonal flow of the Yaquina River and from the storm surges resulted in +/- 0.3 meters difference from the baseline set on DN 73 through DN78 (March 13-March 18, 2012).

In the areas at the entrance to the channel where data from DN101 showed the accretion and scouring, the original data was rejected and only the data collected on DN101 was used. These areas are outlined in Figure 15 and an example of rejected data collected prior to the storm is shown in Figure 16.

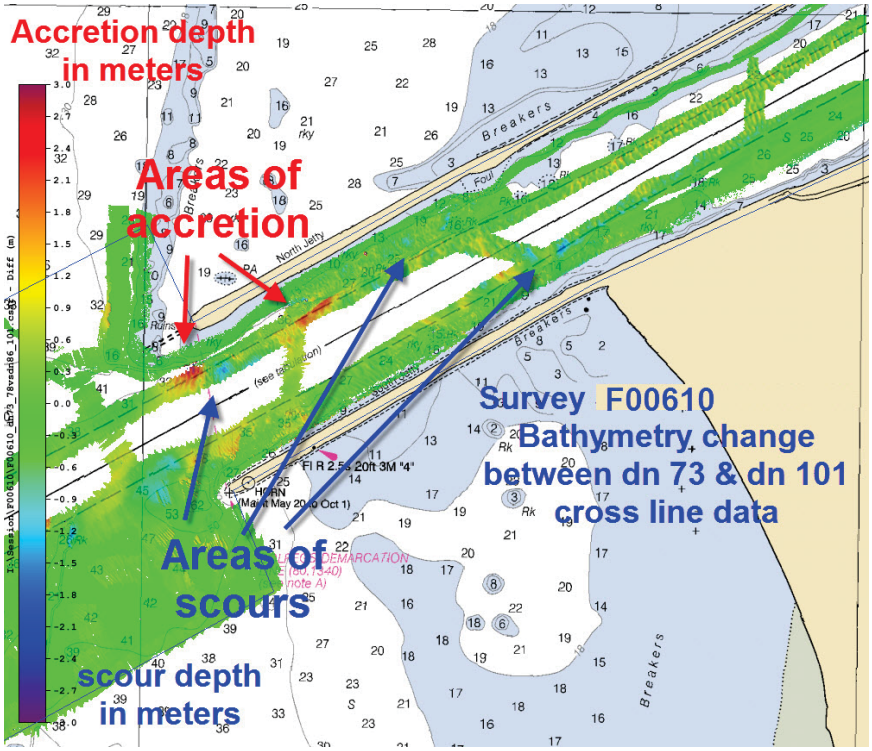


Figure 14: Yaquina River approach accretion and scours

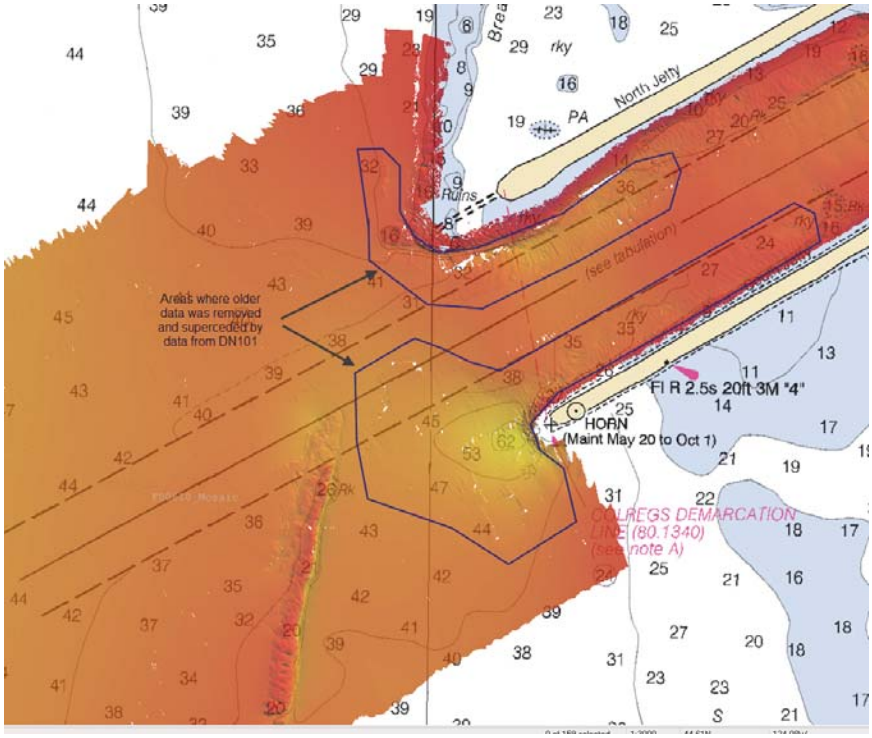


Figure 15: Areas where data was edited after accretion and scouring.

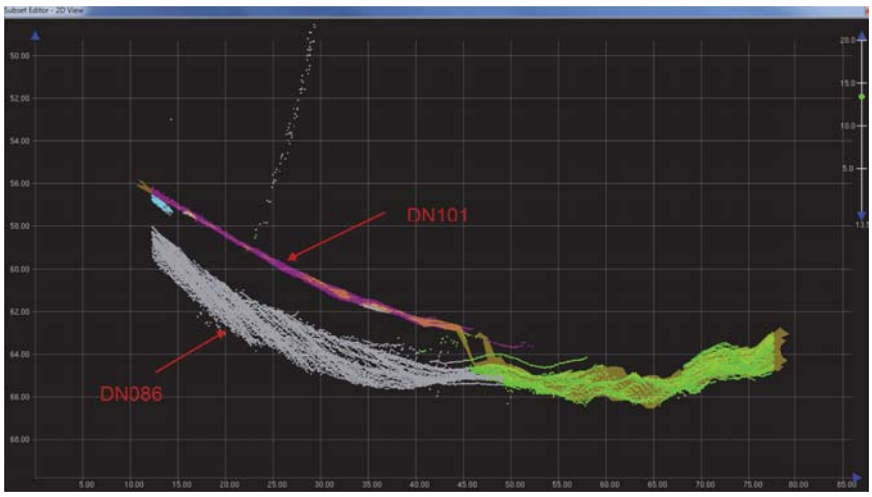


Figure 16: Example of rejected data after accretion

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Sound Speed Profiles were measured in accordance with Specifications and Deliverables 2011. On survey launches, casts were taken with a Seabird seacat profiler no less than a cast every 4 hours while acquiring data and where safely possible, with the exceptions noted below. All CTD casts were concatenated and applied to multibeam data.

Despite best efforts to conduct sufficient sound velocity casts distributed both spatially and temporally throughout the survey area, some instances of sub-optimum sound velocity correction occurred. As a result, sound velocity related artifacts can be found in CARIS Base surfaces which can be seen as a "slight smile or frown". Survey F00610 was found to be an area of dynamic tidal currents and mixing of masses of fresh water from the Yaquina River. Sound speed artifacts occurred at no specific geographical location or time and were observed by launch 2808. All vertical offsets due to sound velocity artifacts that was observed were to be within IHO Special Order tolerances which ranged from 0.1m to 0.4m across all measured depths. To address these sound velocity issues the hydrographer rejected the outermost beams obviously in error in an attempt to produce CUBE surfaces that best represent the seafloor. This technique eliminated many, but not every sound velocity related artifact.

DN077 launch 2808 lost their Seabird seacat CTD and proceeded to acquire data inside the channel to outside beyond the bar. The application of sound speed correctors proved to be problematic in these areas. In these areas the Hydrographer used "closest in distance" in an effort to correct sound speed artifacts, casts from DN086 and DN101 were used. The data continued to possess the characteristic "frowns" indicative of inaccurate sound speed corrections. These errors are due to the Yaquina River outfall, and the extremely dynamic nature of such a narrow strait through the reef just outside the river channel. Nowhere did these errors exceed 0.4m and, where the outer beams affected the surface, the outer beams were rejected by the hydrographer.

DN078 Launch 2808 did take a sound velocity cast, however, it was upstream in fresh water and not outside the river channel approach where most data for that day was acquired. In an effort to mitigate the characteristic "frowns" indicative of inaccurate sound speed corrector, in these areas the Hydrographer used "closest in distance" in an effort to correct sound speed artifacts, casts from DN086 and DN101 were used. This technique proved successful.

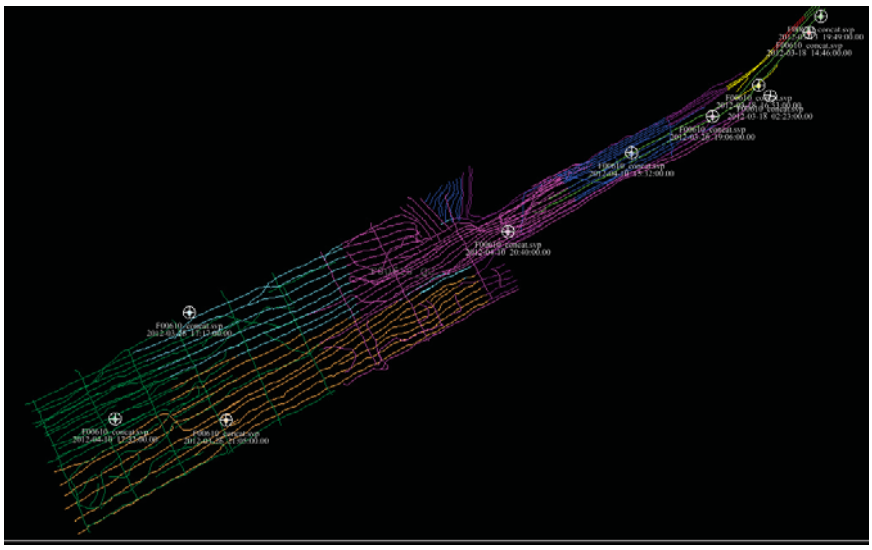


Figure 17: Survey F00610 sound velocity cast locations with applied track lines.

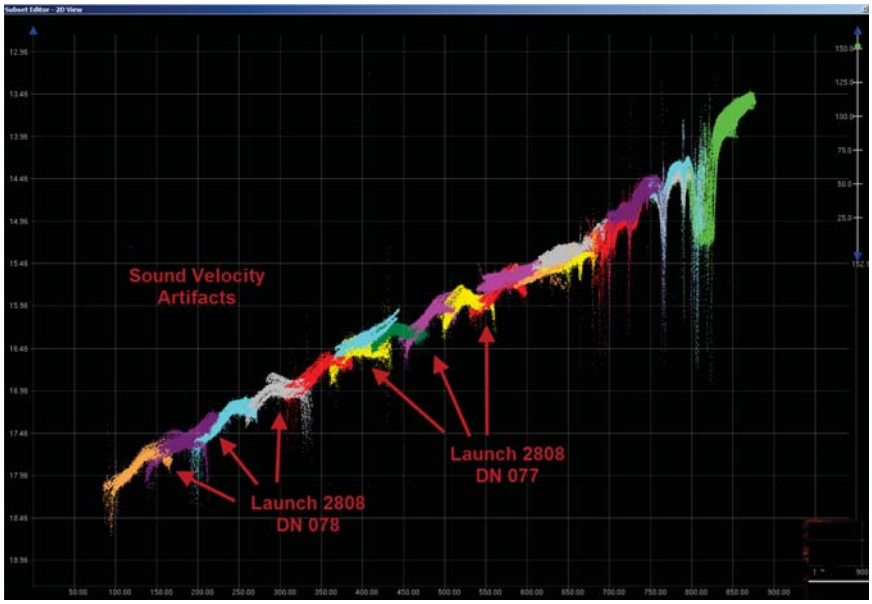


Figure 18: Survey F00610 sound velocity artifacts.

B.2.8 Coverage Equipment and Methods

All Equipment and survey methods were used as detailed in the DAPR.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Backscatter was logged as a 7k and 81X file and submitted to the IOCM processing center and/or directly to NGDC, and is not included with the data submitted to the Branch.

B.5 Data Processing

B.5.1 Software Updates

There were no software configuration changes after the DAPR was submitted.

The following Feature Object Catalog was used: None

B.5.2 Surfaces

The following CARIS surfaces were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00610_1M	CUBE	1 meters	0.00 meters - 34.6 meters	NOAA_1m	Object Detection
F00610_50cm	CUBE	50 centimeters	0.00 meters - 34.6 meters	NOAA_0.5m	Object Detection
F00610_1M_Final	CUBE	1 meters	19 meters - 40 meters	NOAA_1m	Object Detection
F00610_50cm_Final	CUBE	50 centimeters	0 meters - 20 meters	NOAA_0.5m	Object Detection

Table 9: CARIS Surfaces

C. Vertical and Horizontal Control

GPS with real time DGPS corrections from the Fort Stevens USCG differential correction beacon (287 kHz) was used as the primary horizontal control for this project. Horizontal control was enhanced by applying post processed kinematic positioning data. These data were post processed using Applanix POSPac Smart base processing, and the resultant SBETs were applied to bathymetric data in CARIS as described in the DAPR. Preliminary vertical control for F00610 data was downloaded from tide station 9435380 and applied using M320RA2011CORP_Rev.zdf. Final data was referenced to the ellipsoid using applied SBETs and reduced to MLLW using a grid created from the Oregon-Central Oregon VDATUM separation model version 2.3.3, 1999 Geoid using CARIS' apply GPS tide application.

C.1 Vertical Control

The vertical datum for this project is Ellipsoidally Referenced Survey (ers).

Non-Standard Vertical Control Methods Used:

VDatum

Ellipsoid to Chart Datum Separation File:

2012_M917_VDatum_Ellip_MLLW.xyz

A VDATUM separation file, 2012_M917_VDatum_Ellip_MLLW.xyz, was provided with the project instructions. This file was saved as a comma delimited file and applied using CARIS' compute GPS tide application to reduce F00610 data from ellipsoid height to MLLW.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD83).

The following PPK methods were used for horizontal control:

Smart Base

The following DGPS Stations were used for horizontal control:

DGPS Stations
Fort Stevens, Washington (287 kHz)

Table 10: USCG DGPS Stations

D. Results and Recommendations

D.1 Chart Comparison

D.1.1 Raster Charts

The following are the largest scale raster charts, which cover the survey area:

Chart	Scale	Edition	Edition Date	LNM Date	NM Date
18581	1:10000	19	10/2011	04/24/2012	10/29/2011

Table 11: Largest Scale Raster Charts

18581

Chart comparison procedures were followed as outlined in 4.5 of the FPM and section 8.13-D.1 of the HSSD, utilizing CARIS HIPS and Notebook software programs.

Surveyed depths were in general agreement with charted soundings with some areas deeper by up to 2 ft.

At 44-36-19N, 124-05-54W, a sounding was found to be 6 feet deeper than depicted on chart 18581 of 58 feet. See figure 21 below.

The 60 foot contour line located approximately at 44-36-14N, 124-05-49W extending in a north/south direction has shifted 60 meters to the east towards the mouth of Yaquina River. This discrepancy can attributed to the normal seasonal currents and recent storms shifting sand from the previous survey.

The 40 foot contour line located approximately at 44-36-24N, 124-05-01W extending in a northeast/ southeast direction has shifted 90 meters to the northwest towards the mouth of Yaquina River. At the end of the southern jetty the 60' contour line has increased in diameter as well as soundings 5 feet deeper indicating a bigger, deeper scour than the previous survey. There is sediment deposits creating a new 40 foot contour extending from the northern tip of the southern reef outside the jetty entrance extending northward to 44-36-35N, 124-05-06W curling eastward connecting at the southern jetty's most outward point. See figure 20 below. This discrepancy can be attributed to the normal seasonal currents and recent storms shifting sand from the previous survey.

Survey F00610 has a federally maintained channel which the Corps of Engineers regularly dredges from the entrance of the harbor and follow the Yaquina River inland.

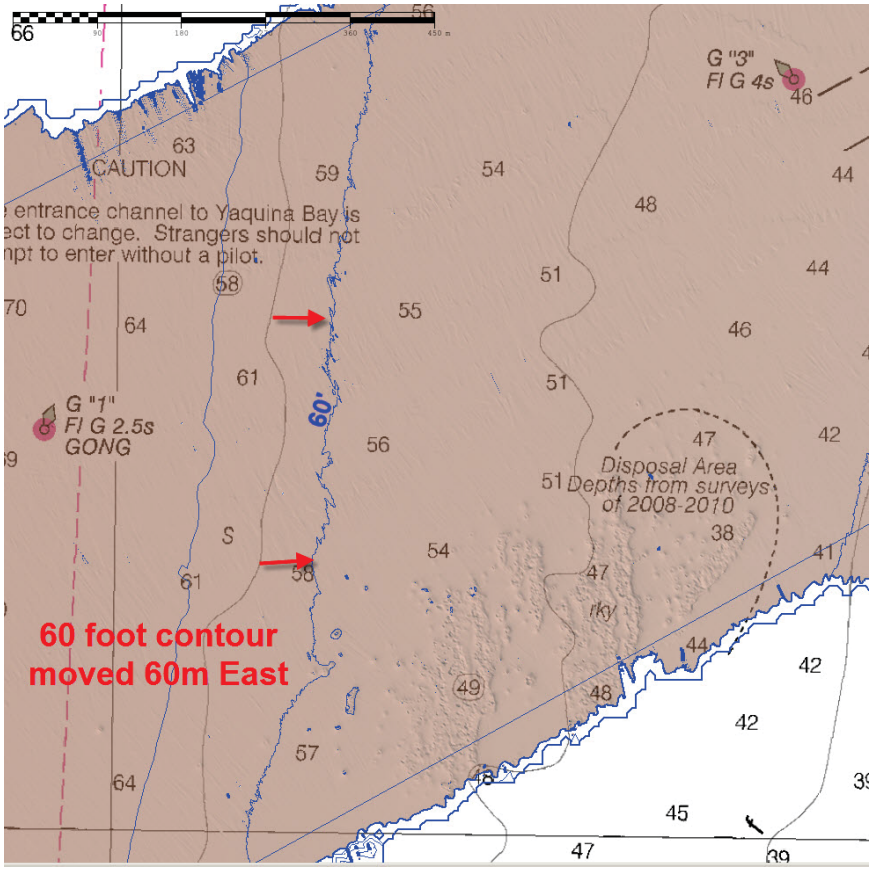


Figure 19: Survey F00610 and chart 18581 compare depicting 60' contour shift 60m east.

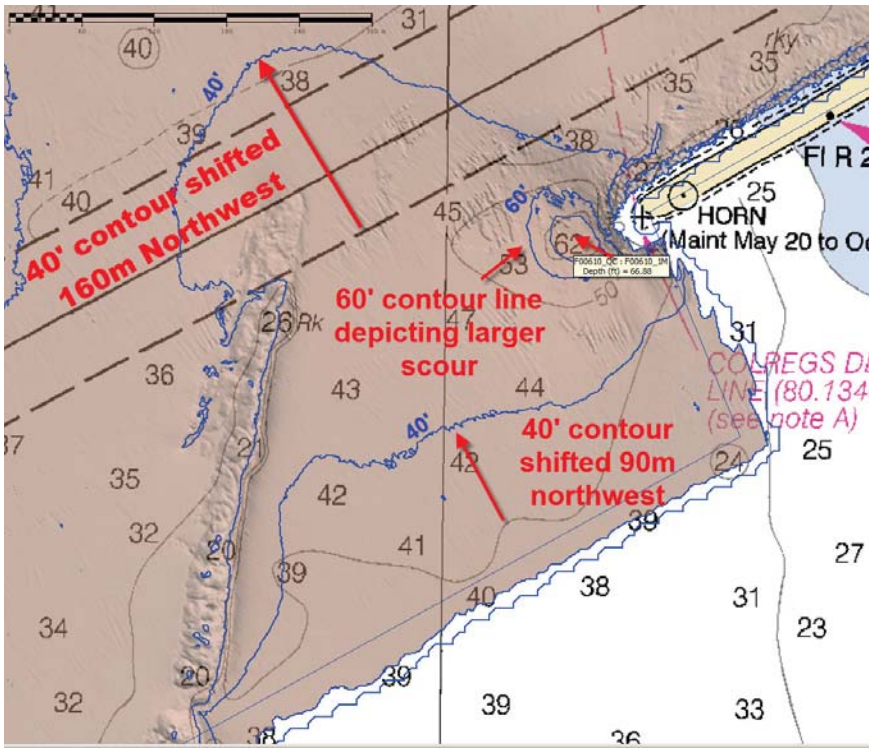


Figure 20: Survey F00610 and chart 18581 compare depicting 40' contour shifts 90m and 160m northwest.

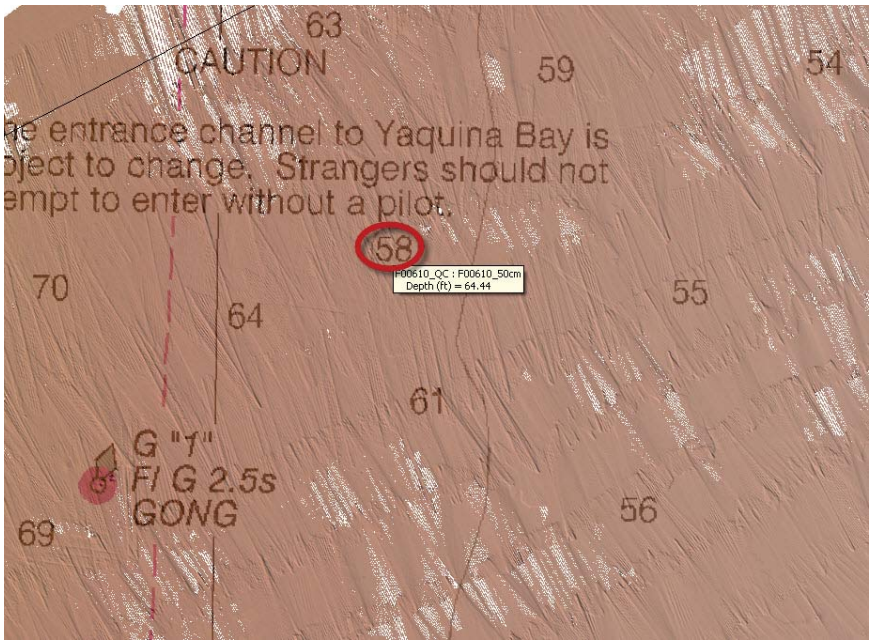


Figure 21: Survey F00610 and Chart 18581 comparison found 6 foot deeper sounding than depicted on chart located at 44-36-19N, 124-05-54W.

D.1.2 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5OR44M	1:10000	2	05/22/2012	05/21/2012	NO

Table 12: Largest Scale ENCs

US5OR44M

Chart comparison procedures were followed as outlined in section 4.5 of the FPM and section 8.1.3-D.1 of the HSSD, utilizing CARIS HIPS and Notebook software programs.

Depths surveyed were in good agreement with chart US5OR44M with a difference of no more than 0.6m. Inside the jetty channel the features are depicted correctly with soundings in good agreement.

D.1.3 AWOIS Items

No AWOIS items exist for this survey.

D.1.4 Charted Features

Charted features exist for this survey, but were not investigated.

D.1.5 Uncharted Features

This project responded to requests from the US Coast Guard and the Army Corps of Engineers to survey the location of the sunken F/V Chevelle and to indicate if the navigational channel is clear of obstructions. The 70 foot fishing vessel ran aground on the north jetty of Yaquina River approach on March 10, 2012. The vessel broke-up and was swept off the jetty due to severe wave action caused by the inclement weather around the evening of March 11, 2012. Attempts to locate the vessel on March 13, 2012 (DN073) with launches 2804 and 2808 using multibeam echo sounders and side scan sonar were unsuccessful due to adverse weather conditions as well as the uncertain location of where the vessel was last seen. Prevailing weather conditions caused the seas to pile up very large breakers near the estimated location of the wreck. Safety became an issue for the launch crews involved and no further advancer out towards the bar could be made until conditions improved. An attempt to survey the navigational channel from that position inward to clear that section of channel for obstructions was then completed.

Severe weather stationed off the central coast of Oregon impeded any further progress until after the Project Instructions were delivered on the night of March 16, 2012 (DN076). On March 17, 2012 and March 18, 2012 (DN077, 078) launch 2808 surveyed the area with side scan sonar in conjunction with multibeam echo sounder. Acquisition on DN077 found a potential contact which could not be confirmed due to the low ping rate caused by towing the side scan sonar. Remaining weather effected the results from the side scan sonar acquisition resulting in less than desirable data on DN078 while searching the approach area.

After acquisition on March 26, 2012 (DN086) utilizing data obtained using the side mounted sonar on launch 2803 the hydrographer was successful in confirming the location of the F/V Chevelle after post processing with thorough examination of all available data in the area. The F/V Chevelle broke into two large sections after being grounded onto the jetty. The remains of these sections were located in CARIS Notebook as a hob file named F00610_Final_Feature and will be submitted with this survey.

Severe weather impeded any safe acquisition until April 10, 2012 (DN101) where the objective was to make another pass over contact, fill in holidays and complete cross lines. It was under this examination that it was discovered the sedimentation amount deposited from repetitive storm surges further discussed in section B-2.8.

The US Coast Guard and C. Moegling of Pacific Hydro Branch were notified of the location of contact #1 on 3/29/2012 as referenced in the appendices, section V labeled supplemental correspondence.

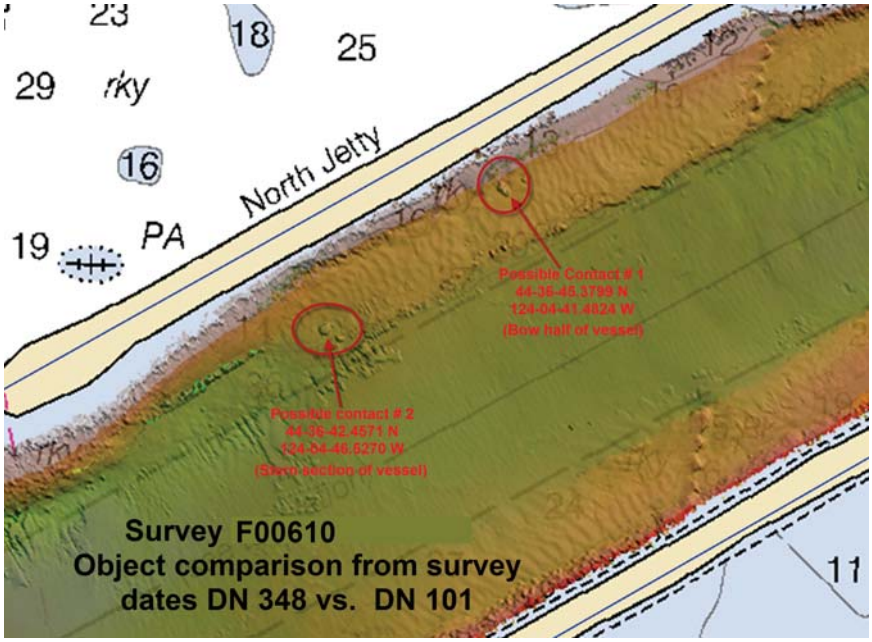


Figure 22: Survey F00610 object locations with comparison to earlier surveys.

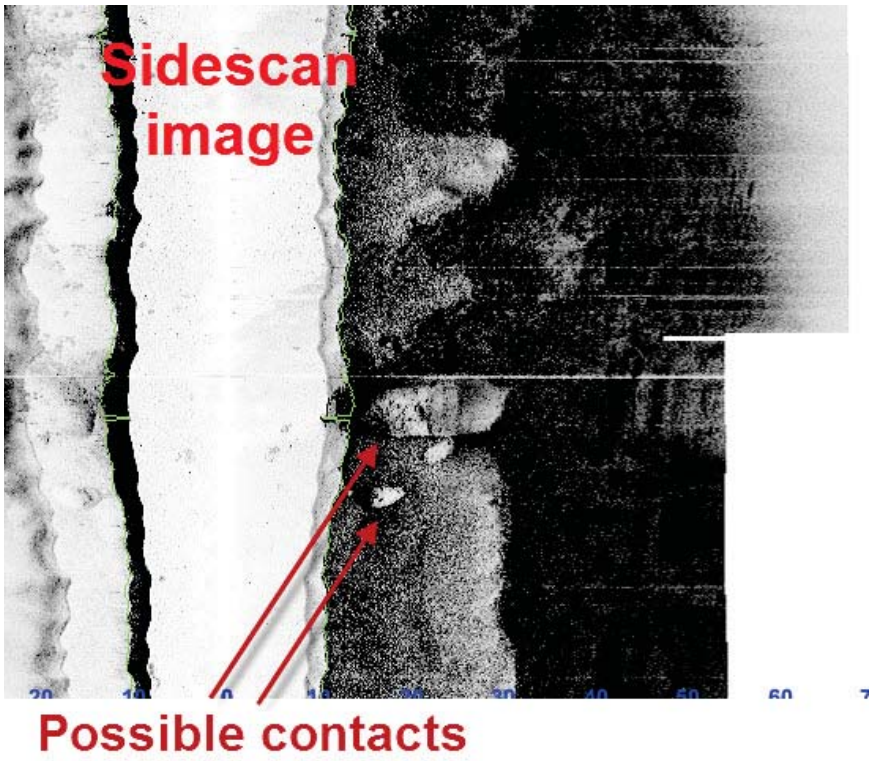


Figure 23: Survey F00610 side scan sonar image capture bow of vessel.

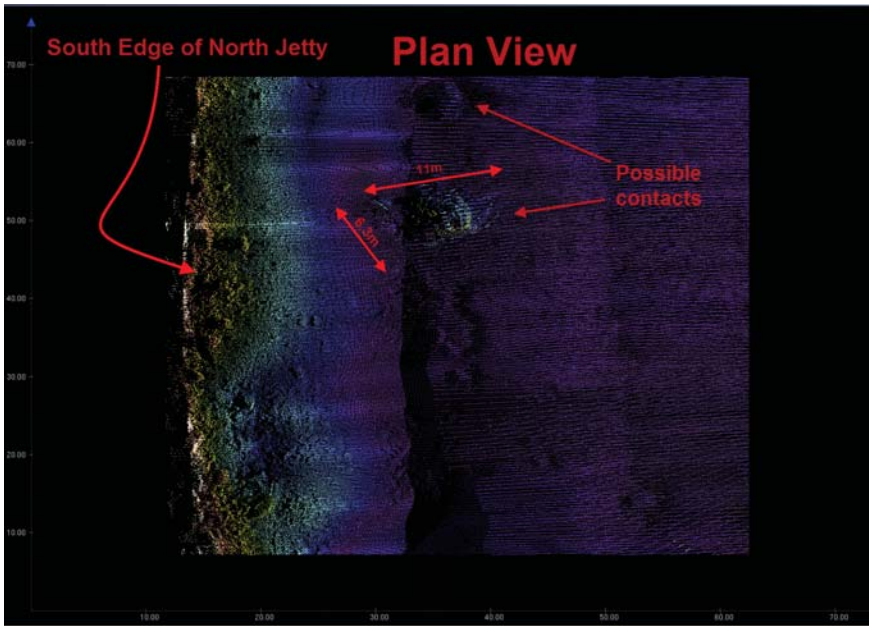


Figure 24: Survey F00610 multibeam echo sounder capture of bow of vessel.

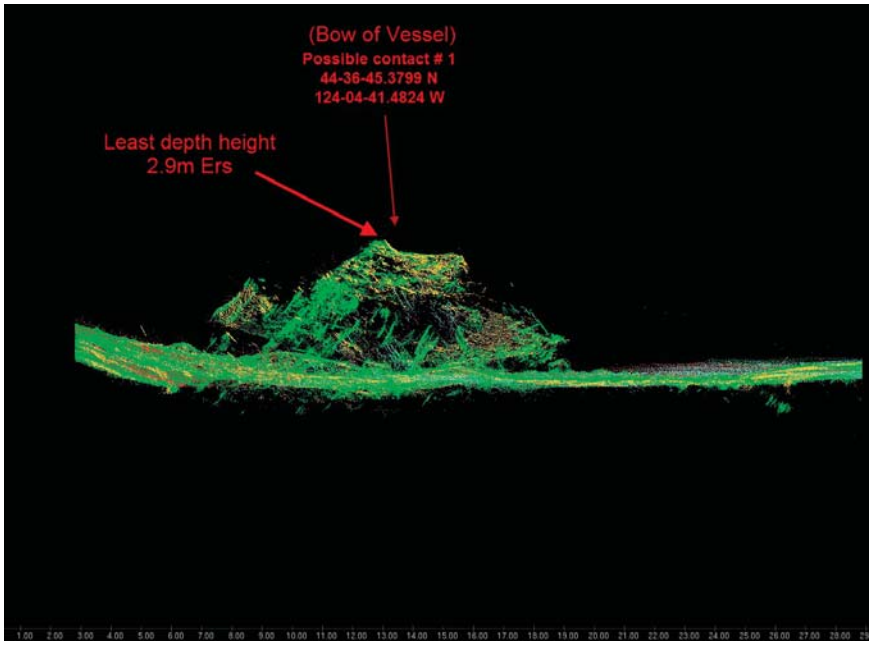


Figure 25: Survey F00610 multibeam capture of bow of vessel with a least depth of 2.9m ERS.

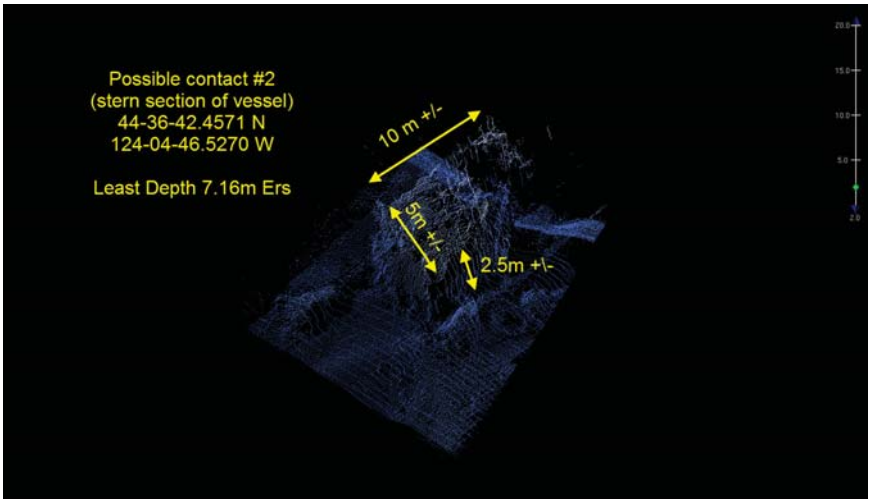


Figure 26: Survey F00610 multibeam capture of stern of vessel with a least depth of 7.16m ERS.

D.1.6 Dangers to Navigation

No Danger to Navigation Reports were submitted for this survey.

D.1.7 Shoal and Hazardous Features

Shoals or potentially hazardous features exist for this survey, but were not investigated.

D.1.8 Channels

Tabulated depths for the Yaquina Bay and river entrance channel did not correlate well with survey soundings. Numerous areas where soundings shoaler than controlling depths were noted. NOAA ship Rainier notified the Corps of Engineers at the time of the survey the discovery of the shoaling as referenced in the appendices, section V labeled supplemental correspondence.

The Hydrographer recommends consulting the Corps of Engineers for the most recent dredge depth. For comparison at the time of the survey, controlling depths of the channel were; left outside (North) 26 feet, middle half of channel 30 feet, and Right outside (South) 31 feet.

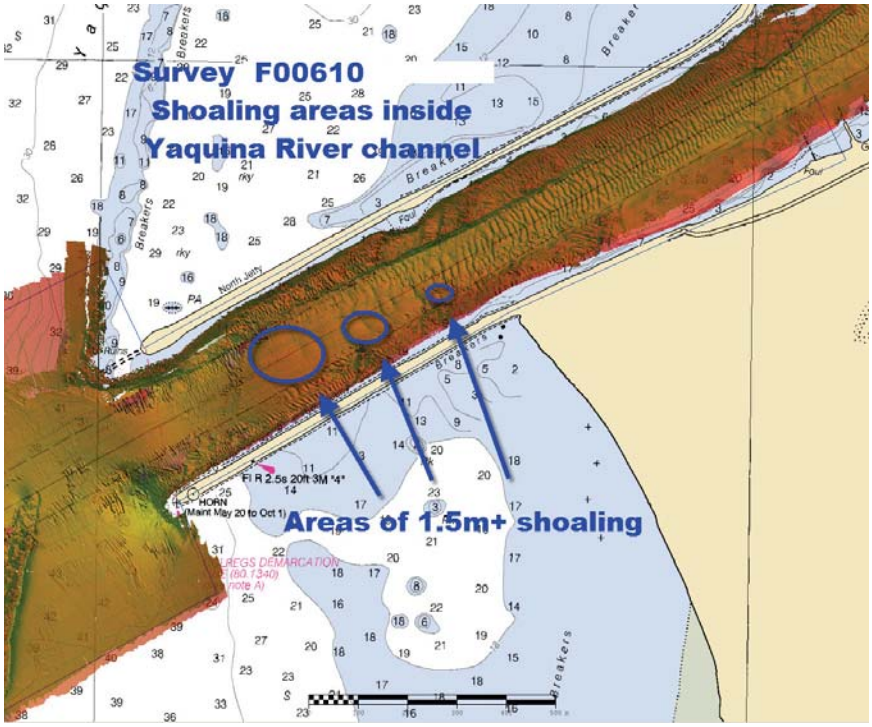


Figure 27: Survey F00610 inside channel shoaling locations.

D.2 Additional Results

D.2.1 Shoreline

Shoreline was not assigned in the Hydrographic Survey Project Instructions or Statement of Work.

D.2.2 Prior Surveys

Prior survey comparisons exist for this survey, but were not investigated.

D.2.3 Aids to Navigation

Aids to navigation (ATONs) exist for this survey, but were not investigated.

D.2.4 Overhead Features

Overhead features do not exist for this survey.

D.2.5 Submarine Features

Submarine features do not exist for this survey.

D.2.6 Ferry Routes and Terminals

No ferry routes or terminals exist for this survey.

D.2.7 Platforms

No platforms exist for this survey.

D.2.8 Significant Features

No significant features exist for this survey.

D.2 Construction and Dredging

Present and/or planned construction or dredging exists within the survey limits, but was not investigated.

E. Approval Sheet

As Chief of Party, Field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Approver Name	Approver Title	Approval Date	Signature
Richard T. Brennan CDR / NOAA	Commanding Officer	07/19/2012	Richard T. Brennan 2012.07.25 12:47:17 -08'00'
Olivia Hauser LT / NOAA	Field Operations Officer	07/19/2012	Olivia Hauser 2012.07.23 14:39:08 -08'00'
James B. Jacobson	Hydrographic Chief Survey Technician	07/19/2012	Digitally signed by James Jacobson Reason: I have reviewed this document Date: 2012.07.23 15:10:14 -08'00'
Todd A. Walsh	Hydrographic Survey Technician / Sheet Manager	07/19/2012	Todd A. Walsh 2012.07.23 15:05:50 -08'00'

F. Table of Acronyms

Acronym	Definition
AFF	Assigned Features File
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continually Operating Reference Staiton
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERZT	Ellipsoidally Referenced Zoned Tides
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division
HSSDM	Hydrographic Survey Specifications and Deliverables Manual

Acronym	Definition
HSTP	Hydrographic Systems Technology Programs
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Local Notice to Mariners
LNM	Linear Nautical Miles
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NAIP	National Agriculture and Imagery Program
NALL	Navigable Area Limit Line
NM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
PST	Physical Science Technician
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Porpagated Error
TPU	Topside Processing Unit
USACE	United States Army Corps of Engineers
USCG	United Stated Coast Guard
UTM	Universal Transverse Mercator
XO	Exectutive Officer
ZDA	Global Positiong System timing message
ZDF	Zone Definition File

APPROVAL PAGE

F00610

Data did not meet current specifications as determined by the OCS survey acceptance review process. It has been determined by the Pacific Hydrographic Branch that the survey served its purpose to fulfill a request by MOC-P, USCG and USACOE to survey in an attempt to locate the F/V Chevelle. Given the general agreement of this survey with the most recent existing chart, Survey F00610 data should be provided to USCG and USACOE but not used for charting purposes. The survey will not be applied to NOAA charting products.

The following products will be sent to NGDC for archive:

- F00610_DR.pdf
- Processed survey data and records

The survey evaluation and verification has been conducted according to current OCS specifications and procedures.

Approved: Digitally signed by Peter Holmberg
DN: cn=Peter Holmberg, o, ou=signing for Annie Raymond, email=annemieke.raymond@noaa.gov, c=US
Date: 2012.10.31 14:58:29 -07'00'

Peter Holmberg
Cartographic Team Lead, Pacific Hydrographic Branch

The survey has not been approved for chart updates. The data will be archived at NGDC so that it can be made available for other uses.

Approved: David Zezula
2012.10.31 14:59:44 -07'00'

LCDR David Zezula, NOAA
Chief, Pacific Hydrographic Branch