

10228

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-10-1-86
Registry No. H-10228

LOCALITY

State Alaska
General Locality Seymour Canal
Sublocality North and West of Swan Island

1986

CHIEF OF PARTY
CAPT C.W. Fisher

LIBRARY & ARCHIVES

DATE October 21, 1987

☆U.S. GOV. PRINTING OFFICE: 1985-586-054

10228

Area 5

CHT
17300

Cartog:
sign off on
fm in back.

HYDROGRAPHIC TITLE SHEET

H-10228

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-10-1-86

State Alaska

General locality Seymour Canal

Locality North and West of Swan Island

Scale 1:10,000 Date of survey October 8 - November 4, 1986

Instructions dated March 14, 1985 Project No. OPR-0179-RA-86

Vessel RAINIER S221 (2120), Launches RA-3 (2123), RA-4 (2124), RA-5 (2125), RA-6 (2126), RA-9 (2129)

Chief of party Carl W. Fisher, CAPT, NOAA

Surveyed by LCDR, Perugini, LT White, ENS Brown, ENS Damm, ENS Poston, ENS O'Mara, ENS Hartzell, ENS Fellows

Soundings taken by echo sounder, hand lead, pole Raytheon DSF-6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by M. Sanders, T. Jones, J. Stringham, I. Almacen Automated plot by PMC Xynetics Plotter

Evaluation by: I. Almacen

Soundings in fathoms ~~688K~~ at ~~MLLW~~ MLLW and tenths of fathoms

REMARKS: Marginal notes in black are by the evaluator. Separates are filed with the hydrographic data.

NOV 15 / SURF ✓ 10/30/87 JIV

502-5-97

PROGRESS SKETCH

OPR-0179-RA-86

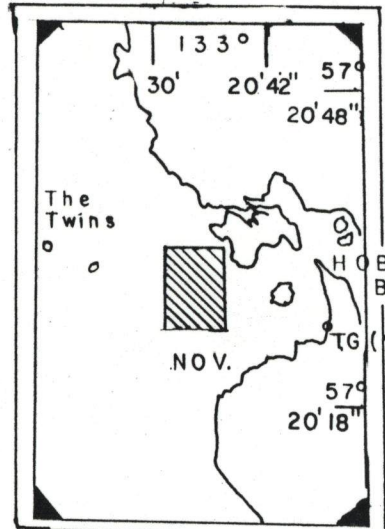
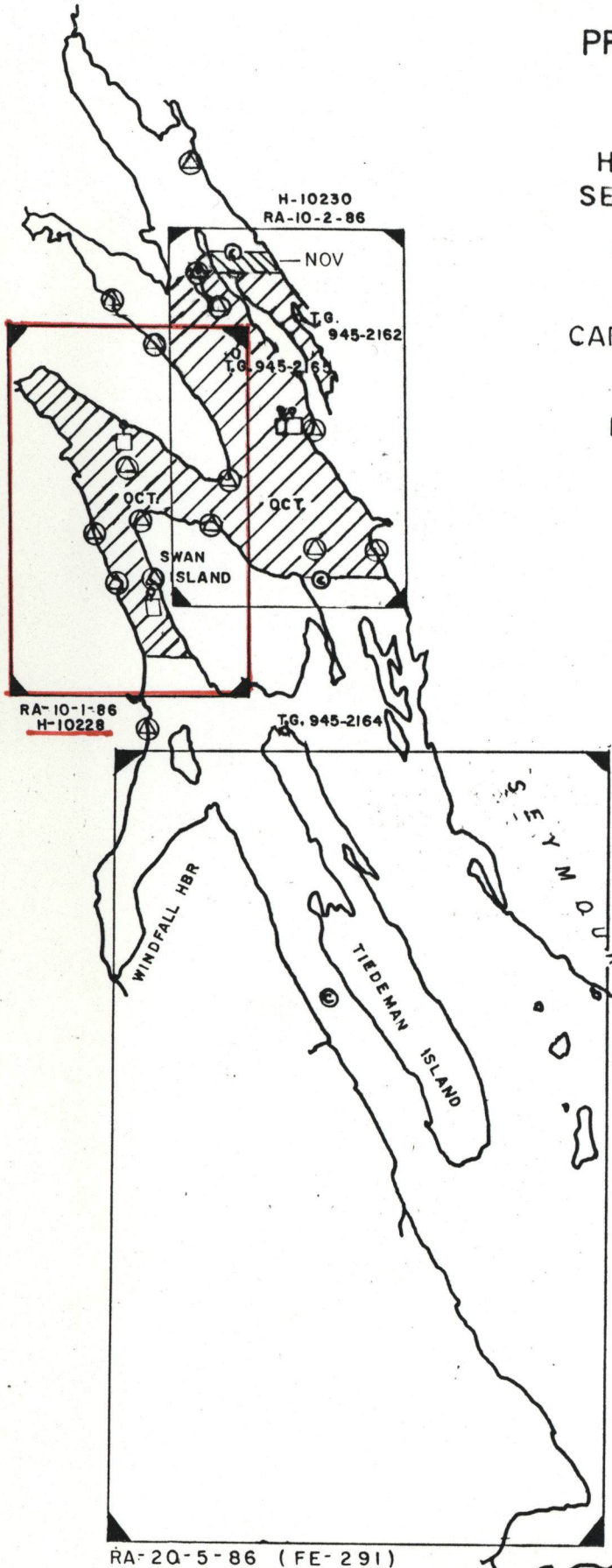
HYDROGRAPHIC SURVEY SEYMOUR CANAL, ALASKA

OCT 5 - NOV 10 1986

NOAA SHIP RAINIER
CARL W. FISHER, CAPT., NOAA
COMMANDING

FROM CHART No. 17300 & 17360

58°
00'



RA-10-3-86

OCT.	NOV.	
14.45	0.61	SQ N.M. Sounding
432.3	126.0	L.N.M. Misc. Distance
625.3	57.5	L.N.M. Sounding
28	48	Bottom Samples (Grab)
19	1	Control Station (Electronic)
4	2	Temp., Depth, Sound Velocity
-	1	Nansen Cast
3	1	Tide Gauges
6	1	Stations Located by Traverse
4	10	Water Samples Analyzed
-	-	SQ.N.M. Side Scan Sonar
-	-	L.N.M. Side Scan Sonar
3	-	Current Sta. Occupied

57°
50'

RA-20-5-86 (FE-291)

134° 20' 134° 10' 134° 00' 133° 50'

57°
40'

A. PROJECT

A basic hydrographic survey was completed as specified by Project Instructions OPR-0179-RA-85, dated March 14, 1985. The following changes ammend the original project instructions:

<u>CHANGE</u>	<u>DATE</u>
1	3/21/85
2	9/27/85
3	1/17/86
4	6/24/86
5	9/10/86

As of Change Number 3, this project has been designated OPR-0179-RA-86. The purpose of this project is to provide contemporary hydrographic survey data for existing nautical charts covering this area. This survey was designated sheet F from the original sheet layout for the Seymour Canal survey project. The survey was assigned the Registry Number H-10228 (Field Number RA-10-1-86).

B. AREA SURVEYED

The survey was located in northwest Seymour Canal, Alaska; an area west and north of Swan Island. Small craft setting crab pots or fishing for halibut and salmon frequently transit the survey area. This area is characterized by a bottom which tends to shoal offshore due to reefs, rock outcrops and tidal flats. Generally, the bottom is sloped with the greatest degree of slope found near shore. The shoreline has numerous ledges and detached rocks with occasional stretches of sand or gravel beaches. Depths in the survey area range from 0 to 22 fathoms. The survey was bounded by the following limits:

- North - 58° 00' 00" N
- South - 57° 54' 30" N
- East - 134° 18' 00" W
- West - 134° 19' 30" W

Data acquisition was conducted from October 8, 1986 to November 4, 1986 (DN 281 - DN 308).

C. SOUNDING VESSELS

Vessels used in this survey were:

<u>Vessel</u>	<u>EDP #</u>
RA-3	2123
RA-4	2124
RA-5	2125
RA-6	2126
RA-9	2129

RAINIER launches RA-3, RA-4, RA-6, and RA-9 were used to acquire range-range and range-azimuth hydrographic data. RA-5 was used only to collect bottom samples.

RA-9 is an aluminum 19 foot MonArk used for sounding and shoreline verification in foul areas near shore. This MonArk is equipped with a Raytheon DE-719B fathometer as well as a Mini Ranger positioning system. Sounding data were hand-logged in a sounding volume aboard this vessel.

No changes to the standard sounding configurations were necessary.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Sounding Equipment

The launches used for this survey were equipped with DSF-6000N Raytheon echo sounders (Table 1). DSF-6000N echo sounders were operated in the HIGH+LOW (HIGH DIGITIZED) function, using manual gain controls to obtain the best analog trace. Attempts were made to try to operate echo sounders using auto gain controls as specified by the Provisional Operating Manual.* The DSF-6000N is calibrated at 4,800 ft/sec for soundings in fathoms. Bar checks were conducted daily throughout the project. High and low frequency readings were recorded at two fathoms below the transducer, while high frequency readings were recorded from two to six fathoms. The bar checks verified known transducer depths. Velocity correctors were determined to be negligible at these shallow depths and, therefore, do not appear in the bar check data. These bar checks confirm echo sounder calibration within ± 0.1 fathom error (Appendix V), by agreement with the known transducer depth of 0.3 fathom and consideration of velocity correctors. Velocity correctors over the two to six fathom bar check depth are not significant. There are no instrument errors associated with operation of the DSF-6000N.

* See N/CG memo, dated 5/23/86

Table 1. Raytheon Echo Sounders

<u>LAUNCH</u>	<u>DSF-6000N SERIAL NUMBER</u>	<u>DAY NUMBERS</u>
2123	A114N A117N	281-289 290-291
2124	A103N	281-290
2125	A117N	289, 308 (bottom samples only)
2126	A119N	³⁰⁶ 281- 290
2129	9270*	281-290

* Raytheon Model DE-719B Portable Echo Sounder

The transducer on all automated survey launches is mounted starboard midships. Transducer depths of 0.3 fathoms for all the launches were measured during the last winter inport and agree with historical data. Transducer location on the launches is such that any sounding corrections apply to both the narrow and wide echo sounder beams.

The echo sounder functioned properly and remained in good working condition throughout the survey except for one day (DN 289) when the echo sounder in vessel 2126 was replaced by the one in vessel 2125. Refer to the Correction to Echo Sounding Report for further details.

Corrections to all soundings were determined for velocity of sound through water, settlement and squat, and tides. Variations in the instrument initial and stylus arm length do not occur with the DSF-6000N. Operation of the DE-719B echo sounder was in accordance with OORDER APPENDIX T.

Other Sounding Equipment Used

A calibrated sounding pole was used occasionally to obtain depths on rocks along the shoreline.

Sea Surface Conditions

The effects of sea surface conditions were not a problem during this survey because the survey area is in protected waters.

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 March, 1985 by the Northwest Regional Calibration Center, Bellevue, Washington (Appendix IV). ✓

Electronic sound velocity data were compared with velocities calculated from a surface sample to verify the validity of the electronic data. Agreement between the two methods was typically within 1 meter/sec (Appendix IV). Sound velocity casts were taken at the following locations: ✓

Table 2. Velocity Casts

<u>CAST</u>	<u>DEEPEST DEPTH(m)</u>	<u>DAY NUMBER</u>	<u>POSITION</u>
1	25	282	57° 57.8'N, 134° 17.2'W (H-10228)
2	30	290	57° 55.7'N, 134° 19.5'W (H-10228) ✓
3	60	295	57° 59.0'N, 134° 12.1'W
4	60	303	57° 59.0'N, 134° 11.9'W

Velocity correctors are applied to all soundings on this survey based on velocity cast number three. The difference between cast one taken at the beginning of the survey, and cast four taken near the end of the survey shows less than a 0.1 Fm shift of velocity corrections over the survey period. Based on this information, cast three was chosen as a representative cast for the entire period of the survey. Velocity Table I was constructed from cast three and was used for all vessels. ✓

Table 3. Velocity Correction Tables

<u>VELOCITY CORRECTOR TABLE NUMBER</u>	<u>VELOCITY CAST NUMBER</u>	<u>APPLIES TO DATA ACQUIRED ON DAYS</u>	<u>APPLICABLE DEPTHS(FM) AND CORRECTORS(FM)</u>
1	3	281-308	^a 0.0 - 8.8 / 0.0 8.9 - 23.6 / 0.1 23.7 - 29.8 / 0.2 30.0

Settlement and Squat

Settlement and squat trials were performed on survey launches 2123, 2124, and 2126 on 4 November 1986 (DN 308) in the vicinity of King Salmon Bay tide gage. The water depth was approximately 10 fathoms. Seas were flat and wind was calm as each launch made successive runs toward an observer positioned on a rock near the middle of an islet NW of Swan Island in King Salmon Bay. A Zeiss Ni2 leveling instrument (S/N 87102) was used to observe an elevation rod held vertically on deck directly above the transducer. The first observation was made while the launch was dead in the water (DIW). Succeeding observations were then made at 700, 1000, 1200, 1500, 1800, 2000, 2200, and 2400 RPM. Five readings were recorded and averaged at each RPM tested. A temporary tide staff, installed at the location of the observer, was read concurrently with the level observations, and all elevations were normalized to a common tide height. A correction of -0.1 fm is applicable to vessel 2126 and vessel 2123 for engine speeds of 2400 RPMs. A correction of -0.1 fm is applicable to vessel 2124 for engine speeds 2200 RPMs and above (Appendix IV). ✓

Soundings on the final field sheet are not corrected for settlement and squat. A TC/TI tape has been cut and submitted with this survey. Records of all settlement and squat data are included in Appendix IV. ✓

Tide Correctors

Preliminary tidal zoning for this survey was provided by N/OMA123 using Juneau, Alaska (945-2210) as the control station. The predicted time and height correctors applied to rough plotted soundings proved to be adequate as evidenced by consistencies observed when comparing mainscheme soundings with split and crossline soundings. Soundings on the Final Field Sheets were plotted using the tidal zoning scheme developed by the Project Instructions (Table 4). ✓

TABLE 4. Tide Correctors Applied to Tide Station

<u>SURVEY</u>	<u>APPLICABLE AREA</u>	<u>TIME CORRECTION</u>		<u>HEIGHT RATIO</u>
		<u>High Water</u>	<u>Low Water</u>	
H-10228	North of 57° 54.0'N	+15 min	+15 min	0.98

Further details on all aspects of echo sounding corrections are provided in the supplemental Corrections to Echo Soundings Report, OPR-0179-RA-86. ✓

E. HYDROGRAPHIC SHEETS

One 1:10,000-scale plotter sheet designated RA-10-1-86 was used to plot survey data. This sheet was prepared aboard the RAINIER using the PDP-8/e Hydroplot system on a Houston Instrument Complot DP-3 roll plotter. This computer system draws a modified transverse Mercator projection.

Shoreline detail notes have been plotted on an overlay sheet at the same scale as the final field sheet in order to avoid obscuring soundings. Additions are shown in black and changes are shown in red. All features are plotted on the final field sheet. ✓

Data designated "Not for Smooth Plotting" (NSP) have been plotted on a separate sheet.

The parameters which define these sheets can be found in Appendix I.

The final field sheet, overlays, and accompanying field records will be forwarded to the Nautical Chart Branch, Pacific Marine Center for verification.

F. CONTROL STATIONS

All horizontal control stations established for this survey were positioned to the Third Order Class I standards, with the exception of HP-29 which is a less accurately positioned photo point. The following stations were used in the completion of this survey:

<u>Signal #</u>	<u>Station Name</u>	<u>Date Established</u>
133	WINDFALL 2	1985
134	SEYMOUR	1983
137	PAD	1985
148	COB	1983
149	CYGNET	1983
150	DEER	1985
151	HUMP	1985
152	SAL	1986
153	MON	1986
310	HP-29	1983

Not used for control & off sheet limits ✓

Stations SEYMOUR, COB, CYGNET, and HP-29 were all set by the DAVIDSON in 1983 during her reconnaissance survey of this area. All other stations were set by the RAINIER building upon the framework left by the DAVIDSON. All stations were positioned by traverse. ✓

The North American Datum of 1927 was used.

No unusual or non-standard survey methods were used.

For more information on horizontal control work for this survey, refer to the report, Horizontal Control Report for OPR-0179-RA-86.

G. HYDROGRAPHIC POSITION CONTROL

Soundings were located using range-range and range-azimuth geometry. Range data were acquired with Motorola's Mini-Ranger III electronic positioning system. Azimuths were measured using WILD T-2 theodolites.

Positioning Equipment

Four Mini-Ranger console/RT pairs and five vessels were used during this survey. The following table lists the days of use and corresponding vessel for each console/RT pair.

<u>Console/RT pair</u>	<u>DN</u>	<u>EDP #</u>	<u>Vessel name</u>
720/B1405	281,288-291	2123	RA-3
715/911615	281,282,288, 291,307	2124	RA-4
711/C1712	289	2125	RA-5
B0269/B1388	308	2125	RA-5
B0269/B1388	281,282,288, 289,290	2126	RA-6
711/C1712	305,307	2126	RA-6
711/C1712	281,282,288, 291	2129	RA-9

Along with these console/RT pairs, nine shore transponders were used:

<u>Code</u>	<u>Serial Number</u>
0	01789
1	C1883
2	B1106
3	911635
A	1645
B	B1412
D	1569
E	911721
F	911711

See Appendix V for the location of transponders and the days used.

Calibrations and System Checks

Four console/RT pairs were calibrated to all nine transponders over a baseline on Lake Union at Seattle, Washington during September 1986. From this baseline calibration, signal strength cutoffs and correctors were determined. Throughout this survey these correctors were confirmed with critical and noncritical systems checks.

Upon the return of the RAINIER to Seattle, a final baseline calibration was conducted over the Lake Union baseline during November 1986. To determine the final correctors the following method was employed. If the opening and closing corrector values differed by two or more meters, the final corrector was the average of the opening and closing values. If the difference was found to be less than two meters, the opening value was retained as the final corrector value. The final field sheet plotted onboard the RAINIER was plotted using the opening baseline correctors.

Critical system checks were conducted at least once a week, using the theodolite intersection, fixed point observation or three point sextant fix techniques. Due to the ease in which a fixed point observation could be conducted, this became the most frequent form of daily calibration. An abstract of correctors derived from these system checks can be found in ~~Appendix M~~ with the survey records.

During this survey, a daily noncritical system check was required. It was found that the fixed point critical systems check could be conducted with a greater amount of ease than any noncritical method. When a critical check was not possible, a noncritical check using the baseline crossing method was employed.

Positioning Techniques

Range-range geometry was the principle method of locating soundings throughout this survey. Range-azimuth geometry was used in areas near shore where range-range positioning could not. No unusual techniques were employed. ✓

Problems and Unusual Position Configurations

On day number 294 the Mini-Ranger console of RA-6, serial number BO269, was replaced with that of RA-5, serial number 711. Console BO269 was found to have a cracked card connector which prevented the unit from functioning. The console was repaired by the ET's onboard the RAINIER and placed in RA-5 for the remainder of the season. ✓

Antenna Distance

On vessels 2123, 2124, 2125, 2126, and 2129 the RT is located over the transducer with an ANDIST of 0,0. ✓

Refer to Electronic Control Report, OPR-0179-RA-86 for additional information.

H. SHORELINE

Shoreline details on the field sheet were transferred directly from two NOS shoreline manuscripts:

TP-01163	TP-01164
ALASKA	ALASKA
SEYMOUR CANAL	SEYMOUR CANAL
KING SALMON BAY	SWAN ISLAND

These manuscripts are oblique Mercator projections at 1:20,000 scale. These were enlarged to 1:10,000 to conform with the scale of this survey. ✓

All shoreline details have been verified by use of the following three methods:

- a. Detached positions
- b. Reference numbers (as directed in PMC OPORDERS Appendix P Sec. I.A.) ✓
- c. Annotations made on data printouts during visual inspection of shoreline features at the termination of survey lines inshore.

Shoreline manuscripts were completely adequate with no areas in which shoreline verification was not accomplished. The following table summarizes changes and additions to the manuscript that were found in the field. ✓

Unless otherwise noted, all changes are of geographic position.

CHANGE

<u>POSITION NO.</u>	<u>GEOGRAPHIC POSITION</u>	<u>FEATURE</u>	<u>Smooth Sheet</u>
1063	57° 55' 48. ³ 94" N 134° 17' 20. ⁶ 71" W	rock bares 3 ft at MLLW	* (3)
1064	57° 55' 39. ³¹ 28" N 134° 15' 55. ⁵⁴ 60" W	rock bares 4 ft. at MLLW	* (4)
1271	57° 58' 21. ⁷ 73" N 134° 17' 22. ⁶⁵ 59" W	rock bares 3 ft. at MLLW	* (3)
1276	57° 58' 20. ⁴⁴ 39" N 134° 16' 50. ⁴ 84" W	eastern limit of reef	* (2)
1277	57° 58' 21. ⁵¹ 46" N 134° 16' 55. ⁴³ 39" W	western limit of reef	* (3)
1279	57° 58' 26. ⁹² 87" N 134° 16' 51. ⁸² 77" W	change E. limits of reef which bares 5 ft. at MLLW	* (4)
1280	57° 58' 25. ⁸² 78" N 134° 16' 49. ⁵ 40" W	"	* (3)
1281	57° 58' 23. ⁴² 37" N 134° 16' 47. ¹² 08" W	"	* (3)
1282	57° 58' 22. ⁶³ 58" N 134° 16' 48. ²¹ 17" W	"	* (13)
1283	57° 58' 23. ²¹ 16" N 134° 16' 48. ²¹ 17" W	"	* (3)
1285	57° 59' 02. ⁵ 22" N 134° 17' 42. ²¹ 11" W	rock bares 6 ft. at MLLW	* (6)
1288	57° 59' 13. ⁹² 89" N 134° 18' 06. ⁴⁴ 33" W	rock bares 5 ft. at MLLW	* (6)
4834	57° 57' 59. ²⁸ 25" N 134° 14' 14. ⁴¹ 33" W	change S. limit of ledge	* (4)
4836	57° 58' 03. ⁷⁰ 68" N 134° 14' 19. ⁹ 30" W	change W. limit of ledge	* (6)
4837	57° 58' 05. ⁶ 34" N 134° 14' 33. ³¹ 22" W	rock bares 4 ft. at MLLW	* (4)

Smooth Sheet

4838	57° 58' 04. ⁷ ₅ " N 134° 14' 35. ⁵⁸ ₄ " W	rock bares 4 ft. at MLLW	* (7)
4839	57° 58' 02. ⁴ ₆₃ " N 134° 14' 40. ⁴ ₆₁ " W	rock bares 5 ft. at MLLW	* (5)
4840	57° 58' 02. ⁷⁰ ₆₉ " N 134° 14' 43. ¹⁵ ₀₀ " W	rock bares 5 ft. at MLLW	* (5)
4842	57° 58' 16.76" N 134° 15' 13. ^{14.07} ₉₉ " W	rock bares 6 ft. at MLLW	* (6)
4843	57° 58' 46. ⁸ ₁₉ " N 134° 16' 11. ¹ ₀₁ " W	rock bares 10 ft. at MLLW	* (10)
4844	57° 58' 43. ⁶⁹ ₇₀ " N 134° 16' 06. ¹⁹ ₀₄ " W	rock bares 3 ft. at MLLW	* (2)
9376	57° 58' 42. ^{71.97} ₀₀ " N 134° 16' 47. ⁴⁸ ₆₄ " W	rock bares 4 ft. at MLLW (shown as part of reef on smooth sheet)	* (2)

ADDITIONS

<u>POSITION NO. REFERENCE NO.</u>	<u>GEOGRAPHIC POSITION</u>	<u>FEATURE</u>	
1094	57° 56' 32. ⁷⁹ ₈₄ " N 134° 16' 39. ^{38.98} ₀₁ " W	rock bares 5 ft. at MLLW	* (4)
1099	57° 57' 00.12" N 134° 16' 49. ⁵ ₂₀ " W	rock bares 8 ft. at MLLW	* (8)
1100	57° 57' 03.00" N 134° 16' 53. ²⁴ ₁₈ " W	rock bares 6 ft. at MLLW	* (5)
1101	57° 57' 05. ³ ₄₇ " N 134° 16' 54. ⁶¹ ₅₅ " W	rock bares 4 ft. at MLLW	* (3)
1204	57° 57' 21.38" N 134° 14' 53. ⁶ ₇₃ " W	rock bares 11 ft. at MLLW	* (10)
1208	57° 57' 20. ⁰⁷ ₁₃ " N 134° 15' 06. ⁶ ₇₁ " W	rock bares 9 ft. at MLLW (offshore limit of ledge)	* (7)
1286	57° 59' 00.69" N 134° 17' 39. ⁷ ₄₂ " W	rock bares 5 ft. at MLLW	* (6)
1287	57° 59' 00.91" N 134° 17' 40. ³⁰ ₂₀ " W	rock bares 4 ft. at MLLW	* (5)

1289

 $57^{\circ} 59' 16.71''$ N
 $134^{\circ} 18' 10.22''$ W

rock bares 7 ft. at MLLW

* (7)

I. CROSSLINES

A total of 9.5 nautical miles of crosslines were run. This is equivalent to 9.7 percent of the total mainscheme hydrography. The following table lists the agreements of soundings for a sample of 42 comparisons made across the sheet. ✓

CROSSLINE AGREEMENT

soundings within 0.1 fathom : 62%
 soundings within 0.2 fathom : 93%
 soundings within 0.3 fathom : 95%

Minor disagreements occurred between the crossline and mainscheme hydrography in areas of steep bottom slope.

J. JUNCTIONS

This survey junctions with two contemporary surveys which were also conducted by the RAINIER.

JUNCTION SURVEYS

<u>Registry No.</u>	<u>Scale</u>	<u>Date</u>	<u>Location</u>
H-10230	1:10,000	1986	east junction
H-10201	1:10,000	1985	south junction

The depth contours at the junctions were in close agreement, and no discrepancies between adjacent soundings were found. ✓

K. COMPARISON WITH PRIOR SURVEYS

The survey was compared to two prior surveys:

<u>SURVEY</u>	<u>SCALE</u>	<u>DATE</u>
H-2001	1:80,000	1889
BP-124984	1:20,000	1983

Both of these surveys were compared to the contemporary survey on a sounding to sounding basis in all areas of significant shoaling or outstanding bottom features. The remaining soundings were either compared sounding to sounding or by comparing the general depth trends. ✓

Survey H-2001 is a leadline survey that was conducted by the U.S. Coast and Geodetic Survey Ship PATTERSON. Due to its nearly 1/8 nm spacing between soundings, the PATTERSON survey lacks the thoroughness found on the present survey. The contemporary survey verifies principle depths, and provides far greater detail than the survey conducted by the PATTERSON. ✓

While providing more accurate data than that of the PATTERSON, the reconnaissance survey conducted by the NOAA Ship DAVIDSON lacks the extensiveness of the present survey. In comparing this survey to the present survey, few discrepancies were found. Soundings compared to one another were in close agreement, and discrepancies between adjacent soundings may be attributed to steep bottom slopes. ✓

The prior surveys of this area consist of either lead line or reconnaissance surveys. Some of the features found during the course of this survey were in areas that had not been previously surveyed. These features are addressed in the following section. ✓

L. COMPARISON WITH THE CHART

This survey was compared to the following chart:

<u>Chart Number</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
17300	1:209,978	24th	6/15/85

Comparison

Comparisons between the small scale chart and the large scale survey are of little value. However, though the charted soundings are generally correct, some soundings do not adequately represent the bottom in certain areas. All charted soundings within the limits of this survey, a total of 8, were used for this comparison. The following three charted soundings are felt to be misrepresentations and give the appearance of navigable water where it may not exist. These three charted depths are also discussed in a Dangers to Navigation Report (Appendix XII). ✓

CHARTED FEATURE: 2.25 fathom depth

GENERAL LOCATION: .25 nm NW of the NW corner of Swan Island

GEOGRAPHIC POSITION: 57° 57' 30" N
134° 17' 30⁵" W

METHOD OF INVESTIGATION: 50m splits of main scheme North/South development

RECOMMENDATIONS:

This depth is located in an area which becomes a narrow navigable channel at MLLW. Hydrography in this area indicates depths ranging from 0 to 2.5 fathoms. It is recommended that a 1 fathom depth replace the 2.25 charted depth. Chart area according to this survey

CHARTED FEATURE: 6 fathom depth

GENERAL LOCATION: .5 nm NW of the NW corner of Swan Island

GEOGRAPHIC POSITION: 57° 57' 45" N
134° 17' 30⁵" W

METHOD OF INVESTIGATION: 50m splits of main scheme North/South development

RECOMMENDATIONS:

Soundings from this present survey, which were taken in the vicinity of the 6 fathom depth, indicate a range of depths from 3.0 to 5.4 fathoms. A 3.0 fathom depth is recommended to replace the charted 6 fathom depth. Chart the area according to this survey

CHARTED FEATURE: 1.5 fathom depth

GENERAL LOCATION: 1.5 nm NW of NW corner of Swan Island

GEOGRAPHIC POSITION: 57° 58' 20⁵" N
134° 18' 30⁴" W

METHOD OF INVESTIGATION: 50m splits of main scheme

RECOMMENDATIONS:

Due to the extensive coverage of soundings obtained in this survey, the zero fathom curve is well defined. The charted 1.5 fm depth is positioned on the chart at a location which this survey shows to be near the offshore limit of an area that bares at MLLW. The charted MLLW line does not show this.

This survey indicates a shoaling area northwest of the reef centered at 57° 57' 25" N latitude and 134° 15' 45" W longitude. Soundings indicate that this shoaling area extends further into the navigable waters than the present chart indicates.

It is recommended that these survey depths supercede all previous charted depths for this area.

Concur

Non-Sounding Features

There were no charted non-sounding features in the survey area. ✓

Recommendations

No changes to scale, coverage, or format of the published charts for this survey area are recommended. ✓

Danger to Navigation Reports

A Danger to Navigation Report pertaining to this survey area was filed on November 25, 1986. A copy of that report can be found in Appendix XII. ✓

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supercede all prior surveys. ✓

N. AIDS TO NAVIGATION

There were no aids to navigation in the survey area. ✓

O. STATISTICS

<u>EDP NO.</u>	<u>NUMBER OF POSITIONS</u>	<u>NAUTICAL MILES OF SOUNDING LINES</u>
2123	630 ¹	59
2124	693 ⁸	66
2125	34 ⁴	-
2126	755	85
2129	215	6
-----	-----	-----
TOTAL	2227 317	216

SQUARE MILES OF HYDROGRAPHY : 5.5
 BOTTOM SAMPLES : 34
 TIDE STATIONS : 2
 CURRENT STATIONS : 1
 VELOCITY CASTS : 3
 DAYS OF PRODUCTION : 10
 NAUTICAL MILES OF SIDE SCAN : 0

P. MISCELLANEOUS

A current observation station was occupied near the area of this survey to provide preliminary tidal current information in compliance with the Project Instructions. All Rainier current observations can be found in the supplemental Current Report, OPR-0179-RA-86.

Bottom samples have been submitted to the Smithsonian Institute.

Q. RECOMMENDATIONS

The hydrographer considers field work on this survey to be complete. No additional field work is required.

Concur

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished with a PDP 8/e Hydroplot computer system. The following is a list of programs used to carry out the acquisition and processing.

<u>Number</u>	<u>Description</u>	<u>Version</u>
RK 112	HYPERBOLIC, R/R HYDROPLOT	3/01/86
RK 201	GRID, SIGNAL, AND LATTICE PLOT	4/18/75
RK 211	RANGE-RANGE NON-REAL TIME PLOT	2/13/84
RK 212	VISUAL STATION TABLE LOAD	4/01/74
RK 221	COMB R/R & HYPER PLOT NON-RT	3/26/86
RK 300	UTILITY COMPUTATIONS	10/21/80
RK 330	REFORMAT AND DATA CHECK	5/04/76
PM 360	ELECTRONIC CORRECTOR ABSTRACT	2/02/76
RK 407	GEODETTIC INVERSE/DIRECT COMPUTATION	9/25/78
RK 409	GEODETTIC 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 GEODETTIC CALIBRATION	12/01/82
RK 562	THEODOLITE CALIBRATION	9/05/84
AM 602	ELINORE-LINE ORIENTED EDITOR	12/08/82
AM 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 AM 902	5/07/76
RK 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 TEST	3/15/82
RK 950	HARDWARE TEST (DOCUMENTATION ONLY)	6/02/75

S. REFERRAL TO REPORTS

The following reports contain information relevant to this survey:

Corrections to Echo Soundings Report, OPR-0179-RA-86
 Horizontal Control Report, OPR-0179-RA-86
 Electronic Control Report, OPR-0179-RA-86
 Coast Pilot Report, OPR-0179-RA-86
 Current Report, OPR-079-RA-86

Respectfully submitted,
William A. Hartzell
William A. Hartzell, ENS, NOAA

FIELD TIDE NOTE
RA 10-2-86
H-10230

Correctors were derived using program AM 500, Predicted Tide Generator, applying the following correctors to the Juneau reference station:

Time Correctors		Height
<u>High Water</u>	<u>Low Water</u>	<u>Ratio</u>
-0hr 11 min	-0hr 14 min	x 0.92

The Juneau, Alaska tide station (945-2210) served as the control station for this project.

Three tide stations were installed in the project area. Bristol Bubbler tide gages were used at these locations. During the project, two gages failed and were replaced with spare gages. Two chart drives also failed and had to be replaced.

Tide station information follows:

NORTH END, TIEDEMAN ISLAND (945-2164)

Geographic Locale - Tiedeman Island, Seymour Canal, Alaska
57° 53.7' N
134° 12.3' W

Installation date - October 5, 1986

Removal date - November 4, 1986

Gage type - Bristol Bubbler s/n 64A 11028, after failing on 10/20, gage was replaced with Bristol Bubbler s/n 67A 235. The gage was located 15 yards behind the treeline on the island. The orifice was bolted to a rocky ledge. A length of 120 feet of tubing was required to reach the gage.

Staff - The staff was a 16 foot 2x4 with vitrified staffing attached. The staff was secured to the same ledge as the orifice.

Staff-Gage - 64A 11028 - 10.0
67A 235 - 9.8

- Levels - Installation levels were run on 10/5/86 connecting 3 existing bench marks. The closure was to 0.001 m. Two additional bench marks were set on 10/20 and levels were run connecting the 5 bench marks (closure = 0.003 m). Final levels were run on 11/4 connecting 5 bench marks (closure = 0.003 m). Elevations agreed to 0.005 m of previous bench mark elevations. Due to the large tide range, the base of the staff was installed above the zero of marigram. The staff stop was located at the 30.05 ft mark on the staff.
- Bench Marks - Three marks were recovered in good condition: 2164 A 1985, 2164 B 1985, and 2164 C 1985. Two marks were set: 2164 D 1986 and 2164 E 1986.
- Gage Time - Coordinated Universal Time
- Marigram Records - Records were continuous with the following exceptions: 1. 1820 Z (10/6) to 0006 Z (10/8) due to a malfunctioning pen. No hydrography was run during this period. 2. 2000 Z 10/18 to 2350 Z 10/19 due to a malfunctioning gage. During this period, this gage was not required for hydrography and 2 other gages were in operation.
- Station Problems - Gage 64A 11028 failed on 10/20 when it could not hold pressure. It was replaced with 67A 235.

SOUTH POINT, KING SALMON BAY (945-2169)

- Geographic Locale - King Salmom Bay, Seymour Canal, Alaska
58° 00.3'N
134° 13.7'W
- Installation date - October 5, 1986
- Removal date - November 5, 1986
- Gage type - Bristol Bubbler s/n 67A 16205, after failing on 10/8, gage was replaced with Bristol Bubbler s/n 68A 14940. The gage was located at the top of a small islet, under a tree. The orifice was secured to an anchor plate. A length of 200 feet of tubing was required to reach the gage.
- Staff - The staff was a 16 foot 2x4 with vitrified staffing attached. The staff was secured to a ledge, north of the orifice.
- Staff-Gage - 68A 14940 - 13.1

- Levels - Installation levels were run on 10/7/86 connecting 5 newly set bench marks. The closure was to 0.001 m. Final levels were run on 11/4 connecting 5 bench marks (closure = 0.002 m). Elevations agreed well (0.005 m) with previous bench mark elevations. Due to the large tide range, the base of the staff was installed above the zero of marigram. The staff stop was located at the 26.52 ft mark on the staff.
- Bench Marks - Five bench marks were established on 10/6: 2169 A 1986, 2169 B 1986, 2169 C 1986, 2169 D 1986 and 2169 E 1986.
- Gage Time - Coordinated Universal Time
- Marigram Records - Upon replacing gage 67A 16205 with gage 68A 14940, records were continuous with the following exception: 1706 Z (10/17) to 1724 Z (10/17) while the chart drive was replaced.
- Station Problems - 1. Gage 67A 16205 failed and was replaced with 68A 14940 on 10/8. No hydrography was acquired with gage 67A 16205. 2. Time errors in excess of 12 minutes occurred on several occasions with chart drive 502306. The clock could not be adjusted correctly. On 10/17, the chart drive was replaced with 21009 and time errors were eliminated.

SOUTH END, FOOL INLET (945-2162)

- Geographic Locale - Fool Inlet, Seymour Canal, Alaska
58° 00.9' N
134° 11.8' W
- Installation date - October 17, 1986
- Removal date - November 5, 1986
- Gage type - Bristol Bubbler s/n 68A 9333. The gage was located at the treeline on a peninsula in Fool Inlet. The orifice was attached to an anchor plate. A length of 225 feet of tubing were required to reach the gage.
- Staff - The staff was a 16 foot 2x4 with vitrified staffing attached. The staff was secured to a boulder.
- Staff-Gage Levels - 68A 9333 - 2.6
- Levels - Installation levels were run on 10/17/86 connecting 5 newly established bench marks. The closure was to 0.000 m. Final levels were run on 11/5 (closure = 0.001 m). Elevations agreed to 0.005 m of previous bench mark elevations. Due to the large tide range, the base of the staff was installed above the zero of marigram. The staff stop was located at the 18.00 ft mark on the staff.

- Bench Marks - Five bench marks were set on 10/15: 2162 A 1986, 2162 B 1986, 2162 C 1986, 2162 D 1986 and 2162 E 1986.
- Gage Time - Coordinated Universal Time
- Marigram Records - Records were continuous with the following exceptions: 1. 1712 Z (10/30) to 1730 Z (10/30) while the chart drive was replaced. 2. 0340 Z 11/3 to 0500 Z 11/3; 0420 Z 11/4 to 0550 Z 11/4; and 0505 Z 11/5 to 0630 11/5 due the orifice going dry. No hydrography was run during these periods.
- Station Problems - Time errors in excess of 12 minutes occurred on several occasions with chart drive 521413. The clock could not be adjusted correctly. On 10/30, the chart drive was replaced with 507799 and time errors problems were eliminated.

JUNEAU CONTROL STATION

The control station at Juneau was leveled and serviced by the NOAA Ship MT MITCHELL on September 15 and November 7.

ZONING RECOMMENDATIONS

Preliminary Tidal Zoning as supplied by Project Instructions OPR-RA-0179-86, Change No 5 (September 10, 1986) appears to be adequate. The RAINIER recommends that the zoning correctors as provided in the project instructions be maintained for next year's work.

MASTER STATION LIST
OPR-0179-RA-86
SEYMOUR CANAL
ALASKA

VERSION 12/18/86

133	3	57	53	48885	134	15	42818	139	0004	000000
/WINDFALL		2	1985						RAINIER G.P. SET FALL 1985	
134	2	57	56	51936	134	11	26091	250	0010	000000
/SEYMOUR		1983							DAVIDSON G.P.	
137	3	57	53	59092	134	16	41794	250	0005	000000
/PAD		1985							RAINIER G.P. SET FALL 1985	
148	3	57	57	18092	134	16	59333	250	0006	000000
/COB		1983							DAVIDSON G.P.	
149	3	57	58	18726	134	17	11706	250	0012	000000
/CYGNET		1983							DAVIDSON G.P.	
150	3	57	57	23953	134	18	36175	250	0003	000000
/DEER		1985							RAINIER G.P. SET FALL 1985	
151	3	57	56	21619	134	16	31116	250	0006	000000
/HUMP		1985							RAINIER G.P. SET FALL 1985	
152	3	57	58	02595	134	14	05956	250	0006	000000
/SAL		1986							RAINIER G.P. SET FALL 1986	
153	3	57	57	18590	134	14	41421	250	0006	000000
/MON		1986							RAINIER G.P. SET FALL 1986	
310	3	57	56	14151	134	17	32890	254	0000	000000
/HP-29		1983							PACIFIC 1983 PHOTO PARTY	



10-1-86
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

November 25, 1986

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

RE: Notice to Mariners

Dear Sir:

It is requested that 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 1986 charting operations in Seymour Canal. The following is a list of dangers to navigation that represent changes and additions to chart 17300 in the area north of Windfall Harbor into King Salmon Bay. All depths have been reduced to Mean Lower Low Water using predicted tides. Locations are given in geographic positions as well as ranges and bearings from the charted position of Grand Island Light in Stephens Passage.

NORTHWEST OF SWAN ISLAND

<u>ITEM</u>	<u>FEATURE</u>	<u>GEOGRAPHIC POSITION</u>	<u>GRAND ISLAND LIGHT BEARING FROM</u>	<u>RANGE FROM</u>
A	Change 2 1/4 fm to 1 fm depth	57°57.5'N 134°17.4'W	215°T	10.4 nm
B	Change 6 fm depth to 3 fm	57°57.8'N 134°17.6'W	216°T	10.1 nm
C	Change 1 1/2 fm depth to 1/2 fm	57°58.4'N 134°18.6'W	220°T	10.0 nm



NORTH OF SWAN ISLAND

<u>ITEM</u>	<u>FEATURE</u>	<u>GEOGRAPHIC POSITION</u>	<u>GRAND ISLAND LIGHT BEARING FROM</u>	<u>RANGE FROM</u>
D	Add 1 fm depth	57°57.6'N 134°16.1'W	210°T	9.8 nm
E	Add 4 fm depth	57°57.8'N 134°13.0'W	203°T	9.0 nm
F	Add 1 fm depth	57°56.8'N 134°12.2'W	199°T	9.9 nm

EAST OF SWAN ISLAND

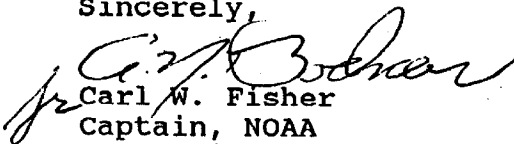
G	Add 5 fm depth	57°56.8'N 134°10.1'W	193°T	9.4 nm
---	----------------	-------------------------	-------	--------

KING SALMON BAY

H	Add 2 fm depth	57°58.3'N 134°12.0'W.	201°T	8.3 nm
I	Add 2 fm depth	57°58.8'N 134°12.6'W	204°T	8.0 nm
J	Add 2 fm depth	57°59.0'N 134°12.9'W	206°T	7.8 nm
K	Add 1 fm depth	57°59.2'N 134°11.7'W	203°T	7.6 nm
L	Add 4 fm depth	57°59.2'N 134°12.9'W	207°T	7.5 nm
M	Change 14 fm to 9 fm depth	58°00.9'N 134°14.0'W	219°T	6.5 nm
N	Change 7 fm to 5 fm depth	58°01.5'N 134°14.8'W	225°T	6.4 nm

This is advance information subject to office review.

Sincerely,



Carl W. Fisher
Captain, NOAA
Commanding Officer, NOAA Ship RAINIER

Enclosure
cc: DMAHTC

24th Ed., June 15/85

17300

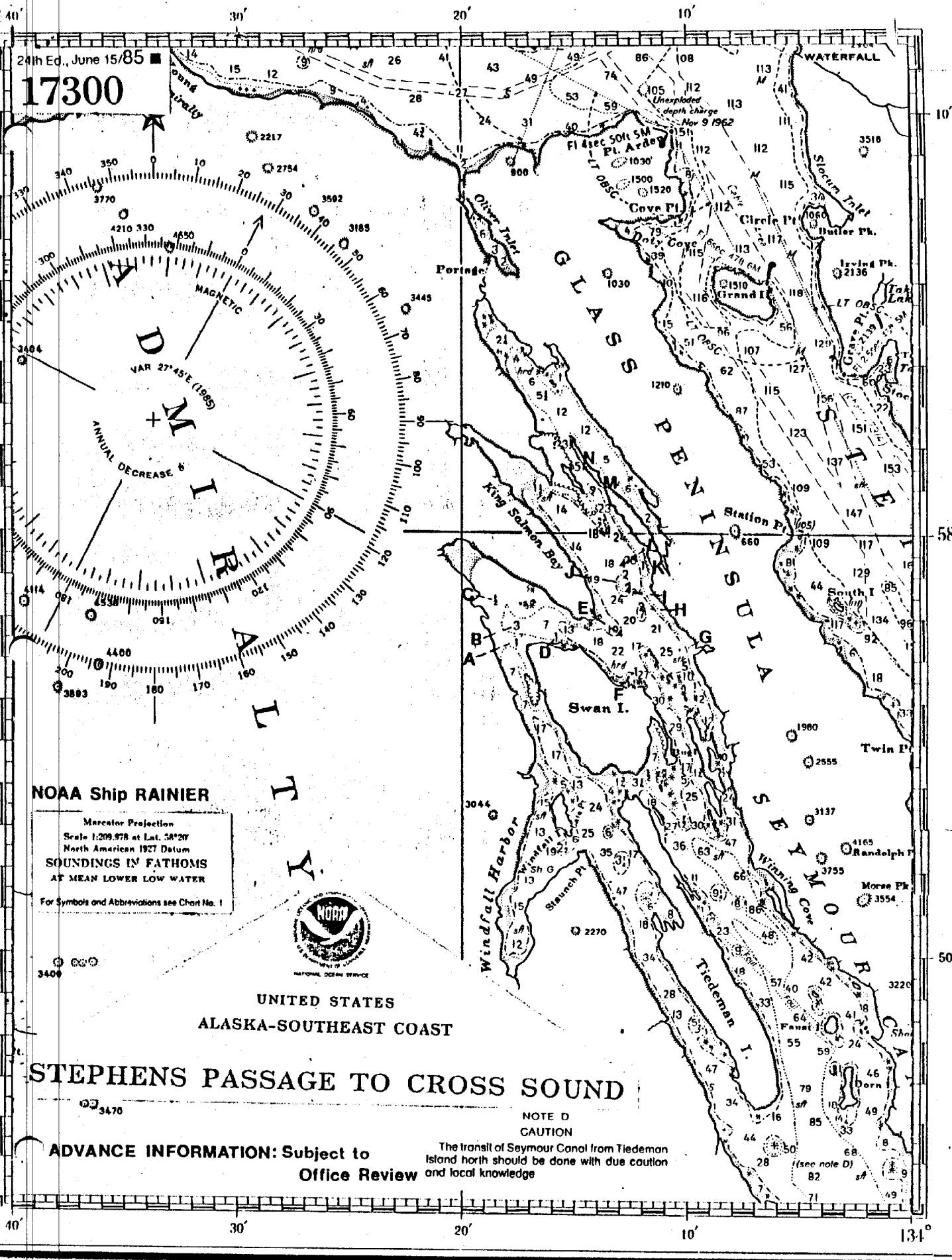
(CONTINUED ON CHART 16760)

58°

58°

10'

50'



NOAA Ship RAINIER

Mercator Projection
 Scale 1:209,978 at Lat. 58°20'
 North American 1927 Datum
SOUNDINGS IN FATHOMS
 AT MEAN LOWER LOW WATER
 For Symbols and Abbreviations see Chart No. 1



UNITED STATES
 ALASKA-SOUTHEAST COAST

STEPHENS PASSAGE TO CROSS SOUND

ADVANCE INFORMATION: Subject to Office Review

NOTE D CAUTION
 The transit of Seymour Canal from Tiedeman Island north should be done with due caution and local knowledge

40' 30' 20' 10' 134°

FILE COPY



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

NOAA Ship RAINIER
1801 Fairview Ave E.
Seattle Wa.

November 26, 1986

TO: N/CG222 - Norman Banks

THRU: N/MOP - Robert L. Sandquist *RS*

FROM: S221 *TWC* Carl W. Fisher *CW Fisher*

SUBJECT: Dangers to Navigation Report, Seymour Canal AK
OPR-0179-RA-86

Upon completion of the 1986 field season in Seymour Canal Alaska, RAINIER is submitting a Dangers to Navigation Report in accordance with the Hydrographic Manual as ammended by Hydrographic Survey Guideline No. 46. During October and early November, 1986, RAINIER completed the following basic hydrographic surveys in Seymour Canal under Project OPR-0179-RA-86.

<u>Sheet</u> <u>Letter</u>	<u>Field</u> <u>Number</u>	<u>Registry</u> <u>Number</u>	<u>Survey Title</u>
F	RA-10-1-86	H-10228	North and West of Swan Island
G	RA-10-2-86	H-10230	South Portion of King Salmon Bay

RAINIER has identified 14 features shoaler than ten fathoms which are not represented correctly on Chart 17300, 24th Ed., June 15/85 (1:209,978). Several of these items are new features not found on prior survey H-2001, 1889, (1:80,000). Other items represent shoal depths that were poorly delineated on the prior survey but have now been sufficiently developed to supersede currently charted deeper depths. Cartographic interpretations were applied to all items in bringing through depths on the small scale chart from the large scale survey. The recommendations which follow should be reviewed by office cartographers for their validity. Copies of preliminary field sheets are submitted with this report.

Hydrographic position control was accomplished using range-range and range-azimuth geometry. Mini-Ranger was used as the electronic positioning system and azimuths were measured with Wild T-2 theodolites. All positions meet requirements for a 1:10,000 scale survey.



Two methods were used to determine least depths; 1) RAINIER launches equipped with DSF-6000N echo sounders and 2) Diver least depths using a leadline. The appropriate predicted tides furnished with the project instructions have been applied in the reduction of all soundings to MLLW.

All field procedures were performed in accordance with the Hydrographic Manual, the Hydrographic Survey Guidelines and the PMC Oporders.

ITEM A

Survey Depth: 1/2 fm to 3 fm

Charted Depth: 2 1/4 fm 57°57'30"N

General Locale: Northwest of Swan Island 134°17'24"W

Method of Investigation: The area along the northwest tip of Swan Island was developed at 25 meter spacing. Depths in the channel range from 1/2 to 3 fm.

Recommendation: At the present chart scale, the charted 2 1/4 fm depth is a misleading representation. Change the charted depth to 1 fm.

ITEM B

Survey Depth: 3 fm

Charted Depth: 6 fm 57°57'48"N

General Locale: Northwest of Swan Island 134°17'36"W

Method of Investigation: The area was developed at 50 meter spacing. Depths of 3 to 6 fm were found in the vicinity of the charted 6 fm depth.

Recommendation: Change the charted 6 fm depth to 3 fm.

ITEM C

Survey Depth: 1/2 fm

Charted Depth: 1 1/2 fm 57°58'24"N

General Locale: Northwest of Swan Island 134°18'36"W

Method of Investigation: The area was sounded at 100 meter spacing. Depths of -1/2 fm to 2 fm were found in the immediate area. A large area which bares at MLLW exists to the west and northwest of the charted 1 1/2 fm depth.

Recommendation: Change the charted 1 1/2 fm depth to 1/2 fm.

ITEM D

Survey Depth: 1 fm
Charted Depth: Not represented 57°58'36"N
General Locale: North of Swan Island 134°16'06"W

Method of Investigation: A shoal which extends about 500 meters north of the north shore of Swan Island was developed at 25 meter spacing.

Recommendation: Add a 1 fm depth at the above position.

ITEM E

Survey Depth: 4.1 fm
Charted Depth: 10 fm 57°57'47.07"N
General Locale: North of Swan Island 134°12'59.17"W

Method of Investigation: A submerged ridge in the area of a 10 fm charted depth was developed at 25 meter spacing. A leadline least depth of 4.1 fm was determined by divers at the above position.

Recommendation: Add a 4 fm depth to the chart at the above position.

ITEM F

Survey Depth: 1.5 fm
Charted Depth: Not represented 57°56'45.10"N
General Locale: North of Swan Island 134°12'10.77"W

Method of Investigation: An uncharted pinnacle was developed at 25 meter spacing. A leadline least depth of 1.5 was determined by divers at the above position.

Recommendation: Add a 1 fm depth to the chart at the above position.

ITEM G

Survey Depth: 4.9 fm
Charted Depth: Not represented 57°56'50.78"N
General Locale: East of Swan Island 134°10'06.49"W

Method of Investigation: An uncharted pinnacle was developed at 25 meter spacing. A leadline least depth of 4.9 fm was determined by divers at the above position.

Recommendation: Add a 5 fm depth to the chart at the above position.

ITEM H

Survey Depth: 2.1 fm

Charted Depth: 7 fm 57°58'18.42"N

General Locale: North of Swan Island 134°11'57.83"W

Method of Investigation: A charted 7 fm shoal area was developed at 25 meter spacing. Several rock pinnacles were found on a gently sloping plateau. A leadline least depth of 2.1 fm was determined by divers at the above position.

Recommendation: Add a 2 fm depth to the chart at the above position.

ITEM I

Survey Depth: 2.2 fm

Charted Depth: 3 fm 57°58'49.35"N

General Locale: King Salmon Bay 134°12'35.05"W

Method of Investigation: A charted 3 fm shoal was developed at 25 meter spacing. Several rock pinnacles were found over the extent of the shoal. The shoalest pinnacle was a 2.2 fm leadline depth determined by divers at the above position.

Recommendation: Add a 2 fm depth to the chart at the above position.

ITEM J

Survey Depth: 2.5 fm

Charted Depth: 3 fm 57°58'59.78"N

General Locale: King Salmon Bay 134°12'51.65"W

Method of Investigation: The same charted 3 fm shoal referenced in Item K was developed at 25 meter spacing. A leadline least depth of 2.5 fm was determined by divers on this second pinnacle at the above position.

Recommendation: Add a 2 fm depth to the chart at the above position.

ITEM K

Survey Depth: 0.9 fm

Charted Depth: Not represented 57°59'12.27"N

General Locale: King Salmon Bay 134°11'42.54"W

Method of Investigation: The area was developed at 25 meter spacing. An echo sounder least depth of 0.9 fm was found. A leadline least depth was determined by divers to be 1.0 fm on the pinnacle rock at the above position.

Recommendation: Add a 1 fm depth to the chart at the above position.

ITEM L

Survey Depth: 4.2 fm

Charted Depth: Not represented 57°59'13.99"N

General Locale: King Salmon Bay 134°11'52.58"W

Method of Investigation: A submerged ridge was developed at 25 m spacing. A leadline least depth of 4.2 fm was determined by divers on a rock pinnacle at the above position.

Recommendation: Add a 4 fm depth to the chart at the above position.

ITEM M

Survey Depth: 9 fm

Charted Depth: 14 fm 58°00'54"N

General Locale: King Salmon Bay 134°14'00"W

Method of Investigation: The channel that leads from King Salmon Bay north into Fools Inlet was developed at 50 meter spacing. Depths of 9 fm to 12 fm were found in the immediate area.

Recommendation: Change the charted 14 fm to a 9 fm depth.

ITEM N

Survey Depth: 5 fm

Charted Depth: 7 fm 58°01'30"N

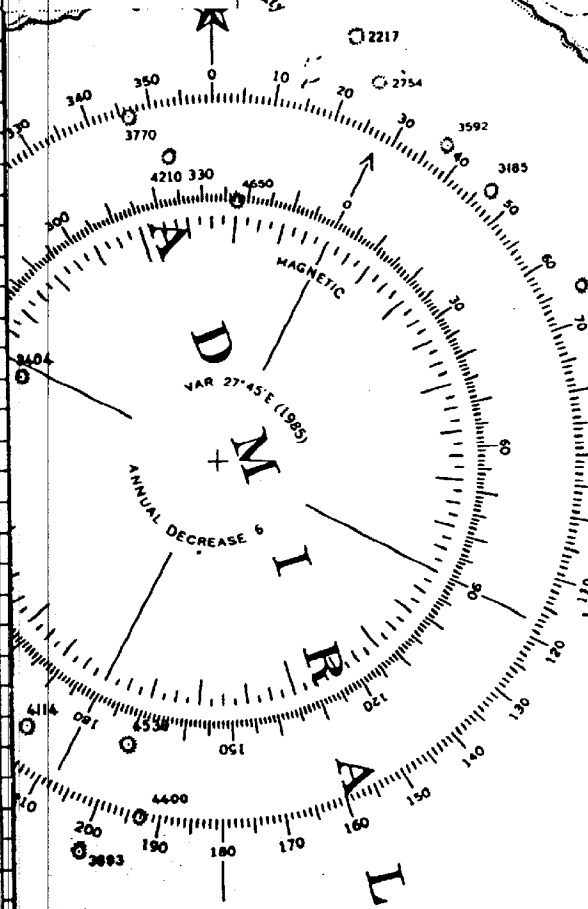
General Locale: King Salmon Bay 134°14'30"W

Method of Investigation: The channel connecting King Salmon Bay and Fools Inlet was developed at 50 meter spacing. Depths of 5 fm to 7 fm were found in the middle of the channel.

Recommendation: Change the charted 7 fm to a 5 depth.

24th Ed., June 15/85
17300

(CONTINUED ON CHART 1760)



NOAA Ship RAINIER

Mercator Projection
Scale 1:509,978 at Lat. 58°29'
North American 1927 Datum
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
For Symbols and Abbreviations see Chart No. 1



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

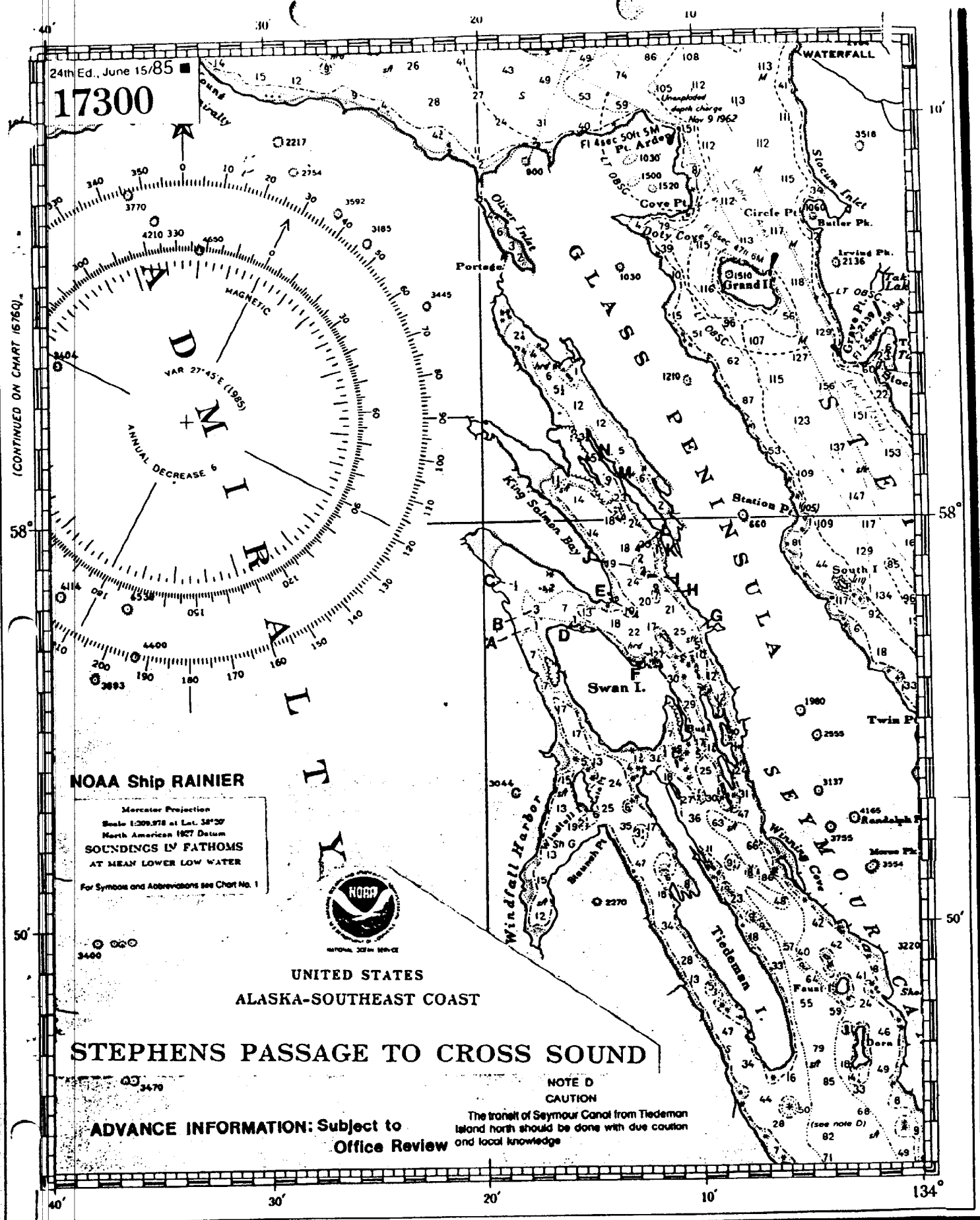
UNITED STATES
ALASKA-SOUTHEAST COAST

STEPHENS PASSAGE TO CROSS SOUND

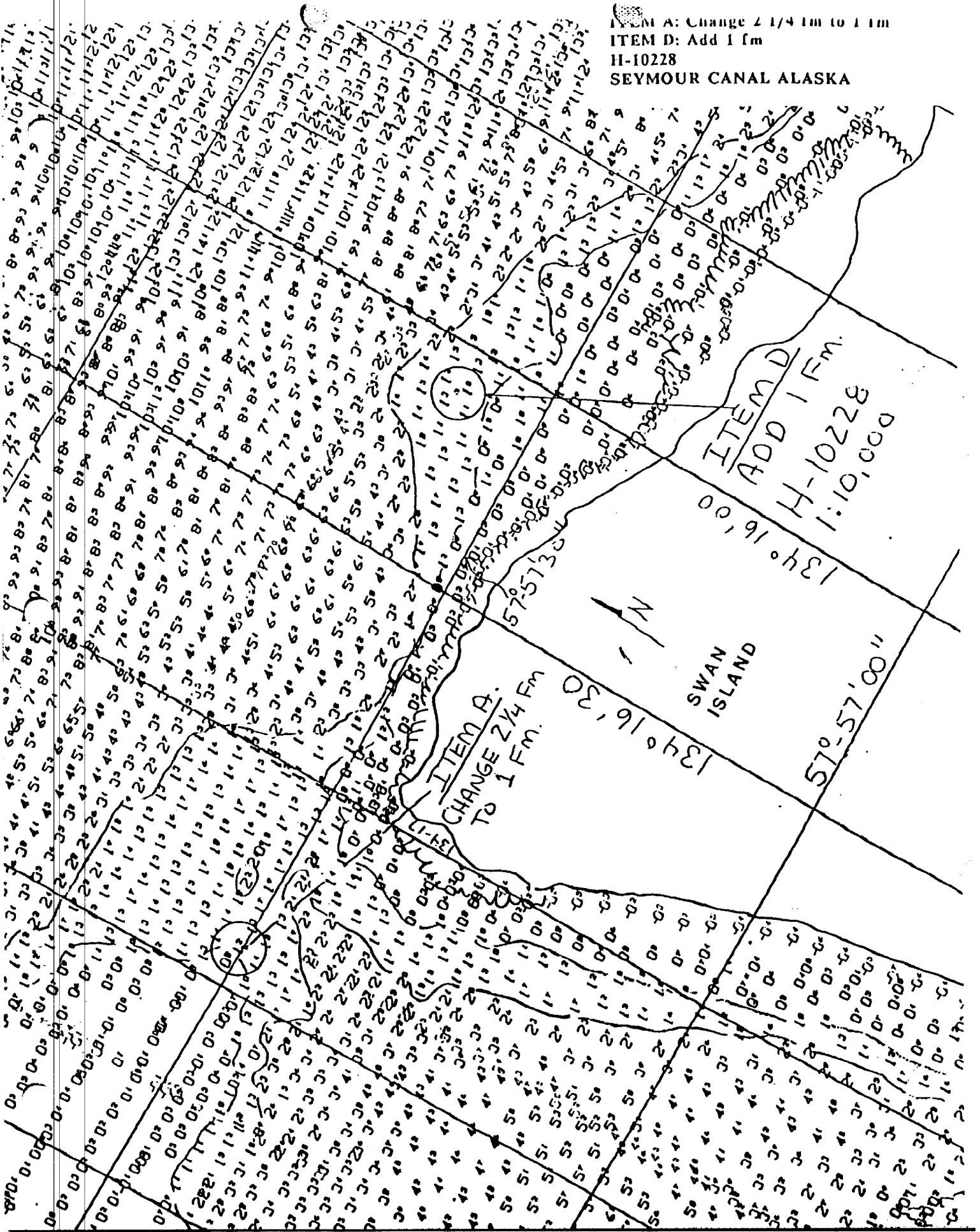
ADVANCE INFORMATION: Subject to Office Review

NOTE D
CAUTION

The transit of Seymour Canal from Tiedeman Island north should be done with due caution and local knowledge



ITEM A: Change 2 1/4 fm to 1 fm
ITEM D: Add 1 fm
H-10228
SEYMOUR CANAL ALASKA



ITEM A:
CHANGE 2 1/4 Fm
TO 1 Fm.

ITEM D:
ADD 1 Fm.
H-10228
1:10,000

SWAN
ISLAND



57°-57'00"

134° 16' 00"

57-57'30"

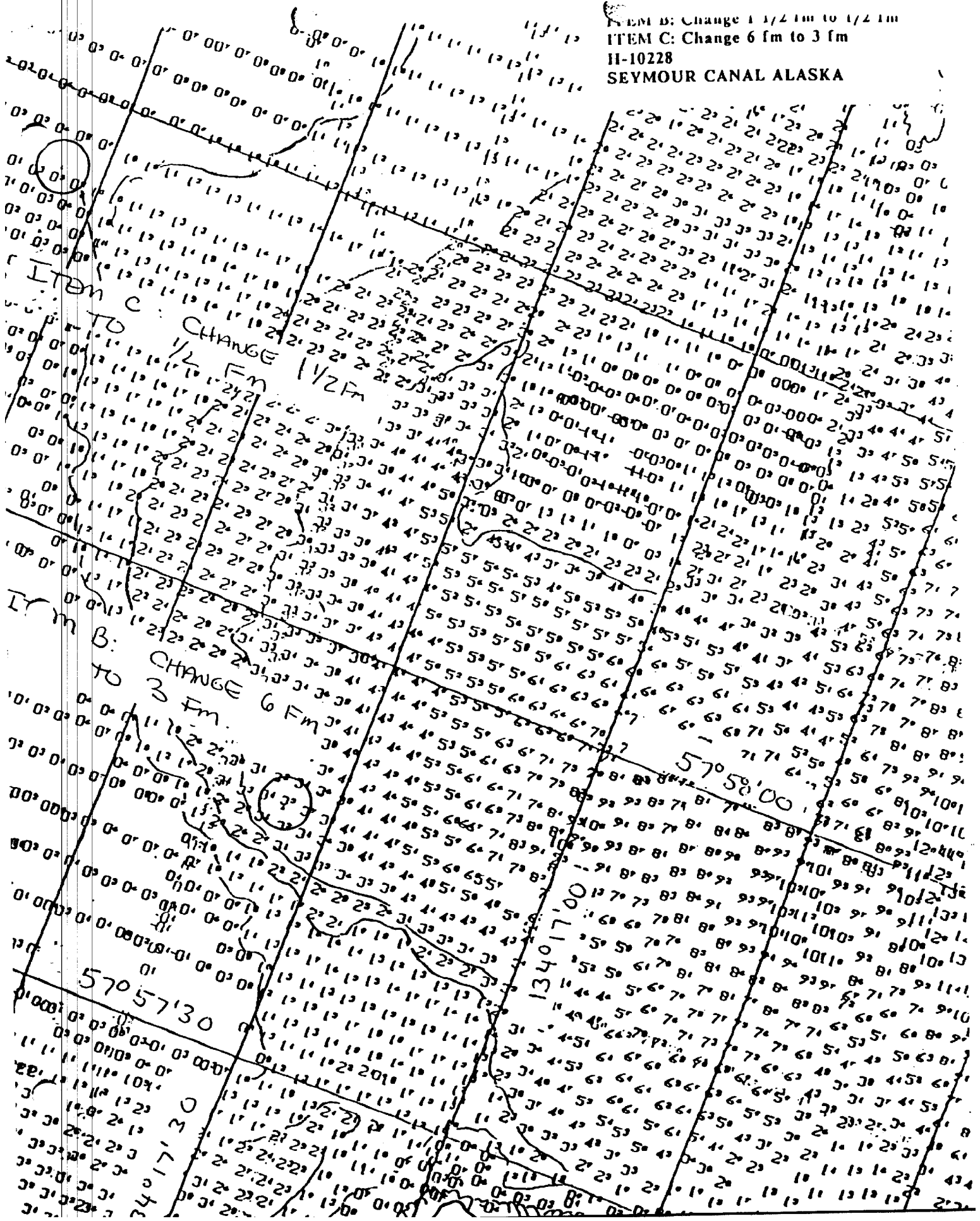
134-16'30"

ITEM B: Change 1 1/2 fm to 1/2 fm

ITEM C: Change 6 fm to 3 fm

H-10228

SEYMOUR CANAL ALASKA



ITEM C:
TO CHANGE
1/2 Fm
1/2 Fm

ITEM B:
TO CHANGE
3 Fm
6 Fm

57° 57' 30"

134° 17' 00"

57° 58' 00"

Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

SEP 2 1987

N/MOP211C/AAL

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

Dear Sir:

During office review of hydrographic survey H-10228, North and West of Swan Island, Seymour Canal, Alaska, the following change affecting chart 17300 was noted. Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following statement is recommended for inclusion in the Local Notice to Mariners:

"An uncharted shoal covered by 0.8 fathom at MLLW discovered; Chart No. 17300 (NAD 27 datum); latitude 57°57'34.4"N, longitude 134°15'48.1"W; distance 9.7 nautical miles, bearing 210 degrees true from Grand Island Light".

Sincerely,

Robert L. Sandquist
Rear Admiral, NOAA
Director, Pacific Marine Center

bc: N/CG222

FILE COPY

JSS

CODE	SURNAME	DATE	CODE	SURNAME	DATE
N/MOP2	Richards	Aug 9/1	N/MOP	Sandquist	9/2
N/MOP2	Mordock	Aug 9/1			
N/MOPx	Petersen				

APPROVAL SHEET


DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

RA-10-1-86 (H-10228)

Standard procedures were followed in accordance with the Hydrographic Manual, Hydrographic Survey Guidelines, and PMC OPORDERS in producing this survey. The data were examined daily during the 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.


for 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: March 16, 1987

Marine Center: Pacific

OPR: 0179

Hydrographic Sheet: H-10228

Locality: North and West of Swan Island, Seymour Canal, Alaska

Time Period: October 8 - November 3, 1986

Tide Station Used: 945-2164 North End Tiedman Island, AK
945-2169 South Point, AK

Plane of Reference (Mean Lower Low Water): 945-2164 = 18.43 Ft.
945-2169 = 18.50 Ft.

Height of Mean High Water Above Plane of Reference: 945-2164 = 14.6 Ft.
945-2169 = 14.4 Ft.

Remarks: Recommended Zoning:

1. South and West of a line formed by 2 points located at

57°58.0' 57°56.8'
134°14.0' 134°13.8' zone direct on 945-2164.

2. North and East of the previous line zone direct on 945-2169.

for Brian K. Lewis

Chief, Tidal Datum Quality
Assurance Section

GEOGRAPHIC NAMES

H-10228

Name on Survey
ALASKA, SEYMOUR CANAL
NORTH AND WEST OF
SWAN ISLAND

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
I INDEXED

Name on Survey	A	B	C	D	E	F	G	H	I	
ADMIRALTY ISLAND	X		X						01163 01164	1
ALASKA (TITLE)										2
SEYMOUR CANAL	X		X						01163 01164	3
SWAN COVE			X						01163	4
SWAN ISLAND	X		X						01164	5
										6
										7
										8
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Approved:

Charles E. Harrington
Chief Geographer - NCG2R5

MAY 28 1987



FILE COPY

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

MAR 2 1987

N/MOP21x2/MM

TO: Commanding Officer
NOAA Ship RAINIER

Robert L. Sandquist
FROM: N/MOP - Robert L. Sandquist

SUBJECT: Preprocessing Examination of:
~~H-10228~~ Alaska, Seymour Canal,
North and West of Swan Island

H-10230 Alaska, Seymour Canal,
South Portion of King Salmon Bay

Hydrographic surveys H-10228 and H-10230 have been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for these surveys is attached. Surveys H-10228 and H-10230 are accepted for Pacific Marine Center processing.

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

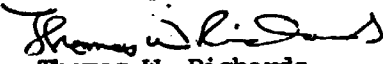




UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Pacific Marine Center
Nautical Chart Branch
7600 Sand Point Way NE
Seattle, Washington 98115-0070

February 25, 1987 N/MOP21x2/MM

TO: N/MOP - Robert L. Sandquist

FROM: 
N/MOP 21 - Thomas W. Richards

Subject: Preprocessing Examination for H-10228 and H-10230

I. SURVEY INFORMATION

A. Field No. RA-10-1-86 Registry No. H-10228
RA-10-2-86 H-10230

B. State: Alaska

General Locality: Seymour Canal

Sublocality: North and West of Swan Island
South Portion of King Salmon Bay

C. Project Instructions: OPR-0179-RA-86

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

D. Dates:	H-10228	H-10230
Field Work Commenced:	Oct. 8, 1986	Oct. 18, 1986
Field Work Completed:	Nov. 4, 1986	Nov. 4, 1986
plus 6 weeks:	Dec. 16, 1986	Dec. 16, 1986
Data received at Marine Center:	Dec. 23, 1986	Jan. 13, 1987
plus 2 months:	Feb. 23, 1987	Mar. 13, 1987

Examination critique transmitted to field March 2, 1987

Target for completion of Marine Center processing September 2, 1987



II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic surveys H-10228 and H-10230 were performed by personnel of the NOAA Ship RAINIER, CAPT Carl W. Fisher, Commanding Officer. The following personnel supervised portions of the data acquisition: LCDR Perugini, LT White, ENS Brown, ENS Damm, ENS Poston, ENS O'Mara, ENS Hartzell and ENS Fellows.

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:

There were fourteen dangers to navigation reported by RAINIER surveys H-10228 and H-10230. The Danger to Navigation report is included in both Descriptive Reports.

One additional danger to navigation for H-10230 was found during the preprocessing examination. A Danger to Navigation report was sent to the Seventeenth Coast Guard District for inclusion in the Local Notice to Mariners (see Attachment A).

B. Compliance with Instructions:

Surveys H-10228 and H-10230 generally comply with the Project Instructions and Changes 1-5.

C. Final Field Sheets:

The depth curves for H-10230 are not continuous between north and south final field sheets (see Attachment B). Careful sheet alignment and drafting of depth curves will allow for smooth curves to be drawn from one sheet to another.

An area between the north and south final field sheets for H-10230 was not investigated (see Attachment C). No significant features within this area appear on the chart, shoreline manuscript or prior surveys.

Some peaks on the echograms from H-10230 were not inserted into the sounding records and were not further investigated for least depth determinations (see Attachments D,E). All echograms should be carefully inspected to ensure each important sounding has been properly scaled and recorded [HM 4.9.8.1]. Least depths over pinnacles should be carefully determined [HM 1.4.1, 4.5.9].

Excessive gain in the high frequency mode was used on occasion during data acquisition on H-10230 (see Attachment F). High and low frequency settings should be adjusted to ensure adequate bottom delineation [DSF-6000N Provisional Instructions].

D. Descriptive Report:

Section D (Sounding Equipment and Corrections to Echo Soundings) of the Descriptive Report for H-10230 states two types of echo sounders were used during survey operations although the table included within this section does not show which vessel used the DE-719B Raytheon echo sounder. The type and serial number of all echo sounding equipment should be described in Section D of the Descriptive Report [HM 5.3.4.D; PMC OORDER, Appendix Q, Attachment B, Section D.1].

Section D of the Descriptive Report for H-10228 states that attempts were made to operate DSF-6000N echo sounder using auto gain controls as specified by the Provisional Operating Manual. No further discussion of gain settings followed. This information, however, is included in the 1986 Corrections to Echo Soundings Report. Any faults with the equipment that affect the accuracy of soundings and how they were resolved should be included in Section D [HM 5.3.4.D; PMC OORDER, Appendix Q, Attachment B, Section D.3].

Section D of the Descriptive Report for H-10228 refers to Appendix IV of the report when discussing calibration of the Plessy/Grundy Velocity Sensor. Appendix IV contains no information regarding the calibration of the sensor.

Section G of both Descriptive Reports does not identify the Wild T2 theodolites used during the surveys. Control equipment, including sextants and theodolites, should be identified by manufacturer, model and serial number [PMC OORDER, Appendix Q, Attachment B, Section G.3].

Section G of both Descriptive Reports refers to Appendix V of the reports for locations of shore transponders and the days used. Appendix V contains only electronic corrections abstracts and abstracts of baseline calibrations.

Section J of the Descriptive Report for H-10230 states the survey junctions with H-10228 and H-10201. Survey H-10230 junctions with H-10228 and H-10204.

Section L of the Descriptive Report for H-10228 states three charted depths do not accurately reflect the bottom topography of the area; the survey depths in these areas were included in the Dangers to Navigation report. This section of the report should also include the position numbers associated with the applicable survey depths [PMC OORDER, Appendix Q, Section L.2].

F. Sounding Volumes and/or Raw Data Printouts:

Several entries in the sounding volumes for H-10228 were corrected by using "white out" to cover errors. Some entries for H-10230 were corrected by writing over errors. Corrections should be made by crossing out erroneous entries and making corrections above or to one side [HM 4.8.3.1].

Shore stations and type of sounding equipment used to collect bottom samples (H-10228, DN 289) were not identified in the sounding volumes. Other stamp information in the sounding volumes for H-10230 was not completed. Information regarding personnel, instruments used, weather conditions, etc. should be entered at the beginning of each work day [HM 4.8.3.2, 4.8.3.3].

K. Special and/or Ancillary Reports:

The Corrections to Echo Soundings Report and the Electronic Control Report were briefly examined during the preprocessing examination.

Section A of the Correction to Echo Soundings Report states all soundings were corrected for transducer depth, settlement and squat, sound velocity and tides. Section C of the report (and Section D of both Descriptive Reports) states settlement and squat correctors were determined but not applied to soundings on the final field sheets. Better wording for Section A would have been "Corrections were determined for transducer ...; corrections for settlement and squat were not applied to the final field sheets".

L. Automated Data Check:

All comments regarding automated data check refer to H-10230. One corrector tape was labelled backwards, causing parity errors during spooling of the survey.

Fifty percent of data designated "N.S.P." in the Abstracts of Positions were not annotated "N.S.P." on the corrector tapes. The Abstract of Positions was used during spooling to denote all data designated "N.S.P.".

Five errors on data tapes (resulting from incorrect time sequence, incorrect control number designated on one master tape, and no common time between first position on master/corrector tape) caused minor problems during spooling of the survey.

M. General Comments:

Particular attention should be made when writing the Descriptive Report to ensure the details within each section of the report accurately reflect the final field sheet data and data printouts.

Careful scanning of echograms should ensure all significant features within the survey area have been investigated. This is particularly important if final field sheets are immediately copied and forwarded to Rockville by the Nautical Chart Branch for application to existing charts.

N. Survey Acceptance:

The preprocessing examination of H-10228 and H-10230 were 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, H-10228 and H-10230 are in compliance with the Project Instructions. I recommend that H-10228 and H-10230 be accepted for Nautical Chart Branch processing.

Prepared by:

Marlene Mozgala.

Marlene Mozgala

HYDROGRAPHIC SURVEY STATISTICS

H-10228

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		6
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		3
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES	2				
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): TP-01163 & TP-01164

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			2317
POSITIONS REVISED			19
SOUNDINGS REVISED			138
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	93.5		93.5
VERIFICATION OF SOUNDINGS	117.0		117.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	54.0		54.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS		16.0	16.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		20.0	20.0
GEOGRAPHIC NAMES			
OTHER: Digitizing			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	264.5	36.0

Pre-processing Examination by M. Mozgala	Beginning Date 2/23/86	Ending Date 3/2/87
Verification of Field Data by M. Sanders, T. Jones, J. Stringham, I. Almacen	Time (Hours) 117.0	Ending Date 8/12/87
Verification Check by J. Stringham, B. Olmstead	Time (Hours) 75.5	Ending Date 8/18/87
Evaluation and Analysis by I. Almacen	Time (Hours) 30.0	Ending Date 8/25/87
Inspection by D. Hill	Time (Hours) 2.0	Ending Date 8/28/87

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10228

1. INTRODUCTION

H-10228 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER (S212) in accordance with the following project instructions:

OPR-0179-RA-86, dated March 14, 1985
Change Number 1, dated March 21, 1985
Change Number 2, dated September 27, 1985
Change Number 3, dated January 17, 1986
Change Number 4, dated June 24, 1986
Change Number 5, dated September 10, 1986

This is the initial basic hydrographic survey of the northern section of Seymour Canal covering the area northwest of Swan Island from latitude 57°55'00.0"N to latitude 57°59'30.0"N. Ledges, isolated rocks, islets and off-lying rocky reefs are found throughout the area. The bottom consists of sand and mud. Depths range from 0 to 22 fathoms.

Field processing used predicted tides for Juneau, Alaska. Office processing used approved hourly heights zoned from the North End Tiedeman Island gage (945-2164).

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. TRA and sound velocity correctors are adequate. The electronic control correctors were updated during office processing to reflect the final correction values based on the beginning and ending baseline calibrations. The smooth position and sounding 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 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-86, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1983, 1985 and 1986 field values based on NAD 1927. The computation of positions accomplished during office processing used these same values. The smooth sheet and accompanying overlays are annotated with NAD 1983 adjustment ticks based on adjustment values determined by N/CG121. Geographic positions based on the NAD 1983 may be plotted on the smooth sheet utilizing the NAD 1927 projection by applying the following corrections:

Latitude: 1.201 seconds (37.2 meters)
 Longitude: -6.308 seconds (-103.4 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 ten weak fixes (angles of intersection less than 30 degrees or more than 150 degrees) noted on this survey. However, there are no significant plotting differences between the soundings derived from these fixes and those in adjacent areas. Also, none of these fixes are used to position dangers to navigation. These fixes are considered acceptable.

The applicable shoreline manuscripts are TP-01163 and TP-01164, compiled at a scale of 1:20,000 and enlarged to the scale of the survey. These registered Class III maps, originate from photography dated July 1983.

Shoreline and alongshore features within the survey limits were verified as required by the project instructions. Section H of the hydrographer's report contains adequate discussions of changes to ledge configuration, reef limits and location of rocks.

3. HYDROGRAPHY

Hydrography within the limits of this survey is adequate to:

a. Delineate the bottom configuration, determine least depths and 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 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 PMC OORDER, except as noted in the attached copy of Preprocessing Examination Report, dated February 25, 1987.

5. JUNCTIONS

H-10228 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10201	1985	1:10,000	South
H-10230	1986	1:10,000	East

The junction with H-10201 has not been formally completed. H-10201 was previously processed and forwarded for charting. The junction comparison was made using a copy. Soundings were found to be in good agreement; however, portions of the depth curves on H-10201 should be adjusted to conform with H-10228.

The junction with H-10230 has been adequately effected.

6. COMPARISON WITH PRIOR SURVEYS

H-2001 (1889), 1:80,000

H-2001 provides the basic survey coverage for this area of Seymour Canal. Comparison with this prior survey is satisfactory, taking into consideration the differences in the scales of the surveys and the methods of surveying. No significant discrepancies between the two surveys were noted except an indication of shoaling in some areas northwest of Swan Island. H-10228 was accomplished with far more accurate positioning and depth determination. It also provides adequate position and height determination of prominent features which was not accomplished during the 1889 survey by the USC&GS Ship PATTERSON.

A comparison accomplished with the 1983 reconnaissance survey (BP124982) of Seymour Canal by NOAA Ship DAVIDSON is good. Soundings agree within 0.3 of a fathom throughout the survey.

There are no AWOIS items originating from H-2001 applicable to the present survey.

H-10228 is adequate to supersede the prior survey within the common area.

7. COMPARISON WITH CHART

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

a. Hydrography - Charted information originates from H-2001 and other miscellaneous sources not readily ascertainable. The comparison with the few charted features is satisfactory, except the three (3) charted depths and an uncharted shoal included in the attached Dangers to Navigation Report. For more details see section L of the hydrographer's report.

There are no AWOIS items originating from miscellaneous sources.

H-10228 is adequate to supersede charted hydrography within the common area of coverage.

Geographic names appearing on the smooth sheet have been approved by the Chief Geographer and are plotted in accordance with this chart.

A Danger to Navigation Report (copy attached) concerning shoals identified as items A, B, C and D was sent by the hydrographer to the 17th Coast Guard District. A separate report pertaining to the same items was transmitted to the Chart Information Section, N/CG222 (copy attached).

A Danger to Navigation Report (copy attached), generated during office processing, was forwarded to the USCG. This report pertains to an 0.8-fathom shoal located at latitude 57°57'34.4"N, longitude 134°15'48.1"W.

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


c. Aids to Navigation - There are no fixed or floating aids located within the limits of this survey.

8. COMPLIANCE WITH INSTRUCTIONS

H-10228 adequately complies with the project instructions mentioned in Section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a very good basic hydrographic survey. No additional field work is recommended for this particular area of Seymour Canal.


Sr Isagani A. Almacén
Cartographer

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


for Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10228

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

Thomas W. Richards 9/1/87
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LW Mordock

SIGNATURE AND DATE:

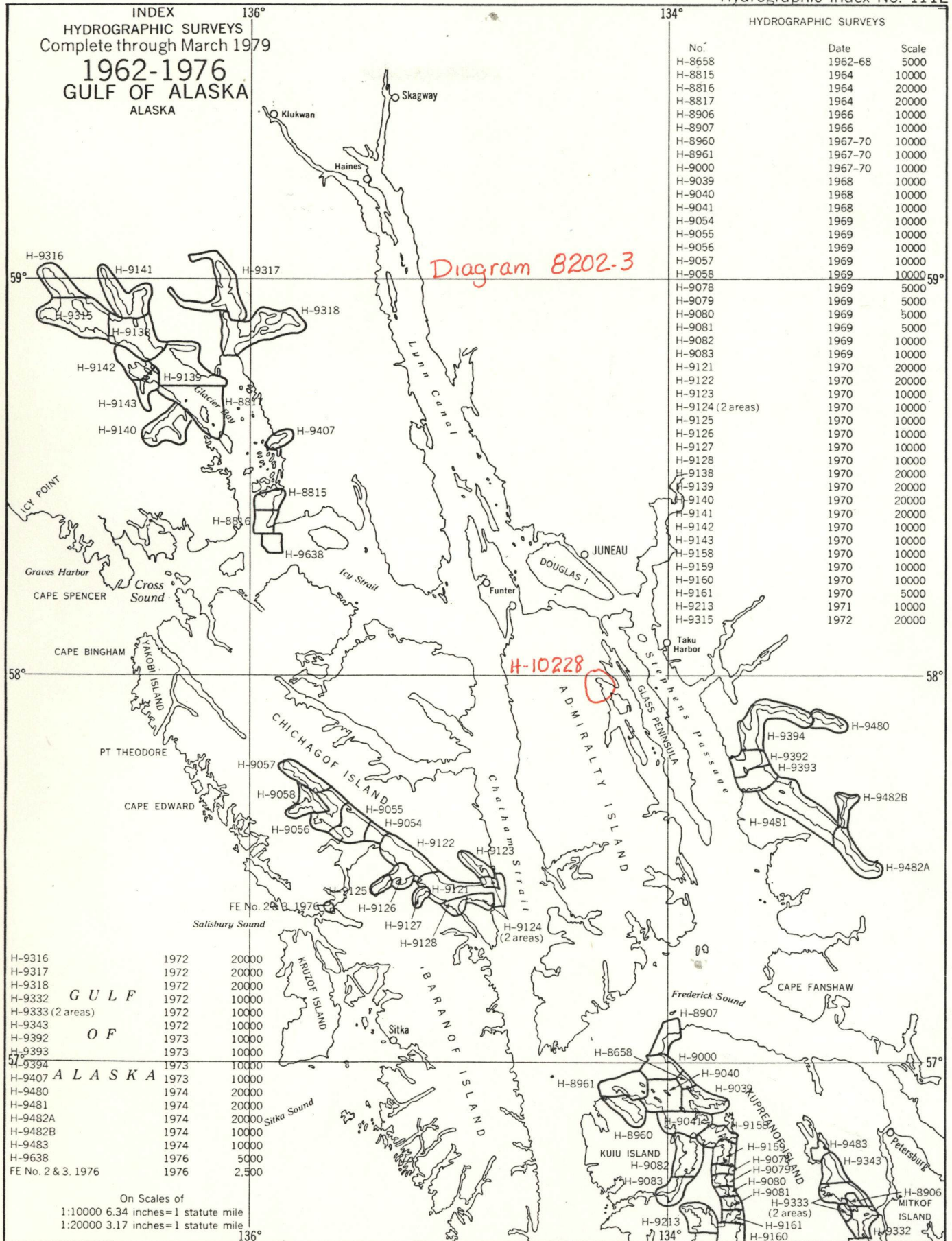
Langford Mordock 9/1/87

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

for *Simund R. Petersen* 9/1/87
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 111E



(see also No. 110)

