

H1188

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-10-17-02**

Registry No. **H-11188**

LOCALITY

State **Washington**

General Locality **Admiralty Inlet and Port Townsend,
Puget Sound**

Sublocality **Partridge Bank**

.....
2002
.....

CHIEF OF PARTY
.....
CAPT. James C. Gardner, NOAA

LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET**H-11188**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 10-17-02State WashingtonGeneral Locality Admiralty Inlet and Port Townsend, Puget SoundSublocality Partridge BankScale 1:10,000Date of Survey 10/17/2002-11/05/2002Instructions Date 3/5/2002Project No. OPR-N326-RA-02**Change #1 10/03/2002, Change #2 11/01/2002**Vessel RA-4(2124), RA-5(2125)Chief of Party CAPT JAMES C. GARDNER, NOAA, CommandingSurveyed by Ship personnel and physical scientists from Pacific & Atlantic
Hydrographic BranchesSoundings taken by echo sounder, hand lead, pole Seabeam/Elac 1050DMK, Knudson 320 MGraphic 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: All times are 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 10).**

Descriptive Report to Accompany Hydrographic Survey H11188

Project OPR-N326-RA
Partridge Bank, Washington
Scale 1:10,000
October 2002
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-N326-RA-02, dated March 5, 2002, the Draft Standing Project Instructions dated March 21, 2001, change #1 dated October 3, 2002 and change #2 dated November 1, 2002. The survey area is located west of Whidbey Island and includes Partridge Bank. This survey corresponds to sheet "J" 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 8 meters and deeper. In waters from 4 meters to 8 meters, SWMB data were obtained at 25-meter line spacing, and in these areas additional coverage was obtained to obtain least depths over features or shoals.¹

The purpose of this survey is to address inadequate chart data with contemporary hydrographic surveys. This survey supports the ongoing project with the United States Geological Survey and Canadian Hydrographic Service to further develop sonar technologies and investigate surficial geology, potential hazards and active processes in the Georgia Basin-Puget Sound region. This survey, in addition to being a critical area, responds to requests from the Washington State Ferries and Puget Sound Pilots.

Data acquisition was conducted from October 17 to November 5, 2002 (DN 290 to 309).

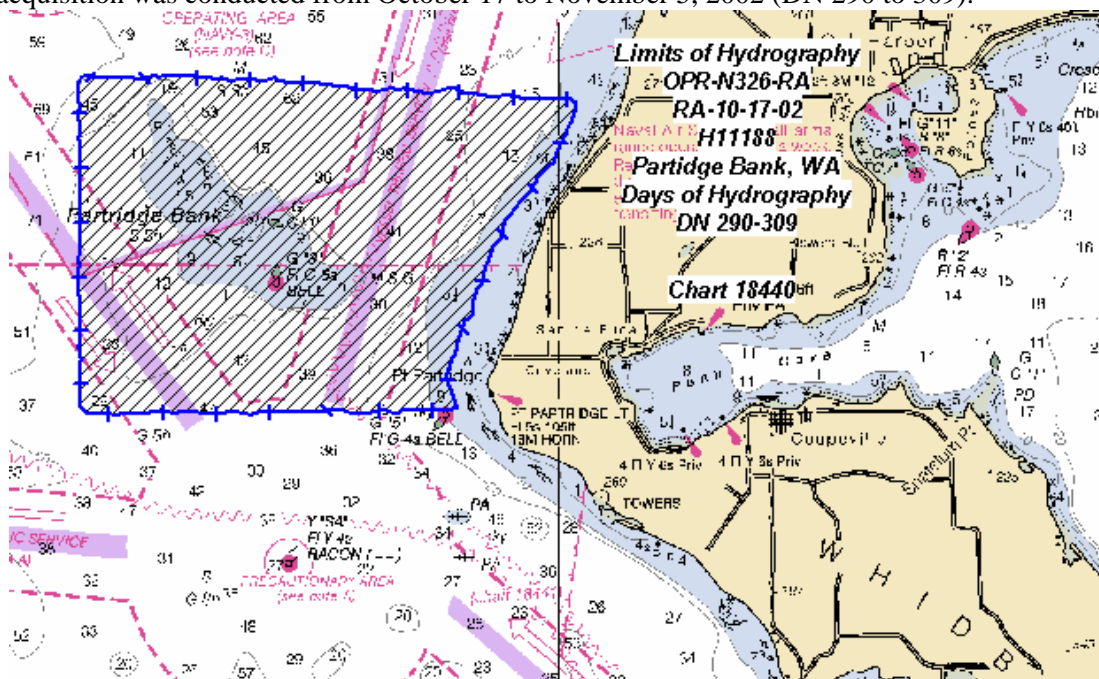


Figure 1. H11188 Survey Limits

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-N326-RA-02 Data Acquisition and Processing Report*,² 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 were acquired by survey launches (vessel numbers 2124 and 2125). Vessels 2124 and 2125 were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. No unusual vessel configurations or problems were encountered during this survey.³

B2. Quality Control

Crosslines

Shallow Water Multi-beam (SWMB) crosslines totaled 31.1 nautical miles, comprising 5.55% of SWMB hydrography. Visual comparison of depths was completed in MapInfo and compared well, SWMB crosslines matched within 0.5 meters of SWMB mainscheme hydrography. Quality Control Reports (CARIS HIPS) were run for vessels 2124 and 2125. The checkline file averaged 99.99% for vessel 2124 and 99.92% for vessel 2125, with a depth tolerance factor of 0.023, which conforms to International Hydrographic Organization Order 2⁴ specifications detailed in Special Publication S-44, Edition 4, as well as NOS Hydrographic Surveys Specifications and Deliverables Manual. See Appendix V for the detailed report.⁵

Junctions

No contemporary surveys junctioned with H11188.⁶

Data Quality Factors

In a few areas around Partridge Bank, thick kelp often obscured the detection of the bottom. In the SWMB data, removal of soundings obtained over kelp was not possible in HDCS SwathEdit, as there is no definitive way to determine if a sounding is on a feature such as a rock or kelp. In HDCS Subset Mode, in some instances, it was possible to discern the true bottom, as kelp often appeared as soundings “disconnected” from the continuous bottom. In these instances soundings over kelp were rejected. However, when unable to clearly distinguish between the bottom and kelp, the kelp was not rejected. Areas with kelp were noted by the Hydrographer during shoreline verification and are also indicated in the “H11188_ShorelineNotes” Mapinfo table of the Detached Position and Bottom Sample Plot.

B3. Data Reduction

Data reduction procedures for survey H11188 conform to those detailed in the *OPR-N326-RA-02 Data Acquisition and Processing Report*.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H11188 can be found in the

OPR-N326-RA-02 Horizontal and Vertical Control Report,⁷ 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 Whidbey Island (302 kHz) and Amphitrite (315 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-N326-RA-02 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) primary tide station at Port Townsend, WA (944-4900) and Seattle, WA (944-7130) served as control for datum determination.

Survey H11188 was controlled only by Port Townsend (944-4900) tide station; all data were reduced to MLLW using unverified observed tides from station Port Townsend (945-4900), WA and using the tide file 9444900.tid and time and height correctors using the zone corrector file N326RA2002CORP.zdf.

The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. A request for delivery of final approved (smooth) tides for survey H11188 was forwarded to N/OPS1 on November 8, 2002 in accordance with FPM 4.8. A copy of the request is included in Appendix IV.⁸

D. RESULTS AND RECOMMENDATIONS

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

No AWOIS items were located within the limits of H11188.⁹

D.2 Chart Comparison

Survey H11188 was compared with chart 18471 (8th Ed.; January, 19 2002; 1:40,000) and 18441 (42nd Ed; May 25, 2002, 1:80,000)

Chart 18471

Depths from survey H11188 matched well with the depths on chart 18471. In some instances, this survey found shoaler soundings between charted soundings even though agreement at the position of the charted depths was accurate. These slight differences could be attributed to the number of soundings acquired by SWMB. The eastern extent of Partridge Bank extends into the southbound traffic lane. This charted shoal area compares accurately with SWMB soundings. The southwestern extent of Partridge Bank has shifted slightly. The ten-fathom curve has extended and shoaler soundings are approaching the northbound traffic lanes.¹⁰

Chart 18441

Depths from survey H11188 generally matched well with the depths on chart 18441. Two soundings were charted more shoal than acquired. A charted 45 (48° 13' 33 N, 122° 51' 38 W) and a charted 24

(48° 15' 33 N, 122° 49' 33 W) were charted approximately six and eight fathoms more shoal respectively than determined with SWMB. An area around a charted 35 fathoms (48° 15' 06 N, 122° 47' 05 W) was determined to be approximately four fathoms shallower than charted. The southeastern extent of Partridge Bank is accurately charted.¹¹

Chart 18465

Depths from survey H11188 generally matched well with the depth on chart 18465. Three soundings were charted more shoal than acquired. A charted 25 (48° 14' 14 N, 122° 50' 39 W), charted 12 (48° 15' 08 N, 122° 48' 46 W) and a charted 5 (48° 14' 39 N, 122° 46' 58 W) were charted approximately nine, eleven and three fathoms more shoal respectively than determined with SWMB. Two areas were determined to be shoaler than charted. A charted 7 (48° 15' 13 N, 122° 50' 06 W) on Partridge Bank was shown with SWMB to shoal up to 2.6 fathoms. A charted 62 (48° 16' 57 N, 122° 49' 50 W) was shown to shoal to 53 fathoms with acquired depths. The southeastern extent of Partridge Bank is accurately charted.¹²

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 chart comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.¹³

D.3 Shoreline

Shoreline Source

No shoreline was within the boundary limits of H11188.¹⁴

Charted Features

No charted features were within the boundary limits of H11188.¹⁵

D.4 Dangers to Navigation

One Danger to Navigation was found and reported to the Marine Charting Division for verification and final submission to the Thirteenth Coast Guard District on May 13, 2003. A copy of the preliminary Danger to Navigation Report is included in Appendix I.¹⁶

D.5 Aids to Navigation

All aids to navigation (ATONs) were found to be correctly charted and serve their intended purpose.

Detached positions were taken on each ATON for check purposes only.¹⁷

D.6 Miscellaneous

During the course of the survey, kelp was observed in a few locations. These areas are displayed on the DPBS Plot in the "H11188_ShorelineNotes" layer. Bottom samples were not collected on survey H11188 due to time constraints.¹⁸

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 H11188 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.¹⁹

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-N326-RA-02	3/21/03	N/CS34
Horizontal and Vertical Control Report for OPR-N326-RA-02	TBD	N/CS34
Tides and Water Levels Package for OPR-N326-RA-02	N/A	N/OPS1
Coast Pilot Report for OPR-N326-RA-02	TBD	N/CS26

Approved and Forwarded: James C. Gardner 5-22-03
 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: Sarah K. Mrozek 5/19/03
 Sarah K. Mrozek
 Ensign, NOAA

Field Operations Officer: Richard A. Fletcher 5/19/03
 Richard A. Fletcher
 Lieutenant Commander, NOAA

Revisions Compiled During Office Processing and Certification

- ¹ Concur.
- ² Filed with Project Records.
- ³ Concur.
- ⁴ Do not concur, after office review this survey conforms to IHO order 1 specifications.
- ⁵ Filed with Project Records.
- ⁶ Concur.
- ⁷ Filed with Project Records.
- ⁸ Approved Tide Note dated December 23, 2002 is attached.
- ⁹ Concur.
- ¹⁰ Concur with hydrographer's statements.
- ¹¹ Concur.
- ¹² Concur.
- ¹³ During office processing, survey H11188 was compared to charts 18441 (45th Ed., April 29, 2006) and 18471 (10th Ed., July 09, 2005) with very good agreement.
- ¹⁴ Concur.
- ¹⁵ Concur.
- ¹⁶ PHB Revision--~~Strikethrough Appendix I~~ and add "this report".
- ¹⁷ The evaluator recommends that MCD use the latest ATONIS information to chart the aid to navigation.
- ¹⁸ Concur. Some charted bottom samples were retained on the Hdrawing.
- ¹⁹ Concur with hydrographer's statements.

Hydrographic Survey Registry Number: H11188

Survey Title: State: Washington
Locality: Admiralty Inlet and Port Townsend, Puget Sound
Sub-locality: Partridge Bank

Project Number: OPR-N326-RA-02

Survey Dates: October 17- November 5, 2002

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

CHARTS AFFECTED:

<u>Chart</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
18471	1:40,000	8 th	January 19, 2002
18465	1:80,000	34 TH	July 28, 2001
18441	1:80,000	42 nd	May 25, 2002

DANGERS TO NAVIGATION:

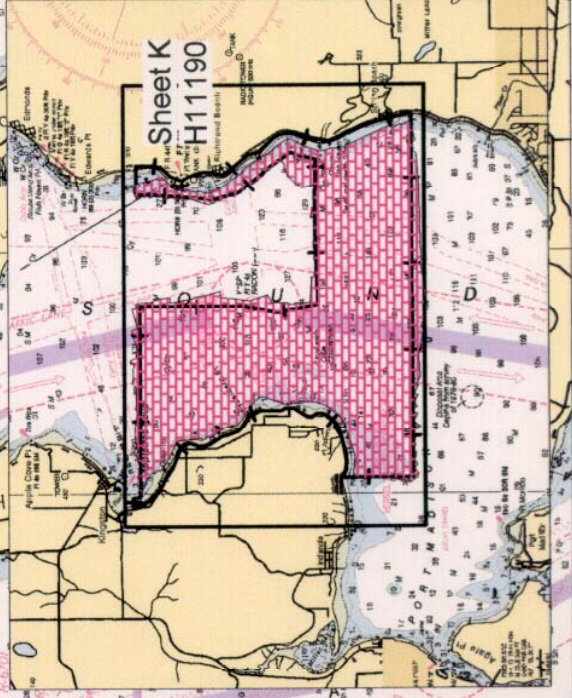
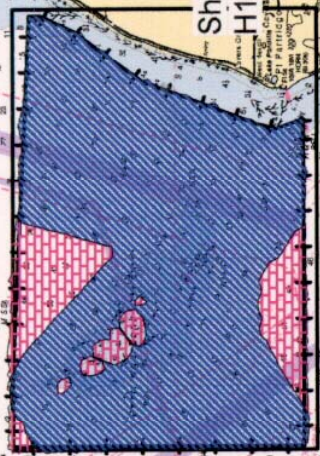
<u>Feature</u>	<u>Depth(fms)</u>	<u>Latitude</u>	<u>Longitude</u>
Shoal	10.2	48/14/37	122/51/43

COMMENTS:

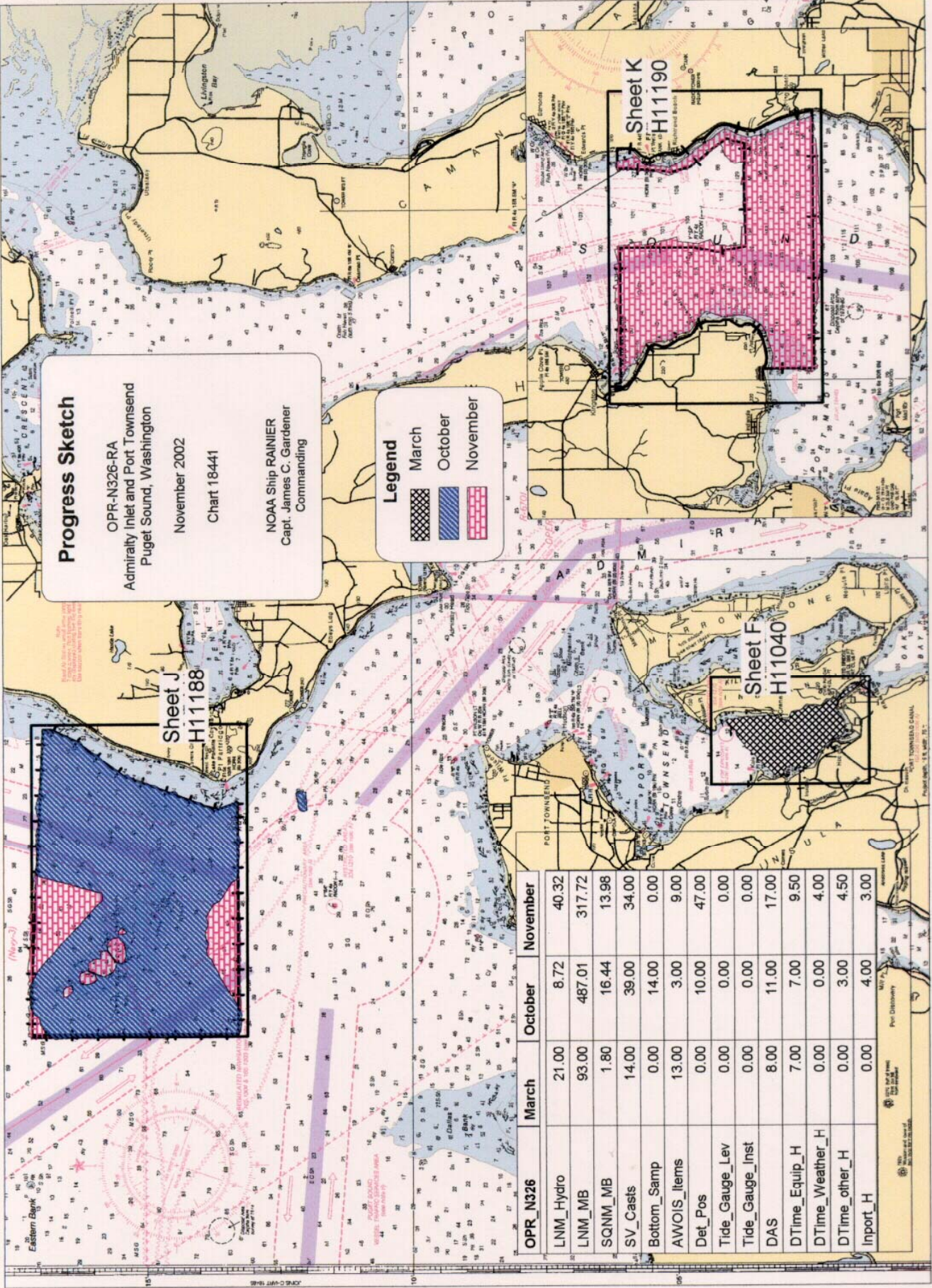
Questions concerning this report should be directed to the Commanding Officer, NOAA Ship RAINIER, at (206) 553-4794 (inport November through mid-March), (877) 665-6533 (at sea, mid-March through November), or by e-mail at co.rainier@noaa.gov.

Progress Sketch
 OPR-N326-RA
 Admiralty Inlet and Port Townsend
 Puget Sound, Washington
 November 2002
 Chart 18441
 NOAA Ship RAINIER
 Capt. James C. Gardener
 Commanding

Legend
 March
 October
 November



OPR_N326	March	October	November
LNM_Hydro	21.00	8.72	40.32
LNM_MB	93.00	487.01	317.72
SQNM_MB	1.80	16.44	13.98
SV_Casts	14.00	39.00	34.00
Bottom_Samp	0.00	14.00	0.00
AWOIS_Items	13.00	3.00	9.00
Det_Pos	0.00	10.00	47.00
Tide_Gauge_Lev	0.00	0.00	0.00
Tide_Gauge_Inst	0.00	0.00	0.00
DAS	8.00	11.00	17.00
DTime_Equip_H	7.00	7.00	9.50
DTime_Weather_H	0.00	0.00	4.00
DTime_other_H	0.00	3.00	4.50
Inport_H	0.00	4.00	3.00





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 23, 2002

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-N326-RA-2002
HYDROGRAPHIC SHEET: H11188

LOCALITY: Puget Sound, WA
TIME PERIOD: October 18-November 5, 2002

TIDE STATION USED: 944-4900 Port Townsend, Admiralty Inlet, WA
Lat. 48° 06.1'N Lon. 122° 45.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.387 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PS98, PS99, PS100 & PS218.

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 V. New 1/2/03

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR-N326-RA-2002, Sheet H11188.

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 PS98	944-4900	-24	0.81
-122.854848 48.291333			
-122.899968 48.261473			
-122.893765 48.285462			
-122.887292 48.331774			
-122.893736 48.365136			
-122.910881 48.391388			
-122.892658 48.421794			
-122.860175 48.422416			
-122.851662 48.416993			
-122.837844 48.408095			
-122.809807 48.394001			
-122.797653 48.385336			
-122.804821 48.348601			
-122.82567 48.314919			
-122.854848 48.291333			
Zone PS99	944-4900	-24	0.83
-122.906045 48.237829			
-122.899968 48.261473			
-122.854848 48.291333			
-122.82567 48.314919			
-122.804821 48.348601			
-122.797653 48.385336			
-122.779262 48.372319			
-122.753679 48.335555			
-122.75432 48.302865			
-122.791509 48.266338			
-122.840126 48.228362			
-122.905945 48.195859			
-122.92476 48.189261			
-122.906045 48.237829			
Zone PS100	944-4900	-24	0.86

-122.883403 48.156423
-122.900792 48.149681
-122.906998 48.157486
-122.92476 48.189261
-122.905945 48.195859
-122.840126 48.228362
-122.791509 48.266338
-122.75432 48.302865
-122.760073 48.243261
-122.763423 48.223421
-122.797437 48.202752
-122.833308 48.180006
-122.883403 48.156423

Zone PS218

944-4900

-12

0.86

-122.760073 48.243261
-122.68631 48.33782
-122.712316 48.389835
-122.722076 48.408507
-122.734497 48.426136
-122.749341 48.442118
-122.770917 48.432214
-122.763088 48.413972
-122.757852 48.385576
-122.753679 48.335555
-122.75432 48.302865
-122.760073 48.243261

Final Aeronautical Zoning for OPR-N326-RA-2002
Port Townsend, WA- Sheet H11188

(see note A) 12 RKS 1 Smith I 4 (55) 4
 8 7 NWR 4 4 4 4
 PS98 7 6 2 h 4 4 4
 SMITH ISLAND LT
 FI 15s 97ft 21M 39

Time Corrector -24 mins
 Range Corrector x0.81
 Reference 944-4900
 OPERATING AREA
 PS99:5
 Time Corrector -24 mins
 Range Corrector x0.83
 Reference 944-4900/

(NAVY-3)62
 (see note D)
 Reference 944-4900/

PS218
 Time Corrector -12 mins
 Range Corrector x0.86
 Reference 944-4900
 SMALL ARMS
 SAFETY ZONE
 (See Note)

Note
 Naval Air Station search range operates 7 days a week
 Red flashing light and sound signal displayed during exercises. Use caution transiting near the zone.

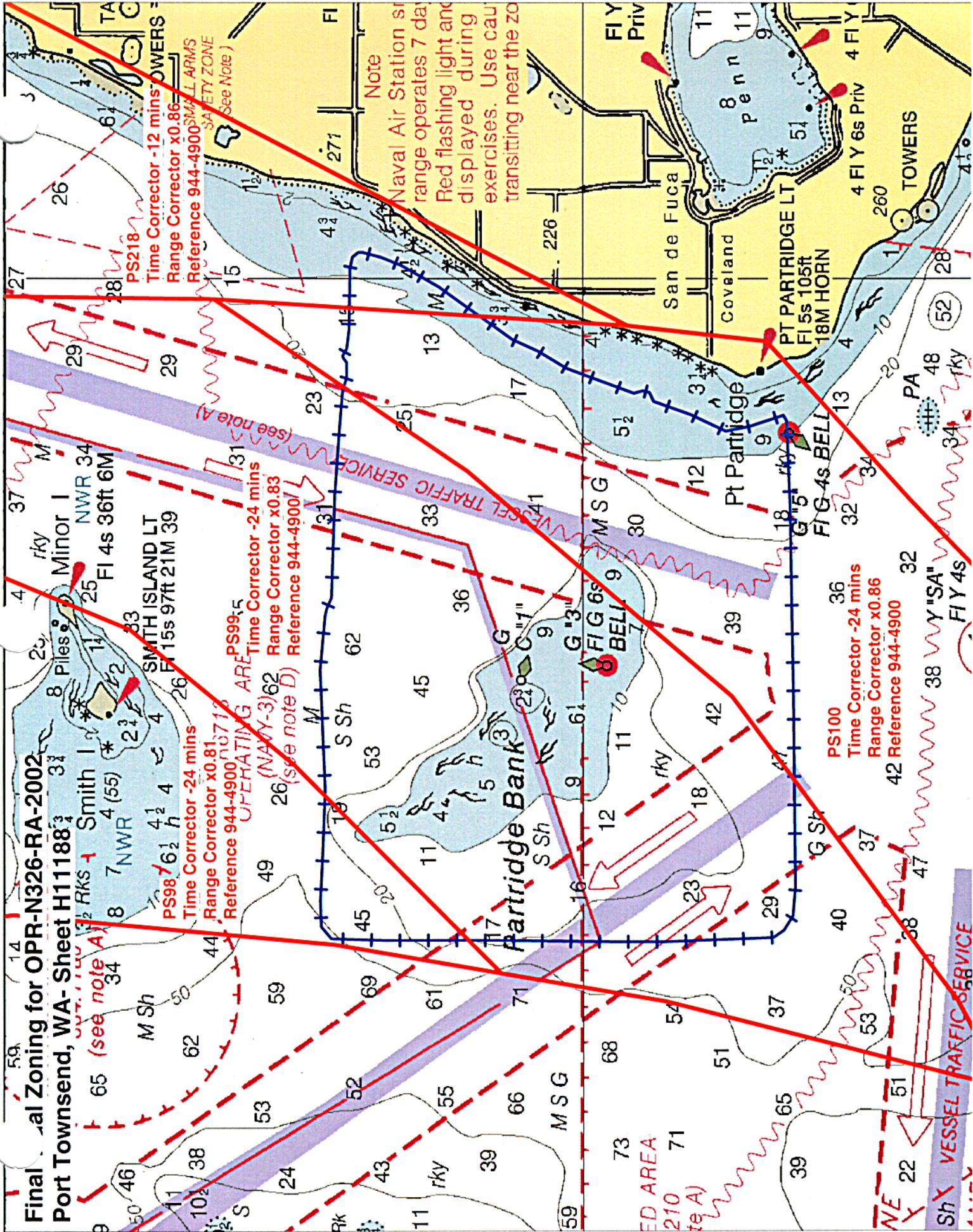
PT PARTRIDGE LT
 FI 5s 105ft
 18M HORN

FIG 4s BELL 13
 FIG 6s BELL 9
 FIG 6s BELL 7
 FIG 6s BELL 9

PS100
 Time Corrector -24 mins
 Range Corrector x0.86
 Reference 944-4900

38 "Y SA"
 FI Y 4s

Sh X VESSEL TRAFFIC SERVICE



APPROVAL SHEET
H11188

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 L. Nelson Date: 24 June 2006
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.

[Signature], CDR/NOAA Date: 27 JUNE 2006
Donald W. Haines
CDR, NOAA
Chief, Pacific Hydrographic Branch

