

H11738

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. .... H11738

### LOCALITY

State ..... CALIFORNIA

General Locality ..... Northern California Coast

Sublocality ..... Point Reyes Light to Drakes Bay

**2007**

### CHIEF OF PARTY

..... Andrew Orthmann, Fugro-Pelagos, Inc.

### LIBRARY & ARCHIVES

DATE .....

**HYDROGRAPHIC TITLE SHEET**

H11738

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.  
Sheet G

State CALIFORNIA

General Locality Northern California Coast

Sublocality Point Reyes Light to Drakes Bay

Scale N/A Dates of Survey 02/16/2007 - 04/04/2007

Instructions Date 6/26/2007 Project No. OPR-M-M924-KR-07

Vessel F/V PACIFIC STAR (556510)

Chief of Party Andrew Orthmann

Surveyed by Orthmann, Moyles, Reynolds, Briggs, Gill, Mount, Farley, Lapointe, et al.

Soundings taken by echo sounders: Reson Seabat 8101 (Hull Mounted) echosounder

Graphic record scaled by Fugro Pelagos, Inc. personnel

Graphic record checked by Fugro Pelagos, Inc. personnel

Evaluation by A. Raymond Automated plot by N/A

Verification by A. Raymond, K. Reser

Soundings in Fathoms and Feet at MLLW

REMARKS: Time in UTC. UTM Projection Zone 10

Revisions and annotations appearing as endnotes were

generated during office processing.

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

All separates are filed with the hydrographic data.



## A. AREA SURVEYED

H11738 (Sheet G) encompasses the area from Point Reyes Light to Drakes Bay, California. It is bound by the coordinates listed in Table 1.

This data was originally collected by Fugro Pelagos, Inc. for the Seafloor Mapping Lab at California State University Monterey Bay (CSUMB) for the purpose of fisheries habitat mapping. CSUMB refers to this data set as “Northern Central California Coast State Waters Mapping Project Phase II”. After submission to CSUMB in June 2007, an agreement with NOAA was reached to reprocess and QC the data to produce deliverables that meet NOAA specifications and are suitable to OCS for nautical charting purposes.<sup>1</sup> This report and accompanying data represent those deliverables.

Hydrographic data collection began on February 16, 2007 and ended on April 4, 2007.

**Table 1 – Sheet Bounds**

<b>Point</b>	<b>Latitude (North)</b>	<b>Longitude (West)</b>
1	38-03-57	123-05-52
2	38-03-57	122-49-25
3	37-55-57	122-49-25
4	37-55-57	123-05-52
5	38-03-57	123-05-52

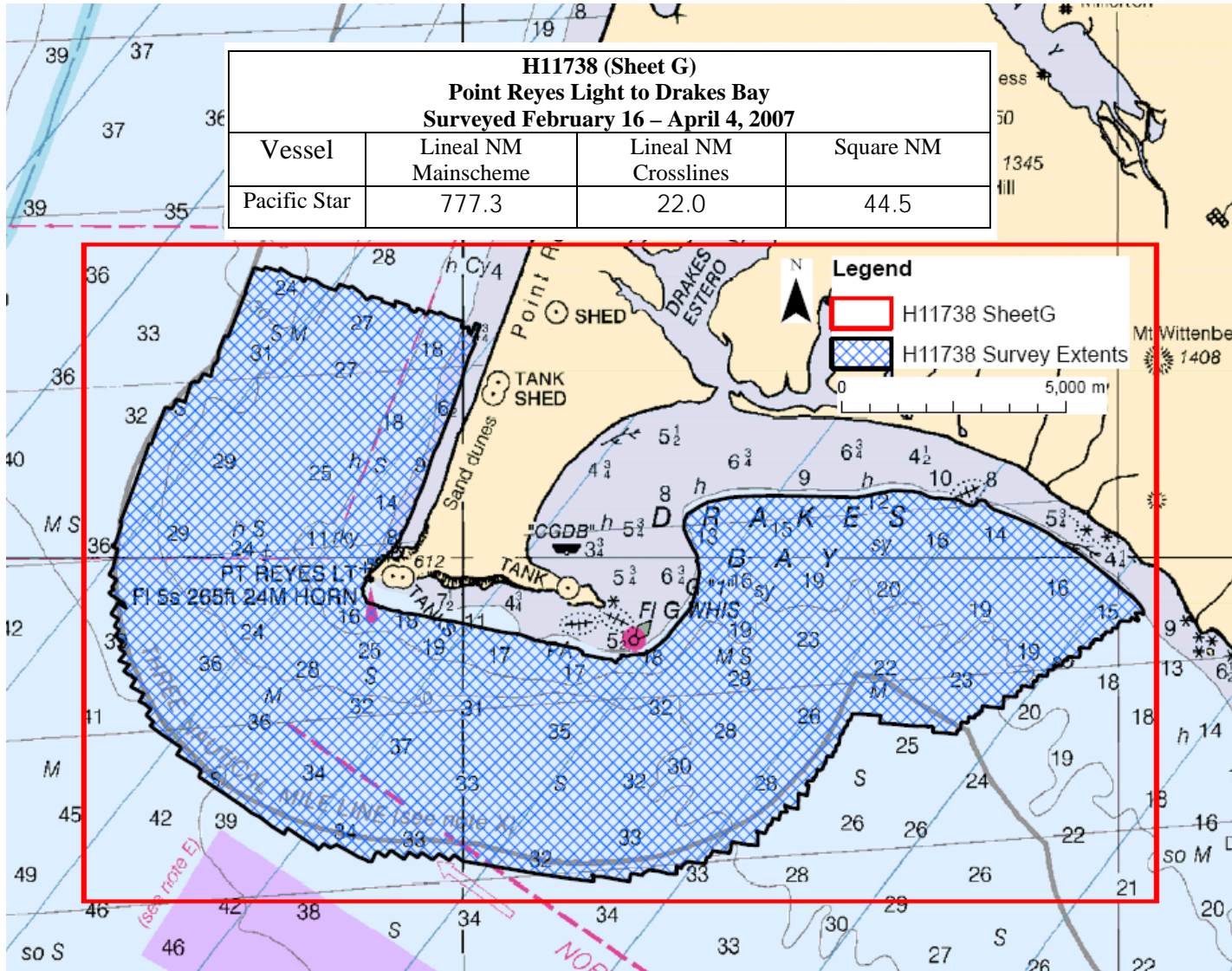


Figure 1 H11738 Area Surveyed

## B. DATA ACQUISITION AND PROCESSING

Refer to the OPR-M-M924-KR-07 Data Acquisition and Processing Report<sup>2</sup> 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 acquired all sounding data for H11738. The Pacific Star, which is 162 feet in length with a draft of 14 feet, was equipped with a Reson 8101 with option 033 (pseudo Side Scan) for multibeam data acquisition. The vessel was also equipped with two AML sound velocity and pressure sensors (SV&P) for sound velocity profiles. Vessel attitude and position were measured using an Applanix Position and Orientation System for Marine Vessel (POSMV 320 V4) with XTF files logged in Triton ISIS v7.1.428.53.

Refer to OPR-M-M924-KR-07 Data Acquisition and Processing Report for a complete listing of equipment and vessel descriptions.

### B.2 Quality Control

#### Crosslines

Quality control crosslines were planned so that all main scheme lines would intersect with at least one crossline. This resulted in at least one crossline for each block of mainlines. Total crossline length surveyed was 22 nautical miles or 2.8 percent of the total main scheme nautical miles (5 % was not required). Conducted crosslines were distributed throughout the sheet to ensure adequate crossline distribution. All crosslines were compared to the mainline CUBE surface, using the CARIS HIPS QC report routine and all beams passed at 95 percent confidence level or better. Results are located in Separate IV.<sup>3</sup>

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

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

where, a = 0.5, b = 0.013 and d = depth.

However, since a variance of a difference, rather than a variance from a mean is being used, the a and b values were defined in the user defined option within the CARIS HIPS QC Report routine:

$$a = 0.5 * \sqrt{2} = 0.707$$

$$b = 0.013 * \sqrt{2} = 0.018$$

### Uncertainty Values

The majority of H11738 had uncertainty values of 0.30 to 0.60 m, with extremes of 0.23 m and 1.02 m. The effects of speed sound uncertainty are apparent in the graphic below. No uncertainty values exceeded IHO Order 1.<sup>4</sup>

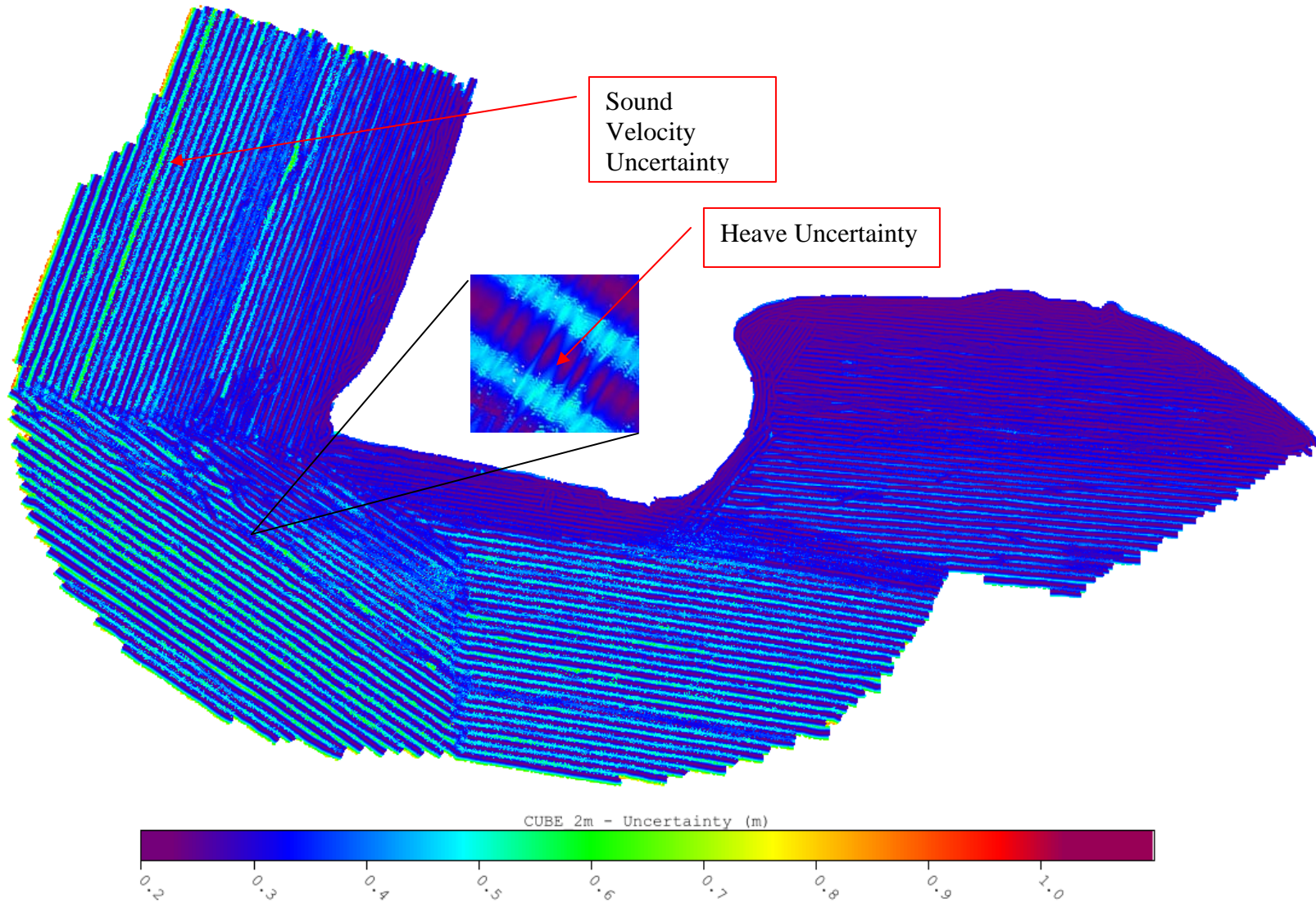


Figure 2 Uncertainty DTM

Survey Junctions

H11738 (Sheet G) junctions with:

Registry #	Date	Junction Side
H11735	2007	North
H11739	2007	South

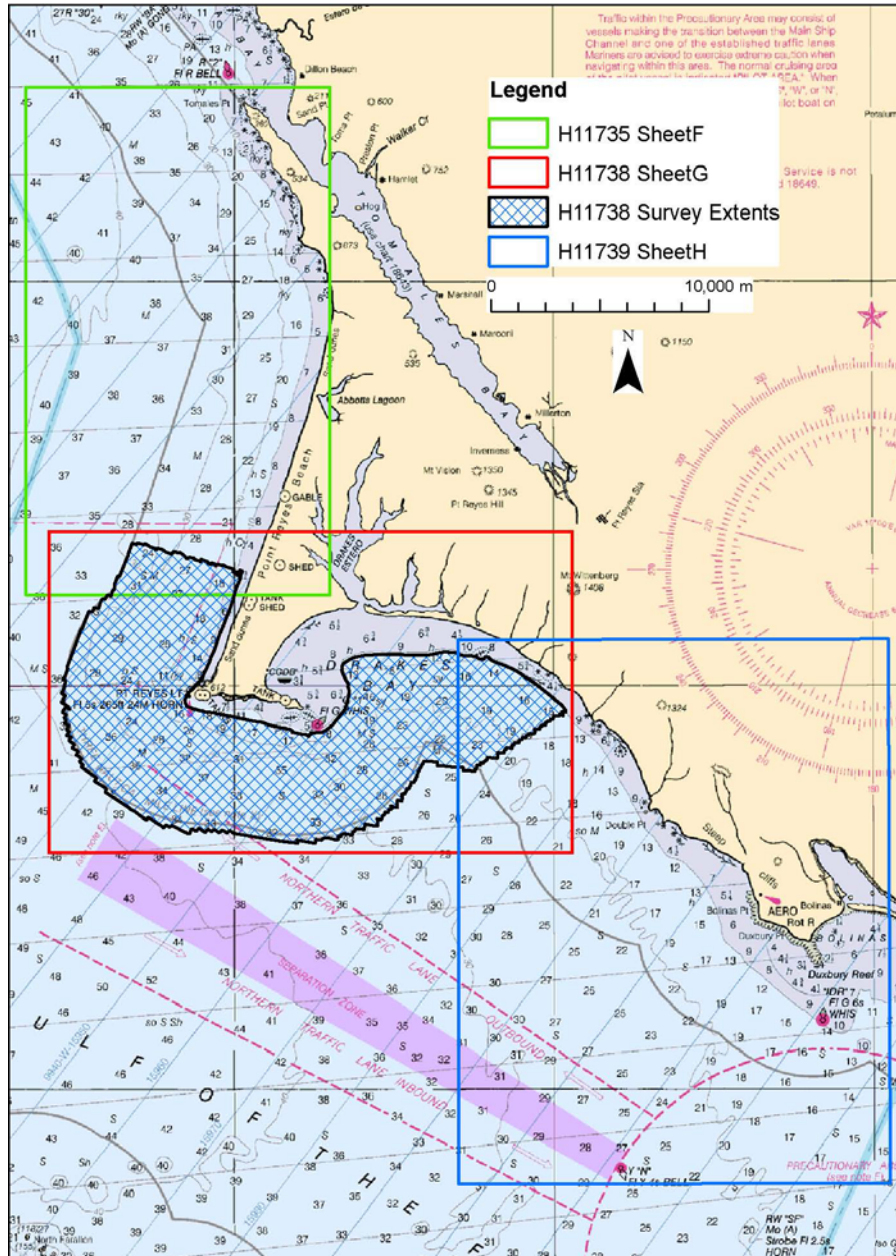


Figure 3 H11738 Survey Junctions



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>5</sup>

### Quality Control Checks

Positioning system confidence checks were conducted on a daily basis using the POSMV controller software. The controller software had various 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 stopped.

### Data Quality

In general, the multibeam data quality for H11738 was good. Three notable problems follow:

- During data acquisition and routine processing, a general downward and/or upward cupping was noticed in the across track sounding profiles for certain areas. This is possibly due to a high volume of thermal layering and strong under currents 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 on the uncertainty surface, the data is within required specifications.<sup>6</sup>
- During data acquisition and routine processing an across-track oscillation in the survey data was noted and attributed to heave error. Error was directly proportional to swell / wave height and varied from 0.05m to 0.15m. Though not apparent in the 1x depth DTMs the effect can be seen if greater vertical exaggerations are used. The problem could not be compensated for but was considered the best that could be expected from the heave compensation system in the long-period swell experienced on this survey (POSMV manufacture specs are heave at +/- 5 % of heave amplitude). Though the effect can be seen on the uncertainty surface, the data is within required specifications.<sup>7</sup>
- Dungeness crab fishery was ongoing while this survey was underway; many crab pots buoys were encountered while surveying in 15m to 30m water depths. This made navigation difficult as the survey vessel attempted to avoid them, sometimes leading to small holidays that could not be filled. They were especially prevalent inside Drakes Bay. Shoaling was not observed on the edges of these holidays.<sup>8</sup>

Sound velocity profiles were collected every two to three hours to compensate for velocity changes over time. Profiles were collected on alternate ends of lines to minimize the spatial aspect of sound velocity changes.

Object detection requirements were met by minimizing vessel speed, 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 ISIS and DelphMap QC and coverage displays. Ship-board processing crew provided feedback in near real-time after preliminary processing and coverage creation in CARIS HIPS.

Refer to the OPR-M-M924-KR-07 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 OPR-M-M924-KR-07 Data Acquisition and Processing Report for a detailed description of all corrections to echo soundings and lead line measurements. No deviations from the report occurred.

### B.4 Data Processing

Refer to the OPR-M-M924-KR-07 Data Acquisition and Processing Report for a detailed description of the processing flow.

The final Fieldsheet for H11738 is called “H11738-Final” and it contains four BASE surfaces. The following parameters were used:

- 0-21 meters: 1 m resolution, name “H11738\_1m”.
- 18-35 meters: 1.5 m resolution, name “H11738\_1\_5m”
- 31-50 meters: 2 m resolution, name “H11738\_2m”.
- 45-150 meters (or max depth): 4 m resolution, name “H11738\_4m”.

Most of the surveyed area is deeper than 20m, therefore it does not support gridding at resolutions finer than 1 m.<sup>9</sup>

The final S57 file for this project is called “H11738\_S57\_Features.000”.<sup>10</sup> This file contains the S57 objects and metadata as required in the Specifications and Deliverables.

## **C. VERTICAL AND HORIZONTAL CONTROL**

Refer to the OPR-M-M924-KR-07 Horizontal and Vertical Control Report<sup>11</sup> 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). All raw positions were originally collected in WGS84 (ITRF00) and transformed to NAD83 by CARIS HIPS.

A STARFIX XP unit was used for the primary source of DGPS corrections. The Starfix XP service has a rated accuracy of +/- 0.15m. The unit output differentially corrected positions at 1-Hz to the POSMV 320 V4 where it was integrated with inertial data and a position for the top-center of the IMU was generated. This position was then logged concurrently with bathymetry by ISIS and logged to the POS file by the POS Controller software. It was later corrected for offsets to the MBES sonar by CARIS HIPS in processing.

### Vertical Control

All sounding data were initially reduced to MLLW using predicted tidal data from Ft. Ross and Pt. Reyes. Predicted tides were used only for preliminary data cleaning.

On October 12, 2007, John Oswald and Associates (JOA) issued a final tidal zoning scheme covering the project area. Verified tidal data was downloaded from the NOAA COOPS website ([http://tidesandcurrents.noaa.gov/station\\_retrieve.shtml?type=Historic+Tide+Data](http://tidesandcurrents.noaa.gov/station_retrieve.shtml?type=Historic+Tide+Data)). The data was then smoothed using a 5<sup>th</sup> order polynomial curve, and applied to the CARIS data on November 7, 2007. Verified tidal data were used for all final base surfaces. Refer to the Horizontal and Vertical Control Report for additional tidal information and station descriptions.

**Table 2 - Tide Gauges**

Gauge	Location	Latitude	Longitude
9415020	Point Reyes, CA	37° 59.8' N	122° 58.5' W
9416841	Arena Cove, CA	38° 54.8' N	123° 42.5' W

**Table 3 - Final Tide Zones**

Zone	Primary			
	Site	Number	Time Offset	Range Ratio
BB01	Point Reyes, CA	9415020	0	1.00
BB02	Point Reyes, CA	9415020	+6	1.01
BB03	Arena Cove, CA	9416841	0	1.00

## D. RESULTS AND RECOMMENDATIONS

### D.1 Chart Comparison

H11738 survey was compared with charts:

**Table 4 – Chart Comparisons**

Chart Number	Type	Cell Name	Scale	Edition	Edition Date as of Nov. 2007
OPR-M-M924-KR-07					
18647	Raster	N / A	1:40,000	15 <sup>th</sup>	Sept., 2002
18645	Raster	N / A	1:100,000	25 <sup>th</sup>	June 2005
18645	ENC	US4CA11M	N / A	7 <sup>th</sup>	Jan. 30, 2007
18640	Raster	N / A	1:207,840	25 <sup>th</sup>	Aug. 2005
18640	ENC	US3CA14M	N / A	6 <sup>th</sup>	Sept. 6, 2007
18680	Raster	N / A	1:210,668	31 <sup>st</sup>	June 2005

#### Comparison of Soundings

A comparison of soundings was accomplished by generating shoal-biased soundings and contours in the CARIS FieldSheet Editor and overlaying them on the latest edition NOAA charts. The general agreement between charted soundings and H11738 soundings was noted. A more detailed comparison was undertaken for any charted shoals or other dangerous features.

General agreement between this survey and the charts is good. Any significant differences are itemized below.

1. The charts do not show a rock found by this survey at 37-58-51.34 N, 122-57-41.41 W with a depth of 4 fms 4 ft. (reported as a DtoN, see Appendix I).<sup>12</sup>
2. The 5 and 10 fathom contours on chart 18647 do not extend seaward enough to include a sounding found by this survey at 37-59-47.10 N, 123-01-35.50 W with a depth of 4 fms 5 ft. (reported as a DtoN, see Appendix I).<sup>13</sup>
3. This survey found a depth of 33 fathoms at 37-57-45.39 N, 123-00-54.08 W and at 37-57-32.03 N, 123-01-14.36 W where chart 18647 shows depths of 37 fathoms (also affects the smaller scale charts).<sup>14</sup>
4. This survey found a depth of 34 fathoms at 37-57-17.77 N, 123-01-35.44 W where chart 18647 shows a depth of 38 fathoms (also affects the smaller scale charts).<sup>15</sup>
5. This survey found a depth of 19 fathoms at 38-00-35.54 N, 123-01-31.74 W where chart 18680 shows a depth of 14 fathoms.<sup>16</sup>
6. Wreck on charts 18640 and 18680 at 38-00-00 N, 123-03-00 W (note not present on

larger scale chart 18645) was not observed in the DTM at this position. It is recommended that this item be added to the AWOIS database.<sup>17</sup>

#### Automated Wreck and Observation Information System

There were no AWOIS items assigned to H11738.<sup>18</sup>

#### Charted Features

There were no charted features labeled PA, ED, PD, or Rep. within the survey extents of H11738.<sup>19</sup>

#### Dangers to Navigation

Two DTONs were found during H11738. They are detailed in Appendix I.<sup>20</sup>

#### D.2 Additional Results

None to note.

#### Bottom Samples

None were assigned for this sheet.<sup>21</sup>

#### Aids to Navigation

No charted aids to navigation existed within the survey extents of H11738. Aids to navigation did exist nearby but were not investigated as a requirement of this survey.<sup>22</sup>

No uncharted aids to navigation were found in the survey area.

## E. APPROVAL SHEET

### Approval Sheet

For

**H11738**

Standard field surveying and processing procedures were followed in producing this survey in accordance with the following documents:

OPR-M-M924-KR-07 Statement of Work  
NOS Hydrographic Surveys Specifications and Deliverables, April 2007 Edition  
Fugro Pelagos, Inc. Acquisition Procedures (2006- NOAAAcquisitionProcedures);  
Fugro Pelagos, Inc. Processing Procedures (2006-NOAAProcessingProcedures);  
Bodega Bay, CA QC and Zoning Report

The data were reviewed daily during acquisition and processing, and the survey is complete and adequate for its intended purpose.<sup>23</sup>

This report has been reviewed and approved. All records are forwarded for final review and processing to the Chief, Pacific Hydrographic Branch.

Approved and forwarded,



Andrew Orthmann, Fugro Pelagos, Inc.  
Lead Hydrographer  
Fugro Pelagos, Inc. Survey Party

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<sup>1</sup> Concur with clarification. Data meets specifications, verified during Survey Acceptance Review (SAR) performed at the Pacific Hydrographic Branch, PHB.

<sup>2</sup> Filed with project records.

<sup>3</sup> Separate IV filed with hydrographic records.

<sup>4</sup> Concur.

<sup>5</sup> Concur.

<sup>6</sup> Concur.

<sup>7</sup> Concur.

<sup>8</sup> Concur.

<sup>9</sup> Concur.

<sup>10</sup> The H11738\_S57\_Features.000 file contains the DTONs (see endnotes 12 and 13) and rocky seabed areas delineated from the BASE surface. The rocky seabed areas were slightly modified during compilation and are included in the Hcell.

<sup>11</sup> Filed with project records.

<sup>12</sup> Concur with clarification. All affected charts have been updated to reflect the 4 fm 4 ft rock. Appendix I filed with hydrographic records.

<sup>13</sup> Concur with clarification. All charts have been updated to reflect the 4 fm 5 ft shoal with the exception of chart 18680, where the scale could not accommodate that sounding. Appendix I filed with hydrographic records.

<sup>14</sup> Concur.

<sup>15</sup> Concur.

<sup>16</sup> Concur.

<sup>17</sup> Do not concur. Charted wreck located at 38-00-00 N, 123-03-00 W is AWOIS item 50072. According to the AWOIS database, item 50072 was reported after a vessel strike in July 1985 and was classified as an obstruction in the database. An initial search by NOAA Ship Davidson in July 1985 was inconclusive, but on a second search in September 1985, the Davidson disproved the item. It was suggested that the vessel strike may have been an encounter with a submarine since no stationary obstruction or wreck was found in the area. Therefore, the wreck should not be added to the AWOIS database. It is recommended that the wreck symbol be removed from charts 18640 and 18680 and ENC US3CA14M.

<sup>18</sup> Concur with clarification. Four AWOIS items exist within the limits of H11738 but investigation was not required. See endnote 17.

<sup>19</sup> Concur.

<sup>20</sup> Concur. See endnotes 12 and 13. Appendix I filed with hydrographic records.

<sup>21</sup> Concur with clarification. All ENC charted bottom samples, with the exception of one "rocky" notation, were retained. See endnote 10.

<sup>22</sup> Concur with clarification. Chart using latest ATONIS information.

<sup>23</sup> Concur.

**H11738 HCell Report**  
Katie Reser, Physical Scientist  
Pacific Hydrographic Branch

**Introduction**

The primary purpose of the HCell is to directly update NOAA ENC's with new survey information in International Hydrographic Organization (IHO) format S-57. HCell compilation of survey H11738 utilized Office of Coast Survey HCell Specifications Version 3.0, May 2008 and Hcell User Guide Version 1.1, June 2008. HCell H11738 will be used to update charts 18647, 1:40,000 (15th Ed.; September 02, NM 3/1/2008), 18645, 1:100,000 (25th Ed.; June 05, NM 4/5/2008), 18640, 1:207,840 (25nd Ed.; August 05, NM 4/19/2008), 18680, 1:210,668 (31st Ed.; June 05, NM 3/1/2008), US4CA11M and US3CA14M.

**1. Compilation Scale**

The densities of soundings in the HCell are compiled as appropriate to emulate those soundings of Chart 18647, 1:40,000 and Chart 18645, 1:100,000.

**2. Soundings**

**2.1 Source Data**

A 4 meter resolution Combined BASE surface, **H11738\_Combined\_4m** was used as the basis for HCell production following Branch certification.

A survey-scale sounding (SOUNDG) feature object source layer was built from the **H11738\_Combined\_4m** surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 scale using a radius table with values shown in **Table 1**.

Upper limit (m)	Lower limit (m)	Radius (mm)
0	10	3
10	20	4
20	40	4.5
40	500	5

**Table 1**



## **2.2 Sounding Feature Objects**

In CARIS BASE Editor soundings were manually selected from the high density sounding layer from H11738, and imported into a new layer created to accommodate chart density depths. Manual selection was used to accomplish a density and distribution that more closely represents the seafloor morphology and that emulates density and distribution of soundings on charts 18647 and 18645 than is possible using automated methods. See section 10.1, Data Processing Notes, for details about the use of manual sounding selection for H11738. The sounding feature object source layer was exported as **H11738\_CS**, and imported into HOM.

## **3. Depth Areas**

### **3.1 Source Data**

Using the BASE surface **H11738\_Combined\_4m** a single depth area was generated. No depth contours were delivered per OCS HCell Specifications ver.3.0 and Hcell User Guide ver. 1.1.

### **3.2 Depth Area Feature Objects**

One all-encompassing depth range, 8 meters to 74 meters, was used for all depth area objects below MLLW.

## **4. Meta Areas**

The following Meta object areas are included in HCell 11738:

M_QUAL	M_CSCL
M_COVR	

Meta area objects were constructed on the basis of a perimeter line delineating the surveyed limits. This perimeter was first used to create the Skin of The Earth (SOTE) layer, then was duplicated to the Meta object layers and attributed per the HCell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

## 5. Survey Features

H11738 contains two DTONs. One DTON is a 4 fm 4 ft rock located at 37-58-51.34 N, 122-57-41.41 W. The DTON was reported by the field and has been applied to the affected charts. The other DTON is a 4 fm 5ft shoal at 37-59-47.10 N, 123-01-35.50 W. The DTON was reported by the field and has been applied to the affected charts with the exception of 18680, where the scale cannot accommodate the sounding.

H11738 contains four AWOIS items. Although investigation of AWOIS items was not required, the field recommended that a charted (18640 and 18680) wreck at 38-00-00 N, 123-03-00 W that was not observed in the BASE surface be added to the AWOIS database. The wreck is already included in the database as item 50072 and was disproved by the NOAA Ship Davidson.

No bottom samples were collected with H11738. All charted bottom samples, with the exception of one “rocky” notation, within the surveyed area were imported into the H11738 HCell. In the area where the “rocky” notation was removed, it was replaced by rocky seabed area features delineated from the BASE surface.

## 6. Shoreline / Tide Delineation

One depth area (DEPARE) was created for the SOTE.

## 7. Attribution

All S-57 Feature Objects have been attributed as fully as possible based on information provided by the Hydrographer and in accordance with OCS HCell Specifications, ver. 3.0 and Hcell User Guide ver. 1.1.

## 8. Layout

### 8.1 CARIS HOM Layering Scheme

100	Chart scale soundings
101	Survey scale soundings
200	Group 1 object (Skin of the Earth)
300	Point objects
500	Area objects
600-602	Meta layers
800	Items used for creation of Blue Notes

### 8.2 Blue Notes

Notes regarding data sources are in CARIS HOM as layer 800 as a Shapefile set, **H11738\_bluenotes\_p** and **H11738\_bluenotes\_l**.

## 9. Spatial Framework

### 9.1 Coordinate System

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

### 9.2 Horizontal and Vertical Units

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

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

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

#### HOM Units

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

#### Chart Unit Base Cell Units

Depth Units (DUNI):	Fathoms and feet
Height Units (HUNI):	Feet (or fathoms and feet above 6 feet)
Positional Units (PUNI):	Meters

## 10. QA/QC

### 10.1 Data Processing Notes

Manual chart scale sounding selections were made for this survey. Experience has shown that in areas where bathymetry varied, automated sounding selection is impractical. None of the default sounding suppression options offered in CARIS BASE Editor or

HOM yields an acceptable density and distribution of depths, generally bunching soundings nearshore with too sparse coverage seaward. While the customized options are more practical for this type of terrain, an inordinate amount of time must be spent in experimentation with variations on the algebraic terms in order to devise the most suitable formula, and manual adjustments are still required to the resulting sounding set.

## 10.2 ENC Validation Checks

H11738 was subjected to QA and Validation checks in HOM prior to exporting to the HCell base cell (000) file. Full millimeter precision was retained in the export of the metric S-57 base cell data set. This data set was converted to a chart unit 000 file. dKart Inspector 5.0 (Service Pack 1) was then used to further check the data set for conformity using the S-58 ver. 2 standard (formerly Appendix B.1 Annex C of the S-57 standard). All tests were run and errors investigated and corrected where necessary.

## 11. Products

### 11.1 HSD, MCD and CGTP Deliverables

- H11738 Base Cell File, Chart Units, Soundings compiled to 1:40,000 and 1:100,000
- H11738 Base Cell File, Chart Units, Soundings compiled to 1:10,000 and 1:20,000
- H11738 Descriptive Report including end notes compiled during office processing and certification
- H11738 HCell Report
- Blue Notes shape files

### 11.2 File Naming Conventions

HOM file set prefix: *H11738\_hc*

MCD Chart units base cell file: *US311738\_CS.000*

MCD Chart units base cell file, survey scale soundings: *US311738\_SS.000*

### 11.3 Software

BASE Editor 2.1:	Combination of Product Surfaces and initial creation of the S-57 bathymetry-derived features
HOM 3.3:	Assembly of the H-Cell, S-57 products, QA
GIS 4.4a:	Setting the sounding rounding variable
dKart Inspector 5.0:	Validation of the base cell file

## **12. Contacts**

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

Katie Reser, Physical Scientist, PHB, Seattle, WA; 206-526-6864;  
Katie.Reser@noaa.gov.



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

The following DtoN was submitted to PHB on 12/03/07.



## REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H11738

Survey Title:        State:        CALIFORNIA  
                          Locality:    NORTHERN CALIFORNIA COAST  
                          Sub-locality: POINT REYES LIGHT TO DRAKES BAY

Project Number: OPR-M-M924-KR-07

Survey Dates:     February 16 to April 4, 2007

Survey Danger Acquisition Date and Time: April 2, 2007; 0509 UTC

Features are reduced to Mean Lower Low Water using verified tides and are positioned on NAD83.

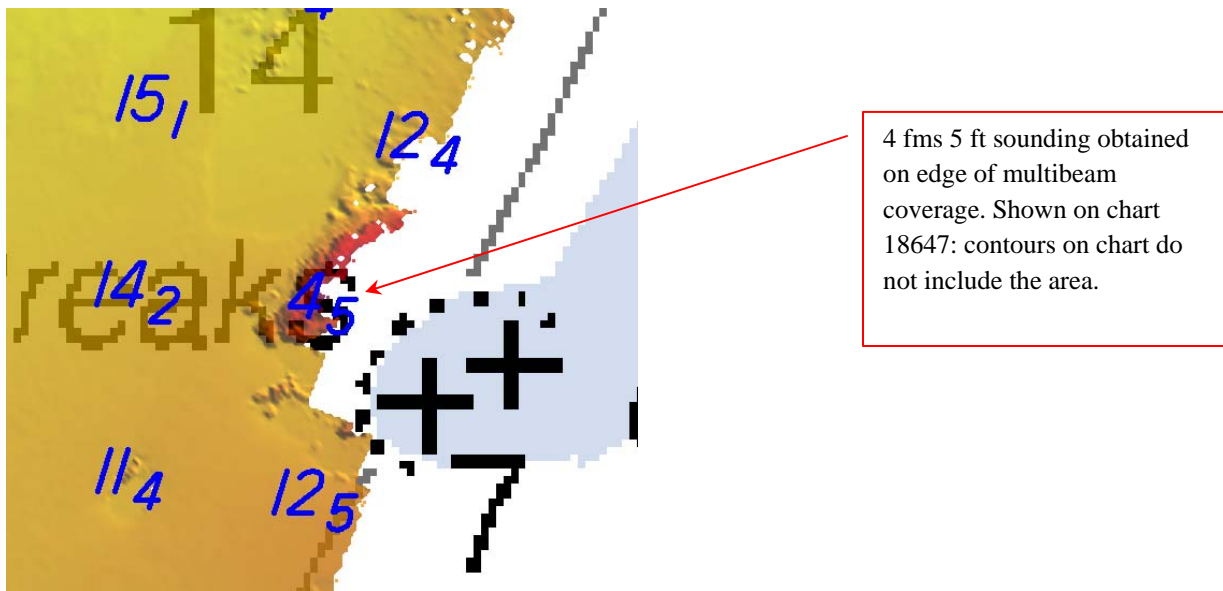
### CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
18647	1:40,000	15 <sup>th</sup>	Sept., 2002
18645	1:100,000	25 <sup>th</sup>	June, 2005
18640	1:207,840	25 <sup>th</sup>	Aug., 2005
18680	1:210,668	31 <sup>st</sup>	June, 2005

### DANGER:

<u>Feature</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Time</u>
1. Rock	4 fms 4 ft.	37-58-51.34 N	122-57-41.41 W	April 2, 2007; 0509 UTC
2. Shoaling Area*	4 fms 5 ft	37-59-47.10 N	123-01-35.50 W	March 19, 2007; 1848 UTC

\* 5 and 10 fms contours on chart 18647 do not extend seaward enough, see figure next page. Note this depth and position is for the shoalest sounding obtained on the edge of multibeam data.



DTON item 2

**COMMENTS:**

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



APPROVAL SHEET  
H11738

Initial Approvals:

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.