

**W00262**

NOAA Form 76-35A

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

**DESCRIPTIVE REPORT**

Type of Survey: Outside Source Data

Registry Number: W00262

**LOCALITY**

State: Washington

General Locality: Olympic Coast National Marine Sanctuary

Sub-locality: Mosquito Creek Approach

**2013**

**CHIEF OF PARTY**  
R/V Tatoosh Personnel

**LIBRARY & ARCHIVES**

Date:

**HYDROGRAPHIC TITLE SHEET**

**W00262**

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

State: **Washington**

General Locality: **Olympic Coast National Marine Sanctuary**

Sub-Locality: **Mosquito Creek Approach**

Scale: **N/A**

Dates of Survey: **01/16/2013 to 01/19/2013**

Instructions Dated: **N/A**

Project Number: **OSD-PHB-13**

Field Unit: **OCNMS R/V Tatoosh**

Chief of Party: **R/V Tatoosh Personnel**

Soundings by: **N/A**

Verification by: **Pacific Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

HCell Compilation Units: ***meters at Mean Lower Low Water***

**Remarks:**

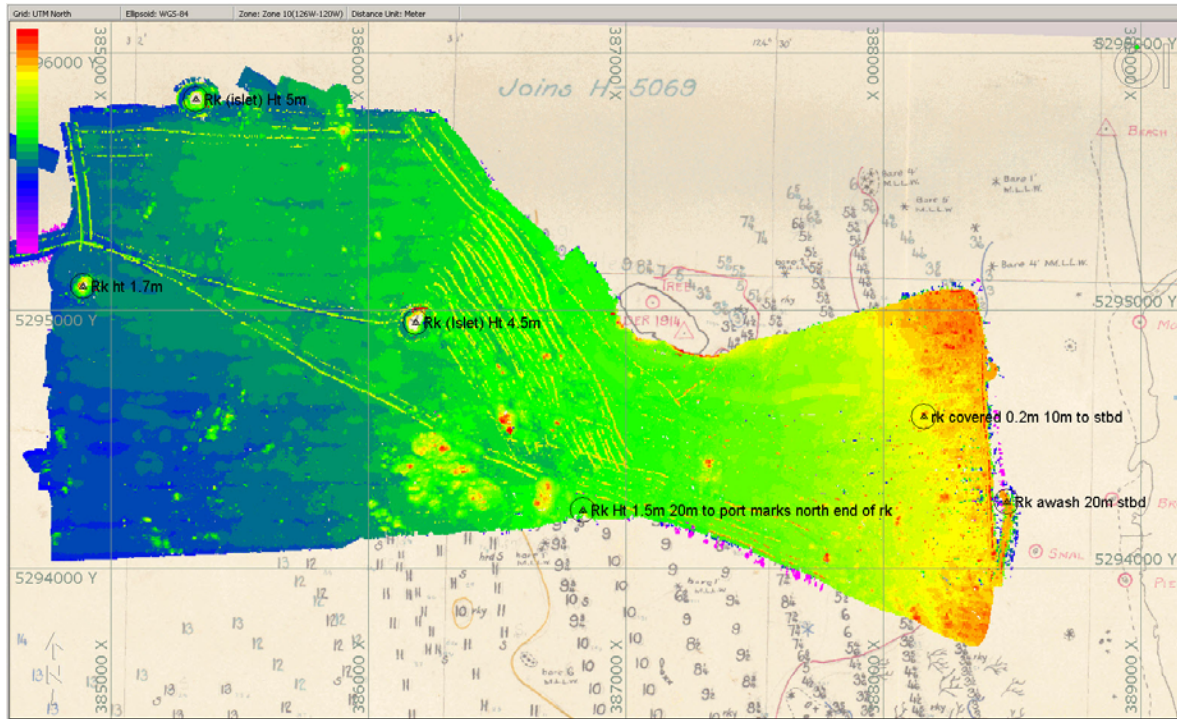
*Horizontal Coordinate System: UTM Zone 10N. The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold, red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Geophysical Data Center (NGDC) and can be retrieved via <http://www.ngdc.noaa.gov/>.*

# Descriptive Report

## Mosquito Creek Approach Investigation

### OCNMS R/V TATOOSH

#### A. AREA SURVEYED<sup>1</sup>



This survey investigation was in response to a dock which is reported to be Tsunami Debris from Japan that washed ashore on the Washington Coast between Mosquito Creek and Hoh Head. The purpose of this investigation was to survey an area to identify safe passage for a potential salvage vessel to approach from sea to a point near enough to hook a tow line to the derelict dock.

The vessel utilized in this investigation was the Olympic Coast National Marine Sanctuary research vessel TATOOSH. The area surveyed was approximately 1.9 nm long and 1 nm wide.

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

### **1. Equipment**

The R/V TATOOSH is a 38' Munson hull. The LOA is 12.8m, beam 3.7m, draft 1m. The survey hardware comprised of a RESON 8101 SWMB sonar that was hull mounted to the R/V TATOOSH, a TRIMBLE DSM 212 DGPS receiver, TSS DMSO5 inertial motion unit, and S.G. Brown Gyro Compass. HYPACK/HYSWEEP software was utilized as the acquisition software and CARIS used for processing. Sound velocity data was collected with a seabird SBE19 CTD.

### **2. Quality Control**

Twenty one cross lines were run for a total of 4.9 nm or 15% of the main scheme lines. The agreement between cross lines and main scheme lines was excellent and no systematic errors were observed.

A CARIS QC reports were generated on the data from 0 to 75 degrees from nadir on two base surfaces of ranges 0-18m and 18-40m. During processing data on beams greater than 60 degrees were rejected. 95% of data collected from beams from nadir to 45 degrees met order 1 standards and 95% of data from 45 degrees to 60 degrees met order 2 standards.

On the first day of acquisition considerable noise in the data was encountered due to the learning process of the survey team to find appropriate sonar settings for the conditions encountered in the survey area. In the shallower portions of the survey where the adjacent survey lines were narrowly spaced bubbles from the jet propulsion created some noise in the data.

An attempt to get 100% bottom coverage was made but due to the loss of the weather window survey operations were halted. The hydrographer feels that although 100% bottom coverage was not completed this survey was adequately completed for its intended purpose and all significant features in the survey area were found. The hydrographic feels this survey is sufficient to supersede the prior surveys and be used for updating the charted soundings in the area.

### **3. Corrections to Echo Soundings**

A Patch Test was conducted on January 16, 2013 in the vicinity of La Push, WA. Corrections were computed in CARIS and entered into the CARIS HVF file for application to the sounding data.

Dynamic draft was applied to the sounding data. The dynamic draft measurements were observed on June 27, 2011 by using a level set up on Hollywood Beach in Port Angeles, WA and observing a staff on the R/V TATOOSH while approaching the level at varying speeds.

Sound velocity (SV) casts were conducted approximately every two hours. SV casts were processed with Seabird proprietary software. SV cast data were manually extended 20% using the last value in the cast. Due to a thin fresh water layer on the surface from the proximity of Mosquito Creek

and Hoh River and a high pressure system with little to no wind for mixing some sound velocity artifacts were seen in the data in the form of smiley face profiles in the CARIS swath editor. Due in part to fresh water on the surface and averaging in values as the CTD is equalizing at the surface the top 1-m bin value is believed to be skewed and not representative of the SV at the transducer face. The surface 1-m bin sound velocity value was edited using the best slope method of the top 3-5 meters of each SV profile which corrected the sound velocity artifacts seen in the data.

Date	Time( GMT)	Lat	Long
2013-016	20:42:43	47:47:58	-124:32:48
2013-016	23:00:46	47:48:20	-124:31:45
2013-017	17:32:50	47:48:18	-124:32:01
2013-017	20:47:51	47:47:38	-124:30:45
2013-017	22:57:16	47:47:42	-124:30:35
2013-018	16:47:00	47:48:01	-124:32:18
2013-018	18:52:00	47:47:48	-124:31:05
2013-018	20:27:00	48:48:01	-124:31:21
2013-018	22:20:08	47:47:36	-124:30:40

*List of SV casts taken*

#### 4. Features

Six features were positioned. Three larger rocks/Islets were positioned by running a survey line around the feature and recording a geographic position using the HYPACK target feature in the center of the circle. Two smaller rocks and the end of a reef were also positioned by recording the position of the survey vessel and recording an offset and azimuth to the feature. NGS software program "Forward" was used to compute the geographic positions from the recorded information. See attached Feature Report for positions.

#### 5. Data Processing

Data processing of soundings was conducted in CARIS. Two CARIS cube surfaces were created over the survey area. One surface for depths up to 18m with a resolution of 1m and ranges from the inshore limit of the survey in approximately 4.5m depth to the 18m curve that extends from the NW end of Anderson Island SW to the southern border of the survey. The second CARIS cube surface was created for depths greater than 18m at a 2m resolution and encompassed the offshore half of the survey

### C. AIDS TO NAVIGATION

There are no aids to navigation in the survey area.

#### **D. DANGER TO NAVIGATION REPORTS**

No dangers to navigation were found.

#### **E. RECOMMENDATIONS**

The hydrographer feels this survey is adequate to supersede the charted soundings in the survey area.<sup>2</sup>

Due to increasing recreational use of the Washington Coast and the rugged nature of the coast a series of larger scale charts is recommended. NOS chart 18485, 1:40,000 covers the entrance to the Strait of Juan De Fuca south to Cape Alava and is an appropriate scale for the traffic and use of the area. South of chart 18485 vessels navigate on chart 18480, scale 1:176253 and chart 18500, scale 1:180789. These small scale charts are not conducive to safe navigation in this area. Two 1:40,000 scale charts extending from Cape Alava to Cape Grenville are recommended for safe navigation. South of Cape Grenville the shore generally has a slow bottom and non-descript shoreline and a smaller scale chart would be suitable.

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

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<sup>1</sup> Select bathymetry and features referenced in this Descriptive Report have been included or otherwise addressed in the chart update product. This survey does not fully comply with the NOS Hydrographic Surveys Specifications and Deliverables and does not meet IHO object detection requirements. Therefore, this survey was not used to supersede shoaler charted soundings or to disprove charted features.

<sup>2</sup> Do not concur.

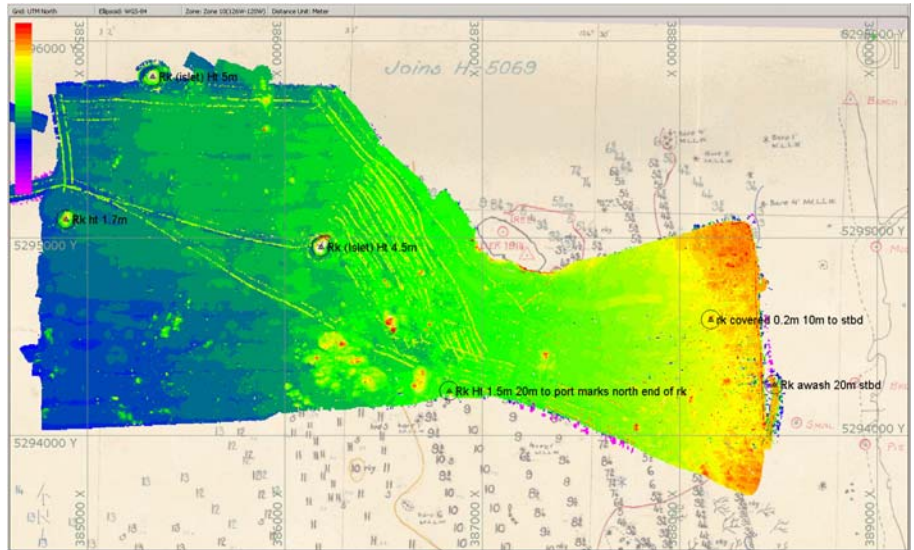
# Mosquito Creek Investigation

## Feature Report

The following 6 rocks/islets/reefs were positioned using HYPACK. The following image shows the raw positions of the items in relation to the survey area.

Heights were corrected to MLLW based on preliminary tides from La Push tide gauge and zone correctors of -6 minutes for time and a range corrector of 0.99.

In the case of item 4, 5, and 6 the final positions were computed using the NGS software "Forward". The position was derived from the position of the survey vessel, an estimated distance, and azimuth, computations attached.



- 1) Rock, Ht 2.2m , 47°47'56.025"N 124°32'13.776"W

A rock with a height of 1.7m was observed at 18:49:40 01/17/2013 GMT. A survey line was run encircling the rock at approximately 30m distance off the rock. A HYPACK target was taken at the center of the circle and the following picture taken.



- 2) Islet, Ht 5.6m, 47°48'19.763"N 124°31'53.433"W

An Islet with a height of 5m was observed at 19:41:39 01/17/2013 GMT. A survey line was run encircling the rock at approximately 30 m distance off the rock. A HYPACK target was taken at the center of the circle and the following picture taken.





- 3) Islet, Ht 5.4m , 47°47'52.311"N 124°31'11.591"W

An Islet with a height of 4.5m was observed at 20:43:33 01/17/2013 GMT. A survey line was run encircling the rock at approximately 30 m distance off the rock. A HYPACK target was taken at the center of the circle and the following picture taken.



- 4) Rock, Ht 1.4m , 47°47'31.193"N 124°29'19.556"W

A rock awash was observed at 21:51:35 01/17/2013 GMT. The rock was 20m to starboard (east) while running a survey line in a northerly direction and the following picture was taken. The position was derived from the position of the survey vessel and an estimated



- 5) Reef, HT 2.2, 47°47'28.450"N 124°30'39.619"W

The north end of a reef oriented in a NE-SW direction and a height of 1.5m was observed at 18:11:42 01/18/2013 GMT. The reef was 20m to port (south) while running a survey line in a westerly direction and the following picture was taken.



- 6) Rock, Ht 1.1m , 47°47'41.728"N 124°29'36.383"W

A rock covered approximately 0.2m was observed at 23:01:42 01/18/2013 GMT. The rock was 10m to starboard (north) while running a survey line in a westerly direction. No picture was taken.

## NGS FORWARD COMPUTATIONS

Item 4

Ellipsoid : GRS80 / WGS84 (NAD83)  
Equatorial axis,  $a = 6378137.0000$   
Polar axis,  $b = 6356752.3141$   
Inverse flattening,  $1/f = 298.25722210088$

First Station : R/V TATOOSH

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LAT = 47 47 31.19300 North  
LON = 124 29 20.51700 West

Second Station : Item 4 - Rock

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LAT = 47 47 31.19300 North  
LON = 124 29 19.55604 West

Forward azimuth    FAZ = 90 0 0.0000 From North  
Back azimuth        BAZ = 270 0 0.7118 From North  
Ellipsoidal distance    S =    20.0000 m

ITEM 5

Ellipsoid : GRS80 / WGS84 (NAD83)  
Equatorial axis,  $a = 6378137.0000$   
Polar axis,  $b = 6356752.3141$   
Inverse flattening,  $1/f = 298.25722210088$

First Station : R/V TATOOSH

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LAT = 47 47 29.09800 North  
LON = 124 30 39.61900 West

Second Station : Item 5 - Reef

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LAT = 47 47 28.45044 North  
LON = 124 30 39.61900 West

Forward azimuth    FAZ = 180 0 0.0000 From North  
Back azimuth        BAZ = 0 0 0.0000 From North  
Ellipsoidal distance    S =    20.0000 m

ITEM 6

Ellipsoid : GRS80 / WGS84 (NAD83)

Equatorial axis,  $a = 6378137.0000$

Polar axis,  $b = 6356752.3141$

Inverse flattening,  $1/f = 298.25722210088$

First Station : R/V TATOOSH

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LAT = 47 47 41.72800 North

LON = 124 29 36.38300 West

Second Station : Item 6 - Rock

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LAT = 47 47 42.05178 North

LON = 124 29 36.38300 West

Forward azimuth    FAZ = 0 0 0.0000 From North

Back azimuth        BAZ = 180 0 0.0000 From North

Ellipsoidal distance    S =    10.0000 m

APPROVAL PAGE

W00262

Data partially meet current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in specific areas as delineated during office processing.

The following products will be sent to NGDC for archive:

- W00262\_DR.pdf
- Collection of depth varied resolution BAGS
- Processed survey data and records
- W00262\_GeoImage.pdf

The survey evaluation and verification has been conducted according current OCS Specifications.

Approved: \_\_\_\_\_

**Kurt Brown**

Physical Scientist, Pacific Hydrographic Branch

The survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: \_\_\_\_\_

**Peter Holmberg**

Cartographic Team Lead, Pacific Hydrographic Branch