

10239

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-10-1-87.....

Registry No. H-10239.....

LOCALITY

State Alaska.....

General Locality .. Seymour Canal.....

Sublocality Head of Seymour Canal.....

19 87

CHIEF OF PARTY
CAPT. C.W. Fisher.....

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DATE April 27, 1988.....

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10239

AREA 5
CHT

17300 } TO SIGN OFF,
SEE "RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10239

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 10-1-87

State AlaskaGeneral locality Seymour CanalLocality Head of Seymour CanalScale 1:10,000 Date of survey April 12 - May 5, 1987Instructions dated March 14, 1985 Project No. OPR-0179-RA-87Vessel RAINIER S221 (2120), Launches, 2123, 2124, 2125, 2126, Skiffs 2128, 2129Chief of party Carl W. Fisher, CAPT, NOAASurveyed by LT White, ENS Damm, ENS Poston, ENS O'Mara, ENS Hill, ENS Meis, ENS LarsenSoundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DSF 6000NGraphic record scaled by RAINIER PersonnelGraphic record checked by RAINIER PersonnelVerification by M. Sanders Automated plot by PMC Xynetics PlotterEvaluation by I. AlmacenSoundings in fathoms ~~feet~~ at ~~MHW~~ MLLWREMARKS: Revisions and marginal notes in black generated during office processing. Separates are filed with the hydrographic data.SP 3-25-97AWOIS and SURF ✓ 2/89 SJB

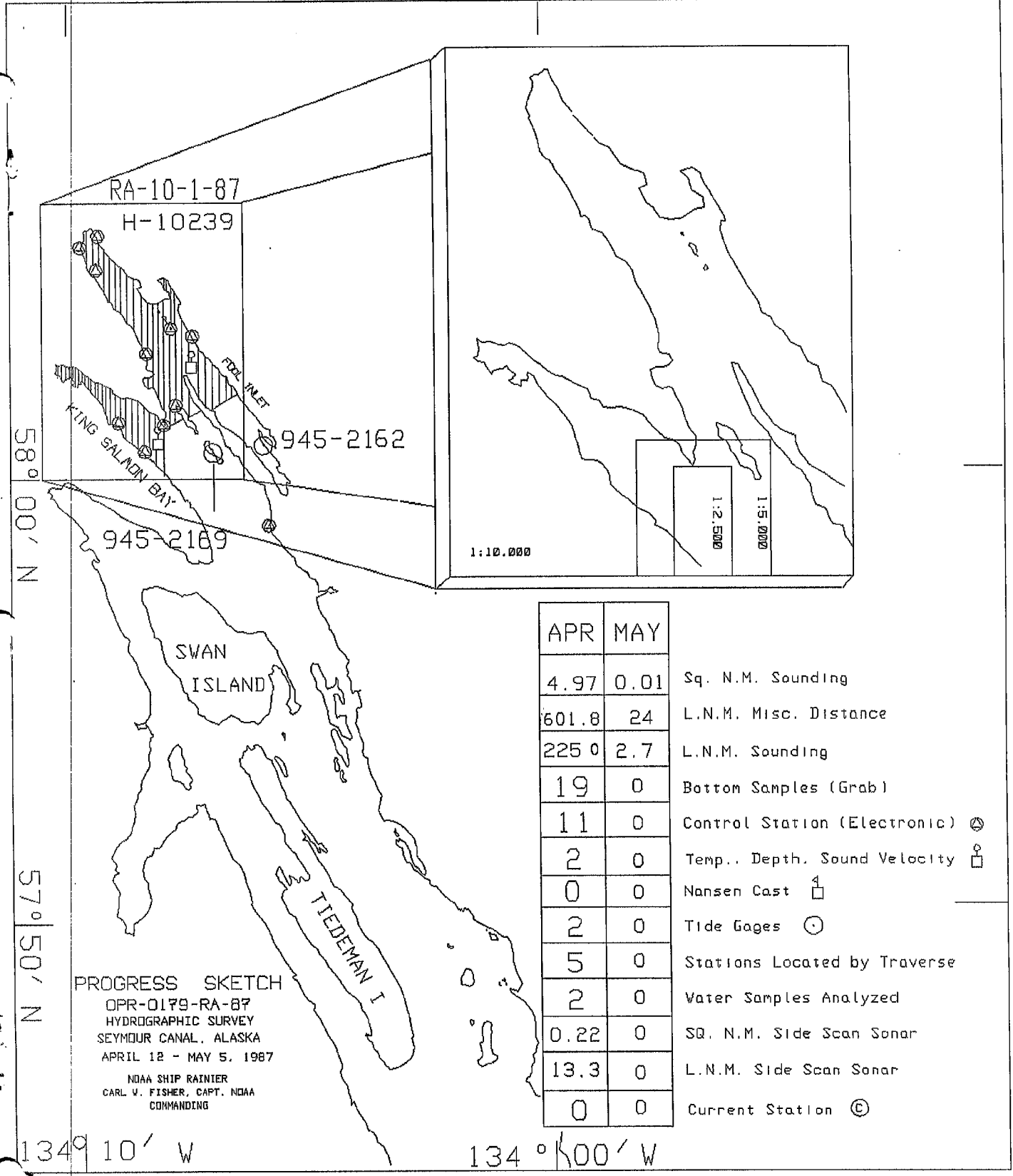


Figure 1. The project area, showing limits of the 1:10,000- (main), 1:5,000- (NSP), and 1:2,500-scale (NSP) survey sheets. (From Chart 17300, scale 1:209,978)

Descriptive Report to Accompany Hydrographic Survey H-10239

Field Number RA-10-1-87
Scale 1:10,000
1987

NOAA Ship RAINIER
Chief of Party: Captain Carl W. Fisher

A. Project

A basic hydrographic survey was completed as specified by Project Instructions OPR-O179-RA-85, dated 14 March 1985, and Changes Number 1 through 6 (Table 1). ✓

Table 1. Changes to Project Instructions OPR-O179-RA-85

<u>Change Number</u>	<u>Date</u>	<u>Title</u>
1	3-21-85	Supplement to Instructions
2	9-27-85	Amendment to Instructions
3	1-17-86	Amendment to Instructions
4	6-24-86	Amendment to Instructions
5	9-10-87 ⁶	Supplement to Instructions
6	2-05-87	Amendment to Instructions

This was the final survey in a project whose purpose is to provide contemporary hydrographic data for existing nautical charts covering Seymour Canal, Alaska. A new 1:80,000-scale chart is also planned. The survey is designated sheet H on the original sheet layout for the project. The field number is RA-10-1-87 and the assigned registry number is H-10239 (Figure 1). ✓

B. Area Surveyed

The survey is located in Southeast Alaska, approximately 20 miles south of Juneau, at the head of Seymour Canal. Seymour Canal extends in a northwest direction into Admiralty Island for about 38 miles, paralleling the Glass Peninsula. The survey area was inaccessible to the ship due to narrow passages, shallow waters, swift currents, and absence of a good anchorage. RAINIER was, however, able to anchor 2.5 nm south of the sheet limit, thus posing no ✓

problem of accessibility for the automated survey launches or for radio communications with them. The approximate geographic limits of the survey are:

North	58° 06' 00" N
South	58° 00' 00" N
East	134° 13' 00" W
West	134° 21' 00" W

Data acquisition was conducted from 12 April 1987 (DN 102) to 30 April 1987 (DN 120).

C. Sounding Vessels

All data were acquired from the ship's four automated survey launches, a 19-foot, aluminum-hulled MonArk, and a 17-foot Boston Whaler (Table 2).

Table 2. Sounding Vessels

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RA-3	2123	R/R, Side scan
RA-4	2124	R/R, R/AZ
RA-5	2125	Velocity casts, Bottom samples
RA-6	2126	R/R, R/AZ
RA-8 (Whaler)	2128	Shoreline verification
RA-9 (MonArk)	2129	Shoreline verification

No changes to the standard sounding configurations were necessary. The MonArk and the Whaler were not outfitted for acquiring automated sounding data on this survey, but were used only for shoreline verification.

D. Sounding Equipment and Corrections to Echo Soundings

The automated survey launches used for this survey were equipped with Raytheon DSF-6000N echo sounders (Table 3). 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 fathoms and tenths of fathoms. Two-fathom bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions, in accordance with the Provisional Instructions "RAYTHEON DSF-6000N ECHO-SOUNDER OPERATING AND PROCESSING INSTRUCTIONS," dated July 5, 1983, and the N/CG2 memorandum "DSF-6000N Depth Errors as a Function of Receiver Gain," dated May 23, 1986.

Table 3. Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial Number</u>	<u>Day Numbers</u>
2123	A117N	102-125
2124	A103N	102-112
	A114N	115-125
2125	A114N	102-114
	A103N	115-125
2126	A119N	102-125

An electronic malfunction necessitated replacement of echo-sounder A103N from launch 2124 on day 112. The unit was removed from service, repaired, and returned to service on day 115 in launch 2125. In the meantime, unit A114N was removed from launch 2125 and placed in launch 2124 on day 115. The malfunction of A103N did not result in any erroneous data being recorded, as launch 2124 was only engaged in Mini-Ranger critical systems checks that day, and had not yet collected sounding data on this survey. All other sounding equipment functioned properly throughout the survey.

A Klein side scan unit (Table 4) was used during this survey to help define contacts needing further development by echo sounder or divers. The side scan unit was operated in accordance with the Provisional Side Scan Sonar Manual, dated 25 April 1986, and proved to be very effective in locating as solid objects items which appeared only as strays or side echoes on the echo-sounder trace.

Table 4. Klein Side Scan System

<u>Equipment</u>	<u>Model</u>	<u>Serial No.</u>
Recorder	521T	254
Transducer	422XS-101AF	410M

Least depths were obtained by divers with a 3D Instruments pneumatic depth gage (S/N 8504192N). The gage was operated in accordance with Hydrographic Survey Guideline #55, and was last calibrated 12/19/86 by 3D Instruments, Inc. (Appendix IV).

Anomalous Soundings

During the course of mainscheme hydrography occasional strays and side echoes were detected which indicated that further development was necessary to better define the limits of these objects. However, many of the strays visible on the high-frequency echo-sounder trace during mainscheme hydrography were not seen on subsequent passes

over the same line, nor on lines closely adjacent to the mainscheme line. In those cases in which a bottom feature could not be discerned by further investigation the shallowest depths seen on the original echo-sounder trace were inserted into the digital record anyway, and caused no significant shifts to the depth contours on the final field sheet (Figure 2).

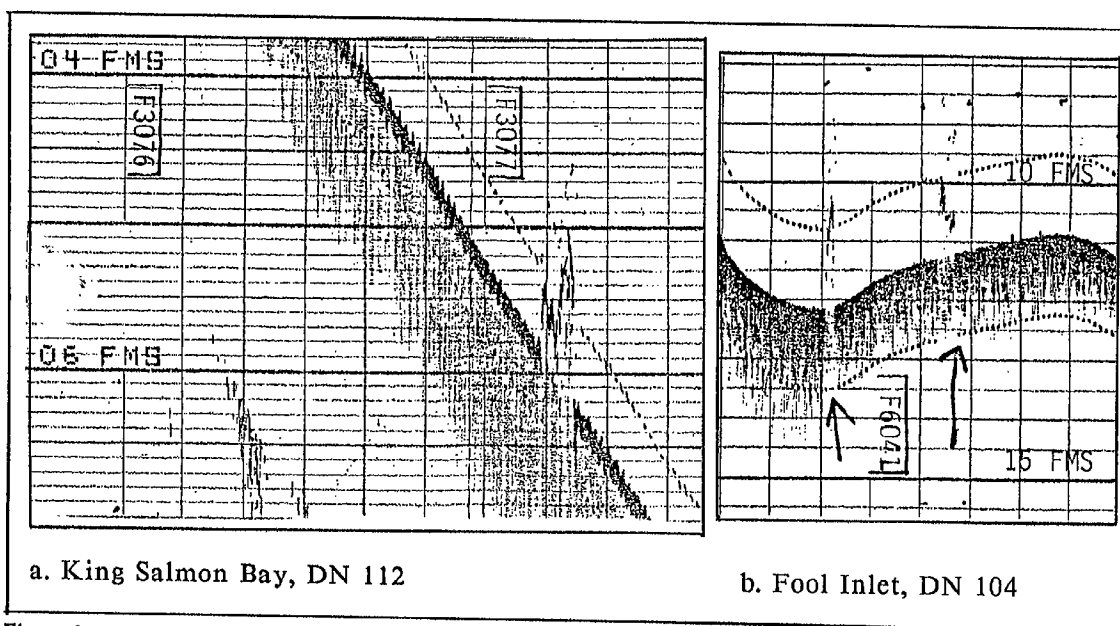


Figure 2, a and b. Examples of high-frequency sounding anomalies which were not found again on subsequent reruns of the same sounding lines. In cases such as these the shallower soundings were inserted into the digital records for plotting of the final field sheet.

Perhaps more perplexing than the high-frequency strays was the occurrence of many side echoes on the low-frequency trace. These ghostlike images showed up mostly in King Salmon Bay on day 116, and only when the water surface was flat calm and the launch was running a straight line with no rolling or pitching. Significant time and effort was spent trying to develop apparent contacts rising 2 to 3 fathoms in 9 to 13 fathoms depth as seen on the low-frequency echo-sounder trace (Figure 3). Developments were run at 10-meter spacing in an attempt to get strong high-frequency images of the peaks, but with very little success. For this reason, a side scan investigation was conducted (Section L).

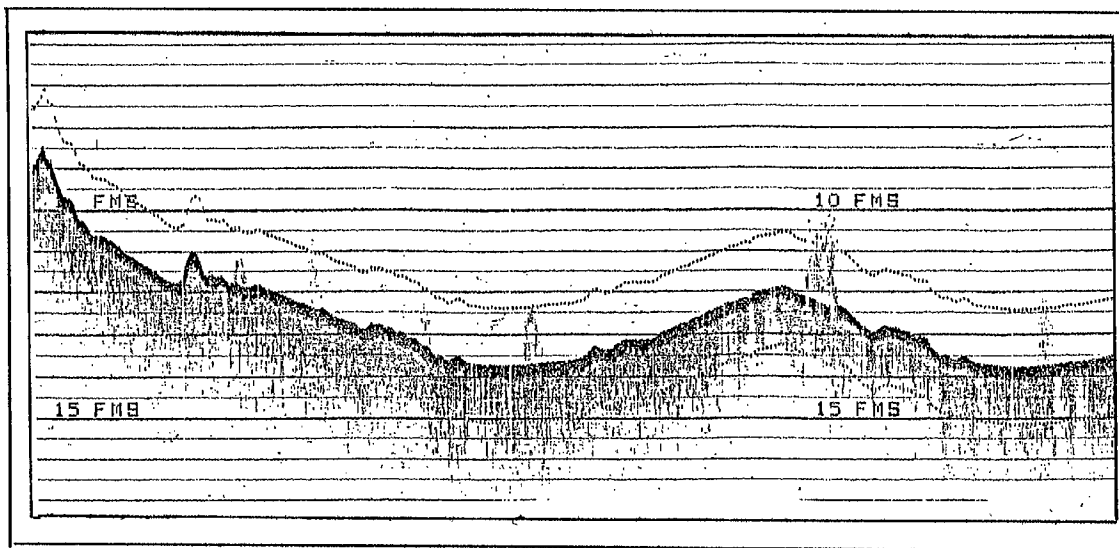


Figure 3. Examples of low-frequency side echoes encountered in King Salmon Bay on day 116. Subsequent narrowing of line spacing often failed to provide further confirmation of the objects with the high-frequency beam. The most significant low-frequency peaks were inserted into the digital record when high-frequency returns could not be obtained.

Corrections to Echo Soundings

Corrections to all soundings were determined for draft, velocity of sound through water, settlement and squat, and tides. These correctors are eventually to be applied to all survey vessels and all areas of this survey. However, in plotting the final field sheet, the determined correctors were applied for draft and velocity only. *Settlement and squat correctors were not applied, but the data are included in Appendix IV of this report. Predicted tide correctors were used in lieu of field-determined correctors, and the field tide records have been forwarded to N/OMA121, as per Hydrographic Survey Guideline #50 and the PMC OPORDER. Sea surface conditions did not warrant use of heave correctors. Variations in the instrument initial, stylus arm length, and belt tension are not present with the DSF-6000N.

*See EVAL
RPT sec. 1

Draft

Transducer depths of 0.3 fathom were measured for all four launches on 3/26/87 by divers using a large wooden T-square. The draft measurements were made at PMC with the fuel tanks all between full and half full, and with zero, then four, people aboard, and the average computed (Appendix IV). The transducer depths of 0.3 fathom agree with RAINIER historical records. Transducers are mounted starboard, midships, in a location such that all sounding corrections apply to both the low- and high-frequency echo-sounder signals.

Velocity Correctors

Velocity of sound through water and the associated corrections to echo soundings were determined by velocity probe casts using a Plessy/Grundy Sound Velocity Sensor (S/N 3444) coupled to a Hewlett-Packard 5315A Universal Frequency Counter (S/N 1946A03637). The Plessy/Grundy velocity sensor was last calibrated in February 1987 at the Northwest Regional Calibration Center, Bellevue, Washington (Appendix IV).

Two velocity casts were performed on day 113. Cast #1 was in the King Salmon Bay area of the survey, and cast #2 was in the Fool Inlet area (Table 5). Results of both casts showed that velocity correctors are 0.0 fm for all soundings in this survey. Thus, velocity tape #1, showing 0.0 fm correctors at all depths, was used on the final smooth plot. (Appendix IV).

Table 5. Velocity Cast Locations

<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>Day Number</u>	<u>Geographic Position</u>
1	20	113	58°00.5'N, 134°15.7'W
2	20	113	58°02.7'N, 134°15.9'W

The Plessy-HP configuration provides data only at discrete, preselected depths, rather than continuously throughout the water column. Therefore, the method used to compute velocity correctors is similar to that outlined in the Hydrographic Manual Fourth Edition as Example 2 on page 4-77, except that more data points were necessary in the 0 to 20 meter depth range in order to define the velocity profile in this shallow area. (Appendix IV).

As a system check of the Plessy probe, surface water samples were obtained at the times and locations of the velocity casts. The surface samples showed acceptable agreement with the probe velocities. (Appendix IV).

Settlement and Squat

Settlement and squat correctors were determined for the automated survey launches on days 118 and 125, over hard bottom in a depth well exceeding seven times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 87102) to a rod held vertically on deck of each launch, almost directly over the transducer. Five level readings were made at each speed tested, and the average taken, to compute the correctors. Tide staff readings were taken concurrently with each set of level readings, and all tide height

differences were normalized to the tide height of the dead-in-the-water level readings before the correctors were computed.

Soundings on the final field sheet are not corrected for settlement and squat, although corrections of 0.1 fathom must be made for certain vessels at some RPMs. TC/TI tapes for each automated sounding vessel have been prepared and submitted with this survey. Records of settlement and squat data are included in ~~Appendix IV~~. *the survey data.*

*See EVAL-
RPT sec. 1*

Tide Correctors

The final field sheet is plotted using predicted tide correctors provided by the Project Instructions (Table 6). Field tide records have been submitted (see Field Tide Note in Appendix II) and a request for approved tides made (Appendix XI).

Table 6. Tide Correctors

Applicable Area	Time Corrector		Height Ratio
	High Water	Low Water	
North of latitude 57°54.0'N	+15 min	+15 min	x0.98

The Fool Inlet tide gage stopped with no time or height check on days 105 and 111. As a precaution, data collected in Fool Inlet on days 104, 105, and 111 were rejected and rerun on days 119 and 120.

E. Hydrographic Sheets

The field sheets were all prepared aboard RAINIER, on a Houston Instrument Complot DP-3 roll plotter, using the PDP-8/e Hydroplot system and program RK201, "Grid, Signal, Lattice Plot". Program RK201 draws a modified transverse mercator projection. The final field sheet is a 1:10,000-scale projection. Additional sheets, drawn at 1:10,000-, 1:5,000-, and 1:2,500-scale are also included with the survey data. Shoal developments and the tracklines of side scan sounding are plotted on these sheets. Least depths from these additional sheets have been transferred to the final field sheet. The central meridian, false easting, and controlling latitude are constant on all field sheets (Appendix I).

The final field sheet and accompanying field records, along with this Descriptive Report, are being forwarded to the Pacific Marine Center for verification.

F. Control Stations

Seven geodetic stations and four photogrammetric stations were used to control this survey (Table 7). Four of the seven geodetic stations were established in 1986 and the remaining three were established during this survey. The photogrammetric stations were monumented in 1983.

All stations were used for range/range electronic positioning. Stations 155 and 159 were also used for range/azimuth positioning.

Table 7. Control Stations

<u>Third-Order, Class I</u>	<u>Signal #</u>	<u>Photogrammetric</u>	<u>Signal #</u>
GLASSY 1986	159		
RYAN 1986	154	HP - 31	315
LODGE 1986	157	HP - 32	316
FOOL 1986	155	HP - 34	314
KING 1987	171	HP - 35	312
BOIL 1987	172		
LOTTO 1987	173		

All seven geodetic control stations were located by traverse from existing control stations in the area. All stations meet third-order, class I standards for positioning (see Horizontal Control Report, OPR-0179-RA-87). The photogrammetric stations were scaled using conventional photogrammetric methods and the positions were checked during the survey using a spur traverse from third-order, class I stations. All photogrammetric positions checked to within one meter of the scaled positions. (Appendix XIII).

The North American Datum of 1927 and Clark Ellipsoid of 1866 were used as the reference in calculating geographic positions.

G. Hydrographic Position Control

Range/range and range/azimuth positioning methods were used on this survey. Ranges were measured with Motorola's Mini-Ranger III electronic positioning system (Tables 8 and 9). Azimuths were measured with a Wild T-2 theodolite (S/N 68648).

Table 8. Mini-Ranger Mobile Equipment Configuration

<u>Console/RT Serial Numbers</u>	<u>Vessel EDP NO.</u>
720/B1405	2123
715/911615	2124
B0269/B1388	2125
711/911102	2126

Table 9. Mini-Ranger Shore Equipment

<u>Transponder Serial Number</u>	<u>Code</u>
G3510	A
B1412	C
911634	D
911721	E
G3501	F
01789	0
01833	1
B1106	2
911635	3

Baseline Calibration and System Check Procedures

Opening baseline calibrations were conducted at the Pacific Marine Center during March 1987. A closing calibration for code 1 and console/RT pair 711/91102 was conducted in Juneau on day 121. Closing calibrations for all other codes (except damaged codes C and E) and console/RT pairs were completed in Sitka on day 140. All baseline calibrations were conducted in accordance with the PMC OPORDER (see Electronic Control Report, OPR-0179-RA-87).

All hydrographic data were plotted using the correctors determined by the opening baseline calibrations.

System checks were conducted in accordance with the PMC OPORDER. The nearly daily relocation of transponders among control stations made critical system checks necessary on a more frequent than weekly interval. Critical check methods included theodolite intersection and fixed point observations.

Two stations in the survey area were monumented and used for fixed point calibration checks of the Mini-Ranger positioning system (Table 10). Data for these stations are in Appendix XIII, included in the hydrographic records.

Table 10. Static Calibration Check Stations

<u>Station Name</u>	<u>Monument</u>	<u>Distance</u>	
Cal Rock 1	Eye-bolt in rock	3401m from FOOL 2747m from GLASSY	✓
Cal Rock 2	White triangle painted on rock	931m from LOTTO	

Distances were measured between the Cal Rock stations and the horizontal control stations with a Hewlett-Packard model 3808A EDM (S/N 1723A00202). ✓

Fixed-point observations were possible from the two "calibration rocks" as well as control stations accessible at higher stages of the tide. Occasionally, checks were delayed or performed poorly because the tide was too low for access to the stations. Such checks were considered invalid and were rejected. ✓

Non-critical system checks were conducted using the launch-to-launch and baseline-crossing methods. The discrepancies between baseline correctors and correctors observed during system checks were abstracted for each vessel to show any trends in the performance of the Mini-Ranger systems (see Electronic Control Report, OPR-0179-RA-87). ✓

Equipment Performance

Shore station performance was good throughout the survey, with only minor problems resulting from mis-pointed and blown-over transponders. Numerous time and course interpolations were the result of low signal strengths and flyers experienced during work from station 155 on day 113 by vessels 2123 and 2126. The transponder was found to be pointed in the wrong direction, causing weak signals at the consoles. On the morning of day 117 two transponders (codes C and E) were found blown over by high winds and damaged beyond immediate repair. It was not possible to obtain closing baseline calibrations on the damaged units. ✓

Mobile equipment performance was generally good, with two exceptions for console/RT pair 711/911102 on vessel 2126. A fixed-point check of code E on day 113 and a baseline crossing between codes E and A on day 114 exhibited discrepancies of six meters. Poor system check procedures caused the excessive errors. Code E was checked again with more exacting procedures on days 115 and 116 and was found to be within tolerance. ✓

On days 117 to 119 system checks of code 1 on station 154 exceeded the five meter limit. A baseline calibration was

subsequently conducted in Juneau on day 121, showing that the baseline corrector had indeed changed by five meters. The value determined in Juneau should be used as the corrector for data collected by vessel 2126 using code 1 on day 117. The code was not used by vessel 2126 after day 117. ✓

H. Shoreline

Shoreline features on the field sheet were transferred from NOS shoreline manuscript:

NATIONAL OCEAN SERVICE
SHORELINE MANUSCRIPT
TP-01163
ALASKA
SEYMOUR CANAL
KING SALMON BAY
SCALE 1:20,000
OBLIQUE MERCATOR PROJECTION
10,000 FOOT GRID BASED ON
ALASKA STATE PLANE COORDINATE SYSTEM
ZONE 1
1927 NORTH AMERICAN DATUM ✓

The scale of this manuscript has been photo-enlarged to 1:10,000 to allow overlay tracing onto the field sheet. ✓

Shoreline details were verified by visual inspection from a skiff or launch at low tide. Features appearing as depicted on the TP-sheet were assigned reference numbers and heights as directed in PMC OORDER, Appendix P, Sec. I.A. The field records for reference numbers are located in the sounding volumes and on a paper copy of the TP-sheet. Descriptive annotations were added to the TP-sheet and also supplied on the raw data printouts at the inshore terminations of sounding lines. ✓

The locations of offshore features were verified by detached positions recorded in sounding volumes or on raw data printouts. Cartographic codes are given in the field records. ✓

See EVAL
RPT sec. 2

Shoreline details and features have been transferred to the field sheet, with additions shown in black. Detached positions are plotted on the final field sheet with their four-digit position numbers. Reference positions are plotted with their three-digit numbers, preceded by an 'R'. ✓

Heights are given in feet and have been corrected for predicted tides. Heights given for ledges, reefs, and islets refer to the highest portion of each feature. ✓

Position numbers 7060 and 7061 are additions to the TP-sheet shoreline. These items are rocks located sufficiently offshore as to be possible navigational hazards. *concur.*

Three shoreline features appearing on the TP-sheet could not be found and were deleted from the final field sheet. Item R302 was looked for on three different occasions at different tide stages, and no rock or group of rocks could be distinguished from the gravel at the location in King Salmon Bay shown on the TP-sheet. Item R618 is shown on the TP-sheet as a rock in Fool Inlet, but no prominent or dangerous rock could be found. Similarly, no distinguished rock could be found at the location of item R303, near the head of Seymour Canal. *concur.*

Several rocks are shown above the zero fathom curve on the TP-sheet in the vicinity of the northernmost head of Seymour Canal. Because of the very gradual slope in this area the rocks could not be approached at low tide, and at higher tides the rocks could not be seen through the murky water from the skiff. A walk along the shoreline allowed the many rocks, jutting approximately 2 to 3 feet above the mud bottom, to be examined for size and number, but it was not possible to distinguish which individual rocks were those depicted on the TP-sheet. The entire group is included together as R617 with the recommendation that they be charted as shown on the TP-sheet. *concur.*

An extremely foul area exists west of the channel leading to the head of Seymour Canal. This area was developed with caution using an automated launch during high or rising tides on calm days. An attempt was made to run survey lines parallel to the axes of the ledges and reefs depicted on the TP-sheet, and as near to the zero-fathom curve as was safe. However, it was not possible to develop the zero-fathom curve fully because of the limited time to do so safely. Verification of the rocks and ledges in this area indicates that the TP-sheet depictions are adequate for charting at the scale of this survey. *concur.*

Control Stations Seaward of the Shoreline

Five control stations exist seaward of the shoreline on bedrock that becomes covered at high water (Table 11).

Table 11. Control Stations Seaward of the Shoreline

<u>Station Name</u>	<u>Signal #</u>	<u>Elevation Above MLLW (ft)</u>
RYAN	154	16.3
LODGE	157	14.5 (<i>off sheet limits</i>)
KING	171	13.5
LOTTO	173	15.1
GLASSY	159	16.3

I. Crosslines

Twelve and one-half miles of crosslines were run, representing 8% of the mainscheme mileage. In some cases the intersecting crosslines and mainscheme lines were run by different vessels, but the soundings were still in general agreement over the entire sheet. A quantitative assessment was made by comparing differences in soundings that plot adjacent to one another on the field sheet. A sample of 90 crossline/mainscheme intersections were selected from areas on the sheet that represent relatively smooth bottom slope. All intersections showed agreement within 0.3 fathoms (Table 12).

Table 12. Crossline/Mainscheme Agreement

Within 0.1 fathom	76%
Within 0.2 fathom	94%
Within 0.3 fathom	100%

J. Junctions

This survey junctions along its southern edge with contemporary survey H-10230, also scale 1:10,000, a 1986 RAINIER survey which includes the southern portions of King Salmon Bay and Fool Inlet. Junction agreement between the sheets is excellent; there are no discontinuities of depth curves between surveys.

K. Comparison With Prior Surveys

This survey has been compared with prior survey H-2001, a 1:80,000-scale survey of 1889. The appropriate portion of H-2001 was enlarged to 1:10,000 scale for comparison purposes. Because H-2001 is not on the NAD27 datum,

soundings were compared by overlapping and matching the shoreline rather than matching the longitude and latitude grid. The depths on H-2001 agree with those from the current survey over most of the sheet.

The only area where differences do occur is at the northern head of Seymour Canal where present depths are, in general, about one fathom shoaler than on the 1889 survey. Such shoaling is not unrealistic, given the existence of streams emptying into the head of the canal and the observation that the bottom there consists mostly of fine grain sand and mud with half-buried boulders strewn throughout.

There are no AWOIS items located within the limits of this survey.

L. Comparison With the Chart

This survey was compared to Chart 17300, NAD27, 24th edition, June 1985. Ten depths appear on Chart 17300 within the area of the present survey. It is difficult to compare the charted depths on the basis of their plotted geographic positions because Seymour Canal is apparently not charted correctly on Chart 17300. As can be seen in Figure 4, positions of shoreline features on the chart do not agree with the TP-sheet. However, a rough visual comparison of the chart with this survey indicates that the charted depths relative to the shoreline are adequate when considering the scale difference in the comparison.

See EVAL
RPT Sec. 7

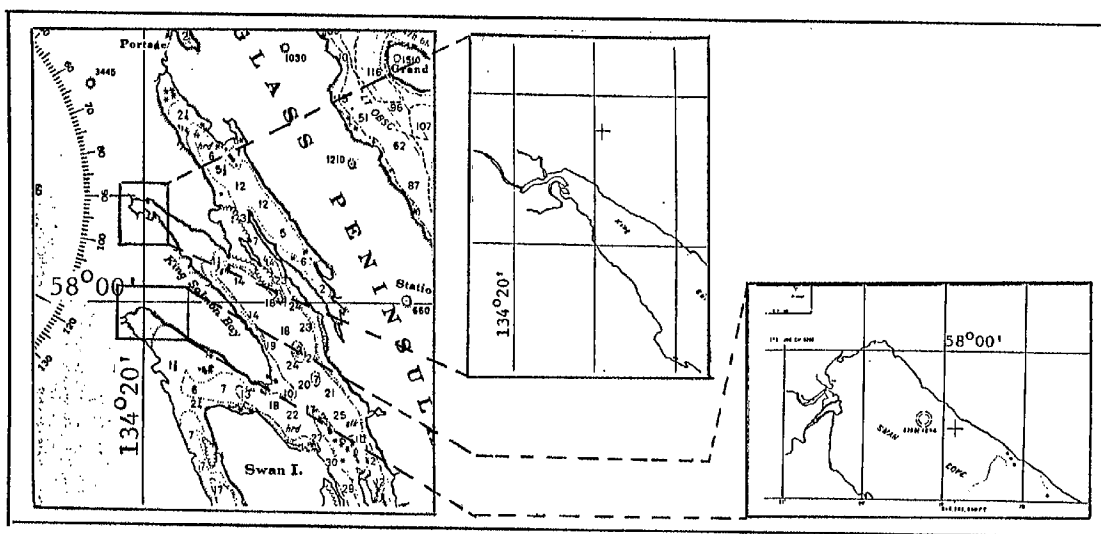


Figure 4. A comparison of Chart 17300 and Shoreline Manuscript TP-01163 shows that Seymour Canal is not charted correctly, thus making it difficult to compare geographical positions of charted depths with current survey depths.

Five dangers to navigation were developed and reported by radio message and follow-up letter to the Coast Guard for inclusion in the Local Notice To Mariners for the 17th District (~~Appendix XII~~). Although these items were missed by prior survey H-2001 (a leadline survey), they do not imply that the chart presently has incorrect depths nearby. However, in order for the chart to more accurately represent the minimum depths present in the area, the depths of these newly discovered items are recommended for inclusion on the next edition of the chart (Table 13).

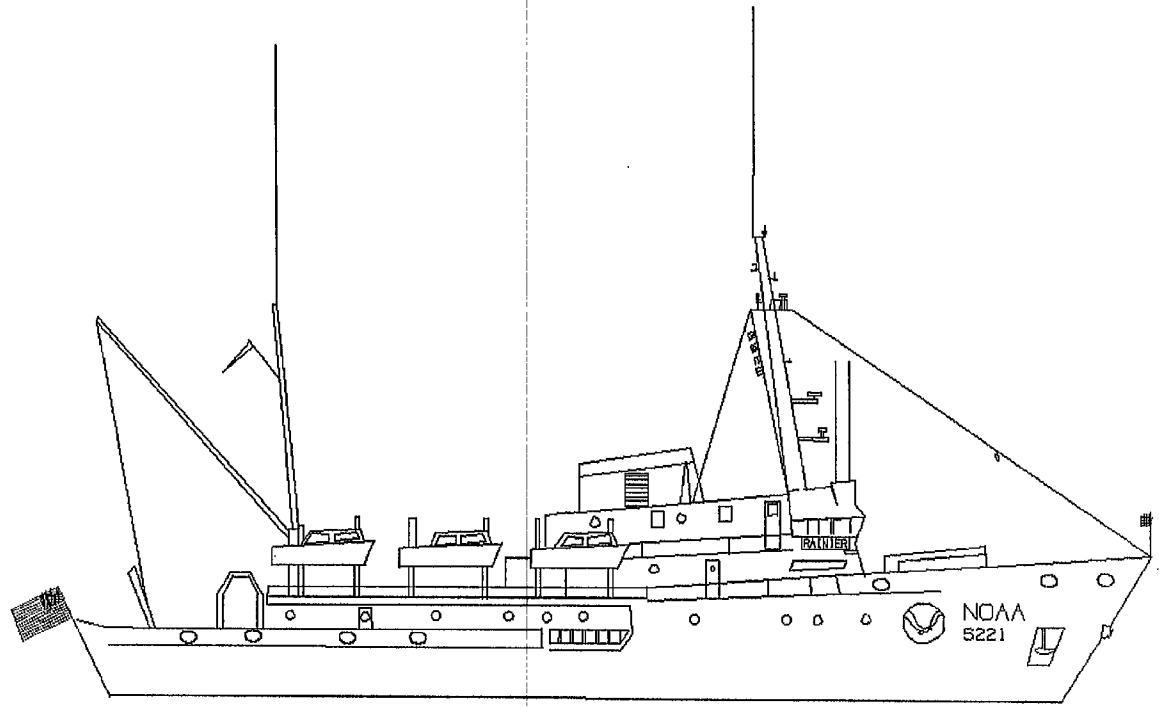


Table 13. Dangers To Navigation Reported

Item 1: Uncharted rock
 Position Number: 4175
 Survey Depth: 3.5⁶ fm
 Surrounding Charted Depth: 12.0 fm ³⁸
 Position: 58/02/55.40 N, 134/14/43.98 W
 Method of Investigation: Diver-positioned pneumatic depth gage

Item 2: Uncharted rock
 Position Number: 4176
 Survey Depth: 2.4⁵ fm
 Surrounding Charted Depth: 12.0 fm
 Position: 58/02/40.10⁷ N, 134/15/27.00⁸ W
 Method of Investigation: Diver-positioned pneumatic depth gage

Item 3: Uncharted rock
 Position Number: 4177
 Survey Depth: 1.7⁹ fm
 Surrounding Charted Depth: 3.5 fm ^{3.82} ^{4.37}
 Position: 58/02/04.11 N, 134/15/05.51 W
 Method of Investigation: Diver-positioned pneumatic depth gage

Item 4: Uncharted shoal
 Position Number: 3791 4177 + 3
 Survey Depth: 3.2⁴ fm
 Surrounding Charted Depth: 5.5 - 6.0 fm
 Position: 58/03/27.50³² N, 134/16/37.20⁰³ W
 Method of Investigation: The least depth was obtained by echo-sounder, using 25 meter line spacing

*See pos# G470 + 2
 A 3.3-fathom sounding was found at Lat. 53° 03' 25.38" N, Long. 134° 16' 32.74" W.*

Item 5: Uncharted shoal
 Position Number: 74269 + 4
 Survey Depth: 2.7⁸ fm
 Surrounding Charted Depth: 5.5 - 12 fm
 Position: 58/03/24.10⁰⁴ N, 134/15/15.10⁰⁶ W
 Method of Investigation: The least depth was obtained by echo-sounder, using 25 meter line spacing

A side scan unit was deployed in a portion of King Salmon Bay where numerous strays and side echoes had been observed on the echo-sounder trace. The side scan detected many contacts, probably large boulders, rising 2 to 3 fathoms off the bottom in 9 to 13 fathoms (see NSP positions 3449 - 3606, DN 116, and 3715 - 3779, DN 119). Side scan tracklines were plotted on a 1:5,000-scale sheet and contact positions were correlated with positions of anomalies seen on the echo-sounder trace. Divers were dispatched to the locations of three of the most prominent contacts, but their underwater investigations were limited in scope because of the depth, and they could not provide confirmation of the existence of 18-foot high rocks. The divers only observed flat mud bottom at 11 fathoms depth due to low visibility. ✓

Even though diver confirmation was not obtained, it is not unreasonable to conclude that the boulders do indeed exist. Besides the side scan images, evidence includes the presence of a steep, high slope adjacent to King Salmon Bay, scarred by past landslides. The shoreline is strewn with rocks and boulders from these slides. Therefore, the ^{minimum} least depths seen on the most significant echoes from both the low- and high-frequency traces have been inserted in the digital record and carried through to the final field sheet. "Rky" notes were shown on the smooth sheet in this survey area.

Non-Sounding Features

There are no non-sounding features located on this survey.

M. Adequacy of Survey

This survey is sufficiently complete and adequate to supersede the prior survey. Some TP-sheet items were not verified in the field records because access to some of the rocks was restricted by shoreline and weather conditions. However, because the TP-sheet did accurately depict the shoreline features over most of the survey, the hydrographer recommends that the shoreline items not addressed in the records be carried forth to the field sheet for inclusion on the chart. See EVAL RPT Sec. 7

Even though there were many spurious low- and high-frequency strays and side-echoes observed during this survey, they have been properly resolved through use of side scan sonar and additional investigation.

N. Aids to Navigation

There are no fixed or floating aids to navigation within the survey area. ✓

O. Statistics

Table 14. Statistics

<u>EDP No.</u>	<u>Number of Positions</u>	<u>Reference Numbers</u>	<u>Nautical Miles of Sounding Lines</u>	<u>Square Miles of Hydrography</u>
2123	832	10	74.2	1.73
2124	684	--	34.5	0.80
2125	23	--	--	--
2126	1138	14	104.9	2.45
2128	--	10	--	--
2129	--	30	--	--
TOTAL	2677	64	213.6	4.98

MILES OF SIDE SCAN	:	13.3
BOTTOM SAMPLES	:	19
TIDE STATIONS	:	2
VELOCITY CASTS	:	2
DAYS OF PRODUCTION	:	25
MAGNETIC STATIONS	:	0
CURRENT STATIONS	:	0

P. Miscellaneous

Depth contours are drawn on the final field sheet in accordance with the Hydrographic Manual (Table 15).

Table 15. Depth Contours Drawn On The Final Field Sheet

<u>Depth Contour(fm)</u>	<u>Color</u>
0	Orange
1	Green
2	Red
3	Blue
5	Red
10	Orange

All bottom samples have been submitted to the Smithsonian Institution (~~Appendix IX~~).

Swift tidal currents were encountered in the narrow passage leading to Fool Inlet and the head of Seymour Canal. Hydrography in this area had to be conducted at times of slack tide to accommodate the heavy flood and ebb flows. A current study was conducted in this passage by RAINIER in 1986, in which currents greater than four knots were recorded (Current Report, OPR-0179-RA-86).

Q. Recommendations

The hydrographer recommends that the ^{shoreline} location of Seymour Canal be revised before printing the next edition of Chart 17300. The existing chart did not agree with the TP-sheet as to the location of the shoreline relative to the longitude and latitude lines. This discrepancy is clearly shown in the examples in Figure 4. RAINIER believes the TP-sheet to be the more accurate source, as geodetic stations plotted on field sheets and overlaid with the TP-sheet agreed. *concur.*

R. Automated Data Processing

Data acquisition and processing were accomplished with a PDP 8/e Hydroplot computer system, using the standard programs (Table 16).

Table 16. Computer Programs Used For Data Processing

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>VERSION</u>
RK 112	HYPERBOLIC,R/R HYDROPLOT	3/01/86
RK 116	RANGE-AZIMUTH RTS	3/01/86
RK 201	GRID, SIGNAL, AND LATTICE PLOT	4/18/75
RK 221	COMB R/R & HYPER PLOT NON-RT	7/25/86
RK 226	RANGE-AZ POSN & SND PLOT NON-RT	7/25/86
RK 300	UTILITY COMPUTATIONS	10/21/80
RA 362	RK 330 AND AM 602 COMBINED	8/20/84
RK 407	GEODETIC INVERSE/DIRECT COMP	9/25/78
RK 409	GEODETIC UTILITY PACKAGE	9/20/78
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	5/10/76
RK 561	H/R GEODETIC CALIBRATION	12/01/82
RK 562	THEODOLITE CALIBRATION	9/05/84
AM 602	ELINORE - LINE ORIENTED EDITOR	12/08/82
RK 606	TAPE DUPLICATOR	8/22/74
AM 607	SELF-STARTING BINARY LOADER	8/10/80
RK 610	BINARY TAPE DUPLICATOR	1/31/85

RK 900	PLOT TEST TAPE GENERATOR FOR AM902	5/07/76
PM 901	CORE CHECK	3/01/72
AM 902	REAL TIME CHECKOUT	11/10/72
DA 903	DIAGNOSTIC-INSTRUCTION TIMER	2/27/76
RK 905	HYDROPLOT CONTROLLER CHECKOUT	3/18/81
RK 935	HYDROPLOT HARDWARE TESTS	3/15/82
RK 950	HARDWARE TESTS (DOCUMENTATION ONLY)	6/02/75

S. Referral to Reports

Several supplementary reports contain additional information relevant to this survey (Table 17). All echo sounding information is included with this report, so a separate Corrections To Echo Sounding Report was not submitted.

Table 17. Supplemental Reports

<u>TITLE</u>	<u>DATE SENT TO MARINE CENTER</u>
Electronic Control Report, OPR-0179-RA-87	June, 1987
Marine Mammal Report, RP-12-87	June, 1987
Horizontal Control Report, OPR-0179-RA-87	June, 1987
Coast Pilot Report, OPR-0179-RA-87	June, 1987
Current Report, OPR-0179-RA-86	January, 1987

Respectfully Submitted;



Robert W. Poston
ENS, NOAA

MASTER STATION LIST
DPR-0179-RA-87
SEYMOUR CANAL, ALASKA
RA-10-1-87 (H-10239)

FINAL VERSION

~~152 3 57 58 42570 134 14 35444 250 0004 000000~~
~~RAINIER 1986 FIELD G.P.~~

~~153 3 57 58 42570 134 14 35444 250 0004 000000~~
~~RAINIER 1986 FIELD G.P.~~

154 3 58 02 45763 134 16 28046 250 0005 000000
/RYAN RAINIER 1986 FIELD G.P.

155 6 58 03 30460 134 15 34745 250 0004 000000
/FOOL RAINIER 1986 FIELD G.P.

~~156 3 58 04 51077 134 14 45507 250 0004 000000~~
~~RAINIER 1986 FIELD G.P.~~

157 3 57 58 57064 134 11 26983 250 0004 000000
/LODGE RAINIER 1986 FIELD G.P.

159 4 58 03 16992 134 14 37002 250 0005 000000
/GLASSY RAINIER 1986 FIELD G.P.

171 1 58 01 12351 134 15 44254 250 0004 000000
/KING RAINIER 1987 FIELD G.P.

172 2 58 01 42078 134 15 22847 250 0006 000000
/BOIL RAINIER 1987 FIELD G.P.

173 7 58 04 19035 134 17 59324 250 0005 000000
/LOTTO RAINIER 1987 FIELD G.P.

312 6 58 01 09702 134 17 35635 254 0000 000000
/HP-35 1983 PHOTO G.P., CM-8203

314 5 58 00 20908 134 16 15133 254 0000 000000
/HP-34 1983 PHOTO G.P., CM-8203

315 3 58 05 07867 134 19 12118 254 0000 000000
/HP-31 1983 PHOTO G.P., CM-8203

316 4 58 05 34694 134 18 34188 254 0000 000000
/HP-32 1983 PHOTO G.P., CM-8203



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Ave East
Seattle, WA 98102

May 6, 1987

Commanding Officer
Seventeenth Coast Guard District
P.O. Box 3-5000
Juneau, Alaska 99802

RE: Notice to Mariners

REF: Radio Messages P 061700Z MAY 87
P 062348Z MAY 87

Dear Sir:

We request the following be published in the Local Notice to Mariners for the Seventeenth District:

The NOAA Ship RAINIER of the National Ocean Service has completed charting operations in Seymour Canal. The following is a list of dangers to navigation that have been discovered during 1987 and represent additions to NOS chart 17300 in the area north of King Salmon Bay near Fool Inlet. All depths have been reduced to mean lower low water using predicted tides.

1. Uncharted rock with least depth of 3.5 fathoms at 58/02/55.40N, 134/14/43.98W bearing 235 degrees true, distance 5.4 nautical miles from Grand Island Light.
2. Uncharted rock with least depth of 2.4 fathoms at 58/02/40.19N, 134/15/27.09W bearing 235 degrees true, distance 5.8 nautical miles from Grand Island Light.
3. Uncharted rock with least depth of 1.7 fathoms at 58/02/04.11N, 134/15/05.51W bearing 230 degrees true, distance 6.1 nautical miles from Grand Island Light.
4. Uncharted shoal with least depth of 3.2 fathoms at 58/03/27.50N, 134/16/37.20W bearing 245.5 degrees true, distance 6.0 nautical miles from Grand Island Light.
5. Uncharted shoal with least depth of 2.7 fathoms at 58/03/24.10N, 134/15/15.10W bearing 241.5 degrees true, distance 5.4 nautical miles from Grand Island Light.



NOS Chart affected by these dangers is:
17300 24th EDITION JUN 15/85 1:209,978.

This is advance information subject to office review.

Sincerely,

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

Enclosure
cc: DMAHTC



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Ave. East
Seattle, WA 98102-3767

May 6, 1987

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

RE: Notice to Mariners

REF: Radio Messages P 061700Z MAY 87
P 062348Z MAY 87

Dear Sir:

The NOAA Ship RAINIER of the National Ocean Service has completed charting operations in Seymour Canal, Alaska. Five new dangers to navigation were reported to the Seventeenth Coast Guard District for publication in the "Local Notice to Mariners". A copy of the report describing these dangers is attached.

Sincerely,

Carl W. Fisher

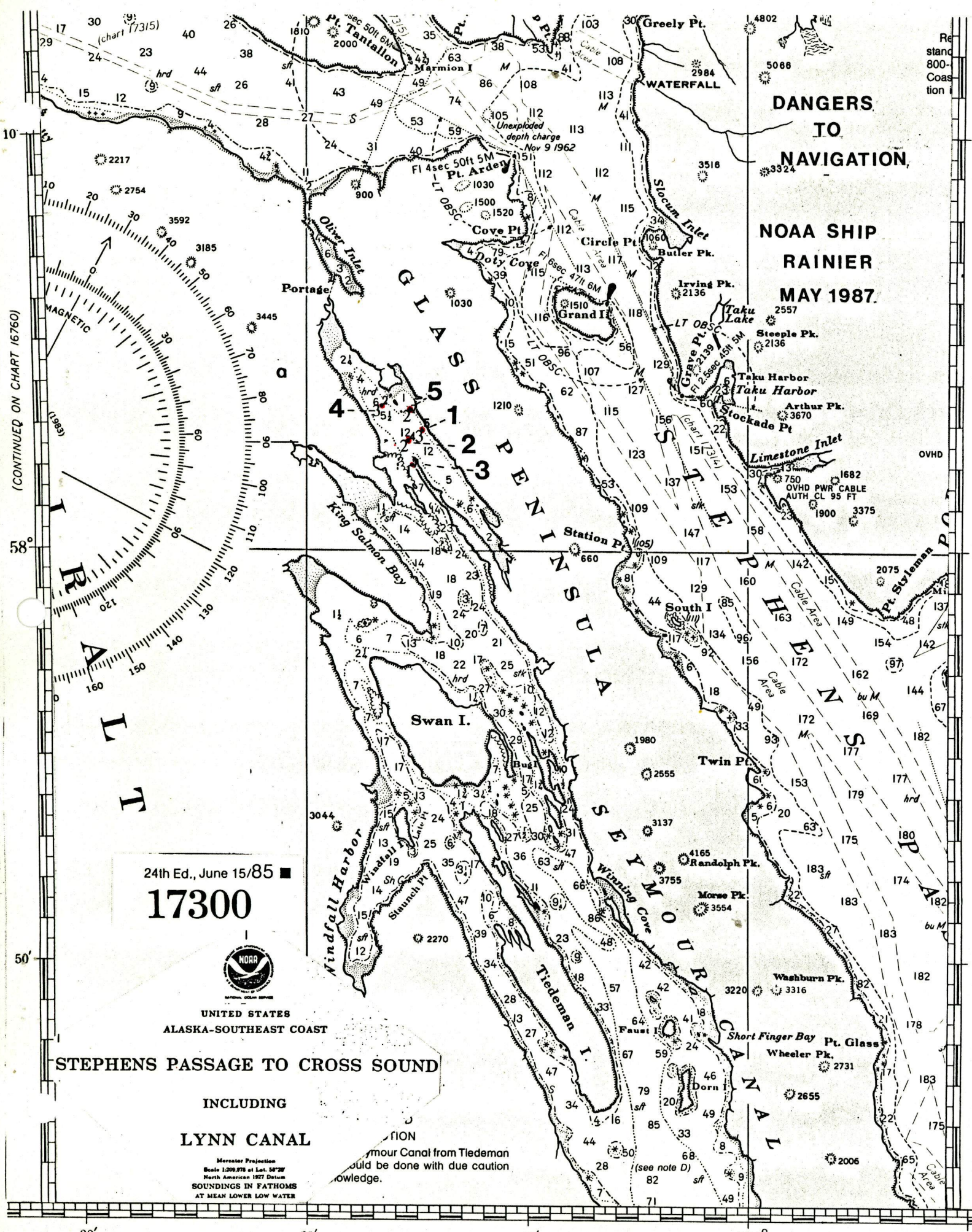
Carl W. Fisher
Captain, NOAA
Commanding Officer

Enclosure

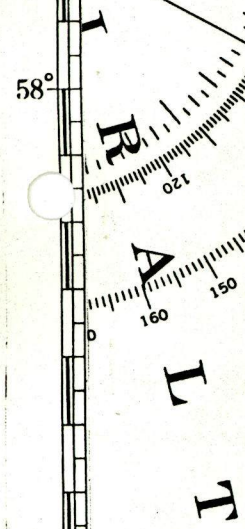


Re
stand
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tion

**DANGERS
TO
NAVIGATION,**
**NOAA SHIP
RAINIER
MAY 1987.**



(CONTINUED ON CHART 16760)



24th Ed., June 15/85

17300



UNITED STATES
ALASKA-SOUTHEAST COAST

STEPHENS PASSAGE TO CROSS SOUND

INCLUDING

LYNN CANAL

Mercator Projection
Scale 1:200,000 at Lat. 54°20'
North American 1927 Datum
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER

...mour Canal from Tiedeman
...ould be done with due caution
...nowledge.

30' 20' 10' 134° 50'

CO CAF
NAU slaw

PTTUZYUW RUHPTF0087 1261700-UUUU--RUHPSUU.
ZNR-UUUUUU
P 061700Z MAY 87
FM NOAA S RAINIER
TO CCGD SEVENTEEN JUNEAU AK
INFO NOAA NOP SEATTLE WA
DMAHTC WASHINGTON DC //NVS//
ACCT CM-VCAA
BT

UNCLAS

REQUEST THE FOLLOWING BE PUBLISHED IN THE LOCAL NOTICE TO MARINERS FOR THE SEVENTEENTH DISTRICT:

//THE NOAA SHIP RAINIER OF THE NATIONAL OCEAN SERVICE HAS COMPLETED CHARTING OPERATIONS IN SEYMOUR CANAL. THE FOLLOWING IS A LIST OF DANGERS TO NAVIGATION THAT HAVE BEEN DISCOVERED DURING 1987 AND REPRESENT ADDITIONS TO NOS CHART 17300 IN THE AREA NORTH OF KING SALMON BAY NEAR FOOL INLET. ALL DEPTHS HAVE BEEN REDUCED TO MEAN LOWER LOW WATER USING PREDICTED TIDES.

1. UNCHARTED ROCK WITH LEAST DEPTH OF 3.5 FATHOMS AT 58/02/55.40N, 134/14/43.98W BEARING 235 DEGREES TRUE, DISTANCE 5.4 NAUTICAL MILES FROM GRAND ISLAND LIGHT.
2. UNCHARTED ROCK WITH LEAST DEPTH OF 2.4 FATHOMS AT 58/02/40.19N, 134/15/27.09W BEARING 235 DEGREES TRUE, DISTANCE 5.8 NAUTICAL MILES FROM GRAND ISLAND LIGHT.
3. UNCHARTED ROCK WITH LEAST DEPTH OF 1.7 FATHOMS AT 58/02/04.11N, 134/15/05.51W BEARING 230 DEGREES TRUE, DISTANCE 6.1 NAUTICAL MILES FROM GRAND ISLAND LIGHT.
4. UNCHARTED SHOAL WITH LEAST DEPTH OF 3.2 FATHOMS AT 58/03/27.50N, 134/16/37.20W BEARING 245.5 DEGREES TRUE, DISTANCE 6.0 NAUTICAL MILES FROM GRAND ISLAND LIGHT.
5. UNCHARTED SHOAL WITH LEAST DEPTH OF 2.7 FATHOMS AT 58/03/24.10N, 134/15/15.10W BEARING 241.5 DEGREES TRUE, DISTANCE 5.4 NAUTICAL MILES FROM GRAND ISLAND LIGHT.

NOS CHART AFFECTED BY THESE DANGERS IS :
17300 23RD EDITION JAN 14/84 1:209,978
THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.//
A LETTER WITH ATTACHED CHARTLET HAS BEEN MAILED TO YOU TO CONFIRM THIS MESSAGE.

BT
#0087

NNNN

NOT / 061831Z MAY 87
MC / 6423

*per
CAF*

NOJ DE WTEF
PTTUZYUW RUHPTEF0091 1262348-UUUU--RUHPSUU.
ZNR UUUUU
P 062348Z MAY 87
FM NOAA RAINIER
TO CCGO SEVENTEEN JUNEAU AK
INFO NOAA MOP SEATTLE WA
DMAHTC WASHINGTON DC //NVS//
ACCT CM-VCAA

MVA | NOJ
8455K | 0353Z
7-May-87

BT
UNCLAS
REFERENCE MY P 061700Z MAY 87.
CORRECT PARAGRAPH 5. (FIVE) AS FOLLOWS:

5. UNCHARTED SHOAL WITH LEAST DEPTH OF 2.7 FATHOMS AT
58/03/24.10N, 134/15/15.10W BEARING 241.5 DEGREES TRUE,
DISTANCE 5.4 NAUTICAL MILES FROM GRAND ISLAND LIGHT.

NOS CHART AFFECTED BY THESE DANGERS IS :
17300 24TH EDITION JUN 15/85 1:209,978

NORTH AMERICAN 1927 DATUM.
THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.//
A LETTER WITH ATTACHED CHARTLET HAS BEEN MAILED TO YOU TO
CONFIRM THIS MESSAGE.

#0091

NNNN

APPROVAL SHEET

Descriptive Report To Accompany Hydrographic Survey RA-10-1-87 (H-10239)

Standard procedures were followed in accordance with the Hydrographic Manual, Third Edition; Hydrographic Survey Guidelines; and PMC OORDER in producing this survey. The data were examined daily during acquisition and processing phases of the survey.

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

Carl W. Fisher

Carl W. Fisher
Captain, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: August 1, 1987

Marine Center: Pacific

OPR: 0179

Hydrographic Sheet: ~~H-10239~~

Locality: Head of Seymour Canal, Alaska

Time Period: April 14-30, 1987

Tide Station Used: 945-2162 South End, Fool Inlet, AK /
945-2169 South Point, King Salmon Bay, AK 2

Plane of Reference (Mean Lower Low Water): 945-2162 = 5.61 Ft.
945-2169 = 17.84 Ft.

Height of Mean High Water Above Plane of Reference: 945-2162 = 15.3 Ft.
945-2169 = 15.1 Ft.

Remarks: Recommended Zoing:

1. North of latitude $58^{\circ}02.3'$, zone direct on 945-2162. /
2. South of latitude $58^{\circ}02.3'$, zone direct on 945-2169. 2


Chief, Tidal Datum Quality
Assurance Section

GEOGRAPHIC NAMES

H-10239

Name on Survey
ALASKA, SEYMOUR CANAL
HEAD OF SEYMOUR CANAL

A ON CHART NO. 17300
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 Manuscript
TI-01 163pt

Name on Survey	A	B	C	D	E	F	G	H	K	
ALASKA (TITLE)	X								X	1
ADMIRALTY ISLAND	X								X	2
FOOL INLET									X	3
GLASS PENINSULA	X								X	4
KING SALMON BAY	X								X	5
SEYMOUR CANAL	X								X	6
										7
										8
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										23
										24
										25

Approved:

Charles E. Harrington
Chief Geographer - N (CG 2x5)

OCT 26 1987



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

FILE COPY AUG 10 1987 N/MOP21x2/MM

TO: Commanding Officer
NOAA Ship RAINIER

Robert L. Sandquist

FROM: N/MOP - Robert L. Sandquist

SUBJECT: Preprocessing Examination of H-10239, Alaska,
Seymour Canal, Head of Seymour Canal

Hydrographic survey H-10239 has been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for this survey is attached. Survey H-10239 is accepted for Pacific Marine Center processing.

The hydrographer is commended for the obvious time and effort expended to improve the appearance, organization and content of the Descriptive Report. The organization of survey data was excellent.

The Preprocessing Examination Critique is designed to provide information which will be useful to the Command for maintaining the quality of future hydrographic surveys. I encourage you to use this information constructively. Your comments on specific critique items are welcome.

Attachment

cc: N/MOP2x1
N/MOP21x2
N/MOP211
N/CG2





**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

NATIONAL OCEAN SERVICE
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE
Seattle, Washington 98115-0070

August 5, 1987

N/MOP21x2/MM

TO: N/MOP - Robert L. Sandquist
Dennis Hill
FROM: N/MOP 21 - Thomas W. Richards
TWR
SUBJECT: Preprocessing Examination for H-10239

I. SURVEY INFORMATION

A. Field No.	RA-10-1-87	Registry No.	H-10239
B. State:		Alaska	
General Locality:		Seymour Canal	
Sublocality:		Head of Seymour Canal	
C. Project Instructions:		OPR-0179-RA-87	
Original dated:		March 14, 1985	
Change No. 1 dated:		March 21, 1985	
Change No. 2 dated:		September 27, 1985	
Change No. 3 dated:		January 17, 1986	
Change No. 4 dated:		June 24, 1986	
Change No. 5 dated:		September 10, 1986	
Change No. 6 dated:		February 5, 1987	
D. Dates:			
Field Work Commenced:		April 12, 1987	
Field Work Completed:		May 5, 1987	
plus 6 weeks:		June 16, 1987	
Data received at Marine Center:		June 18, 1987	
plus 1 month:		July 20, 1987	
Examination critique transmitted to field		August 10, 1987	
Target for completion of Marine Center processing		February 10, 1988	



II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic survey H-10239 was performed by personnel of the NOAA Ship RAINIER, Captain Carl W. Fisher, Commanding Officer. The following personnel supervised portions of the data acquisition: Lieutenant Commander Schomaker, Lieutenant White, Ensign Damm, Ensign Poston, Ensign O'Mara, Ensign Hill, Ensign Meis and Ensign Larsen.

In accordance with the Preprocessing Examination System set forth in Hydrographic Survey Guideline (HSG) No. 15, Section III, the following items are brought to your attention:

A. Danger to Navigation Report:

RAINIER reported 5 dangers to navigation within the limits of H-10239.

No additional dangers to navigation were identified during the preprocessing examination. One danger to navigation (uncharted rock; latitude 58°02'55.40"N, longitude 134°14'43.98"W) was reported to be submerged 3.5fm; the final field sheet shows the rock to be submerged 3.3fm. The raw data computations confirm the 3.5fm depth reported in the danger to navigation letter.

B. Compliance with Instructions:

Survey H-10239 generally complies with the Project Instructions. There are no AWOIS items within the limits of the survey.

C. Final Field Sheets:

The depths of several point features were shown on the final field sheets as soundings. The position and elevation/depth data of point features determined from soundings and dive investigations should be shown on final field sheets [PMC OORDER Section 3.5.1].

An undefined limit line was drawn on the final field sheet (see Attachment A). The line should be annotated to ensure the smooth sheet accurately reflects the findings and charting recommendations of the hydrographer.

The final field sheet included 0-fathom curves from the shoreline manuscript (shown as a dotted line) and from sounding data (a solid orange line). The hydrographer also used a dotted line as a leader to features verified on the T-sheet (see Attachment A, Reference Number R602). The difference between the leader pointing to a verified feature and the photogrammetrically determined 0-fathom curve is not readily apparent.

The 0-fathom curves from both the shoreline manuscript and from sounding data were drawn together in one section of the final field sheet (see Attachment A). It is not necessary to depict on the final field sheets the 0-fathom curve derived from the shoreline manuscript if sounding data delineates the curve.

An islet within a ledge (Reference Number R913) is shown in black ink on the final field sheet. The sounding volume contains a note stating that this feature is a rock (see Attachments A [R913] and B). If the description in

the sounding volume is correct, the feature should be depicted with a rock symbol in red ink. Changes to the shoreline manuscript should be depicted in red on the final field sheets [PMC OORDER, Section 3.6.2].

The hydrographer states that several rocks exist in the area of Reference Number R935 (see Attachment A, R935). No recommendation was made as to whether or not this is to be considered a foul area. The 0-fathom curve on the eastern side of this area has not been transferred from the manuscript to the final field sheet.

Bottom samples were taken at standard spacing but no samples were taken over shoals. Bottom characteristics of shoals should also be determined [HM 4.5.9.2].

D. Descriptive Report:

The Descriptive Report for H-10239 is well-written. The appearance of the report is very professional and most sections of the report are clear and concise. The additional graphs, tables and examples within the text of the report will greatly assist the processing of the survey data.

Section A (Project) incorrectly states the title of the Project Instructions and the date of Change No. 5 as OPR-0179-RA-85 and 10 September 1987, respectively. The title and date are OPR-0179-RA-87 and 10 September 1986.

E. Echograms:

Several high- and low-frequency strays were evident on the echograms for this survey. The hydrographer is commended for the time and effort expended in attempts at verifying or disproving the strays.

The echograms that were reviewed were annotated well, and information stamped on the echograms were complete and accurate.

F. Sounding Volumes and/or Raw Data Printouts:

The sounding volumes and raw data printouts that were reviewed were legible and complete. The index of reference numbers and detached positions within the sounding volume was well-organized.

G. Sounding Correctors:

An incorrect RPM value was determined from the settlement and squat graph for VESNO 2124, thereby making invalid the TC/TI tape listing for this launch (see Attachments C and D).

K. Special and/or Ancillary Reports:

The Electronic Control Report was not available for consideration in the preprocessing examination. The Corrections to Echo Soundings Report was not forwarded as all data and information was included with the data package. The Horizontal Control Report was not reviewed during the preprocessing examination.

L. Automated Data Check:

The hydrographer is commended not only for the organization of the data tapes submitted with the survey but also for all tapes being properly labelled and formatted. The organization and formatting of data tapes greatly reduced the time required to spool the survey.

N. Survey Acceptance:

The preprocessing examination for H-10239 was conducted under the time constraints of HSG 15. All comments contained herein are based on a spot check of the data, and it is possible that some problem areas have not been addressed.

Except for the items noted in the critique, survey H-10239 is in compliance with the Project Instructions. I recommend that H-10239 be accepted for Nautical Chart Branch processing.

Prepared by:

Marlene Mozgala
Marlene Mozgala

Seymour Canal
Locality

Date 13 April 87

HEAD OF SEYMONA CANAL
Sublocality

Boat used 2129; 103 day

STATION NUMBER	TIME	SOUNDINGS		CORRECTIONS				REDUCED SOUNDINGS				
		FEET	TERMS	LEAD LINE	ECHO	TIDE REDUCER	FEET	TERMS	FIELD	FEET	TERMS	OFFICE
R911	2002	-15		-	-	-12.0	-	-13	51			
R912	2008	-40		-	-	-12.6	-	-16	61			
R913	2019	-05		-	-	-13.2	-	-13	71			

ATTACHMENT B

Description of R913 notes the change in feature identification from islet to rock.

BOTTOM	HEADING BY	COMPASS	POSITION CONTROL DATA	REMARKS
		R911		Large light colored boulder.
		R912		Island 40 meters long island Bedrock w/ gravel on top
				10 meters wide. Detached from shore
		R913		7 m square rock
				uncovered. Degraded islet on sheet. Not an islet; covers at high water. Kelp growing on top

SETTLEMENT AND SQUAT WORKSHEET

vessel: ~~2125~~ 2124

locale: King Salmon Tide Station

start time(local): ~~1415~~ 1425

end time(local): 1430

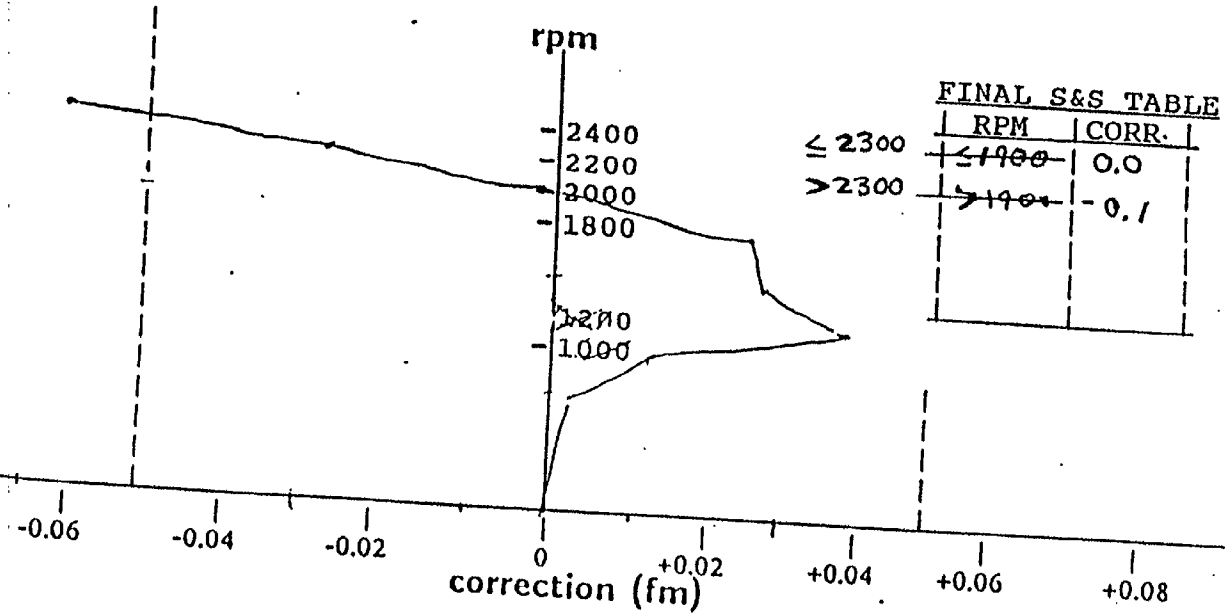
start time(GMT): ~~2215~~ 2225

end time(GMT): 2230

date (local): 4/19/87

Day Number (local): 119

pass #	DIW	700	1000	1200	1500	1800	2000	2200	2400
1	4.25 4.50	4.40	ATTACHMENT C Final S&S Table at bottom of page shows corrected values for rpms.				4.25	4.10	3.80
2	4.40	4.48					4.25	4.00	3.70
3	4.42	4.47					4.21	4.05	3.75
4	4.35	4.51					4.20	4.10	3.80
5	4.48	4.40					4.30	4.00	3.70
average height	4.43	4.45					4.24	4.05	3.75
tide staff	31.4	31.4					31.6	31.6	31.7
normalized tide	0	0							
normalized height	4.43	4.45	4.51	4.65	4.60	4.59	4.44	4.25	4.05
correc-tion-ft	0	+0.02	+0.08	+0.23	+0.17	+0.16	+0.01	-0.18	-0.38
correc-tion-fm	0	+0.003	+0.013	+0.038	+0.028	+0.027	-0.002	-0.03	-0.063



ATTACHMENT D

TC/TI tape listing for VESNO 2124

Tape listing would have included only those entries marked with "*" had the proper settlement & squat correctors been determined.

TC/TI TAPE LISTING

RA-10-1-87

(H-10239)

LAUNCH 2124 (RA-4)

* 185321	0	0003	0001	110	212400	000000
195117	0	0002				
201805	0	0003				
202045	0	0002				
202453	0	0003				
202637	0	0002				
203042	0	0003				
203209	0	0002				
203633	0	0003				
221725	0	0002				
* 221949	0	0003				
222139	0	0002				
222539	0	0003				
222807	0	0002				
003306	0	0003	0001	117	000000	000000
011856	0	0002				
012238	0	0003				
012509	0	0002				
012840	0	0003				
013208	0	0002				
013909	0	0003				
014147	0	0002				
015015	0	0003				
015331	0	0002				
* 202500	0	0000	0000	117	000000	000000
* 195415	0	0003	0001	118	000000	000000
* 180405	0	0002	0001	119	000000	000000
* 180706	0	0003				
* 234545	0	0003				

HYDROGRAPHIC SURVEY STATISTICS

H-10239

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		10
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		2
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	3				
ENVELOPES					
VOLUMES	4				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List)	TP-01163
PHOTOBATHYMETRIC MAPS (List)	
NOTES TO THE HYDROGRAPHER (List)	
SPECIAL REPORTS (List):	
NAUTICAL CHARTS (List):	17300

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			2670.0
POSITIONS REVISED	—	—	12.0
SOUNDINGS REVISED	—	—	86.0
CONTROL STATIONS REVISED	—	—	
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	—	—	—
VERIFICATION OF CONTROL	—	—	—
VERIFICATION OF POSITIONS	55.0	—	55.0*
VERIFICATION OF SOUNDINGS	178.5	—	178.5
VERIFICATION OF JUNCTIONS	—	—	—
APPLICATION OF PHOTOBATHYMETRY	—	—	—
SHORELINE APPLICATION VERIFICATION	—	—	—
COMPILATION OF SMOOTH SHEET	86.0	—	86.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS	—	15.0	15.0
EVALUATION OF SIDE SCAN SONAR RECORDS	—	—	—
EVALUATION OF WIRE DRAGS AND SWEEPS	—	—	—
EVALUATION REPORT	—	28.0	28.0
GEOGRAPHIC NAMES	—	—	—
OTHER: DIGITIZING	—	—	—
USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	319.5	43.0
Pre-processing Examination by LT M. Mozgala	Beginning Date 6/18/87	Ending Date 8/10/87	
Verification of Field Data by M. Sanders	Time (Hours) 319.5	Ending Date 1/19/99	
Verification Check by J. Stringham, B. Olmstead	Time (Hours) 83.0	Ending Date 1/26/88	
Evaluation and Analysis by I. Almacen	Time (Hours) 43.0	Ending Date 3/24/88	
Inspection by D. Hill	Time (Hours) 4	Ending Date 3/30/88	

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10239

1. INTRODUCTION

Survey H-10239 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following project instructions.

OPR-0179-RA-87, dated March 14, 1985
CHANGE No. 1, dated March 21, 1985
CHANGE No. 2, dated September 27, 1985
CHANGE No. 3, dated January 17, 1986
CHANGE No. 4, dated June 24, 1986
CHANGE No. 5, dated September 10, 1986
CHANGE No. 6, dated February 5, 1987

This survey is in the northernmost section of Seymour Canal, covering the area of King Salmon Bay and Fool Inlet. The passage from King Salmon Bay to Fool Inlet is narrow with the presence of strong currents and can only be navigated by smaller vessels with caution. The coast is generally made up of sandy and rocky beaches. Some portions of the area are characterized by the presence of ledges, off-lying rocks, islets, reefs and kelp, particularly at the entrance to Fool Inlet. The bottom is composed mainly of sand, mud and gravel with some rocky patches. Depths range from 0 to 14.2 fathoms.

Field processing used predicted tides for Juneau, Alaska. Office processing used approved hourly heights zoned from two gages, (945-2162) at South End, Fool Inlet and (945-2169) at South Point, King Salmon Bay, Alaska.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The TRA correctors for Launch 2124 were updated to reflect the changes in the settlement and squat corrections for various sounding speeds. Sound velocity and electronic control correctors are adequate and required no revision. An accompanying computer printout contains the revised data.

A digital file, generated for this survey, includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain descriptive information, however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Sections F and G of the hydrographer's report and the Horizontal and Electronic Control Reports for OPR-0179-RA-87 contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1983, 1986 and 1987 field values based on NAD 27. The computation of positions during office processing used these same values. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on values determined by N/CG121. Geographic positions based on NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections.

Latitude: 1.184 seconds (36.6 meters)
Longitude: -6.206 seconds (-101.8 meters)

The year of establishment of control stations shown on the smooth sheet originates with the hydrographer's signal list and is subject to change pending certification of the data by NGS.

There are 110 weak fixes (angle of intersection less than 30 degrees or more than 150 degrees) noted on this survey. However, there are no significant plotting differences identified between these fixes and those of the adjacent areas. None of these fixes are used to position dangers to navigation or other significant features. These fixes are considered acceptable.

The following shoreline map applies to this survey.

	<u>Photo Date</u>	<u>Class</u>
TP-01163	July, 1983	III

Shoreline and alongshore features were verified during this survey. Changes to the present shoreline configuration and locations of features noted in the field are discussed in section H and L of the hydrographer's report. Some of these features were either depicted on the shoreline map and disproven, or were not depicted but were found during this survey. Elevation data and descriptions cross-referenced to the verified features were provided by the hydrographer.

The positions of three rocks depicted on the shoreline map in the vicinity of latitude 58°04'15"N, longitude 134°16'55.0"W, differ from that determined by the hydrographer by as much as 30 meters. Since the hydrographic investigation is inadequate to resolve this discrepancy, both the hydrographic and the photogrammetrically located rocks are depicted on the smooth sheet in accordance with Hydrographic Survey Guideline No. 57. Additional field work is required to adequately dispose of the photogrammetrically located rocks at the following positions.

<u>Latitude N</u>	<u>Longitude W</u>
58°04'18.0"	134°16'59.0"
58°04'14.0"	134°16'51.2"
58°04'12.5"	134°16'48.8"

The islet shown on the shoreline map at latitude 58°02'04.0"N, longitude 134°16'03.0"W was found to be a rock awash during this survey. This feature is depicted on the smooth sheet as a rock uncovering 13 feet.

3. HYDROGRAPHY

Hydrography is adequate to:

- a. delineate the bottom configuration, determine least depths, and to draw the standard depth curves;
- b. reveal that there are no significant discrepancies or anomalies requiring further investigation, and;
- c. show that the survey had been properly controlled and soundings are correctly plotted.

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No.3, the Hydrographic Survey Guidelines, and the PMC OORDER, except as noted in the attached copy of Preprocessing Examination Report, dated August 5, 1987.

5. JUNCTIONS

Survey H-10239 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10230	1986	1:20,000	south

The junction with H-10230 has not been formally completed since that survey was previously processed and forwarded for charting. Junction comparisons are good; however, rocks and soundings have been transferred from an office copy of survey H-10230 to portray shoreline features and delineate a portion of the zero depth curve within the adjoining area. Depth curves are in good agreement.

6. COMPARISON WITH PRIOR SURVEYS

H-2001 (1889) 1:80,000

Survey H-2001 provides the basic survey coverage of the entire area of the present survey. Comparison with this sparsely sounded prior survey is satisfactory, taking into consideration the differences in the scales of the surveys including datum shifts, the method of surveying used and the geophysical changes that have occurred in the area since 1889. No

significant discrepancies between the two surveys were found, except for an indication of shoaling of about one fathom noted along the northernmost section of Fool Inlet, in the vicinity of latitude $58^{\circ}04'45.0''\text{N}$, longitude $134^{\circ}18'15.0''\text{W}$. Survey H-10239 was accomplished with more accurate positioning and determination of critical depths through closer line spacing, supplemented by side scan sonar and dive investigations.

There are no AWOIS items originating from prior survey H-2001.

Survey H-10239 is adequate to supersede the prior survey within the common areas.

7. COMPARISON WITH CHART

Chart 17300, 24th Edition, dated June 15, 1985; scale 1:209,978.

a. Hydrography Most charted information originates from the prior survey H-2001 discussed in Section 6 of this report. Other charted features originate from miscellaneous sources. Additional information concerning charted features are contained in section L of the hydrographer's report.

Chart 17300 is of very small scale and only a few representative features could be depicted within the common area. Comparison with charted features is satisfactory, except for the 12-fathom depth charted at latitude $58^{\circ}02'50.0''\text{N}$, longitude $134^{\circ}15'30.0''\text{W}$, originating from survey H-2001, which is charted west of the 12-fathom area located in this survey. The charted position should be revised in accordance with the present survey. The islet charted at latitude $58^{\circ}02'42.0''\text{N}$, longitude $134^{\circ}16'24.0''\text{W}$, was neither verified nor disproven and should be retained as charted.

Except for the islet mentioned above, H-10239 is adequate to supersede charted hydrography within the common area.

b. AWOIS There are no AWOIS items originating from miscellaneous sources applicable to the survey.

c. Controlling Depths There are no charted channels with controlling depths within the area of this survey.

d. Aids to Navigation There are no fixed or floating aids within the area of this survey.

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 several rocks and shoals to the USCG by radio message dated May 6, 1987. Copies of these reports, previously forwarded to N/CG222, are attached. No additional dangers were discovered during office processing.

8. COMPLIANCE WITH INSTRUCTIONS


H-10239 adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey. However, additional field work may be required on a low priority basis to determine the status of the three rocks and the charted islet discussed in the preceding sections of this report.


Isagani A. Almacén
Cartographer

This survey has been examined and it meets Charting and Geodetic Services' standards and requirements for use in nautical charting. The survey is recommended for approval.


Dennis Hill
Chief, Hydrographic Section

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey H-10239. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

Thomas W. Williams 3/30/88
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

L. W. Mordock 3/31/88

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards.

L. W. Mordock 3/31/88 for,
Director, Pacific Marine Center (Date)

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Washington, D.C.

Hydrographic Index No. 111E

