

H10932

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-10-22-99

Registry No. .... H-10932

#### LOCALITY

State ..... Alaska

General Locality ..... Southwest Prince William Sound

Sublocality ..... Marsha Bay and Approaches

1999

#### CHIEF OF PARTY

Commander D.R. Herlihy, NOAA

#### LIBRARY & ARCHIVES

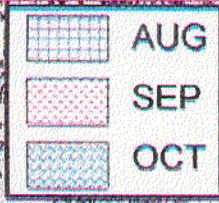
DATE

August 9, 2001

**HYDROGRAPHIC TITLE SHEET****H-10932**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-10-22-99**State AlaskaGeneral Locality Southwest Prince William SoundSublocality Marsha Bay and ApproachesScale 1:10,000Date of Survey Sept 9, 1999 - Oct 19, 1999Instructions Date 7/30/99Project No. OPR-P139- RA-99Vessel RA-1(2121), RA-2(2122), RA-3(2123)RA-4(2124), RA-5(2125), RA-6(2126)Chief of Party CDR D.R. HerlihySurveyed by RAINIER PersonnelSoundings taken by echo sounder DSF-6000N, Knudsen 320M, Reson 8101Graphic record scaled by RAINIER PERSONNELGraphic record checked by RAINIER PERSONNELEvaluation by B. Mihailov Automated plot by HP Design Jet 750CVerification by R. Davies, D. Doles, E. Domingo, R. Mayor, B. MihailovSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC. Revisions and marginal notes in blackwere generated during office processing. All separatesare filed with the hydrographic data. As a result pagenumbering may be interrupted or non-sequential.All depths listed in this report are referenced tomean lower low water unless otherwise noted.46015 / SURF 6/5/01 MCR  
UTM (Zone 6)



Sheet AP  
85.4 sq nm

Sheet AC  
1.97 sq nm

Sheet AD  
14.46 sq nm

Sheet AG  
13.58 sq nm

Sheet AJ  
19.89 sq nm

Sheet AF  
5.85 sq nm

Sheet AH  
14.34 sq nm

Sheet AE  
9.79 sq nm

Sheet AK  
7.40 sq nm

Sheet AL  
8.32 sq nm

Sheet AM  
9.19 sq nm

Sheet AN  
10.91 sq nm

Sheet AR  
14.19 sq nm

AQ

AT

AU

AV

**PROGRESS SKETCH**

**OPR-P139-RA**  
**Southwest**  
**Prince William Sound**  
**ALASKA**

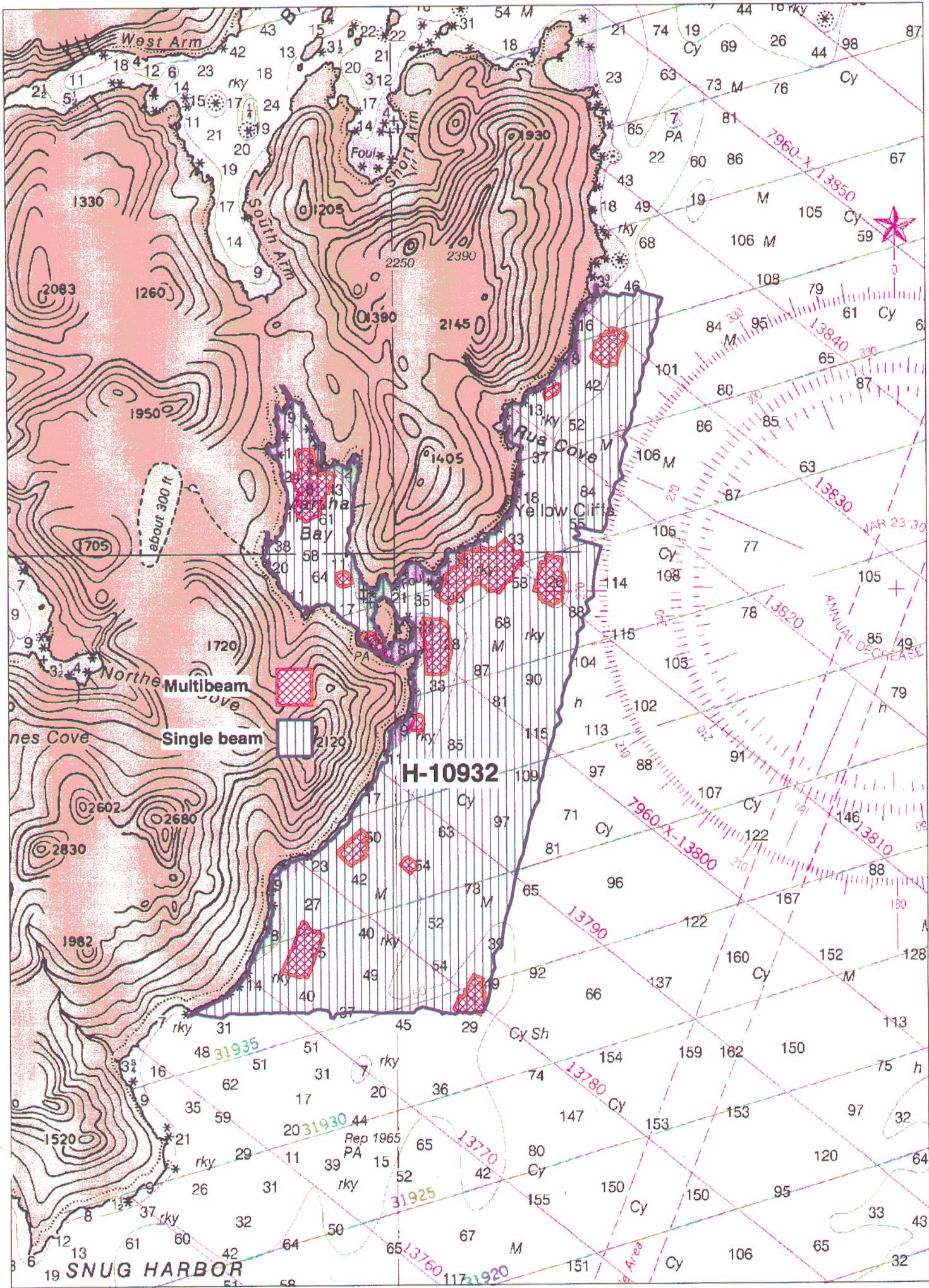
**October 1999**

**Chart 16700**  
**NOAA Ship RAINIER**  
**CDR Daniel R. Herlihy**  
**Commanding**

Downtime Type	August	September	October
Weather - Hr	0	0	0
Mechanical -Hr	0	0	0
Electronic -Hr	0	0	0

Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
AC	H10923	8/15/99	100	8/27/99	9/4/99	1.97
AD	H10921	8/11/99	100	10/6/99		14.46
AE	H10920	8/11/99	100	9/28/99		9.79
AF	H10932	9/9/99	100	<del>10/19/99</del> 10/19/99		5.85
AG	H10929	8/29/99	100	10/20/99		13.58
AH	H10927	8/26/99	100	10/20/99		14.34
AJ	H10918	8/12/99	100	10/20/99		19.89
AK	H10933	9/9/99	100	10/20/99		7.40
AL	H10928	8/27/99	100	10/20/99		8.32
AM	H10922	8/13/99	100	9/28/99		9.19
AN	H10919	8/12/99	100	10/11/99		10.91
AP	H10925	8/16/99	100	10/7/99		85.4

Accomplished	August	September	October
LNМ Hydro	1166.48	1204.09	629.37
LNМ SSS	0	0	0
SQ NM	65.89	39.77	109.63
AWOIS Invest.	7	4	10
Other Invest.	0	0	0
LNМ Multibeam	654.67	609.86	980.62
Days at Sea	17	26	17



# Descriptive Report to Accompany Hydrographic Survey H10932

Field Number RA-10-22-99

Scale 1:10,000

~~October 1999~~ Sept 1999 to Oct 1999

NOAA Ship RAINIER

Chief of Party: CDR Daniel R. Herlihy, NOAA

## A. PROJECT ✓

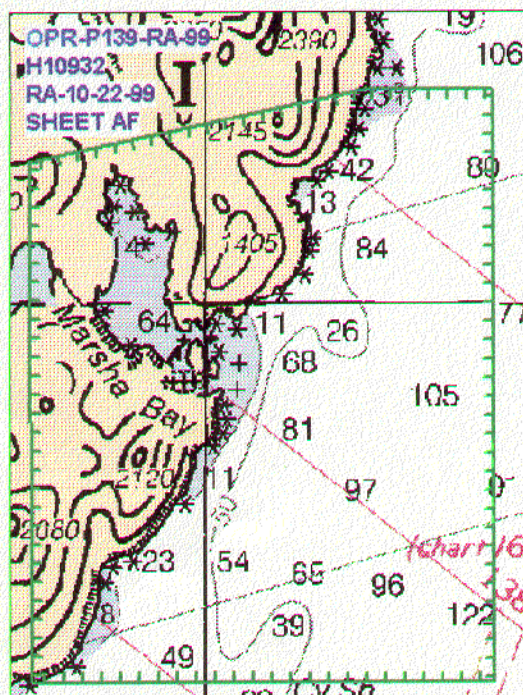
This basic hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P139-RA dated July 30, 1999, and Draft Standing Project Instructions dated April 6, 1998. Survey H10932 corresponds to sheet AF as defined in the sheet layout. This survey will provide data to supersede prior surveys conducted in the early to mid 1900s, and will affect Charts 16700 and 16701. Requests for hydrographic surveys and updated charts in this area have been received from the National Imagery and Mapping Agency (NIMA), the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

Significant changes in depths and shoreline may have occurred in the project area as a result of the earthquake of March 27, 1964. *Concur*

## B. AREA SURVEYED ✓ *See Evaluation Report, section B*

The survey covers approximately 7.9 square nautical miles in the vicinity of Marsha Bay. The area surveyed is depicted below and is overlaid onto chart 16700. The survey's northern limit is latitude  $60^{\circ}21'42''N$  and the southern limit is latitude  $60^{\circ}16'56''N$ . The survey's western limit is the eastern shore of Knight Island and the eastern limit is longitude is  $147^{\circ}35'24''W$ .  
*36'*

Data acquisition was conducted from September 9 to October 19 1999 (DN 252 to 292).



**C. SURVEY VESSELS ✓**

Data were acquired by RAINIER's survey launches (vessel numbers 2121, 2122, 2123, 2124, 2125 and 2126) as noted in the Survey Information Summary included with this report. Vessels 2121, 2123 and 2126 were used for acquisition of shallow-water multibeam data and sound velocity profiles. Vessel 2125 was used for shoreline verification, vertical beam echo sounder (VBES) data acquisition, and bottom sampling. Vessel 2122 was used for shoreline verification and VBES data acquisition. Vessel 2124 was used only for VBES data acquisition. See the Project Related Data for OPR-P139-RA-99 for vessel descriptions. No unusual vessel configurations or problems were encountered on this survey. - CONCUR

**D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓**

All vertical beam echo sounder (VBES) data were acquired using Coastal Oceanographic's HYPACK version 8.9, and processed with the Hydrographic Processing System (HPS) version 9.3 and MapInfo 5.0. Final detached positions, features, and soundings based on observed tides were saved in MapInfo format. Shallow-water multibeam (SWMB) echo sounder data were acquired using Triton-Elics' ISIS software version 4.32, and processed using Universal Systems Limited's CARIS HIPS software version 4.3.

Shallow-water multibeam data were reviewed with the CARIS Hydrographic Data Cleaning System (HDCS). Depth fliers were identified and manually flagged as "rejected". Vessel positioning and attitude data from each system were similarly displayed and manually cleaned. Additionally, instantaneous speed as computed from the positioning data was checked for speed jumps exceeding 3 knots as an indication of potential position fliers. For this survey, all development soundings beyond a maximum angle of 45° off nadir were rejected in an attempt to reduce the noise and refraction errors observed in these outer beams.

After review and cleaning, depth, position and attitude data were merged with sound velocity, predicted tide and dynamic draft correctors to compute the corrected depth and position of each sounding. Processed soundings were read into a CARIS Workfile by selecting shoal-biased "line-by-line" binning at a two densities; one at 3m x 3m, the other at 1.5m x 1.5m at survey scale. The former was used to create digital terrain models (DTMs) that were used to demonstrate multibeam coverage and perform multibeam quality-assurance, while the latter was used to export soundings into HPS through HPTools. Observed tides were applied in the Hydrographic Processing System (HPS) and the processed soundings were excessed using a 3mm character size, and plotted at a 2-mm character size to produce the final sounding plot. Final selected soundings were saved and plotted in MapInfo. Raster images registered in MapInfo facilitated chart and prior survey comparisons.

Survey H10932 is defined as sheet 04 in HPS. The CARIS workfile names are defined as "h10932\_03" for the 3-meter grid and "h10932\_15" for the 15-meter grid. The project name is identified as "P139\_SheetAF" in HDCS.

All final plots were created in MapInfo using UTM Zone 6 projection. ✓

A complete listing of software is included in Appendix H. A data flow diagram is included in Appendix G. \* Filed with the hydrographic data.

**E. SONAR EQUIPMENT ✓**

Side Scan Sonar (SSS) equipment was not used on this survey. However, it should be noted that the Reson SeaBat 8101 SWMB system provides a low-resolution digital SSS record of the SWMB swath. Concur

This SSS imagery is primarily used during final processing of SWMB depth data to aid in determining whether anomalous soundings are true features or noise, but was also used in the investigation of the assigned AWOIS investigation.

## F. SOUNDING EQUIPMENT ✓

Two different categories of echo sounder systems were used and are described below. The individual system(s) chosen for use in a given area were decided at the discretion of the Hydrographer using the guidance stated in the Project Instructions, and depended upon the limitations of each system, the bottom topography, the water-depth, and the ability of the platform vessel to safely navigate the area.

### 1. Launch Vertical Beam Echo Sounder (VN 2122, 2124, and 2125,)

The vertical beam echo sounders (VBES) utilized for this survey were the Raytheon DSF-6000N (VN 2122, 2124, 2125), which are dual frequency (100 kHz, 24 kHz), digital recording single beam fathometers with analog paper records.\* Soundings were acquired in meters for both frequencies, with high frequency utilized as the primary frequency. VBES serial numbers are included in Appendix H. \*

VBES data were also acquired concurrently with SWMB data and were compared to nadir beams of the shallow water multibeam in real-time during data acquisition to assure SWMB data quality. In addition, digital VBES depth data are used by Isis to assist the Reson 8101 in tracking the bottom. The latter is extremely helpful in areas of extreme relief, when the shallow-water multibeam tends to lose bottom lock. VBES data acquired during SWMB were not used for final sounding plot compilation, and are not included with the digital survey data. *Concur*

### 2. Launch Shallow-Water Multibeam (VN 2121, 2123, and 2126)

The shallow-water multibeam (SWMB) system utilized for this survey was the Reson SeaBat 8101, which is a 240 kHz multibeam system that measures relative water depths across a wide swath perpendicular to the vessel's heading. The Reson 8101 has a 150° swath, consisting of 101 individual 1.5° x 1.5° beams. A TSS POS/MV Position and Orientation Sensor was used to correct for the effects of vessel motion during survey operations. Serial numbers for the Reson 8101 and POS/MV are included in Appendix H. \*

SWMB was used to develop shoal areas and acquire least depths over significant features identified during VBES data acquisition.

## G. CORRECTIONS TO ECHO SOUNDINGS ✓

### Water Level Correctors

Soundings were reduced to Mean Lower-Low Water (MLLW) using unverified observed tide data for station Cordova, AK (945-4050) obtained from the Center for Operational Oceanographic Products and Services (CO-OPS) web site. These data were used to create HPS tide table #1. \*

Listings of HPS tide tables used for H10932 and tidal correctors as provided in the Project Instructions for H10933 are contained in the Survey Information Summary included ~~with~~ <sup>in</sup> this report.

\* Filed with the hydrographic data.

The operating National Water Level Observation Network (NWLON) primary tide stations at Cordova, Alaska (945-4050) and Valdez, Alaska (945-4240) will serve as control for datum determination at four subordinate stations. Because a Next Generation Water Level Measurement System (NGWLMS) Aquatrak sensor is the only sensor installed at these primary stations, RAINIER personnel were neither required nor able to inspect and perform leveling at these stations.

RAINIER personnel installed Sutron 8200 "bubbler" tide gauges at the following subordinate stations:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Zaikof Point	945-4411	30-day	10 August 1999	14 October 1999
Port Chalmers	945-4511	30-day	10 August 1999	20 October 1999
Snug Harbor *	945-4662	30-day	11 August 1999	20 October 1999
Montague Island	945-4616	30-day	31 August 1999	20 October 1999

\* Used to reduce final plotted data.

Refer to the Field Tide Notes and supporting data <sup>attached</sup> in ~~Appendix D~~ for individual gauge performance and level closure information.

Raw water level data from these gauges was forwarded to N/OPS1 throughout the project period, with the final package submitted on October 29, 1999 in accordance with HSG 50 and FPM 4.7. 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 to the Pacific Hydrographic Branch was forwarded to N/OPS1 on October 29, 1999 in accordance with FPM 4.8. *Approved Tide Note dated May 15, 2000 is attached*

**Sound Velocity Correctors** ✓

The velocity of sound through water was determined by a minimum of one cast every four hours of acquisition in accordance with the Draft Standing Project Instructions. Cast information is included in the Survey Information Summary and in Appendix I. \*

The sound velocity casts were acquired with SBE SEACAT Profilers (S/N 2543, 2044 and 219). Calibration reports and dates are included with the Project Related Data for OPR-P139-RA-99. Velocity correctors were computed using the program VELOCWIN version 4 beta 2, which generates correction tables for both CARIS and HPS. Sound velocity correctors were applied in CARIS during post processing.

**Settlement and Squat and Static Draft Correctors** ✓

The following table shows when the vessel offset <sup>\*</sup>correctors used for this survey were last measured:

Vessel No.	Date of Static Draft and Transducer Offset Measurements	Method of Settlement and Squat Measurement	Date of Settlement and Squat Measurement	Location of Settlement and Squat Measurement
2121	March 1999	OTF	March 1999	Port Angeles, WA
2122	March 1999	Rod leveling	March 1999	Port Angeles, WA
2123	March 1999	OTF	March 1999	Port Angeles, WA

\* Filed with the hydrographic data.



Vessel No.	Date of Static Draft and Transducer Offset Measurements	Method of Settlement and Squat Measurement	Date of Settlement and Squat Measurement	Location of Settlement and Squat Measurement
2124	March 1999	Rod leveling	March 1999	Port Angeles, WA
2125	March 1999	Rod leveling	March 1999	Port Angeles, WA
2126	March 1999	OTF	March 1999	Port Angeles, WA

Settlement and squat correctors, static draft measurements and vessel offsets are included with the Project Related Data for OPR-P139-RA-99.

**Heave, Pitch, Roll and Heading, Including Biases and Navigation Timing Errors**

SWMB launches (VN 2121, 2123, and 2126) utilize a TSS POS/MV Model 320 Position and Orientation System (POS), which provides accurate navigation and attitude data to correct for the effects of heave, pitch, roll and heading. The POS generates attitude data in three axes (roll, pitch and heading) to an accuracy of 0.05° or better. Heave measurements supplied by the POS maintain an accuracy of 5% of the measured vertical displacement for movements that have a period of up to 10 seconds. The POS delivers heading measurements by two distinct methods. First, the Dynamic Heading Alignment determines the vessels heading by using the data supplied by the Internal Measurement Unit (IMU) and GPS receivers to achieve heading that is, at best, accurate to within 0.35°. This method suffers from drift but is relatively unaffected by noise. Second, the GPS Azimuth Measurement System (GAMS) determines the geographic vector between two GPS antennas fixed to the vessel by comparing the phase of satellite signals they receive. The error from this method is largely due to noise, but exhibits no drift. The POS uses the advantages of each method to compensate for the disadvantages of the other to arrive at an optimal accuracy of 0.05°. Serial numbers are located in Appendix H. \*

Heave, roll, pitch, and navigation latency biases were determined during Patch Tests conducted at Port Angeles, WA on March 26-28, 1999 for vessels 2126 and 2123, and at Shilshole, WA, on July 7, 1999 for vessel 2121. SWMB vessel offsets, dynamic draft correctors, and system bias values are contained in CARIS Vessel Configuration Files (VCF's) created using the program "VCFEDIT" in CARIS. These offsets and biases are applied to the sounding data during processing in CARIS. A printout of each VCF is contained in the Project Related Data for OPR-P139-RA-99, and the VCF's themselves are included with the digital HDCS data.

**H. HYDROGRAPHIC POSITION CONTROL** ✓ *See Eval Rpt, section H.*

The horizontal datum for this project is NAD 83. Differential GPS was the sole method of positioning. The US Coast Guard Beacons at Cape Hinchinbrook (ID# 894) and Potato Point (ID# 883) were the sources of differential correctors.

Launch-to-launch DGPS performance checks were performed in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the Project Related Data for OPR-P139-RA-99.

\* Filed with the hydrographic data.

## I. SHORELINE ✓ See Evaluation Report, Section J.

### Method of Shoreline Verification

N/NGS3 supplied photogrammetric shoreline in MapInfo format for the digital manuscript (hereafter DM) 10297 for use as source shoreline. The DM shoreline was imported into Hypack for field verification. In addition, features shown on the current editions of charts 16700 and 16701 were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

Shoreline verification was conducted near predicted low water in accordance with the Project Instructions and FPM 6.1 and 6.2. For this survey the general limit of safe navigation of a survey launch was 5-30 meters offshore of apparent low tide. Water depths along this limit of safe navigation are generally 2-5 meters at Mean Lower Low Water (MLLW). Features unreachable by survey launch shown inshore of the Navigable Area Limit Line (NALL) are the hydrographer's approximate representation of the shoreline.

Detached positions taken during shoreline verification were recorded within HYPACK and on DP forms,\* and processed in HPS. These indicate revisions to features, and features not found on the DM or chart.

A detailed "DP and BS Plot" is provided showing all detached positions and bottom samples with notes relating to each feature. Updated shoreline and features are also depicted on the final sounding plot. \*

### Source Shoreline Changes and New Features ✓

Several changes and new features were found and are depicted on the final DP plot. DM rocks were often identified as high points or extents of new ledges or reefs. *Concur*

The DM/charted rock at location 60°19'52.28"N, 147°39'54.14"W (Position 20303) was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. — *CONCUR*

### Recommendations

The Hydrographer recommends that the shoreline, as depicted on the DP and BS plot and final sounding plot <sup>map (0910297) with revisions</sup> ~~supersede and complement~~ <sup>supplement</sup> shoreline information compiled on the DM as noted. These revisions are recorded in the MapInfo digital files named "H10932\_Shoreline" and "H10932\_Shoreline\_Updates".

### Charted Features

Charted rocks were identified as DM rocks or high points or extensions of DM ledges or reefs. *Concur*

Six charted rocks from charts 16700 and 16701 were not found during shoreline verification and are listed below.

The charted submerged rock (chart 16701) at location 60°19'45.18"N, 147°40'25.95"W was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. A detached position was not taken. *chart area as shown on survey.*

*A reef (G) was found in the area of the charted submerged rock.*  
The charted rock (chart 16701) at location 60°20'32.85"N, 147°41'08.2"W (Position 20415) was disproved using a 5 minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. *Concur, chart area as shown on survey. A 49 fathom depth was found in the area of the charted rock.*

\* Filed with the hydrographic data

The charted rock (chart 16701) at location 60°20'36.61"N, 147°41'06.48"W (Position 20425) was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. - concur, chart area as shown on the survey.

A 1.2 RK was found approximately 100 meters southeast of the charted rock.

The charted rock (chart 16700) at location 60°20'27.52"N, 147°40'58.58"W (Position 20436) was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. - concur, chart area as shown on survey. A rock is located approximately 100 meters to the North.

The charted submerged rock (chart 16700) at location 60°19'30.17"N, 147°39'27.69"W (Position 51106) was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. - concur, chart area as shown on survey. A 14 fm sandg is located approximately 125 meters to the west.

The charted submerged rock (chart 16700) at location 60°19'17.95"N, 147°39'30.52"W (Position 51105) was disproved using a 5-minute visual and VBES search in a grid pattern over a 75-meter radius in water with 20 feet of visibility. - concur, chart area as shown on survey. A rock is located approximately 100 meters to the northwest.

Recommendations

The charted shoreline should be revised using the DM shoreline and fieldwork notes as recorded in the MapInfo digital files named "H10932\_Shoreline" and "H10932\_Shoreline\_Updates". - All updates were transferred to the smooth sheet. (concur)

J. CROSSLINES

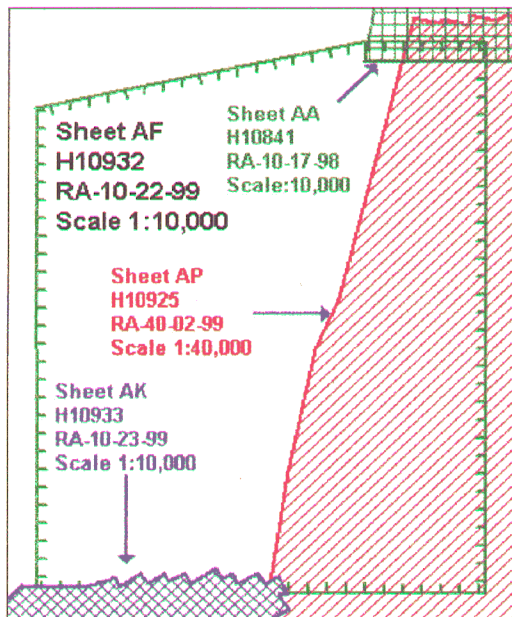
VBES crosslines totaled 10.57 nautical miles, comprising 12.3 % of mainscheme hydrography. Crosslines agreed within 1 meter of mainscheme hydrography.

SWMB crosslines totaled 2.26 nautical miles, comprising 8.70 % of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 84.1%, with a depth tolerance of 0.023. See Appendix E for the detailed report. - Filed with the hydrographic records.

K. JUNCTIONS See Evaluation Report, Section L.

The following contemporary surveys junction with H10932, as depicted on the diagram below:

Registry #	Scale	Date	Junction side
H10925	1:40,000	1999	East
H10933	1:10,000	1999	South
H10841	1:10,000	1998	Northeast



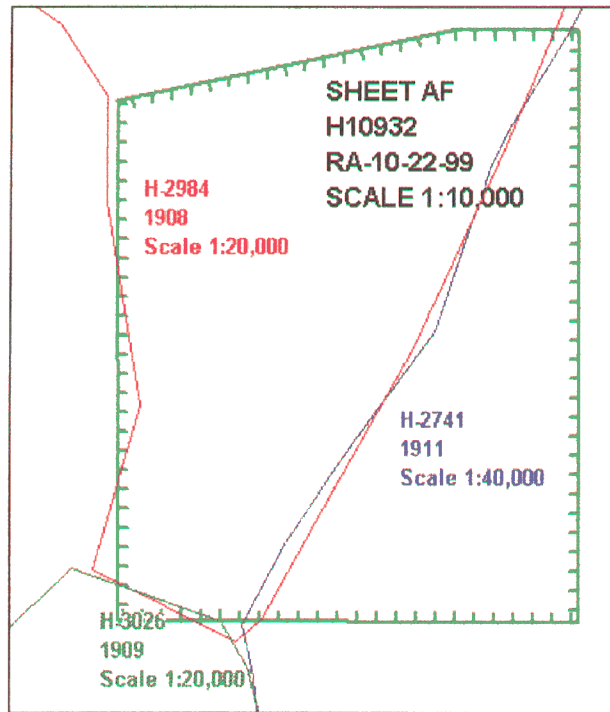
Soundings from junction surveys H10933 and H10841 agreed well with H10932, generally matching within 1 meter. Soundings from junction survey H10925 agreed well with H10932, matching within 1-3 meters, although some larger discrepancies are noted along the steep slope approximately one nautical mile offshore of the entrance to Marsha Bay. These discrepancies are likely due to performance issues related to utilizing VBES along a steep slope. *Concur*

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.

**L. COMPARISON WITH PRIOR SURVEYS** ✓ *See Evaluation Report, Section M.*

The following prior surveys share common area with survey H10932, as depicted on the diagram below:

Registry #	Scale	Date	Area covered
H-2984	1:20,000	1908	Western Edge
H-3026	1:20,000	1909	Southwest Edge
H-2741	1:40,000	1911	Eastern Edge - <i>Superseded.</i>



Soundings from H2984 agreed fairly well with the current survey in some locations, generally within 3-10 feet. However, several soundings did not, and were on average 20 feet deeper than the current survey. There seemed to be no apparent pattern to these discrepancies, but some of the differences occurred in areas with a steep slope. - CONCUR

Prior survey H-2741 covers the southeast region of present survey H10932. Unfortunately the scanned image of the prior survey is barely legible and lacks either a latitude/longitude grid or shoreline to orient it with the current survey. No comparison was possible. *Charted hydrography supersedes this survey.*

Prior survey H-3026 covers a small portion of the southern end of survey H10932. There are only <sup>5</sup> six soundings on the prior that fall within the limits of H10932. ~~Only one of the soundings agreed well with the current survey.~~ The rest of the current soundings were shallower by 17 to 33 feet, except for one sounding at position  $60^{\circ}17'01.6''N$ ,  $147^{\circ}41'35.4''W$  that was shallower <sup>then</sup> than the current survey by 50 feet. There is no indication of shoaling in this vicinity on the current survey. *All other soundings agreed well with the current survey.*

In all cases, the differences in soundings are likely due to increased coverage and positioning accuracy from modern survey equipment, as well as possible bottom changes due to the 1964 earthquake. *Concur*

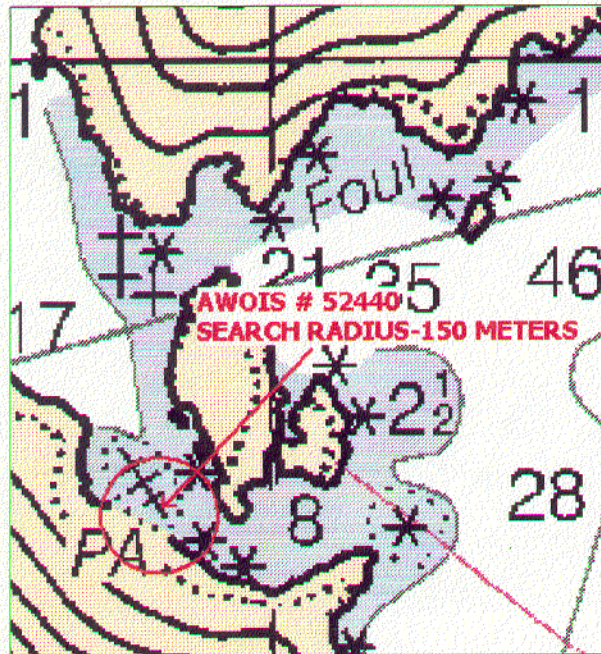
Final comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides.

## M. ITEM INVESTIGATIONS ✓

There was one Automated Wreck and Obstruction Information System (AWOIS) item investigated within the survey area.

AWOIS 52440 ✓**1. Area of Investigation:**

AWOIS Number: 52440 ✓  
 State and Locality: Marsha Bay, AK ✓  
 Reported Position: Latitude: 60/19/21.81N ✓  
 Longitude: 147/40/19.17W ✓  
 Datum: NAD83 ✓  
 Type of Feature: Wreck  
 Reported Depth: None

**2. Description and Source of Item**

LN40/70--17TH CGD, 10/7/70; A 38 FT FISHING VESSEL HAS BEEN REPORTED SUNK IN THE ENTRANCE TO MARSHA BAY IN POSITION 60-19.4N, LONG.147-40.2W (NAD 27) IN 6 FATHOMS OF WATER. A FISH FLOAT BUOY IS ATTACHED TO THE RADIO ANTENNA. ENTERED 7/98 MCR

**3. Survey Requirements**

Multibeam, echo sounder, and salvage documentation. Search radius is 150 meters.

**4. Method of Investigation**

100% shallow-water multibeam search.

## 5. Results of Investigation

Examination of the soundings and digital side scan sonar images from the SWMB data revealed no indication of the wreck. *Do not concur, refer to Eval Rpt, section N for further discussion.*

## 6. Comparison with Prior Surveys

All prior surveys predated the wreck. *Concur*

## 7. Comparison with the Chart and Charting Recommendation

Compared with chart 16700 (26<sup>th</sup> Ed.; Sept 19, 1998; 1:200,000) and chart 16701 (17<sup>th</sup> Ed; July 25, 1998; 1:81,436). The charts show a dangerous wreck at approximately the location stated above.

Because no obstruction was found, the Hydrographer recommends removing the wreck from the chart. *- DO NOT CONCUR, refer to the EVALUATION Report section N for further discussion*

## 8. Evaluator Comments:

### N. COMPARISON WITH THE CHART ✓ *See Evaluation Report, section O.*

Survey H10932 was compared to chart 16700 (26<sup>th</sup> Ed.; Sept 19, 1998; 1:200,000), chart 16701 (17<sup>th</sup> Ed; July 25, 1998; 1:81,436) and chart 16705 (18<sup>th</sup> Ed.; March 27, 1999; 1:80,000).

Chart 16700 was found to be in fair agreement with the current soundings, generally within 1 fathom. There were, however, some exceptions. A few charted soundings near shore were 7-12 fathoms shoaler than the current soundings in the same locations. The scale of the chart possibly did not allow enough space to depict these inshore soundings accurately. There is also a charted 84-fathom sounding at position 60°20'25.58"N, 147°37'18.91"W in which location H10932 revealed a sounding of 78 fathoms. There were similar current soundings approximately 110 meters to the east of this charted sounding. *Concur*

Chart 16701 was found to be in fair agreement with the current soundings, generally within 1-2 fathoms. There were some exceptions. Several current survey soundings are shoaler than the charted soundings by 1-7 fathoms, with no particular trend. There are also a few charted soundings that are up to 13 fathoms shoaler than the survey depths. However, all of these are close to shore and on steep slopes. The scale of the chart possibly did not allow enough space to depict these inshore soundings accurately. *Concur*

Chart 16705 had only 3 soundings within the limits of H10932, and only one was in agreement. At position 60°21'30.93"N, 147°37'25.63"W, the chart has a sounding of 16 fathoms, while H10932 revealed a sounding of 6.7 fathoms. At position 60°21'31.05"N, 147°36'43.91"W, the chart has a sounding of 92 fathoms, while H10932 depicts a sounding of 71 fathoms. Both discrepancies are on a steep slope, and in both cases, this survey obtained soundings approximately 100 meters seaward of the charted soundings that were within one to two fathoms. *Concur*

The differences in soundings are likely due to increased coverage and positioning accuracy from modern survey equipment, as well as possible bottom changes due to the 1964 earthquake. *Concur*

**Dangers to Navigation**

Twelve dangers to navigation were found and reported to the Seventeenth Coast Guard District.

A shoal depth of <sup>6.1</sup>~~6.2~~ fathoms was discovered at 60°21'30.93"N, 147°37'25.63"W, near a charted 16-fathom sounding.

A new reef was discovered at 60°20'02.89"N, 147°38'38.64"W, in the vicinity of a charted 33-fathom sounding.

A shoal depth of 8 fathoms was discovered at 60°19'52.83"N, 147°38'37.04"W, between charted 11-fathom and 58-fathom soundings.

A shoal depth of <sup>6.0</sup>~~6.1~~ fathoms was discovered at 60°19'47.89"N, 147°39'07.37"W, between charted 11-fathom and 46-fathom soundings.

A shoal depth of <sup>7.1</sup>~~7~~ fathoms was discovered at 60°19'44.04"N, 147°39'40.38"W, in the vicinity of a charted 35-fathom sounding.

A shoal depth of 4.6 fathoms was discovered at 60°20'24.45"N, 147°41'09.14"W, near a charted 8-fathom sounding.

A shoal depth of <sup>1.7</sup>~~1.8~~ fathoms was discovered at 60°20'40.59"N, 147°41'25.56"W, near a charted 14-fathom sounding.

A shoal depth of 1.3 fathoms was discovered at 60°19'30.69"N, 147°39'39.93"W, near a charted 2 1/2-fathom sounding.

A shoal depth of <sup>6.7</sup>~~6.8~~ fathoms was discovered at 60°19'26.92"N, 147°39'24.56"W, in the vicinity of a charted 28-fathom sounding.

A shoal depth of <sup>7.0</sup>~~6.9~~ fathoms was discovered at 60°18'56.61"N, 147°39'32.75"W, seaward of the charted 10-fathom curve.

A shoal depth of <sup>4.4</sup>~~4.5~~ fathoms was discovered at 60°18'35.34"N, 147°40'05.74"W, near a charted 11-fathom sounding.

A shoal depth of 9.7 fathoms was discovered at 60°17'19.18"N, 147°41'20.44"W, in the vicinity of a charted 25-fathom sounding.

A copy of the Danger to Navigation report is included in <sup>this report</sup>~~Appendix A~~.

**O. ADEQUACY OF SURVEY** ✓

Survey H10932 is complete and adequate to supersede charted soundings and features in their common areas. — CONCUR



**P. AIDS TO NAVIGATION ✓**

There are no aids to navigation within the survey area of H10932. *Concur*

**Q. STATISTICS ✓**

Refer to the Survey Information Summary <sup>included in</sup> ~~attached to~~ this report.

**R. MISCELLANEOUS ✓**

Bottom samples were collected and sent to the Smithsonian Institution in accordance with the Project Instructions.

No unusual tidal currents or magnetic variations were found during this survey.

There were no observed anchorage locations in use, however the north end of Marsha Bay would be a suitable anchorage for small craft or fishing boats. *Concur*

**S. RECOMMENDATIONS ✓**

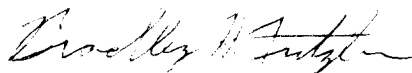
None.

**T. REFERRAL TO REPORTS ✓**

The following supplemental reports contain additional information relevant to this survey:

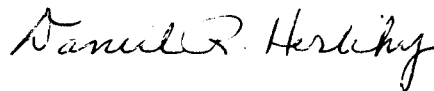
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-P139-RA-99 1999 Coast Pilot Report	TBD 1999	N/CS26
Project Related Data for OPR-P139-RA-99	December, 1999	N/CS34

Respectfully Submitted,



Bradley H. Fritzler  
Ensign, NOAA

Approved and Forwarded,



Daniel R. Herlihy  
Commander, NOAA  
Commanding Officer

# Survey Information Summary

**Project:** OPR-P139-RA      **Project Name:** SOUTHWEST PRINCE WILLIAM SOUND  
**Instructions Dated:** July 30, 1999      **Project Change Info:**  
**Sheet Letter:** AF      **Registry Number:** H10932  
**Sheet Number:** RA-10-22-99

**Survey Title:** Marsha Bay and approaches  
**Data Acquisition Dates:** From: <sup>8</sup> 8-Sep-99 252 To: <sup>20</sup> 21-Oct-99 293

### Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2121								
2122	2	1		1	3	3		
2123								
2124		1						
2125	4	2			4	5	2	
2126								

### Sound Velocity Cast Information

Cast Name	HPS Table #	Cast DN	Max Depth	Position	Applicable DN
99243014	4	243	183.1	60/19/01 147/17/30	236-253
99267202	8	267	230.0	60/19/49 147/30/35	261-267
99270224	12	270	329.3	60/11/00 147/41/10	268-274
99277214	13	277	293.2	60/27/24 147/09/36	278-285
99286165	14	286	369.9	60/17/18 147/35/24	286-287

*These casts plot outside the survey limits.*

### Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS37	-00 hr 00 min	0.93
PWS36	-00 hr 06 min	0.93

### Tide Gage Information

Tide Gauge #	Gauge Name	Installed	Removed
945-4511	Port Chalmers	8/10/1999	10/20/1999
945-4616	Montague Island	8/31/1999	10/20/1999
945-4662	Snug Harbor	8/11/1999	10/20/1999
945-4411	Zaikof Point	8/10/1999	10/14/1999

### Statistics Summary

Type	Total
BS	22
DP	101
MS	85.68
S/L	12.76
SPLIT	51.89
SWMB	25.98
XL	10.57

Percent XL 10.98%  
 SQNM 5.85



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

December 29, 1999

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

**ADVANCE  
 INFORMATION**

Dear CDR Hamblett:

It is requested that the following dangers to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned these features while conducting hydrographic survey H10932 in Prince William Sound, Alaska, from September to October 1999. The dangers are shown graphically on the attached chartlet.

The following dangers to navigation affect chart 16701 (17<sup>th</sup> Ed.; July, 1998, 1:81,436), chart 16700 (26<sup>th</sup> Ed.; September 19, 1998, 1:200,000), and chart 16705 (17<sup>th</sup> Ed.; March 27, 1999, 1:80,000). Positions are on the NAD 83 datum, and depths have been corrected to Mean Lower Low Water.

Feature	Depth(fm)	Latitude (N)	Longitude (W)	Depth (m)
Reef	Awash	60°20'02.89"	147°38'38.64"	-
Shoal	1.3	60°19'30.69"	147°39'39.93"	2.4
Shoal	1.8	60°20'40.59"	147°41'25.56"	3.3
Shoal	4.5	60°18'35.34"	147°40'05.74"	8.2
Shoal	4.6	60°20'24.45"	147°41'09.14"	8.4
Shoal	6.1	60°19'47.89"	147°39'07.37"	11.2
Shoal	6.2	60°21'30.93"	147°37'25.63"	11.4
Shoal	6.8	60°19'26.92"	147°39'24.56"	12.5
Shoal	6.9	60°18'56.61"	147°39'32.75"	12.7
Shoal	7	60°19'44.04"	147°39'40.38"	12.9
Shoal	8	60°19'52.83"	147°38'37.04"	14.6
Shoal	9.7	60°17'19.18"	147°41'20.44"	17.9

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-P139-RA-99 and Danger to Navigation message RA-27-99. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at [FOO.RAINIER@NOAA.GOV](mailto:FOO.RAINIER@NOAA.GOV).

Sincerely,

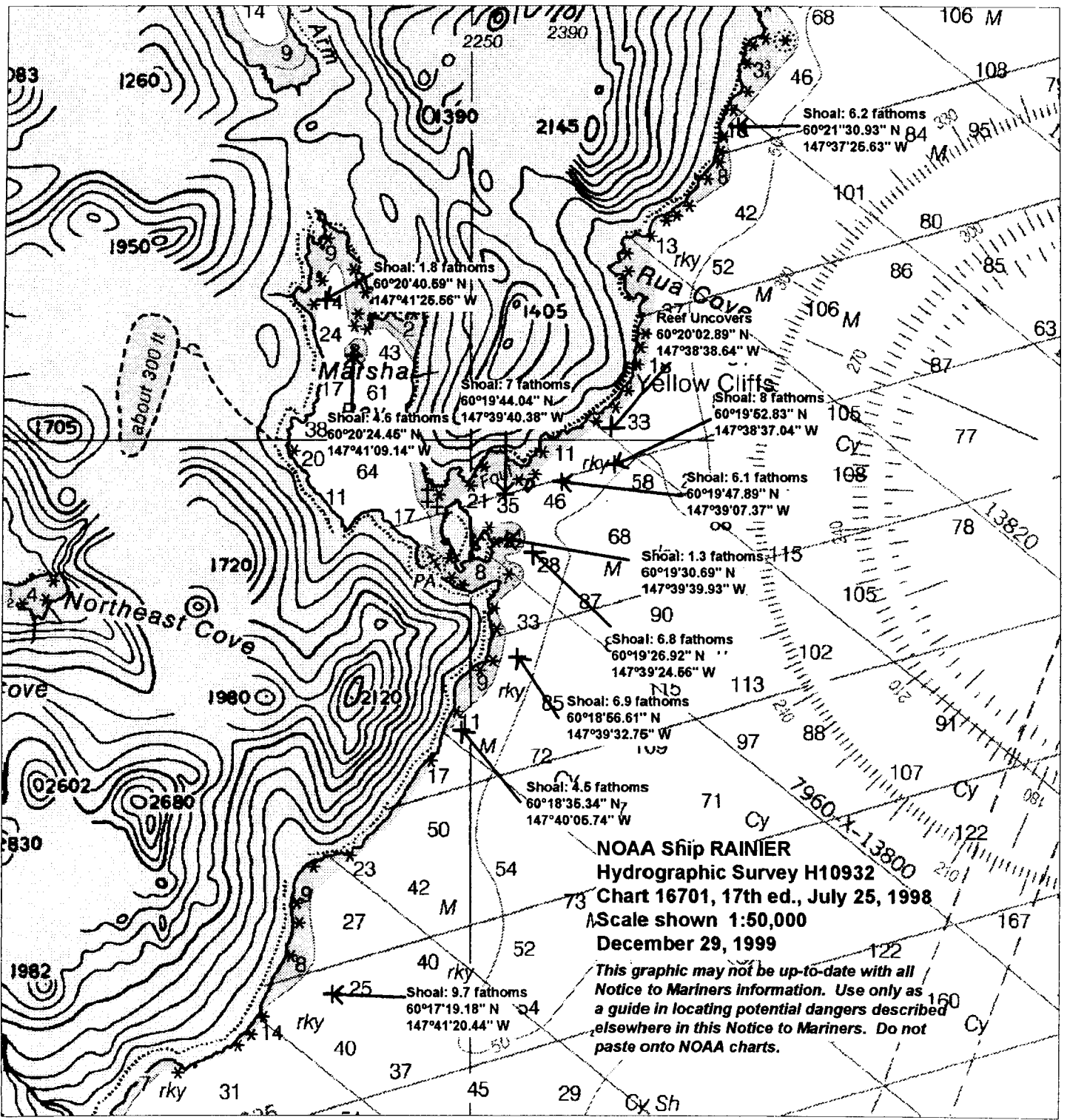
Daniel R. Herlihy  
 Commander, NOAA  
 Commanding Officer

Attachment

cc: NIMA  
 PMC  
 N/CS261  
 N/CS34



ADVANCE  
INFORMATION



NOAA Ship RAINIER  
Hydrographic Survey H10932  
Chart 16701, 17th ed., July 25, 1998  
Scale shown 1:50,000  
December 29, 1999

*This graphic may not be up-to-date with all Notice to Mariners information. Use only as a guide in locating potential dangers described elsewhere in this Notice to Mariners. Do not paste onto NOAA charts.*



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
OFFICE OF COAST SURVEY  
Pacific Hydrographic Branch  
Seattle, Washington 98115-0070

February 8, 2000

Commander (OAN)  
Seventeenth Coast Guard District  
P.O. Box 25517  
Juneau, AK 99802

ADVANCE  
INFORMATION

Dear Sir:

During office review of hydrographic survey H-10932, Alaska, Southwest Prince William Sound, Marsha Bay and Approaches, one shoal depth was found and is considered to be a potential danger to navigation.

It is recommended that the enclosed Report of Danger to Navigation be included in the Local Notice to Mariners.

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

Sincerely,

A handwritten signature in cursive script that reads "James C. Gardner".

James C. Gardner  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

Enclosure

cc: NIMA  
N/CS261  
NOAA Navigation Advisor, Alaska



REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10932

ADVANCE  
INFORMATION

Survey Title:           State:           ALASKA  
                          Locality:       SOUTHWEST PRINCE WILLIAM SOUND  
                          Sublocality:   MARSHA BAY AND APPROACHES

Project Number:       OPR-P139-RA

Survey Date:           SEPTEMBER 9, - OCTOBER 19, 1999

Sounding is reduced to Mean Lower Low Water using predicted tides and is positioned on NAD 83.

Chart affected:       16701 17th Edition July 25, 1998, scale 1:81,436, NAD 83

<u>DANGER TO NAVIGATION</u>	<u>LATITUDE(N)</u>	<u>LONGITUDE(W)</u>
7.7 fathom sounding	60/20/50.14	147/38/12.73

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

**CHART 16701**

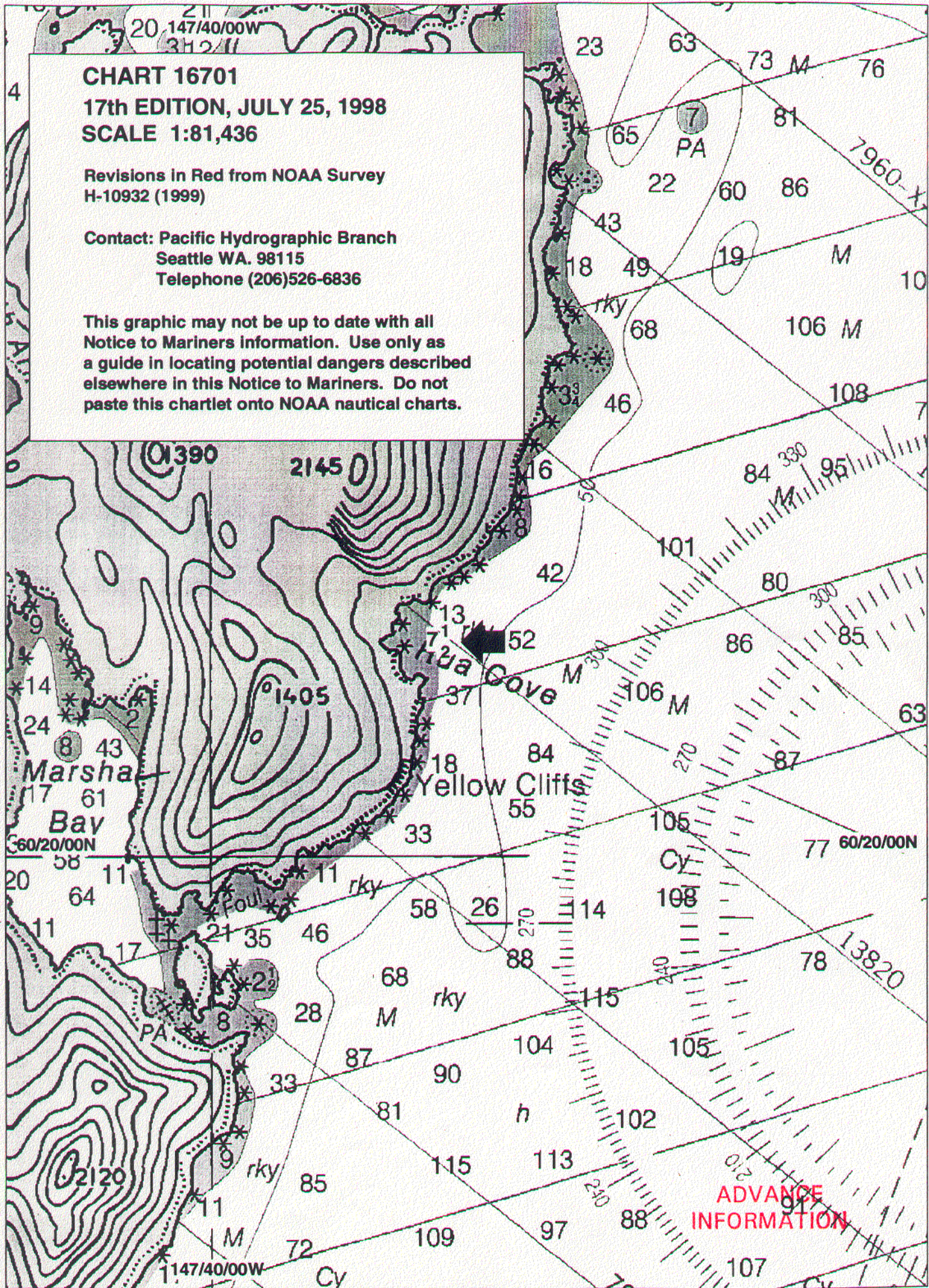
**17th EDITION, JULY 25, 1998**

**SCALE 1:81,436**

Revisions in Red from NOAA Survey  
H-10932 (1999)

Contact: Pacific Hydrographic Branch  
Seattle WA. 98115  
Telephone (206)526-6836

This graphic may not be up to date with all  
Notice to Mariners information. Use only as  
a guide in locating potential dangers described  
elsewhere in this Notice to Mariners. Do not  
paste this chartlet onto NOAA nautical charts.



**ADVANCE  
INFORMATION**

APPROVAL SHEET

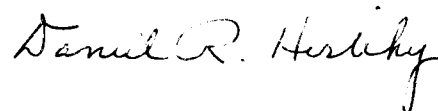
for

H10932

Standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1998.

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.

Approved and Forwarded,



Daniel R. Herlihy  
Commander, NOAA  
Commanding Officer  
NOAA Ship RAINIER





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

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** May 15, 2000

**HYDROGRAPHIC BRANCH:** Pacific  
**HYDROGRAPHIC PROJECT:** OPR-P139-RA-99  
**HYDROGRAPHIC SHEET:** H-10932

**LOCALITY:** Southwest Prince William Sound, AK

**TIME PERIOD:** September 9 - October 19, 1999

**TIDE STATION USED:** 945-4662 Snug Harbor  
Lat. 60° 14.4'N Lon. 147° 43.2'W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters

**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 3.218 meters

**REMARKS: RECOMMENDED ZONING**

**Use zone(s) identified as:** PWS42 & PWS47.

**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. New 5/16/00*  
-----  
**CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION**



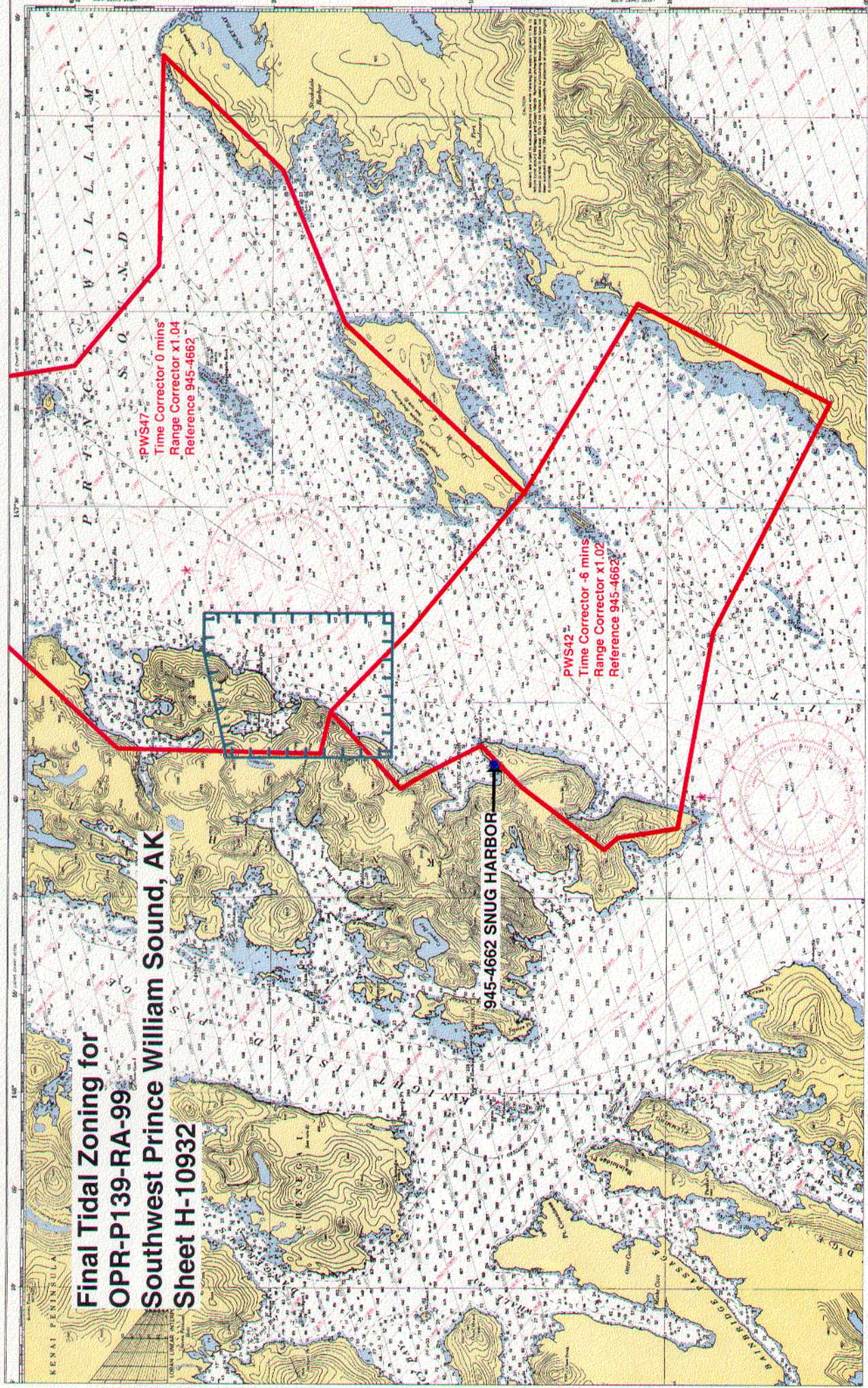
Final tide zone node point locations for OPR-P139-RA-99,  
Sheet H-10932.

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

	Tide Station Order	AVG Time Correction	Range Correction
Zone PWS42			
-147.703642 60.244653	945-4662	-6	1.02
-147.738627 60.227865			
-147.792175 60.19276			
-147.781996 60.187238			
-147.773635 60.161998			
-147.606335 60.147238			
-147.411023 60.097978			
-147.325832 60.179367			
-147.487763 60.226861			
-147.604351 60.274729			
-147.674795 60.308452			
-147.740374 60.278784			
-147.726093 60.266771			
-147.703642 60.244653			
Zone PWS47			
-147.385584 60.525438	945-4662	0	1.04
-147.474011 60.505541			
-147.572046 60.469896			
-147.706768 60.397587			
-147.710815 60.312655			
-147.674795 60.308452			
-147.604351 60.274729			
-147.487763 60.226861			
-147.343216 60.302686			
-147.212948 60.329021			
-147.115049 60.379232			
-147.294086 60.380883			
-147.38032 60.416307			
-147.394959 60.462944			
-147.324788 60.528831			

-147.385584 60.525438

**Final Tidal Zoning for  
OPR-P139-RA-99  
Southwest Prince William Sound, AK  
Sheet H-10932**



PWS47  
Time Corrector 0 mins  
Range Corrector x1.04  
Reference 945-4662

PWS42  
Time Corrector -6 mins  
Range Corrector x1.02  
Reference 945-4662

945-4662 SNUG HARBOR

GEOGRAPHIC NAMES

H-10932

Name on Survey	A		B		C		D		E		F		G		H		K	
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON CHART NO.	ON PREVIOUS SURVEY NO.	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST								
ALASKA (title)	X		X															1
* BAY OF ISLES	X		X															2
KNIGHT ISLAND	X		X															3
MARSHA BAY	X		X															4
PRINCE WILLIAM SOUND	X		X															5
RUA COVE	X		X															6
* SHORT ARM	X		X															7
* SOUTH ARM	X		X															8
YELLOW CLIFFS	X		X															9
																		10
																		11
																		12
																		13
																		14
																		15
																		16
																		17
																		18
																		19
																		20
																		21
* Falls outside of survey area, not shown on SS.																		22
																		23
																		24
																		25

*Dennis J. Masling*  
MAY 4 2000

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER	
HYDROGRAPHIC SURVEY STATISTICS				H-10932	
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		NA
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		NA
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List): DM-100297					
PHOTOBATHYMETRIC MAPS (List): NA					
NOTES TO THE HYDROGRAPHER (List): NA					
SPECIAL REPORTS (List): NA					
NAUTICAL CHARTS (List): Chart 16701 17th Ed, 7/25/98, Chart 16705 18th Ed., 3/27/99					
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS					
VERIFICATION OF SOUNDINGS					
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION-VERIFICATION					
COMPILED OF SMOOTH SHEET			128		128
COMPARISON WITH PRIOR SURVEYS AND CHARTS				5	5
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				40	40
GEOGRAPHIC NAMES					
OTHER (Chart Compilation)				44	44
*USE OTHER SIDE OF FORM FOR REMARKS		TOTALS	128	89	217
Pre-processing Examination by R. Davies			Beginning Date 2/8/00	Ending Date 2/8/00	
Verification of Field Data by R. Davies, D. Doles, E. Domingo, R. Mayor, B. Mihailov			Time (Hours) 128	Ending Date 1/5/01	
Verification Check by B. Olmstead			Time (Hours) 32	Ending Date 5/2/2001	
Evaluation and Analysis by B. Mihailov			Time (Hours) 44	Ending Date 1/1/01	
Inspection by B. Olmstead			Time (Hours) 5	Ending Date 5/10/2001	

**EVALUATION REPORT  
H-10932**

**A. PROJECT**

Project information is adequately discussed in the hydrographer's report.

**B. AREA SURVEYED**

The survey area is adequately discussed in the hydrographer's report

Page-size plots of the charted area depicting the specific limits of supersession accompanies this report as Attachments 1 and 2.

The bottom consists mainly of mud, shells and pebbles. Depths generally range from one fathom along the shoreline and in areas of shoal developments to 117 fathoms along the eastern limits of the survey area.

**C. SURVEY VESSELS**

Survey vessels are adequately discussed in the hydrographer's report.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

The acquisition and processing of data in the field has been adequately discussed in the hydrographer's report.

Office processing of survey data was conducted using the same Computer Aided Resource Information System (CARIS), and Hydrographic Processing System (HPS) used by the hydrographer. The smooth sheet was compiled with MicroStation 95.

Digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 35 and No. 75.

The data is plotted using a Universal Transverse Mercator (UTM) projection and are depicted on a single sheet.

**E. SONAR EQUIPMENT**

Side scan sonar was not utilized during this survey.

**F. SOUNDING EQUIPMENT**

Sounding equipment has been adequately discussed in the hydrographer's report.

**G. CORRECTIONS TO SOUNDINGS**

Soundings have been reduced to Mean Lower Low Water (MLLW), with approved tide correctors obtained from the Center For Operational Oceanographic Products and Services. The approved tide correctors are zoned from Snug Harbor, Alaska, gage 945-4662

Other sounding reducers include corrections for static draft, dynamic draft, sound velocity, heave, roll and pitch. These reducers have been reviewed and are consistent with NOS specification.

## H. CONTROL STATIONS

Control stations have been adequately discussed in the hydrographer's report.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -2.1973 seconds (-67.984 meters)  
Longitude: 7.141 seconds (109.562 meters)

## I. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control is adequately discussed in the hydrographer's report.

Differential GPS (DGPS) was used to control this survey. The maximum horizontal dilution of precision (HDOP) limits of 3.75 for this survey has not been exceeded and the quality of data obtained is good. The reference site confirmation test and daily DGPS performance checks conducted in the field are adequate.

NAD 83 is used as the horizontal datum for plotting and position computations.

Additional information concerning specific control system type, calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and correction to position data.

## J. SHORELINE

Shoreline map DM-10297, scale 1:20,000, was compiled on NAD 83 and applies to this survey. Shoreline drawn on the smooth was used for shoreline during this survey. The digitized shoreline file and the survey file were merged during Microstation processing. There were no mean high water revisions delineated during this survey.

The shoreline maps and the results of the fieldwork as portrayed on the smooth sheet should supersede the presently charted shoreline.

## K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

## L. JUNCTIONS

Survey H-10932 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10841	1998	1:10,000	Northeast
H-10925	1999	1:40,000	East
H-10933	1999	1:10,000	South

The junctions with survey H-10841 has not formally been completed since this survey has been processed and forwarded for charting. However, a comparison with the present survey reveals good agreement. A few depths and features have been transferred to the present survey in order to better delineate the bottom configuration. "Adjoins" notes has been added to the smooth sheet to reflect this situation.

The junction with surveys H-10925 and H-10933 is complete. A few soundings from survey H-10933 have been added to the smoothsheet to better portray the bottom configuration. There is good agreement between sounding and depth curves. A "Joins" note has been shown on the survey.



## M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-2984	1908	1:20,000
H-3026	1909	1:20,000

The legibility of the digital image files for prior surveys H-3026 and H-2984 is good and they were adequately registered to the present survey smooth sheet. The registration was accomplished by matching known geographic points between the present and the prior survey smooth sheet. Sounding comparison with these prior surveys generally reveals agreement within one to two fathoms and reflects a consistent shoal bias. The greatest differences (3-5 fathoms) generally occur within areas of steep slopes. These larger differences are likely attributed to visual positioning and leadline measuring techniques used during the early 1900's. A more thorough coverage of the area utilizing the shallow water multibeam (SWMB) system has revealed several significant changes that have been previously discussed in the hydrographer's report.

In accordance with Hydrographic Survey Guideline No. 39, the effect of the 1964 Prince William Sound earthquake were considered in the comparison of this survey. Prince William Sound experienced a bottom uplift of 4-32 feet during the 1964 earthquake. However, due to the depths of water and the differences in data acquisition methods, no reasonable adjustment value for prior soundings could be determined.

Survey H-10932 is adequate to supersede the prior surveys within the area of common coverage.

## N. ITEM INVESTIGATIONS

AWOIS Item 52440 was investigated during this survey. The investigation of this item was adequately discussed in the hydrographer's report and the evaluator concurs that the existence of the wreck within the AWOIS search area has been disproved. The evaluator recommends that the wreck PA, be removed from the chart and a nearby 6.9 fathom sounding be charted at latitude 60/19/23.80N, longitude 147/40/16.50W.

## O. COMPARISON WITH CHART

Survey H-10932 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16701	17 <sup>th</sup>	July 25, 1998	1:81,436	NAD 83
16705	18 <sup>th</sup>	March 27, 1999	1:80,000	NAD 83

### a. Hydrography

Charted hydrography originates with the previously mentioned prior surveys and requires no further discussion.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as ledges and reefs. The recommended charting disposition of specific ledges or reefs is their depiction as isolated rocks. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features.

Survey H-10932 is adequate to supersede charted hydrography within the common area.

### b. Dangers to navigation

Twelve (12) dangers to navigation (DTON) were discovered during this survey and transmitted to the USCG, NIMA, N/CS261 and N/CS3 on October 9, 1999. One additional danger was found during office processing and transmitted to the USCG, NIMA, N/CS261 and N/CS3 on February 8, 2000. A copy of both reports is attached.

## P. ADEQUACY OF SURVEY

Except as mentioned in section N above, hydrography is adequate to:

- delineate the bottom configuration, determine least depths, and draw the required depth curves;
- reveal there are no significant discrepancies or anomalies requiring further investigation; and
- show the survey was properly controlled and soundings are correctly plotted.

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, the Field Procedures Manual, April 1994 Edition, and the NOS Hydrographic Surveys Specifications and Deliverables dated April 23, 1999.

**Q. AIDS TO NAVIGATION**

There are no aids to navigation located within the survey limits.

There were no features of landmark value found within the area of this survey.

**R. STATISTICS**

Statistics are adequately itemized in the hydrographer's report.

**S. MISCELLANEOUS**

Miscellaneous information is adequately discussed in the hydrographer's report.

**T. RECOMMENDATIONS**

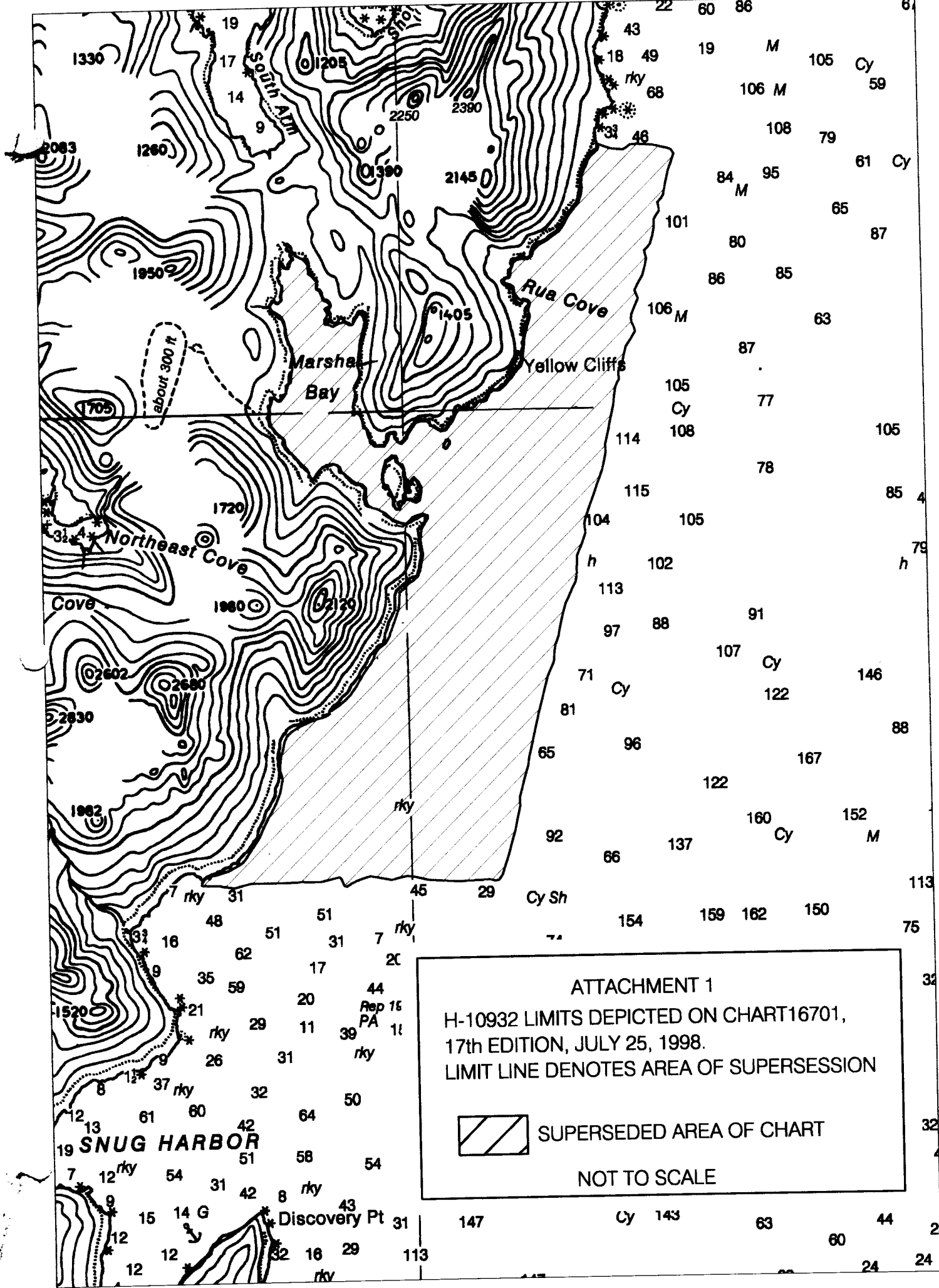
Survey H-10932 is a good hydrographic survey. No additional work is recommended.


**U. REFERRAL TO REPORTS**

Referral to reports is adequately discussed in the hydrographer's report.



Bob Mihailov  
Cartographer



ATTACHMENT 1  
 H-10932 LIMITS DEPICTED ON CHART 16701,  
 17th EDITION, JULY 25, 1998.  
 LIMIT LINE DENOTES AREA OF SUPERSESSON  
 SUPERSEDED AREA OF CHART  
 NOT TO SCALE



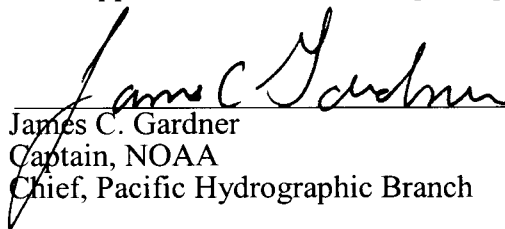
APPROVAL SHEET  
H-10932

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

  
Date: 5/10/2001  
Dennis Hill  
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 Evaluation Report.

  
Date: 5-21-01  
James C. Gardner  
Captain, NOAA  
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

  
Date: 8/9/2001  
Samuel P. De Bow  
Captain, NOAA  
Chief, Hydrographic Surveys Division

