

10201

10201

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-10-2-85
Registry No. H-10201

LOCALITY

State Alaska
General Locality ... Seymour Canal
Sublocality Windfall Harbor and Vicinity

19 85

CHIEF OF PARTY
CAPT C.W. Fisher

LIBRARY & ARCHIVES

DATE January 6, 1987

☆U.S. GOV. PRINTING OFFICE: 1985-566-054

Area 5
CMT
17300
17360

TO SIGN OFF SEE
"RECORD OF APPLICATION"

HYDROGRAPHIC TITLE SHEET

H-10201

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-10-2-85

State Alaska

General locality Seymour Canal

Locality Windfall Harbor and Vicinity

Scale 1:10,000

Date of survey October 5- November 7, 1985

Instructions dated March 14, 1985

Project No. OPR-0179-RA-85

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

Chief of party Carl W. Fisher, CAPT, NOAA

Surveyed by ENS Porta, ENS Brown, ENS Damm, Lt Knorad

Soundings taken by echo sounder, ~~hand lead, pole~~ DSF 6000N, hand lead, ^N pneumatic depth guage

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by W. Johnson

Automated plot by PMC Xynetics Plotter

Evaluation by C.R. Davies

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

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

NOV 015/SURF ✓ 35V 9/3/87

SL 1-31-97

PROGRESS SKETCH

OPR-0179-RA-85

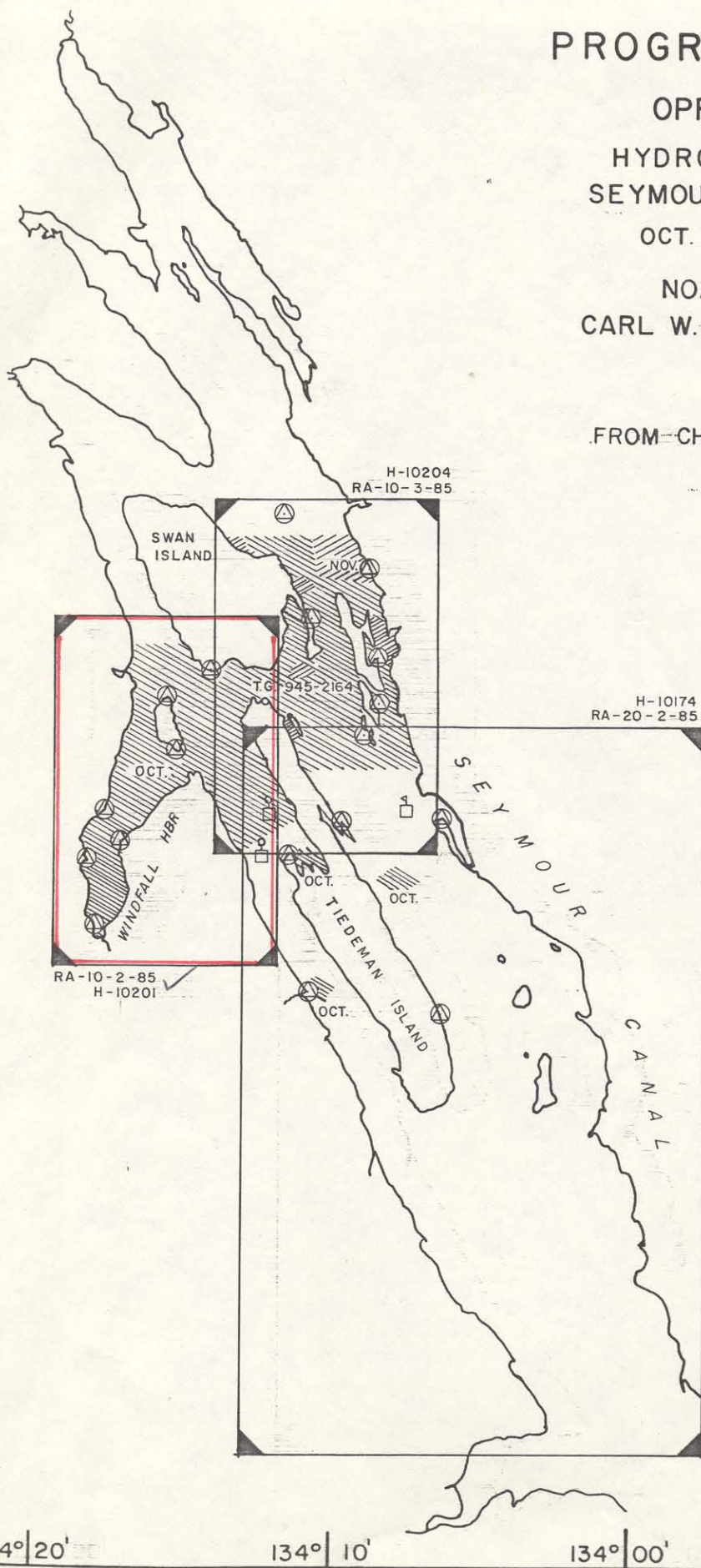
HYDROGRAPHIC SURVEY
SEYMOUR CANAL, ALASKA

OCT. 5 - NOV. 7 1985

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

58°
00'

FROM CHART 17300 & 17360



OCT.	NOV.	
15.39	1.02	SQ.N.M. Sounding
573.8	183.0	L.N.M. Misc. Distance
483.0	115.0	L.N.M. Sounding
65	17	Bottom Samples (Grab)
19	12	Control Station (Electronic)
2	-	Temp., Depth, Sound Velocity
1	-	Nansen Cast
1	-	Tide Gages
10	6	Stations Located by Traverse
10	-	Water Samples Analyzed
-	-	SQ.N.M. Side Scan Sonar
-	-	L.N.M. Side Scan Sonar

57°
50'

134° 20'

134° 10'

134° 00'

133° 50'

57°
40'

A. PROJECT ✓

A basic hydrographic survey in Windfall Harbor, Seymour Canal, Alaska was completed following the specifications of Project Instructions OPR-0179-RA-85, dated March 14, 1985. The survey was assigned Registry Number H-10201 (Field Number RA 10-2-85). Two changes were made to the original instructions, Change Number 1, dated March 21, 1985 and Change Number 2, dated September 27, 1985.

B. AREA SURVEYED ✓

Seymour Canal is located in Southeast Alaska, roughly 30 miles south of Juneau. The Canal branches off Stephens Passage and is oriented northwest-southeast. The survey covers Windfall Harbor, Windfall Island, the northwest end of Tiedeman Island, and the southwest end of Swan Island. The area is bounded by latitudes 57/55/00 N and 57/51/00 N, and 134/11/21 W and 134/18/33 W. Survey operations were conducted from October 5, to November 7, 1985 (DN 278 - DN 311).

See Func Report
Section 1

C. SOUNDING VESSELS ✓

Sounding data for this survey were obtained by vessels RA-3 (2123), RA-4 (2124), and RA-5 (2125). Bottom samples were obtained by RA-5 (2125). No unusual sounding vessel configurations occurred during the acquisition of hydrographic data. The RAINIER (2120) was utilized for sound velocity casts.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS ✓

Sounding Equipment

Survey launches were equipped with Raytheon DSF-6000N dual-beam echo sounders. Serial numbers for sounding equipment used in this survey are as follows:

<u>VESSEL</u>	<u>SERIAL NO</u>
RA-3 (2123)	A119N, A115N
RA-4 (2124)	A117N
RA-5 (2125)	A103N

Depths within this survey ranged from 0 fathoms to 46 fathoms.

Settings for the DSF-6000N echo sounders throughout the survey were as follows:

RANGE: 0-25 fm (Phase 1)
0-50 fm (Phase 1)

CHART SPEED: 30 mm/min
60 mm/min

FUNCTION: High + Low (High frequency digitized)

GAIN SETTINGS: Manual

Sounding Equipment Failures

In general the DSF-6000N echo sounders performed adequately during the course of the survey. A problem was encountered with the high frequency trace in Windfall Harbor (vessel 2124, echo sounder A117N, DN 280-282). The high frequency trace showed numerous false small peaks about 1.5 fms off the bottom. The low frequency maintained a good trace of the flat bottom without peaks. Three of the worst lines were resounded resulting in a good trace for the high and low frequency with no peaks (vessel 2123, echo sounder A119N, DN 302, positions 2453-2487). Although these three lines were not plotted on the final field sheet they justify not inserting the small peaks to the data acquired by vessel 2124, echo sounder A117N on DN 280-282. The cause of the small peaks was traced to electrical problems due to a ground in the ONAN generator which was repaired on DN 282.

Transducer Depth and ANDIST

All soundings were taken from the launches under Mini-Ranger range-range or range-azimuth control. Since the echo sounding transducers on the launches are directly below the the Mini-Ranger R/T units the ANDIST associated with these survey data is 0.0 meters. The final field sheets were plotted with this ANDIST value.

Bar checks were conducted at least once daily for both beams of the DSF-6000N echo sounder as per the Provisional Operating and Processing Instructions for the DSF-6000N Echo Sounder. All bar checks were performed within the survey area. The bar checks were used to confirm proper system function, and bar check data were used to determine launch TRA correctors. The TRA for the wide and narrow beams were within 0.1 fathom of each other. The TRA calculations show a 0.3 fathom TRA for all launches and the final field sheets were plotted with this value.

TC/TI tapes were made in accordance with PMC OORDER Appendix Q. Printouts of the TC/TI tapes are included in the separates following the text.

Sound Velocity-Settlement and Squat Corrections

Velocity corrections were derived from two Plessy 9040 SV/D/T profiling system casts:

<u>Cast Number</u>	<u>Date</u>	<u>Position</u>	<u>Table</u>
1 (SVD)	10 Oct 85 (DN 283)	57/48/30 N 134/16/24 W	4
2 (SVD)	11 Oct 85 (DN 284)	57/50/50 N 134/12/10 W	4

One table of velocity corrections (Table No. 4) was created by averaging both casts. The maximum velocity correction was +0.4 fathoms. A printout of the velocity table is included in the separates following the text.

Settlement and squat trials were conducted with the launches on 22 May 1985. The correctors determined for all launches were less than 0.1 fm, and were not used in the plotting of the final field sheet.

Calibration information regarding instruments used in echo sounding corrections can be found in the Corrections to Echo Sounding Report, OPR-0179-RA-85.

Corrections Due to Sea Surface Conditions

Corrections for sea surface conditions were not needed due to calm seas.

Tide Reduction of Data

Field tide reduction of soundings for survey OPR-0179-RA-85 was based on predicted tides from Juneau, Alaska (945-2210). Corrections were obtained from Preliminary Tidal Zoning OPR-0179-RA-85. The zoning correctors for RA 10-2-85 (H-10201) and RA 10-3-85 (H-10204) are +10 min time corrector for high and low tides and a height ratio of 0.94. The tide corrections were derived from the Tide Tables 1985 and the zoning correctors using program AM500.

E. HYDROGRAPHIC SHEETS ✓

Two 1:10,000-scale field sheets designated RA 10-2E-85 and RA 10-2W-85 were prepared on the RAINIER using the PDP 8/e Hydroplot system which produces modified transverse Mercator projections. There is also an overlay of shoreline features for each sheet and two expansion sheets at the scale of 1:2500 plotted using the same computer system. A list of parameters used to define the field sheets are provided in the separates (I. Hydrographic Sheet Parameters) following the text. Filed with the hydrographic data.

All data and accompanying field records will be sent to the Pacific Marine Center in Seattle, Washington for verification.

F. CONTROL STATIONS ✓

Three different types of stations were used for control for survey H-10201. Two Third-Order Class I stations established in 1983 by the NOAA Ship DAVIDSON were recovered, and their preliminary field positions as provided by PMC were used. One photo-hydro point established by the DAVIDSON in 1983 was used for control. Its aerotriangulation position was provided to the RAINIER by Nautical Charting Division. Seven new control stations were established by closed traverse to Third-Order, Class I standards by RAINIER personnel for use in this survey. The following table shows the stations used for this survey and their respective signal numbers:

<u>SIGNAL #</u>	<u>STATION NAME</u>	<u>SOURCE</u>
130	BUG 1983	DAVIDSON, 3rd Order
132	SWAN 1983	DAVIDSON, 3rd Order
309	HP-13	Photo-hydro point
133	WINDFALL 2 1985	RAINIER, 3rd Order
135	STAUNCH 1985	"
136	LATE 1985	"
137	PAD 1985	"
138	CREEK 1985	"
139	MIG 1985	"
503	WINTER 1985	"

The positions of BUG 1983, SWAN 1983, and HP-13 were verified by ground survey methodology commensurate with Section 3.1.1.2 of the Hydrographic Manual. The 1927 North American Datum was used for this survey. See the Horizontal Control Report, OPR-0179-RA-85 for further details.

G. HYDROGRAPHIC POSITION CONTROL ✓

Range-range (R/R) and Range-azimuth (R/Az) position control were used for this survey. Range information was obtained by using Motorola Mini-Ranger III equipment, and all angular information was obtained by using Wild theodolites. The following tables list the serial numbers of the equipment used, and the dates of operation for the Mini-Ranger III consoles and R/T units:

<u>WILD THEODOLITES</u>	
<u>Model</u>	<u>Serial #</u>
T-2	73226
T-2	57259
T-2	68648
T-2	75599
T-1	65516

MOTOROLA MINI-RANGER III EQUIPMENT

<u>Vessel</u>	<u>E.D.P.#</u>	<u>Console #</u>	<u>R/T #</u>	<u>Days of Operation</u>
RA-3	2123	720 711	B1405 C1712	279-289 290-311
RA-4	2124	B0269	B1388	279-311
RA-5	2125	715	911615	279-293

G.1 Calibration Methods

Mini-Ranger calibrations and system checks were performed in accordance with PMC OPORDERS, Appendices M and S. Initial base line calibrations were performed on Lake Union, Seattle, Washington on Day Numbers (DN) 261 & 262, 1985. Ending calibrations were conducted at the same location on DN's 322 & 323.

An intermediate base line calibration was performed on console number 711 and R/T number C1712 in Juneau on October 25 (DN 298), 1985 for codes B, F, and D. This calibration was done in order to verify a suspected systematic error (which developed during the survey) with that console-RT combination. This problem is addressed in section G.2 below.

Opening base line correctors were used in plotting the final field sheet, with the following exceptions: code F on DN 290 and code D on DN 291. The data from these two days were plotted using the intermediate base line correctors from the Juneau calibration described above. For purposes of processing, this calibration should be treated as the opening calibration for console 711.

Final corrector tapes were cut after the closing base line calibration in Seattle. With the exception of the console-RT combination of 720-B1405, final correctors were determined using the following criteria:

-1) If the opening and closing correctors differ by 2 or more meters, an average of the two correctors will be used, or

-2) If the opening and closing correctors differ by less than 2 meters, the opening corrector will be used alone.

Final correctors for console # 711 with R/T # C1712 were computed using a different criteria. The base line correctors for this console-R/T combination were shifted a discrete amount after the base line calibration was performed, but before data acquisition began. This systematic error was evidenced by the daily systems check addressed in section G.2 below. The final base line correctors for this console were based only on the closing base line calibration, with the exception of codes B, D, and F. The final correctors for these codes were computed using the intermediate calibration described above as the opening calibration and the ending Seattle calibration as closing.

No closing calibration was performed for console # 720 and R/T # B1405, as the electronic failure in the R/T unit affected the base line correctors and no reliable closing results could be obtained. The final correctors for this console-R/T combination are based on the opening correctors.

The opening base line calibrations were also used to determine the minimum signal strength cut-off values for each console/code combination.

Critical or non-critical systems checks were performed daily for each console/code combination used, with at least one critical systems check per week for each combination. The critical checks used were theodolite intersection or fixed point observation, while the non-critical checks were either launch-to-launch or baseline crossing.

Fixed point observation system checks were performed at Third-Order stations along the water's edge. The launch was positioned as close as possible to the check station, on a range with the Mini-Ranger station. While the launch was held in position, the distance between the R/T unit and the check station was taped off, and at the same time, ten range readings and signal strengths were observed and recorded from the Mini-Ranger console. These ranges were then adjusted by adding the taped distance, and then the ranges were compared to the computed geodetic distance between the check station and the Mini-Ranger station. A corrector value was computed for each range and the ten resulting

computed correctors were averaged and compared to the base line corrector.

The following table shows transponder locations on each day of the survey.

TRANSPONDER LOCATIONS

Day	Station Number											
	128	129	130	132	133	135	136	137	138	139	309	311
279	A		3									O
280				2			3	A	O			
281				2			3	A,O		F	B	
282				2			3	A,O	O	F	B	
283				2				A		F		
289				0,2	B			A				3
290				0,2			3	O,3	A		F	
291		D		2				O	A			
292					B							
293							3					
302										F		
311												F

G.2 Equipment Malfunctions and Systematic Errors

On DN 289, the power supply in R/T number B1405 failed, which resulted in the loss of the calibrated console and R/T pair which normally is installed in launch RA-3. In order to keep this launch, a Hydroplot equipped boat, in operation, the console and R/T unit from launch RA-6 was installed in RA-3. This is reflected by a change in the base line correctors used for plotting data acquired by RA-3 starting on DN 290.

On three occasions the difference between the base line corrector and the daily system check exceeded the allowable limit of 5 meters. The first of these was on DN 280 in launch RA-3. The base line corrector for code A when used with console number 720 and R/T number B1405 was -3 and a fixed point observation system check on that day resulted in a computed corrector of +3. On the following two days, however, the same code and console were checked using the same method and computed correctors of 0 and -1 resulted, well within limits. Taking these two checks into consideration, it is our opinion that the excessive error in the original check was due to factors other than system error, such as the launch not being in line between the two stations.

The other two discrepancies occurred on DN 290 and DN 291 in launch RA-3 using console number 711 and R/T number C1712. On DN 290, the system check for code F revealed a 6 meter error between the computed corrector and the base line corrector, and similarly, on DN 291 an error of 11 meters

was revealed with code D. The two codes were not used with that console-R/T combination for the remainder of the leg, and a base line calibration was performed in Juneau in order to check the validity of the systems checks. It was found that the base line correctors had changed by 8 meters in the case of code F and by 10 meters in the case of code D. System checks performed after this calibration revealed no further drift. As mentioned previously, the new base line corrector values have been used as opening values for the purposes of plotting the final field sheets.

BASE LINE CORRECTORS FOR CODES D & F
With Console # 711 & R/T # C1712

Code	Seattle Opening Corr.	Juneau Intermediate Corr.
D	0	+10
F	+2	+10

Although this shift was evidenced only in these two systems checks for these two codes, the closing base line calibration revealed that the correctors for all of the codes paired with the 711-C1712 combination were affected by the shift. For the other codes, the shift was on the order of 6 or 7 meters. Unfortunately, with the 5 meter allowable discrepancy, the daily critical system checks could not discern the discrete shift in these codes. For these codes, the closing base line correctors determined in Seattle upon completion of the survey, were used as the final correctors.

G.3 ANDIST Values

The Mini-Ranger R/T units are positioned on the survey launches so that they are directly over the echo sounder transducers, therefore an ANDIST value of 0 was used for plotting the final field sheet.

For further information on these topics, refer to Electronic Control Report, OPR-0179-RA-85.

H. SHORELINE ✓

Shoreline was transferred to the final field sheet from a 1:20,000-scale registered shoreline manuscript TP-011634 expanded to 1:10,000. Field edit was not required by the project instructions. Shoreline details were verified by the hydrographer. Rocks, ledges, and new features located by the hydrographer are shown on the final field sheet, and are discussed in detail on the raw data printouts. All features verified by the hydrographers are shown on the overlays of the final field sheet.

The following procedures were used during acquisition of shoreline verification data:

- 1) Any rock detached from the MHW line was positioned with a hydrographic fix. When possible, a check fix was obtained.
- 2) Positions were taken to define limits of reefs and ledges.
- 3) Sounding lines which run parallel to shore were used to verify the general trend of the shoreline.
- 4) When hydrographic positions could not be obtained on certain features, reference numbers were used. All detached positions and reference numbers are abstracted in a sounding volume which accompanies the survey.

Generally the shoreline manuscript was found to be accurate. It should be noted that when using a 1:20,000-scale manuscript blown up to a 1:10,000-scale, discrepancies between hydrographic and photogrammetric positions of features are introduced. When discrepancies existed between these types of positioning, the hydrographic position was chosen to depict the feature.

Shoreline features that have been verified are shown on the field sheet in black. Changes are shown in red. The following items represent changes, deletions, and new features which should be applied to the shoreline manuscript.

ITEM NO. 2

Survey Feature: Ledge

Manuscript Feature: Rock

General Locale: 1.5 miles southeast of Windfall Island.

Investigation Day(s): 289 Position Numbers: 5103-5107
Vessel: 2125

LAT: 57/52/13 N
LON;134/14/18 W

Method of Investigation: On the southeastern part of Staunch Point, positions 5103 and 5104 define the seaward limits of a ledge not depicted on the manuscript. *Position # 5103 *(12)*

Positions 5105 and 5106 define the offshore limits of a prominent ledge not depicted on the shoreline manuscript. The ledge bares 14 ft at MLLW.

Position 5107 is the northern extent of a ledge not currently depicted on the manuscript. The rock which is currently shown is part of the ledge.

Recommendations: Supersede the manuscript representations with the survey depictions as shown on the field sheet overlays. *See smooth sheet for charting*

ITEM NO. 3

Survey Feature: Ledge

Manuscript Feature: Rock

General Locale: East shore of Windfall Island.

Investigation Day(s): 291 Position Numbers: 2300-2308
Vessel: 2123

LAT: 57/53/24 N
LON: 134/15/19 W

Method of Investigation: Positions 2300 and 2301 define the offshore limits of a ledge which is currently not depicted on the manuscript. The rock currently shown on the manuscript is part of the ledge and not particularly prominent.

Position 2302 was taken on a manuscript rock which bares 3.5 ft at MLLW. Field notes show the rock lying in a north-south orientation with dimensions 20m x 3m. The survey position falls about 20 meters offshore of the manuscript positions.

Positions 2304-2308 delineate an area "foul with rocks." The current manuscript depiction shows two rocks inshore of the MLLW. The rocks bare 1-3 ft at MLLW and cover a larger area than the manuscript shows. The hydrographer notes that the individual rocks have water between them so the "foul with rocks" symbol has been opted for over changing the area to ledge.

Recommendations: Chart ledge, rock and foul area as shown on the shoreline overlay. Chart according to smooth sheet.

ITEM NO. 4

Survey Feature: Rocks and reefs

Manuscript Feature: Rocks and reefs

General Locale: 0.5 mile east of Windfall Island.

Investigation Day(s): 291 Position Numbers: 2285-2298

Vessel: 2123

LAT: 57/53/34 N

LON: 134/14/55 W

Method of Investigation: Positions 2285-2289 define a foul area south of the manuscript reef. These ^{five} ~~five~~ rocks bare 4-6 ft. at MLLW. The rocks are individual features and not part of a reef. The manuscript rock south of the reef was not found upon inspection. Show the foul area south of the reef, and retain the adjacent manuscript rock. *Do not concur*
Chart foul limit and rocks as shown on smooth sheet.

Position 2290 shows the existing manuscript reef to extend seaward of its presently charted position.

Positions 2291-2293 are detached positions taken on individual rocks. Two rocks are already depicted accurately on the manuscript. A third rock symbol should be added as shown on the field sheet. *Position # 2292 * (3) excessed* *Do not concur*

Positions 2295-2298 are detached positions taken on the northern reef in this area. The seaward limits of the reef were found to extend 10-20 m beyond the limits represented on the current manuscript. ✓

Recommendations: Chart the above rocks and reefs based on the survey positions. *Concur, chart according to smooth sheet.*

ITEM NO. 5

Survey Feature: Ledge

Manuscript Feature: Ledge

General Locale: North tip of Tiedeman Island.

Investigation Day(s): 283,289 Position Numbers: 3826,2003
Vessel: 2123

LAT: 57/53/52 N

LON;134/12/46 W

Method of Investigation: Detached positions were obtained on the northern (seaward) limits of the two protruding ledges in this area. Continuous ledge was found inshore of these positions. The hydrographer noted no prominent rock as shown on the manuscript.

Recommendations: Chart ledges as shown on the shoreline overlays. Delete the two rock symbols. *chart according to smooth sheet*

ITEM NO. 6

Survey Feature: Rock

Manuscript Feature: Rock ~~not depicted~~

General Locale: 2.5 miles north of Windfall Island on Admiralty Island shore.

Investigation Day(s): 289, 291 Position Numbers: 2079, 4950
Vessel: 2123, 2124

LAT: 57/54/³57 N

LON;134/16/4~~0~~ W

Method of Investigation: The manuscript rock was not observed after a 10 minute search, it was not observed while running mainscheme or shoreline, however a rock (vessel 2123, DN 289, pos. 2079) was discovered while acquiring mainscheme line data. A detached position was taken. The rock bares 17.4ft at MLLW. The manuscript rock should be deleted and this rock should be charted. *CONCUR*

See smooth sheet for charting

The rock at position 4950* was not depicted on the manuscript. The rock bares $\frac{1}{2}$ ft at MLLW.

* 57°54'57.8"N, 134°16'41.0"W

Recommendations: Chart the rocks as shown on the shoreline overlay. *see smooth sheet for charting*

ITEM NO. 7

Survey Feature: Rock

Manuscript Feature: Not depicted

General Locale: 2.0 miles north of Windfall Island on the Swan Island shore.

Investigation Day(s): 291 Position Numbers: 7026
Vessel: 2124

LAT: 57/54/48 N
LON: 134/14/57 W

Method of Investigation: A detached position was taken to show the rock which bares 12 ft at MLLW.

Recommendations: Chart the rock. *(mcm)*

ITEM NO. 8

Survey Feature: Ledge

Manuscript Feature: Two rocks

General Locale: 1.0 mile south of the north tip of Tiedeman Island.

Investigation Day(s): 283 Position Numbers: 3820-3823
Vessel: 2123

LAT: 57/53/07 N
LON: 134/12/37 W

Method of Investigation: Several detached positions were taken to show the limits of the ledge. The rocks on the manuscript were part of a ledge that extends south across the entrance of the cove.

Recommendations: Chart the ledge as shown on the shoreline overlays. Two prominent rocks appear on ledge, as * (12) and * (1). See smooth sheet for charting.

ITEM NO. 9

Survey Feature: Ledge

Manuscript Feature: Not depicted

General Locale: 2.5 miles south of the north tip of Tiedeman Island.

Investigation Day(s): 291 Position Numbers: 5370-5372
Vessel: 2125

LAT: 57/52/22 N
LON;134/11/59 W

Method of Investigation: Detached positions show the limits of the ledge.

Recommendations: Chart ledge as shown on the shoreline overlays. *Chart as shown on smooth sheet.*

ITEM NO. 10

Survey Feature: Rocks

Manuscript Feature: Not shown

General Locale: 1.0 miles west of the north tip of Windfall Island.

Investigation Day(s): 289 Position Numbers: 2000-2001
Vessel: 2123

LAT: 57/53/43 N
LON;134/16/45 W

Method of Investigation: Detached positions were taken on these rocks which bare 2 ft.

Recommendations: Chart rocks. *concur*
Chart rocks shown on smooth sheet.

ITEM NO. 11

Survey Feature: Rock

General Locale: 2.0 miles southwest of the northern tip of Windfall Island.

Investigation Day(s): 282
Vessel: 2124

Position Numbers: 4703

LAT: 57/53/11 N
LON;134/17/03 W

Method of Investigation: A detached position was taken on the rock. The rock bares 9 ft. at MLLW.

Recommendations: Chart rock. *concur*
chart rock as shown on smooth sheet.

ITEM NO. 12

Survey Feature: Delete Ledge

Manuscript Feature: Ledge

General Locale: 1.0 mile south of Windfall Island.

Investigation Day(s): 281
Vessel: 2124

Reference Number: 412

Position Number: 4284 + 2 and 3

LAT: 57/52/23 N
LON;134/14/50₅ W

Method of Investigation: While running a sounding line along the shore in this area, the hydrographer noted a gap in the adjacent ledge.

Recommendations: Delete the ledge as shown on the field sheet overlay *chart according to smooth sheet.*

I. CROSSLINES ✓

A total of 3.9 nautical miles of crosslines were run during the survey, representing approximately 8% of the mainscheme mileage. Agreement of soundings at crossings was good, within 1 to 2 fathoms throughout the entire survey area. *CONCUR*

J. JUNCTIONS ✓

This survey junctions with two contemporary surveys at its southern (H-10174, RA 20-2-85) and ^{eastern} western edge (H-101204, RA 10-3-85). The depth contours at the junctions were in close agreement, and no discrepancies between adjacent soundings were found. *See Eum Report Section 5*
CONCUR

K. COMPARISON WITH PRIOR SURVEYS ✓

This survey was compared to the following two registered prior surveys:

<u>Registry No.</u>	<u>Title</u>	<u>Scale</u>	<u>Year</u>	<i>See Eum Report Section 6</i>
H-2001	Seymour Canal and Part of Stephens Passage	1:80,000	1889	
H-2003	Harbor Sheets, Seymour Canal, Windfall and Mole Harbors	1:20,000	1889	

Comparisons were also made with DAVIDSON 1983 reconnaissance suveys 124982⁹ and 124984 conducted at scales of 1:20,000.

In general, current survey soundings verify the discrete leadline depths recorded in the 1889 surveys. However, the current survey has defined much more detail than the prior surveys.

Specifically, current survey soundings in Windfall Harbor show depths 1 to 2 1/2 fathoms shoaler than those found on H-2003. This can be said with some certainty, noting the regular nature of the bottom in Windfall Harbor. Apparently, there is an ongoing silting process within the harbor. *CONCUR*

Outside of Windfall Harbor, the bottom is much more irregular. Comparing the 1:10,000-scale current survey and H-2001 at 1:80,000 is a difficult task in these areas. Since the current chart reflects most of the important prior survey features, discrepancies will be discussed in the following section.

DAVIDSON reconnaissance surveys (124982⁹ and 124984) agree very well with the current surveys. Agreement in all areas are within 0-2 fathoms.

*See ERM Report
Section 6*

There were no AWOIS items in the survey area although one item originating from the DAVIDSON reconnaissance survey was addressed in accordance with Change No. 1 of the project instructions.

L. COMPARISON WITH THE CHART ✓

H-10201 was compared to the following:

<u>Chart Number</u>	<u>Scale</u>	<u>Edition</u>	<u>Date</u>
17300	1:209,978	23th	14 January 1984

*See ERM
Report Section 7*

Currently charted depths have three sources; 1) Prior survey H-2003, 1889, covering Windfall Harbor 2) Prior survey H-2001, 1889, covering the area outside of Windfall Harbor, and 3) the DAVIDSON reconnaissance survey which accounts for a charted 3 1/4 fathom depth 2.5 miles southeast of Windfall Island.

Generally, charted depths accurately represent the nature of the bottom in the survey area. Certainly the detail that was defined in the current survey cannot be displayed on the chart due to the disparity in scales. The following items address discrepancies between charted features (whose source are prior surveys) and current survey features.

ITEM NO. 17

Survey Feature: No feature was indicated

General Locale: 1.3 miles south of the northern tip of Tiedeman Island.

Investigation Day(s): 280, 282 Position Numbers: 3003-3050
3447-3467

Survey Least Depth: 23-33 fm Charted Depth: 6 fm

LAT: 57/52/52 N
LON: 134/13/30 W

Method of Investigation: A charted 6 fathom depth in the area has its source from prior survey. H-2001. Fifty meter splits were run over the position of the charted shoal. The bottom in the area was very regular with depths in the vicinity of 25 fathoms noted. No sign of the 6 fathom shoal was discovered. It should be noted that, without exception in the Seymour Canal, all shoals have been in the form of rock ridges, extending at least one hundred meters along an axis. The likelihood of a 6 fathom pinnacle rising from depths of 25 fms to 6 fms in less than 50 meters is remote.

The hydrographer strongly believes there were position busts in the 1889 prior survey. The strongest case for this assertion is that the prior survey (although the soundings are unreadable) shows the shoal extending several hundred meters along a north-south axis. RAINIER covered this area with 50 meter splits. RAINIER believes that the two separate pinnacles north of the charted 6 fm depth described in Items 14 and 16 are the actual areas where the prior survey depths originated.

Recommendations: Supercede charted depths with survey soundings.

CMW

M. ADEQUACY OF SURVEY ✓

This survey is complete and adequate to supersede all prior surveys for charting purposes. *concur*

N. AIDS TO NAVIGATION ✓

There were no aids to navigation in the survey area. *concur*

O. STATISTICS

<u>Linear Nautical Miles of Hydro</u>	<u>Square Nautical Miles of Hydro</u>	<u>Number of Positions</u>
145.9	9.31	2932

Bottom Samples: 46

Velocity Casts: 2

Tide Stations: 1

P. MISCELLANEOUS ✓

No anomalous currents were observed or reported during this survey.

No Loran-C data were acquired.

Bottom samples were sent to the Smithsonian Institute.

No danger to navigation reports were submitted. *one was submitted*

Q. RECOMMENDATIONS ✓

during office processing.

This survey is complete and no additional field work is recommended. *concur*

R. AUTOMATED DATA PROCESSING ✓

Data acquisition and processing were accomplished in accordance with the Hydrographic Manual (Fourth Edition), Manual of Automated Hydrographic Surveys, the PMC OPORDERS, and the Hydrographic Survey Guidelines.

The following is a list of all computer programs and version dates used for data acquisition or processing:

<u>Number</u>	<u>Description</u>	<u>Version</u>
RK 112	Hyperbolic, R/R Hydroplot	4/23/84
RK 116	Range-Azimuth Hydroplot	10/01/84
RK 201	Grid, Signal, and Lattice Plot	4/18/75
RK 211	Range/Range Non-Real Time Plot	2/13/84
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	5/04/76
AM 360	Electronic Corrector Abstract	2/02/76
RK 407	Geodetic Inverse/Direct Computation	9/25/78
RK 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
AM 606	Tape Duplicator	8/22/74
AM 607	Self-Starting Binary Loader	8/10/80
RK 610	Binary Tape Duplicator	12/01/82
RK 612	Line Printer List	3/22/78

The HP9815A and HP97 programmable calculators were used to compute the geographic positions of control stations.

S. REFERENCES TO OTHER REPORTS ✓

The following reports contain information related to this survey:

Corrections to Echo Soundings for H-10201, H-10204	OPR-0179-RA-85
Electronic Control Report	OPR-0179-RA-85
Horizontal Control Report	OPR-0179-RA-85
Coast Pilot Report	OPR-0179-RA-85

Respectfully Submitted,

Thomas K. Porta

Thomas K. Porta
Ensign, NOAA

FIELD TIDE NOTE
RA/10-2-85
H-10201

Field tide reduction of soundings for survey H-10201 was based on predicted tides from Juneau, Alaska (945-2210). Corections were obtained from Preliminary Tidal Zoning OPR-0179-RA-85. The time corrector is +10 min for both high and low water and the height corrector is .94 (ratio). The predicted tides were derived using program AM500. Predicted tides were adequate for plotting. All times for records annotation are UTC.

The reference station at Juneau was leveled on September 25, 1985. Five permanent benchmarks (including the primary mark) were connected to the ETG reading mark. Levels were run at the end of survey operations on November 11, 1985. Initial and final levels did not compare very well with differences up to 9 mm.

A subordinate station at Tiedeman Island, Alaska (945-2164) provided data for this survey. A standard Bristol Bubbler tide gage (S/N 67A 16201) was installed on a rocky point on the north side of Tiedeman Island (57/53/42N, 134/12/20W) on October 5, 1985. A 1" diameter orifice was bolted to a rock by divers. Three permanent benchmarks were recovered near the site. A staff was installed and initial levels were run to these marks on October 5, 1985.

On October 8, 1985 the gage was found to be malfunctioning. The staff/gage difference was changing by up to .5 feet. The station installation was inspected and the gage was replaced. Gage S/N 73A 233 was installed October 9, 1985. The staff/gage difference is 8.7 feet. The gage operated throughout the project with the exception of a loss of 1 day from 2100 UTC October 17 to 1645 UTC October 18.

Comparing a 3 day sample of real tides to predicted tides for Juneau, Alaska gave a time corrector of +20 min and a height corrector of .98 (ratio).

During the project period currents up to 3 kts were observed east of Bug Island.

The gage was removed and final levels were run November 9, 1985. Final levels on the subordinate station showed no movement of the tidal staff.

MASTER STATION LIST
OPR-0179-RA-85
SEYMOUR CANAL, ALASKA

FINAL VERSION

127 3	57 47	56922	134 06	20140	250 0004	000000	
/SANDY 1983					PRELIMINARY ADJUSTED		
128 4	57 40	31951	134 10	52333	250 0005	000000	
/WEED 1983					PRELIMINARY ADJUSTED		
129 6	57 50	39468	134 11	27628	250 0003	000000	
/TIED 1983					PRELIMINARY ADJUSTED		
130 1	57 53	06021	134 08	56385	250 0008	000000	
/BUG 1983					PRELIMINARY ADJUSTED		
132 6	57 54	18495	134 14	06098	250 0003	000000	
/SWAN 1983					PRELIMINARY ADJUSTED		
133 1	57 53	48885	134 15	42818	250 0000	000000	
/WINDFALL 2 1985					RAINIER G.P		
134 3	57 56	51936	134 11	26091	250 0010	000000	
/SEYMOUR 1983					PRELIMINARY ADJUSTED		
135 7	57 52	27515	134 14	54794	250 0000	000000	
/STAUNCH 1985					RAINIER G.P		
136 1	57 52	57510	134 15	06134	250 0000	000000	
/LATE 1985					RAINIER G.P		
137 3	57 53	59092	134 16	41794	250 0000	000000	
/PAD 1985					RAINIER G.P		
138 3	57 51	53938	134 17	42598	250 0000	000000	
/CREEK 1985					RAINIER G.P		
139 7	57 51	16662	134 17	04670	250 0000	000000	
/MIG 1985					RAINIER G.P		
140 4	57 53	36860	134 07	40044	250 0000	000000	
/CUT 1985					RAINIER G.P		
141 3	57 51	33690	134 09	45025	250 0000	000000	
/BIRD 1985					RAINIER G.P		
142 7	57 56	11852	134 08	47361	250 0000	000000	
/RIP 1985					RAINIER G.P		
143 3	57 54	47984	134 08	41135	250 0000	000000	
/BUG TP 1985					RAINIER G.P		

*

145	6	57	56	11904	134	00	47729	250	0000	000000	
/RIP RM2										RAINIER G.P	
146	4	57	56	50135	134	09	23943	250	0000	000000	
/MASK 1985										RAINIER G.P	
147	3	57	55	05057	134	10	35026	250	0000	000000	
/SLATE 1985										RAINIER G.P	
301	6	57	54	10952	134	11	14326	250	¹³⁹ 0000	000000	
/ISLAND 1985										RAINIER G.P	
303	5	57	54	27965	134	00	30554	254	0000	000000	
/HP-06										PHOTO	
309	0	57	50	54230	134	18	21436	254	0000	000000	
/HP-13										PHOTO	
501	4	57	53	38845	134	14	58552	243	0000	000000	
/CAL POLE 2										RAINIER G.P	
502	7	57	55	50090	134	10	06743	243	0000	000000	
/CAL POLE 3										RAINIER G.P	
503	1	57	54	18900	134	12	10663	250	0000	000000	
/WINTER 1985										RAINIER G.P	
*											



**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

ATTACHMENT A

Danger to Navigation: H-10201

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

February 7, 1986

N/MOP211C/JDW

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

Dear Sir:

During office processing of hydrographic survey H-10201 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 4.7 fathoms of water at MLLW (based on predicted tides) was discovered; chart 17300; latitude 57°53'33"N, longitude 134°13'39"W; distance 1.2 nautical miles bearing 024 degrees true from Stauch Point.

Sincerely,

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



APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

RA 10-2-85 (H-10201)

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, Hydrographic Survey Guidelines and PMC OPORDERS. The data were examined daily during the execution of the survey.

The field sheet and the 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: 02/18/86

Marine Center: Pacific

OPR: 0-179

Hydrographic Sheet: H-10201

Locality: Windfall Harbor, Seymour Canal, AK

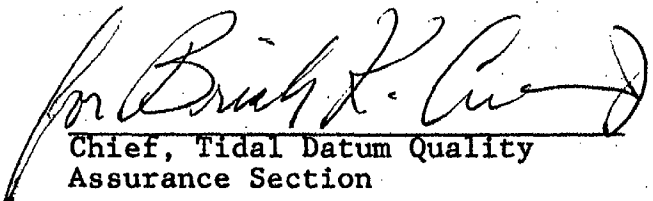
Time Period: October 7 - November 7, 1985

Tide Station Used: 945-2164 North End Tiedeman Island, Ak

Plane of Reference (Mean Lower Low Water): 18.32 ft.

Height of Mean High Water Above Plane of Reference: 14.6 ft.

Remarks: Recommended Zoning: *ZONE DIRECT*
FROM PHONE CONVERSATION w/JOE MULLEN ON 2/26/86.


Chief, Tidal Datum Quality
Assurance Section

GEOGRAPHIC NAMES

H-10201

Name on Survey	ON CHART NO. 17300		ON PREVIOUS SURVEY		ON U.S. QUADRANGLE MAPS TP-01163		ON LOCAL MAPS		P.O. GUIDE OR MAP		GRAND McNALLY ATLAS		U.S. LIGHT LIST	
	A	B	C	D	E	F	G	H	K					
Admiralty Island	x		x											1
Late Point	x		x											2
Pack Creek			x											3
Seymour Canal	x		x											4
Staunch Point	x		x											5
Swan Island	x		x											6
Tiedeman Island	x		x											7
Windfall Harbor	x		x											8
Windfall Island	x		x											9
														10
														11
														12
														13
														14
														15
														16
														17
														18
														19
														20
														21
														22
														23
														24
														25

HYDROGRAPHIC SURVEY STATISTICS

H-10201

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		7
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		5
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):	3 - TP-01164
PHOTOBATHYMETRIC MAPS (List):	
NOTES TO THE HYDROGRAPHER (List):	
SPECIAL REPORTS (List):	
NAUTICAL CHARTS (List):	

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	74		74
VERIFICATION OF SOUNDINGS	1295		1295
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	28		24
COMPARISON WITH PRIOR SURVEYS AND CHARTS		8	8
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		27	27
GEOGRAPHIC NAMES			
OTHER* Digitizing			14
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	231.5	35
			276.5

Pre-processing Examination by J. Wilder	Beginning Date 1/31/86	Ending Date 2/20/86
Verification of Field Data by J. Stringham, B. Johnson, S. Otsubo	Time (Hours) 2275	Ending Date 10/14/86
Verification Check by S. Otsubo, B. Olmstead, J. Green	Time (Hours) 30	Ending Date 11/3/86
Evaluation and Analysis by C.R. Davies	Time (Hours) 32	Ending Date 11/3/86
Inspection by D. Hill	Time (Hours) 4	Ending Date 11/ /86

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10201

1. INTRODUCTION

H-10201 was accomplished by the NOAA Ship RAINIER in accordance with the following project instructions:

OPR-0179-RA-85, dated March 14, 1985
Change Number 1, dated March 21, 1985
Change Number 2, dated September 27, 1985

This is a basic hydrographic survey of the northern portion of Seymour Canal between Admiralty Island and the western shores of Swan and Tiedeman Islands. The survey extends from one and one half nautical miles north of the southern tip of Swan Island, latitude 57°55'00"N, to four nautical miles south of the northern tip of Tiedeman Island, latitude 57°51'00"N. The survey area also includes all of Windfall Harbor to the west. Seymour Canal is characterized by isolated offshore rocky shoals and rocks and ledges extending to .6 nautical miles offshore. A maximum depth of 46 fathoms is located at the southern limit of the survey area, two nautical miles southeast of Staunch Point. The bottom is generally made up of mixtures of mud, shells, pebbles and sand.

Predicted tides based on the Juneau, Alaska gage were used during field processing. Tide correctors used for the final reduction of soundings reflect approved hourly heights zoned from Tiedeman Island.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. The revised data is listed in the smooth position/sounding printout.

A digital file for this survey has been generated and 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

Horizontal control and hydrographic positioning are adequately discussed in section F and G of the hydrographer's report and in the Horizontal and Electronic Control Reports of OPR-0179-RA-85.

Horizontal control stations used during hydrography are either field or preliminary adjusted field positions based on the North American Datum of 1927.

The applicable shoreline manuscript is TP-01164. This is a 1:20,000 scale registered Class III map, and originates from photography dated July 1983. Shoreline and foreshore features are in good agreement with hydrography with the exceptions noted in the hydrographer's report.

3. HYDROGRAPHY

Soundings at line crossings are in good agreement. The depth curves could be completely and adequately drawn except in areas of steep slopes where only the shoalest and deepest curves were shown to avoid congestion. Hydrography within the limits of the sheet is generally 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.
- c. Show that the survey had been properly controlled and soundings are plotted correctly.

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 Three, except as noted in the Preprocessing Examination Report, dated March 6, 1986.

5. JUNCTIONS

H-10201 junctions with the following surveys:

Survey	Year	Scale	Area
H-10174	1985	1:20,000	southeast
H-10204	1985	1:10,000	east

The junctions with H-10174 and H-10204 have been adequately effected. Soundings were transferred from H-10204 to justify depth curves and to portray shoaler information.

There are no contemporary surveys to the north; however, a comparison with charted depths reveals good agreement with the present survey.

6. COMPARISON WITH PRIOR SURVEYS

H-2001 (1889) 1:80,000

H-2003 (1889) 1:20,000

The present survey soundings generally compare within 1 to 2 fathoms of the prior survey soundings. A number of significant shoal soundings were discovered during the course of this survey. This is a result of a more detailed coverage of the area.

BP124984 DA-20-2-83 1:20,000 Reconnaissance Survey

BP124989 DA-20-2-83 1:20,000 Reconnaissance Survey

BP124985 DA-2-02-83 1:10,000 Enlargement 1

Reconnaissance surveys were done by the NOAA Ship DAVIDSON in 1983. Plotted soundings are in good agreement. All positions and least depths on shoals and dangers to navigation from these surveys were investigated and verified to exist at their reported positions with the exception of the 3-fathom sounding at latitude 57°52'36"N, longitude 134°15'18"W. See Item 13 on page 20 of the hydrographer's report for the disposition of this feature.

There are no AWOIS or presurvey review items originating from prior surveys within the limits of the survey.

H-10201 is adequate to supersede the prior surveys within their common areas.

7. COMPARISON WITH CHART

Chart 17300, 23rd edition, dated Jan. 14, 1984; scale 1:209,978

a. Hydrography - Most charted information originates from the prior surveys discussed in Section 6 of this report. Other soundings and charted features originate from miscellaneous sources. For more details see section L of the hydrographer's report.

The 3-fathom depth charted at latitude 57°52'36"N, longitude 134°15'18"W on 17300, 23rd edition was replaced on the 24th edition with two soundings: a 2 1/2-fathom depth at latitude 57°52'30"N, longitude 134°15'30"W and a 6-fathom depth at latitude 57°52'45"N, longitude 134°15'00"W from the DAVIDSON reconnaissance survey mentioned in section 6. It appears that the 2 1/2-fathom depth was misread and is actually a 24-fathom sounding. These reconnaissance soundings are considered superseded by the present survey and should be revised on the next edition of the chart.

There are no Pre-survey review items/AWOIS items originating from miscellaneous sources within the limits of this survey.

Geographic names appearing on the smooth sheet originate with this chart and the topographic manuscript.

H-10201 is adequate to supersede charted hydrography within the common area.

A Danger to Navigation Report (copy appended) has been submitted to the 17th Coast Guard District and DMA by the Pacific Marine Center on February 7, 1986. An additional Danger to Navigation Report on the same feature (copy appended) has been submitted to the same addresses. This additional report changed the features from a shoal to a submerged rock and reduced the reported depth as a result of the application of observed tides.

b. Controlling Depths - There are no controlling depths within the limits of this survey.

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

8. COMPLIANCE WITH INSTRUCTIONS

H-10201 adequately complies with the project instructions noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey. No additional field work is recommended.

Respectfully submitted,

Charles R. Davies

C.R. Davies
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

Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10201

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. Lisianski 11/20/86
Chief, Nautical Chart Branch (Date)

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

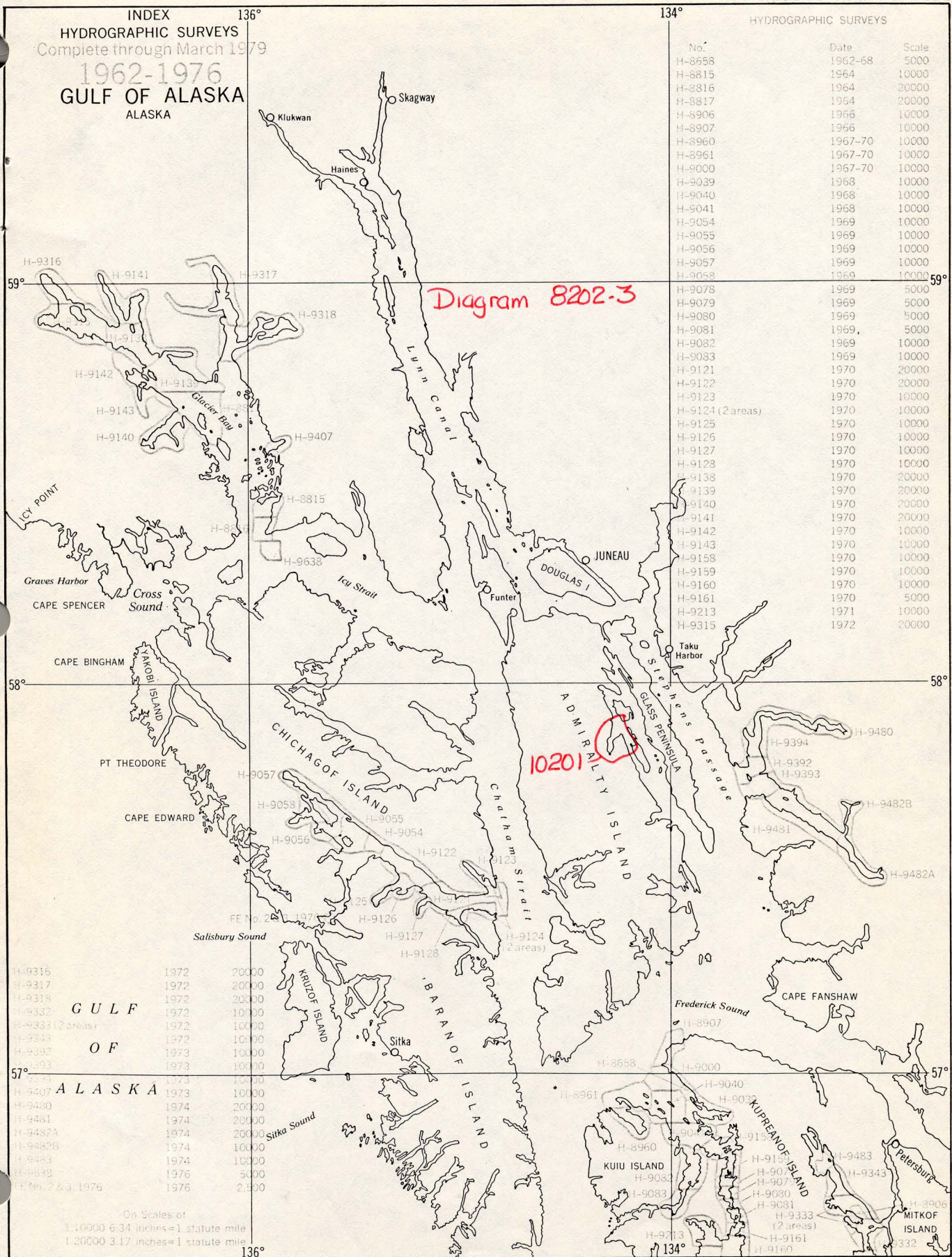
Larry G. Mordock 11/20/86

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.

Robert L. Sandquist 11/20/86
Director, Pacific Marine Center (Date)

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

Hydrographic Index No. 111E



HYDROGRAPHIC SURVEYS		
No.	Date	Scale
H-8558	1962-68	5000
H-8815	1964	10000
H-8816	1964	20000
H-8817	1964	20000
H-8906	1966	10000
H-8907	1966	10000
H-8960	1967-70	10000
H-8961	1967-70	10000
H-9000	1967-70	10000
H-9039	1968	10000
H-9040	1968	10000
H-9041	1968	10000
H-9054	1969	10000
H-9055	1969	10000
H-9056	1969	10000
H-9057	1969	10000
H-9058	1969	10000
H-9078	1969	5000
H-9079	1969	5000
H-9080	1969	5000
H-9081	1969	5000
H-9082	1969	10000
H-9083	1969	10000
H-9121	1970	20000
H-9122	1970	20000
H-9123	1970	10000
H-9124 (2 areas)	1970	10000
H-9125	1970	10000
H-9126	1970	10000
H-9127	1970	10000
H-9128	1970	10000
H-9138	1970	20000
H-9139	1970	20000
H-9140	1970	20000
H-9141	1970	20000
H-9142	1970	10000
H-9143	1970	10000
H-9158	1970	10000
H-9159	1970	10000
H-9160	1970	10000
H-9161	1970	5000
H-9213	1971	10000
H-9315	1972	20000
H-9394		
H-9392		
H-9393		
H-9481		
H-9482B		
H-9482A		
H-9483		
H-9483A		
H-9483B		
H-9483C		
H-9483D		
H-9483E		
H-9483F		
H-9483G		
H-9483H		
H-9483I		
H-9483J		
H-9483K		
H-9483L		
H-9483M		
H-9483N		
H-9483O		
H-9483P		
H-9483Q		
H-9483R		
H-9483S		
H-9483T		
H-9483U		
H-9483V		
H-9483W		
H-9483X		
H-9483Y		
H-9483Z		
H-9484		
H-9485		
H-9486		
H-9487		
H-9488		
H-9489		
H-9490		
H-9491		
H-9492		
H-9493		
H-9494		
H-9495		
H-9496		
H-9497		
H-9498		
H-9499		
H-9500		

No.	Date	Scale
H-9315	1972	20000
H-9317	1972	20000
H-9318	1972	20000
H-9332	1972	10000
H-9333 (2 areas)	1972	10000
H-9333	1972	10000
H-9337	1973	10000
H-9338	1973	10000
H-9339	1973	10000
H-9340	1973	10000
H-9407	1973	10000
H-9480	1974	20000
H-9481	1974	20000
H-9482A	1974	20000
H-9482B	1974	10000
H-9483	1974	10000
H-9483A	1976	5000
H-9483B & C, 1976	1976	2,000

On Scales of
1:10000 6.34 inches = 1 statute mile
1:20000 3.17 inches = 1 statute mile

(see also No. 110)

A-5324

