

H11073

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.* RA-20-05-01

*Registry No.* H-11073

### LOCALITY

*State* Alaska

*General Locality* Approaches to Seward

*Sublocality* Southern Portion of Resurrection Bay

**2002**

### CHIEF OF PARTY

Captain James C. Gardner, NOAA

### LIBRARY & ARCHIVES

DATE

## HYDROGRAPHIC TITLE SHEET

H-11073

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.

RA-20-05-01

State AlaskaGeneral Locality Approaches to SewardSublocality Southern Portion of Resurrection BayScale 1:20,000 Date of Survey 8/20/2001-9/20/2001Instructions Date 7/26/2001 Project No. OPR-P359-RAVessel NOAA Ship RAINIER (2120), RA-1 (2121), RA-2 (2122),RA-3 (2123), RA-4 (2124), RA5-2125, RA6-2126, RA-2127Chief of Party Capt James C. Gardner, NOAASurveyed by RAINIER PersonnelSoundings taken by echo sounder, hand lead, pole KNUDSEN 320M, RESON 8101 MBSEABEAM 1050D LFGraphic record scaled by RAINIER PersonnelGraphic record checked by RAINIER PersonnelEvaluation by R. Shipley Automated plot by HP Design Jet 1050CVerification by E. Domingo, R. ShipleySoundings in Fathoms at MLLWREMARKS: Time in UTC.

**Revisions and annotations appearing as endnotes were  
generated during office processing.**

**All depths listed in this report are referenced to  
mean lower low water unless otherwise noted.  
UTM Projection (zone 6)**

# Descriptive Report to Accompany Hydrographic Survey H11073

Project OPR-P359-RA-01  
Approaches to Seward, Alaska  
Scale 1:20,000  
August-September 2001  
**NOAA Ship RAINIER**  
Chief of Party: Captain James C. Gardner, NOAA

## A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P359-RA-01, dated July, 26 2001, and the Draft Standing Project Instructions dated April 6, 1998. The purpose of this project is to provide contemporary hydrography with full bottom multibeam coverage in Resurrection Bay, Alaska. The project responds to requests from a U.S. Senator, the Southwest Alaska Pilots Association, Cruise Lines, and NIMA. This project will respond to a request from Senator Ted Stevens, on behalf of the city of Seward, for contemporary hydrography in Resurrection Bay that will support the National Tsunami Inundation Mapping Program. This program is critical to the community of Seward, due to its history of severe tsunami damage.

The survey area is located in southern Resurrection Bay, approximately five nautical miles south of Seward, extending south from Caines Head to Bulldog Cove (see Figure 1). The survey's northern limit is latitude 60°02'00"N<sup>1</sup> and the southern limit is latitude 59°52'45'30"N.<sup>2</sup> The survey's western limit is longitude 149°38'30"W<sup>3</sup> and the eastern limit is longitude 149°10'30"W.<sup>4</sup> This survey corresponds to sheet "B" in the sheet layout provided with the Letter Instructions.

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters 10 meters and deeper. In waters from 4 meters to 10 meters, SWMB data was obtained at 25-meter line spacing. In these areas, additional coverage was collected to obtain least depths over features or shoals. Vertical-beam echo sounder (VBES) data were acquired in depths from 4 to 50 meters, at a line spacing of 100 meters, to define the four-meter curve and to aid in the planning of SWMB data acquisition.

Data acquisition was conducted from August 20 to September 20, 2001 (DN 232 to 263).

## B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition, processing systems, survey vessels, quality control procedures, and data processing methods can be found in the *OPR-359-RA-01 Data Acquisition and Processing Report*,<sup>5</sup> submitted under separate cover. Items specific to this survey, and any deviations from the aforementioned report are discussed in the following sections.

### B1. Equipment and Vessels

Data was acquired by RAINIER and her survey launches (vessel numbers 2120, 2121, 2122, 2123, 2124, 2125, 2126, and 2127). Vessels 2120, 2121, 2123, 2124 and 2126 were used to acquire SWMB soundings and sound velocity profiles. Vessels 2122 and 2125 were used to acquire VBES. Vessels 2121, 2122, 2125 and 2127 were used to acquire detached positions (DPs) for shoreline verification.

Vessel 2122 and 2125 were also used to collect bottom samples (BS). No unusual vessel configurations or problems were encountered during this survey.<sup>6</sup>

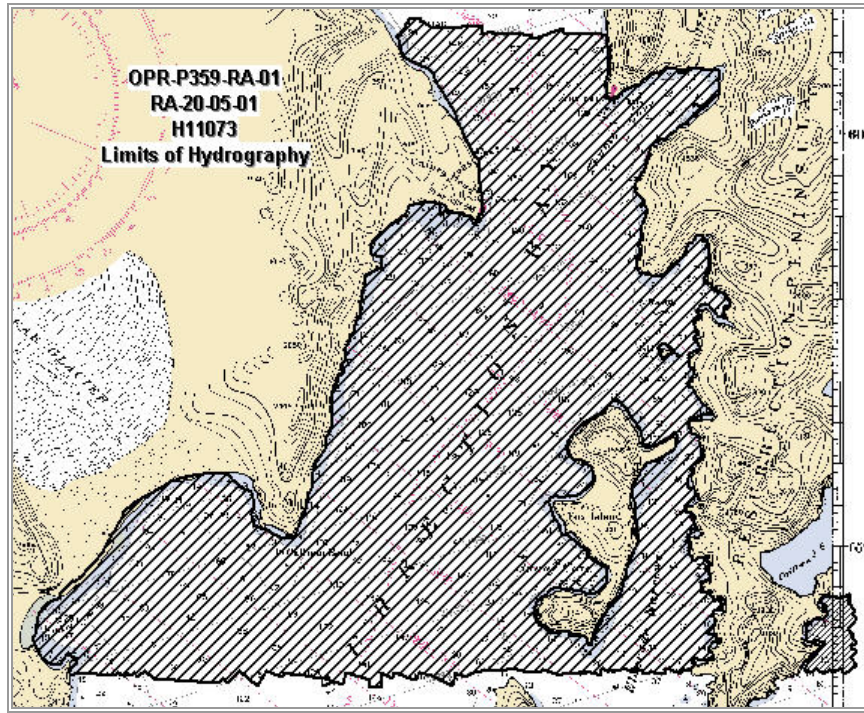


Figure 1. H11073 Survey Limits.

## B2. Quality Control

### Crosslines

VBES crosslines totaled 26.52 nautical miles, comprising 4.48% of VBES mainscheme hydrography. Crosslines generally agreed within 1 to 2 meters of VBES mainscheme hydrography.

SWMB crosslines totaled 36.12 nautical miles, comprising 7.28% of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 75.56%, with a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order 1 specifications detailed in Special Publication S-44, Edition 4, as well as NOS Hydrographic Surveys Specifications and Deliverables Manual. See Appendix V<sup>7</sup> for the detailed report. The Hydrographer believes through manual examination of the data the accuracy standards have been met and crossline agreement is good. The low QCR agreement can be attributed to steep and irregular bathymetry on H11073.<sup>8</sup>

### Junctions

The following contemporary surveys junction with H11073 (see Figure 2):<sup>9</sup>

Registry #	Scale	Date	Junction side
H11072	1:10,000	2001	North
H11074	1:20,000	2001	South

Survey H11072 junctions well with this survey, with differences generally less than one fathom.<sup>10</sup>

Survey H11074 was not completed prior to submittal of survey H11073. Junction comparisons will be performed upon completion.<sup>11</sup>

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.<sup>12</sup>

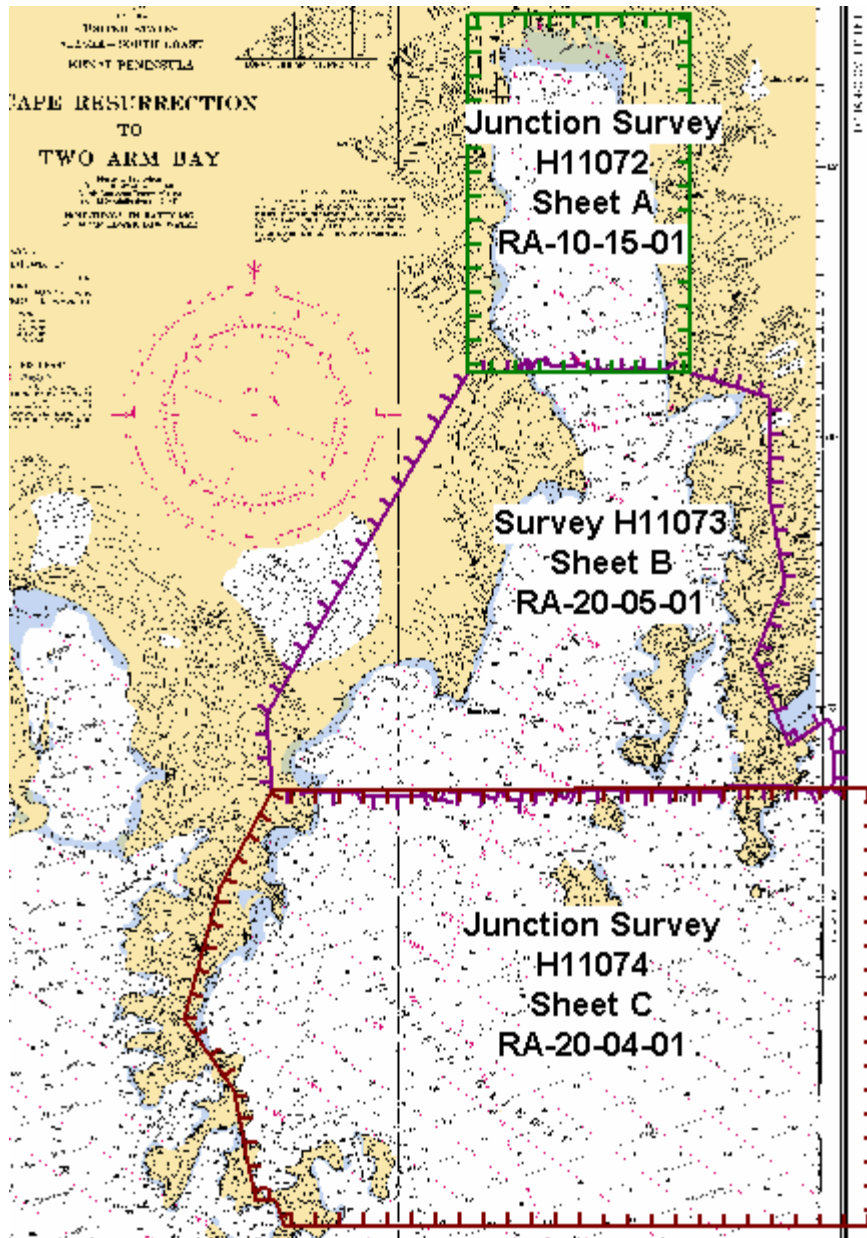


Figure 2. H11073 Junction Surveys.

### Data Quality Factors

In most areas of the survey, no unusual conditions were encountered during the survey that affected the expected accuracy and quality of survey data.

Due to melting glacial ice, river runoff, and the effects of tidal currents, distinct differences in water masses were often observed in the field. This proved to be problematic in the acquisition and application of sound velocity correctors. After correction for sound velocity in Hydrographic Data Cleaning System (HDCS), some lines still exhibited the characteristic "smiles" and "frowns" indicative of inaccurate sound velocity corrections. To correct these sound velocity problems, correctors were often applied based on the geographic position of the cast rather than the time the cast was collected. Such application was performed on individual lines which exhibited profound sound velocity problems. A few boat days worth of data were rejected and reacquired, due to large sound velocity errors. Sound velocity errors were still noticeable in several regions, despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally. To compensate, the Hydrographer, where possible, rejected soundings obviously in error on the outer beams. The largest offsets in the outer beam soundings were generally between 0.5 to 1 meter. Most areas had sufficient overlap with soundings closer to nadir. Near nadir beams are least affected by sound velocity. The near nadir beams, due to their relative shoal nature when compared to the outer beams, are the soundings which are brought forward during the shoal bias binning. The Hydrographer recommends retaining this sounding data.<sup>13</sup>

### **B3. Data Reduction**

HDCS data were reduced to mean lower-low water (MLLW) using smooth tides from station Seward, AK (945-5090) with no zoning correctors applied. This data was used in creating the tide corrector file "9455090.tid" which was applied in CARIS. Detached positions data were reduced to mean lower-low water (MLLW) using smooth tides from station Seward, AK (945-5090). These data were used in creating HPS tide table PTIDE\_98, which was utilized in HPTools to apply zoned tide correctors to the detached positions.

All other data reduction procedures for survey H11073 conform to those detailed in the *OPR-P359-RA-01 Data Acquisition and Processing Report*.

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

A complete description of vertical and horizontal control for survey H11073 can be found in the *OPR-P359-RA-01 Horizontal and Vertical Control Report*,<sup>14</sup> submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

### **Horizontal Control**

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Kenai (310 kHz), Hinchinbrook (292 kHz) and Potato Point (298 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P359-RA-01 Horizontal and Vertical Control Report*.

### **Vertical Control**

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at Seward, AK (945-5090) will serve as control for datum determination and as the primary source for water level reducers for survey H11073. RAINIER personnel

installed a Sutron 8210 “bubbler” tide gauge at the following subordinate station in accordance with the Letter Instructions:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Agnes Cove	945-5120	30-day	August 14, 2001	September 20, 2001

All data were reduced to MLLW using final approved (smooth) tide correctors and zoning obtained from N/OPS1. Elevations have not been corrected to MHW where appropriate.<sup>15</sup> Copies of the request for smooth tides, and Final Tide Note<sup>16</sup>, are included in Appendix IV of this report.

**D. RESULTS AND RECOMMENDATIONS**

**D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations**

Five AWOIS items were located within the limits of H11073 and investigated during this survey. Investigation methods, results, and charting recommendations have been entered into the Microsoft Access AWOIS database and are submitted with the digital data. Printouts of the AWOIS Database forms are included in Appendix VI of this report.

**D.2 Chart Comparison**

Survey H11073 was compared with chart 16682 (14<sup>th</sup> Ed.; June 20, 1998, 1:81,847)<sup>17</sup> and chart 16683 (9<sup>th</sup> Ed.; January 29, 2000, 1:81,436).<sup>18</sup>

**Chart 16682**

Depths from survey H11073 were generally one to five fathoms deeper than depths on chart 16682. In many instances, this survey found shoaler soundings between charted soundings even though agreement at the position of the charted depths was good. This can be attributed to increased bottom coverage using SWMB methods. Many near shore survey depths are deeper than charted. Most instances can be attributed to inaccurate charted shoreline positions due to an offset in the chart and the narrower beamwidth of SWMB compared to prior surveys run with VBES on steeply sloping nearshore bottom topography. In addition, mid-channel surveyed depths tend to be from two to twenty fathoms deeper than charted depths, all mid-channel areas were covered with 100% SWMB.<sup>19</sup>

**Chart 16683**

Depths from survey H11073 generally agreed within one to two fathoms with depths from chart 16683. Many near shore survey depths are deeper than charted. Most instances can be attributed to inaccurate charted shoreline positions due to an offset in the chart and the narrower beamwidth of SWMB compared to prior surveys run with VBES on steeply sloping nearshore bottom topography. Near shore, surveyed depths are generally shoaler than the corresponding charted depths due to increased bottom coverage. In addition, mid-channel surveyed depths tend to be from two to six fathoms deeper than charted depths, all mid-channel areas were covered with 100% SWMB.<sup>20</sup>

The Hydrographer has determined that data accuracy standards and bottom coverage requirements have been met and survey data are adequate to supersede charted data in their common areas.

Final sounding comparisons will be made at the Pacific Hydrographic Branch.

### D.3 Shoreline

N/GS3 supplied photogrammetric shoreline data in vector format as Cartographic Feature Files (CFF) from project GC10494. The CFF vector shoreline data were converted for use in HYPACK for field verification and were used as the primary shoreline source. In addition, features shown on the current editions of charts 16682 and 16683 were digitized in MapInfo by RAINIER personnel and displayed in HYPACK for field verification. In instances in which charted features were digitized, RAINIER personnel attempted to identify the source of the feature by reviewing prior surveys, although in many instances the quality of the prior surveys images was poor, and RAINIER personnel were unable to register them in MapInfo.

#### Shoreline Verification

Shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM 6.1 and 6.2. Detached positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms, and processed in HPS. These indicate revisions to features and features not found on the CFF or chart. In addition, annotations describing shoreline were recorded on hard copy plots of digital shoreline.<sup>21</sup> DP forms are included in Section I of the *Separates to be Included with Survey Data*.

A detailed Detached Position and Bottom Sample (DPBS) plot, in both paper copy and MapInfo format, is provided showing all detached positions and bottom samples with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot.<sup>22</sup>

Verified CFF shoreline that did not require revision is in the MapInfo table “H11073\_Shoreline.” Changes to the shoreline, and revisions to features from the CFF and charted shoreline are depicted in the MapInfo table “H11073\_Shoreline\_Updates.” Charted shoreline, when used for reference purposes or when source data were not available, is depicted in the MapInfo table “H11073\_Charted\_Shoreline.”

Many features found during this survey did not match those of the source and charted shoreline. The CFF vector shoreline data was found to be inaccurate and shifted in several locations, requiring revision. The changes are reflected on the DPBS Plot, and in the MapInfo tables “H11073\_Shoreline\_Updates,” with new features depicted in “H11073\_Features.”

After discussing the CFF shoreline discrepancies with NGS, Remote Sensing Division (RSD), RAINIER was informed that horizontal control in Resurrection Bay at the time of shoreline compilation was considered adequate within H11073 survey limits. In cases where the CFF data varies from data collected in the field, the Hydrographer recommends charting the shoreline as depicted on the Detached Position Plot.<sup>23</sup>

CFF shoreline was not provided for the southwest<sup>24</sup> corner of survey H11073 (east side of Cape Resurrection). Charts 16682 and 16683 were used as reference during shoreline verification. Neither chart was accurate in depicting the actual shoreline. Due to high swells and the shoal nature of the area, survey personnel were unable to take DPs of MHW, therefore the revised MHW line is approximate and was established using LW DPs, VBES and SWMB.



Several photographs were taken to complement the hydrographer's description of shoreline features. These photographs are submitted with the digital data and are named according to the corresponding fix numbers.

### Source Shoreline Changes and New Features <sup>25</sup>

The charted(16682) islet at 59-53-35.00 N, 149-32-57.54 W (357,369.7E, 6,642,246.8N) was disproved with 100% SWMB coverage. The charted islet was located at Pos 52932 and 52933, (59-53-34.99N, 149-33-01.50W; 357,308.1E, 6,642,249.0N), a CFF rock at Pos 52934 (59-53-35.91N, 149-33-04.04W; 357,269.9E, 6,642,278.8N) is an extent of this islet. The Hydrographer recommends removal of the disproved charted islet and CFF rock and charting the islet at the location depicted on the DPBS Plot. <sup>26</sup>

The charted(16682) islet at 59-57-56.84 N 149-25-59.46 W (385,106.3N, 6,541,771.1N) was disproved with 100% SWMB coverage. The charted islet was located at Pos 52945 and 52944, (59-57-58.70N, 149-26-04.87W; 364,081.2E, 6,650,159.2N), a CFF rock at Pos 51753 (59-57-58.70N, 149-26-06.54W; 364,055.3E, 6,650,160.3N) is an extent of this islet. The Hydrographer recommends removal of the disproved charted islet and CFF rock and charting the islet at the location depicted on the DPBS Plot. The CFF rock at (Pos 51754, 59-58-18.79 N, 149-25-51.07 W; 364,317.9E, 6,650,772.8N) was disproved with 100% SWMB coverage. The Hydrographer recommends not depicting the CFF rock on the chart. <sup>27</sup>

The charted(16682) islet position at 59-53-39.27 N, 149-33-04.23 W (357,270.9E, 6,642,382.9N) was disproved with 100% SWMB coverage. The charted islet is represented by a peninsula depicted on the CFF shoreline, located at (Pos 52938, 59-53-39.26N, 149-33-13.03W; 357,134.2E, 6,642,387.7N). The CFF shoreline in this area extends farther to the west than in the original shoreline. The Hydrographer recommends removal of the charted islet and charting of the CFF shoreline and HW shoreline update as depicted on the DPBS Plot. <sup>28</sup>

A new wreck was found in Thumb Cove (Figure 3) at (Pos 53345, 60-00-39.89 N, 149-17-25.61 W; 372,303.9 E, 6,654,856.3 N). The least depth of the wreck was 4.6m. The Hydrographer recommends charting the new wreck as depicted on the DPBS Plot. <sup>29</sup>

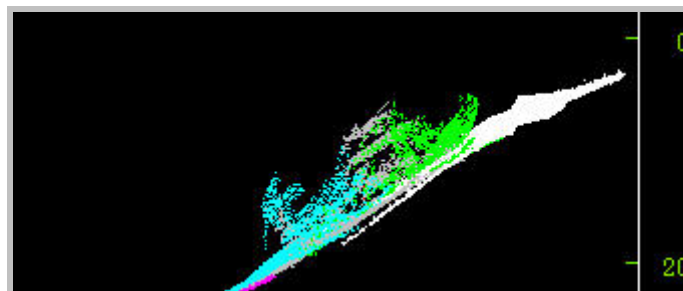


Figure 3. New wreck in Thumb Cove

There was a discrepancy between the CFF and existing shoreline (see Figure 4) at 59-57-52.60N, 149-16-49.32W (372,686.0E, 6,649,663.8N). A new approximate HW line was drawn based on (Pos 52910 and 52912, 59-54-43.07N, 149-17-43.68W; 372,397.8E, 6,649,757.9N) and SWMB coverage. The Hydrographer recommends revising the CFF shoreline to the new approximate HW line depicted in the DPBS Plot. <sup>30</sup>

There was a discrepancy between the CFF and existing shoreline (Figure 4) at 59-57-50.61 N, 149-17-31.68 W (372028.5 E, 6649624.9 N). A new approximate HW line was drawn based on (Pos 52914, 59-57-52.68N, 149-17-36.03W; 371,963.3E, 6,649,691.3N) and SWMB coverage. The Hydrographer recommends revising the CFF shoreline to the new approximate HW line depicted in the DPBS Plot.<sup>31</sup>

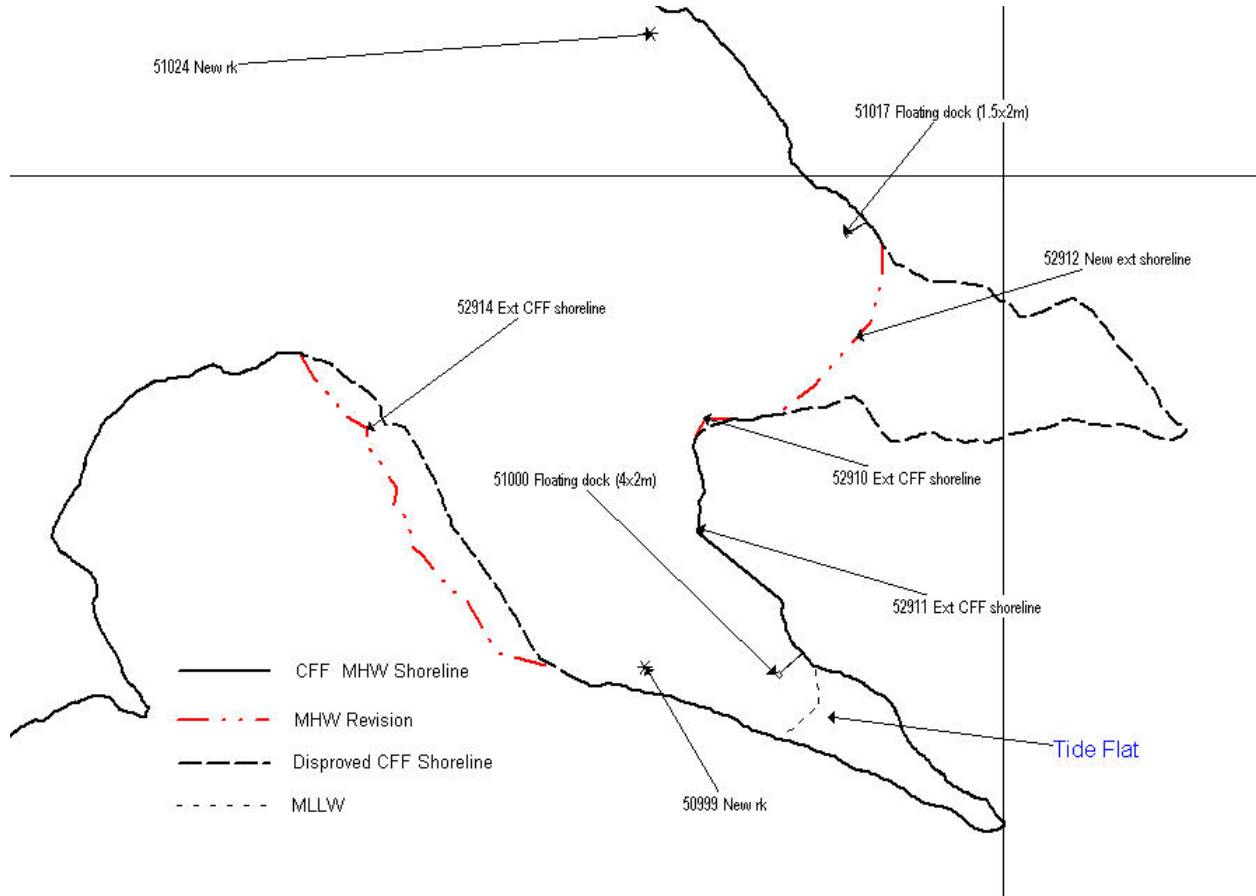


Figure 4. CFF Shoreline Discrepancies

The location of Hat Island (59-57-21.31N, 149-18-40.76W; 370,925.8E, 6,648,756.2N), depicted both on the CFF shoreline and chart(16682), was found to be approximately 30 meters to the west of its CFF shoreline location. The new position is defined to the east and north by Pos 52955 and 52954 (59-57-24.63N, 149-18-39.57W; 370,947.7E, 6,648,858.1N) and to the west and south by Pos 52952 and 52956 (59-57-17.09N, 149-18-42.53W; 370,893.8E, 6,648,626.5N). The Hydrographer recommends revising the CFF shoreline to the new HW line depicting the island as positioned on the DPBS Plot.<sup>32</sup>

There was a discrepancy between the CFF and existing shoreline at 59-55-31.73N, 149-17-59.69W (371,444.9E, 6,645,345.4 N). A new approximate HW line was drawn based on visual observation of the Hydrographer, due to sea state conditions in the area. A new MLW line was drawn based on Pos 52957 (59-55-32.31N, 149-18-04.83W; 371,365.8E, 6,645,366.2N). The Hydrographer recommends revising the CFF shoreline to the new approximate HW line depicted in the DPBS Plot.<sup>33</sup>

There was a discrepancy between the CFF shoreline at 59-54-49.67N, 149-17-57.66W (371,431.2E, 6,644,043.7 N) and the existing shoreline. A new approximate HW line was drawn based on Pos 52961

(59-54-48.98N, 149-18-01.41W; 371,372.3E, 6,644,024.4N) and SWMB coverage. The Hydrographer recommends revising the CFF shoreline to the new approximate HW line depicted in the DPBS Plot.<sup>34</sup>

There was a discrepancy between the CFF and existing shoreline at 59-54-42.57N, 149-17-40.68W (371,687.3E, 6,643,815.0N). A new approximate HW line was drawn based on Pos 52962 (59-54-43.64N, 149-17-43.4W; 371,638.9E, 6,643,846.8N) and SWMB coverage. The Hydrographer recommends revising the CFF shoreline to the new approximate HW line depicted in the DPBS Plot.<sup>35</sup>

The small peninsula on the CFF shoreline in the SE corner of Fox Island was found to be a new islet. The new HW line at (Pos 24188, 59-53-52.15 N, 149-20-27.09 W; 369,048.1E, 6,642,346.4N), was drawn based on visual observation by the Hydrographer and VBES. The new islet was positioned at (Pos 77006, 77008, and 77007, 59-53-51.76 N, 149-20-22.21 W; 369,123.4E, 6,642,331.8N). The Hydrographer recommends revising the CFF shoreline to the new HW line and charting the islet as depicted on the DPBS Plot.<sup>36</sup>

The CFF rock at Pos 24065 (59-55-10.19N, 149-21-15.09W, 368,388.1E, 6,644,785.9N) was found to be the highpoint and seaward most extent of a new islet (Pos 24066, 59-55-11.12N, 149-21-12.84W; 368,424.1E, 6,644,813.5N). The Hydrographer recommends not depicting CFF rock on the chart and charting the new islet as depicted on the DPBS Plot.<sup>37</sup>

### **Charted Features**<sup>38</sup>

The charted(16682) islet at 59-53-32.65 N, 149-33-02.99 W (357,282.2E 6,642,177.4N) was disproved with 100% SWMB coverage. A peninsula depicted on the CFF shoreline was verified at Pos 52935, (59-53-32.34 N, 149-33-08.46 W; 357,197.0E, 6,642,171.2N). The Hydrographer recommends removal of the charted islet and charting the CFF shoreline as portrayed on the DPBS Plot.<sup>39</sup>

The charted(16682) islet at 59-53-36.12 N, 149-33-01.21 W (357,314.0E, 6,642,283.7N) was verified by survey personnel in the field as a new reef located approximately 20 meters to the north at (Pos 53275 and 53274, 59-53-36.77 N, 149-33-00.71 W; 357,322.5E, 6,642,303.3N). The Hydrographer recommends removal of the charted islet and charting of the new reef as depicted on the DPBS Plot.<sup>40</sup>

The charted(16682) islet position at 59-53-37.87 N, 149-33-00.19 W (357,332.0E, 6,642,337.1N) was disproved with 100% SWMB coverage. The Hydrographer recommends removal of the charted islet.<sup>41</sup>

The charted(16682) islet position at 59-53-37.62 N, 149-33-03.50 W (357,280.2E, 6,642,331.4N) was disproved with visual observation of survey personnel and partial SWMB coverage due to the shoal nature of the surrounding area. . The Hydrographer recommends removal of the charted islet and charting of the new rock at (Pos 52931, 59-53-37.82 N, 149-33-07.39 W; 357,220.1E, 6,642,340.0N).<sup>42</sup>

The charted(16682) islet positioned at 59-53-41.45 N, 149-33-00.73 W (357,327.8E, 6,642,448.2N) was disproved with 100% SWMB coverage. A new rock was located at (Pos 53276, 59-53-40.82 N, 149-33-09.71 W; 357,187.6E, 6,642,434.2N). The Hydrographer recommends removing the charted islet and charting the new rock at the location depicted on the DPBS Plot.<sup>43</sup>

The charted(16682) islet positioned at 59-55-06.56 N, 149-27-38.53 W (362,431.2E, 6,644,890.4N) was disproved with 100% SWMB coverage. Two new islets are located at Pos 52942 (59-55-07.54 N, 149-27-44.34 W; 362,342.1E, 6,644,923.9N) and Pos 52941 (59-55-06.31 N, 149-27-45.1 W; 362,328.9E, 6,644,886.4N). The Hydrographer recommends removing the charted islet and charting the two new islets at the locations depicted on the DPBS Plot.<sup>44</sup>

The charted(16682) islet positioned at 59-57-05.61N, 149-26-27.43W, (363,670.9E, 6,648,530.6N) was disproved with 100% SWMB coverage. The new position of the islet is represented by Pos 51786 (59-57-06.96N, 149-26-32.00W; 363,601.6 E, 6,648,575.1N). The charted(16682) islet positioned at 59-57-04.24N, 149-26-31.35W (363,608.5E, 6,648,490.5N) was disproved with 100% SWMB coverage. Pos 51784 (59-57-05.10 N 149-26-37.46 W; 363,514.8E, 6,648,520.8N) represents the new location for the charted islet, a ledge connects this islet to shore at low water. The Hydrographer recommends removing the two disproved charted islets and charting them in their new locations as depicted on the DPBS Plot.<sup>45</sup>

The charted(16682) rock at (Pos 51801, 59-57-31.86 N, 149-26-12.86 W; 363,926.7E, 6,649,333.8N) was disproved after 3-minute visual search, VBES search, and 100% SWMB coverage. The Hydrographer recommends removal of the charted rock.<sup>46</sup>

The charted(16682) islet position at 59-57-40.41N, 149-26-08.20W (364,008.7E, 6,649,595.7N) was disproved with 100% SWMB coverage. The islet (Pos 51751, 59-57-41.75 N, 149-26-14.36 W; 363,914.8E, 6,649,640.6N) was positioned approximately 100m NW of the charted islet. The Hydrographer recommends removal of the existing charted islet and charting the new islet position depicted on the DPBS Plot.<sup>47</sup>

The charted(16682) islet at 59-57-50.21N, 149-26-00.52W (364,139.0E, 6,649,894.4N) was disproved with 100% SWMB coverage. The small peninsula depicted in the CFF shoreline at 59-57-52.42 N, 149-26-07.32 W (364,036.1E, 6,649,966.6N) represents this feature and was verified by survey personnel in the field. The Hydrographer recommends removal of the charted islet and charting the shoreline as depicted on the DPBS Plot.<sup>48</sup>

The charted(16882) rock at Pos 51703, (59-58-47.17N, 149-24-19.42W; 365,770.5E, 6,651,598.3N) was disproved with 100% SWMB coverage. The charted rock at 59-58-49.97 N, 149-24-25.07 W (365,686.1E, 6,651,688.1N) is the highpoint of a large shoal area, and was verified by survey personnel in the field. The Hydrographer recommends removal of the charted rock at Pos 51703, and retaining the verified charted rock and soundings as depicted on the DPBS Plot and Final Field Sheet.<sup>49</sup>

The charted(16682) rock at Pos 20697, (60-00-18.16N, 149-20-06.57W; 369,788.1E, 6,654,271.5N) was disproved after conducting a 5-minute visual search, VBES search, and covered with 100% SWMB. Two new rocks were located at Pos 20973 (60-00-25.45 N, 149-20-07.36 W; 369,783.9E, 6,654,497.5N) and Pos#20974 (60-00-25.09N, 149-20-05.48W; 369,812.5E, 6,654,485.2N). The Hydrographer recommends removal of the charted rock and charting the two new rocks as seen on the DPBS Plot.<sup>50</sup>

The charted islet at 60-00-22.18N, 149-19-54.96W (369,972.3E, 6,654,389.5N) was disproved with 100% SWMB coverage. Two new rocks were located at Pos 20976 (60-00-24.54,N, 149-19-58.29W; 369,923.4E, 6,654,464.2N) and Pos 20977 (60-00-25.62N, 149-19-56.63W; 369,950.3E, 6,654,496.9N). The Hydrographer recommends removal of the charted islet and charting the two new rocks as seen on the DPBS Plot.<sup>51</sup>

The charted(16682) rock position at (Pos#50923, 59-57-18.68N, 149-18-23.83W; 371,185.5E, 6,648,665.8N) was disproved with a VBES search and 100% SWMB. The charted rock was positioned at (Pos#50924, 59-57-19.97 N, 149-18-26.2 W; 371,150.1E, 6,648,706.8N). The Hydrographer recommends removal of the charted rock at the current position and charting the rock at the new location depicted on the DPBS Plot.<sup>52</sup>

The charted(16682) islet at 59-55-53.26N, 149-18-02.63W (371,422.4E, 6,646,012.8N) was disproved with 100% SWMB coverage and visually during shoreline verification and found to be a new rock located

at Pos 20204 (59-55-55.43N, 149-18-04.64W; 371,393.6E, 6,646,081.1N). The Hydrographer recommends removal of the charted islet and charting the new rock as depicted on the DPBS Plot.<sup>53</sup>

The charted(16682) islet at 59-54-58.90N, 149-18-08.75W (371,269.0E, 6,644,335.1N) was disproved during shoreline verification and found to be two new rocks located at Pos 20134 (59-54-59.61N, 149-18-09.79W; 371,253.6E, 6,644,357.5N) and Pos 20131 (59-54-58.0N 149-18-08.94W; 371,265.1E, 6,644,307.3N) were positioned west of the charted islet. The Hydrographer recommends removal of the charted islet and charting the two new rocks as depicted on the DPBS Plot.<sup>54</sup>

The charted(16682) islet position at 59-54-56.12N, 149-18-13.80W (371,187.6E, 6,644,251.9N) was disproved with 100% SWMB coverage. The islet (Pos 52960 and 52958, 59-54-57.60N, 149-18-17.56W; 371,130.8E, 6,644,299.7N) was positioned west of the charted islet. The Hydrographer recommends removal of the existing charted islet and charting the new islet position as depicted on the DPBS Plot.<sup>55</sup>

The charted(16682) islet position at 59-53-55.51N, 149-17-37.40W (371,687.8E, 6,642,358.0N) was disproved with 100% SWMB coverage. The islet (Pos 52964 and 52963, 59-53-57.54N 149-17-41.05W; 371,633.2E, 6,642,422.8N) was positioned north of the charted islet. The Hydrographer recommends removal of the existing charted islet and charting the new islet position as depicted on the DPBS Plot.<sup>56</sup>

The charted(16682) islet at 59-53-53.57 N 149-20-57.93 W (368,570.5E, 6,642,407.3N) was disproved with 100% SWMB. The area was found to be foul, and numerous rocks were positioned in the area, Pos 24014 (59-53-52.16 N, 149-20-56.59 W; 368,589.8E, 6,642,363.0N) is the seaward most rock of the foul area. The Hydrographer recommends removal of the charted islet and charting the area foul with rocks.<sup>57</sup>

The two charted(16682 & 16683) islets at 59-53-38.30N, 149-15-04.17W (374,050.1E, 6,641,744.1N) and 59-53-37.55N, 149-14-59.02W (374,129.4E, 6,641,718.2N) were disproved with 100% SWMB coverage. The Hydrographer believes these islets correlate with the two islets positioned to the north at Pos 52922 (59-53-39.49N, 149-14-59.19W; 374,128.7E, 6,641,778.2N) and Pos 52923 (59-53-38.66N, 149-14-59.74W; 374,119.4E, 6,641,752.9N). The Hydrographer recommends removal of the disproved charted islets from all charts and charting the two new islets positioned to the north as depicted on the DPBS Plot.<sup>58</sup>

The charted(16682 & 16683) islet at 59-53-39.64N, 149-15-04.13W (374,052.2E, 6,641,785.6N) was repositioned with 100% SWMB coverage and Pos 22999 (59-53-39.65N, 149-15-05.64W; 374,028.7E, 6,641,786.6N). The Hydrographer recommends charting the islet as depicted on the DPBS Plot.<sup>59</sup>

The charted(16682) islet positioned at 59-53-46.71N, 149-14-51.31W (374,258.8E, 6,641,997.4N) was disproved with 100% SWMB coverage. The Hydrographer believes the islet correlates with the islet positioned to the northwest at Pos 52921 (59-53-48.6 N, 149-14-52.32W; 374,245.0E, 6,642,056.3N). The Hydrographer recommends removal of the disproved charted islet and charting the islet as depicted on the DPBS Plot.<sup>60</sup>

The charted(16682) islet positioned at 59-53-52.14N, 149-15-14.14W (373,909.8E, 6,642,177.4N) was disproved with 100% SWMB coverage. The Hydrographer believes the islet correlates with the islet positioned to the north at Pos 22978 (59-53-53.55N, 149-15-14.49W; 373,905.8E, 6,642,221.1N). The Hydrographer recommends removal of the disproved charted islet and charting the islet as depicted on the DPBS Plot.<sup>61</sup>

The charted(16682) islet positioned at 59-54-15.87N, 149-14-52.63W (374,268.9E, 6,642,899.8N) extends farther east than originally charted to Pos 52926 (59-54-15.96N, 149-14-50.39W; 374,303.8E,

6,642,901.5N). The Hydrographer recommends charting the revised HW shoreline of the islet as depicted on the DPBS Plot.<sup>62</sup>

## **Recommendations**

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample plot and final sounding plot supersede and complement shoreline information compiled on the CFF and charts as noted.<sup>63</sup> These revisions are recorded in the MapInfo digital files named “H11073\_Shoreline” and “H11073\_Shoreline\_Updates.” In addition, field notes made by the Hydrographer that include verification of source features and descriptions of shoreline classification are submitted in the digital MapInfo file “H11073\_Shoreline\_Notes.”<sup>64</sup>

### **D.4 Dangers to Navigation**

One danger to navigation was found and reported to the Seventeenth Coast Guard District on September 30, 2001.

Eighteen dangers to navigation were found and reported to the Pacific Hydrographic Branch for verification and final submission to the Seventeenth Coast Guard District on July 2, 2002. A copy of the preliminary Danger to Navigation Report is included in Appendix I.<sup>65</sup> A copy of the final report will be inserted by PHB following verification and submission to the U.S Coast Guard.<sup>66</sup>

### **D.5 Aids to Navigation**

Survey H11073 included two aids to navigation (ATONs). Two lights (LL#26000 and LL#25995) were found to serve their intended purposes. Detached positions were taken on each ATON for check purposes only.<sup>67</sup>

### **D.6 Miscellaneous**

Bottom samples were collected and are depicted on the Detached Position and Bottom Sample Plot.<sup>68</sup>

A small portion of the SE corner of H11073 survey, (eastside of Cape Resurrection) along the shoreline, was not covered with 100% SWMB due to high swells and the shoal nature of the area.

## E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

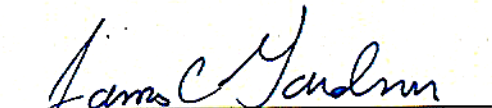
The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H11073 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.<sup>69</sup>

Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

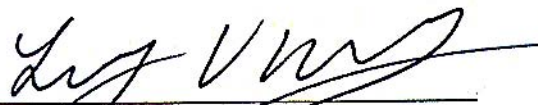
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P359-RA-01	November 21, 2001	N/CS34
Horizontal and Vertical Control Report for OPR- P359-RA-01	TBD <sup>70</sup>	N/CS34
Tides and Water Levels Package for OPR- P359-RA-01	October 29, 2001	N/OPS1
Coast Pilot Report for OPR- P359-RA-01	TBD <sup>71</sup>	N/CS26

Approved and Forwarded:

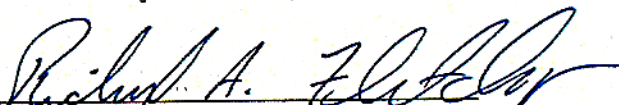
 7-1-02  
 James C. Gardner  
 Captain, NOAA  
 Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager:

  
 Lynnette V. Morgan  
 Senior Survey Technician, NOAA

Field Operations Officer:

  
 Richard A. Fletcher  
 Lieutenant Commander, NOAA

## Revisions Compiled During Office Processing and Certification

- <sup>1</sup> PHB Revision--Strikethrough ~~60°02'00"N~~ and replace with 60°01'25"N.
- <sup>2</sup> PHB Revision--Strikethrough ~~59°52'45'30"N~~ and replace with 59°53'20"N.
- <sup>3</sup> PHB Revision--Strikethrough ~~149°38'30"W~~ and replace with 149°34'05"W.
- <sup>4</sup> PHB Revision--Strikethrough ~~149°10'30"W~~ and replace with 149°14'00"W.
- <sup>5</sup> Filed with the project records
- <sup>6</sup> Concur.
- <sup>7</sup> Filed with the hydrographic records.
- <sup>8</sup> Concur.
- <sup>9</sup> The junctions with H11072 and H11074 are complete. A “Joins” note has been added to the smooth sheet where applicable.
- <sup>10</sup> Concur. Refer to endnote 9.
- <sup>11</sup> Concur. Refer to endnote 9.
- <sup>12</sup> Concur.
- <sup>13</sup> Concur.
- <sup>14</sup> Filed with the project records.
- <sup>15</sup> Elevations were corrected to MHW during PHB processing using final approved (smooth) tides.
- <sup>16</sup> Approved Tide Note dated November 30, 2001 is attached.
- <sup>17</sup> During office processing, survey H11073 was compared to chart 16882 (16<sup>th</sup> Ed., Feb. 4, 2004).
- <sup>18</sup> During office processing, survey H11073 was compared to chart 16883 (10<sup>th</sup> Ed., Feb. 4, 2004).
- <sup>19</sup> Concur. The Evaluator recommends superseding the charted data within the common area covered by the present survey.
- <sup>20</sup> Concur. The Evaluator recommends superseding the charted data within the common area covered by the present survey.
- <sup>21</sup> Plot is filed with the hydrographic data.
- <sup>22</sup> Plot is filed with the hydrographic data.
- <sup>23</sup> Concur with clarification. Chart the Mean High Water Line revisions as shown on the smooth sheet.
- <sup>24</sup> PHB Revision--Strikethrough ~~southwest~~ and replace with southeast
- <sup>25</sup> Shoreline verification conducted by the hydrographer and portrayed on the detached position plot has been analyzed during office processing and shown on the smooth sheet as warranted. The smooth sheet should be referred to for the cartographic portrayal and chart compilation in all cases where the hydrographer has referred to the detached position and bottom sample plot (DPBS). MHWL revisions are shown in red on the smooth sheet.  
Items listed below may have been generalized on the Hdrawing due to chart scale.
- <sup>26</sup> Concur with clarification. The disproved islet is not shown on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>27</sup> Concur with clarification. The disproved islet is not shown on the current edition of the chart. Chart as depicted on the Hdrawing
- <sup>28</sup> Concur with clarification. The disproved islet is not shown on the current edition of the chart. Chart as depicted on the Hdrawing
- <sup>29</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>30</sup> Concur.



- 
- <sup>31</sup> Concur.
- <sup>32</sup> Concur.
- <sup>33</sup> Concur.
- <sup>34</sup> Concur.
- <sup>35</sup> Concur.
- <sup>36</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>37</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>38</sup> See endnote 24.
- <sup>39</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>40</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>41</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>42</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>43</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>44</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>45</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>46</sup> Concur.
- <sup>47</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>48</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>49</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>50</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>51</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>52</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>53</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>54</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>55</sup> Concur. Chart as depicted on the Hdrawing.
- <sup>56</sup> Do not concur. The current edition of the chart shows the islet in the correct position. Chart as depicted on the Hdrawing.
- <sup>57</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.
- <sup>58</sup> Concur. Chart islets as depicted on the Hdrawing.
- <sup>59</sup> Concur. Chart islet as depicted on the Hdrawing.
- <sup>60</sup> Concur. Chart islet as depicted on the Hdrawing.
- <sup>61</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.

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<sup>62</sup> Concur with clarification. The islet was not displayed on the current edition of the chart. Chart as depicted on the Hdrawing.

<sup>63</sup> Do not concur. Shoreline information provided by the hydrographer has been analyzed during office processing and shown on the smooth sheet as warranted.

<sup>64</sup> Concur—Chart as shown on the smooth sheet.

<sup>65</sup> PHB Revision-Strikethrough ~~Appendix I.~~ and add this report.

<sup>66</sup> Concur.

<sup>67</sup> The evaluator recommends that MCD use the latest information to chart aids to navigation.

<sup>68</sup> Concur—Chart bottom samples as shown on the smooth sheet. Some charted bottom samples were retained on the Hdrawing.

<sup>69</sup> Concur.

<sup>70</sup> Submitted 12/12/01

<sup>71</sup> Submitted 12/12/01



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**Office of Marine and Aviation Operations**  
**Marine Operations Center**  
 1801 Fairview Avenue East  
 Seattle, Washington 98102-3767

NOAA Ship RAINIER  
 September 30, 2001

Commander (mon)  
 Seventeenth Coast Guard District  
 Post Office Box 25517  
 Juneau, Alaska 99802-5517

Dear Sir or Madam:

It is requested that the following dangers to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned this feature while conducting hydrographic survey H11073 August through September 2001 in the Approaches to Seward, Alaska. The danger is shown graphically on the attached chartlet.

The following dangers to navigation affect the following charts:

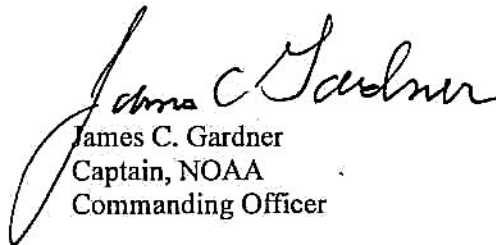
<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
16682	1:81,847	14 <sup>th</sup>	June 20, 1998
16683	1:81,847	9 <sup>th</sup>	January 29, 2000

The positions are on the North American Datum of 1983 (NAD83) datum and depths have been corrected to Mean Lower Low Water using predicted water level data.

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude(N)</u>	<u>(Longitude (W))</u>	<u>Depth (meter)</u>
Submerged barge	0.4	59° 56' 14.334"	149° 18' 57.139"	0.7
Submerged barge	3.1	59° 56' 14.892"	149° 18' 56.077"	5.6

This is advance information subject to office review. Questions concerning this letter should be directed to the Chief, Pacific Hydrographic Branch, (206) 526-6835. Refer to survey project OPR-P359-RA-01. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at: [foo.rainier@ranems.pmc.noaa.gov](mailto:foo.rainier@ranems.pmc.noaa.gov).

Sincerely,

  
 James C. Gardner  
 Captain, NOAA  
 Commanding Officer

Attachment

cc: NIMA  
 MOCP  
 N/CS261  
 N/CS34



59° 56' 30" N

149° 18' 30" W

Chart 16682

14th edition, June 20, 1998

Scale depicted: 1:6000

Revision from NOAA hydrographic  
survey H11073

Pacific Hydrographic Branch

7600 Sand Point Way NE

Seattle, WA 98115

(206) 526-6836

*This graphic may not be up to date with  
all Notice to Mariners information.  
Do not paste onto NOAA charts.*

3.1  
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**Fox Island**

# Danger to Navigation Report

Hydrographic Survey Registry Number: H11073

Survey Title: State: Alaska

Locality: Kenai Peninsula

Sub-locality: Southern Portion of Resurrection Bay

Project Number: OPR-P359-RA-01

Survey Dates: August 20 - September 20, 2001

Depths are reduced to Mean Lower Low Water using observed tides.  
Positions are based on the NAD83 horizontal datum.

## CHARTS AFFECTED:

Chart	Scale	Edition	Date
16682	1:81,847	14 <sup>th</sup>	June 20, 1998
16683	1:81,436	9 <sup>th</sup>	January 29, 2000

## DANGERS:

Feature	Depth(fms)	Latitude	Longitude	Depth(m)
Sounding	1¼	59°55'34.815 N	149°18'04.279 W	2.3
Sounding	1½	59°59'48.899 N	149°19'08.859 W	2.8
Sounding	1½	59°59'32.163 N	149°19'18.750 W	3.0
Sounding	2¾	59°55'10.030 N	149°18'10.045 W	5.2
Sounding	2¾	59°55'45.583 N	149°18'09.496 W	5.2
Sounding	5½	59°53'27.470 N	149°32'53.135 W	10.1
Sounding	6¼	59°55'09.109 N	149°19'15.884 W	11.5
Sounding	6¾	59°54'30.833 N	149°19'36.987 W	12.7
Sounding	7½	59°54'17.335 N	149°17'37.963 W	14.1
Sounding	8	59°53'37.983 N	149°14'35.636 W	14.9
Sounding	8¼	59°53'53.445 N	149°17'50.551 W	15.0
Sounding	10¾	59°54'37.674 N	149°18'06.262 W	20.1
Rock	-¼	59°53'34.599 N	149:18:04.817 W	-0.4
Rock	-1¼	59°55'55.434 N	149:18:04.639 W	-2.4
Rock	-¼	59°55'50.388 N	149:18:08.033 W	-0.5
Rock	0	59°58'41.273 N	149:17:47.933 W	0.0
Rock	¼	59°56'28.318 N	149:18:08.942 W	0.6
Rock	0	59°55'06.983 N	149:28:10.990 W	0.2

## COMMENTS:

Questions concerning this report should be directed to the Commanding Officer, NOAA Ship RAINIER, at (206)553-4794 (inport November through mid-March), 1-(877)665-6533 (at sea mid-March through November), or by e-mail at [co.rainier@noaa.gov](mailto:co.rainier@noaa.gov).

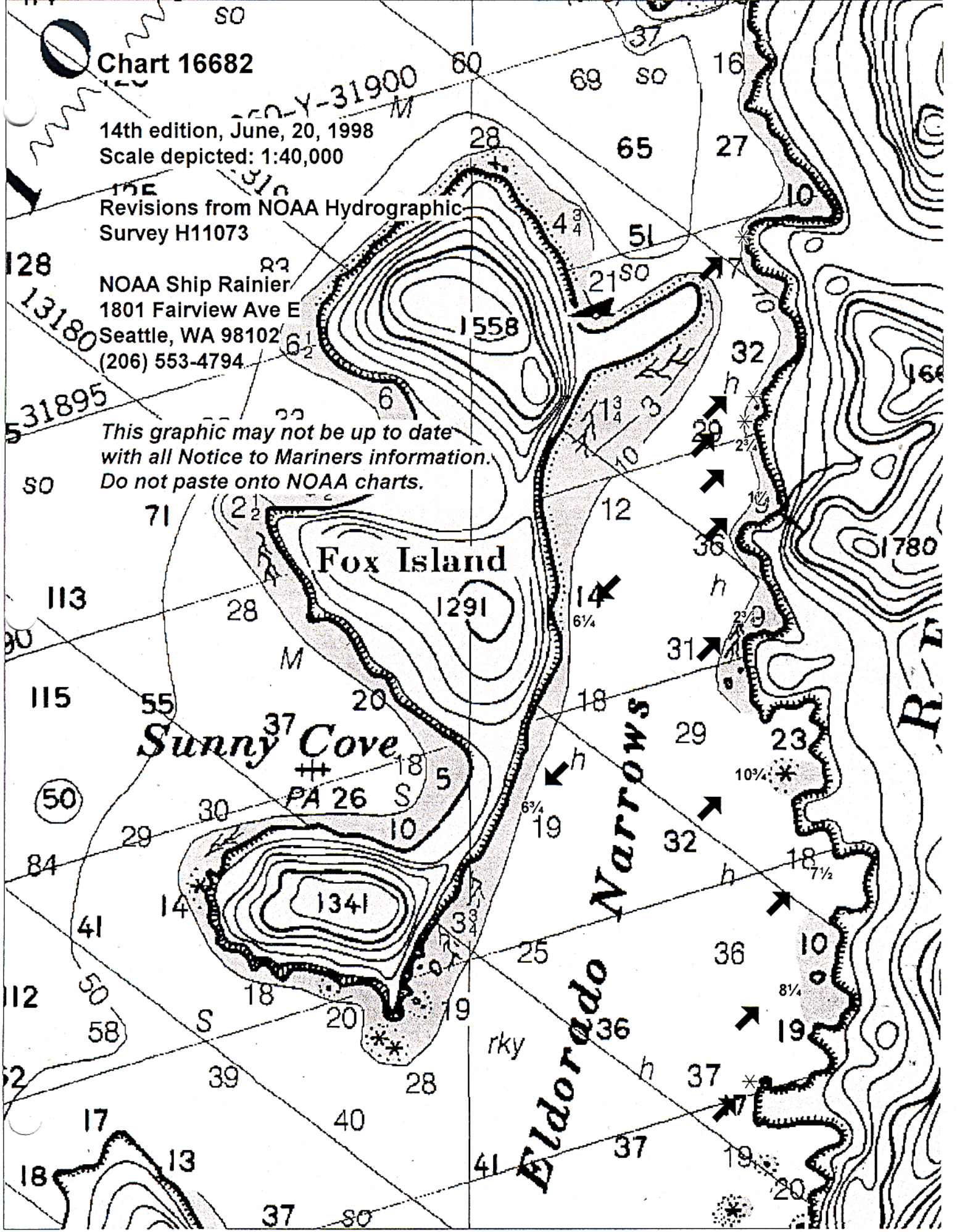
**Chart 16682**

14th edition, June, 20, 1998  
Scale depicted: 1:40,000

Revisions from NOAA Hydrographic Survey H11073

NOAA Ship Rainier  
1801 Fairview Ave E  
Seattle, WA 98102  
(206) 553-4794

*This graphic may not be up to date with all Notice to Mariners information. Do not paste onto NOAA charts.*



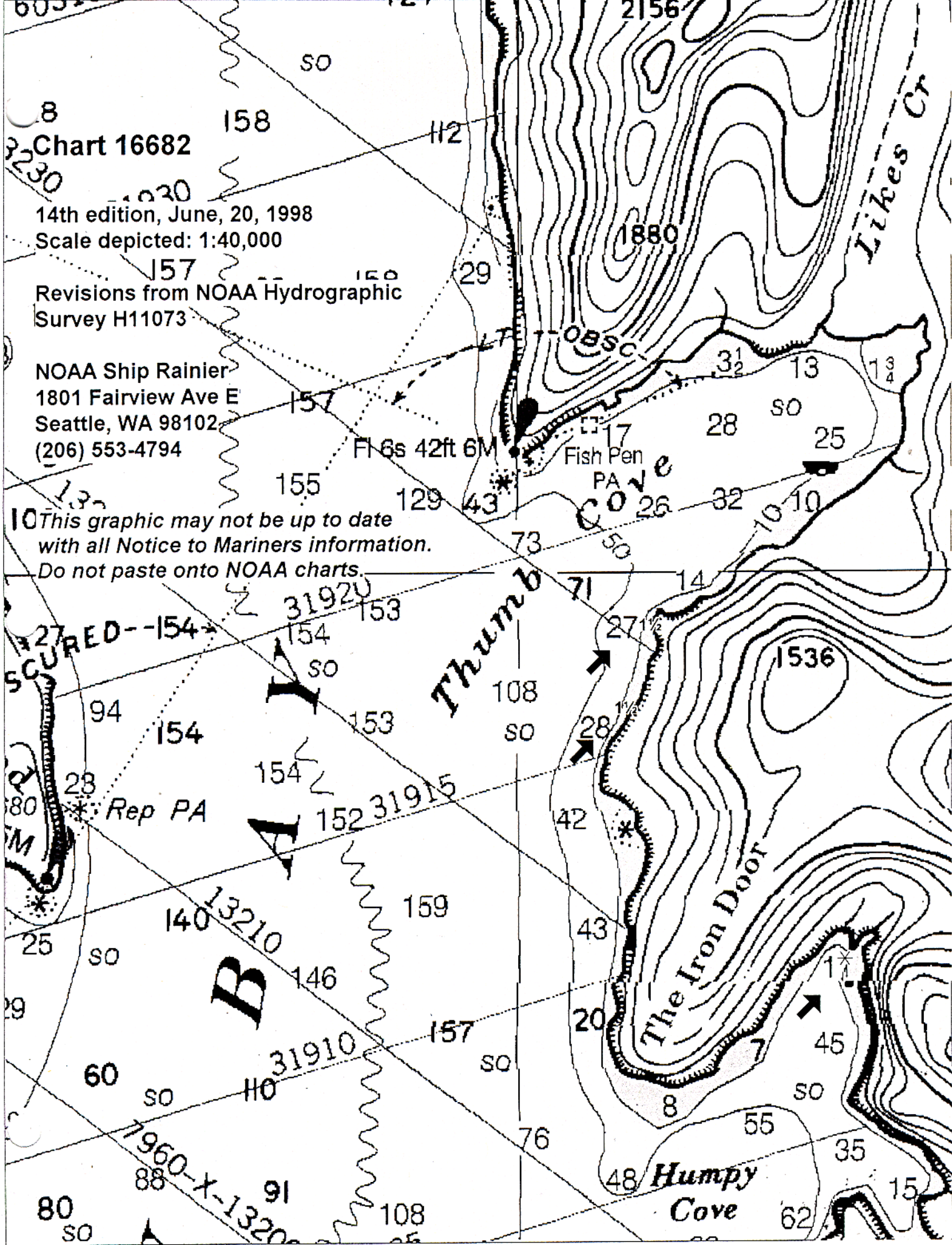


Chart 16682

14th edition, June, 20, 1998

Scale depicted: 1:40,000

Revisions from NOAA Hydrographic Survey H11073

NOAA Ship Rainier  
1801 Fairview Ave E  
Seattle, WA 98102  
(206) 553-4794

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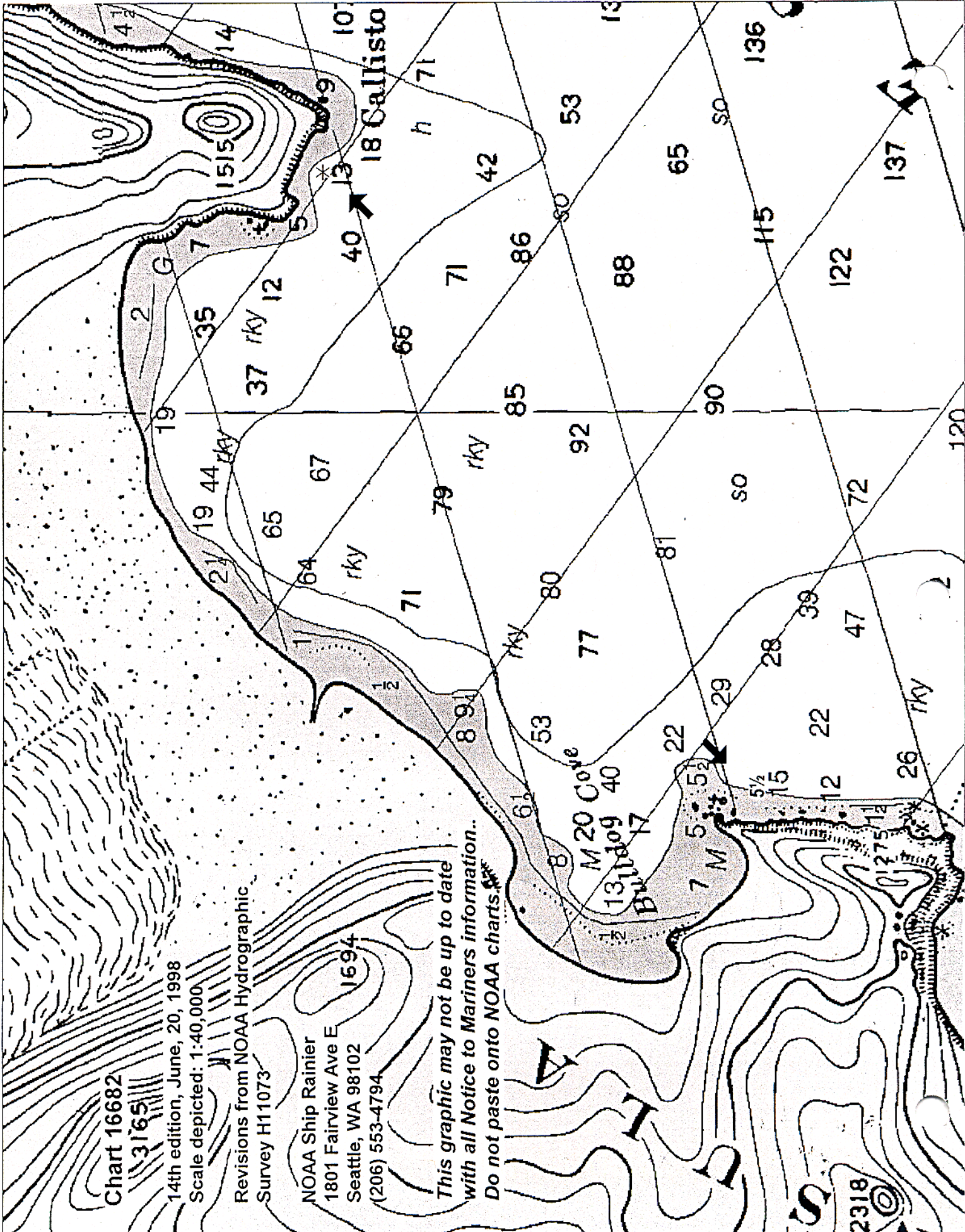
Thumb

Fish Pen Cove

The Iron Door

Humpy Cove

Likes Cr



**Chart 16682**  
3165

14th edition, June, 20, 1998  
Scale depicted: 1:40,000

Revisions from NOAA Hydrographic  
Survey H11073

NOAA Ship Rainier  
1801 Fairview Ave E  
Seattle, WA 98102  
(206) 553-4794

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with all Notice to Mariners information..  
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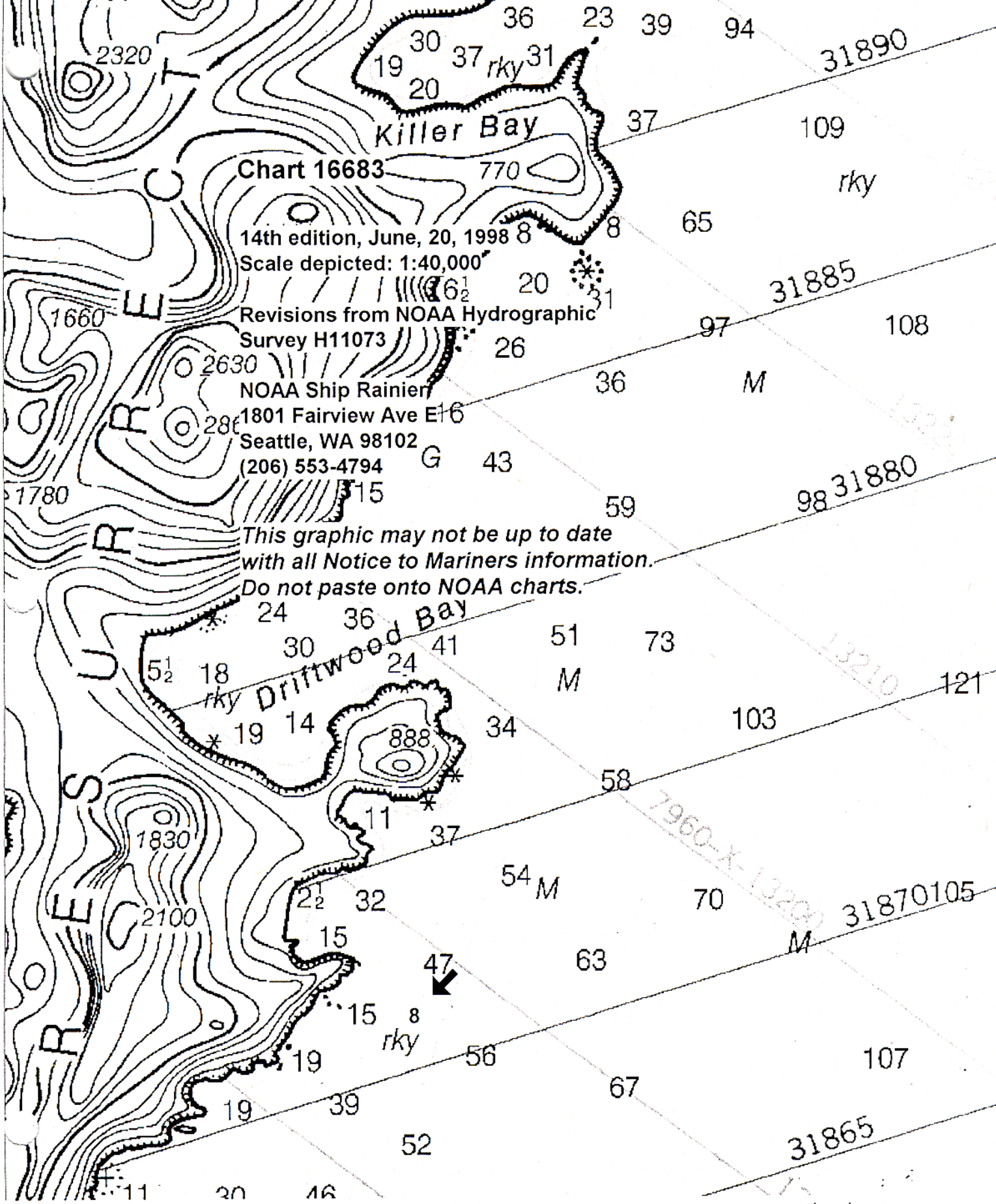


Chart 16683

14th edition, June, 20, 1998

Scale depicted: 1:40,000

Revisions from NOAA Hydrographic Survey H11073

NOAA Ship Rainier  
1801 Fairview Ave E  
Seattle, WA 98102  
(206) 553-4794

*This graphic may not be up to date with all Notice to Mariners information.*

*Do not paste onto NOAA charts.*

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 VESSLTERMS 
 CHART 
 AREA 
  
 CARTOCODE 
 SNDINGCODE 
 DEPTH

LAT83 
 LONG83 
 NATIVDATUM 
  
 LATDEC: 
 LONDEC: 
 GPQUALITY 
  
 GPSOURCE

PROJECT 
 ITEMSTATUS 
 SEARCHTYPE 
  
 RADIUS 
 INIT 
 ASSIGNED 
  
 TECHNIQ

Techniqnote

History

**HISTORY**  
 NM40/58--FISHING VESSEL REP. SUNK IN 30FM DEPTHS IN SUNNY COVE AT APPROX. POS.  
 LAT.59-54-42N, LONG.149-21-00W(REF:LN37/58, 17TH CGD). CHARTED AS NONDANGER-  
 OUS WK PA ON CHART 16682(12TH ED).  
 CL138/59--SEWARD CHART AGENT(1/30/59), REP. WRECK MAY HAVE BEEN "LUCK OF THE  
 IRISH" SUNK THE PREVIOUS FALL BUT PULLED UP. BASED ON THIS CLAIM A NONDANGER-  
 OUS WK PA WAS RETAINED ON CHART 16682 UNTIIL FURTHER NOTICE FROM USCG.  
 \*\*\*\*NOTE: CHARTED POS. DOES NOT AGREE WITH REPORTED POSITION. REPORTED POSITION GIVEN.  
  
 NOT DETERMINED

Fieldnote

**INVESTIGATION**  
 DATE(S): 08/29/01 (DN:241)  
 HYDROGRAPHIC SURVEY NUMBER:  
 VN: 2126 TIME: DN241 21:42:10 - 22:59:55 (UTC)  
 INVESTIGATION METHODS USED: 100% SWMB  
 SURVEYED POSITION: LAT. 59/54/39.5N LON. 149/21/07.33W  
 POSITION DETERMINED BY: DIFFERENTIAL GPS  
 INVESTIGATION SUMMARY: The wreck was disproved with 100% SWMB.  
 CHARTING RECOMMENDATION (HYDROGRAPHER): Remove charted(16682) wreck.  
 EVALUATOR COMMENTS: Concur.

Proprietar

YEARSUNK 
 NIMANUM

RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SNDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECNIQ

Techniqnote

History

Fieldnote

Proprietar

YEARSUNK  NIMANUM

RECRD 52819 VESSLTERMS OBSTRUCTION CHART 16682 AREA P  
CARTOCODE 0067 SENDINGCODE DEPTH

LAT83 60 00 28.7 LONG83 149 19 29.9 NATIVDATUM 31  
LATDEC: 60.007972222222 LONDEC: 149.324972222222 GPQUALITY Med  
GPSOURCE Direct

PROJECT OPR-P359 ITEMSTATUS Assigned SEARCHTYPE Full  
RADIUS INIT MCR ASSIGNED 7/2/2001  
TECNIQ VS,SD,MB,DI

Techniqnote SEARCH 50M OUT FROM AN AXIS DRAWN BETWEEN POS.60-00-33.7 N 149-19-08.4 W AND 60-00-27.15 N 149-19-34.2 W

History HISTORY  
CL1382/92--APPLICATION TO CONSTRUCT AN AQUATIC FARM, 148 X 600 FT SWOWN ON CHART SECTION AND CHARTED ON 16682 IN POS.60-00-28.7 N 149-19-29.9 W, HOWEVER ENCLOSED GRAPHICS HAVE THE LOCATION APPROX 150M-300M TO THE NE OF THIS POSITION.

Fieldnote INVESTIGATION  
DATE(S): 8/20/01, 8/29/01 (DN:232, 241)  
HYDROGRAPHIC SURVEY NUMBER: H11073  
VN: 2122 (DP) TIME: DN232 00:29:05 (UTC)  
VN: 2122 (VBES) TIME: DN232 21:51:55 - 22:11:37 (UTC)  
VN: 2121 (SWMB) TIME: DN241/242 22:57:08 - 00:15:59 (UTC)  
INVESTIGATION METHODS USED: VS, DP, VBES, 100% SWMB  
SURVEYED POSITION: LAT. 60/00/29.1N LON. 149/19/30.15W  
POSITION DETERMINED BY: DIFFERENTIAL GPS  
INVESTIGATION SUMMARY: Visual, vertical beam echo sounder, and 100% SWMB searches disproved the existence of the charted(16682) aquatic farm at position 20698.  
CHARTING RECOMMENDATION (HYDROGRAPHER): Removal of charted(16682) aquatic farm.  
EVALUATOR COMMENTS: Concur.

Proprietar

YEARSUNK NIMANUM

Print Record

RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SNDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECNIQ

Techniqnote

History

Fieldnote

Proprietar

YEARSUNK  NIMANUM

RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SNDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECNIQ

Techniqnote

History   
 Fieldnote

DATE(S): 08/22/01, 08/23/01, 08/29/01, 08/30/01, 09/05/01 (DN:234, 235, 241, 242, 248)  
 HYDROGRAPHIC SURVEY NUMBER: H11073  
 VN: 2125 (DP) TIME: DN234 17:51:49 (UTC)  
 VN: 2125 (DP) TIME: DN248 19:06:07 (UTC)  
 VN: 2122 (VBES) TIME: DN234/235 23:46:27 - 00:14:37 (UTC)  
 VN: 2121 (SWMB) TIME: DN241 19:52:11 (UTC)  
 VN: 2123 (SWMB) TIME: DN234 18:24:28 - 18:36:45 (UTC), DN242 21:46:59 - 22:13:18 (UTC)  
 INVESTIGATION METHODS USED: VS, DP, VBES, 100% SWMB  
 SURVEYED POSITION: LAT. 59-59-08.45N LON. 149-23-09.93W  
 POSITION DETERMINED BY: DIFFERENTIAL GPS  
 INVESTIGATION SUMMARY: 10 minute visual and vertical beam echo sounder search in addition to 100% SWMB coverage revealed no rock at position 51614, 59-59-11.63N, 149-22-59.51W. The charted(16682) rock was found at a new location, in shore of charted and reported positons.  
 CHARTING RECOMMENDATION (HYDROGRAPHER): Removal of charted rock and replace with new rock based on position 52501.  
 EVALUATOR COMMENTS: Concur. Chart area as shown on the smooth sheet.

Proprietar

YEARSUNK  NIMANUM

RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SNDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECNIQ

Techniqnote

History

HISTORY  
 NM40/58--FISHING VESSEL REP. SUNK IN 30FM DEPTHS IN SUNNY COVE AT APPROX. POS.  
 LAT.59-54-42N, LONG.149-21-00W(REF: LNM37/58, 17TH CGD). CHARTED AS NONDANGER-  
 OUS WK PA ON CHART 16682(12TH ED).  
 CL138/59--SEWARD CHART AGENT(1/30/59), REP. WRECK MAY HAVE BEEN "LUCK OF THE  
 IRISH" SUNK THE PREVIOUS FALL BUT PULLED UP. BASED ON THIS CLAIM A NONDANGER-  
 OUS WK PA WAS RETAINED ON CHART 16682 UNTIIL FURTHER NOTICE FROM USCG.  
 \*\*\*\*NOTE: CHARTED POS. DOES NOT AGREE WITH REPORTED POSITION. REPORTED POSITION GIVEN.  
 NOT DETERMINED

Fieldnote

INVESTIGATION  
 DATE(S): 08/29/01 (DN:241)  
 HYDROGRAPHIC SURVEY NUMBER:  
 VN: 2126 TIME: DN241 21:42:10 - 22:59:55 (UTC)  
 INVESTIGATION METHODS USED: 100% SWMB  
 SURVEYED POSITION: LAT. 59/54/39.5N LON. 149/21/07.33W  
 POSITION DETERMINED BY: DIFFERENTIAL GPS  
 INVESTIGATION SUMMARY: The wreck was disproved with 100% SWMB.  
 CHARTING RECOMMENDATION (HYDROGRAPHER): Remove charted(16682) wreck.  
 EVALUATOR COMMENTS: Concur.

Proprietar

YEARSUNK  NIMANUM

RECRD 51030 VESLTERMS UNKNOWN CHART 16682 AREA P  
CARTOCODE 0098 SENDINGCODE DEPTH 0

LAT83 59/56/09.98 LONG83 149/19/07.67 NATIVDATUM 6  
LATDEC: 59.936105555556 LONDEC: 149.31879722222 GPQUALITY Low  
GPSOURCE Scaled

PROJECT OPR-P359 ITEMSTATUS Unassigned SEARCHTYPE 7/2/01  
RADIUS INIT MCR ASSIGNED  
TECNIQ VS,ES,DI,SD

Techniqnote SEARCH ALONG NORTH SIDE OF SPIT (SOUTHERN COAST OF COVE) FROM LAT149-19-14 TO 149-18-33 OUT TO 4M CURVE

History HISTORY  
CL138/59(1-30-59)--SEWARD CHART AGENT (1/30/59), BARGE REP. HALFWAY UP ON BEACH ON NORTH SIDE OF NORTH SPIT ON FOX(RENARD)ISLAND. COMPELETLY VISIBLE AT LOW TIDE AND HALF SUBM. AT HIGH TIDE. CHARTED AS VISIBLE WK. IN LAT. 59-56-12N, LONG.149-19-00W ON CHART 16682 (12TH ED).

Fieldnote INVESTIGATION  
DATE(S): 09/13/01, 09/17/01, 09/19/01 (DN:256,260, 262)  
HYDROGRAPHIC SURVEY NUMBER: H11073  
VN: 2125 (DI) TIME: DN260 20:48 (UTC); DN262 22:56 (UTC)  
VN: 2125 (VBES) TIME: DN241 21:36:40 - 21:45:40 (UTC)  
VN: 2126 (SWMB) TIME: DN256 19:27:38 - 19:56:15 (UTC)  
INVESTIGATION METHODS USED: DI, VS, VBES, 100% SWMB  
SURVEYED POSITION: LAT. 59-56-14.38N LON. 149-18-57.18W  
POSITION DETERMINED BY: DIFFERENTIAL GPS  
INVESTIGATION SUMMARY: The wreck was verified with 100% SWMB. The wreck was not visible during low tide. During the dive investigation a least depth was obtained, with tide correctors applied the least depth is 1.1m. The length and width of the sunken barge are 78.0m and 14.6m respectively.  
CHARTING RECOMMENDATION (HYDROGRAPHER): Revise charted(16682) wreck to the new location based on positions 53341.  
EVALUATOR COMMENTS: Concur. Chart area as shown on the smooth sheet.

Proprietar

YEARSUNK NIMANUM

Print Record



RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SENDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECHNIQ

Techniqnote

History

Fieldnote

Proprietar  
 YEARSUNK  NIMANUM

RECRD 52820 VESSLTERMS OBSTRUCTION CHART 16682 AREA P  
CARTOCODE 0085 SNDINGCODE DEPTH

LAT83 60 00 18.71 LONG83 149 17 56.16 NATIVDATUM 31  
LATDEC: 60.005197222222 LONDEC: 149.298933333333 GPQUALITY Low  
GPSOURCE Scaled

PROJECT OPR-P359 ITEMSTATUS Assigned SEARCHTYPE Full  
RADIUS 100 INIT MCR ASSIGNED 7/2/2001  
TECNIQ VS,SD,MB,ES

Techniqnote  
ALTHOUGH MOORING BUOY HAS BEEN REPORTED AS REMOVED AND RE-ESTABLISHED, CONDUCT A 100M SEARCH ABOUT THE PRESENTLY CHARTED POSITION AND SEARCH 200M ABOUT THE NEW POS.  
60 00 30N, 149 18 00W

History

HISTORY  
CL45/1969--JUNE 1968 APPLICATION FOR COE PERMIT TO ESTABLISH A MOORING BUOY, PURPOSED LOCATION SHOWN.  
CL1034/92--NOAA SHIP RAINIER: SURVEY/CHARTING REQUEST DOCUMENTATION RESPONSE FROM CAPT. MIKE BRITAIN OF ANDERSON TUG AND BARGE (TEL 907-224-5506) STATED THE PRESENTLY CHARTED MOORING BUOY IN THUMB COVE IS GONE. A NEW BOORING BUOY HAS BEEN ESTABLISHED, JUST SOUTH OF THE 28 FM CURVE. IN THE CENTER OF THE CHANNEL.  
LNM40/00--17TH CGD, 10/3/00; ADD THUMB COVE MOORING BUOY, WHITE SPHERE WITH BLUE STRIPE IN POS. 60 00 30N, 149 18 00W  
N W

Fieldnote

INVESTIGATION  
DATE(S): 8/20/01, 08/30/01 (DN:232, 242)  
HYDROGRAPHIC SURVEY NUMBER: H11073  
VN: 2122 (DP) TIME: DN232 00:01:53 (UTC)  
VN: 2122 (VBES) TIME: DN232 22:50:57 - 23:19:34 (UTC)  
VN: 2121 (SWMB) TIME: DN242/243 22:05:32 - 00:14:50 (UTC)  
INVESTIGATION METHODS USED: VS, DP, VBES, 100% SWMB  
SURVEYED POSITION: LAT. 60-00-32.16N LON. 149-18-04.71W  
POSITION DETERMINED BY: DIFFERENTIAL GPS  
INVESTIGATION SUMMARY: Upon visual search, no mooring buoy was found in charted location, position 20610, 60-00-18.8N, 149-17-55.79W. A new mooring buoy was located approximately 430m NNE of the charted(16682) mooring buoy position.  
CHARTING RECOMMENDATION (HYDROGRAPHER): Removal of charted(16682) mooring buoy and replace with the new mooring buoy at position 20699.  
EVALUATOR COMMENTS: Concur. Chart area as shown on the smooth sheet.

Proprietar

YEARSUNK NIMANUM

Print Record

RECRD  VESSLTERMS  CHART  AREA   
 CARTOCODE  SONDINGCODE  DEPTH

LAT83  LONG83  NATIVDATUM   
 LATDEC:  LONDEC:  GPQUALITY   
 GPSOURCE

PROJECT  ITEMSTATUS  SEARCHTYPE   
 RADIUS  INIT  ASSIGNED   
 TECNIQ

Techniqnote

History

Fieldnote

Proprietar

YEARSUNK  NIMANUM

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 30, 2001

HYDROGRAPHIC BRANCH: Pacific  
HYDROGRAPHIC PROJECT: OPR-P359-RA-2001  
HYDROGRAPHIC SHEET: H11073

LOCALITY: Approaches to Seward, AK  
TIME PERIOD: Aug. 20 - Sept. 20, 2001

TIDE STATION USED: 945-5090 Seward, AK  
Lat.  $60^{\circ} 7.2'N$  Lon.  $149^{\circ} 25.6'W$   
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.947 meters

REMARKS: RECOMMENDED ZONING  
Use zone(s) identified as: CA500 & CA501.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units  
(meters), relative to MLLW and on Greenwich Mean Time.

*Thomas N. Meier* 12/3/01  
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CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



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Final tide zone node point locations for **OPR-P359-RA-2001**,  
**Sheet H11073.**

Format:                   Tide Station (in recommended order of use)  
                               Average Time Correction (in minutes)  
                               Range Correction  
                               Longitude in decimal degrees (negative value denotes  
                               Longitude West),  
                               Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone CA500	945-5090	0	1.00
-149.592208 59.893478			
-149.456543 59.97201			
-149.478042 60.144898			
-149.336485 60.132389			
-149.153716 60.068871			
-149.280941 59.957638			
-149.290309 59.895001			
-149.567018 59.750298			
-149.560923 59.760449			
-149.596704 59.764695			
-149.607227 59.803421			
-149.63564 59.804481			
-149.592208 59.893478			
Zone CA501	945-5090	0	1.00
-148.826452 59.763477			
-149.070356 59.957131			
-149.070356 59.957131			
-149.169456 59.931179			
-149.290309 59.895001			
-149.567018 59.750298			
-149.527047 59.714435			
-149.307008 59.573642			
-149.157057 59.403902			
-148.655827 59.530663			
-148.826452 59.763477			

APPROVAL SHEET  
H11073


Initial Approvals:

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.

Gary C. Nelson Date: 12 Aug 2005

Gary Nelson  
Chief, Cartographic Team  
Pacific Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.

 CDR/NOAA Date: 12 Aug 2005

Donald W. Haines  
CDR, NOAA  
Chief, Pacific Hydrographic Branch

