

10371

Diagram No. 8202-3

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-10-1-91
Registry No. . . . H-10371

LOCALITY

State Alaska
General Locality . Cross Sound
Sublocality South Inian Pass

19 91

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE October 2, 1992

10371

wc/L

PRODUCTS

17302

17300

16760

CPB
16016 n/c

HYDROGRAPHIC TITLE SHEET

H-10371

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-10-1-91

State Alaska

General locality Cross Sound

Locality South Inian Pass

Scale 1:10,000 Date of survey March 23 - May 6, 1991

Instructions dated February 21, 1991 Project No. OPR-0106-RA

Vessel NOAA Ship RAINIER, Launches 2123, 2124, 2125, and 2126

Chief of party CAPT Thomas W. Richards, NOAA

Surveyed by LT D. Cole, LT G. Glang, LTJG E. Nelson, LTJG D. Simmins, LTJG S. Lemke, LTJG P. Weber, LTJG C. Ward

Soundings taken by echo sounder, ~~hand held, polyx~~ DSF-6000N, 3D Instruments pneumatic depth gage

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: C.R. Davies Automated plot by PHS Xynetics Plotter

Verification by M. Sanders

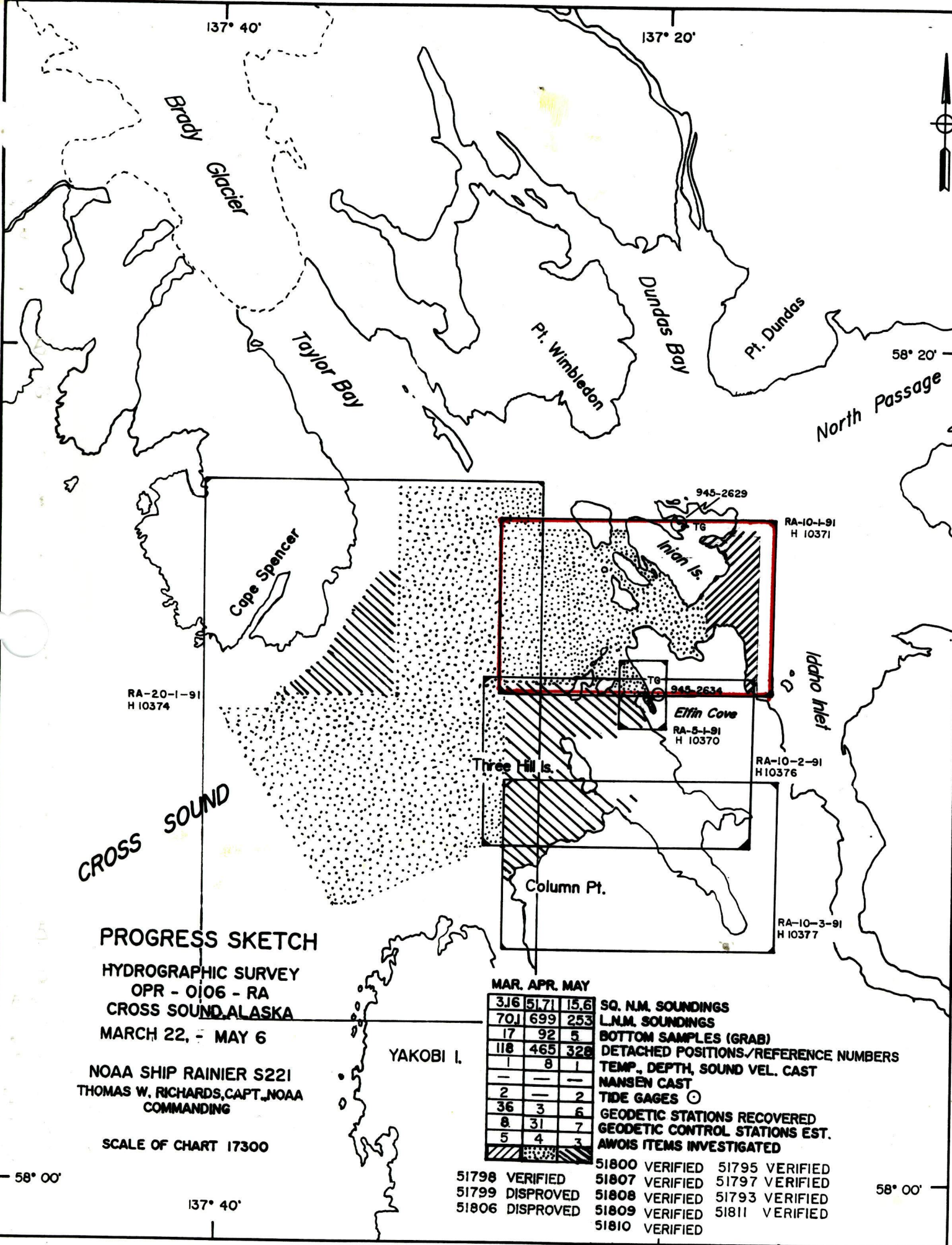
Soundings in ~~fathoms~~ ~~feet~~ meters at MLLW and decimeters

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

AWOIS & SURF CHK
10/19/92 MCR

SC JAN 29 1997

TWW 2/30/93



PROGRESS SKETCH
 HYDROGRAPHIC SURVEY
 OPR - 0106 - RA
 CROSS SOUND, ALASKA
 MARCH 22, - MAY 6

NOAA SHIP RAINIER S221
 THOMAS W. RICHARDS, CAPT., NOAA
 COMMANDING

SCALE OF CHART 17300

MAR. APR. MAY

316	5171	156
701	699	253
17	92	5
118	465	328
1	8	1
-	-	-
2	-	2
36	3	6
8	31	7
5	4	3

SQ. N.M. SOUNDINGS
 L.N.M. SOUNDINGS
 BOTTOM SAMPLES (GRAB)
 DETACHED POSITIONS/REFERENCE NUMBERS
 TEMP., DEPTH, SOUND VEL. CAST
 NANSEN CAST
 TIDE GAGES ☉
 GEODETIC STATIONS RECOVERED
 GEODETIC CONTROL STATIONS EST.
 AWOIS ITEMS INVESTIGATED

- | | | |
|-----------------|----------------|----------------|
| 51798 VERIFIED | 51800 VERIFIED | 51795 VERIFIED |
| 51799 DISPROVED | 51807 VERIFIED | 51797 VERIFIED |
| 51806 DISPROVED | 51808 VERIFIED | 51793 VERIFIED |
| | 51809 VERIFIED | 51811 VERIFIED |
| | 51810 VERIFIED | |

58° 00'

137° 40'

58° 00'

Descriptive Report to Accompany Hydrographic Survey H-10371

Field Number RA-10-1-91

Scale 1:10,000

March-May 1991

NOAA Ship RAINIER

Chief of Party: Captain Thomas W. Richards

A. PROJECT ✓

This basic hydrographic survey was completed in Cross Sound, southeastern Alaska, as specified by Project Instructions OPR-O106-RA dated February 21, 1991. This survey is designated Sheet D on the sheet layout dated June 1, 1990.

This survey is one in a series that will provide contemporary hydrographic data for updating existing nautical charts and planned larger scale chart coverage of the Cross Sound area. There have been numerous reports of shoals, rocks, and inaccurately charted depths and landmarks from the Southeastern Alaska Pilots' Association and NOAA field personnel. Troller fishermen have requested a detailed survey to aid in preventing the loss of trolling gear. In 1959, the U.S. Coast and Geodetic Survey Ship PATTON reported that survey investigations in several areas revealed depths significantly shallower than those charted.

B. AREA SURVEYED ✓

See EVAL Report, section 1

The survey, located in southeastern Alaska, 60 NM west of Juneau, encompasses South Inian Pass. The survey northern limit is 58°15'37"N. The survey southern boundary is along the shoreline of Chichagof Island, George Islands, and 58°12'00"N. The eastern and western limits are 136°15'50"W and 136°25'45"W respectively. Data acquisition was conducted from March 23 through May 06, 1991 (DN 082 to 126).

C. SURVEY VESSELS ✓

All data were acquired by NOAA Ship RAINIER and the four automated survey launches shown below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RAINIER	2120	Velocity Casts Bottom Samples
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification Dive Operations

RA-5	2125	Hydrography Shoreline Verification Velocity Casts Bottom Samples
RA-6	2126	Hydrography Shoreline Verification Bottom Sample Dive Operations

In addition to the survey vessels listed above, two 17' Boston Whalers, a 19' MonArk, and a 12' Zodiac were used to support operations for horizontal control, tide station installation and maintenance, range/azimuth hydrography, and diving.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with Hewlett-Packard (HP) 340M workstations and the following HDAPS programs:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
SURVEY	5.00 (5.11)	20 Mar 1991 (19 Apr 1991)
POSTSUR	5.00 (5.10)	20 Mar 1991 (19 Apr 1991)
PLOTALL	1.80 (1.91)	20 Mar 1991 (19 Apr 1991)
POINT	1.30	20 Mar 1991
BACKUP	2.00	20 Mar 1991
CONVERT	2.40	20 Mar 1991
PRINTOUT	2.30	20 Mar 1991
DIAGNOSTIC	2.70	20 Mar 1991
INVERSE	1.30	20 Mar 1991
INSTALL	2.00	20 Mar 1991
BASELINE	1.10	20 Mar 1991
QUICK	1.10	20 Mar 1991
LISTAWOIS	1.20	20 Mar 1991
LOADNEW	1.30	20 Mar 1991
REJECT	1.00	20 Mar 1991
CARTO	1.20	20 Mar 1991
Vers	NA	20 Mar 1991
BACKOLD	1.10	20 Mar 1991
NEWCONT	1.10	20 Mar 1991
DISC_UTIL	1.00	20 Mar 1991
MB	0.00	20 Mar 1991
HJ	0.00	20 Mar 1991
AUTOST	1.00 (1.10)	20 Mar 1991 (19 Apr 1991)
GLOBAL	1.10	20 Mar 1991
MAKEFIX	1.00	20 Mar 1991
BIGABST	1.01 (1.11)	20 Mar 1991 (19 Apr 1991)
REAPPLY	1.01 (1.30)	20 Mar 1991 (19 Apr 1991)
PREDICT	1.10	20 Mar 1991
READPROJS	1.04 (1.06)	20 Mar 1991 (19 Apr 1991)
SOFTCHECK	1.00 (1.10)	20 Mar 1991 (19 Apr 1991)

HPRAZ	1.10 (1.21)	20 Mar 1991 (19 Apr 1991)
FILESYS	2.10 (2.11)	20 Mar 1991 (19 Apr 1991)
DP	1.10	20 Mar 1991
MANU_DATA	1.10	20 Mar 1991
RAMSAVER	1.00	20 Mar 1991
GRAPHEDIT	NA	20 Mar 1991
EXCESS	NA	20 Mar 1991

The HDAPS REAPPLY program (ver 1.30) was modified by RAINIER in consultation with the HDAPS office on May 20, 1991. After running REAPPLY, most soundings on contemporary junction survey H-10374 did not have sound velocity correctors applied. Part of the problem may have been that a few soundings were greater than the last depth corrector in Velocity Table 2. In addition to modifying the program, the table was extended to 350m. Although the soundings from this survey appear to have all of the sound velocity correctors applied, the original version of REAPPLY should be examined thoroughly by the HDAPS office.

The new HDAPS EXCESS and HPRAZ programs were used in processing and range/azimuth hydrography respectively. The range/azimuth program, HPRAZ, worked well and was used for all range/azimuth hydrography. The PC-DAS system was not used this project. EXCESS worked well and saved considerable time in processing the surveys. There will be a written evaluation of EXCESS in June, 1991.

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	1.11	09 Mar 1990

E. SONAR EQUIPMENT ✓

Side scan sonar was not used during this survey.

F. SOUNDING EQUIPMENT ✓

All survey launches were equipped with the Raytheon DSF-6000N echo sounders shown below. The echo sounders were operated in the HIGH + LOW (HIGH DIGITIZED) function, using manual gain controls on both high and low frequencies to obtain the best analog trace. Soundings were recorded in meters and tenths of meters. Six-meter bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions. The echo sounders were operated in accordance with the Provisional Instructions "Raytheon DSF-6000N Echo-Sounder Operating and Processing Instructions", dated July 5, 1983, and the Field Procedures Manual for Hydrographic Surveying (FPM).

Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial No.</u>	<u>DN</u>
2123	A117N	093-112
2124	B046N A103N B046N	083-086 096 097-125
2125	B048N A103N B048N B039N B048N	082-083 083 096-121 121 122-123
2126	A114N	092-113

The echo sounders were continuously monitored during data acquisition. All sounding data were scanned at least two times, to ensure all significant peaks were inserted, and to verify the digitized depths. While running over steep or irregular areas, the echo sounders sometimes failed to track properly. Running at minimum speeds usually alleviated this problem, but marginal analog traces could not always be avoided. *This data was analyzed during office processing and found to be consistent with surrounding depths.*

Diver obtained depths were determined with a 3D Instruments pneumatic depth gage S/N 8504192N.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Corrections to echo soundings were determined for static draft, heave, velocity of sound through water, settlement and squat, and predicted tides. Sounding correctors apply to both narrow and wide beams of the DSF-6000N echo sounder. Supporting data and computations for all corrections to echo soundings, except heave, are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Sound Velocity ✓

Correctors for the velocity of sound through water were determined from the casts listed below:

<u>TABLE</u>	<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>DN</u>	<u>Geographic Position</u>
1	1	128.1	086	58°13'34"N, 136°16'22"W
2	2	250.9	097	58°14'00"N, 136°24'00"W
	3	78.3	107	58°11'44"N, 136°21'53"W - Not used
3	4A	296.9	109	58°07'06"N, 136°34'12"W
	4B	52.5	109	58°07'06"N, 136°34'12"W
	5A	102.4	116	58°10'39"N, 136°21'31"W
	5B	111.3	116	58°10'39"N, 136°21'31"W
	6	205.3	124	58°09'14"N, 136°26'20"W

Sound velocity casts numbered 1, 2, 3, 4A, 5A, and 6 were acquired with an SBE SEACAT Profiler, S/N 281, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on January 21, 1991. Sound velocity casts numbered 4B and 5B were acquired with an AML SVP, S/N 3042, which was calibrated at NRCC on March 11, 1991. As a system check, Cast Nos. 4A (SEACAT) and No. 4B (AML) were performed on the same day, as were Nos. 5A (SEACAT) and 5B (AML). The casts showed excellent agreement both times; therefore, Cast Nos. 4B and 5B were not applied to echosoundings. Cast Nos. 1, 2, and 4A were used to generate Sound Velocity Corrector Tables No. 1, 2, and 3 respectively. Cast Nos. 3, 5A, and 6 showed no significant change in water column characteristics and weren't used to generate correctors.

Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) #69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Static Draft ✓

For all launches, the distance from the transducer face to the gunwale was measured with a large metal square. Static draft measurements were then determined by dropping a leadline from the gunwale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwale to the waterline were conducted with the fuel tanks averaging 3/4 full and three people aboard. A transducer depth of 0.6 meter was determined for all launches on March 23-25, 1991. This transducer depth agrees with the launches' historical records.

Settlement and Squat ✓

Settlement and squat correctors were determined for Vesnos 2123, 2124, 2125, and 2126 in Shilshole Bay, WA, on February 25, 26, and March 12, 1991. All tests were conducted over a hard bottom in depths well exceeding 7 times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 103453) to a rod held vertically on deck, directly over the transducer. Correctors were computed in accordance with Hydrographic Manual 4.9.4.2, using FPM Fig. 2.2 and 2.3, and are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Heave ✓

Corrections for heave were applied while scanning echograms. The scanning technique used in comparing the analog trace with the digital record eliminated significant fluctuations resulting from sea action.

Pneumatic Depth Gage ✓

The Pneumatic Depth gage was calibrated March 3, 1991, by the Pacific Operations Group (N/OMA1214). In addition, field systems checks were performed via comparison with diver depth gages each time the pneumatic gage was used. Calibration data and correctors applied to the pneumatic depth gage are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Bar Check Lines ✓

Bar check lines were calibrated by RAINIER personnel during January 1991 at PMC. Calibration forms are included in the Spring 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Tide Correctors ✓

Tidal zoning and correctors applicable to predicted tides for the Sitka, Alaska, reference station (945-1600) were provided on the Tidal Zoning Chart accompanying the Project Instructions and are listed below:

	<u>Zone</u>	<u>Time Correctors</u>	<u>Range Ratio</u>
1.	West from 136°26'17"W to 136°26'20"W	+0 hr 10 min	x1.27
2.	West from 136°26'20"W, to a line defined by the points, 58°18'13"N, 136°22'25"W 58°12'55"N, 136°21'40"W	+0 hr 05 min	x1.20

3. West from a line defined by the points,
 58°18'13"N, 136°22'25"W,
 58°12'55"N, 136°21'40"W
 to a line defined by the points,
 58°14'40"N, 136°34'15"W
 58°07'18"N, 136°26'45"W Direct x1.13

Tidal Zone 1 correctors were used for plotter sheet RA-10-1E-91 and Tidal Zone 2 correctors were used for plotter sheet RA-10-1W-91. HDAPS listings of the data used in generating tide corrector tables are included in Appendix V of this report. *

Tide gages were installed and maintained by RAINIER personnel at stations in Inian Cove (945-2629) and in Elfin Cove (945-2634). The tide station descriptions, field tide records, and Field Tide Notes have been forwarded to N/OMA1212 in accordance with HSG 50 and FPM 4.3. Requests for approved tides have been forwarded to N/OMA12. Copies of the Field Tide Notes and the request for approved tides are included in Appendix V. *

H. CONTROL STATIONS ✓

Geographic positions for all control stations are based on the North American Datum of 1983 (NAD83) and the Geodetic Reference System 1980 Ellipsoid.

A listing of the geodetic stations used to control this survey is included in ~~Appendix III~~ this report.

Positions for all existing stations are from the NGS data base. All existing stations were recovered in accordance with methods stated in FPM 5.2.4. New stations were positioned via traverse methods and Global Positioning System (GPS) to meet third-order class I standards. Further information can be found in the Spring 1991 Horizontal Control Report for OPR-O106-RA.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Sounding Position Control ✓

Soundings were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range and manual range/azimuth modes.

Accuracy Requirements/Problems ✓

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were generally met. Under some wind and sea conditions null zones were experienced. When this problem was suspected, the R/T mast height or shore transponder height was adjusted to improve control. When maximum residuals exceeded the specified limits, OIC's deselected the station(s) with the highest residual value and were able to continue hydrography. On occasion, ECR's and maximum residuals persistently exceeded the specified limits. When this happened, the data was generally rejected and re-run with different control.

* Filed with the hydrographic data.

Hydrography collected close inshore was frequently conducted with one or more LOP's blocked, resulting in high ECR's and/or maximum residuals. In these cases, OIC's generally annotated the raw master printout (RMPO). If the data plotted on track and sounding intervals appeared correct, the data was retained. Some data was acquired with only two LOP's because stations were blocked or deselected. In these cases, if the systems check at day's start included additional LOP's and acceptable maximum residuals, and ECR's were acceptable throughout the data collection period, no further system checks were performed at day's end. *All data was checked during office processing and found acceptable.*

Equipment ✓

A Wild T-2 theodolite was used for manual range/azimuth observations in conjunction with Motorola Mini Ranger (M/R) or Hewlett-Packard electronic distance measuring instrument (EDMI) ranges. Serial numbers for all positioning equipment are annotated on the RMPO for each day of hydrography. A complete list of all electronic equipment serial numbers is included in the Spring 1991 Electronic Control Data Package.

Calibrations & Systems Check Methods ✓

Baseline calibrations were conducted in accordance with FPM 3.1.2.1 and 3.1.3.2. On February 5-6 (DN035-DN036), and on March 6 (DN065) calibrations were conducted at the SANDPOINT BASELINE over a known distance of 1058.1876 m. Two shore transponders (codes A&E) were returned to PMC for repairs during this project. Replacement transponders were calibrated on April 14 (DN104) and again on April 26 (DN116) over a measured range of approximately 1265m from VESNO 2123 (in davits) at the U.S. Coast Guard Pier in Juneau to the Union Oil dock across the harbor. The range was measured by EDM and was checked frequently during the calibrations. The calibrations on April 26 were conducted in order to improve the quality of the data for the replacement codes because of unusually high minimum acceptable signal strengths (MASS) found during the April 14 calibrations. The high MASS problem was later resolved by increasing the allocated space on floppy disk media to allow more ranges to be processed by the HDAPS baseline program. Calibration data and a description of the baseline is included in the Spring 1991 Electronic Control Data Package.

In accordance with FPM 3.1.3.3, formal system checks were not documented for multiple LOP hydrography. Data collected with two LOP's was always bracketed by multiple LOP data acquired with ECR (95 % Error Circle Radius) and maximum residuals within acceptable limits, which served as critical system checks. Critical system checks for range-azimuth hydrography were by one of three methods: 1) a multiple LOP system check by observing the range-azimuth M/R code in conjunction with two or more M/R codes (this was the preferred method); 2) a M/R to EDM distance comparison in which the average of 10 M/R ranges (corrected) are compared to the average of 10 EDM observations (the EDM was set up next to the M/R and the retro prism was placed on the R/T to minimize the difference in measured distances); 3) a M/R to computed distance comparison in which the distance between two known geographic positions (one being the shore transponder location) was computed, using the HDAPS inverse utility, and compared to the average of 10 M/R observed distances (corrected for antenna offset from the geographic position). In addition, azimuth checks for range-azimuth hydrography

were performed by sighting on another third-order control station. The check was considered satisfactory if the azimuth difference was less than 30 seconds of arc.

Other Factors ✓

Antenna offset and layback correctors were applied via HDAPS tables. Final field sheets were plotted with correctors determined from baseline calibrations.

J. SHORELINE *See EVMC Report, section 2*

The shoreline map (T-sheet) used to transfer shoreline detail to the final field sheets was a 1:10,000-scale enlargement of TP-01330 (1:20,000; NAD27). Aerial photography was flown in June 1985 and the T-sheet was compiled in December 1988. Final Review was in January 1989.

Shoreline verification was conducted below or near predicted lower low water in accordance with FPM 7.1. Shoreline verification was mostly accomplished by assigning sequential reference numbers and taking detached positions (DPs) in a manner explained later in this section. Approximately five percent of the shoreline was verified with "see field sheet" (SFS) positioning. *Areas are listed in EVMC Report, section 2.*

The large number of new features and disprovals found during this survey indicate that T-sheet photography was flown at a stage of tide too high to allow accurate interpretation for charting and hydrography. Numerous items described as kelp on the T-sheet proved to be rocks. There are approximately 20 disprovals of items, some of which may have been kelp mistaken for rocks. However, DPs and inshore hydrography show that photogrammetric and hydrographic positioning are in excellent agreement despite the photogrammetric misinterpretation of many features.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers and were recorded in the field using sounding volumes and corresponding 1:10,000 scale photocopies of the T-sheet. Reference numbers, descriptions and heights, corrected to predicted MLLW, are recorded in the sounding volumes. Corresponding notes were annotated on the photocopies of the T-sheet. Changes to shoreline features are described in the sounding volumes where applicable. The annotated photocopies of the T-sheet are attached to the sounding volumes which are included with the survey data.

DPs taken during shoreline verification were recorded on the master printouts and indicate significant features, features not found on the T-sheet, and locations of disprovals. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts.

Some T-sheet rocks were found to be isolated boulders, reefs, islets or high points within foul areas, or ledges in the intertidal zone. These posed no danger to navigation. T-sheet features which were verified were retained and shown on the final field sheets (FFS). Verified shoreline and new features are shown in black on the FFS, changes to the shoreline are shown in red, and unverified shoreline is shown in blue. Kelp symbols are shown on the FFS in areas where surface kelp was visible. *No blue shoreline is drawn on the smooth sheet. All shoreline (HWL) was verified by hydrography.*

Detailed 1:10,000-scale paper plots showing all DPs and reference numbers and notes relating to each feature are included with the sheets submitted with this survey. The HDAPS DP Program requires that cartographic codes be assigned to all DPs. These cartographic codes were not plotted because the majority of DPs describe features that are offset slightly from the DP. Position numbers for all DPs are plotted on the two DP overlays. Heights are recorded in meters and are corrected to predicted MLLW.

Reference Number R6-128 describes a change to shoreline on the FFS and is depicted in red. Control Station 130 (LAV), also depicted in red, falls on the same feature. The hydrographer is noting this because the feature is difficult to read under the station symbol. *This is portrayed on the smooth sheet as a reef wash.*

Disprovals

The following disprovals were conducted near predicted lower low water. A visual and echosounder search was conducted for each item lasting an average of fifteen minutes. Positioning was accomplished via Range/Azimuth or by using two or more ranges from Falcon Mini-Rangers with ECRs and maximum residuals within acceptable limits for a 1:10,000 scale survey.

The vicinity of the T-sheet rock at 58°15'31"N, 136°17'51"W was inspected on two different days (Pos No. 6518, Ref. No. R4-3) and the rock was not seen. On both days, water visibility was 3 to 4 meters. The area searched was within a 20m radius of the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°15'14"N, 136°17'51"W was inspected (Pos. No. 6519) and the rock was not seen. Water visibility was 3 to 5 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°15'16"N, 136°17'57"W was inspected (Pos. No. 6520) and the rock was not seen. Water visibility was 3 to 5 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°14'36"N, 136°17'17"W was inspected (Pos. No. 6024) and the rock was not seen. Water visibility was 4 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°14'13"N, 136°19'36"W was inspected (Pos. No. 2004) and the rock was not seen. Water visibility was 3 to 4 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°14'27"N, 136°19'54"W was inspected (Pos. No. 8706) and the rock was not seen. Water visibility was 3 to 4 meters and the search radius was 50m from the DP. The hydrographer noticed significant kelp in the area.

The vicinity of the T-sheet rock at 58°14'29"N, 136°19'57"W was inspected (Pos. No. 8707) and the rock was not seen. Water visibility was 3 to 4 meters and the search radius was 50m from the DP.

The vicinity of three T-sheet rocks at 58°14'22"N, 136°19'55"W was inspected (Ref. No. R6-123) and the rocks were not seen. Water visibility was 3 to 4 meters and the search radius was 75m from the T-sheet rock location. The area within a 50 m radius of Pos. No. 8704 was also searched and no rocks were found (water visibility 3-4 m). Additionally, mainscheme hydrography was conducted over the area (Pos. Nos. 8059+7 to 8061, and 6624 to 6625) with no evidence of any features present on the echograms.

The vicinity of the T-sheet rock at 58°12'2.5"N, 136°22'59"W was inspected (Pos. No. 8448) and the rock was not seen. Water visibility was 3 to 4 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline. The hydrographer noticed significant kelp in the area.

The vicinity of the T-sheet rock at 58°11'57.5"N, 136°23'05"W was inspected (Pos. No. 8460) and the rock was not seen. Water visibility was 3 to 4 meters and the search radius was 20m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°12'00"N, 136°23'14"W was inspected (Pos. No. 8450) and the rock was not seen. Water visibility was 3 to 5 meters and the search radius was 20m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°12'6.5"N, 136°23'11"W was inspected (Pos. No. 8453) and the rock was not seen. Water visibility was 3 to 5 meters and the search radius was 20m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°12'8.5"N, 136°23'11"W was inspected (Pos. No. 8452) and the rock was not seen. Water visibility was 3 to 5 meters and the search radius was 20m from the DP and extended to 50m in each direction along the shoreline.

The vicinity of the T-sheet rock at 58°12'41.5"N, 136°21'52"W was inspected (Pos. No. 2429) and the rock was not seen. Water visibility was 2 meters and the search radius was 50m from the DP. A sparse amount of kelp was visible in the area.

The vicinity of the T-sheet rock at 58°13'57.5"N, 136°21'19"W was inspected (Pos. No. 7217) and the rock was not seen. Water visibility was 3 meters and the search radius was 25m from the DP and extended to 50m in each direction along the shoreline. A sparse amount of kelp was visible in the area.

The vicinity of the T-sheet rock at 58°15'09"N, 136°23'01"W was inspected (Pos. No. 8610) and the rock was not seen. Water visibility was 3 meters and the search radius was 75m from the DP. The area was later developed by hydrography with 10 meter line spacing which revealed a least depth of 9.0 m (Pos. No. 8622+7) at 58°15'09"N, 136°22'57"W that is approximately 80 m from the T sheet position. There is a significant amount of kelp in the vicinity of the search radius.

The vicinity of six T-sheet rocks that lie between 58°15'04"N, 136°21'56"W and 58°15'00"N, 136°21'37"W was inspected via two Range/Azimuth radial lines of hydrography (Pos. Nos. 6786-6791) and the rocks were not seen. The search area lies between the two lines and extends 15 m beyond the northern line. Water visibility was 4 to 5 meters and the hydrographer could visually see the bottom through the kelp that was present over the area.

The vicinity of a submerged T-sheet rock at 58°15'21.5"N, 136°22'01"W was developed via hydrography with no significant feature evident on the echograms. A diver-determined least depth of 3.8⁹m was found (Pos. No. 4708) within 100m of the submerged T-sheet rock position.

The vicinity of two T-sheet rocks at 58°14'50"N, 136°20'36"W and 58°14'49"N, 136°20'35"W was inspected (R6-105) and the rocks were not seen. The T-sheet positions of the rocks were too close (less than 100 m) to control station number 144, Hobbit Hole TP, to take a detached position via Range Azimuth. The area searched is within a 100 m radius of the station and water visibility was 3 m. The disproval is depicted on an annotated videotape included with this survey.

The vicinity of the T-sheet rock at 58°14'17.5"N, 136°19'47"W was inspected (Ref. No. R6-121) and the hydrographer was unable to see bottom due to the thick kelp present. There was no evidence of the feature on the echosounder (average depth 2 to 4 m) and the launch could safely navigate in and around the kelp (predicted tide was +0.3 m). The area searched was within an approximate 25 m radius of the described T-sheet rock position. Main scheme hydrography (Pos. Nos. 8046, 8046+1) run over the area showed no feature present on the echogram. The T-sheet rock is considered disproved by the hydrographer.

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior shoreline information. *Concur*

New Features

The following are significant new features found during shoreline verification near lower low water. The following features are located in navigable areas and were not depicted on the T-sheet. All new features are as shown on the FFS.

Position No. 6691 describes a rock which ^{uncovers} ~~bare~~ 1.9 m MLLW at 58°14'21"³³N, 136°20'36"_{1.14}W. The item is incorrectly depicted on the T-sheet as kelp and does not appear on any prior surveys. The rock was reported as a danger to navigation.

Position No. 6686 describes a floating house at 58°14'19.5"N, 136°20'48"W. The item is incorrectly depicted on the T-sheet as an islet. The house is attached to the surrounding shoreline by four lines that extend outward from each corner of the house. A more complete discussion of this area can be found in Section N (AWOIS 51806).
Houseboat is shown on the smooth sheet.

Position Nos. 8225-8229 describe a series of dolphins and pilings in the vicinity of $58^{\circ}14'37''\text{N}$, $136^{\circ}20'55''\text{W}$. The inhabitants of the Hobbit Hole (described in Section N) use these for moorage. The dolphins and pilings do not appear on the T-sheet or any prior surveys. *Shown on the smooth sheet.*

Position No. 2431 describes Seiner's rock which ^{uncovered} ~~bare~~ ⁷ ~~s~~ ^{4.90} m MLLW at $58^{\circ}13'25''\text{N}$, $136^{\circ}21'27''\text{W}$. The item does not appear on the T-sheet and is grossly mispositioned on the chart. A more complete discussion of this item can be found in section N (AWOIS 51793). The rock was reported as a danger to navigation.

Reference No. R6-103 describes a rock, located near the center of a small bight, which ^{uncovered} ~~bare~~ 1.1 m MLLW. The hydrographer estimated the position to be $58^{\circ}14'21.5''\text{N}$, $136^{\circ}22'22''\text{W}$ by SFS methods. Additionally, two SFS lines of hydrography (Pos. Nos. 486~~3~~⁷ to 486~~8~~⁹) also describe the position of the rock. SFS methods were used because the amount of time required to install a new control station for positioning was not warranted. The T-sheet accurately depicts the small bight but does not show the rock. The rock is depicted on the annotated videotape included with this survey. *Shown on the smooth sheet as a rock which uncovers 1.1 m at MLLW.*

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior shoreline information. *CMW*

Unverified Features

Three islets and one T-sheet rock in the vicinity of $58^{\circ}12'19''\text{N}$, $136^{\circ}23'00''\text{W}$ were not distinguishable from the surrounding shoreline because the hydrographer's viewpoint was blocked by other features. The three islets and T-sheet rock lie inside the limits of a foul area described by R6-14. These features were transferred to the smooth sheet with the addition of a foul limit line.

An islet and a T-sheet rock in the vicinity of $58^{\circ}11'58''\text{N}$, $136^{\circ}24'04''\text{W}$ described by R6-35 were not distinguishable from the surrounding shoreline because the hydrographer's viewpoint was blocked by other features. *Shown on the smooth sheet as a rock and islet.*

The T-sheet rock at $58^{\circ}14'33.5''\text{N}$, $136^{\circ}22'40''\text{W}$ was overlooked by the hydrographer and not verified. *was transferred to the smooth sheet from the shoreline manuscript*

The T-sheet rock at $58^{\circ}13'50''\text{N}$, $136^{\circ}21'11''\text{W}$ (Ref. No. R5-52) is unverified. The hydrographer could not safely navigate close enough to fully investigate the area. There was no feature visible above the water (predicted tide was 0 m at the time of inspection) but there was a lot of kelp present. The amount of surge in the area made it unsafe to maneuver closer to the T-sheet position. *was transferred to the smooth sheet from the shoreline manuscript.*

Recommendation: The above T-sheet features were retained on the final field sheet and shown in blue. Heights were not assigned because the features are unverified.

Rocks and Islets are shown in black on the smooth sheet.

K. CROSSLINES ✓

A total of 27.2 nautical miles of crosslines were run perpendicular or at a 45° angle to mainscheme lines, representing 7.8% of the mainscheme hydrography. Crossline soundings agree to within 2 meters with mainscheme soundings, except in areas of steep bottom topography where the agreement is to within 7 m. The vessel acquiring crossline data did not always collect the corresponding mainscheme data. Agreement between soundings acquired by different echo sounders in a common area is as stated above.

L. JUNCTIONS *See FUA Report, section 5*

This survey junctions with H-10357 (1:10,000; 1990) to the east, H-10374 (1:20,000; 1991) to the west, and H-10370 (1:5,000; 1991) and will junction with H-10376 (incomplete, 1:10,000; 1991) to the south. There are no contemporary surveys junctioning with this survey to the north. No irregularities were found when comparing soundings and depth contours. Agreement between overlapping soundings is excellent, with all junction soundings agreeing to within 2 meters.

M. COMPARISON WITH PRIOR SURVEYS *See FUA Report, section 6*

This survey was compared to the following prior surveys:

H-2558 (1:40,000; 1901):

The hydrographer compared approximately 10 percent of the soundings from a 1:10,000 scale enlargement of H-2558 to this survey. Overall agreement is good, with agreement to within 4 m. A 9.5 fm (17.4 m) depth at 58°12'36"N, 136°23'28"W on H-2558 corresponds to a 12.8 m depth (Pos. No. 6457+2) on this survey at 58°12'49"N, 136°23'35"W. There are many additional areas where shoaler depths were found on the present survey to the West of George Islands. The most likely reasons for this are the wide line spacing used on H-2558 and isostatic rebound.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-2558 within their common areas.

*Concur***H-2559** (1:20,000; 1901):

The hydrographer compared approximately 10 percent of the soundings from a 1:10,000 scale enlargement of H-2559 to this survey. Overall agreement is good, with agreement to within 4 m. The hydrographer noticed that in prior-survey shallow areas (depths of 5 to 10 m), the present survey showed depths that were consistently 1 to 1.5 m shoaler. This is particularly evident in the "Mosquito Pass" (discussed in Section N) area. The discrepancies could possibly be due to isostatic rebound which is prevalent in the area.

On both RAINIER's 1:20,000 copy and 1:10,000 scale enlargement of H-2559, the area in the vicinity of Seiner's Rock (see discussion of AWOIS 51793 in Section N) appears to be heavily investigated but individual soundings and features are illegible. It is not possible to tell if Seiner's Rock was depicted on RAINIER's copy of H-2559.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-2559 within their common areas. *Command*

H-2618 (1:40,000; 1902):

The hydrographer compared approximately ten percent of the soundings from a 1:10,000 scale enlargement of H-2618 to this survey. Overall agreement is good, with agreement to within 4 m. There are many areas where additional shoaling was found on the present survey. These areas are discussed in Section N. The most apparent reason for the discrepancies is the wide line spacing used on H-2618 and isostatic rebound.

The hydrographer noticed that in shallow areas (depths of 5 to 10 m), this survey showed depths that were consistently 1 to 1.5 m shoaler than on H-2618. This is particularly evident when comparing soundings in Earl Cove. The discrepancies could possibly be due to isostatic rebound which is prevalent in the area. This is reinforced by the fact that Inian Cove and Earl Cove are no longer connected by water as shown on H-2618.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-2618 within their common areas. *Command*

H-4318WD (1:40,000; 1922):

Only one sounding from H-4318WD fell within the limits of this survey. This survey revealed a 12.8 m least depth (Pos. No.6457+2) at 58°12'49"N, 136°23'35"W where the wire drag showed a 51 ft (15.5 m) depth. The remainder of H-4318WD was not compared because the survey does not describe the wire depths in a manner understandable to RAINIER personnel.

Recommendation: The hydrographer recommends the soundings and least depths acquired from this survey be used to supersede those of H-4318WD within their common areas. *Only 51 ft depth subject to supersession.*

H-6765 (1:5,000; 1942):

The hydrographer compared all of the soundings from a 1:5,000 scale enlargement of this survey, plotted in fathoms, with H-6765. Agreement between the two surveys is excellent, with agreement between soundings to within 1 fm. This survey shows no additional areas of shoaling when compared to H-6765.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey (only because it is more recent) be used to supersede those of H-6765 for charting purposes within their common areas. H-6765 does contain some additional detail, not included on the present smaller scale survey, that could be useful for engineering purposes. *Do not come, See Enac Report, section 6 for the features not investigated and brought forward from this prior survey.*

N. COMPARISON WITH THE CHART *See Enac Report, section 7.*

The hydrographer compared all of the soundings from a 1:10,000-scale enlargement of NOS chart 17302, 15th Edition, May 20/89, 1:80,000 (NAD83) to this survey.

Comparison of Sounding Features

Overall agreement between this survey and the chart is good, with agreement to within 4 meters. Some of the deeper depths (depths greater than 250 m) agreed to within 20 m. Some discrepancies were found near shoal areas, where this survey revealed some depths shoaler than charted depths. The most probable cause for the discrepancies is wide line spacing on the prior survey. Additional causes may also be less accurate techniques used for positioning and sounding during the prior survey, isostatic rebound and the irregularity of the bottom. The discrepancies are:

The following features originate from the prior surveys listed in section 11 of this report.
A charted depth of 8 fm (14.6 m) in Earl Cove at 58°15.4'N, 136°18.3'W corresponds to a 4.5 m depth (Pos. No. 6502+1) from this survey at 58°15'25"N, 136°18'13"W.

A charted depth of 26 fm (47.5 m) at 58°14.0'N, 136°17.9'W corresponds to a 18.7 m depth (Pos. No. 6177+2) from this survey at 58°14'06"N, 136°18'07"W. The depth from this survey was developed using 10 m line spacing.

A charted depth of 3 fm (5.5 m) in Lacy Cove at 58°12.6'N, 136°18.5'W correspond to several depths ranging from 0 to 4 m from this survey.

A charted depth of 5 1/4 fm (9.6 m) at 58°14.3'N, 136°20.5'W corresponds to a 2.6 m depth (Pos. No. 6607+4) from this survey at 58°14'17"N, 136°20'30"W.

A charted depth of 34 fm (62 m) at 58°13.7'N, 136°16.5'W corresponds to a 45 m depth (Pos. No. 6255+8) from this survey at 58°13'42"N, 136°16'27"W.

A charted depth of 6 1/2 fm (11.9 m) at 58°11.9'N, 136°24.9'W correspond to ~~two~~ ³ 9.2 and 9.4 m depths (Pos. Nos. 7380+1, 7414+2) from this survey at 58°11'53"N, 136°25'08"W, and 58°11'52"N, 136°24'58"W respectively. The depths from this survey were developed using 5 m line spacing.

A charted depth of 8 fm (14.6 m) at 58°12.8'N, 136°23.6'W corresponds to a 12.8 m depth (Pos. No. 6457+2) from this survey at 58°12'49"N, 136°23'35"W.

A charted depth of 2 1/2 fm (4.6 m) at 58°12.8'N, 136°23.0'W corresponds to a 1.1 m ⁶ excess ~~or~~ 1.4 m depth (Pos. No. 4814+4) from this survey at 58°12'47"N, 136°22'58"W. The depth from this survey was developed using 5 m line spacing.

A charted depth of 33 fm (60.3 m) at 58°13.1'N, 136°21.9'W lies inshore of a 34 m depth (Pos. No. 2483+4) from this survey at 58°13'06"N, 136°22'06"W. The depth from this survey was developed using 25 m line spacing.

A charted depth of 31 fm (56.7 m) at 58°14.7'N, 136°22.3'W corresponds to many shoaler depths ranging from 21.7 to 35 m on this survey.

Additional areas of shoaling are listed below.

The following least depths were developed with 50 m line spacing:

17.2³ m at 58°15'18"N, 136°22'04"W (Pos No. 2650+2)
40.0 m at 58°13'20"N, 136°25'54"W (Pos No. 2444)

The following least depths were developed with 10 m line spacing:

22.4⁸ m at 58°12'06"N, 136°16'02"W (Pos No. 6212+5)
18.4 m at 58°13'09"N, 136°18'19"W (Pos No. 6188+5) - NSP

The following least depths were developed with 5 m line spacing:

6.9^{7.5} m at 58°15'07"N, 136°17'18"W (Pos. No. 4254+3)
9.0 m at 58°14'39"N, 136°16'55.5"W (Pos. No. 4379+2)
14.6⁸ m at 58°14'37"N, 136°22'06"W (Pos No. 7279+2)
11.7⁸ m at 58°14'50"N, 136°23'09"W (Pos No. 4680+1)
8.9^{9.0} m at 58°12'10"N, 136°22'06"W (Pos No. 4877+5)
7.4 m at 58°14'05"N, 136°22'40"W (Pos No. 7631+1)

Four shoal areas and features were determined by divers least depth:

0.7⁹ m at 58°15'38"N, 136°16'54"W (Pos No. 8291)
3.3⁴ m at 58°15'39"N, 136°16'49"W (Pos No. 8292)
3.8^{4.0} m at 58°15'39"N, 136°16'48"W (Pos No. 8293)
3.8⁴ m at 58°15'23"N, 136°21'57"W (Pos No. 4708)

Dive investigations resulted in least depth determinations of four features. Each echo sounder depth considered for a dive operation was assigned a dive site number; these numbers, along with the least depths originally investigated, appear on the dive investigation forms. The forms contain detailed descriptions and sketches of each feature and are included within the accordion files submitted with this survey.

Recommendation: The hydrographer recommends sounding data from this survey be used to update chart.

(initials)

Comparison of Non-Sounding Features

An area of water enclosed within a 400 m radius of 58°14'54"N, 136°20'51"W contains a small fishing settlement and is known locally as the "Hobbit Hole". The small passageway leading into the Hobbit Hole is easily navigated by a survey launch or by a small fishing vessel when the tide is 0 or greater. The Hobbit Hole is depicted on the annotated videotape included with this survey.

The small passageway that connects North and South Inian Passes, centered at 58°14'48"N, 136°21'21"W, is also safely navigable by a survey launch at low tide. This area is locally known as "Mosquito Pass".

Comparison of charted shoreline with this survey is discussed in Section J.

AWOIS Items

The following three AWOIS items were listed as a rock, a shoal, and a submerged wreck respectively. The areas were thoroughly investigated with closely spaced sounding lines and/or by visual observation, with the following results:

AWOIS No. 51793: Local fisherman reported a rock off Pt. Lavinia (locally known as Seiner's Rock) as a danger to navigation to the NOAA Ship DAVIDSON in 1979. The RAINIER's investigation for this survey revealed a rock, described by Pos. No. 2431 which ^{uncovers} ~~bare~~ 0.97 m at ^{actual} ~~predicted~~ MLLW at 58°13'25"N, 136°21'27"W. The rock was inspected during shoreline verification near predicted lower low water. The rock is charted inaccurately at 58°13'29"N, 136°21'38"W as a rock awash symbol with a note "REP 1978 PA". This survey showed no significant shoaling, features, or dangers to navigation at the charted position of the rock. The hydrographer strongly recommends updating the chart with the data from this survey. The charted position can mislead mariners into passing too close to the northern shoreline of South Inian Pass where a midchannel course is more prudent given the dangerous currents and sea conditions in the area. *Comment*

Depths to the south of Seiner's Rock (between the rock and Chichagof Island) are deep enough to allow small fishing vessels to transit with local knowledge in times of inclement weather. Seiner's Rock actually provides a lee from seas and swell. This is particularly evident when an ebb tide meets a westerly wind. This survey revealed a depth of 15.6 m (Pos. No. 7009+6) between Seiner's Rock and Chichagof Island which confirms local knowledge. Mariners should be urged to use extreme caution whenever transiting the area as locals have reported that many vessels have sunk in the vicinity of Seiner's Rock. *Comment*

AWOIS No. 51797: The U.S.C. & G.S. Ship PATHFINDER originally reported an 18 fm depth at a previously charted depth of 31 fm in 1967. Launch development (date and source not specified in AWOIS description) revealed a shoaler depth of 14 fm which is currently charted at 58°13'33"N, 136°20'04"W. RAINIER fully developed ^{25.9} the area via hydrography with 10 m line spacing which revealed a least depth of ~~26.2~~ m (14.3 fm) at 58°13'39"N, 136°20'09"W (Pos. No. 7179+2). This item was not reported as a danger to navigation because a 14 fm depth is already charted over the position.

The charted 14 fathom depth is 150 meters to the south of the 25.9 m (14.1 fm) depth found on this survey.

AWOIS No. 51806: A 28 ft fishing vessel is reported to have sunk in PA 58°14'18"N, 136°20'42"W NAD27 (58°14'19"N, 136°20'35"W NAD 83). The GP given in the AWOIS description plots on land near the floating house in the little cove described by Position No. 6686. On DN 099, the hydrographer searched the area between Pos Nos. 8702 and 8703 at a stage of tide near MLLW and saw nothing resembling a wreck in the water or on land. Water visibility was 4 m.

On DN 124, three divers with scooters searched the entire area in the cove and underneath the house and found nothing resembling the remains of a fishing vessel. The average depth of the area is 3 to 5 meters and water visibility was 4 m when the divers conducted their search. A survey launch is able to tie up to the eastern side of the house; however, the mooring lines that hold the house in place prevent a launch from maneuvering around the house. Three soundings were taken via DPs (Pos. Nos. 6688-6690) on the eastern side of the house. A description of the area around the house and AWOIS item is included on the annotated videotape included with this survey. The hydrographer recommends removing the wreck symbol from the chart.

CONCUR

Dangers to Navigation ✓

Twenty-one dangers to navigation within the limits of this survey were reported by radio message and hard copy to the Seventeenth Coast Guard District and DMAHTC. Copies of the correspondence are included in Appendix I of this report. Position numbers associated with each reported danger are included on the copy of the radio message.

O. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions. Do not occur, See Encl Report, section 6

P. AIDS TO NAVIGATION

Two fixed aids to navigation lie within the limits of the survey. Field positions were reported to the U.S. Coast Guard in accordance with the Project Instructions Section 4.2.1.2. (See Appendix VI)

<u>Navigational Aid</u> <u>Light List No.</u>	<u>Published</u> <u>Position*</u>	<u>Charted</u> <u>Position**</u>	<u>Field</u> <u>Position</u>
Pt. Lavinia Light Fl W 6s, #24225	58°13.4'N 136°21.2'W	58°13.4'N 136°21.3'W	58°13'24.0"N 136°21'15.0"W
George Island Light 2 Fl R 6s, #24230	58°12.7'N 136°22.8'W	58°12.7'N 136°22.8'W	58°12'42.4"N 136°22'52.7"W

See
Form 76-40 for
coordinates.

*Source: United States Coast Guard Light List (NAD83), Volume VI, 1990.

**scaled

There are no floating aids to navigation, bridges, overhead cables, submerged pipelines, or ferry routes within the limits of the survey.

Q. STATISTICS ✓

<u>Vessel:</u>	<u>2120</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>Total</u>
# of Pos	2	662	974	741	704	3083 3695
NM Hydro	0	74.6	98.3	113.1	60.8	346.8

NM ² Hydrography	12.56	Velocity Casts	6
Detached Positions	78	Tide Stations	2
Reference Numbers	221	Current/Magnetic Stations	0
Bottom Samples	62		

R. MISCELLANEOUS ✓

The hydrographer noticed that the area defined within a 500m radius of 58°15'00"N, 136°22'35"W exhibited strong and unpredictable currents. Current and sea conditions in this area often times hampered survey operations. Currents from varying directions would often cause whirlpools in the area. The hydrographer observed that even times of predicted slack water, considerable current was still present in the area. The hydrographer recommends that an additional note be included on the chart warning mariners of currents in this area. See Note B on chart 17302. *Should retain this note.*

The hydrographer confirmed the very strong currents existing in South Inian Pass. The most dangerous part of South Inian Pass is defined by longitudes 136°21'00"W and 136°21'45"W. This area is particularly dangerous when the ebb tide meets a westerly wind. Currents in this area frequently hampered survey data collection.

The hydrographer confirmed the magnetic disturbances as noted on the chart. Survey launch coxswains also noticed magnetic variations as much as 10° greater than normal in the area around Pt. Lavinia.

Loran C comparisons were sent to DMAHTC and U.S. Coast Guard in accordance with the project instructions.

All bottom samples were submitted to the Smithsonian Institution.

S. RECOMMENDATIONS ✓

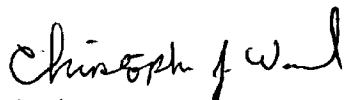
As stated in section J, the aerial photography was flown at too high of a stage of tide to be adequate for this survey. This required an extraordinary amount of additional time spent verifying the shoreline and processing the data. The hydrographer strongly recommends that future aerial photography be flown at a stage of tide near MLLW and that consideration be given to flying low water revision photography in the area.

T. REFERRAL TO REPORTS ✓

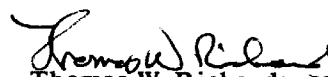
The following supplemental reports contain additional information relevant to this survey:

<u>Title</u>	<u>Date Sent to N/CG245</u>
Spring 1991 Horizontal Control Report for OPR-O106-RA	May 1991
Spring 1991 Electronic Control Data Package for OPR-O106-RA	May 1991
Spring 1991 Corrections to Echo Soundings Data Package for OPR-O106-RA	May 1991
Spring 1991 Coast Pilot Report for OPR-O106-RA	June 1991

Respectfully Submitted,


 Christopher J. Ward
 Lieutenant(jg), NOAA

Approved and Forwarded,


 Thomas W. Richards
 Captain, NOAA
 Commanding Officer

CONTROL STATIONS

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	STATION NAME	SIGNAL NOS.	QUAD NOS.
100	F	058:15:48.046	136:07:57.536	10	250	0.0	0.0	3	03/21/91	YAK	100	581362
101	F	058:13:12.460	136:09:58.937	8	250	0.0	0.0	4	04/30/91	GULL TP	101	581362
102	F	058:14:40.410	136:17:15.657	2	250	0.0	0.0		03/21/91	INIANA	102	
103	F	058:13:46.951	136:18:52.808	7	250	0.0	0.0	A	04/30/91	FAKE	103	581362
104	F	058:19:03.968	136:15:34.968	14	250	0.0	0.0	2	03/21/91	AID	104	581362
105	F	058:12:57.823	136:18:41.194	6	250	0.0	0.0	1	04/24/91	HAM 2	105	581362
106	F	058:11:41.367	136:21:06.313	7	250	0.0	0.0	A	03/24/91	FINN	106	
107	F	058:11:29.612	136:20:36.949	6	250	0.0	0.0	A	04/22/91	CHICH	107	
108	F	058:11:18.689	136:20:21.268	6	250	0.0	0.0	A	03/24/91	KOFF NO 1	108	
109	F	058:13:22.558	136:21:22.945	19	250	0.0	0.0	5	03/25/91	HAIR	109	581362
110	F	058:13:47.701	136:21:19.437	17	250	0.0	0.0	C	04/04/91	EYE	110	581362
111	F	058:15:14.570	136:17:41.249	5	250	0.0	0.0	B	04/06/91	OCTA	111	581362
112	F	058:11:41.776	136:20:55.983	3	250	0.0	0.0	A	03/27/91	WHARF	112	
113	F	058:12:43.819	136:22:51.081	10	250	0.0	0.0	5	04/06/91	ADZE	113	581362
114	F	058:09:58.431	136:21:33.556	6	250	0.0	0.0		00/00/00	ALTHORP ROCK LT	114	
115	F	058:20:02.107	136:18:17.253	10	250	0.0	0.0		00/00/00	BAN	115	
116	F	058:12:07.020	136:22:15.121	10	250	0.0	0.0	E	04/16/91	BEER	116	581362
117	F	058:09:16.155	136:19:07.423	4	250	0.0	0.0	A	05/06/91	BOW	117	
118	F	058:20:28.510	136:21:34.266	8	250	0.0	0.0		00/00/00	CAB	118	
119	F	058:15:02.304	136:21:18.505	6	250	0.0	0.0	E	04/22/91	CANAL	119	581362
120	F	058:11:56.358	136:38:25.437	32	250	0.0	0.0		00/00/00	CAPE SPENCER LT	120	
121	F	058:11:34.714	136:20:47.949	7	250	0.0	0.0	A	03/28/91	COVE	121	
122	F	058:21:04.689	136:17:37.122	2	250	0.0	0.0		00/00/00	DEED	122	
123	F	058:21:37.838	136:22:33.519	0	250	0.0	0.0		00/00/00	DELTA	123	
124	F	058:11:41.037	136:21:06.205	7	250	0.0	0.0		00/00/00	ELFIN COVE LT	124	
125	F	058:16:11.116	136:24:18.155	12	250	0.0	0.0	3	04/05/91	EX	125	581362
126	F	058:12:42.391	136:22:52.644	18	250	0.0	0.0		00/00/00	GEORGE ISLAND LT	126	581362
127	F	058:16:10.954	136:20:03.361	0	250	0.0	0.0		00/00/00	GLORIA	127	
128	F	058:11:43.986	136:22:37.906	9	250	0.0	0.0	1	04/09/91	GRAN	128	
129	F	058:12:08.803	136:21:21.384	5	250	0.0	0.0	A	04/22/91	HOLE	129	
130	F	058:14:18.493	136:20:16.427	6	250	0.0	0.0	E	04/24/91	LAV	130	581362
131	F	058:11:39.817	136:21:29.942	17	250	0.0	0.0	B	04/10/91	NITE	131	581362
132	F	058:13:23.996	136:21:15.011	23	250	0.0	0.0		00/00/00	PT LAVINIA LT	132	
133	F	058:15:15.230	136:23:02.253	15	250	0.0	0.0	C	04/05/91	SUR	133	581362
134	F	058:07:28.079	136:18:51.765	1	250	0.0	0.0		00/00/00	TOWN	134	
206	Z	058:11:41.367	136:21:06.313	7	250	0.0	0.0		03/26/91	FINN(R/AZ)	206	
207	Z	058:11:29.612	136:20:36.949	6	250	0.0	0.0		03/26/91	CHICH(R/AZ)	207	
208	Z	058:11:18.689	136:20:21.268	6	250	0.0	0.0		03/27/91	KOFF NO1(R/AZ)	208	
212	Z	058:11:41.776	136:20:55.983	5	250	0.0	0.0		03/26/91	WHARF(R/AZ)	212	
221	Z	058:11:34.714	136:20:47.949	7	250	0.0	0.0		03/28/91	COVE (R/AZ)	221	
135	F	058:11:51.574	136:38:27.410	18	250	0.0	0.0	2	04/05/91	CAPE	135	581363
136	F	058:11:49.673	136:20:50.459	6	250	0.0	0.0	B	04/09/91	SKY	136	
236	Z	058:11:49.673	136:20:50.459	6	250	0.0	0.0		04/05/91	SKY R/AZ	236	
230	Z	058:14:18.493	136:20:16.427	6	250	0.0	0.0		04/05/91	LAV R/AZ	230	581362
137	F	058:12:36.119	136:21:49.902	15	250	0.0	0.0	2	05/05/91	DUNK NO 2	137	581362
211	Z	058:15:14.570	136:17:41.249	5	250	0.0	0.0		04/04/91	OCTA R/AZ	211	581362
205	Z	058:12:57.823	136:18:41.194	6	250	0.0	0.0		04/05/91	HAM 2 R/AZ	205	581362
209	Z	058:13:22.558	136:21:22.945	19	250	0.0	0.0		04/05/91	HAIR R/AZ	209	581362
138	F	058:13:08.135	136:20:01.278	6	250	0.0	0.0	B	04/07/91	MINK	138	581362
200	Z	058:15:48.046	136:07:57.536	8	250	0.0	0.0		04/06/91	YAK R/AZ	200	581362
201	Z	058:13:12.460	136:09:58.937	8	250	0.0	0.0		04/06/91	GULL TP R/AZ	201	581362
213	Z	058:12:43.819	136:22:51.081	10	250	0.0	0.0		04/09/91	ADZE R/AZ	213	581362
219	Z	058:15:02.304	136:21:18.505	6	250	0.0	0.0		04/09/91	CANAL R/AZ	219	581362
233	Z	058:15:15.230	136:23:02.253	15	250	0.0	0.0		04/09/91	SUR R/AZ	233	581362
139	F	058:09:58.282	136:21:33.918	9	250	0.0	0.0	4	05/01/91	DALI	139	581362
143	F	058:14:46.129	136:20:46.891	5	250	0.0	0.0		04/21/91	ODIN	143	
141	F	058:14:14.253	136:21:47.079	6	250	0.0	0.0	2	05/05/91	URSA	141	581362
270	Z	058:15:04.561	136:21:48.250	5	250	0.0	0.0		04/21/91	EMBO R/AZ	270	581362
251	Z	058:13:00.397	136:21:31.694	6	250	0.0	0.0		04/21/91	AREA R/AZ	251	581362
142	F	058:08:31.134	136:20:53.813	4	250	0.0	0.0	C	05/04/91	EMBO	170	581362
170	F	058:15:04.561	136:21:48.250	5	250	0.0	0.0	E	04/22/91	ZEN	142	581362
140	F	058:12:42.391	136:22:52.644	18	250	0.0	0.0		04/22/91	GEORGE IS LT	140	
240	Z	058:12:42.391	136:22:52.644	18	250	0.0	0.0		04/22/91	HOBBIT HOLE TP	144	581362
144	F	058:14:51.870	136:20:37.104	5	250	0.0	0.0	E	04/22/91	GEORGE IS LT R/AZ	240	581362
151	F	058:13:00.397	136:21:31.694	6	250	0.0	0.0	E	05/02/91	AREA	151	581362
145	F	058:14:26.204	136:20:47.645	4	250	0.0	0.0	2	05/06/91	WHOA	145	581362
245	Z	058:14:26.204	136:20:47.645	4	250	0.0	0.0		04/22/91	WHOA R/AZ	245	581362
243	Z	058:14:46.129	136:20:46.891	5	259	0.0	0.0		04/22/91	ODIN R/AZ	243	581362
241	Z	058:14:14.253	136:21:47.079	6	250	0.0	0.0		04/23/91	HOLE R/AZ	229	
229	Z	058:12:08.803	136:21:21.384	5	250	0.0	0.0		04/22/91	GRAN R/AZ	228	
228	Z	058:11:43.986	136:22:37.906	9	250	0.0	0.0		04/23/91	RUDE 2	152	
152	F	058:09:57.989	136:23:25.066	6	250	0.0	0.0	A	05/01/91	RAIN	153	581362
153	F	058:08:18.190	136:25:21.164	27	250	0.0	0.0	1	05/02/91	CAPE SPENCER LT R/AZ	220	581363
220	Z	058:11:56.358	136:38:25.437	37	250	0.0	0.0		05/02/91	DREAD	154	581362
154	F	058:09:12.753	136:23:04.546	23	250	0.0	0.0	E	05/03/91	WEST	155	
155	F	058:11:38.436	136:23:48.166	0	250	0.0	0.0		00/00/00	DALLE	156	
156	F	058:11:51.099	136:23:28.690	0	250	0.0	0.0		00/00/00	LLAMA	157	581362
157	F	058:07:39.976	136:17:50.319	6	250	0.0	0.0	A	05/04/91	DUNK NO 2 R/AZ	237	
237	Z	058:12:36.119	136:21:49.902	15	250	0.0	0.0		05/05/91	FAKE R/AZ	203	581362
203	Z	058:13:46.951	136:18:52.808	7	250	0.0	0.0		00/00/00	MINK R/AZ	238	581362
204	Z	058:19:03.968	136:15:34.968	10	250	0.0	0.0		00/00/00	HOBBIT HOLE TP R/AZ	244	581362
238	Z	058:13:08.135	136:20:01.278	6	250	0.0	0.0		00/00/00			
244	Z	058:14:51.870	136:20:37.104	5	250	0.0	0.0		00/00/00			

RESPONSIBLE PERSONNEL

NAME

Captain Thomas W. Richards, NOAA

ORIGINATOR

- PHOTO FIELD PARTY
- HYDROGRAPHIC PARTY
- GEODETIC PARTY
- OTHER (Specify)

FIELD ACTIVITY REPRESENTATIVE

OFFICE ACTIVITY REPRESENTATIVE

REVIEWER

QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'
(Consult Photogrammetric Instructions No. 64.)

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

- F - Field
- L - Located
- V - Verified
- 1 - Triangulation
- 2 - Traverse
- 3 - Intersection
- 4 - Resection
- 5 - Field Identified
- 6 - Theodolite
- 7 - Planetable
- 8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
Office of NOAA Corps Operations
NOAA Ship RAINIER
1801 Fairview Avenue East
Seattle, Washington 98102-3767

10 May 1991

**ADVANCE
INFORMATION**

Commander (OAN)
Seventeenth U.S. Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 99802

Dear Sir:


In conjunction with survey operations in Cross Sound, Alaska, personnel from NOAA Ship RAINIER have determined the positions of Althorp Rock Light 3, Cape Spencer Light, Elfin Cove Daybeacon 5, Elfin Cove Entrance Light 2, Elfin Cove Outer Light, George Island Light 2, North Inian Pass Light, Point Lavinia Light and Three Hill Island Light. All positions meet Third-order, Class I specifications and are based on the North American Datum of 1983 and the GRS Ellipsoid of 1980. The positions listed below are field positions and are not adjusted:

<u>Navigation Aid</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>1990 Light List No.</u>
ALTHORP ROCK LIGHT 3	58°09'58.431"	136°21'33.556"	24275
CAPE SPENCER LIGHT	58°11'56.358"	136°38'25.437"	24240
ELFIN COVE DAY-BEACON 5	58°11'39.554"	136°20'56.542"	24260
ELFIN COVE ENTRANCE LIGHT 2	58°11'41.049"	136°21'06.378"	24245
ELFIN COVE OUTER LIGHT	58°11'48.882"	136°21'04.243"	24250
GEORGE ISLAND LIGHT 2	58°12'42.425"	136°22'52.678"	24230
NORTH INIAN PASS LIGHT	58°16'19.815"	136°24'07.799"	24235
POINT LAVINIA LIGHT	58°13'23.996"	136°21'15.011"	24225
THREE HILL ISLAND LIGHT	58°09'12.879"	136°23'03.432"	24280



Questions concerning these data may be directed to:
Commanding Officer, NOAA Ship RAINIER, 1801 Fairview Avenue
East, Seattle, Washington 98102-3767, telephone (206) 553-
4794.

Sincerely,


Thomas W. Richards
Captain, NOAA
Commanding Officer



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington 98102-3767

June 3, 1991

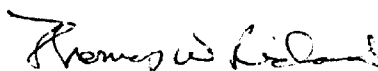
Director
DMAHTC
Attn: MCNA
6500 Brooks Lane
Washington, D.C. 20315-0030

**ADVANCE
INFORMATION**

Dear Sir:

While conducting hydrographic survey operations in Cross Sound, Alaska, NOAA Ship RAINIER discovered 20 dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,


Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington
98102-3767

June 3, 1991

Commander
Seventeenth Coast Guard District
Post Office Box 3-5000
Juneau, Alaska 99802

**ADVANCE
INFORMATION**

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC



P 022020Z JUN 91
 FM NOAA S RAINIER
 TO CGGDSEVENTEEN JUNEAU AK
 DMHTCNAVWARN WASHINGTON DC//MCNM//
 INFO NOAA MOP SEATTLE WA
 ACCT CK-VCAA

**ADVANCE
 INFORMATION**

BT

UNCLAS

NOAA SHIP RAINIER HAS FOUND 20 DANGERS TO NAVIGATION IN CROSS
 SOUND, ALASKA (PROJECT OPR-0106-RA) WITHIN THE LIMITS OF
 HYDROGRAPHIC SURVEY H-10371 (SOUTH INIAN PASS). THE FOLLOWING
 INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO
 MARINERS:

CHARTS AFFECTED: 17302 15TH ED MAY 20/89 1:80,000 NAD83

17300 25TH ED APR 29/89 1:209,978 NAD83

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

T08 03

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE
A.	SHOAL COV	17302	1 3/4FM	NAD83	58-15-39.04N	136-16-49.10W
B.	SHOAL COV	17302 17300	2 1/4FM 2 1/4FM	NAD83 NAD83	58-15-24.80N	136-18-12.53W
C.	SHOAL COV	17302	4 3/4FM	NAD83	58-14-39.38N	136-16-55.54W
D.	SHOAL COV	17302	1 3/4FM	NAD83	58-13-28.73N	136-17-19.28W
E.	SHOAL COV	17302	8 1/4FM	NAD83	58-13-42.16N	136-18-39.19W
F.	SHOAL COV	17302	1/4FM	NAD83	58-12-37.80N	136-18-35.74W
G.	SHOAL COV	17302	1 1/4FM	NAD83	58-14-17.37N	136-20-30.35W
H.	SHOAL COV	17302	3/4FM	NAD83	58-14-49.71N	136-21-21.87W
I.	SHOAL COV	17302	2 3/4FM	NAD83	58-14-58.25N	136-21-24.30W
J.	SHOAL COV	17302 17300	7 3/4FM 7 3/4FM	NAD83 NAD83	58-14-36.83N	136-22-05.87W
K.	SHOAL COV	17302	4 3/4FM	NAD83	58-15-09.18N	136-22-56.77W
L.	SHOAL COV	17302 17300	6 1/4FM 6 1/4FM	NAD83 NAD83	58-14-49.69N	136-23-09.27W
M.	SHOAL COV	17302	4FM	NAD83	58-14-05.30N	136-22-40.45W
N.	ROCK UNCOV	17302	3FT	NAD83	58-13-24.89N	136-21-27.18W
O.	SHOAL COV	17302	1/2FM	NAD83	58-12-46.69N	136-22-58.31W
P.	SHOAL COV	17302 17300	7FM 7FM	NAD83 NAD83	58-12-49.19N	136-23-35.42W
Q.	SHOAL COV	17302	3 1/2FM	NAD83	58-12-33.34N	136-23-23.75W
R.	SHOAL COV	17302	5FM	NAD83	58-11-53.44N	136-25-07.82W
S.	SHOAL COV	17302	4 3/4FM	NAD83	58-12-09.67N	136-22-05.64W
T.	NUMEROUS UNCHARTED ROCKS EXIST ALONG THE SHORES OF SOUTH INIAN PASS WITHIN 100 METERS OF THE LOW WATER LINE. MARINERS SHOULD EXERCISE CAUTION WHEN NAVIGATING CLOSE INSHORE IN THIS AREA.					

Fix # TPOST

8292+0 Mc

6502+1

4379+2

8205+0

6347+0

6534+0

6607+4

6755+3

4733+1

7279+

8622+7

4680+1

7631+1

2431+0

4762+0

6457+0

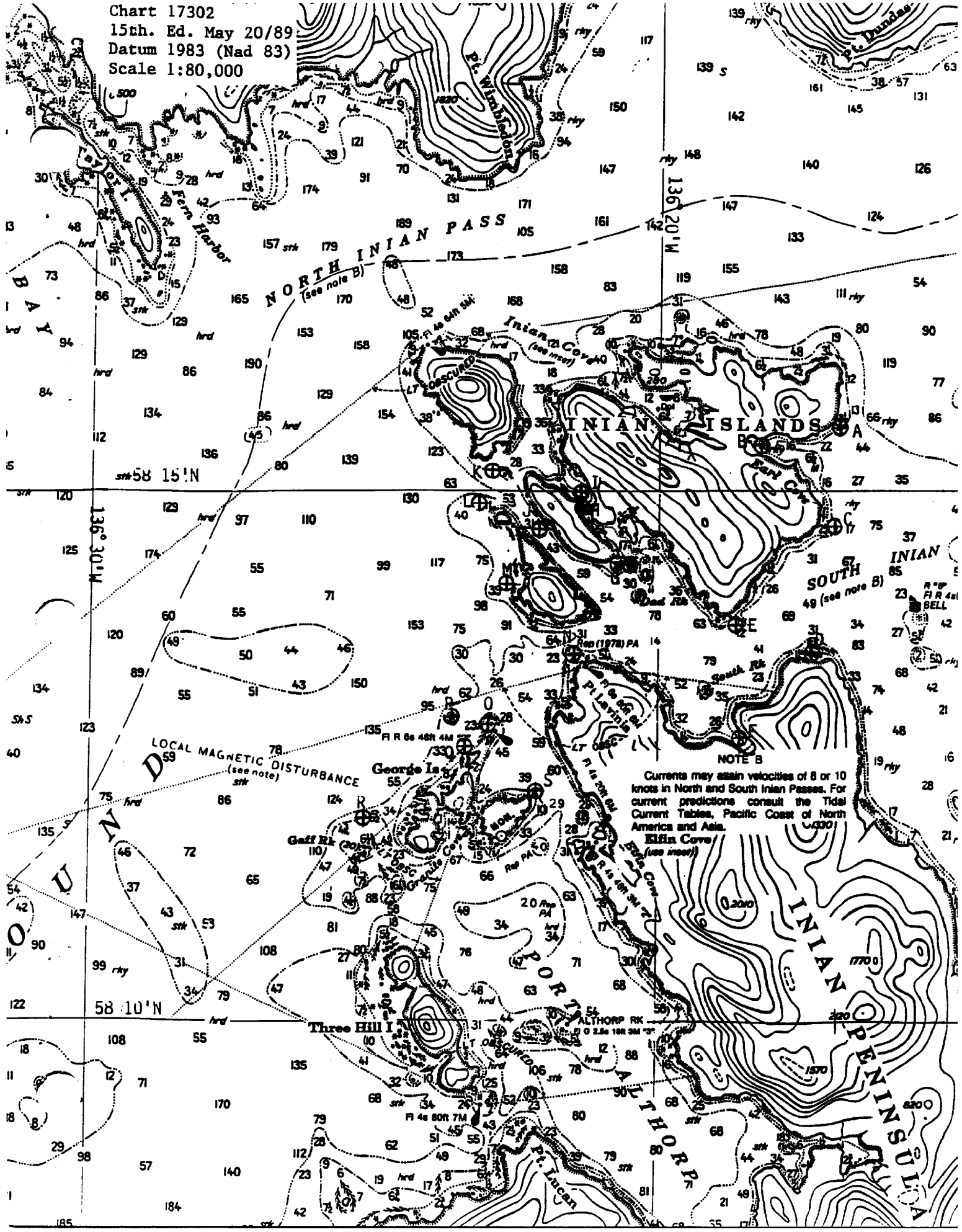
7449+0

7380+1

4877+5

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. QUESTIONS
 CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC

Chart 17302
15th. Ed. May 20/89
Datum 1983 (Nad 83)
Scale 1:80,000



NOTE B
Currents may attain velocities of 8 or 10 knots in North and South Inian Passes. For current predictions consult the Tidal Current Tables, Pacific Coast of North America and Asia.
Elfin Cove (see inset)

June 7, 1991

Commander (OAN)
Seventeenth Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 99802-1217

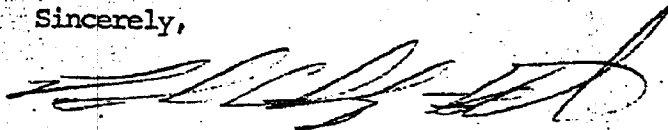
Dear Sir:

During office review of hydrographic survey H-10371, Alaska, Cross Sound, Danger to Navigation affecting charts 17300 (25th ed., April 29, 1989: NAD 83) and 17302 (15th ed., May 20, 1989: NAD 83).

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 Section at (206) 526-6853.

Sincerely,



Pamela R. Chelgren-Koterba
Commander, NOAA
Chief, Pacific Hydrographic Section

Enclosure

cc: DMA/TC
N/CG221

CG 10371 June 10 6-7-91
245 DHC 6-7-91
245 PCK 6-7-91

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10371
Survey Title: State: Alaska
Locality: Cross Sound
Sublocality: South Inian Pass
Project Number: OPR-0106-RA, NOAA Ship RAINIER

The following item was discovered during office processing of hydrographic survey H-10371.

Object discovered: One rock corrected to predicted tides

Affected nautical chart

<u>CHART</u> <u>NUMBER</u>	<u>EDITION</u>		<u>REPORTED</u> <u>DEPTH</u>	<u>CHARTED</u> <u>HORIZ</u> <u>DATUM</u>	<u>GEOGRAPHIC POSITION</u>	
	<u>NO.</u>	<u>DATE</u>			<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
17300	25th	4/29/89	RK uncov 6.0 ft	NAD 83	58°14'21.33"	136°20'31.14"
17302	15th	5/20/89	RK uncov 6.0 ft	NAD 83	58°14'21.33"	136°20'31.14"

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.


APPROVAL SHEET

for

H-10371

Standard procedures were followed in accordance with the Hydrographic Manual (Fourth Edition), the Hydrographic Survey Guidelines, and the Field Procedures Manual in producing this survey. The data were examined daily during data acquisition and processing.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.


Thomas W. Richards
Captain, NOAA
Commanding Officer

ORIGINAL

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 28, 1991

MARINE CENTER: Pacific

OPR: O106-RA

HYDROGRAPHIC SHEET: H-10371

LOCALITY: South Inian Pass, Cross Sound, Alaska

TIME PERIOD: March 23, 1991 - May 6, 1991

TIDE STATIONS USED: 945-2629 (945-2630) Inian Cove, Alaska
Lat. 58° 15.8'N Lon. 136° 19.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 8.87 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 10.6 ft.

REMARKS: RECOMMENDED ZONING

1. West of 136° 24.5', apply a -6 minute time correction and a x0.93 range ratio to Inian Cove.
2. East of 136° 24.5' and west of 136° 21.5', apply a -6 minute time correction and a x0.94 range ratio to Inian Cove.
3. East of 136° 21.5' and west of 136° 17.5', times and heights are direct on Inian Cove.
4. East of 136° 17.5' and west of 136° 14.5', apply a +6 minute time correction and a x1.04 range ratio to Inian Cove.

Notes: Inian Cove station # is 945-2629, however, the data is in file # 945-2630.
Times are tabulated in Greenwich Mean Time.


CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

GEOGRAPHIC NAMES

H-10371

Name on Survey	A ON CHART NO. 17434 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 TP-01330										
	A	B	C	D	E	F	G	H	I	J	K
ALASKA (title)	X										1
CHICHAGOF ISLAND	X										2
CROSS SOUND	X										3
DAD ROCK	X								X		4
EARL COVE	X								X		5
GEORGE ISLANDS	X								X		6
HOBBIT HOLE, THE				X							7
INIAN ISLANDS	X								X		8
INIAN PENINSULA	X								X		9
LACY COVE									X		10
LAVINIA, POINT	X								X		11
MIDDLE PASS				X							12
MOSQUITO COVE				X							13
MOSQUITO PASS				X							14
SEINERS ROCK				X							15
SOUTH INIAN PASS	X								X		16
SOUTH ROCK	X								X		17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

Charles E. Harrington
Chief Geographer

JAN 29 1992

* Tentative approval pending U.S. Board on Geographic Names decision

Form 9-1343

UNITED STATES BOARD ON GEOGRAPHIC NAMES DOMESTIC GEOGRAPHIC NAMES REPORT	Controversial name	Recommended name: MIDDLE PASS
	Name change	State ALASKA
	Changed application	County CROSS SOUND
	X Other	

Lat. 58 ° 15 ' 40 " N. Long. 136 ° 22 ' 15 " W. Mouth End Center (Circle one)
 Lat. 58 ° 15 ' 00 " N. Long. 136 ° 23 ' 00 " W. Heading End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

MIDDLE PASS LIES ALONG THE LINE CONNECTING THE TWO POINTS LISTED ABOVE. IT CONNECTS NORTH INIAN PASS TO CROSS SOUND.

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)

Provide information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application

THE NAME "MIDDLE PASS" IS USED BY THE LOCALS WHO INHABIT THE HOBBIT HOLE AND ELFIN COVE. THE LOCAL CONTACT FOR INFORMATION IN ELFIN COVE IS :

MARY JO LORD-WILD
ELFIN COVE, AK 99825

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS	OCCUPATION

Submitted by: CAPT THOMAS W. RICHARDS Title COMMANDING OFFICER Date 29 MAY 1991
 Name
 Agency NOAA SHIP RAINIER Address 1801 FAIRVIEW AVE E, SEATTLE, WA

Form 9-1343

UNITED STATES BOARD ON GEOGRAPHIC NAMES DOMESTIC GEOGRAPHIC NAMES REPORT	Controversial name	Recommended name SEINER'S ROCK
	Name change	State ALASKA
	Changed application	County CROSS SOUND
	<input checked="" type="checkbox"/> Other (NEW)	

Lat. 58 ° 13 ' 25 " N. Long. 136 ° 21 ' 27 " W. Mouth End Center (Circle one)

Lat. _____ ° _____ ' _____ " N. Long. _____ ° _____ ' _____ " W. Heading End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

SEINER'S ROCK, LOCATED OFF PT. LAVINIA, IS A PROMINENT FEATURE THAT UNCOVERS AT LOW WATER. THE ROCK IS AN IMPORTANT DANGER TO NAVIGATION AND WAS THE SUBJECT OF AN AWOIS INVESTIGATION (AWOIS #51793). THERE IS NAVIGABLE WATER ALL AROUND THE ROCK.

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)

Av. Provide information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application

THE ROCK IS REPORTED IN THE AWOIS LISTING AS "LOCALLY KNOWN AS SEINER'S ROCK". LOCALS IN THE HOBBIT HOLE AND IN ELFIN COVE HAVE NO KNOWLEDGE OF THIS NAME.
 THE LOCAL CONTACT FOR INFORMATION IN ELFIN COVE IS:

MARY JO LORD-WILD
 ELFIN COVE, AK 99825

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS	OCCUPATION

Submitted by: Name CAPT THOMAS W RICHARDS Title COMMANDING OFFICER Date 29 MAY 1991
 Agency NOAA SHIP RAINIER Address 1801 FAIRVIEW AVENUE EAST, SEATTLE, WA

Form 9-1343

UNITED STATES
BOARD ON GEOGRAPHIC NAMES
DOMESTIC GEOGRAPHIC NAMES
REPORT

Controversial name	Recommended name: THE HOBBIT HOLE
Name change	State ALASKA
Changed application	County CROSS SOUND
<input checked="" type="checkbox"/> Other (NEW)	

Lat. 58 ° 14 ' 54 " N. Long. 136 ° 20 ' 51 " W. Mouth End Center (Circle one)
 Lat. _____ ° _____ ' _____ " N. Long. _____ ° _____ ' _____ " W. Heading End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

An area of water is enclosed within a four hundred meter radius of the above position. There is a small fishing settlement of about 7 people who reside inside the enclosed area. The people who live there call it The Hobbit Hole. The area has been inhabited for almost 100 years.

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application

The inhabitants of the HOBBIT HOLE have no telephones or direct Mail Access. A NOAA weather observer who resides in Elfin Cove, AK, may act as a point of reference
 Mary Jo Lord-Wild
 Elfin Cove, AK 99825

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS	OCCUPATION

Submitted by: Name CAPT Thomas W. Richards, NOAA Title Commanding Officer Date 29 May, 1991
 Agency NOAA Ship RAINIER Address 1801 Fairview Ave E, Seattle, WA

Form 9-1343

UNITED STATES BOARD ON GEOGRAPHIC NAMES DOMESTIC GEOGRAPHIC NAMES REPORT	<input type="checkbox"/>	Controversial name	Recommended name: MOSQUITO PASS
	<input type="checkbox"/>	Name change	State Alaska
	<input type="checkbox"/>	Changed application	County Cross Sound
	<input checked="" type="checkbox"/>	Other	

Lat. 58 ° 14 ' 48 " N. Long. 136 ° 21 ' 21 " W. Mouth End Center (Circle one)
 Lat. _____ ° _____ ' _____ " N. Long. _____ ° _____ ' _____ " W. Heading End _____ (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

Mosquito Pass is a small passageway, centered at the above position that connects North and South Inian Pass. The pass is navigable at all but the lowest stage of tide by small fishing vessels and is well protected from heavy weather.

The cove connected to the northern part of Mosquito Pass is known as Mosquito Cove.

Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)

Av. Give information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application

RAINIER learned of this name from local residents of The Hobbit Hole and Elfin Cove, AK. A NOAA weather observer who resides in Elfin Cove, AK may act as a local contact for information.

Mary Jo Lord-Wild
 Elfin Cove, AK 99825

AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS	OCCUPATION

Submitted by: Name CAPT Thomas W. Richards Title Commanding Officer Date 29 May 1991
 Agency NOAA Ship RAINIER Address 1801 Fairview Ave E, Seattle, WA

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10371	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS	
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	3				
ENVELOPES					
VOLUMES	5				
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					
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					3695
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS			68		68
VERIFICATION OF SOUNDINGS			478		478
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION/VERIFICATION					
COMPILATION OF SMOOTH SHEET			172		172
COMPARISON WITH PRIOR SURVEYS AND CHARTS				10	10
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				25	25
GEOGRAPHIC NAMES					
OTHER*					
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	718	35
					753
Pre-processing Examination by M. Brown			Beginning Date 5/30/91	Ending Date 6/13/91	
Verification of Field Data by M. Sanders			Time (Hours) 718	Ending Date 7/29/92	
Verification Check by J. Stringham			Time (Hours) 70	Ending Date 8/26/92	
Evaluation and Analysis by R. Davies			Time (Hours) 35	Ending Date 9/8/92	
Inspection by D. Hill			Time (Hours) 6	Ending Date 9/10/92	

EVALUATION REPORT

H-10371

1. INTRODUCTION

Survey H-10371 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-O106-RA, dated February 21, 1991

This survey occurred in Alaska and covers South Inian Pass between Cross Sound and South Passage. This area also includes the northern portion of Inian Peninsula and George Islands to the south and the Inian Islands to the north. The surveyed area extends from latitude 58/11/45N to latitude 58/15/45N, and from longitude 136/15/42W to longitude 161/26/00W. The shoreline in the area is characterized by rocks, rock ledges, and many submerged rocks and islets near shore. This area has numerous small coves and narrow passages with extreme currents at certain times of the day. The bottom consists of mud, shells and pebbles. Depths range from zero to 280 meters.

Predicted tides for Sitka, Alaska, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Inian Cove, Alaska, gage 945-2629, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. NAD 83 is used as the horizontal datum for plotting and position computation. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey as required by the specifications contained in Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete depiction of survey data.

2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report and the Spring 1991 Horizontal and Electronic Control Reports for OPR-O106-RA, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1990 and 1991 field and published values based on NAD 83. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks 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: -1.322 seconds (-40.897 meters)
Longitude: 6.626 seconds (108.110 meters)

The year of establishment of control stations shown on the smooth sheet originates with the NGS listing and the previously mentioned horizontal control report.

The quality of several positions exceeds limits in terms of error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

The following shoreline maps were compiled on NAD 27 and apply to this survey.

	<u>Photo Date</u>	<u>Class</u>	<u>Scale</u>
TP-01330	June 1985	III	1:20,000
TP-01331	June 1985	III	1:20,000

There are numerous small shoreline changes shown in red on survey H-10371. These revisions are considered adequate to supersede the common photogrammetrically delineated shoreline.

3. HYDROGRAPHY

Except as noted below and elsewhere in this report, hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard 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.

Because of the steep sloping and rocky shoreline, the zero meter curve could not be adequately drawn and developed but the hydrography is adequate for charting.

The following features were transferred from the final field sheet without supporting position information.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
deadhead	58/14/55	136/21/03
ledges	58/15/30	136/21/45
rock	58/14/23	136/22/22

Bottom samples were not adequately taken west of longitude 136/24/00W.

4. CONDITION OF SURVEY

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, and the Field/Procedures Manual, April 1990 edition, except for the following.

A detailed comparison with all prior surveys common with the present survey was not accomplished. Several features were brought forward to the present survey because of

inadequate investigations. See section 6 of this report for these items. Reference the Field Procedures Manual, Figure 6.1, Section M, Comparison with Prior Surveys.

A comparison of charted soundings was made by the hydrographer in section N of the descriptive report. This comparison should have been in Section M, Comparison of Prior Surveys, as all of the soundings originate from prior surveys. Reference the FPM, Figure 6.1, Section M, Comparison with Prior Surveys.

5. JUNCTIONS

Survey H-10371 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10357	1990	1:10,000	East
H-10370	1991	1:5,000	South
H-10374	1991	1:20,000	West
H-10376	1991	1:10,000	Southwest
H-10419	1992	1:10,000	North

The junction with surveys H-10357, H-10370 and H-10374 are not formally completed since these surveys were previously processed and forwarded for charting. Soundings have been transferred from the above surveys to better portray the bottom in the common areas. Portions of the depth curves on the above surveys should be adjusted to conform with those on survey H-10371.

The junction with surveys H-10376 and H-10419 are not formally completed since these surveys are in office processing. The junction with survey H-10371 will be addressed in the evaluation reports for surveys H-10376 and H-10419.

6. COMPARISON WITH PRIOR SURVEYS

H-2558 (1901) 1:40,000
H-2559 (1901) 1:40,000
H-2618 (1902) 1:40,000
H-2618a (1902) 1:40,000

The prior surveys listed above cover the entire area common with the present survey. The shoreline in the area has remained relatively stable throughout the years. There is an average difference in depths of ± 10 meters between the prior surveys and survey H-10371. This area has experienced earthquakes, possible isostatic rebound and natural accretion and erosional processes. These processes, the different horizontal datums, the greater sounding coverage and the relative accuracy of the data acquisition techniques account for the differences between the soundings on the prior surveys.

H-6765 (1942) 1:5,000

This prior survey covers the southwestern portion of survey H-10371, in the general area of the George Islands. This survey compares favorably with the present survey, with only a meter difference in depth.

The following features have been transferred from prior survey H-6765 to this survey.

<u>Feature</u>	<u>Latitude(N)</u>	<u>longitude(W)</u> NAD 83
12 fathom (21.9m)	58/12/17	136/23/02
rock	58/12/02.6	136/22/58.2
ledge	58/12/02	136/22/59
kelp	various	

In accordance with Hydrographic Survey Guideline No. 39, the effects of the 1964 Prince William Sound earthquake were considered in the comparison of these surveys. No reasonable adjustment value for prior soundings could be determined.

With the transfer of the features above, survey H-10371 is adequate to supersede the prior surveys within the common area.

H-4318WD (1922) 1:40,000

Wire-drag survey H-4318 covers the entire area of the present survey. One hang depth, 51 ft (15.5m) at latitude 58/12/48N, longitude 136/23/36W, is superseded by a 12.8m (42 ft) depth on the present survey at latitude 58/12/49N and longitude 136/23/35W. There are otherwise, no conflicts between these present and prior surveys.

There are no AWOIS items originating from the above listed prior surveys.

7. COMPARISON WITH CHART

Chart 17302, 15th edition, dated May 20, 1989; scale 1:80,000

a. Hydrography

Charted hydrography originates with above mentioned prior surveys and miscellaneous sources and requires no further discussion.

b. AWOIS

The following AWOIS items originate with miscellaneous sources: 51793, 51797 and 51806. The disposition of all the items are adequately discussed by the hydrographer in section N.

c. Controlling Depths

There are no channels with controlling depths within the area of this survey.

d. Aids to Navigation

There are two fixed aids and no floating aids located within the area of this survey and they serve their intended purposes.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer.

f. Dangers to Navigation

The hydrographer reported twenty covered shoals to the Seventeenth District of the United States Coast Guard, Juneau, Alaska, on June 20, 1991. Copy of the message is attached. One additional danger was discovered during office processing and was reported to the Coast Guard, DMATC and N/CG221, see attached letter.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10371 adequately complies with the Project Instructions except where noted in this report.

9. ADDITIONAL FIELD WORK

This is an adequate hydrographic survey. Additional field work is recommended on a low priority basis to resolve items mentioned in sections 3 and 6 of this report.

Charles R. Davies
Charles R. Davies
Cartographer

APPROVAL SHEET
H-10371

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 disproof of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Dennis Hill

Date: 9-10-92

Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

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.

Douglas G. Hennick

Date: 9/14/92

Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:

J. Austin Yeager

Date: 9/28/93

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

Received 4/6/92

