

H12131

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. .... H12131

### LOCALITY

State ..... OREGON

General Locality ..... Pacific Ocean - Southern Oregon

Sublocality ..... Cape Ferrelo to Winchuck River

2010

CHIEF OF PARTY  
Dean Moyles, Fugro Pelagos, Inc.

### LIBRARY & ARCHIVES

DATE .....

<p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;"><b>HYDROGRAPHIC TITLE SHEET</b></p>	<p>REGISTRY No</p> <p style="text-align: center;"><b>H12131</b></p>
<p><b>INSTRUCTIONS</b> – The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.</p>	<p>FIELD No: <b>N/A</b></p>
<p>State <u>Oregon</u></p> <p>General Locality <u>Pacific Ocean - Southern Oregon</u></p> <p>Sub-Locality <u>Cape Ferrelo to Winchuck River</u></p> <p>Scale <u>N/A</u> Date of Survey <u>09/23/09 – 11/01/09</u></p> <p>Instructions dated <u>6/29/2009</u> Project No. <u>M-M928-KR-09</u></p> <p>Vessel <u>F/V Pacific Star (556510), R/V R2 (623241) and R/V D2 (647782)</u></p> <hr/> <p>Chief of party <u>Dean Moyles, Fugro Pelagos, Inc.</u></p> <p>Surveyed by <u>BRIGGS, MOYLES, REYNOLDS, FARLEY, ROKYTA, LYDON, LOPEZ, BARROW, TIXIER, GOODALL</u> <u>CAIN, ESPOSITO,et. Al</u></p> <p>Soundings by <u>RESON SEABAT 7125 (R2, PACIFIC STAR, HULL MOUNT), RESON SEABAT 8125 (D2, HULL MOUNT)</u></p> <p>SAR by <u>Martha Herzog</u> Compilation by <u>Fernando Ortiz</u></p> <p>Soundings compiled in <u>Fathoms</u></p>	
<p><b>REMARKS:</b> All times are UTC. UTM Projection 10</p> <p>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. Revisions and end notes in red were generated during office processing.</p> <p>Page numbering may be interrupted or non sequential.</p> <hr/> <p>All pertinent records for this survey, including the Descriptive Report, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <a href="http://www.ngdc.noaa.gov/">http://www.ngdc.noaa.gov/</a>.</p>	

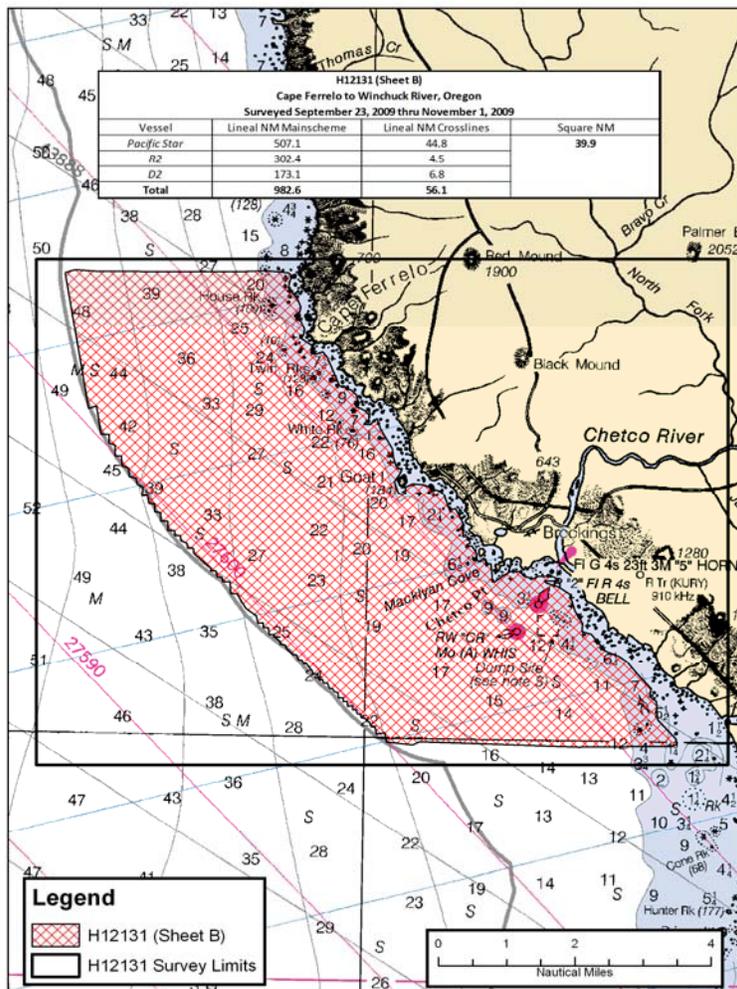
## A. AREA SURVEYED

H12131 (Sheet B) is located in the areas extending from Cape Ferrelo to Winchuck River. It is bound by the coordinates listed in **Table 1** and shown in **Figure 1**.<sup>1</sup>

Hydrographic data collection began on September 23, 2009 and ended on November 1, 2009.

**Table 1 – Sheet Bounds**

Point	Latitude (North)	Longitude (West)
1	41-59-39	124-26-27
2	41-59-43	124-12-49
3	42-07-27	124-13-03
4	42-07-21	124-26-38



**Figure 1 H12131 Area Surveyed**

## **B. DATA ACQUISITION AND PROCESSING**

Refer to the M-M928-KR-09 Data Acquisition and Processing Report for a detailed description of all equipment, survey vessels, processing procedures and quality control features. Items specific to this survey and any deviations from the Data Acquisition and Processing Report are discussed in the following sections.

### B.1 Equipment & Vessels

The F/V Pacific Star (with launches R2 and D2) acquired all sounding data for H12131.

F/V Pacific Star, 162 feet in length with a draft of 16 feet, was equipped with a hull mounted Reson SeaBat 7125 dual-frequency multibeam echosounder system for the M-M928-KR-09 survey. All 7125 multibeam data files were logged in the S7K format using WinFrog Multibeam v 3.08.44.04. The vessel was equipped with two AML sound velocity and pressure sensors (SV&P), and a Brooks Ocean Moving Vessel Profiler (MVP), for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

R/V R2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. For this survey, R2 was equipped with a hull mounted Reson SeaBat 7125 dual-frequency multibeam echosounder system. All 7125 multibeam data files were logged in the S7K format using WinFrog Multibeam v 3.08.44.04. R2 was equipped with with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

R/V D2, a Pacific Star launch, is 29 feet in length with a draft of 3 feet. D2 is outfitted and configured in a manner similar to R/V R2. For this survey, D2 was equipped with a Reson Seabat 8125 (455 kHz frequency) multibeam echosounder system. Multibeam data files were logged in the XTF format using WinFrog Multibeam v 3.08.44.04. D2 was equipped with with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles, and vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessels (POS MV) 320 V4.

Refer to M-M928-KR-09 Data Acquisition and Processing Report for a complete listing of equipment and vessel descriptions.

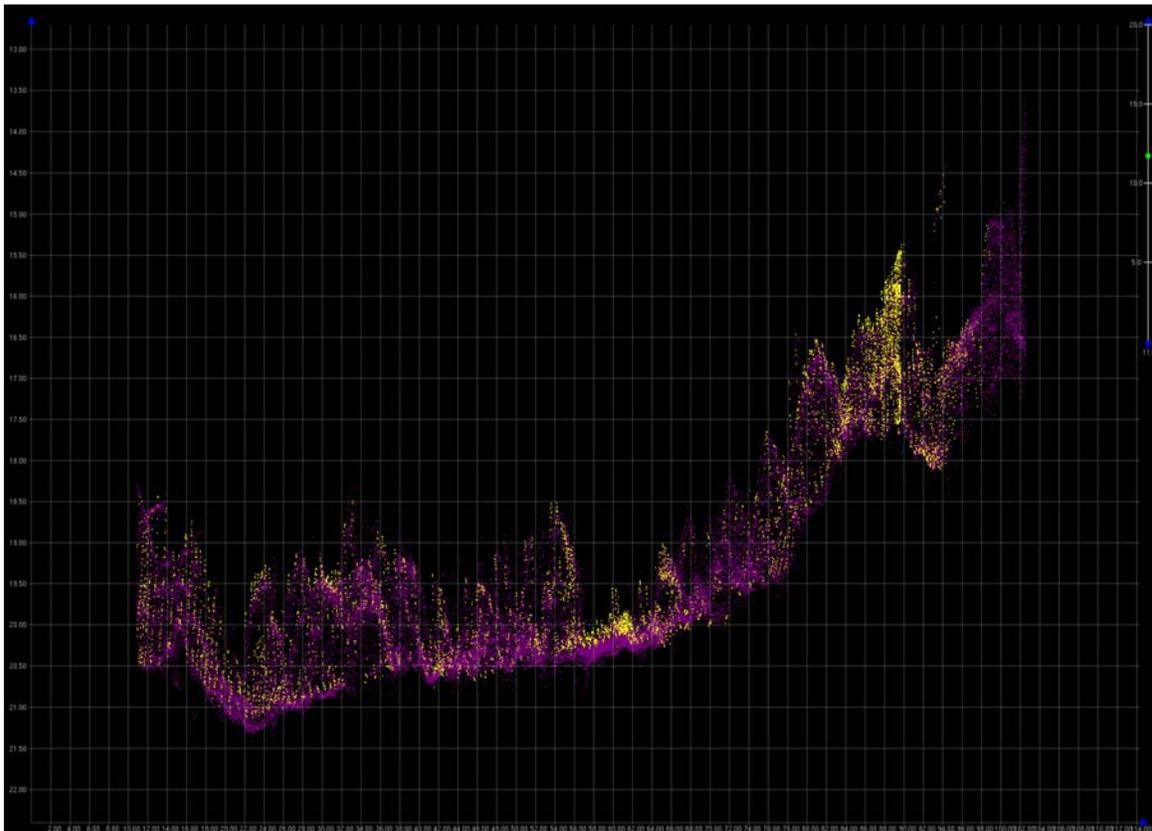
## B.2 Quality Control

### Crosslines

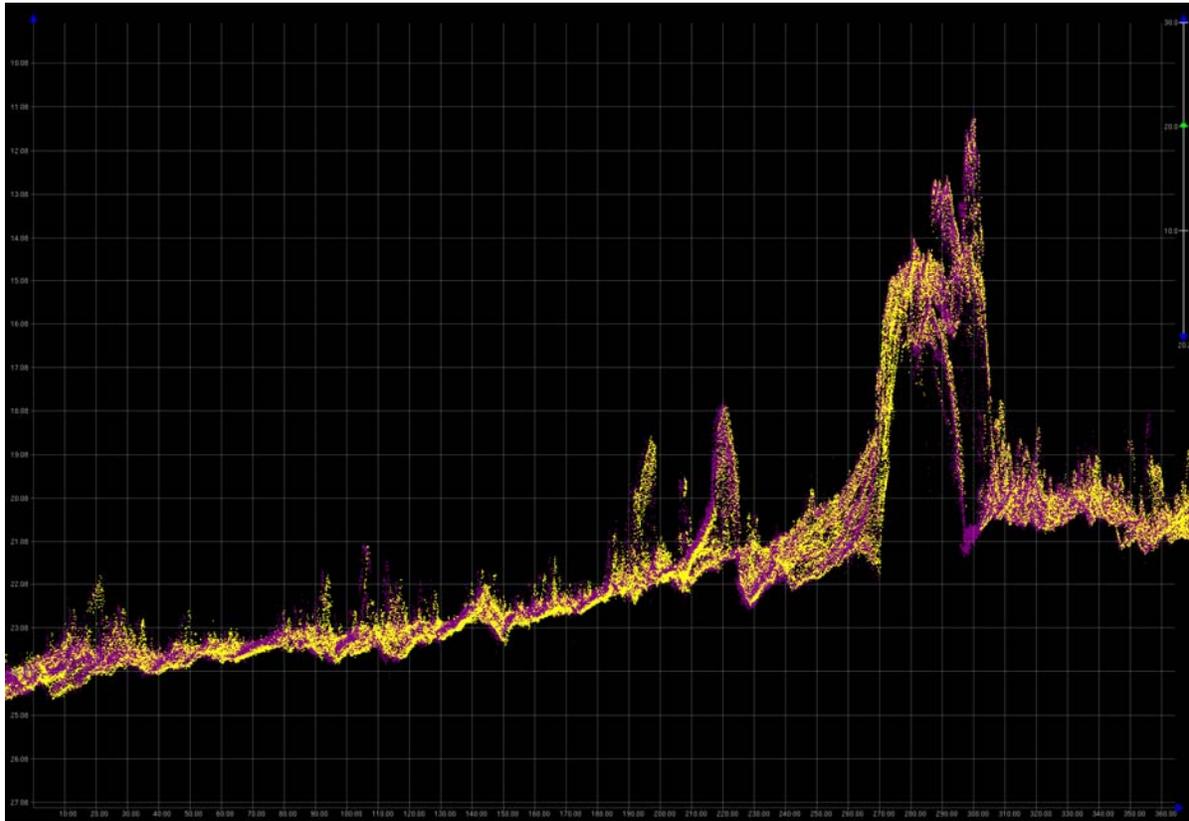
Crosslines were planned and well distributed throughout the survey to ensure adequate quality control. Total crossline length surveyed was 56.1 nautical miles or 17.5 percent of the total main scheme line length. Each crossline was compared to the entire main scheme line plan and CUBE surface it intersected, using the CARIS HIPS QC report routine.

The majority of QC Reports fall well within the required accuracy specifications. However, beams that fall below the 95 percent confidence level in the QC report are associated with areas and conditions illustrated below. It should be noted that these locations are in agreement with the surrounding adjacent lines and are considered well within the required specifications.<sup>2</sup> Results are located in Separate IV.

The majority of beams that fall below the 95 percent confidence level are located in areas having steep slopes and rocks.<sup>3</sup> **Figures 2 and 3** below provide examples. Note: Main scheme lines are shown in yellow and crosslines in purple.



**Figure 2 Profile of 5B03-TIE08**



**Figure 3 Profile of 4B01-TIE08**

Note: The QC reports were generated based on the given accuracy specification of:

$$\pm\sqrt{a^2 + (b * d)^2}$$

Where, a=0.5 and b=0.013, d=depth

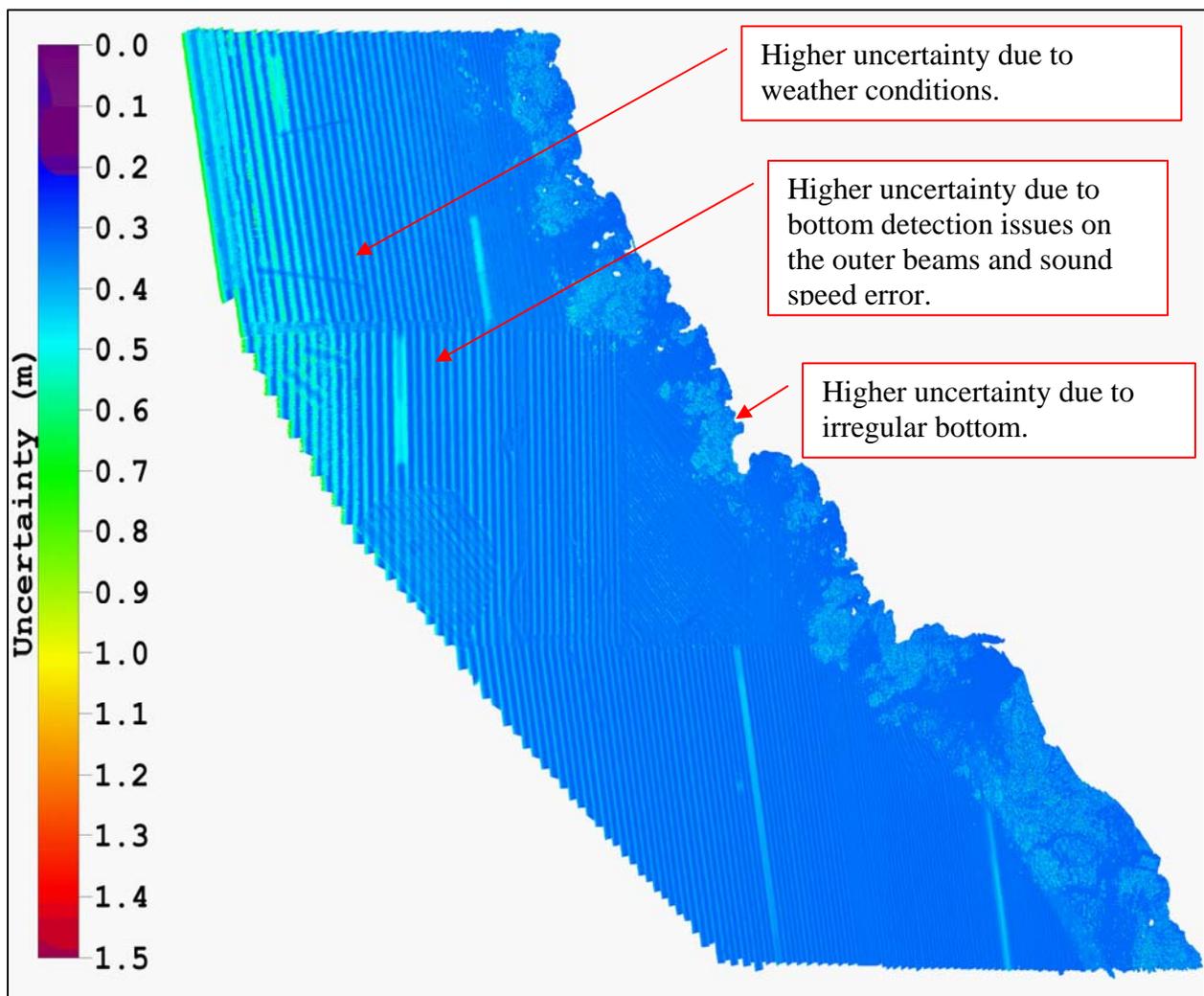
### Uncertainty Values

The majority of H12131 had uncertainty values of 0.32 m to 0.66 m, which met project specifications (**Figure 4**).<sup>4</sup>

As seen in the uncertainty surface graphic, uncertainty is generally lowest near the sonar nadir beams and increases toward the outside of each swath. This is expected and primarily a result of sound velocity error uncertainty and bottom detection.

Other areas of higher uncertainty include rock outcrops and irregular bottom topography.

Oscillations along track and port to starboard on the uncertainty surface are due to higher uncertainty computed due to vessel roll, again prevalent mostly in the outer beams. <sup>5</sup>



**Figure 4 Uncertainty DTM**

Survey Junctions

H12131 (Sheet B) junctions with:<sup>6</sup>

Registry #	Date	Junction Side
H12130 (Sheet A)	2009	North

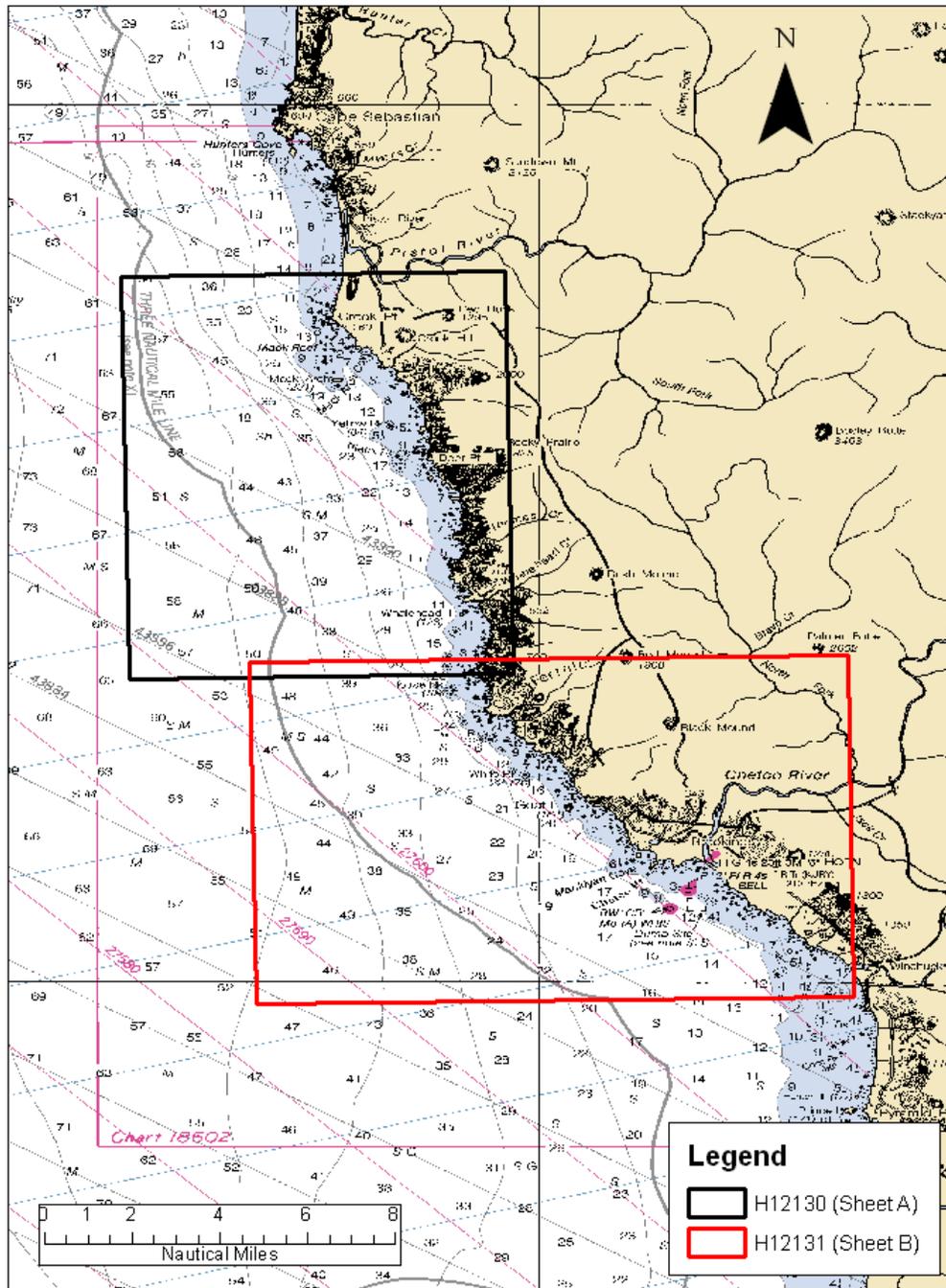


Figure 5 H12131 Survey Junctions

The surveys are in agreement along their common borders. The agreement was noted in the field using the CUBE surfaces during subset cleaning. The conformity is also apparent in the Final Combined BASE Surfaces.<sup>7</sup>

### Quality Control Checks

Positioning system confidence checks were conducted on a daily basis using the (POS MV) controller software. The controller software had numerous real-time displays that were monitored throughout the survey to ensure the positional accuracies specified in the NOS Hydrographic Surveys Specifications and Deliverables were achieved. These include, but are not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP), and Satellite Status. During periods of high HDOP and/or low number of available satellites, survey operations were suspended.

Sonar system confidence checks were performed weekly by comparing post processed depth information collected by multiple vessels surveying over a common area. In addition, bar checks were performed to maintain a high confidence level. Sound Velocity Probe confidence checks were conducted weekly by producing comparative sound velocity data between all vessels. This was conducted by having all sound velocity profiling equipment (MVP and SVPs) perform a cast in close proximity to each other in a near simultaneous time period.

### Data Quality

In general, the multibeam data quality for H12131 was good. Three notable problems follow:

1. A general downward and/or upward cupping is noticeable in the across track sounding profiles for certain areas. This is possibly due to a high volume of thermal layering and strong undercurrents in the water column. This problem was addressed by conducting SVP casts more frequently and reducing the line spacing interval. Even though this SVP error is noticeable in the data, it is within required specifications.<sup>8</sup>

R2 and D2 collected sound velocity profiles every two hours (or less) to compensate for velocity changes over time. Profiles were collected on alternate ends of lines, or often in the middle of lines, to minimize the spatial aspect of sound velocity changes.

The MVP system on the Pacific Star was also used at an interval of every two hours, except that the system was used to collect as many as five profiles along the course of a single line. Two hours later, another set of profiles would be collected, with the net result being the creation of a grid of sound velocity profiles that kept differences in time and distance to a minimum between the survey data and the in-use sound velocity profile.

2. Some small holidays over and around features exist in the data. The least depth was not obtained on some submerged features, in cases such as these, several attempts are made to obtain complete coverage, but may not be achieved due to safety concerns.<sup>9</sup>

Detection requirements were met by minimizing vessel speed when necessary, using sonar range scales appropriate to the water depth to maximize ping rates, and maximizing swath overlap. These variables were adjusted in real-time by the online acquisition crew based on the WinFrog QC and coverage displays. The office-based processing crew provided feedback after preliminary processing and coverage creation in CARIS HIPS, and reported re-runs or in-fills as necessary to the acquisition crew.

3. During subset cleaning it became apparent in areas of H12131 that minor dynamic bottom issues were present, on the order of 0.05 to 0.10 meters. It should be noted that this survey was conducted in multiple phases, since it was conducted in conjunction with the M-L906-KR-08 (California State Mapping Project). Due to weather conditions and logistical considerations, survey operations were not confined to a particular sheet or area.

Since there is no way to rectify this issue (because this is a dynamic bottom), the data was edited to reflect the shoalest depth and all other data points were marked as rejected in subset editor.<sup>10</sup>

Refer to the M-M928-KR-09 Data Acquisition and Processing Report for a detailed description of the survey equipment and methodology used over the course of this survey.

### B.3 Corrections to Echo Soundings

Refer to the M-M928-KR-09 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings. No deviations from the report occurred.

### B.4 Data Processing

Refer to the M-M928-KR-09 Data Acquisition and Processing Report for a detailed description of the processing flow.

The final fieldsheet for H12131 is called “H12131\_(Sheet\_B)” and it contains three BASE surfaces. The following parameters were used:<sup>11</sup>

- 0-23 meters: 1 m resolution, name “H12131\_1m\_Final”
- 20-52 meters: 2 m resolution, name “H12131\_2m\_Final”
- 46-115 meters: 4 m resolution, name “H12131\_4m\_Final”

Notes:

- Maximum depth was approximately 90 m; therefore resolutions coarser than 4m were not computed.
- Due to the quantity of data, final CUBE BASE surfaces were created with CARIS v 7.0 in the CARIS Spatial Archive (CSAR) format. These surfaces are located under the “H12131\CARIS\Fieldsheets\” directory.

The final S57 file for this project is called “H12131\_S57\_Features.000”.<sup>12</sup> This file contains the object and metadata S57 objects as required in the Specifications and Deliverables.

## C. VERTICAL AND HORIZONTAL CONTROL

Refer to the M-M928-KR-09 Horizontal and Vertical Control Report for a detailed description of the horizontal and vertical control used on this survey. No deviations from the report occurred. A summary of the project's horizontal and vertical control follows.

### Horizontal Control

The horizontal control datum for this survey was the North American Datum of 1983 (NAD83).

For real-time DGPS corrections, a CSI MBX-3 unit was tuned to the Cape Mendocino, CA. USCG DGPS site. The unit output differentially corrected positions at 1 Hz to the (POS MV) 320 V4 where it was integrated with inertial data, and a position for the top-center of the IMU was generated. This position was logged concurrently with the bathymetry from WinFrog and the POS file by WinFrog PosMvLogger. It was later corrected for offsets to the multibeam echosounder (MBES) by CARIS HIPS in processing.

Final positioning, however, was done using post-processed kinematic (PPK) methods. Applanix POSpac software was used in conjunction with the POS files and local base station data to generate a higher accuracy position which was applied in processing, replacing the real-time position records.

See M-M928-KR-09 Horizontal and Vertical Control Report for a more detailed description of PPK positioning methods used.

### Vertical Control

All sounding data were initially reduced to mean lower low water (MLLW) using predicted tidal data. Predicted tidal data for a month long period, was assembled (for gauges 9419750 & 9431647) from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). A cumulative file for the gauges was updated monthly by appending the new data. It should be noted that predicted tides were used in the field for preliminary processing only.

On March 1, 2010, verified tide data was acquired from the National Water Level Observation Program accessed through the NOAA tides and currents website (<http://tidesandcurrents.noaa.gov/>). Tidal zoning file was developed and provided by NOAA. From March 1, 2010 to March 2, 2010, all sounding data were re-merged using CARIS HIPS and SIPS tide routine. Verified tidal data from the Crescent City, CA. (9419750), and the Port Orford, OR. (9431647) tidal stations were used for the final Navigation Base Surfaces and S-57 Feature files. Tidal Stations were owned and operated by the NOAA's National Ocean Service through the National Water Level Observation Program.

**Table 2 – Tide Gauge**

Gauge	Location	Latitude	Longitude
9419750	Crescent City, CA	41° 44.7' N	124° 10.9' W
9431647	Port Orford, OR	42° 44.4' N	124° 29.8' W

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

H12131 survey was compared with charts shown in **Table 3**.

**Table 3 – Chart Comparisons<sup>13</sup>**

Chart Number	Type	Cell Name	Scale	Edition	Edition Date
18007	Raster	n/a	1:811,980	33	February-2009
18010	Raster	n/a	1:196,948	21	March-2007
18600	Raster	n/a	1:207,840	14	January-2002
18602	Raster	n/a	1:40,000	12	April-2003
18600	ENC	US30R03M	n/a	9	September-2009

### Comparison of Soundings

A comparison of soundings was accomplished by overlaying the latest edition of NOAA charts and ENCs onto the final BASE surfaces in CARIS HIPS & SIPS. The general agreement between the charted soundings and H12131 soundings is noted. A more detailed comparison was undertaken for any charted shoals or other dangerous features.

Agreement between the H12131 BASE surface depths and the charted soundings for all applicable ENC and Raster charts was within +/- 1 to 2 fathoms. Since the survey area was ensonified with 100% multibeam coverage, shoaler depths were discovered between the charted soundings. In these areas, when necessary, the sounding was designated to ensure its inclusion in the finalized BASE surface.<sup>14</sup> Exceptions follow:

1. Some discrepancy exists at the exact position of charted soundings on steep slopes, likely due to the charted soundings being slightly out of position, making a large difference in depths apparent.<sup>15</sup>
2. Charted rocks and islets on ENC US30R03M, fall within the multibeam coverage and should be modified to agree with the H12131 survey.<sup>16</sup>

3. Charted Rock labeled “Awash 1/3 tide” located on chart 18602 at 42-02-52.71N 124-18-02.39W, should have it’s position adjusted to coincide with the H12131 multibeam survey.<sup>17</sup>

The Hydrographer recommends that soundings within the survey limits of H12131 supersede all prior survey and charted depths.<sup>18</sup>

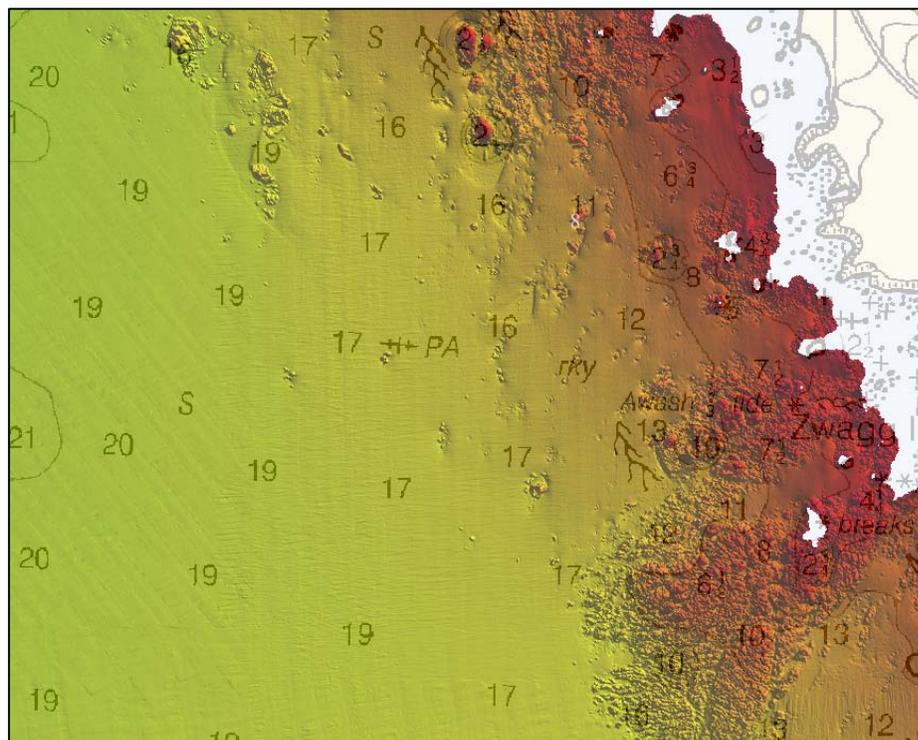
### Automated Wreck and Observation Information System

There were four AWOIS items assigned to H12131, items 16145, 16147, 16149 and 16151,<sup>19</sup> refer to Appendix II for a detailed description.<sup>20</sup>

### Charted Features

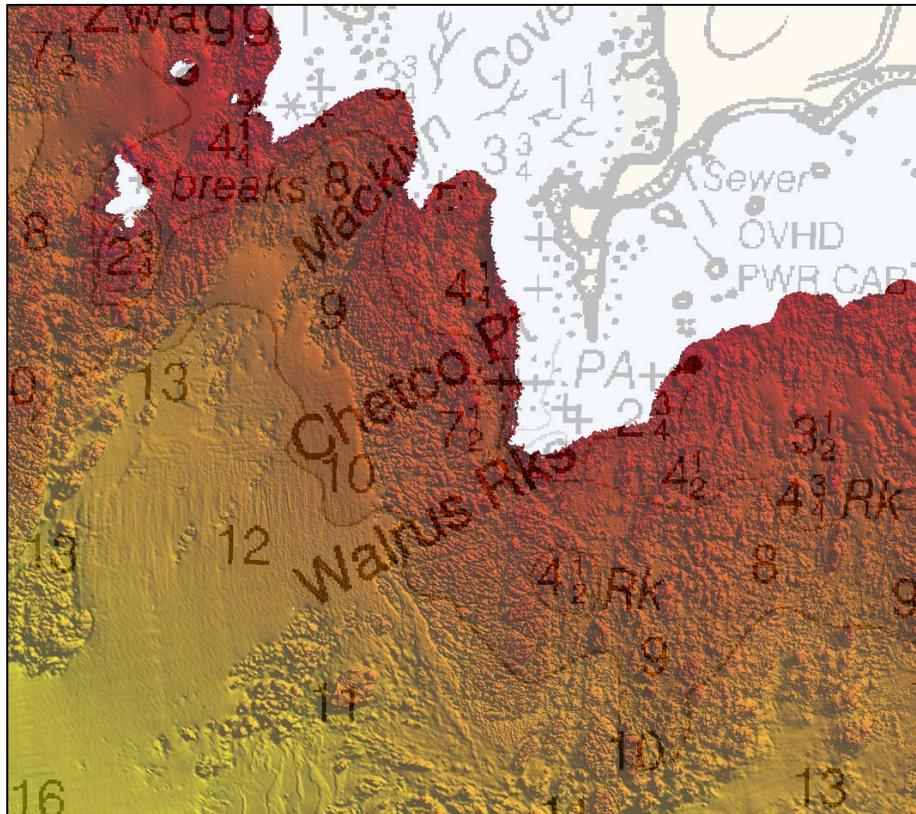
There were two charted features labeled ED, PD, or PA within the limits of H12131.

1. The wreck label “PA” charted at 42-02-58N 124-18-57W on chart 18602 was not found during the H12131 survey. This area was surveyed with 100% multibeam coverage and contains numerous rock outcrops, making it difficult to identify a wreck if one did exist. Recommend removal of feature from existing charts.<sup>21</sup> Refer to **Figure 6** below for a detailed view.



**Figure 6 H12131 Charted Feature**

1. The wreck label “PA” charted at 42-02-30N 124-17-30W on chart 18602, was located on the near shore limits of the H12131 survey. This area was surveyed with 100% multibeam coverage and contains numerous rock outcrops, making it difficult to identify a wreck if one did exist. Since the entire area around the charted feature was not ensonified, no recommendation could be made. Refer to **Figure 7** below for a detailed view.<sup>22</sup>



**Figure 7 H12131 Charted Feature**

### Dangers to Navigation

Five dangers to navigation were found and reported for this survey. See Appendix I for the DtoN reports.<sup>23</sup>

### D.2 Additional Results

None to note.

### Bottom Samples

None were assigned for this sheet.<sup>24</sup>

### Aids to Navigation

The following aids to navigation were examined during this survey:<sup>25</sup>

1. Buoy R "2" FI R 4s BELL at 42-02-25 N, 124-16-36 W (chart 18602) found to exist and to be serving its intended purpose.
2. Buoy RW "CR" Mo (A) WHIS at 42-01-40 N, 124-17-02 W (chart 18602) found to exist and to be serving its intended purpose.

No uncharted aids to navigation were found in the survey area.<sup>26</sup>

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**Revisions and Corrections performed during office processing and certification.**

- <sup>1</sup> Concur.
- <sup>2</sup> Concur. Data is within specifications and adequate to supersede charted data in the common area.
- <sup>3</sup> Concur. Areas that fall below the 95 percent confidence level are common in these situations having steep slopes and rocks. Data is adequate to supersede charted data in the common area.
- <sup>4</sup> Concur.
- <sup>5</sup> Concur. Data is adequate to supersede charted data in the common area, despite of the areas with high uncertainties.
- <sup>6</sup> H12131 junctions with survey H12130 to the North . A common junction was made with an adjoining portion of H12130.
- <sup>7</sup> Concur.
- <sup>8</sup> Concur. Data is adequate and within specifications despite Sound velocity errors. It is recommended that the data from H12131 supersede charted data within the common area.
- <sup>9</sup> Concur. Holidays were examined in Caris HIPS and SIPS 7.0. In places where the least depth wasn't captured, the holiday is preserved in the HCell coverage. In some cases, where there is evidence, a rock with unknown depth was included in the holiday. Chart features as depicted in the HCell.
- <sup>10</sup> Concur. Chart depths as depicted in the HCell.
- <sup>11</sup> A 4 meter combined surface was created during the Survey Acceptance Review and was used for cartographic compilation of this survey.
- <sup>12</sup> The feature file was used in the compilation of H12131
- <sup>13</sup> The HCell was compiled to chart 18602, 1:40,000 and 18602 inset, 1:10,000
- <sup>14</sup> Concur.
- <sup>15</sup> Concur with clarification. Generalizing depths offshore is no longer accepted practice. Chart depths as depicted in the HCell
- <sup>16</sup> Concur. Chart features as depicted in the HCell.
- <sup>17</sup> Concur. Chart features as depicted in the HCell.
- <sup>18</sup> Concur.
- <sup>19</sup> Concur with clarification. The field submitted an AWOIS report containing different assigned number for each AWOIS.  
The following are the proper numbers for each AWOIS item and their location.

AWOIS		
	Item #	
16145	(53812)	42-05-55.675N, -124-21-42.664 W. Chart feature as depicted in the HCell.
16147	(53813)	42-04-49.493N, -124-20-34.819 W. Chart feature as depicted in the HCell
16149	(53814)	42-02-59.407N,- 124-23-04.362 W. Chart feature as depicted in the HCell
16151	(53815)	42-01-50.399N, -124-16-07.327 W. A blue note was added to the HCell to be retained.

An additional AWOIS item that was addressed during H12130 HCell falls within the limits of H12131 HCell. It is item 16143 (53812) located at 42-05-55.675N,124-21-42.664W. The islet is included in HCell H12131. The section of the H12130 AWOIS report that addresses this feature is attached to this report.

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<sup>20</sup> AWOIS report is attached to this document, even though the AWOIS Item numbers are the incorrect ones. See endnote 19 for clarification.

<sup>21</sup> Concur with hydrographers recommendation of removing the charted wreck. A blue note was added to the HCell to be removed.

<sup>22</sup> Concur. A blue note was added to the HCell to retain the wreck label "PA" charted at 42-02-30N 124-17-30W.

<sup>23</sup> DTON report is attached to this report. All DTONs have been applied to the charts.

<sup>24</sup> No bottom samples were collected during this survey. There is a general blue note in the HCell recommending that all charted bottom samples be retained. Unless they fall within rocky seabed areas, in which case they are blue noted to be removed.

<sup>25</sup> Chart ATON according to the latest ATONIS information.

<sup>26</sup> Concur.

## REPORT OF DANGERS TO NAVIGATION

**Hydrographic Survey Registry Number:** H12131 (Sheet B)

**Survey Title:**      **State:**           Oregon  
                          **Locality:**       Pacific Ocean – Southern Oregon  
                          **Sub-locality:** Cape Ferrelo to Winchuck River

**Project Number:**    M-M928-KR-09

**Survey Dates:**     September 2009 to November 2009

**Survey Danger Acquisition Date and Time:** See feature.

Features are reduced to Mean Lower Low Water using preliminary tidal zoning provided by COOPS and preliminary observed tide data from gauges 941-9750 (Crescent City) and 943-1647 (Port Orford).

### CHARTS AFFECTED:

Chart Number	Type	Cell Name	Scale	Edition	Edition Date
18010	Raster	n/a	1:811,980	21	Jan-07
18600	Raster	n/a	1:196,948	14	Jan-02
18602	Raster	n/a	1:40,000	12	Apr-03
18007	Raster	n/a	1:200,000	33	Feb-09
18600	ENC	US3OR03M	n/a	9	Oct-09

### DANGER:

Feature	Depth	Latitude	Longitude	Time (UTC)
1. Sounding	6.4 fathoms	42-06-32.81N	124-22-30.96W	2009-10-30 @ 22:32:35
2. Sounding	9.9 fathoms	42-06-04.42N	124-22-09.35W	2009-09-26 @ 02:45:05
3. Sounding	3.6 fathoms	42-00-38.93N	124-14-38.20W	2009-09-24 @ 20:26:20
4. Sounding	5.6 fathoms	42-00-35.41N	124-14-50.95W	2009-09-23 @ 22:22:52
5. Sounding	1.4 fathoms	42-02-48.72N	124-18-19.32W	2009-10-28 @ 23:35:18

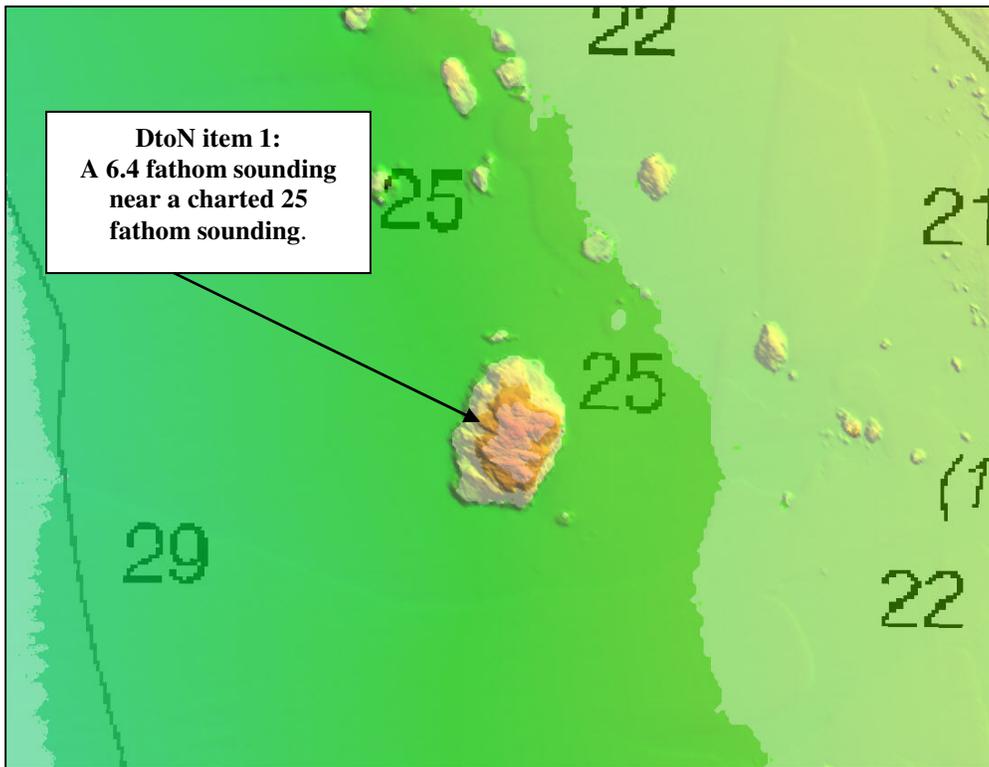


Figure 1: DtoN Item 1

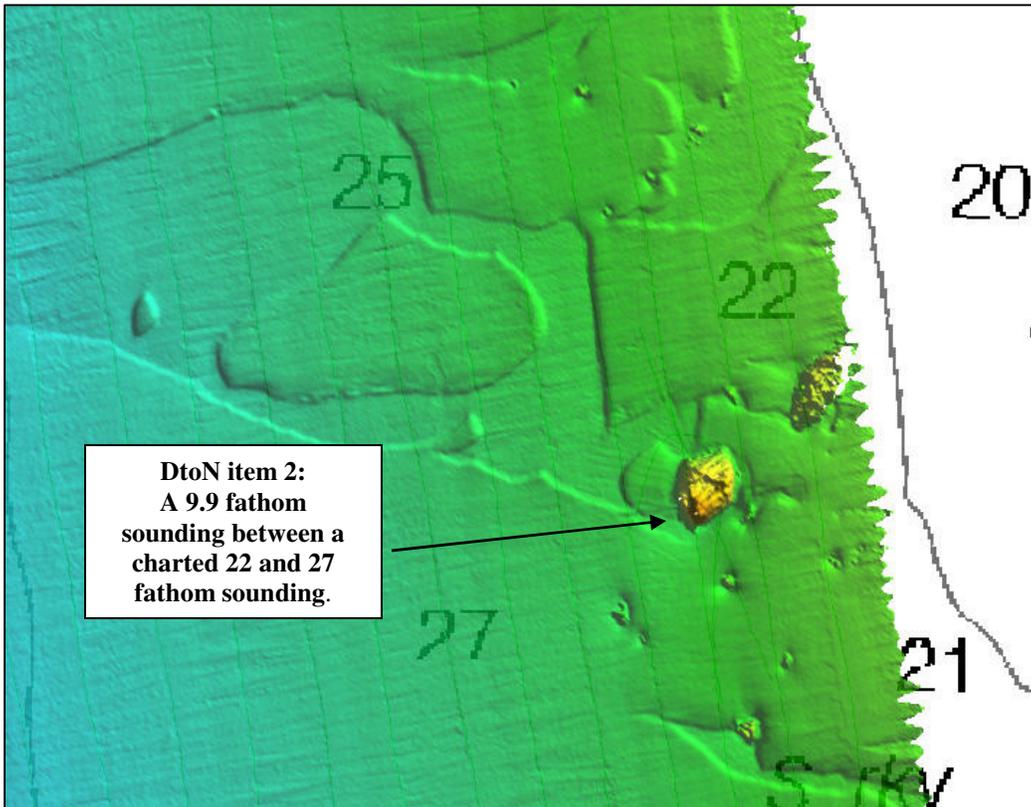
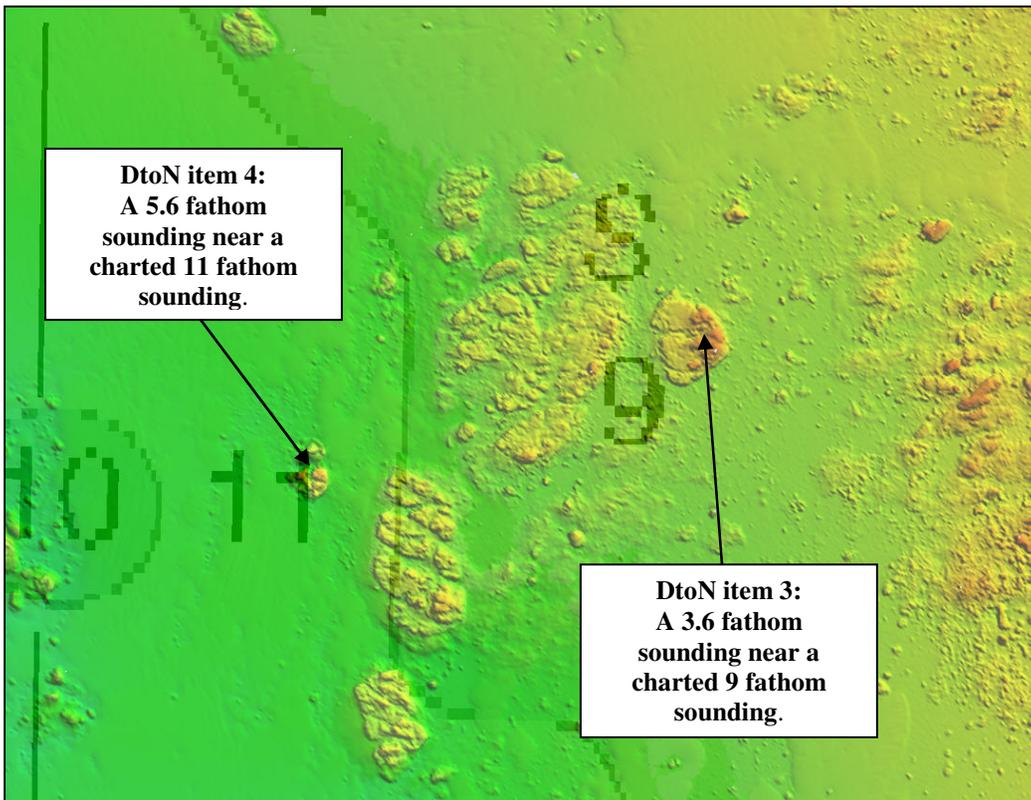
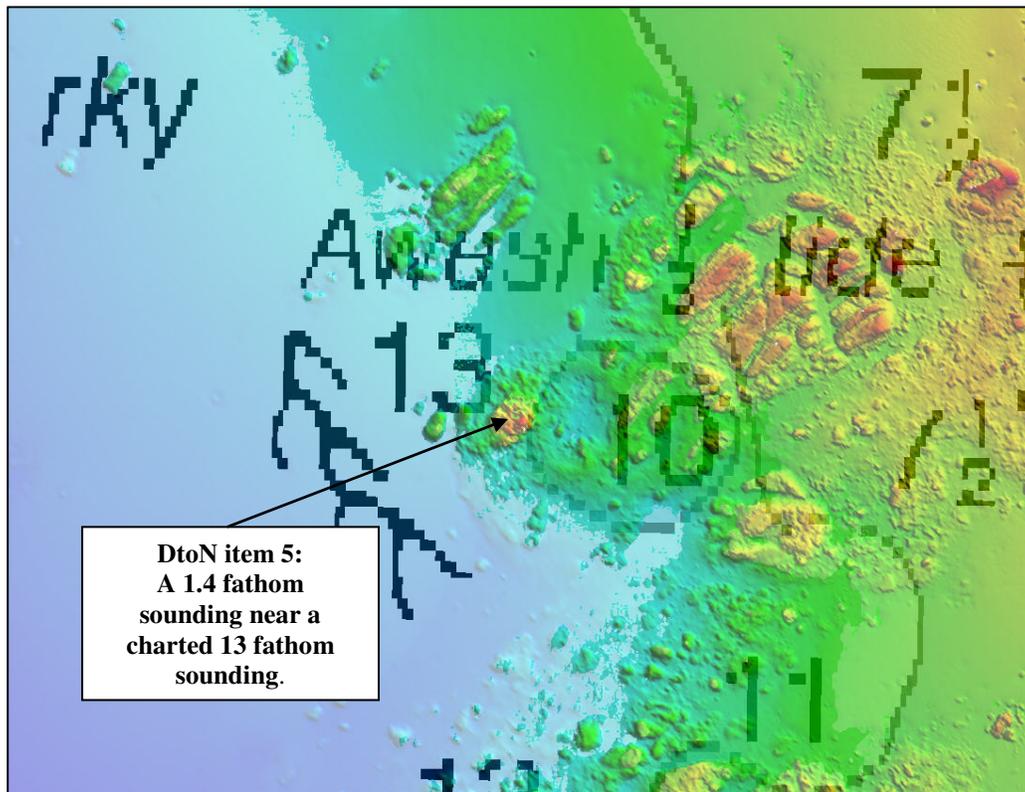


Figure 2: DtoN Item 2



**Figure 3: DtoN Items 3 & 4**



**Figure 4: DtoN Item 5**

**COMMENTS:**

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch (N/CS34), at (206) 526-6836.



## **APPENDIX I -- DANGER TO NAVIGATION REPORTS**

Five dangers to navigation were found and reported for during H1231.

[AppendixI\(Danger to Navigation Reports\)\H12131 DTON Combine Fugro 110609.pdf](#)

## APPENDIX II – SURVEY FEATURE REPORT

There were four AWOIS items assigned to H12131, items 16145, 16147, 16149 and 16151.

Item 16145:

This item was investigated and a detached position (DP) acquired on October 30, 2009 by R/V D2. The height of the feature was determined visually. This item is included in the final S57 file for this sheet, called “H12131\_S57\_Features.000”.



**Figure 1 H12131 AWOIS Item 16145 (Islet)**

Item 16147:

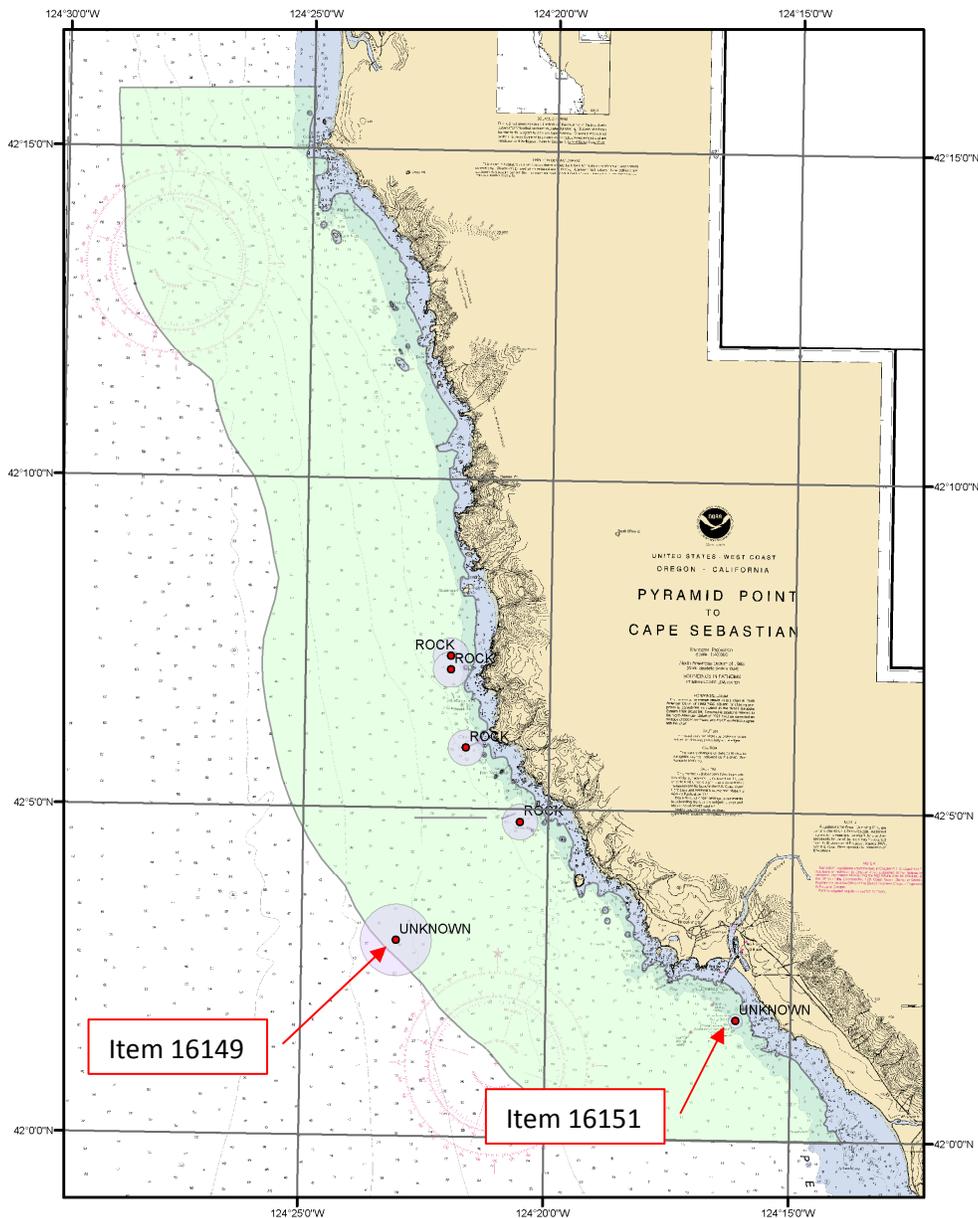
This item was investigated and a detached position (DP) acquired on October 30, 2009 by R/V D2. The height of the feature was again determined visually. This item is included in the final S57 file for this sheet, called "H12131\_S57\_Features.000".



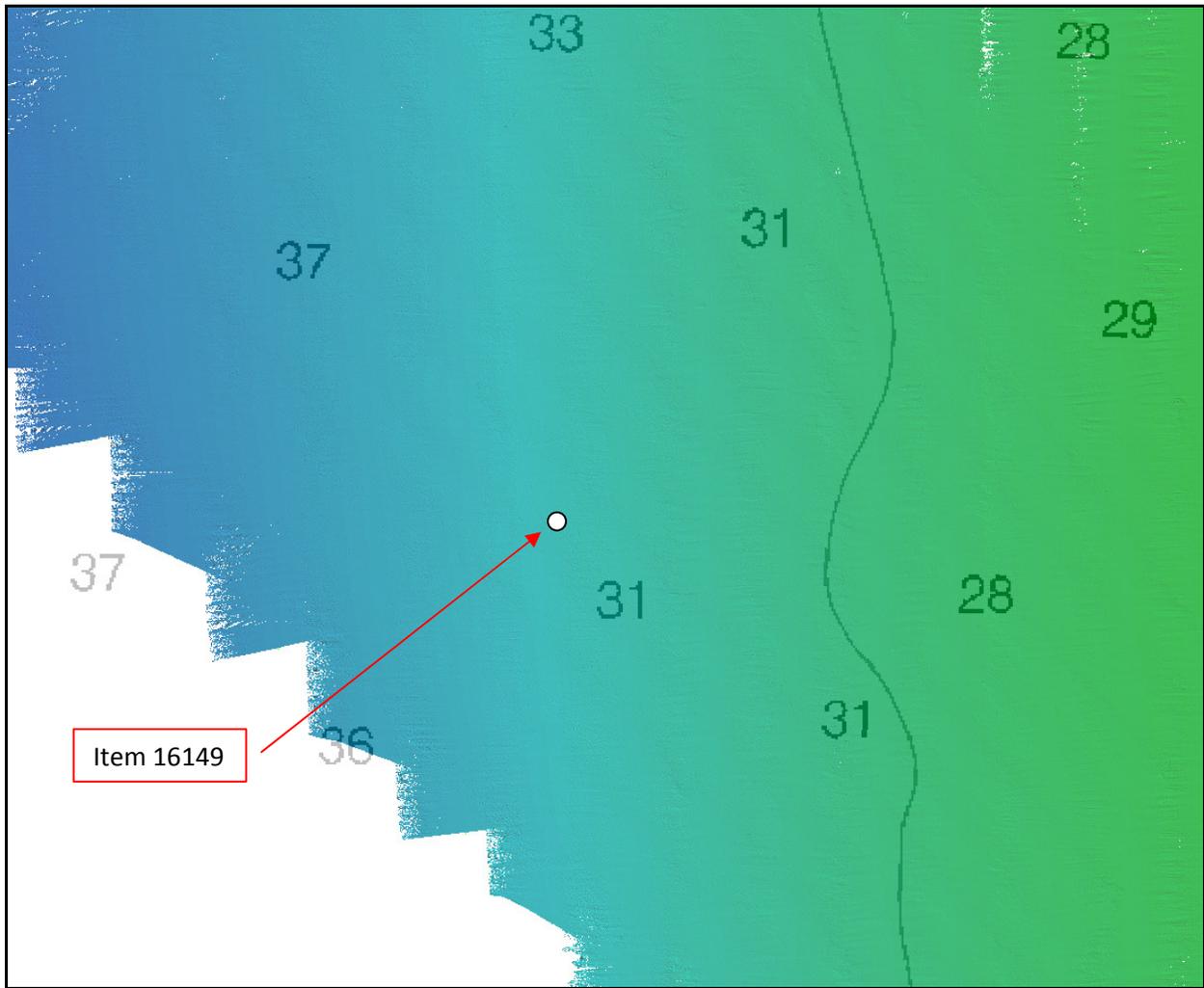
**Figure 2 H12131 AWOIS Item 16147 (Islet)**

Item 16149:

This item was located on the outer limits of H12131, refer to **Figure 3**, since the search radius would have been outside the survey limits, Fugro Pelagos, Inc. were instructed to stop at the survey bounds, refer to Appendix V for correspondence. The portion of the search area surveyed was ensonified using object detection criteria, but no feature was located, refer to **Figure 4**.



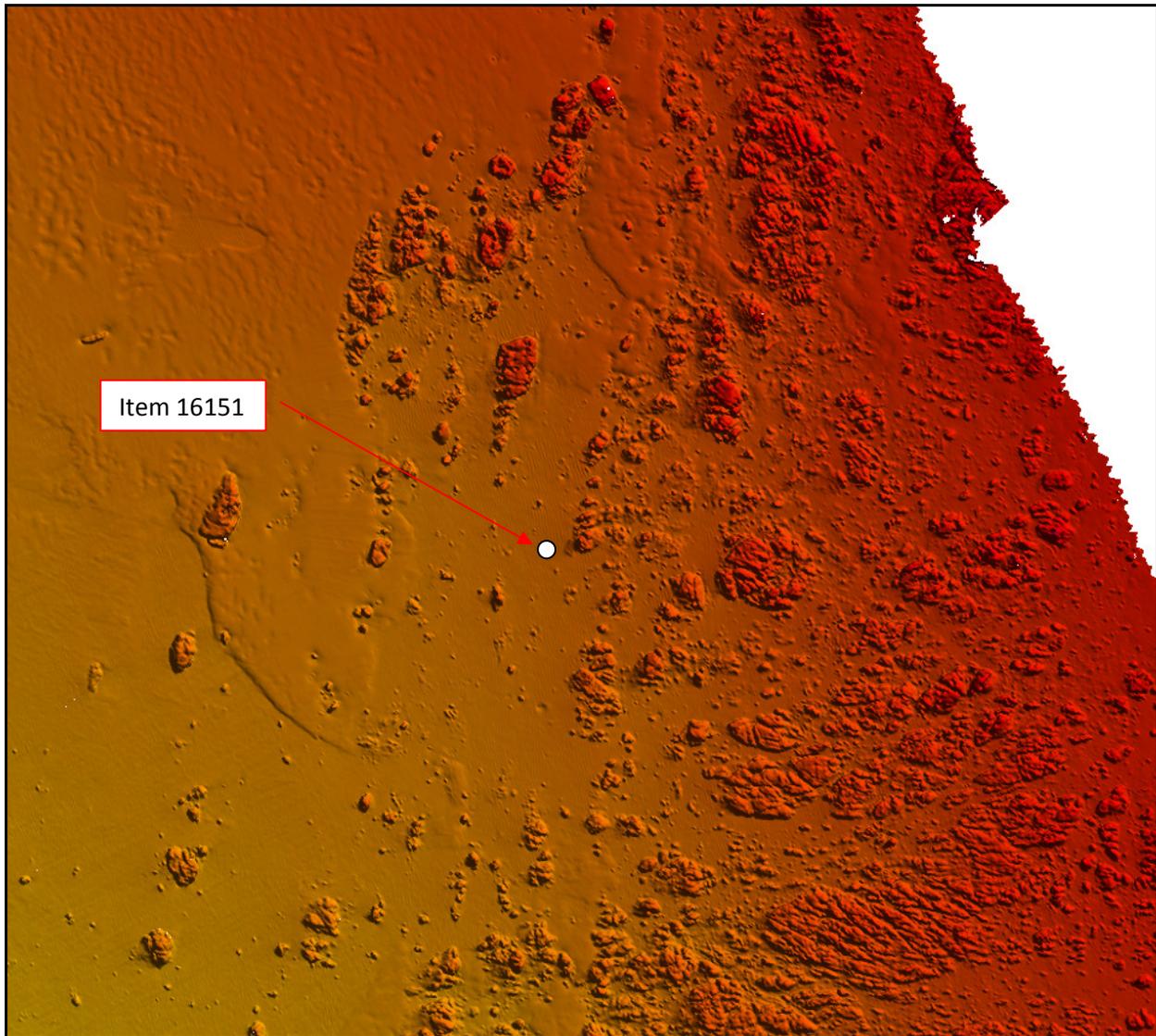
**Figure 3 H12131 AWOIS Items**



**Figure 4 H12131 AWOIS Item 16149**

## Item 16151:

This item was located in the southeast portion of H12131, refer to **Figure 3**. The search area was ensonified using object detection criteria and contained numerous rock outcrops, making it difficult to identify a wreck or other feature if one did exist. Refer to **Figure 5** for a detailed view.



**Figure 5 H12131 AWOIS Item 16151**

Item 16143:

This item was investigated and a detached position (DP) acquired on October 30, 2009 by R/V D2. The height of the feature was again determined visually. This item is included in the final S57 file for this sheet, called "H12130\_S57\_Features.000".



**Figure 2 H12130 AWOIS Item 16143 (Islet)**



**Dean Moyles**

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**From:** David.Scharff [David.Scharff@noaa.gov]  
**Sent:** Monday, September 28, 2009 11:55 AM  
**To:** James Hailstones  
**Subject:** Re: Oregon Project a  
**Attachments:** David\_Scharff.vcf

Hi James,

Sorry for the delay I was on travel.

- POC for OCU: Chris Goldfinger ([gold@coas.oregonstate.edu](mailto:gold@coas.oregonstate.edu))
- No need to compile the BS mosaic, I think they just needed the HDCS files.
- Regarding the AWOIS item - you can stay inside the survey limits.

Thanks,  
Dave

James Hailstones wrote:

- >
- > Afternoon Dave
- >
- > Still looking to clarify the questions below.
- >
- > · Contact at OSU re backscatter data?
- >
- > · Do we need to compile BS mosaic if OSU is doing it?
- >
- > · 1 x AWOIS target has boundary outside survey limit (see attached).
- > Survey AWOIS boundary or keep to survey limits?
- >
- > Look forward to hearing from you.
- >
- > Regards
- >
- > James
- >
- > \*From:\* James Hailstones
- > \*Sent:\* Saturday, September 12, 2009 10:48 AM
- > \*To:\* 'David.Scharff'
- > \*Subject:\* Oregon Project
- >
- > Morning Dave
- >
- > It is our intention to transit to the worksite Thursday next week and
- > commence this project. To facilitate can you please have Port Orford
- > and Crescent City tide gauges added to the hot list?
- >
- > A couple of questions also:
- >
- > Project instructions say that we will provide data to the Oregon State
- > University for them to generate Backscatter Mosaic. Does that mean we
- > don't need to? Further to this, can you provide contact details for
- > the person at OSU who we will liaise with?
- >

**H12131 HCell Report**  
Fernando Ortiz, Physical Scientist  
Pacific Hydrographic Branch

**1. Specifications, Standards and Guidance Used in HCell Compilation**

HCell compilation of survey H12131 used:

Office of Coast Survey HCell Specifications: Version: 4.0, 2 June, 2010.  
HCell Reference Guide: Version 2.0, 2 June, 2010.

**2. Compilation Scale**

Depths and features for HCell H12131 were compiled to the largest scale raster charts shown below:

Chart	Scale	Edition	Edition Date	NTM Date
18602	1:40,000	12 <sup>th</sup>	04/01/2003	04/30/2011
18602	1:10,000	12 <sup>th</sup>	04/01/2003	04/30/2011

The following ENC's were also used during compilation:

Chart	Scale
US3OR03M	1:196,948

**3. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 4-meter Combined Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 and 1:5,000 for charts 18602 and 18602 the inset at survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
-5	10	2
10	20	3
20	50	3.5
50	500	4

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

#### 4. 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 metric and fathom equivalent contour values are shown in the table below.

Chart Contour Intervals in Fathoms from Chart 18602	Metric Equivalent to Chart Fathoms, Arithmetically Rounded	Metric Equivalent of Chart Fathoms, with NOAA Rounding Applied	Fathoms with NOAA Rounding Applied	Fathoms with NOAA Rounding Removed for Display on H12131_SS.000
1	1.8288	2.0574	1.125	1
2	3.6576	3.8862	2.125	2
3	5.4864	5.715	3.125	3
5	9.144	9.3726	5.125	5
10	18.288	18.517	10.125	10
20	36.576	37.9476	20.750	20
30	54.864	56.2356	30.750	30
40	73.152	74.5236	40.750	40

#### 5. Meta Areas

The following Meta objects areas are included in HCell H12131:

M\_QUAL  
M\_CSCL

The Meta area objects were constructed on the basis of the limits of the hydrography.

#### 6. Features

Features addressed by the field units are delivered to PHB where they are deconflicted against the hydrography and the largest scale chart. These features, as well as features to be retained from the chart and features digitized from the Base Surface, are included in the HCell. The geometry of these features may be modified to emulate chart scale per the HCell Reference Guide on compiling features to the chart scale HCell.

#### 7. Spatial Framework

##### 7.1 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.

##### 7.2 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

See the HCell Reference Guide for details of conversion from metric to charting units, and application of NOAA rounding.

**7.3 S-57 Object Classes**

The CS HCell contains the following Object Classes:

\$CSYMB	Blue Notes (points) —Notes to the MCD chart Compiler
*LNDARE	Land area
*LNDELV	Land elevation
M_CSCL	Compilation Scale of Data
M_QUAL	Data quality Meta object
OBSTRN	Obstruction areas.
SBDARE	rocky seabed areas
SOUNDG	Soundings at chart scale density
*UWTROC	Rock features

\* The M\_QUAL is adequate for NDB product searches except for features in these object classes which reside outside the M\_QUAL limits.

The SS HCell contains the following Object Classes:

DEPCNT	Generalized contours at chart scale intervals (See table under section 4.)
SOUNDG	Soundings at the survey scale density (See table under section 3.)

**8. Data Processing Notes**

There were no significant deviations from the standards and protocols given in the HCell Specification and HCell Reference Guide.

**9. QA/QC and ENC Validation Checks**

H12131 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell base cell (000) file. The millimeter precision metric S-57 HCell was converted to 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.

**10. Products**

**10.1 HSD, MCD and CGTP Deliverables**

H12131_CS.000	Base Cell File, Chart Units, Soundings and features compiled to 1:40,000 and 1:10,000
H12131_SS.000	Base Cell File, Chart Units, Soundings and Contours compiled to 1:10,000 and 1:5,000
H12131_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
H12131_outline.gml	Survey outline
H12131_outline.xsd	Survey outline

**10.2 Software**

CARIS HIPS Ver. 7.0	Inspection of Combined BASE Surfaces
CARIS BASE Editor Ver. 2.1	Creation of soundings and bathy-derived features, creation of the meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.1	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, SP 1	Validation of the base cell file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

## **11. Contacts**

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

Fernando Ortiz  
Physical Scientist  
Pacific Hydrographic Branch  
Seattle, WA  
206-526-6859  
[Fernando.ortiz@noaa.gov](mailto:Fernando.ortiz@noaa.gov).

APPROVAL SHEET  
H12131

The survey evaluation and verification has been conducted according to branch processing procedures and the HCell compiled per the latest OCS HCell 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 disapproval 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.