

F00590

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

*Type of Survey* ..... Hydrographic Survey  
*Field No.* ..... N/A  
*Registry No.* ..... F00590

### LOCALITY

*State* ..... CALIFORNIA  
*General Locality* ..... ENTRANCE TO SAN DIEGO BAY  
*Sublocality* ..... ZUNIGA PT. TO NAVY PIER

2010

### CHIEF OF PARTY

ERIC M. MOORE

### LIBRARY & ARCHIVES

**DATE** ..... October 25, 2010 .....

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  <b>HYDROGRAPHIC TITLE SHEET</b>		REGISTRY No  <b>F00590</b>
<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.		FIELD No: N/A
State <u>California</u>		
General Locality <u>Entrance to San Diego Bay</u>		
Sub-Locality <u>Zuniga Pt. to Navy Pier</u>		
Scale <u>1:10,000</u>	Date of Survey <u>April 13 to October 25, 2010</u>	
Instructions dated <u>4/2/2010</u>	Project No. <u>S-L914-NRT6-10</u>	
Vessel <u>NOAA Survey Launch S3003</u>		
Chief of party <u>Eric M. Moore</u>		
Surveyed by <u>Navigation Response Team Six Personnel</u>		
Soundings by <u>Simrad EM3000 Multibeam Echosounder</u>		
SAR by <u>Kay MacDonald - PHB</u>	Compilation by <u>Kay MacDonald - PHB</u>	
Soundings compiled in <u>Feet</u>		
REMARKS: <u>All times are UTC. UTM Zone 11N</u>		
<u>The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS)</u>		
<u>naautical charts. All separates are filed with the hydrographic data. Revisions and end notes in red were</u>		
<u>generated during office processing. Page numbering may be interrupted or non sequential.</u>		
<u>All pertinent records for this survey, including the Descriptive Report, are archived at the</u>		
<u>National Geophysical Data Center (NGDC) and can be retrieved via <a href="http://www.ngdc.noaa.gov/">http://www.ngdc.noaa.gov/</a>.</u>		

Descriptive Report  
to accompany  
HYDROGRAPHIC SURVEY F00590  
PROJECT: S-L914-NRT6-10  
Scale of Survey: 1:10,000  
Year of Survey: 2010  
NOAA Navigation Response Team 6  
Eric Moore, Laura Pagano and Ed Wernicke

## **A. AREA SURVEYED**

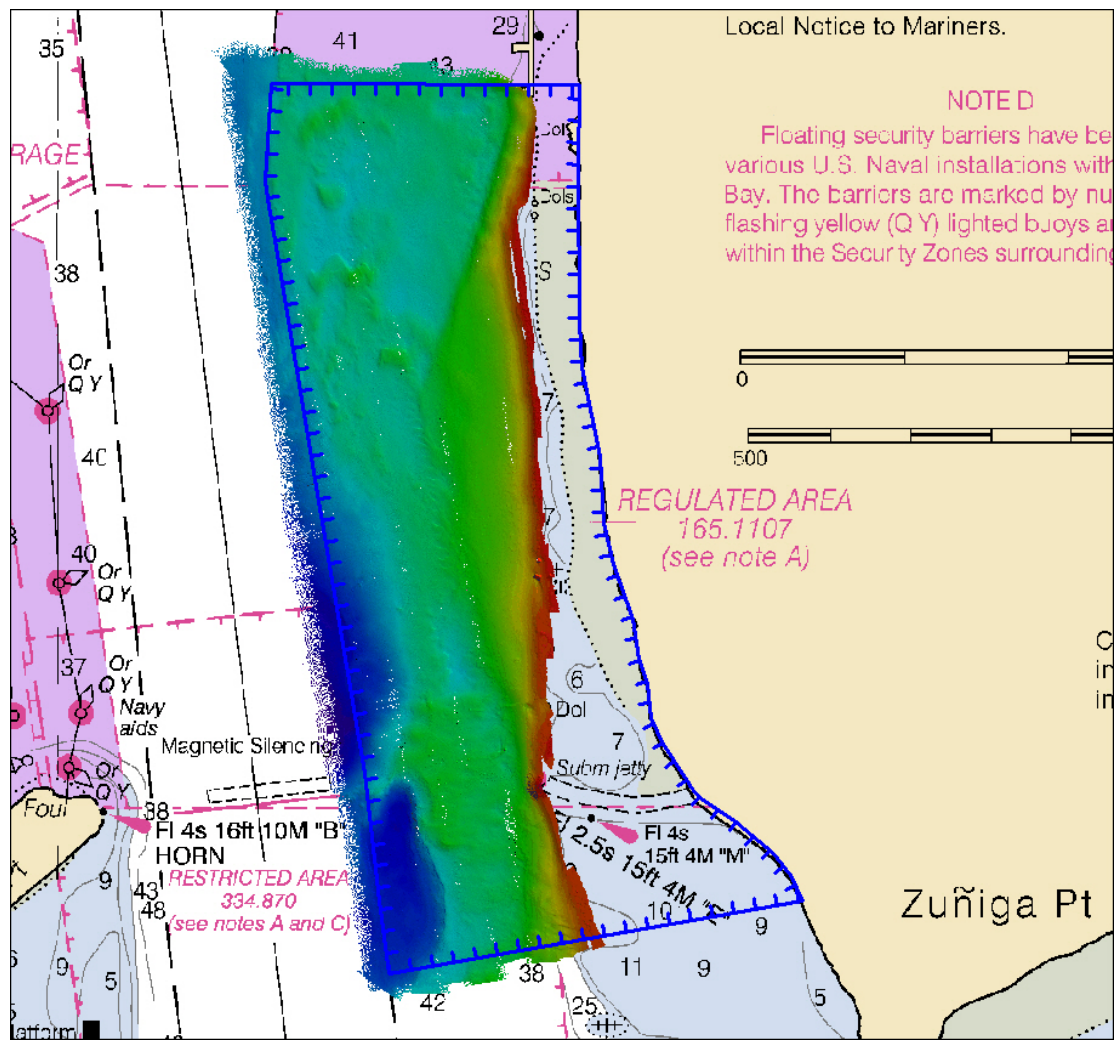
This survey was conducted in accordance with Hydrographic Survey Letter Instructions for Survey F00590, San Diego, CA. Original instructions are dated April 2, 2010. Data acquisition was conducted from April 13, 2010 through October 25, 2010. Most data were collected during the first week of acquisition. Two subsequent days of side scan coverage were collected at later dates in order to meet object detection requirements. No new contacts that required development using SWMB were found on the last day of side scan acquisition.

200% Side Scan and 100% Complete Multibeam Coverage were acquired over the survey area, with object detection coverage over significant features.

See Table 1 and Figures 1-3 below for acquisition totals, images of survey limits and data coverage.

Multibeam (mainscheme)	6.06 LNM
Side Scan Sonar 100% <sup>1</sup> (mainscheme)	6.8 LNM
Crosslines	0.75 LNM
Development/Holidays	.043 LNM
Square Nautical Miles	0.1 SNM

**Table 1: NOAA Survey Launch S3003 Acquisition Totals**



**Figure 1: San Diego Bay, Sheet B, multibeam sonar coverage.**

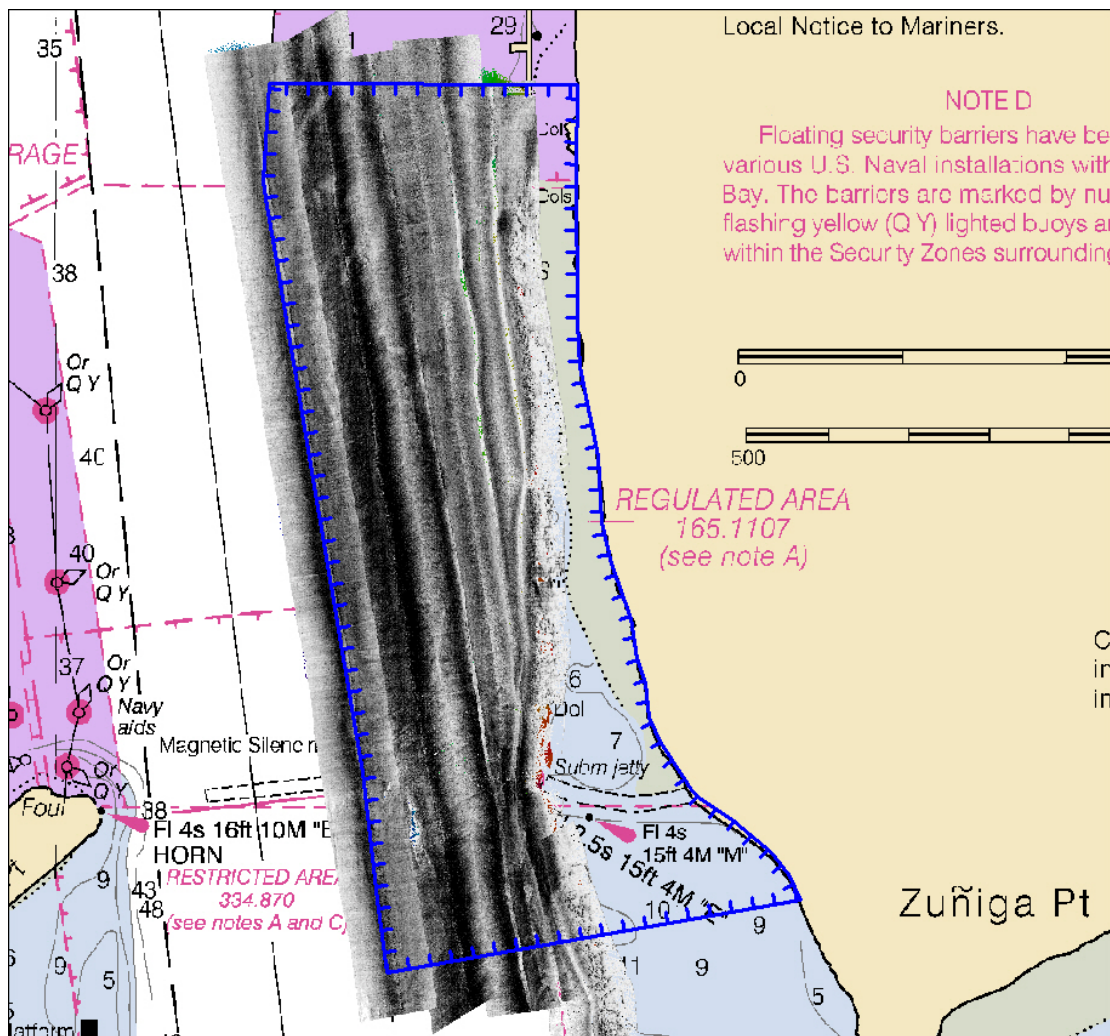


Figure 2: 100% Side scan sonar coverage.

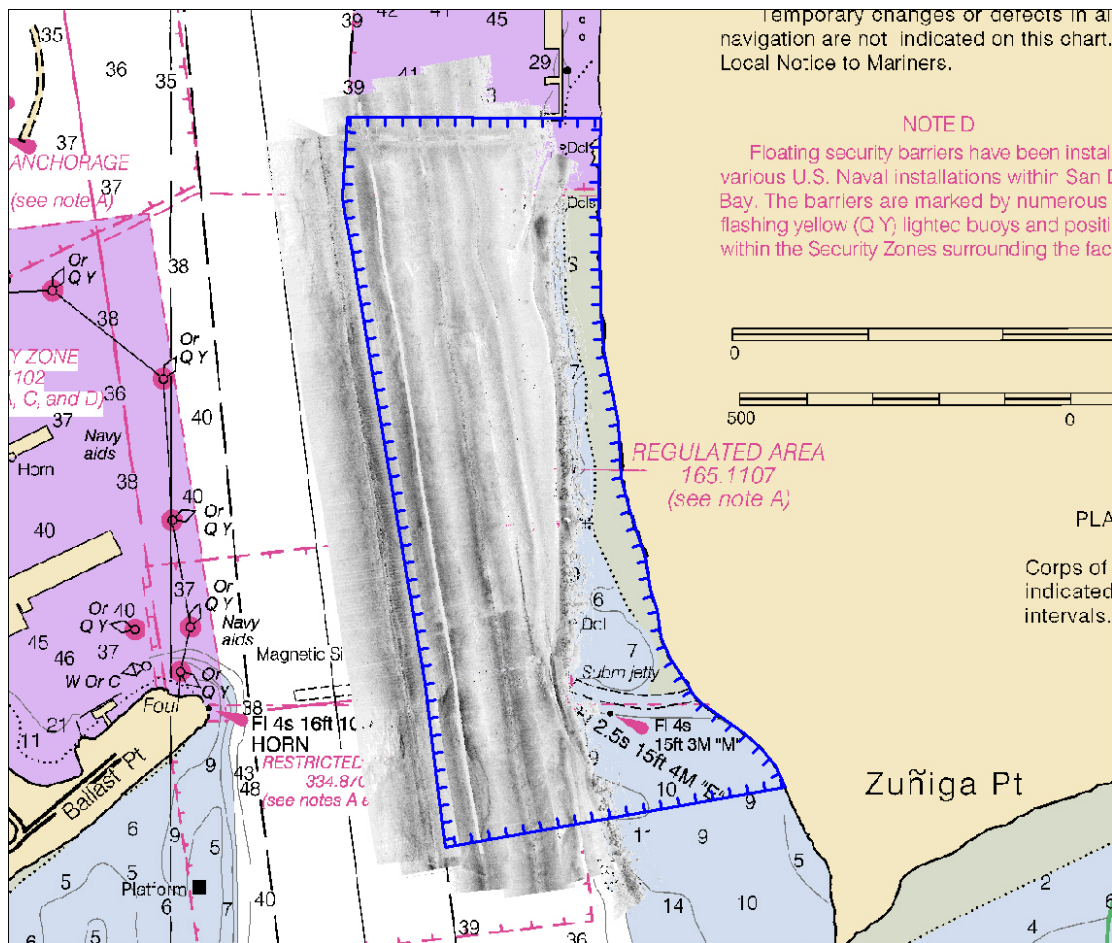


Figure 3: 200% Side scan sonar coverage.

## B. DATA ACQUISITION AND PROCESSING

### B.1 EQUIPMENT

Data were acquired by NOAA Survey boat S3003, which is a 10-meter hydrographic survey vessel with a transducer draft of 0.507 meters (-.024m from reference to waterline, 0.483m from reference to multibeam transducer).

NOAA Survey boat S3003 acquired soundings, imagery, and sound velocity profiles. Soundings and imagery were acquired by SIMRAD EM3000 multibeam echosounder. Imagery was acquired with a KLEIN 3000 side scan sonar. Water

column sound velocity data was acquired with a Sea-Bird SBE 19+ CTD.

NOAA Survey boat S3003 positioning and attitude data were determined with an Applanix POS/MV 320 Version 4 GPS-aided inertial navigation system.

Refer to the Data Acquisition and Processing Report (DAPR) for detailed equipment and vessel configuration information.

## **B.2 QUALITY CONTROL**

### **B.2.1 Side Scan Sonar Quality Control**

Daily confidence checks were made by observing the outer ranges of the side scan sonar images. A good check consisted of distinguishing contacts corresponding to charted features such as navigational Fixed Aids and other cultural features across the entire range of the side scan trace.

### **B.2.2 Shallow Water Multibeam Quality Control**

No unusual problems were encountered during this survey. Refer to this project's DAPR and HSRR for detailed discussion of SWMB system calibrations, data acquisition, and data processing.

Sound velocity casts were originally logged in local time, and were later adjusted to UTC time, in order to properly apply them to SWMB data. The Seacat has since been updated to log in UTC.

### **B.2.3 BASE Surfaces**

One CARIS HIPS BASE (*Bathymetry Associated with Statistical Error*) surface, which incorporates each sounding's total propagated uncertainty (TPU), was created.<sup>2</sup> The finalized BASE surface contains ten layers: depth, uncertainty, density, mean, standard deviation, hypothesis strength, hypothesis count and user nominated, node standard deviation, and bounding polygon. Refer to this project's DAPR for detailed discussion of BASE surface generation and processing. One Bathymetric Attributed

Grid (BAG) was created from the finalized BASE surface.<sup>3</sup>

The following field sheet was generated as part of this survey:

Table 2: Fieldsheets, BASE Surfaces and BAG (Bathymetric Attributed Grid) surfaces created.

<u>Fieldsheet</u>	<u>#BASE Surfaces</u>	<u>Resolution</u>	<u>Purpose</u>
F00590	2	0.5m	Coverage & Finalized
F00590_0p5m	1	0.5m	BAG Generation

#### **B.2.4 Crosslines**

A total of 6.06 lnm of mainscheme lines were planned and approximately 0.75 lnm of crosslines were conducted, totaling more than 5% of the planned survey lines. BASE surfaces were examined and no systematic errors in the SWMB system were found.<sup>4</sup>

### **B.3 CORRECTIONS TO ECHO SOUNDING**

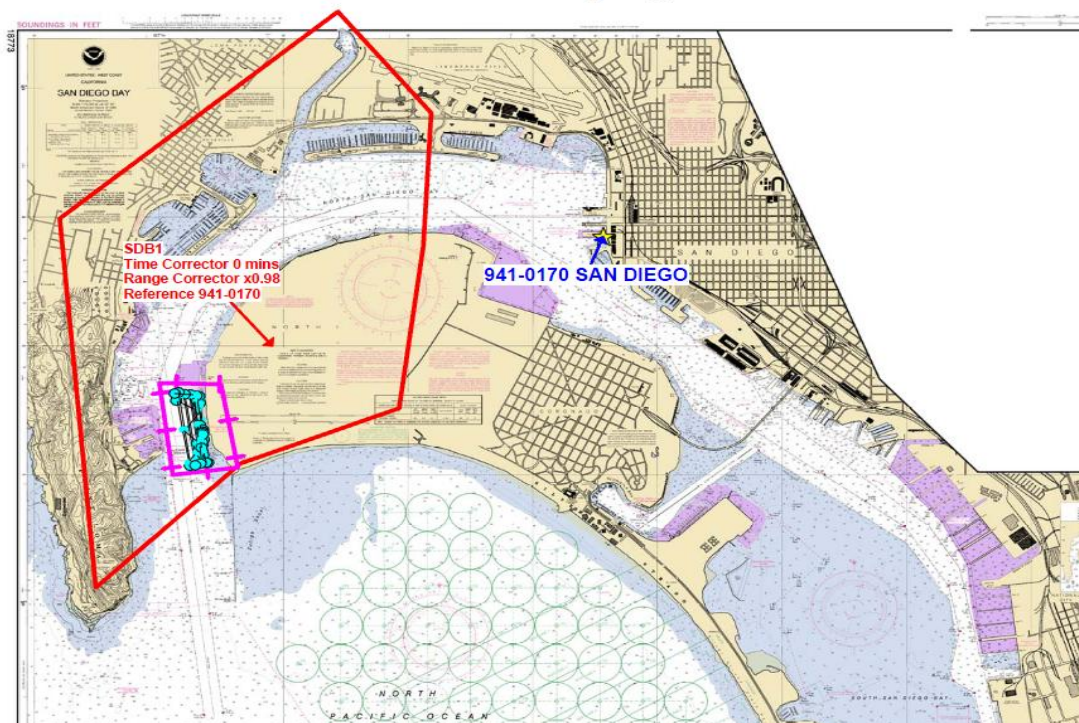
All methods or instruments used are detailed in the project DAPR. A table of all sound velocity casts is located in Separate II.

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

### **C.1 VERTICAL CONTROL**

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at San Diego, CA (941-0170) was the sole water level station for this project. See Figure 4 for station location and tide zone boundaries. The tide zoning file “L914NRT62010CORP” was applied during processing. The uncertainty value of .007m was used for the TPE computation in CARIS, since a 95% ( $2\sigma$ ) value of .014m was given in the project Water Level Instructions.<sup>5</sup>





**Figure 4: Preliminary Tide Zoning**

The preliminary/final zones and correctors used for this survey are as follows:

**Table 1: Preliminary Tide Zones & Correctors**

<b><u>Zone Name</u></b>	<b><u>Time Correctors (mins)</u></b>	<b><u>Range Ratio</u></b>	<b><u>Predicted Reference</u></b>
SDB1	0	X0.98	941-0170

A Request for Smooth Tides was sent to N/OPS1 on April 26, 2010, and another, revised tide request was sent on August 04, 2010 to include an additional day of SWMB collection on day 139. Both are included in Appendix IV Tides & Water Levels. Observed water levels from the N/OPS1 CO-OPS website were downloaded and applied to all sounding data with preliminary tide zoning. Refer to the 2010 DAPR for a summary of the methods used to determine, evaluate, and apply tide

corrections to sounding data.

## **C.2 HORIZONTAL CONTROL**

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 11.

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon station at Pt. Loma, CA (302 kHz). No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily. The observed HDOP values did not exceed 4.00.

## **D. RESULTS AND RECOMMENDATIONS**

### **D.1 CHART COMPARISON**

Data accuracy standards and bottom coverage requirements have been met and survey data for survey F00590 are adequate to supersede charted data in their common areas.<sup>6</sup>

There are two raster charts affected by this survey:  
There is one ENC cell covering the survey area.

Table 3: Affected Charts

<b><u>Chart Number</u></b>	<b><u>Edition</u></b>	<b><u>Edition Date</u></b>	
18772	48 <sup>th</sup>	Dec 2005	
18773	41 <sup>st</sup>	Oct 2008	
<b><u>ENC Cell</u></b>	<b><u>Last Updated</u></b>	<b><u>Issue Date</u></b>	<b><u>Edition</u></b>
US5CA72M	1/14/2010	1/22/2010	23 <sup>rd</sup>

#### **D.1.1 General Agreement with Charted Soundings**

Depths from survey F00590 generally agree with depths on chart 18772 and 18773, with the exception of a few contour lines that need to be repositioned to reflect new survey data.<sup>7</sup>

#### **D.1.2 Dangers to Navigation (Dtons)**

Two DTON reports were sent to AHB<sup>8</sup>, the first on 4/20/2010 and the second on 8/4/2010. Investigation methods, results and charting recommendations have been entered into the Pydro PSS “F00590.pss”. Information pertaining to the DTON is contained in Appendix I of this report.<sup>9</sup>

#### **D.1.3 AWOIS Items**

No AWOIS items were assigned to this survey.<sup>10</sup>

### **D.2 ADDITIONAL RESULTS**

#### **D.2.1 Prior Surveys**

No prior surveys were listed for comparison in the project instructions.

#### **D.2.2 Aids to Navigation and Other Detached Positions**

No AtoNs were positioned during this survey.<sup>11</sup>

#### **D.2.3 Bridges and Overhead Cables**

No bridges or overhead cables were present in the survey area.<sup>12</sup>

#### **D.2.4 Ferry Routes**

No ferry routes are present in the survey area.<sup>13</sup>

#### **D.2.5 Submarine Cables and Pipelines**

No submarine cables or pipelines were present in the survey area.<sup>14</sup>

#### **D.2.6 Bottom Samples**

Bottom samples were not taken during this survey.<sup>15</sup>

## **E. APPROVAL SHEET**

**S-L914-NRT6-10**  
**San Diego Bay, California**  
**Survey Registry No. F00590**

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

This survey is adequate to supersede all prior surveys in common areas and for application to the relevant NOS nautical charts.

Also submitted in association with this Descriptive Report has been a series of reports and data:

- SEPARATES TO ACCOMPANY PROJECT S-L914-NRT6-10
- S-L914-NRT6-10 HORIZONTAL AND VERTICAL CONTROL REPORT
- APRIL 2010 DATA ACQUISITION AND PROCESSING REPORT

Respectfully Submitted:

Approved and Forwarded:

**Eric  
Moore**

Digitally signed by Eric Moore  
DN: cn=Eric Moore, o, ou=NOAA  
NRT6,  
email=eric.m.moore@noaa.gov,  
c=US  
Date: 2010.11.24 13:04:08 -08'00'

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Eric Moore, NOAA  
Physical Science Technician

## **Revisions Compiled During Office Processing and Certification**

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<sup>1</sup> SSS data was collected at 200% coverage per the Project Instructions.

<sup>2</sup> This surface was used to generate F00590\_0p5m\_office\_Final for use in cartographic compilation.

<sup>3</sup> The field created BAG was not used. An office generated BAG was created from the finalized surface F00590\_0p5m\_office\_Final.

<sup>4</sup> Concur.

<sup>5</sup> The Final Tide note is attached to the Descriptive Report.

<sup>6</sup> Concur.

<sup>7</sup> In general, depth comparison between the newly collected data and the charts for the area varied from 1 to 7 feet.

<sup>8</sup> The survey was processed by Pacific Hydrographic Branch.

<sup>9</sup> See the Dangers to Navigation and Survey Features Report. Information for two DtoNs (2.1 and 2.2) was submitted by the field to MCD in an xml format on 4/20/2010, and information on two additional DtoNs (2.3 and 2.4) was submitted by the field on 8/4/2010. A review of ENC's for the area showed that those charts had been updated with DtoN 2.1 and 2.2, however RNC's for the area had not been updated for these DtoNs. In order to ensure that the RNC's were updated, a DtoN report was resubmitted to MCD by PHB on 1/6/2011. Based on visual interpretation of the BASE Surface, it was determined that the two DtoN features reported as rocks (2.1 and 2.2) are concrete blocks measuring approximately 4m to 8m across. The blocks have been compiled to the HCell as a new OBSTRN area whose limits include numerous similar debris objects. DtoNs 2.3 and 2.4 have been compiled to the HCell as a single Obstruction area object, replacing a similarly charted feature, with category of obstruction, snag/stump, and depth of 28.9 feet. These were not included in the resubmission of the DtoN report to MCD by PHB because there was already a charted obstruction of similar depth.

<sup>10</sup> Concur.

<sup>11</sup> Chart ATONS per the latest US Coast Guards Aids to Navigation Information System (ATONIS) database.

<sup>12</sup> Concur.

<sup>13</sup> Concur.

<sup>14</sup> Concur.

<sup>15</sup> There were no charted bottom characteristics. No bottom samples were required for F00590. Two rocky seabed areas were delineated during the HCell compilation.

# Survey Feature Report

**Registry Number:** F00590  
**State:** California  
**Locality:** SAN DIEGO BAY, CA  
**Sub-locality:** ZUNIGA PT TO NAVY PIER  
**Project Number:** S-L914-NRT6-10  
**Survey Dates:** 04/13/2010 - 04/15/2010

## Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
18773	41st	10/01/2008	1:12,000 (18773_1)	USCG LNM: 11/24/2009 (02/02/2010) NGA NTM: 08/25/2007 (02/20/2010)
18772	48th	12/01/2005	1:20,000 (18772_1)	[L]NTM: ?
18765	16th	01/01/2005	1:100,000 (18765_1)	[L]NTM: ?
18740	42nd	03/01/2007	1:234,270 (18740_1)	[L]NTM: ?
18022	35th	08/01/2005	1:868,003 (18022_1)	[L]NTM: ?
18020	38th	10/01/2007	1:1,444,000 (18020_1)	[L]NTM: ?
501	12th	11/01/2002	1:3,500,000 (501_1)	[L]NTM: ?
530	32nd	06/01/2007	1:4,860,700 (530_1)	[L]NTM: ?
50	6th	06/01/2003	1:10,000,000 (50_1)	[L]NTM: ?

\* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

## Features

No.	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	Obstruction	3.30 m	32° 41' 14.5" N	117° 13' 39.4" W	---
2.1	Rock	1.71 m	32° 41' 19.8" N	117° 13' 38.9" W	---
2.2	Rock	1.11 m	32° 41' 19.2" N	117° 13' 38.8" W	---
2.3	Obstruction	9.16 m	32° 41' 12.4" N	117° 13' 43.2" W	---
2.4	Obstruction	8.81 m	32° 41' 12.4" N	117° 13' 42.3" W	---

## **1 - New Features**



## 1.1) Profile/Beam - 194/117 from hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 802\_1918

### Survey Summary

**Survey Position:** 32° 41' 14.5" N, 117° 13' 39.4" W  
**Least Depth:** 3.30 m (= 10.81 ft = 1.802 fm = 1 fm 4.81 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.961$  m ; TVU (TPEv)  $\pm 0.126$  m  
**Timestamp:** 2010-105.19:26:18.908 (04/15/2010)  
**Survey Line:** hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 802\_1918  
**Profile/Beam:** 194/117  
**Charts Affected:** 18773\_1, 18772\_1, 18765\_1, 18740\_1, 18022\_1, 18020\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

Old piles just west of charted dolphin, possible old dolphin.

### Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2010-105/802_1918	194/117	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519192600	0005	3.80	148.6	Secondary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519193700	0004	3.88	025.3	Secondary

### Hydrographer Recommendations

Chart 11 ft obstruction at this position

#### Cartographically-Rounded Depth (Affected Charts):

11ft (18773\_1)  
 1 ¾fm (18772\_1, 18740\_1, 18022\_1, 18020\_1, 530\_1)  
 1fm 5ft (18765\_1)  
 3.3m (501\_1, 50\_1)

### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 1:snag / stump  
 QUASOU - 1:depth known

SORDAT - 20100519

SORIND - US, US, Survy, F00590

TECSOU - 3:found by multi-beam

VALSOU - 3.296 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## **2 - Dangers to Navigation**

## 2.1) Profile/Beam - 230/100 from hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 801\_1916

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 32° 41' 19.8" N, 117° 13' 38.9" W  
**Least Depth:** 1.71 m (= 5.59 ft = 0.932 fm = 0 fm 5.59 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.960$  m ; TVU (TPEv)  $\pm 0.120$  m  
**Timestamp:** 2010-105.19:24:26.583 (04/15/2010)  
**Survey Line:** hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 801\_1916  
**Profile/Beam:** 230/100  
**Charts Affected:** 18773\_1, 18772\_1, 18765\_1, 18740\_1, 18022\_1, 18020\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2010-105/801_1916	230/100	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519193700	0002	2.53	017.1	Secondary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519192600	0002	5.08	154.3	Secondary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

5ft (18773\_1)

0  $\frac{3}{4}$ fm (18772\_1, 18740\_1, 18022\_1, 18020\_1, 530\_1)

0fm 5ft (18765\_1)

1.7m (501\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** QUASOU - 1:depth known

SORDAT - 20100519

SORIND - US, US, Survy, F00590

TECSOU - 3:found by multi-beam

VALSOU - 1.705 m

VERDAT - 12:Mean lower low water

## 2.2) Profile/Beam - 435/119 from hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 801\_1916

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 32° 41' 19.2" N, 117° 13' 38.8" W  
**Least Depth:** 1.11 m (= 3.65 ft = 0.608 fm = 0 fm 3.65 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.961$  m ; TVU (TPEv)  $\pm 0.117$  m  
**Timestamp:** 2010-105.19:24:39.796 (04/15/2010)  
**Survey Line:** hdcs\_data / nrt6\_s3003\_em3000 / 2010-105 / 801\_1916  
**Profile/Beam:** 435/119  
**Charts Affected:** 18773\_1, 18772\_1, 18765\_1, 18740\_1, 18022\_1, 18020\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

[None]

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2010-105/801_1916	435/119	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519193700	0001	5.99	037.5	Secondary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519192600	0001	6.91	134.1	Secondary

#### Hydrographer Recommendations

[None]

#### Cartographically-Rounded Depth (Affected Charts):

3ft (18773\_1)

0 ½fm (18772\_1, 18740\_1, 18022\_1, 18020\_1, 530\_1)

0fm 3ft (18765\_1)

1.1m (501\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Underwater rock / awash rock (UWTROC)

**Attributes:** QUASOU - 1:depth known

SORDAT - 20100519

SORIND - US, US, Survy, F00590

TECSOU - 3:found by multi-beam

VALSOU - 1.111 m

VERDAT - 12:Mean lower low water

## 2.3) Profile/Beam - 3522/112 from hdcs\_data / nrt6\_s3003\_em3000 / 2010-103 / 403\_2019

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 32° 41' 12.4" N, 117° 13' 43.2" W  
**Least Depth:** 9.16 m (= 30.05 ft = 5.008 fm = 5 fm 0.05 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.965$  m ; TVU (TPEv)  $\pm 0.143$  m  
**Timestamp:** 2010-103.20:32:03.336 (04/13/2010)  
**Survey Line:** hdcs\_data / nrt6\_s3003\_em3000 / 2010-103 / 403\_2019  
**Profile/Beam:** 3522/112  
**Charts Affected:** 18773\_1, 18772\_1, 18765\_1, 18740\_1, 18022\_1, 18020\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

This is a pile found in a line of piles west of the charted Magnetic Silencing Range.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2010-103/403_2019	3522/112	0.00	000.0	Primary

#### Hydrographer Recommendations

The hydrographer recommends charting a 30 ft obstruction at this location.

#### Cartographically-Rounded Depth (Affected Charts):

30ft (18773\_1)  
 5fm (18772\_1, 18740\_1, 18022\_1, 18020\_1, 530\_1)  
 5fm 0ft (18765\_1)  
 9.2m (501\_1, 50\_1)

#### S-57 Data

**Geo object 1:** Obstruction (OBSTRN)  
**Attributes:** CATOBS - 1:snag / stump  
 QUASOU - 1:depth known



SORDAT - 20100519

SORIND - US, US, Survy, F00590

TECSOU - 3:found by multi-beam

VALSOU - 9.158 m

VERDAT - 12:Mean lower low water

WATLEV - 3:always under water/submerged

## 2.4) Profile/Beam - 3535/13 from hdcs\_data / nrt6\_s3003\_em3000 / 2010-103 / 403\_2019

### DANGER TO NAVIGATION

#### Survey Summary

**Survey Position:** 32° 41' 12.4" N, 117° 13' 42.3" W  
**Least Depth:** 8.81 m (= 28.90 ft = 4.817 fm = 4 fm 4.90 ft)  
**TPU ( $\pm 1.96\sigma$ ):** THU (TPEh)  $\pm 1.965$  m ; TVU (TPEv)  $\pm 0.148$  m  
**Timestamp:** 2010-103.20:32:04.342 (04/13/2010)  
**Survey Line:** hdcs\_data / nrt6\_s3003\_em3000 / 2010-103 / 403\_2019  
**Profile/Beam:** 3535/13  
**Charts Affected:** 18773\_1, 18772\_1, 18765\_1, 18740\_1, 18022\_1, 18020\_1, 501\_1, 530\_1, 50\_1

#### Remarks:

This object is the shoalest of a line of piles found west of the channel.

#### Feature Correlation

Address	Feature	Range	Azimuth	Status
hdcs_data/nrt6_s3003_em3000/2010-103/403_2019	3535/13	0.00	000.0	Primary
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519191500	0002	8.24	288.8	Secondary (grouped)
hdcs_data/nrt6_s3003_klein3000_sss100/2010-139/sonar_data100519190400	0001	28.26	184.0	Secondary (grouped)

#### Hydrographer Recommendations

Piles were found west of the channel near the charted Navy Magnetic Silencing range. The hydrographer contacted naval personnel from the degaussing range, and it is possible these are remnants of an older degaussing range. The hydrographer recommends charting a 29 ft obstruction at this position.

#### Cartographically-Rounded Depth (Affected Charts):

29ft (18773\_1)  
 4  $\frac{3}{4}$ fm (18772\_1, 18740\_1, 18022\_1, 18020\_1, 530\_1)  
 4fm 5ft (18765\_1)  
 8.8m (501\_1, 50\_1)

**S-57 Data**

**Geo object 1:** Obstruction (OBSTRN)

**Attributes:** CATOBS - 1:snag / stump

QUASOU - 1:depth known

SORDAT - 20100519

SORIND - US, US, Survy, F00590

TECSOU - 3:found by multi-beam

VALSOU - 8.810 m

VERDAT - 12:Mean lower low water

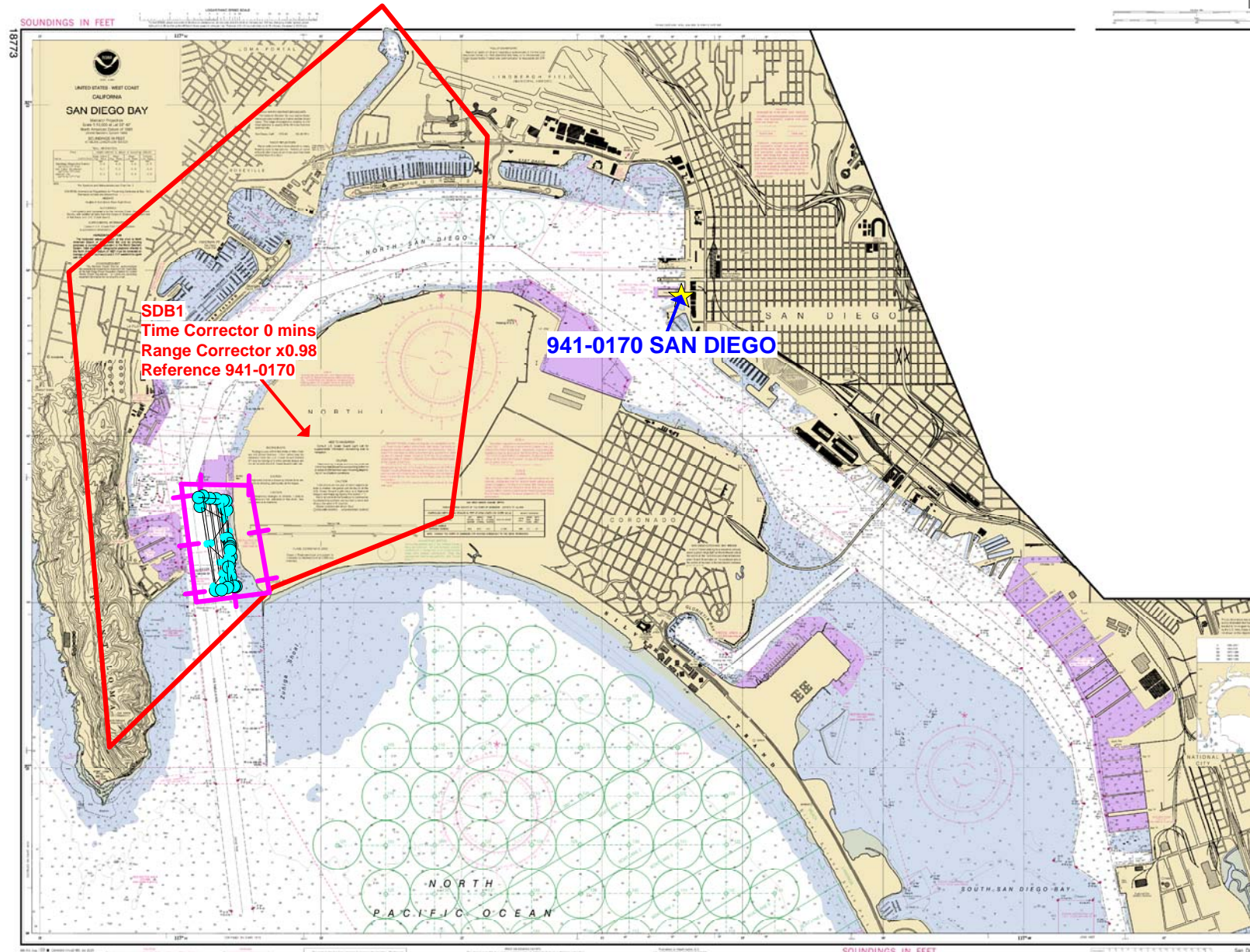
WATLEV - 3:always under water/submerged



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



Preliminary as Final Tidal Zoning  
for S-L914-NRT6-2010, F00590  
San Diego Bay, CA



**F00590 HCell Report**  
Kay MacDonald, ERT  
Pacific Hydrographic Branch

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

HCell compilation of survey F00590 used:

Office of Coast Survey HCell Specifications: Draft, Version: 4.0, 17 March, 2010.  
HCell Reference Guide: Version 2.1, 13 January, 2011.

### **2. Compilation Scale**

Depths and features for HCell F00590 were compiled to the largest scale raster chart, 18773. Survey F00590 falls entirely within 18773, which is a 1:12,000 scale chart.

Chart	Scale	Edition	Edition Date	NTM Date
18773	1:12,000	41st	10/01/2008	1/22/2011

The following ENC was also used during compilation:

Chart	Scale
US5CA72M	1:12,000

### **3. Soundings**

A survey-scale sounding (SOUNDG) feature object layer was built from the 0.5-meter Finalized Surface in CARIS BASE Editor. A shoal-biased selection was made at 1:10,000 survey scale using a Radius Table file with values shown in the table, below.

Shoal Limit (m)	Deep Limit (m)	Radius (mm)
0	10	1.5
10	20	1.5
20	50	3

In CARIS BASE Editor, soundings were manually selected from the high density sounding layer (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 F00590\_SS HCell for MCD raster charting division to use for guidance in creating chart contours. The metric and feet equivalent contour values are shown in the table below.

<b>Chart Contour Intervals in Feet as seen on Chart 18773</b>	<b>Metric equivalent to Chart Feet, Arithmetically Rounded</b>	<b>Meters with NOAA Rounding Applied</b>	<b>Feet with NOAA Rounding Applied</b>	<b>Feet with NOAA Rounding Removed for Display on Chart 18773 (as seen on F00590_SS)</b>
6	1.8288	2.0574	6.75	6
12	3.6576	3.8862	12.75	12
18	5.4864	5.715	18.75	18
30	9.144	9.3726	30.75	30

Contours in the F0059\_SS file have not been deconflicted against shoreline features, soundings and hydrography, as all other features in the F00590\_CS file and soundings in the F00590\_SS have been. This may result in conflicts between the F00590\_SS file contours and HCell features at or near the survey limits. Conflicts with M\_QUAL and SBDARE objects should be expected. HCell features should be honored over F00590\_SS.000 file contours in all cases where conflicts are found.

## 5. Meta Areas

The following Meta area object is included in HCell F00590:

M\_QUAL

The Meta area object was constructed on the basis of the limits of the hydrography using high resolution Finalized Surfaces.

## 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 HCell 000 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.

Depth Units (DUNI):	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 a precision as possible. Depth units for

soundings measured with sonar maintain millimeter precision. BASE Editor and S-57 Composer units and precision are shown below.

Sounding Units:            Meters rounded to the nearest millimeter

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
*DEPARE	Intertidal area
*DEPCNT	Modified surveyed MLLW
M_QUAL	Data quality Meta object
MORFAC	Dolphin
OBSTRN	Obstruction area objects
SBDARE	Bottom samples, reefs and rocky seabed areas
*SOUNDG	Soundings at chart scale density
UWTROC	Rock features
WRECK	Wreck

\* 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.

### **8.1 Conflicts between Shoreline and Hydrography**

There is one instance of charted shoreline in conflict with hydrography, in the northeastern most extent of the survey area. Here the highest resolution Surface was used to compare to the charted MLLW, just outside of the survey limits, and based on the depths of 6 to 15 feet seen, it is recommended that the charted MLLW line be moved inshore approximately 30 feet, as indicated in the HCell.

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

F00590 was subjected to QA checks in S-57 Composer prior to exporting to the metric HCell (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/Naming Conventions

F00590_CS.000	Chart Units HCell, Soundings and features compiled to 1:12,000
F00590_SS.000	Chart Units HCell, Soundings and Contours compiled to 1:10,000
F00590_DR.pdf	Descriptive Report including end notes compiled during office processing and certification, the HCell Report, and supplemental items
F00590_outline.gml	Survey outline
F00590_outline.xsd	Survey outline

## 11. Software

CARIS HIPS Ver.7.0	Inspection of BASE Surface
CARIS BASE Editor Ver. 3.0	Creation of soundings and bathy-derived features, meta area objects, and Blue Notes; Survey evaluation and verification; Initial HCell assembly.
CARIS S-57 Composer Ver. 2.2	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 HCell 000 file.
Northport Systems, Inc., Fugawi View ENC Ver.1.0.0.3	Independent inspection of final HCells using a COTS viewer.

## 12. Contacts

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

Kay MacDonald, ERT  
Pacific Hydrographic Branch, Seattle, WA  
206-526-6883 [kay.macdonald@noaa.gov](mailto:kay.macdonald@noaa.gov)

APPROVAL SHEET  
F00590

Initial Approvals:

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 disproof 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.