

10269

Diagram 8201-4

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-20-2-88
Registry No. . . . H-10269

LOCALITY

State . . . Alaska
General Locality . . . Frederick Sound
Sublocality . . . Cape Strait to Bay Point

1988

CHIEF OF PARTY
CAPT. J.C. Albright

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DATE . . . March 10, 1989

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HYDROGRAPHIC TITLE SHEET

H-10269

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 20-2-88

State Alaska

General locality Frederick Sound

Locality Cape Strait to Bay Point

Scale 1:20,000 Date of survey April 22 to May 17, 1988

Instructions dated January 29, 1987 Project No. OPR-0358-RA

Vessel NOAA Ship RAINIER 2120, Launches 2123, 2124, 2125, 2126

Chief of party John C. Albright, Captain, NOAA

Surveyed by LT Mozgala, LTJG Lovell, ENS Hill, ENS Meis, ENS Larsen, ENS Smith, ENS Groeneveld, ENS Noll

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluated by Gordon E. Kay Automated plot by PMC Xynetics Plotter

Verification by Thelma O. Jones

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

REMARKS: Comments in black are made by the Evaluator. Separates have been removed and filed with the survey records.

SL 3-28-97 ✓ AWOIS and SURF Rnd 4/89
X.W.W. 9/14/92

Descriptive Report to Accompany Hydrographic Survey H-10269

Field Number RA/20-2-88
Scale 1:20,000
1988

NOAA Ship RAINIER
Chief of Party: Captain John C. Albright

A. Project

A basic hydrographic survey using the navigable area concept was completed in Frederick Sound from east of Cape Strait to Bay Point as specified by Project Instructions OPR-O358-RA, dated January 29, 1987, Change Number 1, dated February 27, 1987, Change Number 2, dated September 22, 1987, and Change Number 3, dated March 8, 1988. The survey is designated sheet C on the revised sheet layout dated February 18, 1988.

This survey was one of a series to provide contemporary hydrographic data for existing nautical charts and for a new series of 1:80,000-scale charts. It is part of a continuing program to improve chart coverage of the Inside Passage of southeast Alaska in response to requests from the Southeastern Alaska Pilots' Association, the Department of Transportation of Alaska, and other private interests such as the cruise liner and fishing industries.

B. Area Surveyed

The survey was located in central Frederick Sound, Alaska, extending from Cape Strait to the entrance of Portage Bay and north to Bay Point. From Cape Strait, Frederick Sound extends in a westerly direction to meet with Stephens Passage. The survey is bounded on the east by longitude $133^{\circ}04'00''\text{W}$, on the west by longitude $133^{\circ}18'20''\text{W}$, and on the south by Kupreanof Island. The northern limit of the survey is the Alaska mainland, plus a line which extends from $57^{\circ}06'00''\text{N}$, $133^{\circ}12'12''\text{W}$ across Farragut Bay to $57^{\circ}06'42''\text{N}$, $133^{\circ}16'54''\text{W}$.

The shoreline in this portion of Frederick Sound is rough with rocks, cobbles, and bedrock outcrops. The bottom near the shore within the survey area was found to be deep and steeply sloping, with the following exceptions; a delta extending 200 meters offshore of a small creek at longitude $133^{\circ}12'40''\text{W}$ on the south shore, shelf-like bedrock extending out 20-70 meters near both Bay Point and Grand Point, and foul areas near the southern end of Read Island and south of Cape Strait.

Shoals and rocks visible at low tide are present in the eastern passage to Farragut Bay. In addition, numerous rocks, some related to nearby bedrock outcrops, dot the southern shore. The northern shore has rocky beaches, 50 to 100 meters wide, which are isolated by rock outcrops that form several points jutting into the sound. As the shoreline stretches to the east, the bedrock becomes steeper and the beaches rarer.

Data acquisition was conducted from April 22 through May 17, 1988 (DN 113 - DN 138).

C. Sounding Vessels

All data were acquired from RAINIER and four automated survey launches, as shown below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RAINIER	2120	Bottom samples, Plessey casts
RA-3	2123	R/R
RA-4	2124	R/R
RA-5	2125	R/R
RA-6	2126	R/R
		Shoreline Verification

No changes to the standard sounding configurations were necessary.

D. Sounding Equipment and Corrections to Echo Soundings

All sounding vessels were equipped with Raytheon DSF-6000N echo sounders. The echo sounders were operated in the HIGH + LOW (HIGH DIGITIZED) function, using manual gain controls on both high and low frequencies to obtain the best analog trace. Soundings were recorded in fathoms and tenths of fathoms. Two-fathom bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions, to verify the gain adjustments necessary for digitizing in either frequency. The echo sounders were operated in accordance with the Provisional Instructions "RAYTHEON DSF-6000N ECHO-SOUNDER OPERATING AND PROCESSING INSTRUCTIONS", dated July 5, 1983, and the N/CG2 memorandum "DSF-6000N Depth Errors as a Function of Receiver Gain", dated May 23, 1986.

The echo sounders functioned properly, with occasional minor problems. On day number (DN) 117 S/N B046N, in vessel 2123, malfunctioned and was replaced with A103N. B046N was returned to vessel 2123 on DN 128. On DN 138 A114N, in vessel 2124, was replaced with B046N because it was not functioning adequately.

The echo sounders failed to track properly at times while running over extremely steep, irregular bottom. Running at minimum speeds usually alleviated this problem, and overall data quality was not compromised, but marginal analog traces sometimes could not be avoided. For further information on echo sounder performance, see the 1988 Corrections to Echo Soundings Report for OPR-0358-RA.

REPORT CONTAINS NO INFORMATION AFFECTING THE ADEQUACY OF THIS SURVEY FOR USE IN NAUTICAL CHARTING.

Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial Number</u>	<u>Day Numbers</u>
2120	B046N	120,133-134
2123	B046N	115-117
	A103N	118-127
	B046N	128-131
2124	A114N	113-126
	B046N	138
2125	A119N	127
2126	A117N	114-126

Diver-obtained least depths were determined with a 3D Instruments pneumatic depth gage (S/N 8504192N). The gage was operated in accordance with Hydrographic Survey Guideline #55, and was last calibrated March 15, 1988 by the Pacific Operations Group (N/OMA 1214). In addition, field system checks were performed each day the pneumatic depth gage was used. ✓

Corrections to Echo Soundings

Corrections to echo soundings were determined for heave, static draft, velocity of sound through water, settlement and squat, and predicted tides. These correctors are eventually to be applied to all echo soundings. Soundings on the final field sheets are corrected for heave, static draft, sound velocity, and predicted tides. Settlement and squat correctors will be applied at the Pacific Marine Center during *OFFICE PROCESSING* verification. Variations in the instrument initial, stylus arm length, and belt tension are not present with the DSF-6000N echo sounder.

Heave

Corrections for heave were applied while scanning. The scanning technique used in comparing the analog trace with the digital record was chosen to eliminate fluctuations greater than 0.2 fathoms resulting from sea action.

Draft

Transducer depths of 0.3 fathom were measured for all four launches on March 23, 1988 by divers using a large metal T-square. The draft measurements were made at PMC with the fuel tanks averaging 3/4 full. For each launch, measurements with no people and with four people aboard were made, and the average computed. The transducer depths of 0.3 fathom agree with RAINIER historical records. Transducers are mounted starboard, midships, in a location such that all sounding corrections apply to both the low- and high-frequency echo-sounder signals.

Velocity Correctors

Corrections for the velocity of sound through water were determined from the two Plessey SVD casts described below. The Plessey casts provide data at discrete, preselected depths, rather than continuously throughout the water column. Therefore, the method used to compute velocity correctors is similar to that outlined in the Hydrographic Manual Fourth Edition, Example 2, page 4-77. The Plessey Sound Velocity Sensor, S/N 5652, was connected to a Hewlett/Packard 5326B Universal Frequency Counter, S/N 1312A02159. The sound velocity sensor was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, Washington on April 4, 1988. All supporting data of the Plessey casts can be found in the 1988 Corrections to Echo Sounding Report for OPR-0358-RA.

Velocity Casts

<u>Cast No.</u>	<u>Cast Depth</u>	<u>Day Number</u>	<u>Geographic Position</u>	<u>Day Numbers for Cast</u>	<u>Velocity Tape</u>
2	225 m	115	57°03.5'N, 133°10.0'W	113-119	2
3	225 m	128	57°03.2'N, 133°11.2'W	124-138	3

A substantial difference in the sound velocity of the upper layers was evident when comparing the two casts. The difference is due to an increase in water temperature of the respective layers between day 115 and day 128. Therefore, the velocity correctors were applied temporally, as shown above. Both velocity tapes are listed in Appendix IV, *which has been filed with the RAW records.*

Settlement and Squat

Settlement and squat correctors were determined for the automated survey launches at Shilshole Bay, Washington, on March 30, 1988. Misreadings of the level for vessel 2123 necessitated a rerun of the settlement and squat tests for that vessel in Farragut Bay, Alaska on May 5, 1988. All tests were conducted over a hard bottom in depths exceeding seven times the vessels' drafts. Both sea and wind were calm. Observations were made using a Zeiss Ni2 leveling instrument (S/N 87102) to a rod held vertically on the deck of each launch, almost directly over the transducer.

Ten level readings were observed at each speed tested, and the average taken, to compute the correctors. Tide staff readings were recorded concurrently with each set of level readings, and all tidal height differences were normalized to the tidal height of the dead-in-the-water level readings.

Soundings on the final field sheet are not corrected for settlement and squat. TC/TI tapes for each automated sounding vessel have been prepared and submitted with this survey (Appendix IV). Records of settlement and squat data are included in the 1988 Corrections to Echo Soundings Report for OPR-0358-RA.

Tide Correctors

Tidal zoning and correctors for this survey were provided within the Project Instructions. There were two corrector zones within the survey area. The difference between these zones is small; therefore, only one set of correctors was used in the field to aid in the logistics of acquiring and processing data. The correctors used for field data are based on the predicted tides at the Juneau, Alaska tide station (945-2210). The field tide records have been forwarded to N/OMA121, in accordance with Hydrographic Survey Guideline #50 and the PMC OORDER.

A tide station was established at Cape Strait (945-1559) and maintained by RAINIER personnel. A request for approved tides has been forwarded to N/OMA 121 (Appendix IX).

Tide Correctors

<u>Applicable Area</u>	<u>Time Correction</u>		<u>Height Ratio</u>
	<u>High Water</u>	<u>Low Water</u>	
west area	- 15 min	- 10 min	x0.91
east area *	- 15 min	- 10 min	x0.95

* these correctors were applied to all soundings

E. Hydrographic Sheets

All field sheets were prepared aboard RAINIER, on a Houston Instrument Complot DP-3 roll plotter, using the PDP8/e Hydroplot system and program RK201, "Grid, Signal, Lattice Plot". Program RK201 draws a modified transverse mercator projection. The final field sheets, two 1:20,000-scale projections, were designated RA-20-2E-88 and RA-20-2W-88. The following expansion sheets were made for three areas which required line spacing less than 100 meters:

<u>Sheet</u>	<u>Survey Area</u>	<u>Sheet Boundaries</u>
Expansion 1	AWOIS 51187, 51188	North - 57°02'00"N ✓ South - 57°00'45"N ✓ East - 133°04'45"W ✓ West - 133°08'00"W ✓
Expansion 2	AWOIS 51191	North - 57°05'38"N ✓ South - 57°04'45"N ✓ East - 133°10'00"W ✓ West - 133°12'00"W ✓

Expansion 3

Irregular Bottom

North - 57°05'00"N ✓
 South - 57°03'55"N ✓
 East - 133°09'35"W ✓
 West - 133°10'45"W ✓

Depth contours are drawn on the final field sheets in accordance with the Hydrographic Manual, except in areas of steep bathymetry where all prescribed contours could not be drawn without degrading the legibility of the sheets. ✓

All final field sheets, accompanying field records, and this Descriptive Report are being forwarded to the Pacific Marine Center (N/MOP 21) for verification. ✓

F. Control Stations

The following geodetic stations were used to control this survey:

<u>Station</u>	<u>Order. class</u>	<u>Date established</u>	<u>Signal No.</u>
BAY POINT*	1,I	1917	146
BRIDGE*	1,I	1917	145
CAPE STRAIT LIGHTHOUSE	3,I	1988 <i>Field Position</i>	133
CATCH 2*	1,I	1917	142
FLAT*	1,I	1917	150
HIGHLAND*	1,I	1917	151
PORTAGE*	1,I	1917	147
PORTAGE 2	3,I	1988 <i>field Position</i>	(147)
SAND*	1,I	1917	141
SOUTH GRAND*	1,I	1917	144
SQUARE*	1,I	1917	138
WAVE 2	3,I	1988 <i>Field Position</i>	139

* positions from NGS data base

Although CAPE STRAIT LIGHTHOUSE was positioned for the United States Coast Guard per Project Instructions, hydrography was performed using the published position. The difference between the published and computed positions for CAPE STRAIT LIGHTHOUSE is 1.014 meters, *the Computed Positions were used for processing.* ✓

PORTAGE 2 is a new station positioned by closed traverse, and is an unadjusted field position. PORTAGE 2 was set at the site of the destroyed station PORTAGE using the two recoverable reference marks. This allowed hydrography to continue using the published position of PORTAGE while PORTAGE 2 was positioned. The difference between the positions of PORTAGE and PORTAGE 2 is less than Third-Order, Class I work can resolve. *This station was NOT used for Hydrography.*

The published position for WAVE 2 was determined to be in error when the check angles from three other stations did not agree with the computed inverse angles. The inverse distance between the unadjusted field position, determined by triangulation from NOON and SAND, and the published position is 0.297 meter, *the field value was used on the Smith Sheet.*

All stations meet or exceed Third-order, Class I standards for positioning. Further information can be found in the 1988 Horizontal Control Report for OPR-O358-RA.

Geographic positions were based on the North American Datum of 1927 and Clark Ellipsoid of 1866.

G. Hydrographic Position Control

All soundings were located using Motorola's Mini-Ranger III microwave positioning equipment in the HYDROPLOT range-range acquisition mode.

Positioning Equipment

Five Mini-Ranger console-R/T pairs and nine shore transponders were used during the survey. The following table summarizes the vessel and console-R/T pair configurations:

<u>Day Numbers</u> <u>(DN)</u>	<u>Vessel</u> <u>EDP No.</u>	<u>Vessel</u> <u>Name</u>	<u>Console-R/T</u> <u>Serial No.</u>
115-124	2123	RA-3	720/B1405
127-132	2123	RA-3	711/B1405
113-138	2124	RA-4	30269/B1388
127	2125	RA-5	720/911615
114-126	2126	RA-6	715/911102
120,133-4	2120	RAINIER	715/911102

The table below lists the shore equipment used during this survey:

<u>Transponder Serial Number</u>	<u>Code</u>
G3510	A
E2868	B
G3500	C
F3256	E
G3501	F
B1412	0
C1883	1
B1106	2
911635	3

Baseline Calibrations

Three baseline calibrations over water were conducted in accordance with PMC OORDER 3.3 (see table below). Calibration data and descriptions of the baselines can be found in 1988 Electronic Control Report for OPR-O358-RA.

<u>Location</u>	<u>Distance</u>	<u>Description</u>
Seattle, WA	1312 m	Sandpoint pier to Matthews Beach
Farragut Bay, AK	1446 m	Read Island to mainland Alaska
Kodiak, AK	1626 m	Bell Flats Hwy to NOS Tidal BM

The Farragut Bay calibration, using console-R/T pairs 711/B1405 and 720/911615, produced opening calibration results for transponder codes A, B, 1, and 3.

The final field sheets were plotted with the opening calibration correctors. It is recommended that these same correctors be used during processing because the difference between the opening and closing correctors was less than eight meters for all codes.

System Check Procedures

In accordance with PMC OORDER 3.3, critical system checks were made at least weekly and noncritical checks were made daily when critical checks were not acquired. The data from launch RA-3 on DN 124 were rejected because the launch failed to get any system check before R/T B1405 failed.

Critical system checks were made at the following stations using the fixed point observation method: CAPE STRAIT LIGHTHOUSE (133), SAND (141), CATCH 2 (142), BRIDGE (145), BAY POINT (146), and PORTAGE (147).

Noncritical system checks were conducted using the launch-to-launch or baseline crossing methods. All noncritical system checks fell within the allowable rejection limits and no systematic discrepancies with opening baseline correctors were observed.

Problems and Unusual Position Configurations

The R/T unit B1405 failed on launch RA-3 on DN 124. The data collected on this day were rejected, and the R/T was repaired and calibrated with console 711 on DN 125. The last day of data acquisition for B1405 before failure was DN 118.

Null zones and erratic ranges were occasionally experienced due to the destructive interference of direct and reflected rf waves. This problem was significantly reduced by placing several of the shore transponders atop twenty-foot Raydist towers. Time and course interpolations were used during data processing to correct the position of soundings taken when launches approached null zones (as indicated by the launches' erratic steering needles and automated plotters).

A small amount of survey positioning data was acquired with signal strengths one unit below the computed cutoff values. The use of these signal strengths may result in range discrepancies with baseline correctors of less than 10 meters, less than 0.5 millimeter at the scale of the survey, and do not cause significant degradation of positional quality.

The following table summarizes significant events in the electronic control for the survey:

<u>DN</u>	<u>Event Description</u>
113	First day of data acquisition for H-10269 (April 22, 1988)
124	R/T B1405 failed on launch RA-3 (May 3, 1988)
125	Opening calibrations for launch RA-3 (711/B1405) and RA-5 (720/911615) using Codes A, B, 1, 3 (May 4, 1988)
138	Last day of data acquisition for H-10269 (May 17, 1988)

Antenna Offset Distances (ANDIST)

Each launch had its antenna located over its depth transducer, making the ANDIST corrector 0.0 in all cases.

H. Shoreline

See EVALUATION REPORT section 2

Shoreline maps were not compiled for this project area; therefore, shoreline features were transferred onto the final field sheet from a 1:20,000-scale enlargement of NOS Chart 17367, 1:40,000 scale, 9TH edition, April 21, 1979.

Shoreline is shown in brown on the final field sheets for orientation purposes only. Detached positions were obtained for all features extending into the navigable area of the survey, as defined in the Project Instructions, and are shown on the final field sheets in black with their four-digit position numbers. All heights are in feet and are corrected to MLLW based on ~~predicted~~^{ATYPICAL} tides. The heights computed for rocks, ledges and islets refer to the highest portion of each feature.

Cartographic codes for all features within the navigable area are noted in the field records. Observations of shoreline features at low water reveal that ledges do exist as charted.* Detached positions were obtained on the outer limits of ledges that extend into the navigable area, and the field records refer to these as "bedrock outcrops". These detached positions are shown as rocks on the final field sheets.

* *These ledges are located outside of the NAS limits.*

Several detached positions from DN 125 were rejected due to bad position intersections. The same shoreline was observed on DN 126 (May 5, 1988) and it was determined that none of the features extended into the navigable area or are a hazard to navigation.

I. Crosslines

Crosslines were oriented perpendicular to the mainscheme sounding lines, and comprised 10% of the mainscheme mileage. Overall agreement between crossline and mainscheme hydrography was within the limits stated in the Hydrographic Manual.

It was determined that the crossline data collected by VESNO 2124 on DN 138 was poorly synchronized with the times of predicted tides due to a faulty timer in the HYDROPLOT Controller. The actual times of hydrography were approximated to delineate the tidal range during data acquisition, then the times of these tides were compressed to match the times of acquisition as indicated by the raw data. This analysis allowed a plot of the crossline data and the following mainscheme versus crossline comparison:

Within 0.2 fathom	93%
Within 0.5 fathom	95%
Within 1.0 fathom	100%

Note that the affected crosslines have not been adjusted on the final field sheet and that the hydrographer is not recommending that the data be adjusted during verification; the actual times of crossline hydrography cannot be recovered with sufficient accuracy. This analysis was undertaken merely to confirm that the faulty timer was the sole problem and to disprove any inaccuracies in the mainscheme hydrography. Note also that the agreement between the affected crosslines and mainscheme meets the prescribed standards without adjustment, and that this timing problem did not affect any other data acquired by this launch during the survey.

*CONCURE NO PROBLEMS
ON SMOOTH SHEET.*

The raw and approximate times of hydrography, the computations for tides, and the faillogs related to the failed mechanism are in Appendix XI. The rough plot of the adjusted crossline data from DN 138 is also being submitted.

J. Junctions *SEE EVALUATION REPORT SECTION 5*

This survey junctions with H-10265 (1:20,000, 1988) and H-10272 (1:20,000, 1988) along the eastern and western boundaries, respectively. No irregularities were found when comparing soundings and depth contours. Minor discrepancies exist in

some steep nearshore areas, but overall agreement of overlapping soundings between surveys is excellent, as the following comparison indicates:

Within 0.0 fathom	97%	✓
Within 0.5 fathom	98%	
Within 1.0 fathom	99%	

K. Comparison With Prior Surveys *SEE EVALUATION REPORT SECTION 4 and 6.*

This survey was compared to the 1887 prior surveys H-1804 (1:80,000 scale smooth sheet), H-1806 (1:80,000 scale boat sheet), H-1812 (1:20,000), and H-1813 (1:10,000). See Section L for prior survey sounding comparison. ✓

Three AWOIS investigations were completed. AWOIS Items 51187, 51188 and 51191 are three separate wire drag hangs and are described below. ✓

AWOIS Item 51187:

Feature: Charted 14-fathom depth from wire drag hang on rocky shoal approximately 200 meters in diameter, at $57^{\circ}01'07.00''N$, $133^{\circ}06'10.00''W$ (H-3991, Wire Drag, 1917). ✓

Investigation: The feature was developed with a 100-meter north-south and 50-meter east-west line spacing pattern (Expansion Sheet #1). Depths of 45-50 fathoms were found at the position stated in the AWOIS listing. The feature is not present at the charted location, but lies further north as part of an extensive shoal which is described in the discussion of AWOIS #51188. ✓

Recommendation: Delete charted 14-fathom depth at $57^{\circ}01'07.5''N$, $133^{\circ}06'10.5''W$. ✓ *CONCUR*

AWOIS Item 51188:

Feature: Charted 10-fathom depth from wire drag hang on rocky shoal approximately 200 meters in diameter, at $57^{\circ}01'13.00''N$, $133^{\circ}06'10.00''W$ (H-3991).

Investigation: The feature was developed with the same echo sounder investigation as AWOIS Item 51187. Depths of 12-15 fathoms were found at the position stated in the AWOIS listing. There was one dive on the shoal with a pneumatic gauge least depth of 58.0 feet (9.78 fathoms) at $57^{\circ}01'15.73''N$, $133^{\circ}06'12.43''W$ (position number 4611). The divers found the item immediately and visibility was 35 feet. The feature is a smooth, well-rounded rock outcrop, 60 meters north-south by 40 meters east-west, figure-eight shaped, and the difference in height is less than 0.3 fathom over this area. The least depth was found at the southern end of the feature. *This position is 93.3 meters northwest from the AWOIS position.*

Recommendation: Delete charted 10-fathom depth at $57^{\circ}01'13.0''N$, $133^{\circ}06'10.0''W$ and chart 9.78 fathoms, at $57^{\circ}01'15.73''N$, $133^{\circ}06'12.43''W$. ✓ *CONCUR*
RK

AWOIS Item 51191:

Feature: Charted 14-fathom depth from wire drag hang, at $57^{\circ}05'16.00''N$, $133^{\circ}11'20.50''W$ (H-3992, Wire Drag, 1917). ✓

Investigation: A dive was performed to locate the least depth, and additional sounding lines were acquired to define the depth contours, as shown on Expansion Sheet No. 2. A least depth of 12.½ fathoms was found using a pneumatic depth gauge at 57°05'14.33"N, 133°11'18.22"W (position number 4861). A 50-meter circle search was performed in 25-foot visibility, and the least depth was taken on the smooth, level top surface of a fine silt shoal with no exposed rocky outcrops. A danger to navigation report was submitted for this feature.

* This position is 643 METERS SOUTHEAST FROM THE AWD'S POSITION

Recommendation: Delete the charted 14-fathom depth at 57°05'15.5"N, 133°11'20.0"W and chart 12.½ fathoms at 57°05'14.33"N, 133°11'18.22"W.

CONCUR

L. Comparison With the Chart

This survey was compared to a 1:20,000 scale enlargement of NOS Chart 17367, 9th Edition dated 21 April, 1979, 1:40,000 scale.

All charted depths originate from the 1887 surveys H-1806 (1:80,000 boat sheet), H-1804 (1:80,000 smooth sheet), H-1812 (1:20,000) and H-1813 (1:10,000). A comparison of charted and survey soundings was made, as shown below, and agreement was found to be good, with the major discrepancies occurring in very deep water or in the extremely steep areas along the shore.

Agreement Within Fathoms

10.0 fms	100%
5.0 fms	89%
3.0 fms	69%
2.0 fms	52%
1.0 fms	39%
0.0 fms	27%

Large discrepancies were investigated by reducing the line spacing in areas where H-10269 was deeper than the prior surveys. In general, alongshore survey depths are deeper than charted depths, as seen by the trend of the 10-fathom contour, except in the vicinity of Bay Point, where the 10-fathom curve extends farther offshore than charted. The techniques used for positioning and sounding during the prior survey are the probable cause of these discrepancies. It is recommended that H-10269 soundings supersede those from prior surveys within their common area.

The following four areas were investigated:

Irregular Bottom (Expansion Sheet No. 3):

Additional sounding lines were run at 1:5,000 scale to delineate the irregular bottom south of Grand Point Light.

Rocky Area:

A dive investigation on a rocky area off the southern shore was performed on DN 130. A 50-meter circle search showed that there were many unconsolidated rock piles within this region. The pneumatic gauge least depth was 12.1 feet, or 2.01 fathoms, at $57^{\circ}00'44.73''$ N, $133^{\circ}15'43.15''$ W (position number 3842). This feature was submitted as a danger to navigation.

Rocky Ridge No. 1:

A dive was performed on DN 130 on a rocky outcrop located at $57^{\circ}00'51.61''$ N, $133^{\circ}15'47.29''$ W (position number 3840). The least depth of 59.0 feet, or 9.89 fathoms, was observed with pneumatic gauge on a major ridge 60 meters wide by 80 meters long, trending northwest-southeast. This feature was submitted as a danger to navigation.

Rocky Ridge No. 2:

A bedrock outcrop near the southwest section of the survey was investigated by a 50-meter circle search on DN 132. The pneumatic gauge least depth was 52.8 feet, or 8.8 fathoms, at $57^{\circ}00'43.87''$ N, $133^{\circ}13'12.15''$ W (position number 3865). The bottom drops off sharply to the north and east of the feature. This feature was submitted as a danger to navigation.

Danger to Navigation Reports

The following dangers to navigation were found and reported to the Seventeenth Coast Guard District, Juneau, Alaska (Appendix X):

<u>Feature</u>	<u>Least Depth</u>	<u>Fix no.</u>	<u>Position</u>
1. Obstr (snag) 0.8 m diam.	-0.4 feet	8054	$57^{\circ}05'45.4''$ N $133^{\circ}11'13.5''$ W
2. Rock	9.8 fathom	3840	$57^{\circ}00'51.6''$ N $133^{\circ}15'47.3''$ W
3. Rock	2.0 fathom	3842	$57^{\circ}00'44.7''$ N $133^{\circ}15'43.1''$ W
4. Rock Shoal	8.8 fathom	3865	$57^{\circ}00'43.9''$ N $133^{\circ}13'12.1''$ W
5. Shoal	5.2 fathom	4348	$57^{\circ}00'38.7''$ N $133^{\circ}15'46.5''$ W
6. Shoal	1.1 fathom	6683	$57^{\circ}05'56.8''$ N $133^{\circ}11'16.8''$ W
7. Shoal	12.1 fathom	4861	$57^{\circ}05'14.3''$ N $133^{\circ}11'18.2''$ W
8. Rock <i>submerge</i>	3.5 fathom	3536+1	$57^{\circ}04'51.8''$ N $133^{\circ}05'28.6''$ W

A ledge at Grand Point extends further west than the chart indicates (position number 8055, $57^{\circ}05'29.00''$ N, $133^{\circ}11'15.06''$ W) and will be reported in the Danger to Navigation report submitted with hydrographic survey H-10272 (RA-20-3-88). *Yes it was rebated.*

It is recommended that least depths and contours from this survey supersede the charted depths in their common areas. *CONCUR*

M. Adequacy of Survey

This survey is complete and adequate to be used for charting purposes, and to supersede prior surveys within the navigable area as defined in the Project Instructions. *CONCUR*

N. Aids to Navigation

Two fixed aids to navigation, Cape Strait Light and Grand Point Light, are within the survey limits. Both aids were positioned by Third Order, Class I traverse techniques in accordance with Section 4.2.1.2 of the Project Instructions. ✓

<u>Navigational Aid Light List No.</u>	<u>Published Position *</u>	<u>Charted Position</u>	<u>Field Position</u>
Cape Strait Light #23240	$56^{\circ}59.9'N$ $133^{\circ}05.5'W$	$56^{\circ}59'55.0''N$ $133^{\circ}05'26.5''W$	$56^{\circ}59'54.488''N$ $133^{\circ}05'26.171''W$ ✓
Grand Point Light #23245	$57^{\circ}05.5'N$ $133^{\circ}11.1'W$	$57^{\circ}05'29.3''N$ $133^{\circ}11'05.6''W$	$57^{\circ}05'28.974''N$ $133^{\circ}11'06.353''W$

*Source: United States Coast Guard Light List, Vol. VI, 1988.

There are no bridges, overhead cables, pipelines or ferry routes within the limits of the survey. Three submarine cable areas cross the survey. The southernmost cable area appears to merge with the Boulder Point shore, which is outside the navigable area; therefore, no detached positions were obtained. ✓

O. Statistics

<u>EDP No.</u>	<u>Number of Positions</u>	<u>Nautical Miles of Sounding Lines</u>
2120	41	0
2123	872 861	189.8
2124	1094 1079	234.4
2125	6 5	0
2126	1000 942	237.0
TOTAL	3013 2928	661.2

SQUARE MILES OF HYDROGRAPHY	42.4	
MILES OF SIDE SCAN	0.0	
BOTTOM SAMPLES	41	
TIDE STATIONS	1	
VELOCITY CASTS	2	
DAYS OF PRODUCTION	29	✓
MAGNETIC STATIONS	0	
CURRENT STATIONS	0	

P. Miscellaneous

All bottom samples have been submitted to the Smithsonian Institution (Appendix VII). Bottom sample spacing was designated at nine centimeters because the survey area is too deep for anchoring and the bottom characteristic is the same throughout the area (i.e. green mud). The samples confirmed the charted bottom characteristics. ✓

No current measurements were made during this survey, since no anomalous current conditions were observed. ✓

Simultaneous LORAN-C and Mini-Ranger III positioning information was acquired during bottom sample collection and forwarded to the Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC) per PMC OORDER 1.2.4. ✓

Q. Recommendations

Reconnaissance work done by RAINIER prior to anchoring in Farragut Bay indicates that uncharted features, such as the two Dangers to Navigation reported during this survey, may be present in the bay. Thus, the hydrographer recommends that Farragut Bay be surveyed as soon as shoreline manuscripts become available. *CONCUR*

R. Automated Data Processing

Data acquisition and processing were accomplished with a PDP 8/e Hydroplot computer system, using the following programs:

<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 221	COMB R/R & HYPER PLOT NON-RT	7/25/86

RK 300	UTILITY COMPUTATIONS	10/21/80
RA 362	RK 330 AND AM 602 COMBINED	8/20/84
RK 407	GEODETIC INVERSE/DIRECT COMP	9/25/78
RK 409	GEODETIC UTILITY PACKAGE	9/20/78
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	5/10/76
RK 561	H/R GEODETIC CALIBRATION	12/01/82
AM 602	ELINORE - LINE ORIENTED EDITOR	12/08/82
RK 606	TAPE DUPLICATOR	8/22/74
AM 607	SELF-STARTING BINARY LOADER	8/10/80
RK 610	BINARY TAPE DUPLICATOR	1/31/85
RK 900	PLOT TEST TAPE GENERATOR FOR AM902	5/07/76
PM 901	CORE CHECK	3/01/72
AM 902	REAL TIME CHECKOUT	11/10/72
DA 903	DIAGNOSTIC-INSTRUCTION TIMER	2/27/76
RK 905	HYDROPLOT CONTROLLER CHECKOUT	3/18/81
RK 935	HYDROPLOT HARDWARE TESTS	3/15/82
RK 950	HARDWARE TESTS (DOCUMENTATION ONLY)	6/02/75

In plotting the final field sheet, overprints were removed by various techniques. The pen was manually lifted and special corrector tapes were made to edit out individual soundings. These tapes have not been submitted. Some soundings, including least depths, have been transferred by hand to the final field sheet from NSP data.

Position Numbers

The following series of position numbers was assigned to each survey vessel:

<u>Vessel Number</u>	<u>Position Numbers</u>
2120	28-68
2123	3000-3871
2124	4000-4986
	7000-7065
2125	5000-5005
2126	6000-6694
	8000-8056

Many duplicate positions occurred during this survey, and are listed in the following table:

<u>Vesno</u>	<u>Position Numbers</u>	<u>DN</u>	<u>Sheet Number</u>
2126	6478-6724	116	RA-20-2W-88
2126	6478-6531	117	RA-20-2E-88
2126	6532-6618	118	RA-20-2E-88
2126	6619-6676	124	Exp. 2
2126	6677-6694	125	RA-20-2E-88
2124	7000-7021	126	RA-20-2W-88
2124	7000-7065	138	RA-20-2W-88

S. Referral to Reports

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

<u>TITLE</u>	<u>DATE SENT TO MARINE CENTER</u>
1988 Horizontal Control Report for OPR-O358-RA	July, 1988
1988 Electronic Control Report for OPR-O358-RA	July, 1988
1988 Corrections to Echo Soundings Report OPR-O358-RA <i>(Filed with the field records for this survey)</i> <i>XWW 8/12/88</i>	June, 1988
Marine Mammal Report, RP-12-88	June, 1988
1988 Coast Pilot Report, OPR-O358-RA	June, 1988

Respectfully Submitted;

Guy T. Noll
Guy T. Noll
Ensign, NOAA

Approved and Forwarded;

John C. Albright
John C. Albright
Captain, NOAA
Commanding Officer
NOAA Ship RAINIER

FIELD TIDE NOTE

OPR-O358-RA-88, Frederick Sound, Alaska

OPR-O358-RA-88, Frederick Sound Alaska, includes three hydrographic surveys which were completed during April-May 1988. H-10265 (Sheet B), H-10269 (Sheet C), and H-10272 (Sheet D) are the affected surveys. Field-tide reduction of soundings was based on predicted tides computed with program AM 500, Predicted Tide Generator, by using the predicted tides for the Juneau, Alaska, tide station (945-2210). Three corrector zones were prescribed for the project area, but as an aid in processing logistics, only two sets of correctors were used. The corrector set which covered the most area of a particular survey was applied. The table below shows the small difference between the corrector sets.

Sheet	Time Correction		Height Ratio
	High Water	Low Water	
NONE	-0hr 15min	-0hr 10min	0.98
B,C	-0hr 15min	-0hr 10min	0.95
D	-0hr 15min	-0hr 10min	0.91

Near the beginning and end of the project, leveling was conducted at the Juneau tide station to connect three bench marks with the staff. The opening levels were conducted by RAINIER personnel on April 15 and closing levels were conducted by FAIRWEATHER personnel and will be submitted separately.

The following tide station was installed in the project area:

CAPE STRAIT, FREDERICK SOUND, ALASKA (945-1559)

Geographic Locale - 56° 59.9' N, 133° 05.6' W

Installation Date - April 10, 1988

Removal Date - May 18, 1988

Gage Type - Bristol bubbler (S/N 67A-16205) with a backup Bristol bubbler (S/N 73A-235). The gages were placed on a wooden trestle behind the Cape Strait light structure. The orifices were attached to a steel plate which was anchored to the bottom with four-foot sand anchors. Below the surf zone, tubing was anchored with rocks and chain. Above the surf zone, the tubing was secured to the bedrock with eye bolts.

Staff - The staff was 12 feet long made of four-inch aluminum angle iron with vitrified scale. It was secured to bedrock with 2x4 wooden braces and angle iron located 50 feet north of BM 1559 B. The staff stop was a stainless steel hex machine bolt located at 16.120 ft on the staff.

Staff Zero/Gage Zero

Gage # 67A-16205

Before 4/23: 0.64

After 4/23: 1.68

Gage # 73A-235

Before 4/23: 1.18

After 4/23: 1.87

Gage Time - Universal Coordinated Time

Bench Marks - Five bench marks were recovered at this station: 1559 A 1987, 1559 B 1987, 1559 C 1987, 1559 D 1987, and 1559 E 1987. The five bench marks were connected in the initial and final leveling.

Levels - Installation levels were completed on April 10, connecting the five bench marks mentioned above. Final levels were completed on May 18. The initial and final levels agreed to within 0.002 m.

Marigram Records -

GAGE # 67A-16205: Marigram records are continuous:

<u>FROM</u>	<u>TO</u>
4/10/88 @ 2212	4/16/88 @ 1502
4/16/88 @ 1630	4/17/88 @ 1535
4/17/88 @ 1725	4/18/88 @ 1620
4/18/88 @ 1800	4/22/88 @ 2305
4/22/88 @ 2300	4/23/88 @ 1735
4/23/88 @ 1824	4/27/88 @ 1653
4/27/88 @ 1711	5/10/88 @ 1940
5/10/88 @ 1933	5/18/88 @ 2105

GAGE # 73A-235: Marigram records are continuous:

<u>FROM</u>	<u>TO</u>
4/10/88 @ 2211	4/11/88 @ 1659
4/11/88 @ 1724	4/12/88 @ 1839
4/12/88 @ 1845	4/14/88 @ 1918
4/14/88 @ 1930	4/16/88 @ 1712
4/16/88 @ 1825	4/17/88 @ 1940
4/17/88 @ 2125	4/18/88 @ 2232
4/18/88 @ 2355	4/19/88 @ 1639
4/19/88 @ 1720	4/19/88 @ 2242
4/19/88 @ 2300	4/20/88 @ 1935
4/20/88 @ 1947	4/23/88 @ 1730
4/23/88 @ 1824	4/27/88 @ 1648
4/27/88 @ 1650	5/3/88 @ 1755
5/3/88 @ 1800	5/5/88 @ 2250
5/5/88 @ 2256	5/12/88 @ 2022
5/12/88 @ 2025	5/14/88 @ 0140
5/17/88 @ 2130	5/18/88 @ 2036

Station Problems

On April 20, the chart drive from gage 73A-235 was replaced with a new chart drive (S/N: 210102) after having repeated problems keeping time and paper alignment.

Due to an extreme spring low tide, the orifices were exposed during the following dates and times (differences in time occur because of correct time and gage time adjustments):

	<u>#73A-235</u>	<u>#67A-16205</u>
	Gage Time	Gage Time
April 16	1710 to 1825	1500 to 1630
April 17	1940 to 2127	1530 to 1730
April 18	2230 to 2355	1620 to 1800
April 19		1720 to 1815

No hydrographic data were collected from April 16 to April 18. Because the orifice on gage 73A-235 was set slightly deeper than the orifice on gage 67A-16205, no tide data were lost on April 19. Inspection of the marigram records revealed that the tide trace did not fall to zero upon exposure. Gage 67A-16205 fell to 1.0 feet, and gage 73A-235 fell to 2.5 feet upon exposure. Therefore, on April 23, RAINIER personnel brought the orifices to the surface to calibrate a zero trace. Before calibrating, the gages were exposed to atmosphere and read the same as when previously exposed during the spring low tides. The orifices were then placed at a deeper depth to avoid exposure during spring low tides. Three hour observations were made on the morning of April 24.

On May 14, at approximately 0140 the paper in gage 73A-235 jammed. This caused a loss of data until May 17 at 2130, when the paper was replaced. During the same time interval the primary gage (67A-16205) functioned normally.

MASTER STATION LIST
OPR-0358-RA-88, FREDERICK SOUND, ALASKA
RA-20-2-88(H-10269)

FINAL VERSION

133	3	56	59	5448 ⁵	133	05	261 ⁶⁹	250	0011	000000	
/CAPE STRAIT LIGHTHOUSE											
RAINIER G.P.											
138	3	57	01	10477	132	59	57475	250	0001	000000	
/SQUARE 1917											
NGS QUAD 571323 STA. 1024											
139	3	56	58	41099	132	56	14272	250	0004	000000	
/WAVE 2											
RAINIER G.P.											
141	3	56	59	28831	133	04	32810	250	0005	000000	
/SAND 1917											
NGS QUAD 561331 STA. 1091											
142	3	57	03	30047	133	01	52188	250	0005	000000	
/CATCH 2 1917											
NGS QUAD 571332 STA. 1003											
144	3	57	05	22442	133	10	40177	250	0003	000000	
/SOUTH GRAND 1917											
NGS QUAD 571332 STA. 1027											
145	3	57	00	42643	133	12	04595	250	0005	000000	
/BRIDGE 1917											
NGS QUAD 571332 STA. 1002											
146	3	57	06	24700	133	18	45458	250	0006	000000	
/BAY POINT 1917											
NGS QUAD 571332 STA.1001											
147	3	57	01	09427	133	20	48241	250	0008	000000	
/PORTAGE 2											
RAINIER G.P.											
150	3	57	03	30013	133	35	49259	250	0004	000000	
/FLAT 1917											
NGS QUAD 571333 STA. 1016											
151	3	57	09	02129	133	27	44542	250	0005	000000	
/HIGHLAND 1917											
NGS QUAD 571332 STA. 1014											

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	JOHN C. ALBRIGHT, CAPT., NOAA Commanding Officer Chief of Party	<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	CARL R. GROENEVELD, ENS., NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

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

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

- | | |
|-------------------|----------------------|
| F - Field | P - Photogrammetric |
| L - Located | Vis - Visually |
| V - Verified | |
| 1 - Triangulation | 5 - Field identified |
| 2 - Traverse | 6 - Theodolite |
| 3 - Intersection | 7 - Planetable |
| 4 - Resection | 8 - Sextant |

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

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

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

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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



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

June 10, 1988

Director
DMAHTC
6500 Brooks Lane
Washington, DC 20315

Dear Sir:

During 1988 surveys in eastern Frederick Sound, Alaska, the NOAA Ship RAINIER located three aids to navigation and discovered eighteen dangers to navigation. These have been reported to the Seventeenth Coast Guard District for publication in the Local Notice to Mariners. A copy of the report describing them is enclosed.

Sincerely,

John C. Albright
John C. Albright
Captain, NOAA
Commanding Officer

Enclosure



JCA

PTTUZYUW RUHPTEF0000 0000000-UUUU--RUHPSUU.

ZNR UUUUU

FM NOAAS RAINIER

TO CCGDSEVENTEEN JUNEAU AK

INFO NOAMOP SEATTLE WA

DMAHTC WASHINGTON DC //NVS//

ACCT CM-VCAA

BT

UNCLAS

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

//THE NOAA SHIP RAINIER OF THE NATIONAL OCEAN SERVICE HAS COMPLETED CHARTING OPERATIONS IN FREDERICK SOUND. THE FOLLOWING DANGERS TO NAVIGATION HAVE BEEN DISCOVERED. ALL DEPTHS AND HEIGHTS REDUCED TO MLLW USING PREDICTED TIDES AND ALL POSITIONS BASED ON NAD27 DATUM.

- A. 1.6 FEET ROCK AT 56/54/11N 132/50/57W
 - B. 1.0 FOOT EXPOSED ROCK AT 56/54/24N 132/51/36W
 - C. 1.4 FEET ROCK AT 56/55/32N 132/53/14W
 - D. 1.3 FATHOM SHOAL AT 56/59/25N 132/58/21W
 - E. 1.3 FATHOM ROCK AT 57/01/18N 133/00/13W
 - F. 1.4 FATHOM ROCK AT 57/01/20N 133/00/13W
 - G. 1.8 FATHOM ROCK AT 57/01/45N 133/00/18W
 - H. 14.3 FATHOM SHOAL AT 57/01/49N 133/02/53W
 - I. 9.8 FATHOM ROCK AT 57/00/52N 133/15/47W
 - J. 2.0 FATHOM ROCK AT 57/00/45N 133/15/43W
 - K. 3.5 FATHOM SHOAL AT 57/04/52N 133/05/29W
 - L. 8.8 FATHOM SHOAL AT 57/00/44N 133/13/12W
 - M. 5.2 FATHOM SHOAL AT 57/00/39N 133/15/47W
 - N. 12.1 FATHOM SHOAL AT 57/05/14N 133/11/18W
 - O. 1.1 FATHOM SHOAL AT 57/05/57N 133/11/17W
 - P. 0.4 FOOT EXPOSED SNAG AT 57/05/45N 133/11/13W
- THE FOLLOWING POSITIONS ARE APPROXIMATE:
- Q. 11.2 FATHOM SHOAL AT 57/07/57N 133/11/50W
 - R. 15.9 FATHOM SHOAL AT 57/08/10N 133/10/23W

THE FOLLOWING NOS CHARTS ARE AFFECTED:

17367 9TH ED APR21/79 1:40000

17360 26TH ED AUG18/84 1:217828

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.//
A LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO YOU TO
CONFIRM THIS MESSAGE.

BT

#0000

NNNN



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

NOAA Ship RAINIER S-221
1801 Fairview Avenue East
Seattle, Washington 98102

June 10, 1988

Commander
Seventeenth Coast Guard District
P.O. Box 3-5000
Juneau, AK 99802

Dear Sir:

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

The NOAA Ship RAINIER of the National Ocean Service has conducted 1988 charting operations in eastern Frederick Sound, Alaska. Three fixed aids to navigation were located by geodetic methods to third order, class I standards on the NAD27 datum:

1. Beacon Point Daybeacon, $56^{\circ}56'23.362''N$ and $132^{\circ}59'38.708''W$.
2. Cape Strait Light, $56^{\circ}59'54.488''N$ and $133^{\circ}05'26.171''W$.
3. Grand Point Light, $57^{\circ}05'28.974''N$ and $133^{\circ}11'06.353''W$

The following dangers to navigation have been discovered (all depths have been reduced to MLLW using predicted tides; positions are based on NAD 27 datum):

1. Rock with a least depth of 1.6 feet at $56^{\circ}54'11''N$ and $132^{\circ}50'57''W$.
2. Rock exposed 1.0 feet at $56^{\circ}54'24''N$ and $132^{\circ}51'36''W$.
3. Rock with a least depth of 1.4 feet at $56^{\circ}55'32''N$ and $132^{\circ}53'14''W$.
4. Shoal with a least depth of 1.3 fathoms at $56^{\circ}59'25''N$ and $132^{\circ}58'21''W$.
5. Rock with a least depth of 1.3 fathoms at $57^{\circ}01'18''N$ and $133^{\circ}00'13''W$.



6. Rock with a least depth of 1.4 fathoms at 57°01'20"N and 133°00'13"W.
7. Rock with a least depth of 1.8 fathoms at 57°01'45"N and 133°00'18"W.
8. Shoal with a least depth of 14.3 fathoms at 57°01'49"N and 133°02'53"W.
9. -Rock with a least depth of 9.8 fathoms at 57°00'52"N and 133°15'47"W.
10. -Rock with a least depth of 2.0 fathoms at 57°00'45"N and 133°15'43"W.
11. -Shoal with a least depth of 3.5 fathoms at 57°04'52"N and 133°05'29"W.
12. -Shoal with a least depth of 8.8 fathoms at 57°00'44"N and 133°13'12"W.
13. -Shoal with a least depth of 5.2 fathoms at 57°00'39"N and 133°15'47"W.
14. -Shoal with a least depth of 12.1 fathoms at 57°05'14"N and 133°11'18"W.
15. -Shoal with a least depth of 1.1 fathoms at 57°05'57"N and 133°11'17"W.
16. -Snag exposed 0.4 feet at 57°05'45"N and 133°11'13"W.
17. Shoal with a least depth of 11.2 fathoms 57°07'57"N and 133°11'50"W (Position Approximate).
18. Shoal with a least depth of 15.9 fathoms 57°08'10"N and 133°10'23"W (Position Approximate).

Features 1-8 were discovered while working on survey H-10265, Frederick Sound, Point Agassiz to Cape Strait. Features 9-16 were discovered while working on survey H-10269, Frederick Sound, Cape Strait to Bay Point. Features 17 and 18 were discovered outside of the project area in Farragut Bay while transiting to and from anchorage.

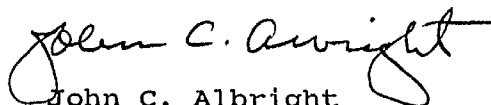
The following NOS charts are affected:

17360	26th ed	8/18/84	1:217828	NAD27 DATUM
17367	9th ed	4/21/79	1:40000	NAD27 DATUM

These are preliminary depths, heights, and positions subject to office review. Questions concerning these data can be directed to:

Director, Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102
(206) 442-7656

Sincerely,



John C. Albright
Captain, NOAA
Commanding Officer

Enclosure

cc:DMAHTC
N/CG222
N/MOP

CHART 17360

WARNING

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

NOTE B

CAUTION

Several rocks have been reported to be bare at MLLW. Mariners should exercise caution in this area.

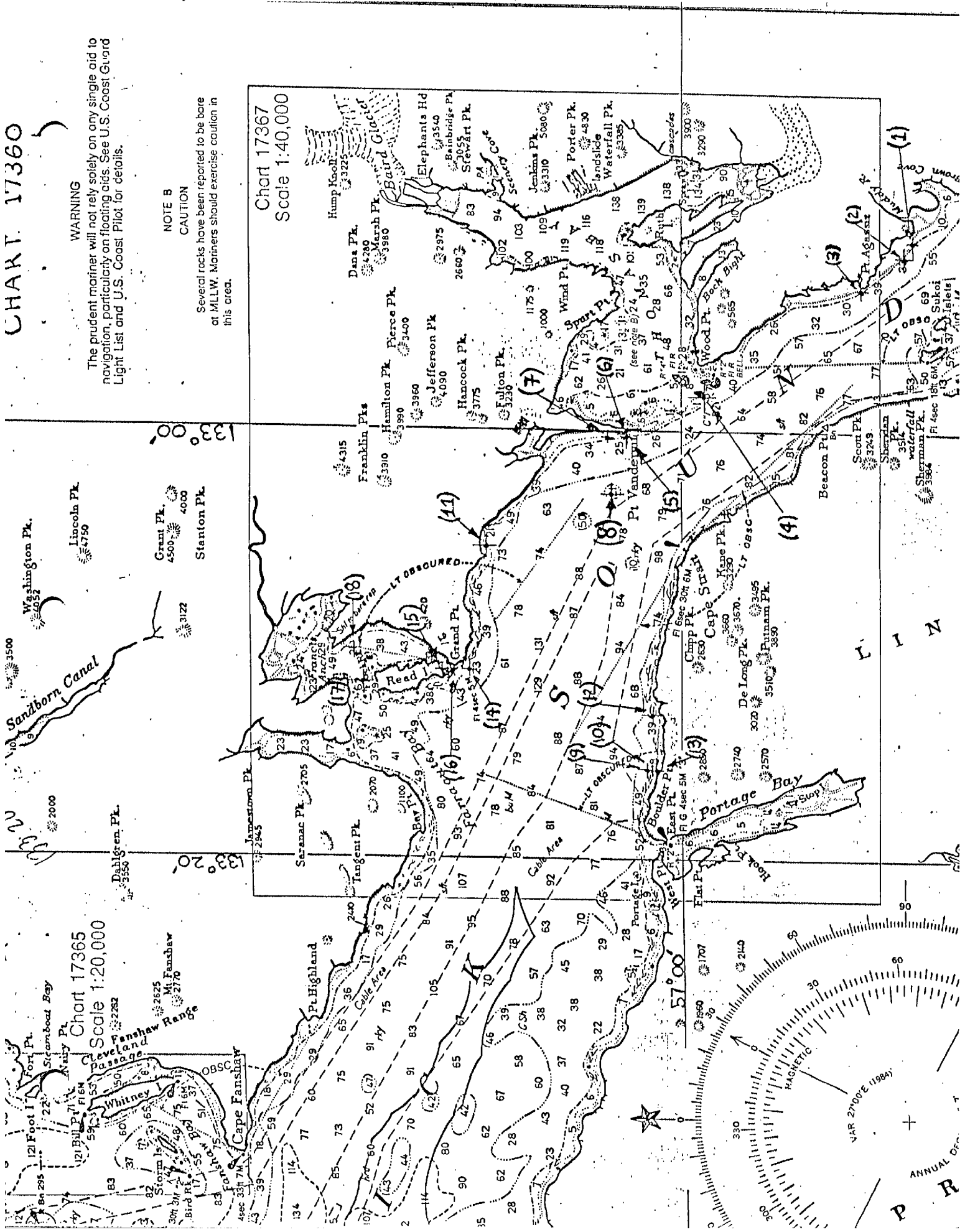


Chart 17365
Scale 1:20,000

Chart 17367
Scale 1:40,000

Scale 1:20,000

Scale 1:40,000

MAGNETIC

VAR 27°00' (1984)

P R

ANNUAL OF

1707

330

300

240

30

60

90



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

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

JUL 18 1988

N/MOP211B/JLS

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

Dear Sir:

During office review of hydrographic survey H-10269, Alaska, Frederick Sound, Cape Strait to Bay Point, Alaska, the following change was noted (see below) which affects the following chart:

17367 (9th ed., 04/21/79; datum: NAD 27)

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; depths are reduced to MLLW:

- A. "A rock, uncovers ²3 feet, is located at latitude 57°00'31.7N, longitude 133°14'44.8W. The rock was found in 5 fathoms of water. The rock bears 277 degrees true, 5.1 nautical miles from Cape Strait Light."

Sincerely,

A handwritten signature in cursive script that reads "Robert L. Sandquist".

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



APPROVAL SHEET

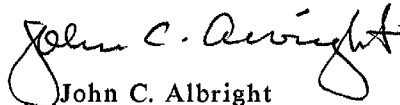
Descriptive Report to Accompany Hydrographic Survey

RA-20-2-88

H-10269

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

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



John C. Albright
Captain, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: September 7, 1988

MARINE CENTER: Pacific

OPR: 0358

HYDROGRAPHIC SHEET: H-10265

LOCALITY: Point Agassiz to Cape Strait, Frederick Sound, AK

TIME PERIOD: April 11 - May 18, 1988

TIDE STATION(S) USED: 945-1558 Cape Strait, AK

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 5.33 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.5 ft.

REMARKS: RECOMMENDED ZONING

1. Zone Direct

for Joseph V. Mulholland

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

GEOGRAPHIC NAMES

H-10269

Name on Survey	A ON CHART NO. 17367 B ON PREVIOUS SURVEY NO. 17360 C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G GRAND McNALLY ATLAS H U.S. LIGHT LIST K											
	ALASKA (title)											
BAY POINT												2
BOULDER POINT												3
FARRAGUT BAY												4
FREDERICK SOUND												5
GRAND POINT												6
KUPREANOF ISLAND												7
READ ISLAND												8
STRAIT, CAPE												9
												10
												11
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												25

Approved:

Charles E. Harrington
Chief Geographer - N/C&S

OCT 7 1988

HYDROGRAPHIC SURVEY STATISTICS

H-10269

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		8
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	1				
CAHIERS					
BOXES					

SHORELINE DATA					
SHORELINE MAPS (List):					
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			2928	
POSITIONS REVISED			21	
SOUNDINGS REVISED			136	
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	66		66	
VERIFICATION OF SOUNDINGS	116.5		116.5	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILATION OF SMOOTH SHEET	96		96	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		20	20	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		15	15	
GEOGRAPHIC NAMES				
OTHER* Digitization				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	278.50	35	313.52

Pre-processing Examination by John Miller	Beginning Date 4/22/88	Ending Date 8/7/88
Verification of Field Data by Thelma O. Jones	Time (Hours) 278.5	Ending Date 12/16/88
Verification Check by J. Stringham, B. Olmstead	Time (Hours) 191.5	Ending Date 12/27/88
Evaluation and Analysis by Gordon E. Kay	Time (Hours) 35	Ending Date 2/10/89
Inspection by Dennis J. Hill	Time (Hours) 2	Ending Date 2/10/89

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10269

1. INTRODUCTION

Survey H-10269 is a navigable area survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-0358-RA, dated January 29, 1987
CHANGE NO. 1, dated February 27, 1987
CHANGE NO. 2, dated September 22, 1987
CHANGE NO. 3, dated March 8, 1988

This survey occurred in Alaska and covers an area in Frederick Sound from Boulder Point and Bay Point at longitude 133°18'30"W east to Cape Strait at longitude 133°04'00"W. The mountains around Frederick Sound are steep, the slope continues at the water line to the bottom of the sound where depths reach 133 fathoms. The shoreline in this portion of Frederick Sound is rugged with scattered rocks and bedrock outcrops. The bottom consists of mud and sand.

Predicted tides for Juneau, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned from Cape Strait, gage 945-1558, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. During processing the sound velocity and TRA correctors were removed from pole and dive soundings. An accompanying computer printout contains the parameters and the correctors.

A digital file, generated for this survey, includes categories of information required to comply with N/CG2 Hydrographic Survey Guideline Number 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 1988 Horizontal and Electronic Control Reports for OPR-0358-RA contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are published and 1988 field values based on NAD 27. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 83 adjustment ticks based on values determined by N/CG121. Geographic positions based on NAD 83 may be plotted on the smooth sheet utilizing the NAD 27 projection by applying the following corrections.

Latitude: 1.223 seconds (37.8) meters
Longitude: -6.211 seconds (-104.7) meters

The year of establishment of control stations shown on the smooth sheet originates with the field records and the published NGS data and is subject to change pending certification of the field data by NGS.

There are no shoreline maps applicable to this survey. Shoreline depicted on the smooth sheet originates with chart 17367, 16th edition, and blueprint 131991 (revisions compiled on chart base 17367), and is drawn in brown ink on the smooth sheet for orientation purposes only.

In the vicinity of latitude $57^{\circ}04'33''N$, longitude $133^{\circ}04'00''W$ the shoreline is shown in dashed red and was plotted using estimated distances observed by the hydrographer and listed in the raw data printouts.

3. HYDROGRAPHY

The mountains along Frederick Sound have steep slopes that continue below the waterline into the sound. The steep slopes produce deep soundings very close to the shoreline. The depth curves were drawn with the farthest offshore curve and the 3-fathom curve, depicted on the chart with a stipple pattern, retained over the shoaler depth curves. The supplemental 60-fathom and 70-fathom depth curve are depicted on the smooth sheet. With the exception noted here, hydrography is adequate to:

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

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 Number 3; the Hydrographic Survey Guidelines; and the PMC OPORDER, except as follows.

The hydrographer did not make a comparison with prior surveys H-3991(1917)WD, H-3992(1917)WD, T-3688(1917), T-3699(1917) as required by section 6.10. of the Project Instructions.

5. JUNCTIONS

Survey H-10269 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10265	(1988)	1:20,000	East
H-10272	(1988)	1:20,000	West

The junctions with surveys H-10265 and H-10272 are complete. Soundings are in good agreement. Some soundings from surveys H-10265 and H-10272 have been carried forward to survey H-10269 to better portray the bottom and to bring the depth curves into agreement.

There are no contemporary surveys to the north in Farragut Bay. Instead, comparison was made to chart 17367, 9th edition, in the junction area. The survey soundings compare well with the charted soundings.

6. COMPARISON WITH PRIOR SURVEYS

H-1804(1887) 1:80,000
H-1806(1887) 1:80,000

Surveys H-1804 and H-1806 cover the entire area of the present survey. However, soundings depicted on survey H-1804 also appear on survey H-1806. Survey H-1806 appears to be a preliminary version of survey H-1804. Soundings do not compare well with the present survey. Differences of up to 10-fathoms exist with the present survey containing the deeper soundings. The extreme depth differences occur in water depths greater than 80 fathoms. These differences are attributed to changes in sounding and positioning techniques.

H-1812(1887) 1:20,000
H-1813(1887) 1:10,000

Survey H-1812 covers the extreme northern part of the present survey at the entrance to Farragut Bay. Survey H-1813 covers the extreme southern part of the present survey at the entrance to Portage Bay. Soundings compare well with no significant differences.

Survey H-10269 is adequate to supersede the prior surveys within the common area.

T-3688(1917) 1:20,000

T-3689(1917) 1:20,000

These shoreline maps were compared to survey H-10269. A rock at latitude 56°59'48"N, longitude 133°05'06"W was carried forward from survey T-3688 to the present survey.

With the transfer of the one rock mentioned above, survey H-10269 is adequate to supersede these prior shoreline maps as a source for charted hydrography.

H-3991(1917)WD 1:20,000

H-3992(1917)WD 1:20,000

Surveys H-3991WD and H-3992WD agree with the present survey.

AWOIS items 51187 and 51188 originate from survey H-3991WD. These two items were located during the present survey north of the charted positions. It appears that the charted positions were not correctly adjusted to NAD 1927. Item 51191 originates from survey H-3992WD. These items are all adequately discussed in the hydrographer's report, section K, pages 11 and 12.

7. COMPARISON WITH CHART

Chart 17367, 9th Edition, dated April 21 1979;
scale 1:40,000

a. Hydrography

All charted hydrography originates with the prior surveys previously discussed and requires no further discussion.

Survey H-10269 is adequate to supersede charted hydrography within the common area.

b. AWOIS

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

c. Controlling Depths

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

d. Aids to Navigation

There are two fixed and no floating aids located within the area of this survey. These fixed aids serve their intended purpose and are adequately discussed in section N of the hydrographer's report.

e. Geographic Names

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

f. Dangers to Navigation

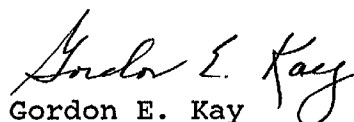
The hydrographer sent a Danger to Navigation letter to the Seventeenth Coast Guard District on June 10, 1988. One additional danger was found during office processing and was reported to the Seventeenth Coast Guard District on July 18, 1988. Copies of the reports are attached.

8. COMPLIANCE WITH INSTRUCTIONS

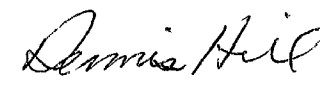
Survey H-10269 adequately complies with the Project Instructions mentioned in section 1 of this report.

9. ADDITIONAL FIELD WORK

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

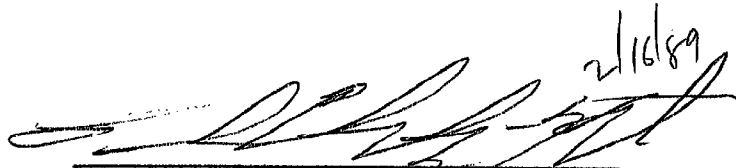

Gordon E. Kay
Cartographer

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


Dennis Hill
Chief, Hydrographic Section

APPROVALS

I have reviewed the smooth sheet, accompanying data, and reports associated with hydrographic survey H-10269. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

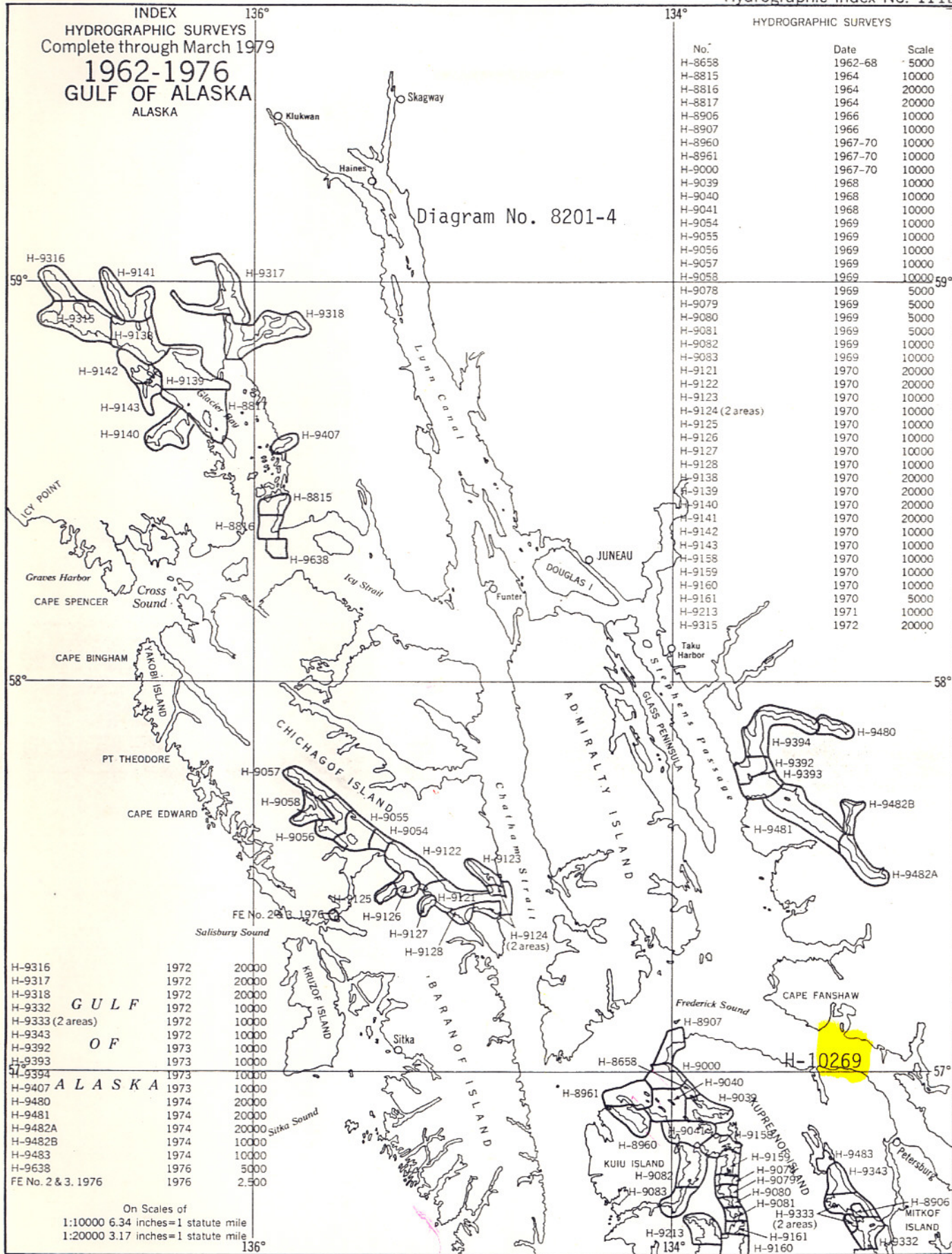
 2/16/89
Chief, Nautical Chart Branch (Date)

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

 2/16/89
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)

A-5324

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10269

INSTRUCTIONS

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

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

CHART	DATE	CARTOGRAPHER	REMARKS
17367	11/21/89	<i>ALMICEA</i>	Full Part Before After Marine Center Approval Signed Via <i>full application of</i> Drawing No. <i>soundings from SS.</i>
17360	1/3/90	<i>Hal B. Downing</i>	Full Part Before After Marine Center Approval Signed Via <i>full application of</i> Drawing No. <i>Soundings from SS</i>
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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