H10928

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-10-20-99

Registry No. H-10928

LOCALITY

State Alaska

General Locality Southwest Prince William Sound

Sublocality West of Green Island

1999

CHIEF OF PARTY
Commander Daniel R. Herlihy, NOAA

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10928

HYDROGRAPHIC TITLE SHEET

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-10-20-99

State: Alaska

General locality: Southwest Prince William Sound

Locality: West of Green Island

Scale: 1:10,000 Date of survey: 8/27/99 - 10/20/99

Instructions dated: July 30, 1999 Project No.: OPR-P139-RA-99

Vessel: RA-1(2121),RA-2(2122),RA-3(2123),RA-4(2124),RA-5(2125), RA-6(2126)

Chief of party: Commander Daniel R. Herlihy, NOAA

Surveyed by: RAINIER Personnel

Soundings taken by echo sounder, hand lead, pole: DSF 6000N, RESON 8101MB, KNUDSEN 320M

Graphic record scaled by: RAINIER Personnel

Graphic record checked by: RAINIER Personnel

Evaluation by: L. Deodato Automated plot by: HP 750C

Verification by: R. Davies, D. Doles, E. Domingo, R. Mayor, G. Nelson

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths

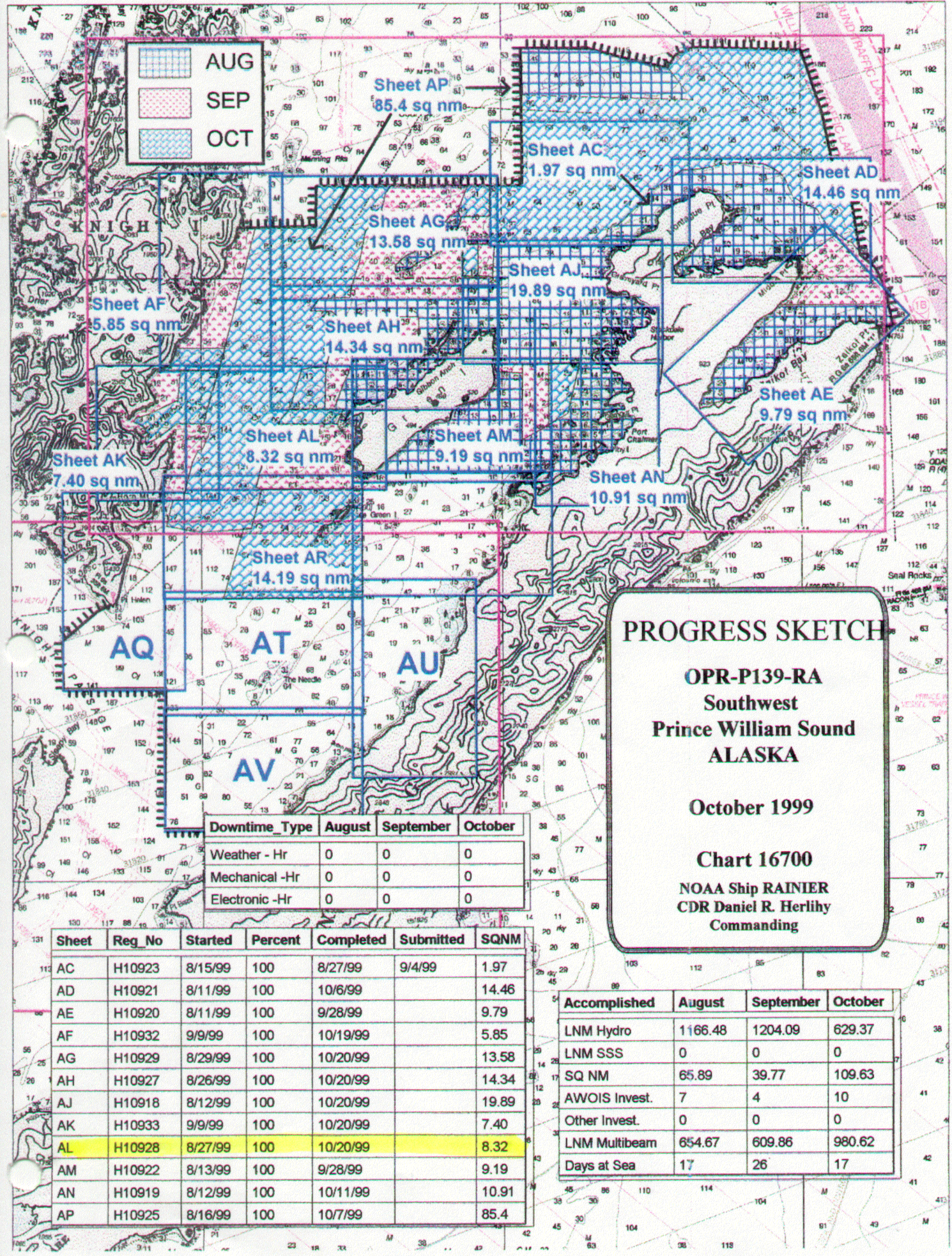
REMARKS: All times are UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

All depths listed in this report are referenced to mean lower low water unless otherwise noted.

AWOIS / SURF 4/16/01 MCR

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

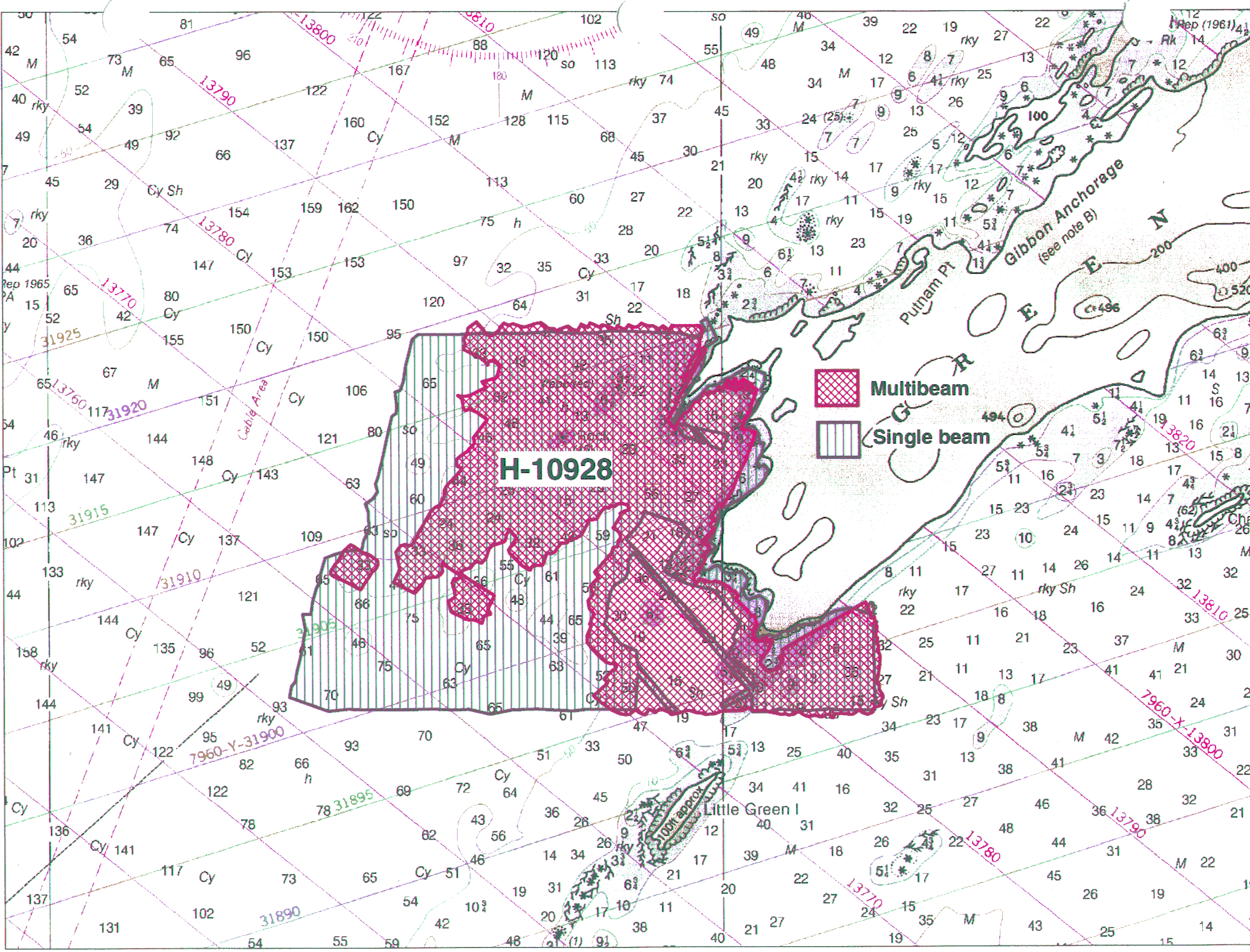
U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215



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


H-10928
Multibeam
Single beam
Gibbon Anchorage
(see note B)
Putnam Pt
GREEN
Little Green I
100ft approx
Cable Area
7960-X-13800
7960-Y-31900

Descriptive Report to Accompany Hydrographic Survey H10928

Field Number RA-10-20-99
Scale 1:10,000
August-October 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 H10928 corresponds to sheet AL 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.

B. AREA SURVEYED ✓ See Eval Rpt., section B

The survey area is located west of Green Island in Southwest Prince William Sound, Alaska, and covers approximately 8.3 square nautical miles. Survey limits are depicted in blue in Figure 1. The survey's northern limit is latitude 60°15'42"N and the southern limit is latitude 60°13'01"N. The survey's western limit is longitude 147°36'45"W and the eastern limit is the 147°27'44"N.

Data acquisition was conducted from August 27 to October 20, 1999 (DN 239 to 293).

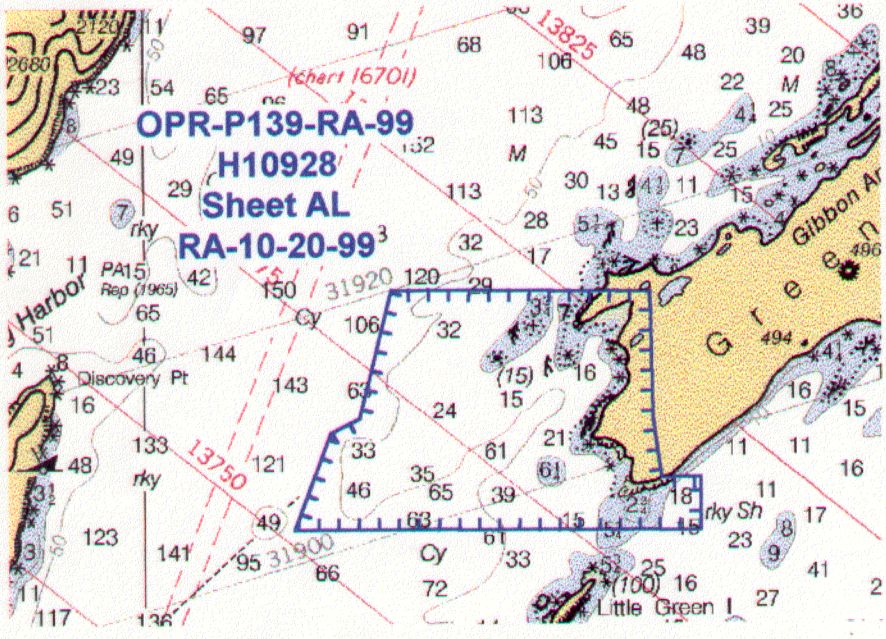


Figure 1. Survey Limits in blue for H10928.

C. SURVEY VESSELS ✓

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

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 were checked for speed jumps exceeding 3 knots as an indication of potential position fliers. For this survey, all soundings beyond a maximum angle of 60° 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 two densities; one at 5m x 5m, the other at 1.5mm x 1.5mm 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 3-mm 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 H10928 is defined as sheet 09 in HPS. The CARIS workfile names are defined as "h10928_5m" for the workfile used for quality assurance and "h10928_15m" for the workfile exported to HPS. The project name is identified as "P139_SheetAL" 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. 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.

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. This decision 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, 2123, 2124, 2125, 2126)

The vertical beam echo sounders (VBES) utilized for this survey were the Raytheon DSF-6000N (VN 2122, 2124, 2125) and Knudsen 320M (VN2123, 2126), which are dual frequency (100 kHz, 24 kHz), digital recording singlebeam 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 was not used for final sounding plot compilation, and is not included with the digital survey data.

2. Launch Shallow-Water Multibeam (VN 2121, 2123, 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 tide data for station Cordova, AK (945-4050) obtained from the Center for Operational Oceanographic Products and Services (CO-OPS) web site. This data were used in creating HPS tide table #1 and was also used in CARIS.

* Filed with the hydrographic data.

Listings of HPS tide tables used for H10928 and tidal correctors as provided in the Project Instructions for are contained in the Survey Information Summary included with this report.

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

Refer to the Field Tide Notes and supporting data 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 SWMB acquisition, and one cast every week for VBES 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 219, 2543, and 2477). 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 to SWMB soundings in CARIS and to VBES soundings in HPS during post processing.

Settlement and Squat and Static Draft Correctors

The following table shows when the vessel offset 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
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

* Filed with the hydrographic data.

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 2123 and 2126, 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) and were 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 Project Related Data for OPR-P139-RA-99, and the VCF's themselves are included with the digital HDCS data.

H. HYDROGRAPHIC POSITION CONTROL ✓

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 Project Related Data for OPR-P139-RA-99. ✱

I. SHORELINE ✓ See Eval Rpt., section J

Method of Shoreline Verification

N/NGS3 supplied photogrammetric shoreline in MapInfo format for T-12709 and T-12712 for use as source shoreline. The T-sheet 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

✱ Filed with the hydrographic data.

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 T-sheet 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. T-sheet rocks were often identified as high points or extents of new ledges.

T-sheet rocks at 60°15'04.67"N, 147°30'35.35"W were not found after a 5-minute visual search. A depth of 14.2 meters was found at this position (Pos. #40099). Not shown on smooth sheet.

T-sheet rocks at 60°14'58.80"N, 147°30'40.42"W were not found after a 5-minute visual search. A depth of 32.6 meters was found at this position (Pos. #40100). Not shown on smooth sheet,

Recommendations

The Hydrographer recommends that the shoreline as depicted on the DP and BS plot and final sounding plot supersede and complement shoreline information compiled on the T-sheets as noted. These revisions are recorded in the MapInfo digital files named "H10928_Shoreline" and "H10928_Shoreline_Update".
Do not concur. There are no MHWL revisions.

Charted Features

Charted rocks were often identified as T-sheet rocks or high points or extensions of T-sheet ledges.

The charted submerged rock at 60°15'20.33"N, 147°31'31.98"W is actually two rocks separated by 220m (Pos. #40044, 40046). This feature also corresponds to AWOIS item 52431 and is discussed further in Section M.

The charted submerged rock at 60°14'58.63"N, 147°32'22.17"W is actually a reef extending northeast-southwest 138m (Pos. #40040, 40042). This is a charted islet with an elevation of 15ft, See Eval Rpt., section M.

The charted rock at 60°14'02.63"N, 147°30'19.99"W was not found after a 5-minute visual search. The charted rock may be the high point of a ledge observed 50m east of this position. A depth of 7.9 meters was found at this position (Pos. #50001). Delete rock from chart. Chart the area based on the present survey.

The charted rock at 60°15'03.28"N, 147°29'48.45"W was not found after a 5-minute visual search. The charted rock is likely the high point of a ledge observed 89m east of this position. A depth of 16.4 meters was found at this position (Pos. #50003). Delete rock from chart, Chart the area based on the present survey.

The charted rock at 60°15'07.78"N, 147°29'44.25"W was not found after a 5-minute visual search. A depth of 16.4 meters was found at this position (Pos. #50004). Delete rock from chart.

The charted rock at 60°15'00.19"N, 147°30'42.61"W was not found after a 5-minute visual search. A depth of 14.5 meters was found at this position (Pos. #50006). Delete rock from chart. Chart the area based on the present survey.

Recommendations

The charted shoreline should be revised using the T-sheet shoreline and fieldwork notes as recorded in the MapInfo digital files named "H10928_Shoreline" and "H10928_Shoreline_Update". concur

J. CROSSLINES ✓

VBES crosslines totaled 16.00 nautical miles, comprising 12.2% of mainscheme hydrography. Crosslines agreed within 1 meter of mainscheme hydrography in regions of relatively flat bathymetry.

SWMB crosslines totaled 5.99 nautical miles, comprising 4.8% of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 86.61%, with a depth tolerance of 0.023. See Appendix E for the detailed report.

K. JUNCTIONS ✓ See Eval Rpt., section L

The following contemporary surveys junction with H10928 and are shown in Figure 2 below:

Registry #	Scale	Date	Junction side
H10922	1:10,000	1999	East
H10925	1:40,000	1999	West
H10927	1:10,000	1999	North
H10940	1:10,000	1999	South

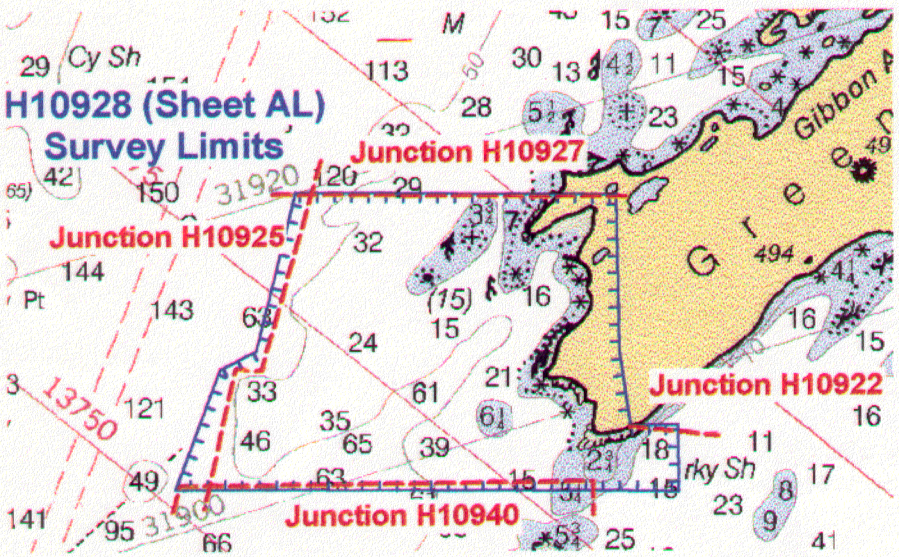


Figure 2. Contemporary survey junctions with H10928 outlined in blue.

Soundings from junction surveys H10922, H10925, H10927, and H10940 agreed well with H10928, generally matching within 1 meter.

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

L. COMPARISON WITH PRIOR SURVEYS ✓ See Eval Rpt, section M

The following prior surveys share common area with survey H10928 and are shown in Figure 3 below:

Registry #	Scale	Date	Area covered
H3353	1:20,000	1909	Eastern half
H5427	1:20,000	1933	Southeastern corner
H5431	1:20,000	1933	Western half
H9512	1:20,000	1975	South end
H9513	1:20,000	1975	Western half

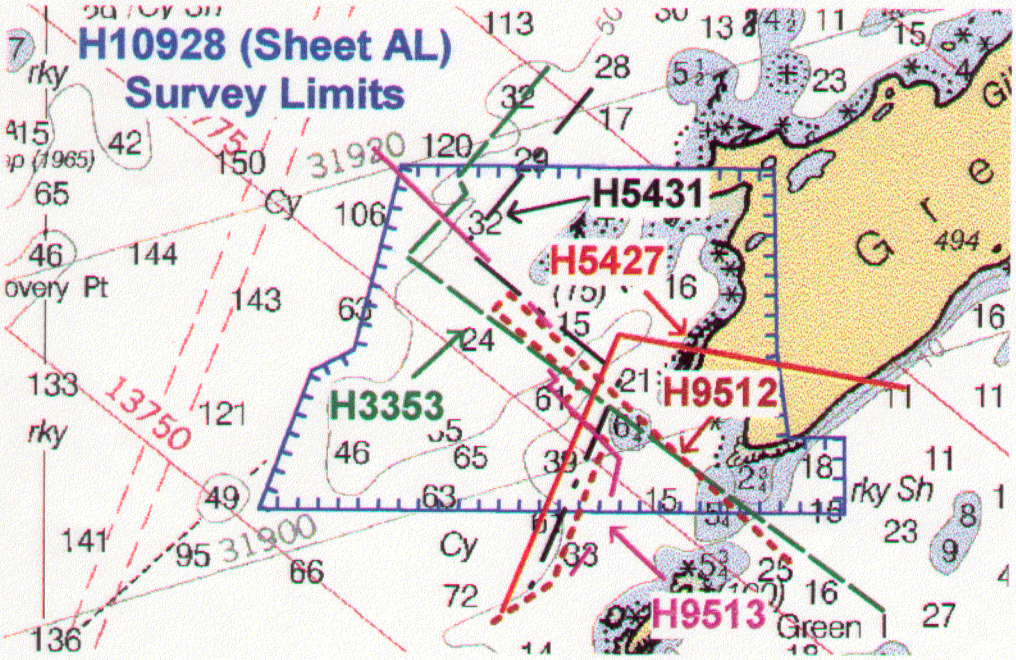


Figure 3. Prior survey junctions with H10928 outlined in blue.

Prior survey H3353 covers the eastern half of survey H10928. The prior survey agreed poorly with the present survey. Soundings from H10928 were generally 5-20 fathoms shoaler than H3353. The shoreline depicted on H3353 agreed well with the current survey.

Prior survey H5427 covers the southeastern corner of survey H10928. The prior survey agreed well with H10928. Soundings from the current survey were generally 1-3 fathoms shoaler than H5427. Shoreline depicted on H5427 agreed fairly well with the current survey.

Prior survey H5431 covers the western half of survey H10928. The prior survey agreed fairly well with the present survey. Soundings from H10928 were generally 3-6 fathoms shoaler than H5431. Shoreline depicted on H5431 agreed well with the current survey.

Prior survey H9512 covers the southern portion of survey H10928. Current survey soundings were generally 2-5 fathoms shoaler than H9512.

Prior survey H9513 covers the western half of survey H10928. Prior survey H9513 agreed well with the survey H10928, with current soundings generally 1-3 fathoms shoaler than prior soundings. Exceptions to these findings include an observed 28.4-fathom depth at 60°14'24.03"N, 147°33'29.29"W (Pos. #42369) at a prior survey sounding of 45 fathoms, and an observed 50.9-fathom depth at 60°13'56.45"N, 147°32'48.63"W (Pos. #41938) observed at a prior survey sounding of 63 fathoms. Concur.

Differences between the current and prior surveys can most likely be attributed to increased accuracy from modern positioning and sounding equipment, as well as possible uplift due to the 1964 earthquake. Final comparisons will be made at the Pacific Hydrographic Branch after the application of smooth tides. concur

M. ITEM INVESTIGATIONS

There was one Automated Wreck and Obstruction Information System (AWOIS) items investigated within the survey area. The position and search radius with respect to the survey limits of H10928 are shown in Figure 4 below.

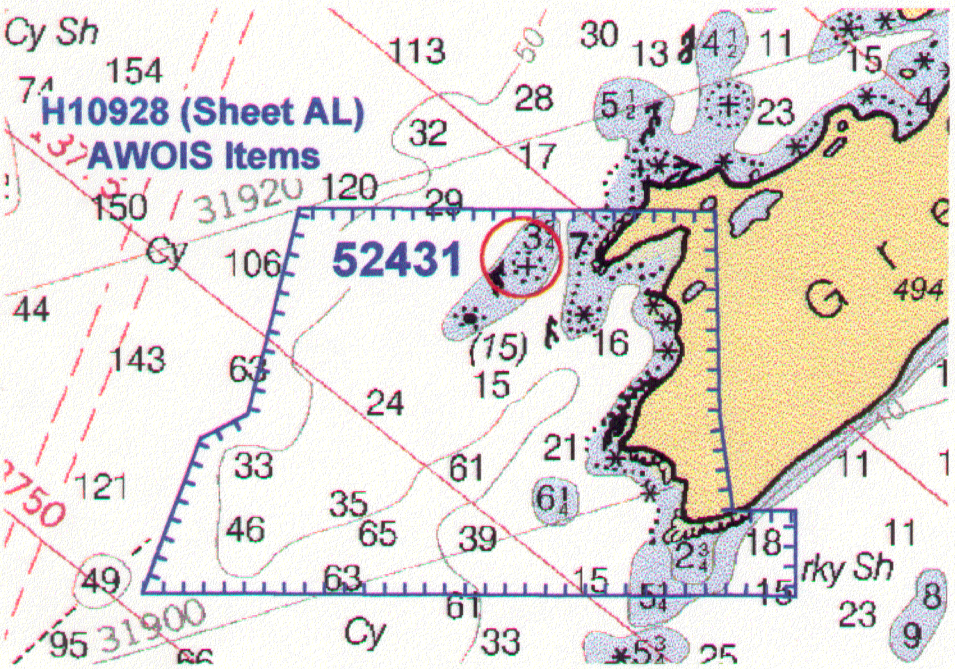


Figure 4. AWOIS Item within H10928 limits.

AWOIS 52431

1. Area of Investigation:

AWOIS Number:	52431
State and Locality:	Prince William Sound, AK
Reported Position:	Latitude: 60/15/20.00 N
	Longitude: 147/31/31.50 W
	Datum: NAD83
Type of Feature:	Obstruction
Reported Depth:	N/A

2. Description and Source of Item:

CL604/28 – Recon survey by H.H. Heck, USC&GS; Rock located and positioned by visual fixes on prominent natural features. Charted in pos. lat. 60-15-20N, long. 147-31-31.5W (NAD83).

3. Survey Requirements:

Visual search, shallow-water multibeam, echo sounder. 500-meter search radius. Determine extent of rocky shoal for least depth. Search radius is for general guidance.

4. Method of Investigation:

Vessel 2124 investigated the area on DN 239 and 273 using a vertical beam echo sounder. Vessel 2122 investigated the area on DN 286 using a vertical beam echo sounder. Vessel 2121 investigated the area using shallow-water multibeam on DN 282 and 284. The area was covered with 100% shallow-water multibeam.

5. Results of Investigation:

The current survey found five significant items within the search radius. A rock was discovered awash at MLLW at 60°15'08.85"N, 147°31'54.28"W (Pos. #40043). Another rock was visible 1.2m above MLLW at 60°15'16.70"N, 147°31'36.16"W (Pos. #40044). A third rock was discovered awash at MLLW at 60°15'22.17"N, 147°31'26.09"W (Pos. #40046). A significant amount of shoaling was found in the vicinity of the search radius. The northeast-southwest extent of this shoal area spans 800 meters with depths ranging from 0.9 to 5.2 fathoms. The shoal has a northeastern limit of 60°15'25.48"N, 147°31'19.66"W and southwestern limit of 60°15'07.05"N, 147°31'58.57"W. A second observed shoal area was found to have a least depth of 2.4 fathoms at 60°15'31.39"N, 147°31'09.91"W (Pos. #75946).

6. Comparison with Prior Surveys:

Prior survey H3353 shows a least depth of 23 feet (3.8 fathoms) within the vicinity of the search radius.

7. Comparison with the Chart and Charting Recommendation:

AWOIS 52431 was compared with chart 16701 (18th Ed.; July 25, 1998, scale 1:81,436). The chart shows a dangerous submerged rock, with a "reported" annotation, adjacent 3¾-fathom and 6½-fathoms soundings within the search radius. The chart also depicts a 13-fathom sounding near the rock discovered at 60°15'08.85"N, 147°31'54.28"W, and an 11-fathom sounding near the depth of 2.4

fathoms discovered at 60°15'31.39"N, 147°31'09.91"W. The shoaling extent observed during the current survey was submitted as a Danger to Navigation on December 21, 1999 (Pos. #40043, 40044, 40046, 75946). ~~A copy of the Danger to Navigation Report is included in Appendix A.~~ Copy attached.

The Hydrographer recommends superseding charted soundings with soundings and features from this survey. Figure 5 below depicts the extent of shoaling observed during the current survey.

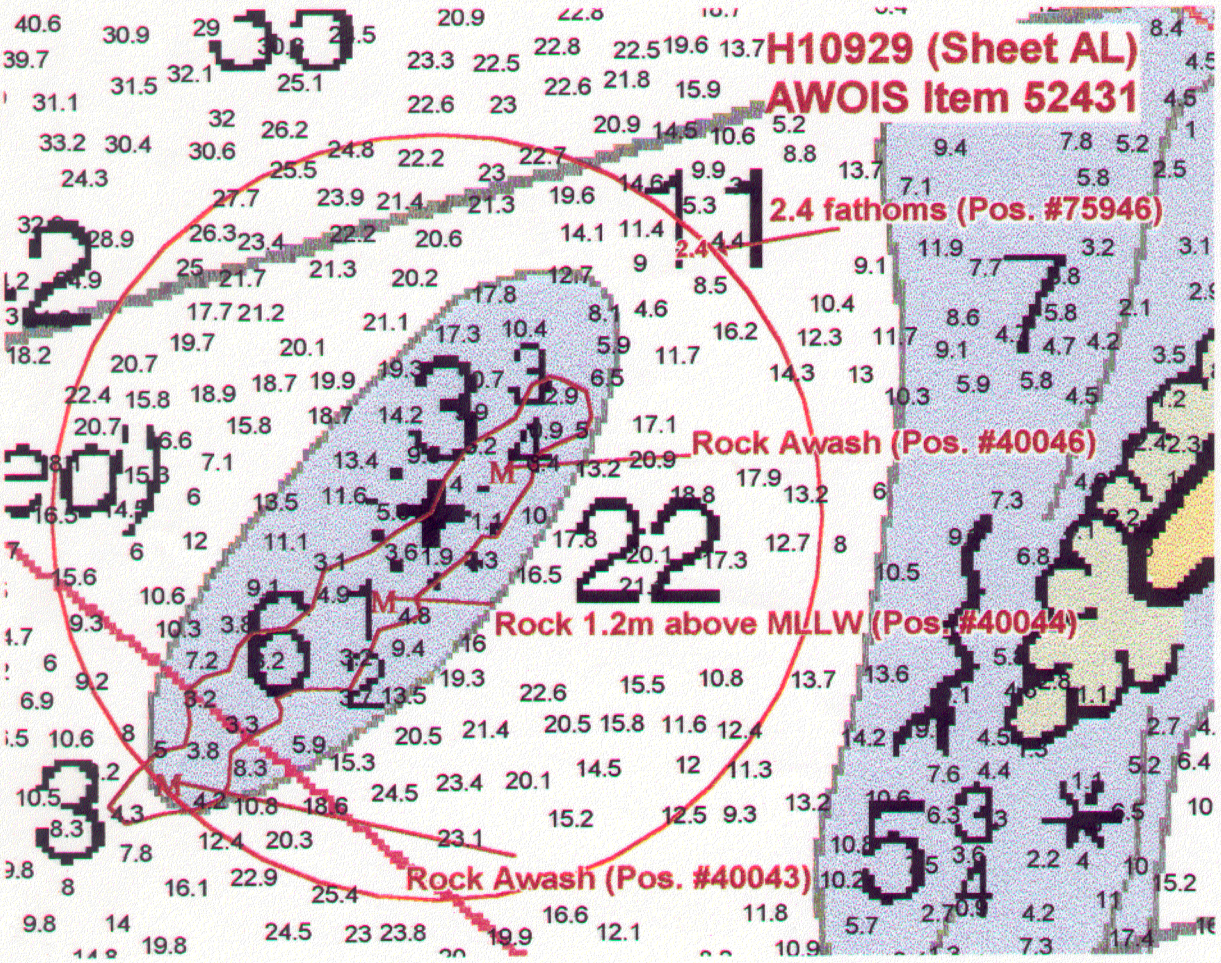


Figure 5. AWOIS Item 52431.

N. COMPARISON WITH THE CHART ✓ See Eval Rpt., section O

Survey H10928 was compared with Chart 16701 (17th Ed.; July 25, 1998, 1:81,436).

Survey depths within the southern half of the current survey were generally 1-5 fathoms shoaler than depths from Chart 16701. Depths were generally 3-10 fathoms shoaler than Chart 16701 in the northern half of the survey area. Notable differences are addressed below. The majority of differences were addressed through 100% SWMB coverage. The differences are likely due to the extreme uplift of this region during the 1964 earthquake and increased coverage from shallow-water multibeam technology.

A depth of 15.1 fathoms (Pos. #70244) at 60°14'15.04"N, 147°31'03.59"W was found in the vicinity of a charted 21-fathom sounding.

A depth of 16.0 fathoms (Pos. #77105) at 60°14'40.42"N, 147°31'41.56"W was found in the vicinity of a charted 29-fathom sounding.

A depth of 17.7 fathoms (Pos. #73109) at 60°15'13.27"N, 147°33'19.42"W was found in the vicinity of a charted 32-fathom sounding.

A depth of 18.2 fathoms (Pos. #80698) at 60°15'26.91"N, 147°32'06.10"W was found in the vicinity of a charted 42-fathom sounding.

A depth of 24.6 fathoms (Pos. #77483) at 60°15'40.42"N, 147°31'38.64"W was found in the vicinity of a charted 35-fathom sounding.

A depth of 31.7 fathoms (Pos. #73240) at 60°15'02.28"N, 147°33'22.62"W was found in the vicinity of a charted 46-fathom sounding.

A depth of 32.6 fathoms (Pos. #73838) at 60°14'30.78"N, 147°30'52.10"W was found in the vicinity of a charted 56-fathom sounding.

A depth of 25.5 fathoms (Pos. #81348) at 60°14'03.36"N, 147°35'25.83"W was found in the vicinity of a charted 33-fathom sounding.

A depth of 53.6 fathoms (Pos. #42273) at 60°14'31.02"N, 147°34'27.73"W was found in the vicinity of a charted 60-fathom sounding.

A depth of 54.0 fathoms (Pos. #40507) at 60°13'59.28"N, 147°32'31.11"W was found in the vicinity of a charted 61-fathom sounding.

A depth of 55.7 fathoms (Pos. #41841) at 60°14'15.11"N, 147°35'12.55"W was found in the vicinity of a charted 63-fathom sounding.

A depth of 44.6 fathoms (Pos. #21163) at 60°13'31.70"N, 147°32'44.03"W was found in the vicinity of a charted 39-fathom sounding.

Dangers to Navigation ✓

(18)

Eighteen Dangers to Navigation were found and reported to the Seventeenth Coast Guard District.

A rock which uncovers 1.1 fathoms (Pos. #40178) was discovered at 60°13'54.10"N, 147°30'25.13"W. Chart 16701 shows the 10-fathom curve at this position. * (7)

A rock awash (Pos. #40139) was discovered at 60°14'07.64"N, 147°30'36.09"W. Chart 16701 shows the 10-fathom curve at this position. *(2)

A rock which uncovers 0.4 fathoms (Pos. #40227) was discovered at 60°13'28.55"N, 147°29'34.16"W. Chart 16701 shows a depth of 5½ fathoms near this position. *(3)

A new reef which uncovers 0.9 fathoms (Pos. #40269) was discovered at 60°13'16.53"N, 147°29'16.34"W. Chart 16701 shows a depth of 2¾ fathoms at this position. *(6)

A rock which uncovers 0.7 fathoms (Pos. #40044 – AWOIS Item 52431) was discovered at 60°15'16.62"N, 147°31'35.88"W. Chart 16701 shows a submerged rock near this position. *(4)

A new rock awash (Pos. #40043 – AWOIS Item 52431) was discovered at 60°15'08.92"N, 147°31'54.06"W. Chart 16701 shows a 13-fathom sounding near this position. * cov ift

A 1.5-fathom shoal (Pos. #74096) was discovered at 60°15'20.11"N, 147°30'02.23"W. Chart 16701 shows a depth of 8 fathoms near this position.

A 2.4-fathom shoal (Pos. #75946 – AWOIS Item 52431) was discovered at 60°15'31.39"N, 147°31'09.91"W. Chart 16701 shows an 11-fathom sounding at this position.

A 3.7-fathom shoal (Pos. #76383) was discovered at 60°14'56.84"N, 147°30'58.20"W. Chart 16701 shows the 10-fathom curve inshore of this position.

A 3.0-fathom shoal (Pos. #72811) was discovered at 60°13'02.81"N, 147°29'43.27"W. Chart 16701 shows a depth of 5¼ fathoms near this position.

A 4.3-fathom shoal (Pos. #42454) was discovered at 60°14'43.17"N, 147°29'45.30"W. Chart 16701 shows a depth of 6 fathoms near this position.

A 4.8-fathom shoal (Pos. #80989) was discovered at 60°13'54.80"N, 147°30'48.79"W. Chart 16701 shows 26-fathom and 13-fathom soundings near this position.

A 4.9-fathom shoal (Pos. #74360) was discovered at 60°15'02.18"N, 147°30'02.98"W. Chart 16701 shows a depth of 16 fathoms near this position.

A 5.4-fathom shoal (Pos. #70046) was discovered at 60°13'40.05"N, 147°31'06.99"W. Chart 16701 shows a depth of 6¼ fathoms near this position.

A 6.1-fathom shoal (Pos. #75295) was discovered at 60°15'16.34"N, 147°31'02.18"W. Chart 16701 shows a depth of 22 fathoms near this position.

A 6.4-fathom shoal (Pos. #78063) was discovered at 60°15'41.59"N, 147°30'52.98"W. Chart 16701 shows a depth of 12 fathoms near this position.

A 7.7-fathom shoal (Pos. #79753) was discovered at 60°13'07.89"N, 147°28'58.66"W. Chart 16701 shows a depth of 9 fathoms near this position.

A 9.5-fathom shoal (Pos. #79594) was discovered at 60°12'58.60"N, 147°29'18.54"W. Chart 16701 shows a depth of 12 fathoms near this position.

~~A copy of the Danger to Navigation report is included in Appendix A.~~ Copy attached.

O. ADEQUACY OF SURVEY ✓ See Eval Rpt, section P

Survey H10928 is complete and adequate to supersede charted soundings and features in their common areas. concur

P. AIDS TO NAVIGATION ✓

No aids to navigation exist within the survey limits. concur

Q. STATISTICS ✓

Refer to the Survey Information Summary attached to this report.

R. MISCELLANEOUS ✓

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

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

A large amount of kelp and eel grass was found close to shore during this survey. Refer to the DP and BS plot for their extent.

S. RECOMMENDATIONS ✓

None.

T. REFERRAL TO REPORTS ✓

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

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

Respectfully Submitted,

Angie J. Venturato
Ensign, NOAA
Junior Officer

Approved and Forwarded,

Daniel R. Herlihy
Commander, NOAA
Commanding Officer

Survey Information Summary

Project: OPR-P139-RA-99 **Project Name:** Southwest Prince William Sound

Instructions Dated: 30-Jul-99 **Project Change Info:**

Change #	Dated
n/a	n/a

Sheet Letter: AL **Registry Number:** H10928

Sheet Number: RA-10-20-99

Survey Title: West of Green Island

Data Acquisition Dates: **From:** 8-29-99 (241) **To:** 10-20-99 (293)

Vessel Usage Summary

VesNo	MS	Splits	Dev	XL	S/L	DP	BS	SWMB
2121								3
2122	1	2	1			1		
2123	1							3
2124	3			1	2	2		
2125						1	1	
2126	1							1

Sound Velocity Cast Information

HPS Table #	Cast DN	Max Depth	Position	Applicable DN
4	243	183.1	60/19/01 N 147/17/30 W	236-253
12	270	329.3	60/11/00 N 147/41/10 W	268-274
13	277	293.0	60/27/24 N 147/09/36 W	278-285
14	286	369.9	60/17/18 N 147/35/24 W	286-293

Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS16	-00 hr 06 min	0.91
PWS36	-00 hr 06 min	0.93

Tide Gauge Information

Tide Gauge #	Gauge Name	Installed	Removed
945-4511	Port Chalmers	8/10/99	10/20/99
945-4616	Montague Island	8/31/99	10/20/99
945-4662	Snug Harbor	8/11/99	10/20/99
945-4411	Zaikof Point	8/10/99	10/14/99

Statistics Summary

Type	Total	Type	Total	Type	Total		
BS	13	MS	131.03	XL	16.00		
DP	39	SPLIT	28.00	Dev	2.25	Percent XL	12.2%
S/L	3.91	SWMB	124.44			SQNM	8.32

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

March 1, 2000

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

Dear Sir:

During office review of hydrographic survey H-10928, Alaska, Southwest Prince William Sound, West of Green Island, eight shoal depths were found and are considered to be potential dangers to navigation.

It is recommended that the enclosed Report of Dangers 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,

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-10928

Survey Title: State: ALASKA
Locality: SOUTHWEST PRINCE WILLIAM SOUND
Sublocality: WEST OF GREEN ISLAND

Project Number: OPR-P139-RA

Survey Date: AUGUST 27, - OCTOBER 20, 1999

Soundings are reduced to Mean Lower Low Water using predicted tides and are positioned on NAD 83.

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

DANGER TO NAVIGATION	LATITUDE(N)	LONGITUDE(W)
4.7 fathom sounding	60/15/27.67	147/30/42.76
9.4 fathom sounding	60/15/07.89	147/32/14.17
7.1 fathom sounding	60/15/05.56	147/31/10.30
4.7 fathom sounding	60/15/13.17	147/30/15.38
11.0 fathom sounding	60/14/53.42	147/30/13.68
8.5 fathom sounding	60/13/49.02	147/30/28.32
3.9 fathom sounding	60/14/16.41	147/30/24.79
6.2 fathom sounding	60/13/42.12	147/29/53.88

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

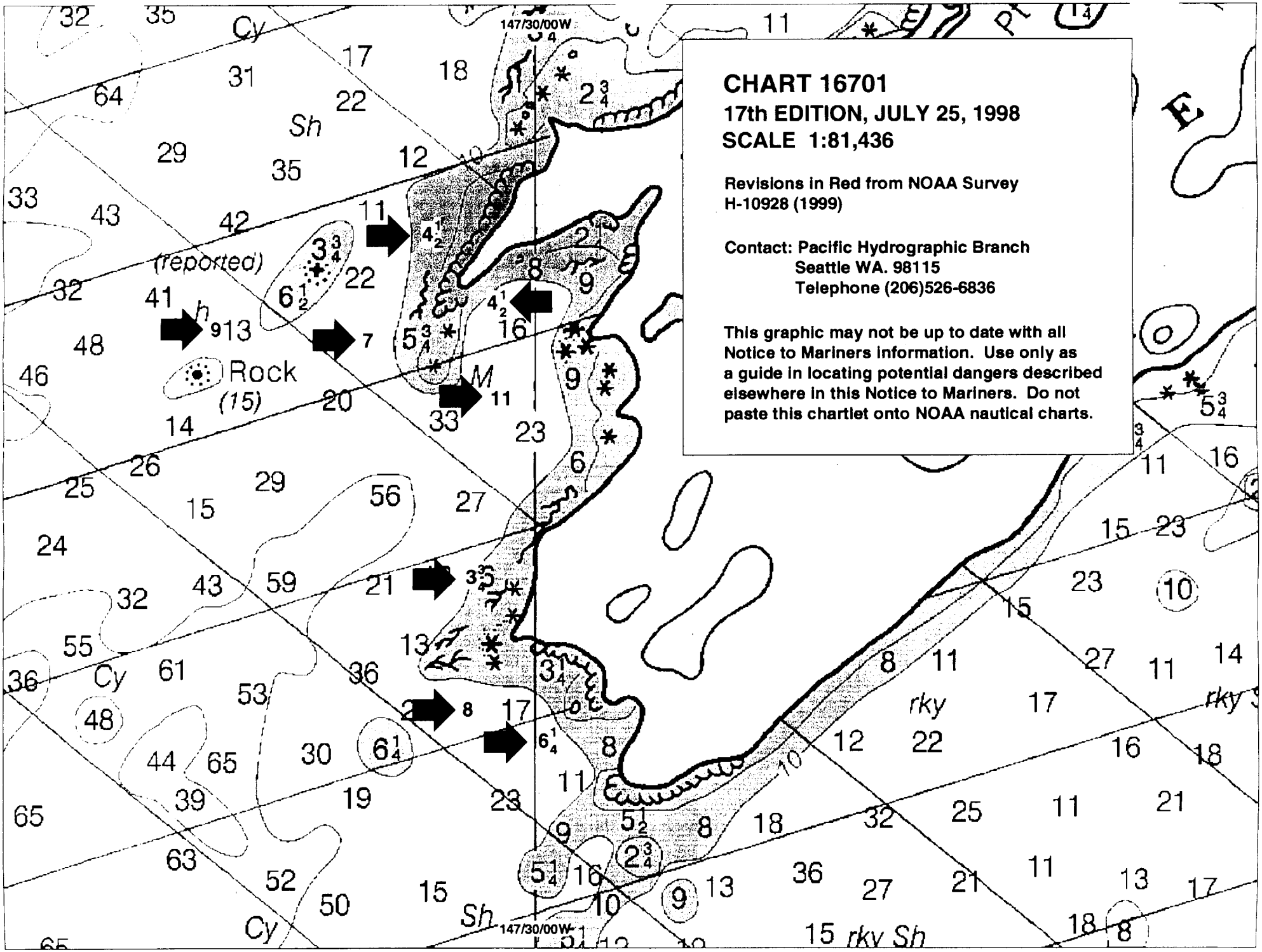


CHART 16701
17th EDITION, JULY 25, 1998
SCALE 1:81,436
Revisions in Red from NOAA Survey H-10928 (1999)
Contact: Pacific Hydrographic Branch
Seattle WA. 98115
Telephone (206)526-6836
This graphic may not be up to date with all Notice to Mariners information. Use only as a guide in locating potential dangers described elsewhere in this Notice to Mariners. Do not paste this chartlet onto NOAA nautical charts.
147/30/00W
Rock
(15)
(reported)
Cy
Sh
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rky Sh

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 20, 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 H10928 in Prince William Sound, Alaska. The dangers are shown graphically on the attached chartlet.

The following dangers to navigation affect the following charts:

Chart	Scale	Edition	Date
16700	1:200,000	26th	September 19, 1998
16701	1:81,436	17th	July 25, 1998

The positions are on the NAD 83 datum and depths have been corrected to Mean Lower Low Water using predicted tides.

Feature	Depth (fm)	Latitude (N)	Longitude (W)	Depth (m)
Rock	Uncovers	60/13/54.24	147/30/24.97	-
Reef	Uncovers	60/13/16.53	147/29/16.34	-
Rock	Uncovers	60/15/16.62	147/31/35.88	-
Rock	Uncovers	60/13/28.55	147/29/34.16	-
Rock	Awash	60/14/07.04	147/30/36.09	-
Rock	Awash	60/15/08.92	147/31/54.06	-
Shoal	1.5	60/15/20.11	147/30/02.23	6.2
Shoal	2.4	60/15/31.39	147/31/09.91	4.4
Shoal	3.7	60/14/56.84	147/30/58.20	6.9
Shoal	4.0	60/13/02.81	147/29/43.27	7.4
Shoal	4.3	60/14/43.17	147/29/45.30	7.9
Shoal	4.8	60/13/54.80	147/30/48.79	8.9
Shoal	4.9	60/15/02.18	147/30/02.98	9.0
Shoal	5.4	60/13/40.05	147/31/06.99	10.0
Shoal	6.1	60/15/16.34	147/31/02.18	11.3
Shoal	6.4	60/15/41.59	147/30/52.98	11.8
Shoal	7.7	60/13/07.89	147/28/58.66	14.2
Shoal	9.5	60/12/58.60	147/29/18.54	17.5

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-25-99. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

Sincerely,

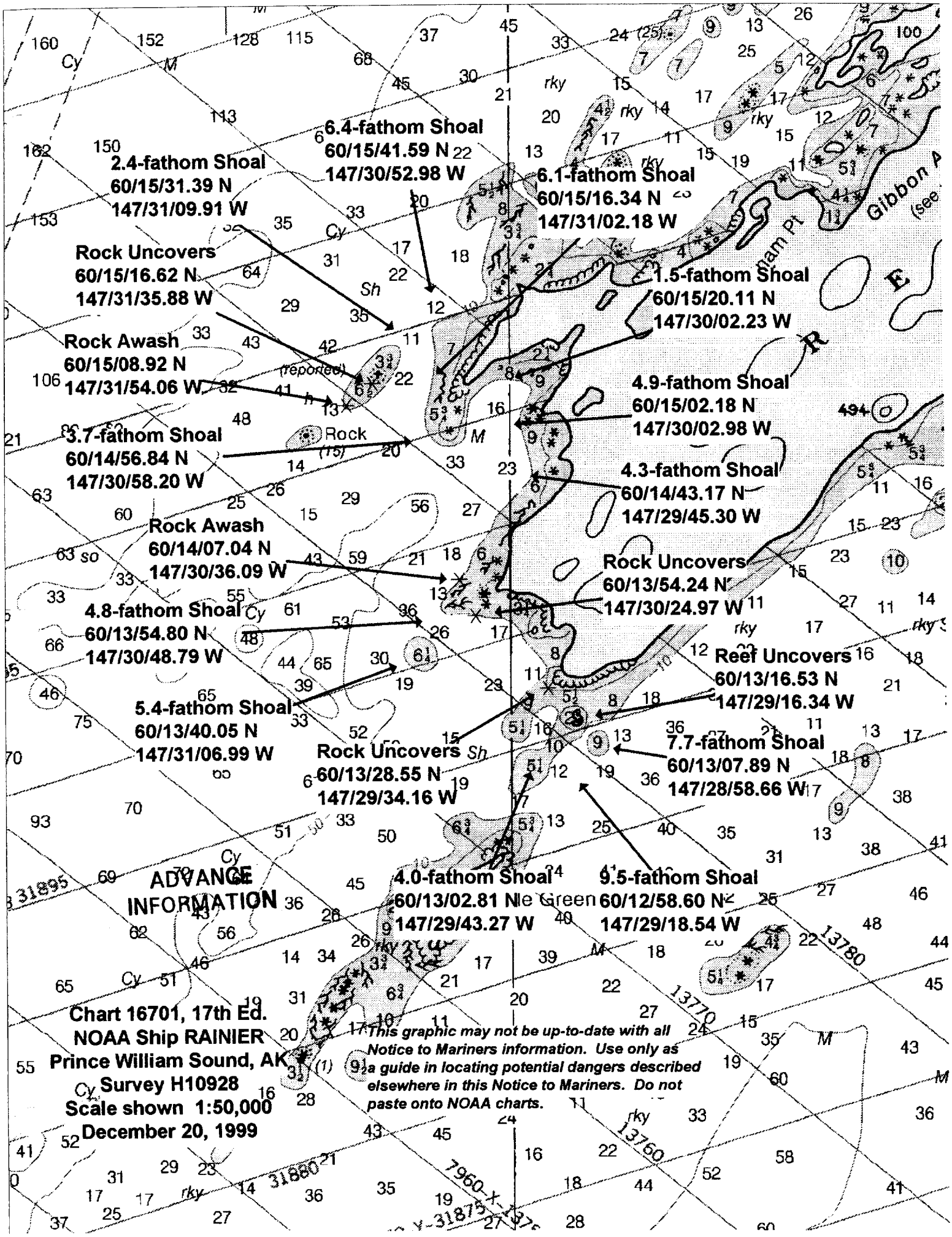
Daniel R. Herlihy

Daniel R. Herlihy
Commander, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34

ADVANCE INFORMATION


6.4-fathom Shoal
60/15/41.59 N
147/30/52.98 W
2.4-fathom Shoal
60/15/31.39 N
147/31/09.91 W
6.1-fathom Shoal
60/15/16.34 N
147/31/02.18 W
Rock Uncovers
60/15/16.62 N
147/31/35.88 W
1.5-fathom Shoal
60/15/20.11 N
147/30/02.23 W
Rock Awash
60/15/08.92 N
147/31/54.06 W
(reported)
4.9-fathom Shoal
60/15/02.18 N
147/30/02.98 W
3.7-fathom Shoal
60/14/56.84 N
147/30/58.20 W
4.3-fathom Shoal
60/14/43.17 N
147/29/45.30 W
Rock Awash
60/14/07.04 N
147/30/36.09 W
Rock Uncovers
60/13/54.24 N
147/30/24.97 W
4.8-fathom Shoal
60/13/54.80 N
147/30/48.79 W
Reef Uncovers
60/13/16.53 N
147/29/16.34 W
5.4-fathom Shoal
60/13/40.05 N
147/31/06.99 W
7.7-fathom Shoal
60/13/07.89 N
147/28/58.66 W
Rock Uncovers
60/13/28.55 N
147/29/34.16 W
4.0-fathom Shoal
60/13/02.81 N
147/29/43.27 W
9.5-fathom Shoal
60/12/58.60 N
147/29/18.54 W
ADVANCE
INFORMATION
Chart 16701, 17th Ed.
NOAA Ship RAINIER
Prince William Sound, AK
Survey H10928
Scale shown 1:50,000
December 20, 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.

APPROVAL SHEET

for

H10928

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

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

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10928

Name on Survey	A ON CHART NO. 16700, 16701	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X		X							1
GREEN ISLAND	X		X							2
PRINCE WILLIAM SOUND	X		X							3
										4
										5
										6
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										25

Dennis J. Romshine
APR 27 2000

NOAA FORM 76-155 SUPERSEDES C&GS 197

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-10928

LOCALITY: Southwest Prince William Sound, AK

TIME PERIOD: August 27 - October 20, 1999

TIDE STATION USED: 945-4511 Port Chalmers
Lat. 60° 14.5'N Lon. 147° 14.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.321 meters

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, PWS44 & 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.

Note 2: Use tide data from the appropriate station with applicable zoning correctors for each zone according to the order in which they are listed in the Tidezone corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available.

Thomas K. Meo 5/16/00

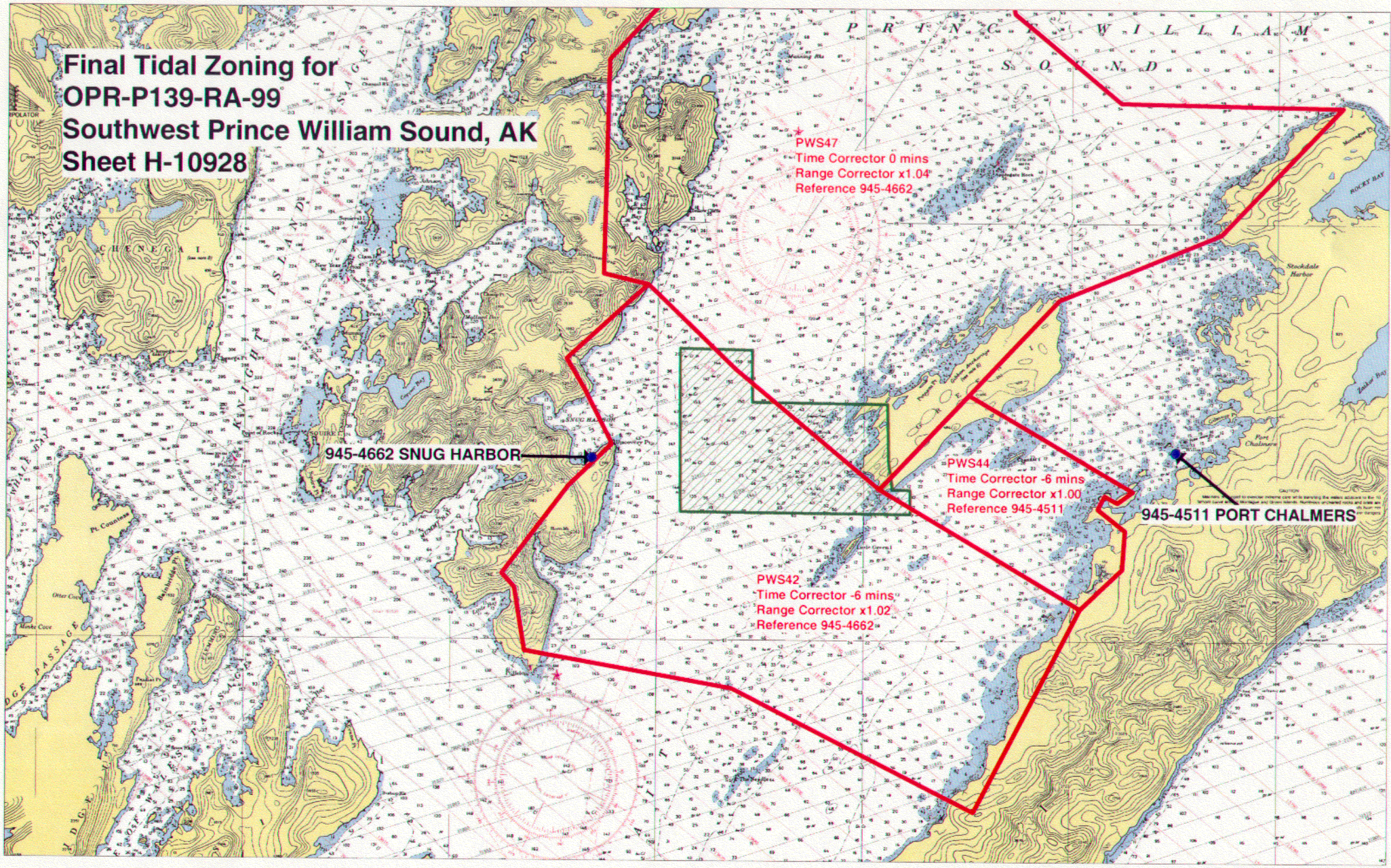
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR-P139-RA-99,
Sheet H-10928.

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 PWS44			
-147.325832 60.179367	945-4511	-6	1.00
-147.291846 60.195367			
-147.289814 60.210781			
-147.311642 60.219369			
-147.306057 60.224673			
-147.295905 60.221895			
-147.283464 60.226381			
-147.41572 60.264551			
-147.487763 60.226861			
-147.325832 60.179367			
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-10928
PWS47
Time Corrector 0 mins
Range Corrector x1.04
Reference 945-4662
945-4662 SNUG HARBOR
PWS44
Time Corrector -6 mins
Range Corrector x1.00
Reference 945-4511
945-4511 PORT CHALMERS
PWS42
Time Corrector -6 mins
Range Corrector x1.02
Reference 945-4662

NOAA FORM 77-27(H) (9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10928

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET		SMOOTH OVERLAYS: POS., ARC, EXCESS	NA
DESCRIPTIVE REPORT		FIELD SHEETS AND OTHER OVERLAYS	NA

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	1					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List): T-12709 and T-12712

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 16701 17th Edition, July 25, 1998

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			

	TIME-HOURS		
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VERIFICATION OF POSITIONS			
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Pre-processing Examination by R. Davies	*Beginning Date* 1/6/00	*Ending Date* 1/6/00
Verification of Field Data by R.Davies,D.Doles,E.Domingo,R.Mayor,G.Nelson	*Time (Hours)* 95	*Ending Date* 11/16/00
Verification Check by I. Almocen	*Time (Hours)* 5.0	*Ending Date* 3/26/01
Evaluation and Analysis by L. Deodato	*Time (Hours)* 58	*Ending Date* 1/22/01
Inspection by I. Almocen	*Time (Hours)* 1.0	*Ending Date* 3/27/01

EVALUATION REPORT
H10928

A. PROJECT

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

B. AREA SURVEYED

The survey area is adequately described in the hydrographer's report.

A page-size plot of the charted area depicting the specific limits of supersession accompany this report as Attachment 1.

The bottom consists mainly of mud, sand, pebble, and broken shell. Depths range from -1.4 to 106 fathoms.

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 discussed in the hydrographer's report, section D.

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 and MicroStation 95.

Processed 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 the Specifications and Deliverables, April 1999.

The data are plotted on NAD 83 using a Universal Transverse Mercator, Zone 06 projection and are depicted on a single sheet. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections:

Latitude:	-2.290 seconds (-70.878 meters)
Longitude:	6.978 seconds (107.346 meters)

E. SONAR EQUIPMENT

Side scan sonar was not used during the survey.

F. SOUNDING EQUIPMENT

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

G. CORRECTIONS TO SOUNDINGS

Soundings and elevations have been reduced to Mean Lower Low Water (MLLW) or Mean High Water (MHW) as appropriate with verified tide correctors obtained from CO-OPS. The correctors are zoned direct from station 945-4511, Port Chalmers, Alaska and station 945-4662, Snug Harbor, Alaska.

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 specifications.

H. CONTROL STATIONS

Horizontal control is adequately discussed in the hydrographer's report

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 4.0 was specified in the project instructions. Three hundred forty two (342) positions exceed this limit and were rejected by the hydrographer.

During data collection satellite configuration, as indicated by HDOP and the number of satellites, is monitored visually on HYPACK. During multibeam operations final positions are provided by the POS-MV that combines the DGPS position with inertial navigation information. In the event that the differential GPS corrector signal is lost, the POS-MV will continue to provide positions based on inertial navigation. Data was analyzed during processing to ensure it contained no significant errors.

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

J. SHORELINE

Shoreline maps in digital raster file and MapInfo format for T-12709 and T-12712 were office compiled on NAD83 and apply to this survey. Shoreline drawn on the smooth sheet in black originates from the above digital raster data as provided by the Remote Sensing Division, NGS. The shoreline data and the hydrographic data were merged during MicroStation processing. There were no MHW revisions on this survey.

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

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H10928 junctions with the following surveys:

Survey	Year	Scale	Area
H10922	1999	1:10,000	East
H10925	1999	1:40,000	West
H10927	1999	1:10,000	North
H10940	1999	1:10,000	South

The junctions with surveys H10922, H10925, H10927, and H10940 are complete. A "Joins" note has been added to the smooth sheet where applicable. A few soundings from H10927 have been transferred within the common areas of H10928 to better delineate the bottom configuration.

M. COMPARISON WITH PRIOR SURVEYS

The present survey was compared to the following prior surveys.

Survey	Year	Scale	Datum
H03353	1911	1:20,000	Valdez
H05427	1933	1:20,000	Valdez
H05431	1933	1:20,000	Valdez
H09512	1975	1:20,000	NAD27
H09513	1975	1:20,000	NAD27

Prior surveys H03353, H05427, H05431, H09512, and H09513 cover the entire area of the present survey. The present survey was compared to the digital raster copies of H03353, H05427, H05431, H09512, and H09513. The registration of these prior surveys to the present survey was good. The legibility of the digital raster copies was good.

Sounding agreement is good with the present survey depths shoaler by 2 to 15 fathoms with H03353 and 0 to 6 fathoms with H05427 and H05431. These differences may be attributed to greater sounding coverage, improved positioning and sounding methods and relative accuracy of the data acquisition techniques. Sounding agreement with the 1975 surveys (H09512 and H09513) is also good with the present survey depths shoaler by 0.5 to 1 fathom.

An islet was transferred from H03353 to the present survey. Refer to section P of this report.

In accordance with the Hydrographic 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.

With the transfer of the islet to the smooth sheet, survey H10928 is adequate to supersede the above prior surveys within the common area.

N. ITEM INVESTIGATIONS

There is one AWOIS item assigned to this survey and it was adequately addressed in section M of the hydrographer's report.

O. COMPARISON WITH CHART

Survey H10928 was compared with the following chart:

Chart	Edition	Date	Scale
16701	17th	July 25, 1998	1:81,436

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous source data. The prior surveys have been adequately addressed in section M and require no further discussion.

Charted information originating with miscellaneous source data has been satisfactorily addressed during survey operations.

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 H10928 is adequate to supersede charted hydrography within the charted area.

b. Dangers To Navigation

Eighteen dangers to navigation were discovered during survey operations and reported to the USCG on December 20, 1999. Eight additional dangers to navigation were found during office processing. These were reported to the USCG, NIMA and N/CS1 on March1, 2000. Copies of these reports are attached.

P. ADEQUACY OF SURVEY

With the exception of the items mentioned below, hydrography contained on survey H10928 is adequate to:

a. Delineate the bottom configuration, determine least depths, and draw the required depth curves;
b. Reveal there are no significant discrepancies or anomalies requiring further investigation; and
c. Show the survey was properly controlled and soundings are correctly plotted.

The hydrographer failed to adequately identify the existence of a charted islet with an elevation of 15 feet above MHW at latitude 60/14/58N, longitude 147/32/22W. This feature was identified in the field as a reef. It was depicted as an islet on prior survey H03353 (1911) and was carried forward on the present survey. Triangulation station SMALL, 1905 was previously established as control station on top of this islet at latitude 60/14/57.453N, longitude 147/32/21.429W. This feature could have been misapplied on the chart as a rock awash instead of an islet.

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 fixed and floating aids to navigation within the survey area.

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

R. STATISTICS

Statistics are adequately itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

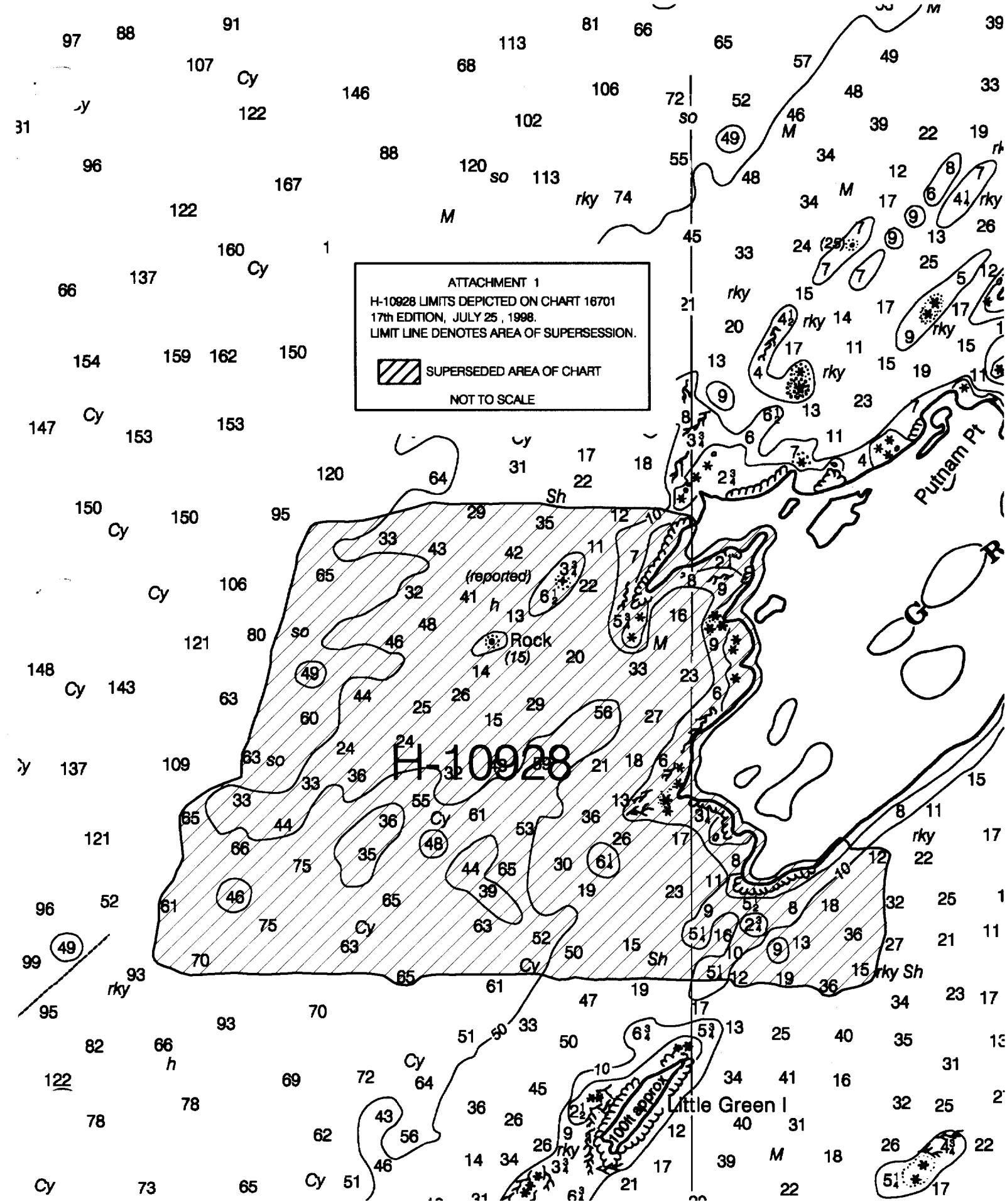
T. RECOMMENDATIONS

This is an adequate hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

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

Leonardo T. Deodato
Cartographer


ATTACHMENT 1
H-10928 LIMITS DEPICTED ON CHART 16701
17th EDITION, JULY 25 , 1998.
LIMIT LINE DENOTES AREA OF SUPERSESSION.
SUPERSEDED AREA OF CHART
NOT TO SCALE
H-10928
Rock
(15)
(reported)
Putnam Pt
Little Green I
100m approx

APPROVAL SHEET
H10928

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.

for _____ Date: 3-27-01
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: 3-29-01
James C. Gardner
Captain, NOAA
Chief, Pacific Hydrographic Branch

****

Final Approval

Approved:

_____ Date: May 8, 2001
Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10928

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16701	1/19/01	Leo T. Derbato	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Application of soundings and features from smooth sheet.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.