10231

10231

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. MI-20-2-86

Registery No. H-10231

LOCALITY

State .... Alaska

General Locality .... Icy Strait

Sublocality .... The Sisters and Vicinity to Include Point Sophia

19 86

CHIEF OF PARTY
CAPT F.T. Smith

LIBRARY & ARCHIVES

DATE .... August 24, 1988

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

"GP"

CHT
80-17302
80-17316
209-17300
CARTOG SIGN OFF ON FM. IN back

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-10231

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.
MI 20-2-86

State Alaska

General locality Icy Strait

Locality The Sisters and Vicinity to include Point Sophia

Scale 1:20,000 Date of survey October 19 - November 14, 1986

Instructions dated July 29, 1986 Project No. OPR-0186-MI-86

Vessel NOAA Ship MT MITCHELL

Chief of party CAPT F.T. Smith, NOAA

Surveyed by LCDR Greenwalt, LT Diaz, LTJG Harris, ENS Jeffers, ENS Montgomery, ENS Bradley, ENS Schattgen, ENS Stenger, ENS Hoffmen

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

Graphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

~~Protracted by~~ Verification by Thelma O. Jones Automated plot by PMC Xynetics Plotter

~~Verification by~~ Evaluation by I. Almacen

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths of Fathoms

REMARKS: All times are Coordinated Universal Time (UTC)

Revision and marginal notes in black generated during office processing.

Separates are filed with the hydrographic data.

AWOIS/SURF MSM 12/8/88

SC 325-97
K.W.W. 8/14/92

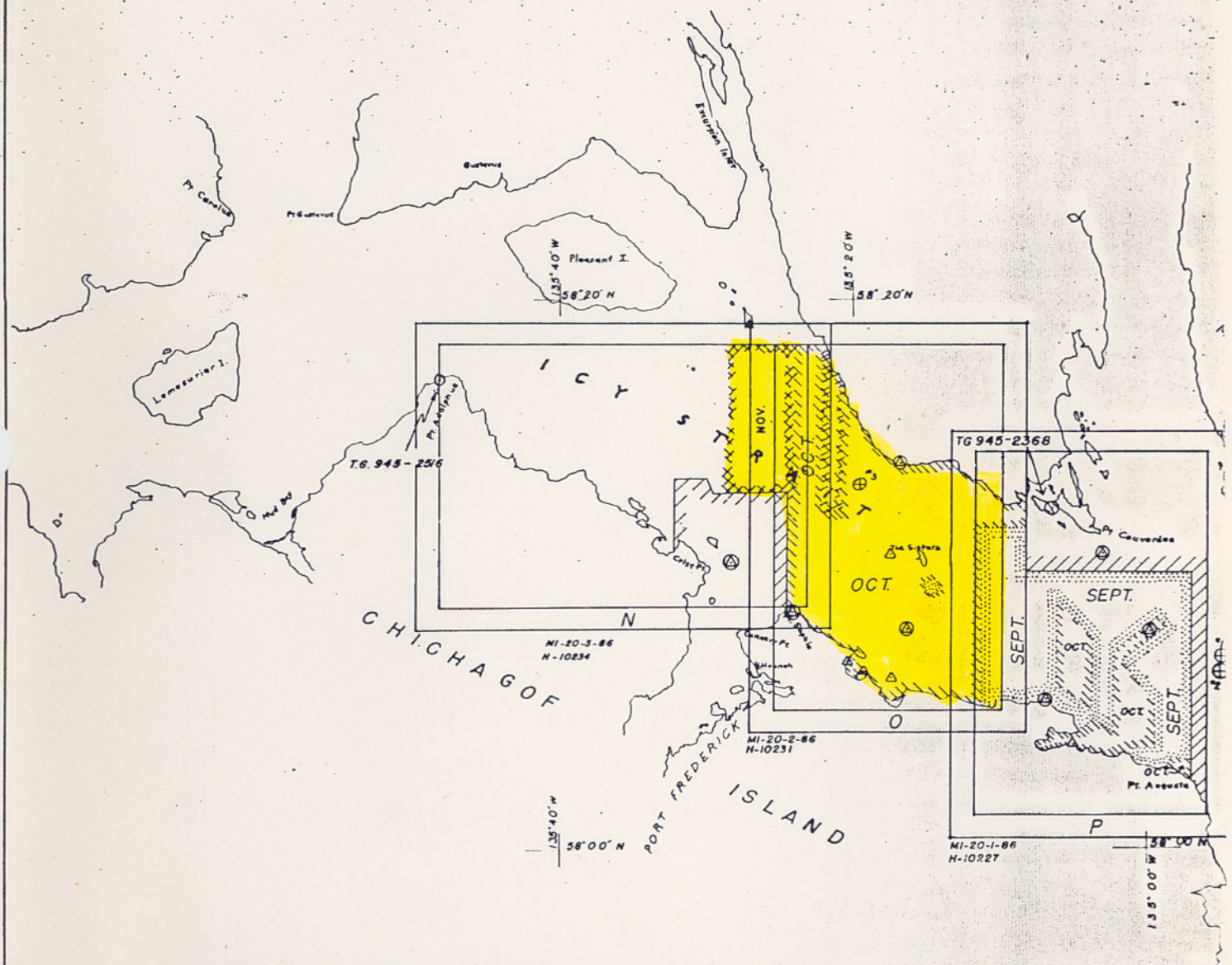
NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

OPR-0186-MI-86
ICY STRAIT, AK.
SEPT - NOV 1986

NOAA SHIP M.T. MITCHELL
FIDEL T. SMITH CAPTAIN, NOAA
COMMANDING

FROM CHART 17300-



MONTH	SEP	OCT	NOV
SQ. NM SOUNDINGS	35.8	80.6	163
L.NM SOUNDINGS	546.2	1375	398
.NM MISC. DISTANCE	248	383	122
LNM TO AND FROM	276	523	84
BOTTOM SAMPLES	0	91	37
NANSEN CAST ⊕	1	1	1
CONTROL STATIONS △	1	4	1
TIDE GAGE ⊙	1	0	1

TABLE OF CONTENTS

APPENDICES

* have been filed with SEPERATES #1

Descriptive Report
To Accompany
Hydrographic Survey H-10231
Field Number MI-20-2-86
Captain Fidel T. Smith, Commanding

A. PROJECT

This project was conducted in accordance with Project Instructions OPR-0186-MI-86, issued 29 July 1986 and amended by Change No.1, dated 4 August 1986 (See Appendix XIII). SEE EVALUATION REPORT SECTION I

This survey is O-Sheet as designated on the sheet layout dated 30 August 1986.

This survey provides contemporary hydrographic survey data for the existing nautical charts which cover Icy Strait, Alaska. This project responds to requests from NOAA, U.S. Coast Guard, Defense Mapping Agency, representatives of state and local governments, Alaska Draggers Association, Nor'Wester Magazine, and Seine Boat Owners and Operators. ✓

This survey will supersede hydrography conducted during the late 1800's and early 1900's. The use of modern techniques and equipment increases the level of accuracy and bottom mapping confidence for this portion of Icy Strait. ✓

B. AREA

This survey covers a portion of Icy Strait, which lies between Point Sophia to two miles east of The Sisters. This area includes the waters in and around The Sisters, Sisters Reef, Spasski Island, Spasski Bay and Pulizzi Island. The survey is bound as follows: ✓

To the NORTH by: Northern Shore of Icy Strait

To the SOUTH by: Southern Shore of Icy Strait

To the EAST by: LONGITUDE 135° 11'W and H-10227

To the WEST by: LONGITUDE 135° ~~19~~ 28'W and H-10234 *

* THIS SURVEY WAS INCOMPLETE AND WAS MADE PART OF H-10231

Sounding operations were conducted on this survey during the period 19 October through 14 November 1986. During this project the weather was generally conducive to launch hydrography. Two days of scheduled launch work were cancelled because of adverse weather conditions and on these ✓

days the ship was used to collect bottom samples or perform Nansen casts.

The area is a fjord created by severe glaciation which occurred during the Pleistocene Epoch. The area which was covered by an ice sheet is strewn with till and is characterized by typical glacial land forms. This accounts for the extreme irregularity of the bottom in some areas, and in the numerous steep slopes both along shore and in areas which parallel the direction of major ice movement.

C. SOUNDING VESSELS

The NOAA Ship MT MITCHELL (S-222), and four Jensen launches were used as sounding vessels for this survey. The vessel numbers and days of production are as follows:

EDP#	VESSEL	HULL #	DAYS of PRODUCTION
2220	MT MITCHELL	222	292, 301, 305
2223	JENSEN LAUNCH	1021	275-278, 290 294-296, 302, 306, 307
2224	JENSEN LAUNCH	1012	275-279, 292, 295, 296, 302, 304, 306-308, 310, 318
2225	JENSEN LAUNCH	1003	268, 275, 279, 290-292, 294-296, 302-304, 306, 310, 317
2226	JENSEN LAUNCH	1004	268, 272-281, 294, 295, 302, 303, 318
2227	BOSTON WHALER		307

The NOAA Ship MT MITCHELL is a Class II hydrographic survey vessel. The launches are standard 29-ft aluminum Jensen survey launches. No special or unusual modifications were made to any of these vessels and no major problems were encountered.

Vessel 2227, a 17-ft Boston Whaler, was used on day 307, to define the limits of a rocky shoal near Neck Point.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

This survey was conducted using predicted tides. Tide tapes were generated using Juneau, Alaska as the reference station and corrected as per Project Instructions.

The station used for tidal datum determination was Swanson Harbor, Icy Strait, Alaska (945-2368). It was installed and maintained by ship personnel. See the FIELD TIDE NOTE included in Appendix II of this report.

Smooth tides were requested from Chief, Tides and Water Levels Branch (N/OMA12) in a letter dated December 4, 1986. A copy of this letter is included in Appendix XI.

For a list of the sounding equipment and corrections to echo soundings, see SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS REPORT for OPR-0186-MI-86.

Settlement and Squat for all four of the MT MITCHELL launches was determined prior to the survey. The corrections were less than 0.1 fathom for all launches. This value is negligible and not applied to soundings.

All survey records were scanned by survey personnel and commissioned officers. In scanning the echograms, all significant peaks, deeps, and incorrectly digitized soundings were inserted and corrected on the electronic corrector tape. These changes were then rechecked.

Sounding disagreements were encountered in areas where DSF 6000N narrow beam and wide beam soundings overlapped along steep gradients. Generally, in areas where water depths were less than 100 fathoms, and narrow beam soundings were digitized. In areas where water depths exceeded 100 fathoms, especially along steep gradients, DSF 6000N wide beam soundings were digitized. Discrepancies between sounding were observed where these narrow and wide beam soundings overlapped. In areas of steep gradients, sounding disagreements between wide and narrow beam soundings were as much as 30 fathoms. The majority of the disagreements were resolved by rescanning the echogram and selecting the narrow beam trace if it was evident on the record.

Soundings were in -1.8 fathoms. Survey depths from this survey ranged from -2.3 fathoms to 257 fathoms. The final field sheets were plotted using predicted tides and velocity corrections.

The "Day Record" on all range-range master tapes may be in error. The 01 March version of RK-112 incorrectly indicated which beam of the echo sounder was being digitized. The digitized beam was noted on the echogram.

Lead lines were used to determine least depths on several shoals. The lead line calibration records can be found in the SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS REPORT.

E. HYDROGRAPHIC SHEETS

All field sheets were generated aboard the MT MITCHELL with the PDP 8/e computer and Hydroplot system. Hydrographic survey data is presented on two final field sheets at a scale of 1:20,000 showing main scheme hydrography and least depths. Two overlays (1:20,000) show shoreline, crosslines and developments. Spasski Bay and an area north of Neck Point are represented on separate 1:5,000 scale inserts.

A 100-meter line spacing was used on this survey because of the very complex and radically uneven bottom. This resulted in a congestion of soundings on the final field sheet, but increased the bottom mapping confidence without returning numerous times for developments. The boat sheets are extremely congested and contain many overlapped soundings. An attempt was made to "NOT SMOOTH PLOT" (NSP) the overlapped soundings in order to make the final field sheet more legible.

Parameter tape printouts for all plotted sheets are included in Appendix I. All field records and tapes will be forwarded to N/MOP21 for verification.

F. CONTROL STATIONS

A detailed description of horizontal control work can be found in the HORIZONTAL CONTROL REPORT. The HORIZONTAL CONTROL REPORT was forwarded to MOP21. A list of all signal names and geodetic positions is included in Appendix VI of this report. The horizontal control stations are based on NAD 1927.

G. HYDROGRAPHIC POSITION CONTROL

This survey utilized several means of hydrographic position control: Range/Range with ARGO and Falcon Mini-Ranger, range/azimuth with Falcon Mini-Ranger and a theodolite, and visual.

The majority of the control on this sheet utilized AGRO in the range/range mode. ARGO antennas and Falcon Mini-Ranger remote units directly over known geodetic control stations, except at ARGO station First 2 1922 where an offset was calculated with a theodolite and a steel tape because the antenna could not be placed over the mark.

Spasski Bay was surveyed using range azimuth (Mini-Ranger and theodolite). The theodolite and Mini-Ranger were set up on Pulizzi Island.

The development of the AWOIS item no. 51073 was controlled with Mini-Ranger (range/range). The Mini-Ranger remote units were located on Spasski Island and Pulizzi Island with station 2309 (SPASSKI ISLAND LIGHT #12) as the left station and station 620 (PULIZZI 1986) as the right.
114

Detached positions on the reef which lies to the east of Neck Point and bottom sample taken in Spasski Bay were positioned by observing sextant angles to visual signals erected over geodetic stations.

ARGO calibrations where conducted using two methods. The first method was a three range Falcon Mini-Ranger fix, and RK 561 to set the whole lane count and calculate a partial lane corrector for RK 112. The second method was a static calibration using a pole established on Sisters Reef. This pole was guyed in a vertical position directly over a third order station established by the MT MITCHELL. Sisters Reef is located approximately 1.5 Nm. west of Sisters Island.

Antenna distance (ANDIST) corrections used are:

VESNO	ARGO	Mini-Ranger
2220	ANDIST = +6.0	ANDIST = 0.0
2223	ANDIST = -3.5	ANDIST = 0.0
2224	ANDIST = -3.5	ANDIST = 0.0
2225	ANDIST = -3.5	ANDIST = 0.0
2226	ANDIST = -3.5	ANDIST = 0.0

A complete description of the hydrographic position control for this survey is included in the, HYDROGRAPHIC POSITION CONTROL REPORT.

H. SHORELINE

Shoreline is shown in brown and is for orientation. See Evaluation Report Section 2. This shoreline was transferred to the final field sheets from a 1:20,000 scale enlargement of NOAA chart 17316 (30 October 1982,14th Edition, scale 1:80.000) and USGS Quadrangle

Juneau, Alaska (A-4) 1948 scale 1:63,360, as noted on the final field sheets. This shoreline has not been verified as no shoreline manuscripts were available for the project area. SEE EVALUATION REPORT SECTION 2

A timber and earth pier on the north shore LAT. 58° 17' 20" N, LONG.135° 21' 18" W, was not previously charted. The top of the pier is approximately 10 ft above MLLW. The pier was apparently constructed to support logging operations in the area. The MT MITCHELL established a third order station in the southeast corner of the pier for static calibration purposes.

Recommendation: Shoreline for The Sisters, Spasski Island and Pulizzi Island should be transferred ~~form~~ from the new shoreline manuscripts (available in 1987). Charted shoreline appears to be in error and should be supersede by shoreline from 1987 manuscripts. CONCUR

I. CROSSLINES

A total of 128.6 LNM of crosslines were run. This represents 10.9% of the total mainscheme miles (1179.6 LNMS) and exceeds the criteria specified in Section 1.4.2 of the HYDROGRAPHIC MANUAL.

Crossline soundings are generally in agreement with mainscheme soundings. The largest discrepancies of 4 to 5 fathoms are found in areas which have nearly vertical slopes in 90 to 120 fathoms of water. There are two such areas:

LAT. 58° 11'N, LONG. 135° 18'W

LAT. 58° 10'N, LONG. 135° 12'W

Soundings recorded by each MT MITCHELL launch are in agreement with each other.

J. JUNCTIONS

This survey junctions with three contemporary surveys.

REGISTRY NO.	
H-9990 (1981)	Junction lies along longitude 135° 24.5' from the southern Shoreline north to Lat. 56° 11.90'. The junction soundings agree to within 1 fathom.
SCALE 1:10000	

H-10227 (1986)
SCALE 1:20000

Junction with this survey lies along the entire eastern edge of the survey limits (LONG. 135° 08.0'W). All soundings and contour lines are in excellent agreement. This survey was conducted concurrently with H-10231.

H-10234 (1986)
SCALE 1:20000

Junction with this survey lies along the entire western edge of the survey limits (LONG. 135° 24.0'W). All soundings and contour lines are in excellent agreement. This survey was conducted concurrently with H-10231.

SEE EVALUATION REPORT SECTION 1

H-10257 (1987)
SCALE 1:10,000

This survey junctions To The North of H-10231 Soundings ARE IN SATISFACTORY AGREEMENT

See EVALUATION REPORT Section 5

K. COMPARISON WITH PRIOR SURVEYS

FOR A COMPARISON with H-4227 W/D (1922-23) SEE EVALUATION REPORT, SECTION 6

Comparison between Survey ~~H-10231~~ H-2562 (1901, 1:40000) and the current survey (H-10231) shows many differences in individual soundings as well as some lesser least depths on shoals. The following is an item by item discussion of each discrepancy:

Survey H-10231 indicates a 53 fms. shoal at 58° 12.6'N, 135° 17.5'W. The prior survey shows only a 96 fms. sounding.

Recommendation: H-10231 supersede prior survey

CONCUR

H-10231 indicates 11.~~0~~9 fms. sounding at 58° 07.4'N, 135° 17.2W. The prior survey shows 29 fms.

Recommendation: H-10231 supersede prior survey.

CONCUR

On H-10231 Spasski Bay general does not compare well with the prior survey (H-2662). There is much evidence of shoaling since the 1901 survey, along the western and southern shores.

Recommendation: H-10231 supersede prior survey.

CONCUR

In general the contour lines from US topographic quad map USGS Quadrangle Juneau, Alaska (A-4) 1948 scale 1:63,360 compare well with H-10231.

L. COMPARISON WITH CHART

Comparison with NOAA Chart No. 17300 24th Edition June 15, 1985

The investigation of AWOIS item 51073 is indicated on Charts 17300 and 17316, as a rock position doubtful, revealed shoaling approximately 400 meters south by southeast of the charted position. The least depth of 1.8 fathoms is at 58° 07'.49'N, 135° 19'.30'W. This shoal is 370 meters bearing 146° from the charted position doubtful. This search was conducted by first running 25-meter spaced lines then 10-meter spaced lines over the charted position and suspect areas. This AWOIS item was reported by a vessel which grounded on this shoal. The method which the vessel positioned itself while aground is unknown.

Recommendation: Delete position doubtful charted at LAT.58° 06'.5'N, LONG. 135° 19'.25'W and chart as a rock at 58° 07'.49'N, 135° 19'.30'W.

A charted sounding of 146 fms. at 58° 14.0'N, 135° 18.2'W compares to 122 fms. sounding from H-10231. The steeply sloping bottom combined with errors from transferring the charted sounding are contributing factors in the 42 fms. discrepancy.

Recommendation: Supersede ~~prior~~ ~~survey~~.

At 58° 12.2'N, 135° 21.0'W the prior survey indicates a depth of 145 fms. H-10231 shows a depth of 130 fms. which is 15 fms. shoaler.

Recommendation: Supersede ~~prior~~ ~~survey~~.

Comparison with NOAA Chart No. 17302 14th Edition October 3, 1981:

Chart 17302 junctions with the western edge of H-10231. Soundings along longitude 135° 23.5'W agree to within 5% except for a 127 fms. sounding which compares to a 116 fms. sounding on H-10231 at LAT. 58° 17.4'N, LONG 135° 23.5'W.

In Spasski Bay, Chart No. 17302 shows a rock awash symbol just to the southeast of Neck Point 58° 18.9'N, 135° 18.8'W. Spasski Bay inset (sheet 5 of 6) shows a 2.3 fms.* to the north of the rock awash symbol. A search was not conducted to disprove the rock awash at that location.

* 3.3 fms, Latitude 58°06'57.99"N, Longitude 135°18'52.45"W

Recommendation: Delete the charted rock symbol at 58° 06'.9'N, 135° 18'.9'W, and add rock awash symbol

at 58° 07.0'N, 135° 18.8'W. Also the rock ledge around Neck Point should be redefined with using the H-10231 survey data.

The rock awash symbol at 58° 10.7'N, 135° 17.4'W which locates Sisters Reef was found to be larger than on single rock. The rock awash symbol should be changed to a reef symbol located at 58° 10.7'N, 135° 17.5'W.

Recommendation: Delete rock awash and chart as a reef.

Two negative soundings located southeast of The Sisters 58° 09.8'N, 135° 14.75'W, -0.4 fms. and 58° 9.74'N, 135° 14.72'W, -0.3 fms. position an uncharted reef.

Recommendation: The area southeast of The Sisters be recharted to show more accurately this reef.

A 1.75 fathom sounding on Chart No. 17302 was searched for with 25 meter spaced lines and not found. This sounding was from a wire drag survey [H-4227 WD 1922-23, 1:40,000]. This survey (H-10231) indicates 80 fms. of water in the area of the 1.75 fms. sounding. The reef mentioned in the above paragraph are some 200 meters to the north of this 1.75 fms sounding.

Recommendation: Carry forward the 1.75 fms. sounding from H-4227WD survey.

Comparison with NOAA Chart No. 17316 14th Edition October 30, 1982, 1:80,000

H-10231 compares well will this chart except for discrepancies on features common to other charts which were mentioned previously. Soundings generally agree to within 10 fms. in 100 fms of water. Difference in scale can be contributed to some disagreement between soundings.

M. <u>ADEQUACY OF SURVEY</u>

This survey is considered complete and is adequate to supersede all prior surveys of the area excepd as mentioned below.

An area southwest of Pulizzi Island (58° 06' 00" N, 135° 17' 35" W) was not surveyed because it was over looked.

An area along the north shore of Icy Strait (135° 20' 00" N, 58° 15' 48" W), where survey coverage did not meet requirements. AREA SURVEYED IN 1987

It is recommended that these areas be surveyed during future operations in this area.

N. AIDS TO NAVIGATION

There are no floating aids to navigation within the limits of this survey. There are two fixed aids to navigation Sisters Island Light and Spasski Island Light. Both of these lights are maintained by the United States Coast Guard.

The Sisters Light (Light List #24135) is 69 feet above the water on the southern end of the northern (larger) part of The Sisters. There are many lighted antennas on The Sisters and The Sisters Light can be distinguished by its flashing white 4 second characteristics.
LAT. 58° 10' 8.600" N, LONG. 135° 15' 22.602" W

Spasski Island Light 12 (Light List #24140) is located on the northern end of Spasski Island approximately 30 feet above the water. The light is mounted on top of a white 8 ft tall wooden box with triangular day shapes mounted on the northeast and northwest sides. The light's characteristics are white flashing 6 seconds. LAT 58° 07' 59.096" N, LONG 135° 16' 11.718" W.

The Sisters Light and Spasski Island Light aid the mariner in navigating safely between Sisters Island to the north and Spasski Island to the south. The distance between the islands is small (2.5 Nm.) as compared to the width of Icy Strait to the east and west (8.5 Nm.).

There are no overhead cables, bridges or pipelines within the limits of this survey. There is a submarine cable area that runs along the northern limit of this survey.

There is a ferry which transits through Lynn Canal to Hoonah, Alaska and from Hoonah to Chatham Strait. The ferry runs on a weekly schedule and its route should not be displayed on the chart. The ferry does not always follow the same track through the area.

Recommendation: Add a note to charts 17300 and 17316 that the ferry transits this area. CONCUR

O. STATISTICS

EDP NO. 2220

Total number of postions	63
Linear nautical miles of mainscheme hydrograph	0
Linear nautical miles of crosslines	0
Linear nautical miles of developement	0
Total linear nautical miles of hydrography	0.0
Total square nautical miles of hydrography	0

EDP NO. 2223

Total number of postions	963
Linear nautical miles of mainscheme hydrograph	151.9
Linear nautical miles of crosslines	18.2
Linear nautical miles of developement	10.4
Total linear nautical miles of hydrography	180.5
Total square nautical miles of hydrography	7.3

EDP NO. 2224

Total number of postions	1750
Linear nautical miles of mainscheme hydrograph	382.3
Linear nautical miles of crosslines	49.2
Linear nautical miles of developement	43.1
Total linear nautical miles of hydrography	516.7
Total square nautical miles of hydrography	18.4

EDP NO. 2225

Total number of postions	1537
Linear nautical miles of mainscheme hydrograph	318.3
Linear nautical miles of crosslines	44.5
Linear nautical miles of developement	72.2
Total linear nautical miles of hydrography	435.0
Total square nautical miles of hydrography	15.3

EDP NO. 2226

Total number of postions	1315
Linear nautical miles of mainscheme hydrograph	327.1
Linear nautical miles of crosslines	16.7
Linear nautical miles of developement	80.9
Total linear nautical miles of hydrography	382.6
Total square nautical miles of hydrography	15.7

TOTAL OF ALL SOUNDING VESSELS

Total number of postions	5628
Linear nautical miles of mainscheme hydrograph	1179.6
Linear nautical miles of crosslines	128.6
Linear nautical miles of developement	164.5
Total linear nautical miles of hydrography	1472.7
Total square nautical miles of hydrography	56.7

P. MISCELLANEOUS

Positions 8001 through 8391 and 8499 thru 9181 were used by launches 2223 and duplicated by 2226. During the days with duplicated position numbers launch 2223 was working exclusively in Spasski Bay using range azimuth for hydrographic position control. For VESNO. 2225 position no. 4929 is the last position used on DAY 296 and the first position used on DAY 302, and VESNO. 2226 position no. 6465 is the last position used on DAY 277 and the first position used on DAY 278.

Loran-C comparisons were observed in conjunction with most bottom samples taken by interfacing the 6000 Loran-C receiver with the Hydroplot system by invoking the Hydroplot program RK 112 Loran-C option. Loran-C rates that were monitored are 7960-X and 7960-Y. Loran-C signal strengths were low in the survey area making the recorded rates suspect. This data will be transmitted to the Hydrographic Surveys Branch, Pacific Marine Center (N/MOP23) via the survey's raw data master tapes.

No unusual or anomalous tidal conditions or currents were observed. Due to wind and sea conditions currents could not be accurately calculated from vessel heading. No anomalous or unusual magnetic variations were observed.

When the wind would blow from the northeast, the entrance to Spasski Bay would fill with breaking swells much larger than would be expected for wave conditions in close proximity or for wind velocities. Several contributing factors to the larger waves sizes in this area are; shoaling, tidal currents, and the the fact that Spasski Bay forms a catch basin for waves with a long fetch.

Bottom samples were collected and submitted to the Smithsonian Institution. Copies of Oceanographic Log M sheets are included in Appendix IX.

Q. RECOMMENDATIONS

The area surveyed has a rugged and complex bottom. Prior survey data was sparse and did not adequately define the bottom topography. Although no dangers to surface navigation were found, there are dangers to subsurface navigation and to fishing gear. For this reason, it is recommended that the next edition of NOAA Charts No. 17300 and 17316 show the depth contours at 20 fathom intervals to 100 fathoms as found during this survey.

It is recommended that data compiled for this survey supersede all existing charts and information for charting purposes with the exceptions of the areas mentioned in Section M of this report and shoreline features and details. There is no current photogrammetric data for this survey. Since numerous discrepancies of shoreline features were found. It is recommended that shoreline manuscripts be compiled for this survey.

SEE EVALUATION REPORT SECTION 2

Specific recommendations concerning charted features and other items can be found in Section H, J, L, and N of this report.

R. AUTOMATED DATA PROCESSING

The following programs were used in acquiring and processing data for this survey.

RK 112 03/01/86	Hyperbolic Range/Range Hydroplot
RK 116 03/01/86	Range-Azimuth RTS
RK 201 04/18/75	Grid, Signal, and Lattice Plot
RK 221 07/25/86	Comb R/R and Hyperbolic Plot (Non-RT)
RK 226 07/25/86	Range-Azimuth Posn and Snd Plot (Non-RT)
RK 300 10/21/80	Utility Computation
RK 330 05/04/76	Data Reformat and Check
RK 360 02/02/86	Electronic Corrector Abstract
RK 362 08/20/84	RK 330 and RK 602 Combined
RK 500 11/10/72	Predicted Tide Generator
RK 530 12/01/82	Layer Corrections for Velocity
RK 561 12/01/82	Hyperbolic and Range Range Geodetic Calibration
RK 602 12/08/82	Extended Line Oriented Editor
RK 612 03/22/78	Line Printer List

S. REFERENCE TO REPORTS

The ship's personnel installed two tide gage stations during this survey. Only one of the stations were required for this survey. The FIELD TIDE NOTE has been submitted to Chief, Tide and Water Levels Branch (N/OMA12) in Rockville, Maryland. All leveling records and monthly tide data have been submitted to that office.

The following is a list of reports that have been submitted to Pacific Marine Center:

Reports	Date Submitted
Coast Pilot Report	December 1986
Horizontal Control Report	January 1987
Hydrographic Position Control Report	January 1987
Sounding Equipment and Corrections To Echo Sounding Report	January 1987

All supplemental and related data will be forwarded with this report.

Prepared by:

Paul L. Schattgen
ENS, NOAA

Submitted by:

Fidel T. Smith,CAPT, NOAA
Commanding Officer
NOAA Ship MT MITCHELL

FIELD TIDE NOTE
OPR-0186-MI-86
ICY STRAIT, ALASKA

Field tide reduction of soundings was based on predicted tides from Juneau, Alaska as listed in "Tide Tables, 1986, West Coast of North and South America." These were corrected for the hydrographic survey area using zoning provided by Sea and Lake Levels Branch (N/OMS12) as follows:

Time Correction: (Times are direct)
Height Correction: (X 0.92)

These tides were interpolated using a PDP8/e computer and program AM 500. The time zone for all predicted and recorded tides is UTC. The tidal datum is MLLW.

In accordance with Project Instructions, OPR-0186-MI-86, the following tide gages were used to obtain tidal information:

STATION #	NAME	LOCATION	FIELD SHEET
945-2210	JUNEAU, ALASKA	58° 17.9'N 134° 24.7'W	Primary gage used as control for datum determination
945-2368	SWANSON HARBOR, ALASKA	58° 12.9'N 135° 24.7'W	20-1-86 "O" (H-10227) 20-2-86 "P" (H-10231)
945-2516	PT. ADOLPHUS, ALASKA	58° 17.2'N 135° 48.2'W	20-3-86 "N"

JUNEAU, ALASKA (945-2210):

The primary gage in Juneau, Alaska served as the control station for datum determination. This gage was established by NOAA and maintained during the entire project by a contract observer, Mr. Jim Rodewald, P.O. Box 215, Juneau, Alaska, 99803.

Levels were run from the ETG scribe to five permanent benchmarks, including the primary benchmark. Opening levels, run on September 15, 1986, and closing levels, run on November 7, 1986, agreed well with elevations differing by 0.007 feet or less. These levels also agree well with levels run by Pacific Operations Group on June 12 and 13, 1986 with the exception of the section between the ETG scribe and BM B (1982). The difference on this section was 0.015 feet. Pacific Operations Group has been notified of this discrepancy. During the period of hydrography there was no evidence of staff or crustal movement. It is recommended that a new primary benchmark be designated. The present primary benchmark, (BM #8, 1922), was originally set vertical in the side of a building 0.5 feet above the sidewalk. However, the benchmark is no longer completely

vertical making it difficult to position the level rod for accurate measurement.

SWANSON HARBOR, ALASKA (945-2368):

On September 17, 1986 a 0-30 foot BRISTOL Bubbler tide gage, S/N 67A-10292, was installed six feet above high water line in a protected rock niche on the southeast side of Ansley Island, Swanson Harbor, Alaska. The orifice was placed 200 feet offshore from the gage and was secured to a fifty pound concrete anchor. On September 18th a 1" galvanized steel pipe staff was installed near a large rock outcrop approximately 175 feet offshore from the gage. This staff broke on September 22nd and was replaced on September 23rd by a 4" X 4" wood staff.

The gage was operated and maintained by MT MITCHELL personnel and ran satisfactorily with only minor problems from the time it was installed on September 17th until it was removed on November 15, 1986. On September 23rd it was noticed that the gage was running on local time and at 2000Z it was reset to UTC. The gage continued to run on UTC for the remainder of the project. On October 25th at 1600Z the marigram chart paper ran out. This was not corrected until October 28th (DOY: 301) at 2300Z. This incident occurred during one of the ship's inport weekends. The MT MITCHELL, (VESNO: 2220), ran four hours of bottom samples, (DOY: 301: 1850Z-2300Z), while the gage was not operating. On October 29th at 0700Z the marigram jumped sprockets. This was corrected on October 30th at 0100Z. The hourly heights scaled from the marigram were corrected for both time and height offsets.

Based on the average of all staff to gage comparisons the height datum for this gage is as follows:

Pipe Staff (SEPT. 19-SEPT. 23 @ 1600Z):	0.0 on marigram equals -3.9 on the staff
Wood Staff (SEPT. 23 @ 1700Z-NOV. 15):	0.0 on marigram equals -3.4 on the staff

There was no evidence of orifice movement . All hourly heights of tides were abstracted from the marigrams by MT MITCHELL personnel and timing errors were distributed linearly throughout the period between observations.

Three historic permanent benchmarks, including the primary benchmark, were recovered by MT MITCHELL personnel on September 16th. On September 17th MT MITCHELL personnel established two permanent marks. Opening levels were run to these five benchmarks on September 18 and 19, 1986. On September 21st

levels were run from BM 2368 B (1986) to the 1" galvanized steel pipe staff. Then on September 23rd, following the installation of the 4" X 4" wood staff, levels were again run from BM 2368 B (1986) to the new staff. Closing levels were run to all five permanent benchmarks and the staff on November 13, 14, 15, and 16, 1986. The elevation differences obtained from the opening and closing level runs indicate that there was staff movement of up to 0.05 feet. The distance from the staff to the furthest benchmark is approximately one and a quarter miles. The level run itself is difficult. The terrain varies from gravel beach to large rock outcrops and rocky slide areas to spongey marsh areas. The complete level run cannot be finished in one day and must be accomplished at various states of tide.

It is recommended that BM 1 (1901) be designated as the primary benchmark because it is set in bedrock. The present primary benchmark, BM 4 (1959), is atop a large boulder which rests on spongey ground.

PT. ADOLPHUS, ALASKA (945-2516):

On November 4, 1986 a 0-30 foot BRISTOL Bubbler tide gage , S/N 67A-10294, was installed ten feet above high water line on top of a large rock outcrop on the second rocky point west of Pt. Adolphus Light on the northeast tip of Chicagof Island, Alaska. It is at the same site used by NOAA Ship DAVIDSON in 1976. The orifice was placed 220 feet directly offshore from the gage and was secured to a 1" galvanized steel pipe "T"-stand which was anchored in place with rocks. On November 5th the orifice exposed at low tide. At 1800Z on November 5 it was moved to deeper water. After the orifice was manually moved to deeper water there was no further evidence of orifice movement.

On November 5th a 4" X 4" wood staff was installed 200 feet offshore from the tide gage at the northwest edge of a large rock outcrop.

The gage was operated and maintained by MT MITCHELL personnel and ran satisfactorily with only minor time errors from the time it was installed on November 4th to the time it was removed on November 15, 1986. All times were recorded in UTC.

Based on the average of all staff to gage observations, the height datum for this gage is as follows:

NOV. 4 @ 2200Z - NOV. 5 @ 1843Z: 0.0 on marigram equals -2.8 on staff

NOV. 5 @ 1941Z - NOV. 15 @ 1830Z: 0.0 on marigram equals -9.1 on staff

Additionally, all hourly heights of tides were abstracted from the marigrams by MT MITCHELL personnel and timing errors were distributed linearly throughout the period between observations.

On October 30, 1986 MT MITCHELL personnel established three permanent benchmarks. Opening levels run to these three benchmarks, on November 5th and 6th, and closing levels run on November 15, 1986, agree very well. There is no evidence of crustal or staff movement.

ZONING:

Field inspection of tide data indicates that predicted tidal times and ranges are very similar to actual tides obtained on the marigrams. As per Project Instructions OPR-MI-0186-86 use the following tidal information for final plotting:

FIELD SHEET	TIDE STATION
Survey H-10227 Survey H-10231	Swanson Harbor, Alaska Station #945-2368
Field Sheet MI-20-3-86	Pt. Adolphus, Alaska Station #945-2516

CONTROL STATIONS

SIGNAL #	STATION NAME	SOURCE	TYPE
100	FUNTER 2, 1922	USC&GS	Electronic
130	HANUS REEF LIGHT, 1986	MTM	Calibration
140	ROCKY ISLAND LIGHT, 1986	MTM	Calibration
150	PEACH 2, 1922	USC&GS	Calibration
200	FIRST 2 ARGO ECC, 1986	MTM	Electronic
201	FIRST 2, 1922	USC&GS	Calibration
212	SISTERS, 1986	MTM	Calibration
230	SPASSKI ISLAND LIGHT 12	MTM	Calibration
300	EGAN, 1959	USC&GS	Electronic
301	EGAN, 1959	USC&GS	Calibration
320	SOPHIA 2, 1922	USC&GS	Calibration
400	SCRAGGY, 1901	USC&GS	Electronic
610	NECK POINT, 1986	MTM	R/AZ Control
620	PULIZZI, 1986	MTM	R/AZ Control
630	SPASSKI, 1986	MTM	R/AZ Control

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [x] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [x] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
MT MITCHELL	Alaska	Icy Strait	11/86

The following objects HAVE [ ] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-0186-MI/86	N/A	H-10231	NAD 27

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LT.	(THE SISTERS LIGHT) Light List #24135 FL W 4 sec.	58-10	08.600	135-15	22.602		F-3-6-L	17300 17316
LT.	(SPASSKI ISLAND LIGHT 12) Light List #24140 FL W 6 sec.	58-07	59.096	135-16	11.718		F-3-6-L	17300 17316
	L-821(88)							

RESPONSIBLE PERSONNEL

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	Fidel T. Smith, Captain, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED		FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ 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

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

☆ U. S. GPO:1975-0-665-080/1155

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN ~~SURVEY~~ SERVICE
NOAA Ship MT MITCHELL S-222
439 W. York Street
Norfolk, Virginia 23510-1114

19 October 1986

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

RE: Notice to Mariners

REF: Radio Message 192240Z OCT 86

Dear Sir:

It is requested that the following be published in the Seventeenth Coast Guard District Local Notice to Mariners:

"The NOAA Ship MT MITCHELL has built a temporary structure on Sisters Reef, 1.1 nautical miles west of The Sisters, at latitude 58°10'47.2"N, longitude 135°17'29.7"W. The structure is 18 feet tall and is a 1½-inch diameter steel pipe guyed in place. A two-foot diameter orange float is tethered to the top of the pipe.

The structure is a temporary survey station being used in support of the recharting effort in Icy Strait. It will be removed by 17 November 1986.

NOS charts affected are:

17300	24th edition, 15 June 1985
17316	14th edition, 30 October 1985

Mariners are urged to exercise caution while transitting the area."

Sincerely,

Captain Fidel T. Smith, NOAA
Commanding Officer
NOAA Ship MT MITCHELL

October 21, 1986 N/CG243:GHM

TO: N/MOA2 - Charles B. Ellis

FROM: N/CG243 - George H. Mastrogianis

SUBJECT: Assignment of Registry Number

The following hydrographic registry number, H-10231, is assigned in accordance with the information listed below:

Registry No.	Field No.	Area	Project No.
H-10231	MI-20-2-86 (Sheet O)	ALASKA ICY STRAIT POINT SOPHIA TO TWO MILES EAST OF THE SISTERS	OPR-O186

cc:
N/MOA2x1 - Bouchard
N/MOA23 - MacFarland
N/MOP21 - Richards
N/CG24x2 - Wellman

APPROVAL SHEET

The field work on this Hydrographic Survey was under my daily supervision. I have reviewed and approved all final field sheets and records. This survey is complete and adequate to supersede all prior surveys in this area.

Fidel T. Smith, Captain, NOAA
Commanding Officer
NOAA Ship MT MITCHELL

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10231

GEOGRAPHIC NAMES

Name on Survey
ALASKA, ICY STRAIT, THE SISTERS AND VICINITY TO INCLUDE POINT SOPHIA

	A ON CHART NO. 17316, 17300	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K Manuscript TP-	
ALASKA (TITLE)										1
CHICHAGOF ISLAND	17300 17316								01313 01314	2
ICY STRAIT	17300 17316								01310-11 01313-14	
NECK POINT	17300 17316								01313	4
POINT SOPHIA	17300 17316								01313	5
PULIZZI ISLAND	17300 17316								01313	6
SCRAGGY ISLAND	17300 17316								01313	7
SISTERS REEF	17300 17316								01313	8
SPASSKI BAY	17300 17316								01313	9
SPASSKI CREEK	17316								01313	10
SPASSKI ISLAND	17300 17316								01314	11
THE SISTERS	17300 17316								01311 01314	12
										13
										14
										15
										16
										17
				Approved:						18
										19
				Charles E. Harrington						20
				Chief Geographer – N/CG2x5						21
				SEP 23 1987						22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10234
(Merged to Survey H-10231)

HYDROGRAPHIC TITLE SHEET

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.

MI 20-3-86

State Alaska

General locality Icy Strait

Locality The Sisters and Vicinity to include Point Sophia

Scale 1:20,000 Date of survey November 5 to November 12

Instructions dated August 4, 1986 Project No. OPR-0186-MI-86

Vessel NOAA Ship MT. MITCHELL, Launches 2223, 2224

Chief of party Capt. Fidel T. Smith, NOAA

Surveyed by LCDR Greenawalt, LT Diaz, ENS Jeffers, ENS Hoffman

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

Graphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

~~Protracted by~~ Verification by Thelma O. Jones Automated plot by PMC Xynetics Plotter

~~Verification by~~ Evaluation by I.Almacen

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

REMARKS: Field work on H-10234 was partially completed in 1986. Field data were merged to and became a part of Survey H-10231. Survey registry number H-10234 was rescinded.

Revisions and marginal notes in black generated during office processing. Separates are filed with the hydrographic data.

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

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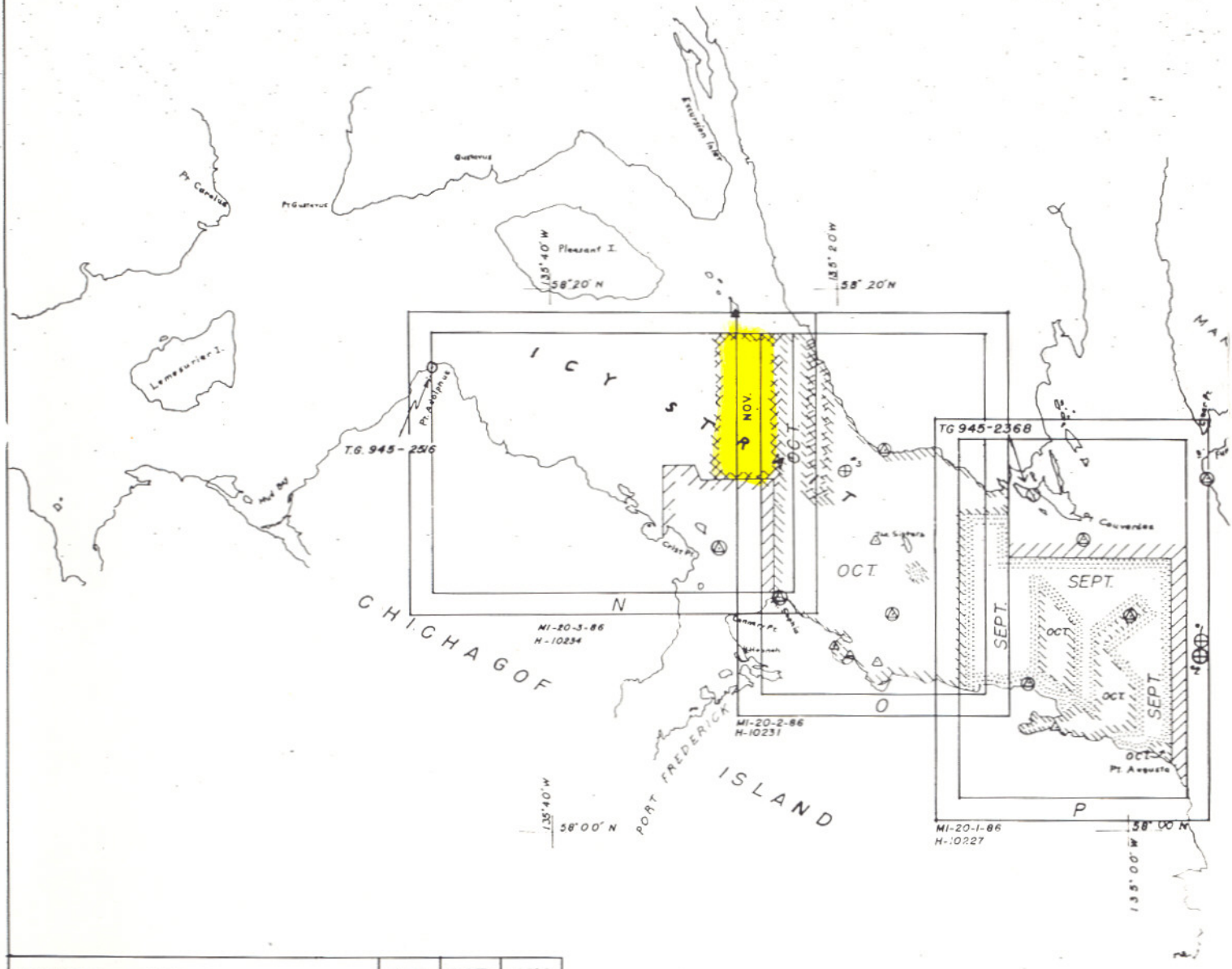
APPENDICES

* have been filed with Separates #2

OPR-0186-MI-86
ICY STRAIT, AK.
SEPT - NOV 1986

NOAA SHIP MT. MITCHELL
FIDEL T. SMITH CAPTAIN, NOAA
COMMANDING

FROM CHART 17300



MONTH	SEP	OCT	NOV
SQ. NM SOUNDINGS	35.8	80.6	163
LNM SOUNDINGS	546.2	1375	398
LNM MISC. DISTANCE	248	383	122
LNM TO AND FROM	276	523	84
BOTTOM SAMPLES	0	91	37
NANSEN CAST ⊕	1	1	1
CONTROL STATIONS △	1	4	1
TIDE GAGE ⊙	1	0	1

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-10234
FIELD NUMBER MI-20-3-86
CAPTAIN FIDEL T. SMITH, COMMANDING OFFICER

A) Project

Hydrographic Survey H-10234 was conducted in accordance with project instructions OPR-0186-MI-86 dated July 29,1986 and Change No. 1 dated August 4, 1986, PMC Oporders, the Hydrographic Manual (4th edition), and the Hydrographic Survey Guidelines.

The purpose of this project is to provide contemporary hydrographic survey data for existing nautical charts covering Icy Strait, Alaska. This project responds to requests from USCG, DMA, representatives of state and local governments of Alaska, NOAA, Alaska Draggers Association, Nor'westing Magazine, and seine boat owners and operators.

This sheet is designated as "N" in the project instructions. The field work for the sheet was not completed but will resume next field season.

B) Area Surveyed

The area surveyed in 1986 lies within Icy Strait, Alaska, located north of Hoonah and Scraggy Islands and south of Porpoise Islands. The area's geological features show that it is a fjord, created by severe glaciation that occurred during the Pleistocene Epoch. The area, which was covered by an ice sheet is strewn with till characterized by typical glacial land forms. This accounts for the irregularity of the bottom, which is slowly uplifting.

The limits of the sheet are as follows: 58° 11' 00" N to 58° 18' 00" N and 135° 24' 00" W to 135° 28' 00" W.

The 1986 field work for this survey commenced on November 5, 1986 and completed November 12, 1986.

C) Sounding Vessels

Two of the NOAA ship MT MITCHELL's survey launches were used as sounding vessels for this survey. The vessel numbers and the days they conducted operations follow:

EDP	VESSEL	HULL#	DAY (DN)
2223	Jensen launch	1021	309-310,316
2224	Jensen launch	1012	309-310

The Jensen launch is a standard 29-foot aluminum survey boat. No special or unusual modifications were made to any of these vessels and no problems were encountered in using them.

D) Sounding Equipment and Corrections to Echo Sounders

The two launches were equipped with dual beam Raytheon DSF-6000N echo sounders as follows:

Sounding Equipment

VESNO	DAY (DN)	INSTRUMENT/MODEL	S/N
2223	309-316	Raytheon DSF 6000N	B044N
2224	309-311	Raytheon DSF 6000N	B036N

Echo sounding equipment was monitored continuously while on line. All hydrographic data were scanned at least twice to insert peaks and deeps between soundings and to ensure proper depth digitization. The effects of excess wave and swell action were adjusted at this time.

MT MITCHELL's survey launches were tested for settlement and squat on August 6, 1986 (DN 218) at Shilshole Bay, Washington. Measurements were conducted in accordance with Section 4.9.4.2 of the Hydrographic Manual. It was determined that there were no applicable settlement and squat corrections for any launch when performing surveys in fathoms.

One barcheck was performed daily, wind and sea conditions permitting. Barchecks were normally done at two fathoms to ensure the echo sounder was operating properly. No leadline comparisons were made because of current and depth of water.

A depth simulator test was conducted daily on each launch's echo sounder using an Electronic Devices, Inc., (EDI), Model 3A Depth Sounder Test Set in accordance with the Raytheon DSF 6000N Echo Sounder Operations and Processing Instructions, dated June 1983.

The launch transducer depth (TRA) was determined by direct measurement of the transducer to the water line; a TRA of 0.3 fathoms was determined. The TRA was applied during the on-line and off-line processing. Sounding corrections for the DSF-6000N apply to both the narrow and wide beam. Depth soundings for the narrow beam data was digitized for H-10234.

Velocity correctors were determined from one Nansen cast. Velocity tables were determined for this survey from this one cast. Velocity corrections were applied to echo sounder depths plotted on the final field sheets.

CAST NO.	DAY (DN)	LAT.	LONG.
3	305	58° 13' 00"N	135° 20' 00"W

Barcheck abstracts, settlement and squat data, Nansen cast data, and velocity correction graphs and tables are included with the Correction to Echo Sounders Report for OPR-0186-MI-86.

TC/TI tapes were made in accordance with PMC Oporder, Appendix Q, dated April 16, 1985. Printouts of TC/TI tapes are included in Appendix D of this report.

Predicted tide correctors were applied to the soundings plotted on the field sheets for this survey. The tide correctors used were from the "1986 West Coast of North And South America Tide Tables", for Juneau, Alaska and are corrected to Icy Strait per section 5.9 of the project instructions. For further information refer to Appendix B, "Field Tide Note".

On all master tape printouts, the beginning day word shows the indicator "5" for the wide beam frequency of the DSF-6000N when it should be "1" for narrow beam. This has been annotated on all master tape printouts, but not on the data tapes.

All hydrography was processed in accordance with PMC Oporder, Appendix Q, dated April 16, 1985. All peaks and deeps and sounding corrections for range/range hydrography were placed on corrector tape. In all cases inserted soundings were positioned by time and course.

E) Hydrographic Sheets

The final field sheets were plotted aboard the MT MITCHELL using a PDP/8E computer and Houston Instrument's Complot Plotter. The 1986 field work consists of one final

field sheet and one overlay for crosslines and developments, both plotted on mylar. Appendix A lists the sheet parameters.

All hydrographic data for this survey will be forwarded to the Pacific Marine Center in Seattle, Washington for verification and smooth plotting.

F) Control Stations

All horizontal control stations used on this survey were recovered and/or established by MT MITCHELL personnel. All geodetic positions were based on the North American 1927 Datum. Conventional traverse and triangulation methods were used throughout this survey. No anomalies in control, adjustment or closures were encountered. All positions meet or exceed third order, Class 1 specifications.

Horizontal Control Stations
OPR-0186-MI-86
H-10234

301 EGAN 1959
200 FIRST 2 ARGO ECC 1986
212 SISTERS 1986
400 SCRAGGY 1901
320 SOPHIA 2 1922
230 SPASSKI ISLAND LIGHT 12

See Horizontal Control Report for OPR-0186-MI-86.

G) Hydrographic Position Control

Hydrographic positioning control was accomplished using the "Cubic Western Data" ARGO System. The control configurations consisted of range/range for all positioning control. The following table is a listing of RPU, CDU, and ALU units used on each sounding vessel.

ARGO EQUIPMENT

VESNO	DAY (DN)	RPU	CDU	ALU
2223	309-316	R0379117	C097842	A047859
2224	309-316	R0682566	C047822	A047851

See the Electronic Control Report for a complete list of shore station equipment, a description of calibration methods, and the determination of final electronic correctors.

No hydrography was performed with weak or less than minimum required control geometry. No unusual atmospheric conditions were encountered that may have affected data quality. ✓

H) Shoreline

There was no shoreline within the limits of hydrography. Shoreline is shown in brown and is for orientation. This shoreline was transferred to the final field sheets from a 1:20,000-scale enlargement of Chart 17316 (30 Oct. 1982, 14th ed., scale 1:80,000). This shoreline has not been verified. ✓

I) Crosslines

All crosslines were run at a minimum of 45 degrees with respect to the main scheme lines and account for 14% of the total lineal nautical mileage. Agreement between crossline and main scheme hydrographic sounding lines is good. Ninety-five percent (95%) of the soundings agree within one fathom. ✓

J) Junctions

This survey junctions with the following surveys:

H-10231, 1986 1:20,000 scale to the east
H-9990, 1981-82 1:10,000 scale to the south
H-10257 1987 1:10,000 See Evaluation Report Section 5

Comparison between junctions were good. Ninety-five percent (95%) of the soundings agree within one fathom. H-10231 was performed by the MT MITCHELL earlier this year and is unverified. All depth contours could be adequately drawn.

K) Comparisons with Prior Surveys

The survey is covered by the following prior surveys:

H-2562 1:40,000 1901
H-~~4277~~ 4227 1:40,000 1922-23 WD

Comparison with both surveys was difficult due to the fact that the surveys were done on one datum then subsequently shifted to the 1927 North American Datum. See Evaluation Report Section 6

In general, comparisons with the prior surveys were good (1-2 fathom).

Field comparison with the wire drag survey was not possible. This was because the photocopy of the original survey received by the MT MITCHELL shows the sweep coverage, but not the color-coded depth clearance as shown on the original survey. Because of the age of the surveys, comparison was of little value other than historical interest.

Recommendation: Supersede all prior surveys with Survey H-10234. See EVALUATION REPORT Section 6

No AWOIS items exist in the area surveyed in 1986.

L) Comparison with the Chart

Comparisons were made with a 1:20,000 scale enlargement of Chart 17316 (Oct 30, 1982, 14th edition) scale 1:80,000 and with Chart 17300, (June 15, 1985, 24th ed.) scale 1:209,978. The soundings on the chart for this area were derived from the prior surveys discussed in section K of this report.

In general, comparison with the chart is good (one fathom). In the vicinity of 58° 15' 15" N and 135° 27' 44" W the chart shows a 146 fm sounding; survey depths show 135-139 fms. At 58° 15' 53" N and 135° 26' 30" W the chart shows a 143 fm sounding ; survey depths show 136-137 fms.

Recommendation: Supersede the charted depths with soundings from H-10234. CONCUR

No dangers to navigation were found or reported.

M) Adequacy

This survey is incomplete, but adequate to supersede prior surveys in its common areas. Additional field work is necessary to complete the survey. See EVALUATION REPORT Section 7

N) Aids to Navigation

There are no floating or fixed aids to navigation within the limits of this survey. A submarine cable AREA is charted on the NE corner of the sheet.

Recommendation: Retain this submarine cable AREA as charted. CONCUR

O) Statistics

VESSEL	2223	2224	TOTAL
POSITIONS	154	192	346
LNM	66.0	76.7	92.7
SNM	8.0	8.3	16.8
BOTTOM SAMPLES	0	0	0
DETACHED POSITIONS	0	0	0
VELOCITY CASTS			1
TIDE STATIONS			1

P) Miscellaneous

Wind and sea conditions made it difficult to calculate currents from vessels heading, when steering hydrography lines by steering needle.

Bottom samples were not taken during the 1986 field season.

Q) Recommendations

It is recommended that additional work be done to complete the survey (see section M). During the 1987 field work, bottom samples should be taken in the area surveyed in 1986. See also sections K, L, and N. See Addendum

R) Automated Data Processing

The following is a list of the Hydroplot programs used for processing and data acquisition during this field examination.

Number	Program Name	Version Date
RK 112	R/R Real Time Plot	3/01/86
RK 201	Grid, Signal and Lattice Plot	4/18/75
RK 221	R/R Non Real Time Plot	3/26/86
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	5/04/76
PM 360	Electronic Corrector Abstract	2/02/76
RK 362	Combined RK 330/AM602	8/20/84
AM 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections for Velocity	5/10/76
RK 561	Hyperbolic and R/R Geodetic Calibration	12/01/82
AM 602	ELINORE - Line Oriented Editor	12/08/82

S) Referral to Reports

The reports listed below are to be submitted separately from this Descriptive Report and the hydrographic records for H-10234.

Report	To Be Submitted
Horizontal Control Report	January 1987
Electronic Control Report	January 1987
Correction to Echo Soundings Report	January 1987
Coast Pilot Report	January 1987

Prepared by,

Federico R. Diaz, LT NOAA

Respectfully submitted,

Fidel T. Smith, CAPT. NOAA
Commanding Officer
NOAA Ship MT. MITCHELL

FIELD TIDE NOTE
OPR-0186-MI-86
ICY STRAIT, ALASKA

Field tide reduction of soundings was based on predicted tides from Juneau, Alaska as listed in "Tide Tables, 1986, West Coast of North and South America." These were corrected for the hydrographic survey area using zoning provided by Sea and Lake Levels Branch (N/OMS12) as follows:

Time Correction: (Times are direct)
Height Correction: (X 0.92)

These tides were interpolated using a PDP8/e computer and program AM 500. The time zone for all predicted and recorded tides is UTC. The tidal datum is MLLW.

In accordance with Project Instructions, OPR-0186-MI-86, the following tide gages were used to obtain tidal information:

STATION #	NAME	LOCATION	FIELD SHEET
945-2210	JUNEAU, ALASKA	58° 17.9'N 134° 24.7'W	Primary gage used as control for datum determination
945-2368	SWANSON HARBOR, ALASKA	58° 12.9'N 135° 24.7'W	20-1-86 "O" (H-10227) 20-2-86 "P" (H-10231)
945-2516	PT. ADOLPHUS, ALASKA	58° 17.2'N 135° 48.2'W	20-3-86 "N"

JUNEAU, ALASKA (945-2210):

The primary gage in Juneau, Alaska served as the control station for datum determination. This gage was established by NOAA and maintained during the entire project by a contract observer, Mr. Jim Rodewald, P.O. Box 215, Juneau, Alaska, 99803.

Levels were run from the ETG scribe to five permanent benchmarks, including the primary benchmark. Opening levels, run on September 15, 1986, and closing levels, run on November 7, 1986, agreed well with elevations differing by 0.007 feet or less. These levels also agree well with levels run by Pacific Operations Group on June 12 and 13, 1986 with the exception of the section between the ETG scribe and BM B (1982). The difference on this section was 0.015 feet. Pacific Operations Group has been notified of this discrepancy. During the period of hydrography there was no evidence of staff or crustal movement. It is recommended that a new primary benchmark be designated. The present primary benchmark, (BM #8, 1922), was originally set vertical in the side of a building 0.5 feet above the sidewalk. However, the benchmark is no longer completely

vertical making it difficult to position the level rod for accurate measurement.

SWANSON HARBOR, ALASKA (945-2368):

On September 17, 1986 a 0-30 foot BRISTOL Bubbler tide gage, S/N 67A-10292, was installed six feet above high water line in a protected rock niche on the southeast side of Ansley Island, Swanson Harbor, Alaska. The orifice was placed 200 feet offshore from the gage and was secured to a fifty pound concrete anchor. On September 18th a 1" galvanized steel pipe staff was installed near a large rock outcrop approximately 175 feet offshore from the gage. This staff broke on September 22nd and was replaced on September 23rd by a 4" X 4" wood staff.

The gage was operated and maintained by MT MITCHELL personnel and ran satisfactorily with only minor problems from the time it was installed on September 17th until it was removed on November 15, 1986. On September 23rd it was noticed that the gage was running on local time and at 2000Z it was reset to UTC. The gage continued to run on UTC for the remainder of the project. On October 25th at 1600Z the marigram chart paper ran out. This was not corrected until October 28th (DOY: 301) at 2300Z. This incident occurred during one of the ship's inport weekends. The MT MITCHELL, (VESNO: 2220), ran four hours of bottom samples, (DOY: 301: 1850Z-2300Z), while the gage was not operating. On October 29th at 0700Z the marigram jumped sprockets. This was corrected on October 30th at 0100Z. The hourly heights scaled from the marigram were corrected for both time and height offsets.

Based on the average of all staff to gage comparisons the height datum for this gage is as follows:

Pipe Staff (SEPT. 19-SEPT. 23 @ 1600Z):	0.0 on marigram equals -3.9 on the staff
Wood Staff (SEPT. 23 @ 1700Z-NOV. 15):	0.0 on marigram equals -3.4 on the staff

There was no evidence of orifice movement . All hourly heights of tides were abstracted from the marigrams by MT MITCHELL personnel and timing errors were distributed linearly throughout the period between observations.

Three historic permanent benchmarks, including the primary benchmark, were recovered by MT MITCHELL personnel on September 16th. On September 17th MT MITCHELL personnel established two permanent marks. Opening levels were run to these five benchmarks on September 18 and 19, 1986. On September 21st

levels were run from BM 2368 B (1986) to the 1" galvanized steel pipe staff. Then on September 23rd, following the installation of the 4" X 4" wood staff, levels were again run from BM 2368 B (1986) to the new staff. Closing levels were run to all five permanent benchmarks and the staff on November 13, 14, 15, and 16, 1986. The elevation differences obtained from the opening and closing level runs indicate that there was staff movement of up to 0.05 feet. The distance from the staff to the furthest benchmark is approximately one and a quarter miles. The level run itself is difficult. The terrain varies from gravel beach to large rock outcrops and rocky slide areas to spongey marsh areas. The complete level run cannot be finished in one day and must be accomplished at various states of tide.

It is recommended that BM 1 (1901) be designated as the primary benchmark because it is set in bedrock. The present primary benchmark, BM 4 (1959), is atop a large boulder which rests on spongey ground.

PT. ADOLPHUS, ALASKA (945-2516):

On November 4, 1986 a 0-30 foot BRISTOL Bubbler tide gage , S/N 67A-10294, was installed ten feet above high water line on top of a large rock outcrop on the second rocky point west of Pt. Adolphus Light on the northeast tip of Chicagof Island, Alaska. It is at the same site used by NOAA Ship DAVIDSON in 1976. The orifice was placed 220 feet directly offshore from the gage and was secured to a 1" galvanized steel pipe "T"-stand which was anchored in place with rocks. On November 5th the orifice exposed at low tide. At 1800Z on November 5 it was moved to deeper water. After the orifice was manually moved to deeper water there was no further evidence of orifice movement.

On November 5th a 4" X 4" wood staff was installed 200 feet offshore from the tide gage at the northwest edge of a large rock outcrop.

The gage was operated and maintained by MT MITCHELL personnel and ran satisfactorily with only minor time errors from the time it was installed on November 4th to the time it was removed on November 15, 1986. All times were recorded in UTC.

Based on the average of all staff to gage observations, the height datum for this gage is as follows:

NOV. 4 @ 2200Z - NOV. 5 @ 1843Z: 0.0 on marigram equals -2.8 on staff

NOV. 5 @ 1941Z - NOV. 15 @ 1830Z: 0.0 on marigram equals -9.1 on staff

Additionally, all hourly heights of tides were abstracted from the marigrams by MT MITCHELL personnel and timing errors were distributed linearly throughout the period between observations.

On October 30, 1986 MT MITCHELL personnel established three permanent benchmarks. Opening levels run to these three benchmarks, on November 5th and 6th, and closing levels run on November 15, 1986, agree very well. There is no evidence of crustal or staff movement.

ZONING:

Field inspection of tide data indicates that predicted tidal times and ranges are very similar to actual tides obtained on the marigrams. As per Project Instructions OPR-MI-0186-86 use the following tidal information for final plotting:

FIELD SHEET	TIDE STATION
Survey H-10227 Survey H-10231	Swanson Harbor, Alaska Station #945-2368
Field Sheet MI-20-3-86	Pt. Adolphus, Alaska Station #945-2516

SIGNAL LISTING
OPR-0186-MI-86
ICY STRAIT, AK
H-10234
MI-20-3-86

200	6	58	05	27606	135	06	53382	250	0004	164670
212	5	58	10	47200	135	17	29680	139	0000	000000
230	6	58	07	59099	135	16	11716	139	0000	000000
301	3	58	14	03376	135	17	02600	139	0001	000000
320	6	58	08	35144	135	23	47230	139	0003	000000
400	5	58	10	28805	135	28	16165	250	0009	164670

MASTER LIST
GEOGRAPHIC NAMES
OPR-0186-MI-86
H-10234
MI-20-3-86

STATION NAME	YEAR ESTABLISHED	ESTABLISHED BY
(200) FIRST 2 ARGO ECC	1986	MT. MITCHELL
(212) SISTERS	1986	MT. MITCHELL
(320) SOPHIA 2	1922	U.S.C. & G.S.
(400) SCRAGGY	1901	U.S.C. & G.S.
(230) SPASSKI ISLAND LIGHT 12	1986	MT. MITCHELL
(301) EGAN	1959	U.S.C. & G.S.

APPROVAL SHEET

The field work on this Hydrographic Survey was under my daily supervision. I have reviewed and approved all final field sheets and records. This survey is ~~incomplete,~~ but adequate to supersede all prior surveys in this area.

Fidel T. Smith, Captain, NOAA
Commanding Officer
NOAA Ship MT MITCHELL

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10231 (addendum)

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.

MI 20-2-86

State Alaska

General locality Icy Strait

Locality The Sisters and Vicinity to Point Sophia

Scale 1:20,000 Date of survey April 16 to May 16, 1987

Instructions dated July 29, 1986 Project No. OPR-0186-FA-87

Vessel FAIRWEATHER 2020, Launches 2023, 2024, 2026, 2030

Chief of party CAPT J.W. Carpenter, NOAA

Surveyed by LCDR Kenny, LT Ruiz, ENS Cone, ENS Lynch, ENS Bernard, ENS Nodine, ENS Lemon, ENS Birk, CST Krick

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

Graphic record scaled by Ships Personnel

Graphic record checked by Ships Personnel

Evaluation by I. Almacen Automated plot by PMC Xynetics Plotter

Verification by Thelma O. Jones

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW and tenths of Fathoms

REMARKS: All times are UTC.

This data supplements H-10231, 1986.

Revisions and marginal notes in black generated during office processing. Separates are filed with the hydrographic data.

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174

MONTHLY PROGRESS SKETCH

OPR-0186-FA-87

ICY STRAIT, ALASKA

NOAA SHIP FAIRWEATHER S-220

CAPT. JOHN CARPENTER, CMDG

SCALE FROM NOS CHART 17000

APRIL TO MAY 1987

	APRIL	MAY
SQ NM SOUNDING LINE	11	12
LNM SOUNDING LINE	266	231
BOTTOM SAMPLE	60	39
HYDRO CONTROL STATIONS	22	8
SV/D- NANSEN CAST	2	2
TIDE GAGE INSTALLATION	1	0
HYDROGRAPHY		

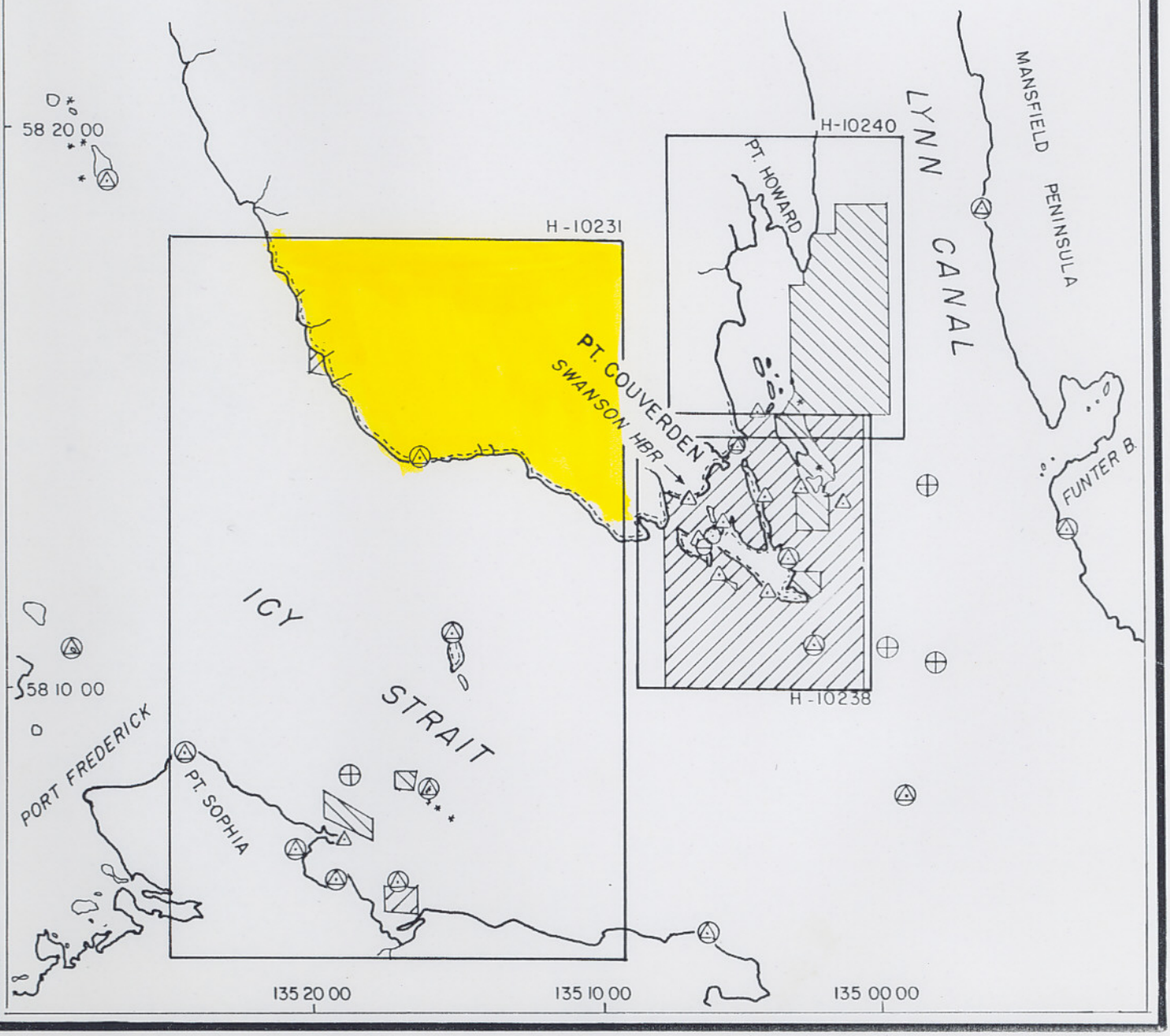
⊕ SV/D NANSEN CAST

△ STA ESTABLISHED

△ STA RECOVERED

S/L VERIFICATION

⊖ TIDE GAGE



Descriptive Report to Accompany Hydrographic Survey
H-10231 ADDENDUM (Field No. MI-20-2-86, Scale 1:20,000)
NOAA Ship FAIRWEATHER S-220
Captain John W. Carpenter, Commanding
1987

A. PROJECT

The addendum to hydrographic survey H-10231 was conducted in accordance with Project Instructions OPR-0186-FA-87 dated July 29, 1986, Change No. 1 dated August 4, 1986, Change No. 2 dated December 24, 1986, Change No. 3 dated February 2, 1987, Change No. 4 dated March 17, 1987, Change No. 5 dated April 13, 1987,and Change No. 6 dated April 29, 1987. PMC OPORDER, the Hydrographic Manual (fourth edition), and the Hydrographic Survey Guidelines are also applicable.

This sheet is designated as "O" in the project instructions.

This data supplements the basic hydrographic survey begun by MT. MITCHELL in 1986.

B. AREA SURVEYED

FAIRWEATHER personnel completed hydrographic surveying in the area southwest of Pulizzi Island (58/06/00N, 135/17/35W), and in an area along the north shore of Icy Strait in the vicinity of latitude 58/15/48N, longitude 135/20/00W. The area in the vicinity of latitude 58/08/00N, longitude 135/17/06W, was further developed in order to verify a 1.75-fathom charted sounding. Finally, a development was run in an area with irregular bottom contours north of Neck Point . This development extends due south from latitude 57°07/42N, longitude 135/19/43W, to latitude 57°07/26N, southeast to latitude 57°07/04N, longitude 135/18/52W, due east to longitude 135/18/40W, due north to latitude 57°07/18N and northwest to latitude 57°07/42N, longitude 135/19/13W.

The 1987 work includes verification of all shoreline features on the north shore of Icy Strait from latitude 58/17/48N, longitude 135/21/42W, southeast to latitude 58/13/07N, longitude 135/11/05W. Shoreline verification was also completed along the perimeter of the Sisters Island south to latitude 58/10/00N.

The field work for the 1987 field season commenced on April 16, 1987 (DN 106) and was completed May 16, 1987 (DN 136).

C. SOUNDING VESSEL

Hydrographic data for this survey was collected with Jensen launches FA-3 (2023), FA-4 (2024), and FA-6 (2026). Shoreline verification was completed using a 17-foot Boston Whaler FA-10, which was designated vessel number 2030. The NOAA ship FAIRWEATHER (2020) was used for all sound velocity casts.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Three of FAIRWEATHER's survey launches, each equipped with dual-beam Raytheon DSF-6000N echo sounders, were used to obtain soundings for this survey. See Table I for a list of equipment by vessel and day number. A skiff was used for shoreline verification.

Table I
Sounding Equipment

Vessel	Day Number	Instrument/Model	Recorder
FA-3 (2023)	120-135	RAYTHEON DSF-6000N	A113N
FA-4 (2024)	120-122	RAYTHEON DSF-6000N	A121N
	134	RAYTHEON DSF-6000N	A104N
FA-6 (2026)	124	RAYTHEON DSF-6000N	B048N
Skiff(2030)	106-135	Lead Line,Sounding Pole	

Echo-sounding equipment was monitored continuously while on line. All hydrographic data was scanned at least twice to insert peaks and deeps between soundings and to ensure proper depth digitization.

No mechanical problems that degraded data quality were encountered with the DSF-6000N echo sounders during this investigation. Bar checks at three fathoms were done daily to ensure that the Raytheon DSF-6000N echo sounders were operating properly. Sounding corrections determined for this survey apply to both the high- and low-frequency sounding data. High-frequency data was digitized for all depths.

Diver's least depths were obtained using a pneumatic depth gauge manufactured by 3-D Instrument, Inc. (s/n 8302079 N). System calibration data can be found in the separate Corrections to Echo Soundings Data package.

All of FAIRWEATHER's survey launches were tested for settlement and squat on May 22, 1987 (DN 142) in Womens Bay, Kodiak, Alaska. The test results were used to plot settlement and squat curves for each launch. Measurements were conducted in accordance with Section 4.9.4.2 of the Hydrographic Manual. It was determined that there were no applicable settlement and squat corrections for any launch at speeds run while surveying in fathoms. Refer to the Corrections to Echo Soundings Data package for details concerning settlement and squat determinations.

An accurate determination of launch transducer depths was obtained through physical measurement. An oversized carpenter's square was constructed of angle iron, with foot and tenth markings noted on the rise. Divers held the foot of the carpenter's square flush against the transducer while the rise was leveled by personnel on the pier using a circular bubble

level. On March 27, 1987 a transducer draft of 0.3 fathoms was recorded for all launches. All launch soundings on the final field sheet were plotted using this TRA value.

Velocity correctors were determined from three SV/D casts in accordance with section 4.9.5.2 of the Hydrographic Manual. Table II shows the date and locations of the casts. Program VELTAB was used to compute tables from cast data. The results of the first two SV/D casts performed were similar enough to average and combine into one table (Table 1). Table III shows velocity tables determined from cast data. Velocity corrections from Table 1 were applied to all echo sounder depths plotted on the final field sheets.

Table II
Velocity Casts

Cast No.	Date (DN)	Latitude	Longitude
1	095	58/11.9 N	134/59.5 W
2	123	58/10.7 N	135/00.0 W
4	137	58/08.5 N	135/19.0 W

Table III
Velocity Tables

Table No.	Based on Casts	Dates
1	1,2	DN 95-128
2	4	DN 131-137

The SV/D casts were performed using a Plessy Model 9040 Environmental Profiling System (s/n 5647). This instrument was calibrated at the Northwest Regional Calibration Center (NRCC) on March 9, 1987 for the 1987 field season. XBT and surface temperatures were taken during the SV/D casts as a check on the Plessy System.

TC/TI tapes were made in accordance with the PMC OPORDER. Printouts of TC/TI tapes are included in the separates following the text of this addendum.

Predicted tide correctors were applied to the soundings plotted on the final field sheets for this survey. The tide correctors used were from the 1987 West Coast of North and South America Tide Tables. Tide correctors use Juneau, Alaska as the reference station using a height correction range ratio of "x0.92", and no time correction.

E. HYDROGRAPHIC SHEETS

The final field sheets were plotted aboard FAIRWEATHER using a PDP/8e computer and complot plotter. This survey consists of three final field sheets, all plotted on mylar. The dimensions, scale, and skew of each are as follows:

Sheet	Scale	Skew	Dimensions
MI 20-2W-86	1:20,000	90	21x54
MI 20-2E-86	1:20,000	90	21x54
Development A	1:5,000	0	15x15

All the hydrographic data for this survey will be forwarded to the Pacific Marine Center in Seattle, Washington for verification and smooth plotting.

F. CONTROL STATIONS

All horizontal control stations used in this survey were recovered or established by FAIRWEATHER personnel. All geodetic positions were based on the North American 1927 datum. New stations were located by conventional traverse methods. No anomalies in control, adjustment, or closures were encountered. All positions meet or exceed Third Order, Class I specifications.

Stations used in support of this survey are listed in Appendix V, List of Stations. For additional information, refer to the Horizontal Control Report, OPR-0186-FA-87.

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic position control was accomplished using the Motorola Mini-Ranger III system. The control configuration consisted of range/range and range/azimuth for all positioning. Table IV contains a list of console and R/T units for each sounding vessel.

Table IV
Mini-Ranger Equipment by Vessel

Vessel Number	Console/RT Number
2023	703/B1398
2024	506042/E2716
2026	B0323/1875

Mini-Ranger base line calibrations (BLC's) were conducted in accordance with the PMC OPORDER.

Beginning BLC's were performed on DN's 75-78 along a distance of 990.2 meters between two recoverable marks (Naval Reserve Pier to PMC Pier B) across Lake Union in Seattle, Washington. Ending BLC's were performed on DN's 142 and 146 along a distance of 855.4 meters between two recoverable points in Womens Bay, Kodiak, Alaska. All combinations of codes and consoles were calibrated before commencing and after completing H-10231.

As the differences between beginning and ending BLC's were five meters or less, the beginning and ending calibrations were not averaged. The beginning correctors were used as the final correctors. Final baseline correctors and minimum signal strengths can be found in the Electronic Control Data package submitted for H-10231.

Hydrographic positioning equipment was critically system checked at least once per week. Non-critical system checks were conducted once per day. All hydrographic positioning equipment was found to be accurate within the limits set forth by the PMC OPORDER. Critical system checks were accomplished using the theodolite cut method, or by placing the launches at the point of intersection of two known visual ranges. Theodolites onboard the FAIRWEATHER are as follows: Wild T-1 theodolites with serial numbers 13008, 12932; Wild T-2 theodolites with serial numbers 26336, 85652, 257219, 276503; and Lietz TM1A theodolite with serial number 2151.

In all cases, the launch R/T units were located directly over the transducers, eliminating the need for ANDIST correctors.

H. SHORELINE

Shoreline details for this survey are from TP-01310 and TP-01311, 1:20,000 scale, Class III, registered shoreline manuscripts. All verified features are in black ink on the final field sheet with changes recorded in red ink. New features are displayed in black ink.

There are no conflicts between hydrography and the manuscript high water line. All manuscript rocks were found; however, in many cases manuscript rocks were found to be high points on ledges (see final field sheets for changes).

The shoreline area which was verified consists of gravel beaches, boulder and stone beaches, some detached rocks and ledges. Detached positions were taken to locate new rocks and to delineate limits of ledges and foul areas not shown on the manuscript.

The two clusters of manuscript rocks located at latitude 58/13/51N, longitude 135/13/28W, and latitude 58/13/38N, longitude 135/13/21W, were found to be reefs (see final field sheet).

Three mooring anchors were found along the north shore of Icy Strait: two are in the vicinity of latitude 58/15/06N, longitude 135/19/00W; the

other is at latitude 58/15/51N, longitude 135/19/51W. They are shown as obstructions on the final field sheet (see position numbers 1012, 1039 and 1051).

Position Number	Latitude North	Longitude West
1012	58° 15' 04.98"	135° 18' 59.32"
1039	58° 15' 51.67"	135° 19' 50.77"
1051	58° 15' 05.19"	135° 18' 59.07"

I. CROSSLINES

All crosslines were run at a minimum of 45 degrees with respect to the main scheme lines and they account for 13% of the total coverage. Overall agreement between crossline and main scheme hydrographic sounding lines is good. In one instance in depths less than 10 fathoms, a difference greater than one fathom was found at latitude 58/07/30N, longitude 135/19/36W (Development A). This is attributable to a steep ridge at this location that can be seen on the echogram.

J. JUNCTIONS

The hydrographic data collected in 1987 by FAIRWEATHER junctions with the previous work on survey H-10231 conducted by MT. MITCHELL in the fall of 1986. Junctions between the 1986 and 1987 data agree well, with trends of deepening and or shoaling consistent between them.

K. COMPARISONS WITH PRIOR SURVEYS

Comparisons were made to the following prior surveys:

H-2562	1:40,000	1901
H-4227WD	1:40,000	1922-23
H-10231	1:20,000	1986

The hydrographic data from the area southwest of Pulizzi Island was compared to H-2562. Agreement is generally within 1 fathom. An 8-foot sounding (which is charted) originating from H-2562 at latitude 58/06/01.7N, longitude 135/17/39W, was found to be 20 meters to the east of similar shoal depths.

The sounding data from the area along the north shore of Icy Strait compares well with H-2562.

The present survey data was compared to the MT. MITCHELL work done on H-10231. Overall agreement was good between between Development A and H-10231. However, at latitude 58/07/32N, longitude 135/19/28W, there is a discrepancy of almost 4 fathoms. The 1986 data has a 4.8-fathom shoal; whereas, the 1987 data shows an 8.6-fathom depth. This disagreement could not be resolved in the field as time did not permit further investigation. It is recommended that the 4.8-fathom depth be retained. CONCUR

The -0.8-fathom elevation (MLLW) obtained with an echo sounder by MT. MITCHELL in 1986 (latitude 58/07/37N, longitude 135/19/45W) was disproved. The area was searched at a negative tide and a lead-line depth of 4.4 fathoms was obtained at that position (see postion number 3064). There were no rocks bearing at the time in that location. A rock covered 2 feet

at MLLW was found 50 meters to the southwest (position number 3065), and should be charted. CONCUR

In general, hydrography in the vicinity of latitude 58/08N, longitude 135/17W, compared well with the MT. MITCHELL work on H-10231. At latitude 58/08/20N, longitude 135/17/24W, a diver's least depth of 4.4 fathoms was found. This depth should be charted rather than the 5.5-fathom echo sounding obtained in 1986. A 7.9-fathom sounding was found by the present survey at latitude 58/08/09N, longitude 135/17/12W; H-10231, 1986 shows 10.9 fathoms in this area. Time was not available for further development. CONCUR

A 1.4-fathom diver's least depth was found at latitude 58/08/02N, longitude 135/17/08W (position number 9001). This sounding conflicts with the 1.0-fathom echo sounding obtained in the same area by MT. MITCHELL during the 1986 field season. As divers reported kelp in the area it is recommended that the depth of 1.4 fathoms supersede the 1.0-fathom MT. MITCHELL depth. The 1.4-fathom depth found by the present survey should also supersede the 1.75-fathom depth from H-4227WD, positioned 100 meters to the southeast at latitude 58/08/00N, longitude 135/17/06W (10 fathoms was found by the present survey at this position). A 100-meter shift in position is not unexpected given the differences in survey techniques from 1922 to 1987. DO NOT CONCUR. THE 1.1-fathom sounding should supersede the 1 3/4-fathom charted depth.

L. COMPARISON WITH THE CHART

The addendum to H-10231 was compared to Chart 17316, 14th edition, October 30, 1982, scale 1:80,000. All charted soundings in the addendum area were derived from prior surveys H-2562 and H-4227WD and were discussed in section K of this report. No further discussion of sounding comparisons is necessary.

All charted rocks were found. The two charted rocks in the vicinity of latitude 58/13/48N, longitude 135/13/30W, are in fact a reef (shown in red on the final field sheet). This reef was discussed under Section H, Shoreline.

The following AWOIS item is within the survey limits:

AWOIS item #51073 Submerged rock (position doubtful)
Latitude 58/07/28N (corrected latitude, see note below)
Longitude 135/19/15W

(Note: The charted latitude disagrees with the AWOIS listing latitude (58/06/28N). The chartlet accompanying the AWOIS listing showed the submerged rock to be located at latitude 58/07/28N. It is assumed that the AWOIS listing has an incorrect latitude. The charted position rather than the AWOIS listing position was investigated.)

At the charted rock location the depth was found to be 15.2 fathoms. A development with twenty-two meter line spacing was run in the area of the charted position in depths less than approximately 15 fathoms. The area

searched was aproximately 0.2-0.3 nautical miles wide along the northeast, southwest axis and extends 0.3 nautical miles to the northwest and 0.4 nautical miles to the southeast of the charted position (see Development A).

A diver's least depth of 1.2 fathoms (7 feet) was found on a submerged rock at latitude 58/07/17.9N, longitude 135/19/00.8W, 0.2 nautical miles southeast of the charted position. This submerged rock falls within the 0.5 nautical mile search radius specified in the AWOIS listing. Numerous other shoal areas were found in the development area. Seven sites were dove on to determine least depths (see Development A for locations and least depths). Further investigations were not possible due to time constraints.

It is recommended that the submerged rock (position doubtful) be deleted from the chart and the results of the present survey be charted. CONCUR

No dangers to navigation were noted on this survey.

Diver's least depths were determined using a pneumatic gauge. Additionally, lead-line soundings were obtained over other shoal areas that did not have diver least-depth determination.

M. ADEQUACY

This survey is complete and fully adequate to supplement H-10231, 1986 and to supersede all prior surveys in their common areas. SEE EVALUATION REPORT

N. AIDS TO NAVIGATION

There are no aids to navigation within the limits of this survey.

O. STATISTICS

Vessel	2020	2023	2024	2025	2026	Total
Number of Positions	-	311	117	-	50	478
Linear Nautical Miles	-	15	3	-	2	20
Square Miles	-	-	-	-	-	1
Bottom Samples	-	-	-	-	-	0
Velocity Casts	1	-	-	-	-	1
Tide Stations	1	-	-	-	-	1
Days of Production (Hydro only)	-	-	-	-	-	8

P. MISCELLANEOUS

Bottom samples were not required for this addendum. No current observations were made.

Q. RECOMMENDATIONS

The signal list should be reviewed before processing. As FAIRWEATHER did not have a copy of MT. MITCHELL's signal tape or signal listing, it is possible that problems could arise requiring the adjustment of station numbers. Velocity table numbers may also be duplicated.

R. AUTOMATED DATA PROCESSING

All range-range and range-azimuth hydrography was processed in accordance with the PMC OPORDER. All peaks and deeps and sounding corrections for range-range hydrography were placed on the corrector tape. In most cases for range-azimuth control, inserts were placed on the master tapes. In all cases inserts were positioned by time and course.

The following is a list of the hydroplot programs used for processing and data acquisition during this field examination.

Number	Program Name	Version Date
RK 112	R/R Real Time Plot	04/23/84
RK 116	R/Az Real Time Plot	03/01/86
RK 201	Grid, Signal and Lattice Plot	04/18/75
RK 211	R/R Non Real Time Plot	07/25/86
RK 212	R/Az Non Real Time Plot	07/25/86
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	05/04/76
PM 360	Electronic Corrector Abstract	02/02/76
RK 362	RK330/602 Combined	08/20/84
RK 407	Geodetic Inverse/Direct Computation	09/25/78
AM 500	Predicted Tide Generator	11/10/72
RK 562	Theodolite Calibration	09/05/84
AM 602	ELINORE - Line Oriented Editor	12/08/82
	VELTAB	02/01/85

S. REFERRAL TO REPORTS

The reports listed below are to be submitted separately from the descriptive report and the hydrographic records for H-10231.

Report	To Be Submitted
Horizontal Control Report	July, 1987
Electronic Control Data Package	July, 1987
Correction to Echo Soundings Data Package	July, 1987

File with the field records for H-10227

KWW
8/12/92

LIST OF SEPARATES

* have been filed with Separates #3

Swanson Harbor, Alaska
Field Tide Note
April - May, 1987

The tide gage located in Juneau, Alaska (945-2210) served as the reference station for the predicted tides used for correctors on surveys H-10238, H-10240, H-10227 (addendum) and H-10231 (addendum) as specified by Project Instructions OPR-0186-FA-87.

Predicted tide correctors were interpolated aboard the FAIRWEATHER using data from the 1987 West Coast Tide Tables and PDP-8 program AM 500, dated November 10, 1972. All correctors calculated were based on zone correctors supplied by the project instructions and tabulated below.

Time Correction		Height Correction
High Water	Low Water	Range Ratio
0	0	X .92

All times of predicted and reported tides are expressed in Universal Coordinated Time. Predicted tides were acceptable for hydrography with no discrepancies in the raw data attributable to tidal errors.

A Bristol Bubble, Model 15 analog tide gage (range 0-30 feet) was installed in support of the above mentioned hydrographic surveys. Location and period of operation are as follows:

Site	Location	Period
Swanson Harbor, Icy Strait, AK 945-2368	58/12/18N 135/06/30W	4/5/87 - 5/17/87

SWANSON HARBOR

Tide gage (SN # 63A2920) was installed in Swanson Harbor on the southeast side of Ansley Island, Icy Strait, Alaska on April 5, 1987 (DN 95). A three-hour observation on April 6 confirmed that the gage was operating with consistent gage to staff differences. The gage was removed at the finish of hydrographic operations on May 16, 1987 (DN 136).

The orifice at the Swanson Harbor tide gage was secured to a 150-lbs cement block with an angle iron placed vertically to support the orifice which was secured with hose clamps. Tubing was placed between the orifice and gage (approximately 200 feet) and was secured with boulders along its length. A 14-foot fiberglass staff was erected at the site by securing its base within a fracture at the base of a large outcrop. The staff was then shored with an 8-foot 2X4. Guy wires and cables were secured to the staff at the 6-foot and 14-foot marks. Cables which connected to the top of the

staff were anchored to the outcrop by means of eye bolts and turnbuckles which were tightened to give the staff rigidity.
The gage itself ran perfectly throughout the project, although the clock consistently ran fast requiring the marigram to be advanced 24 hours on four separate occasions. The zero mark on the tide staff corresponded to 6.6 feet on the gage.

LEVELING

The comparision of opening and closing level runs suggests that there was no significant staff movement. The staff apparently settled 0.003 meters during the course of the survey. No differences in elevation were recorded between level runs to suggest that the benchmarks had been disturbed.

ZONING RECOMENDATIONS

None.

SIGNAL LISTING OPR-0186-FA-87

ICY STRAIT, AK. H-10231 (1987)

FIRST 2,1922
100 0 58 05 27523 135 06 53300 250 0004 000000

PEACH 2,1922
104 0 58 10 40185 135 03 00801 250 0011 000000

QUILL 2 NO. 2,1987
107 0 58 10 47792 135 15 24801 250 0000 000000

FULIZZI,1986
114 0 58 06 17994 135 17 24281 250 0003 000000

SPASSKI,1986
200 0 58 06 27486 135 19 14117 250 0001 000000

SOPHIA 2,1922
220 0 58 08 35144 135 23 47230 250 0030 000000

EGAN,1959
230 0 58 14 03376 135 17 02608 250 0001 000000

SCRAGGY,1901
240 0 58 10 28805 135 28 16165 250 0009 000000

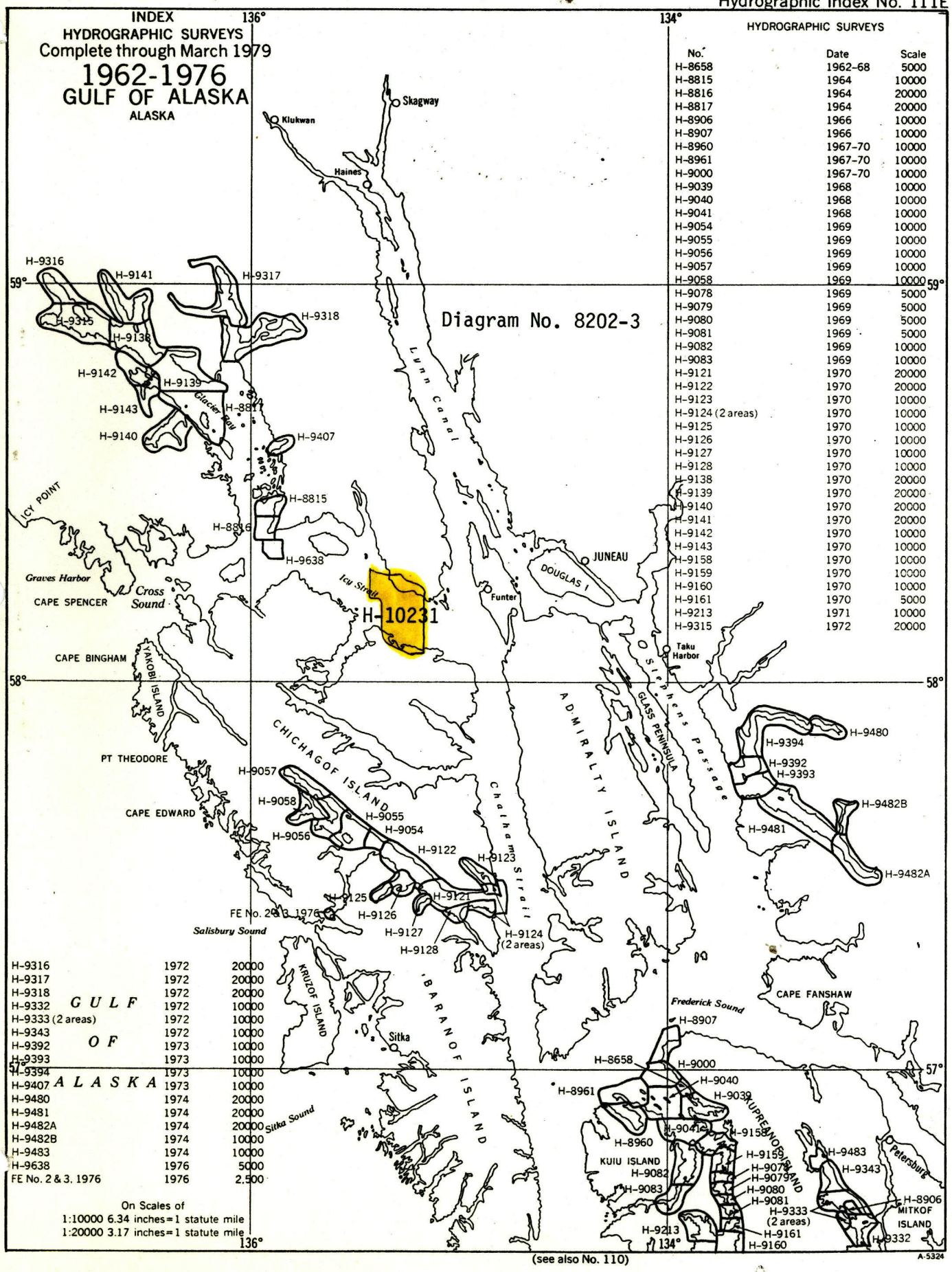
PORPOISE,1986
260 0 58 19 02373 135 26 59103 250 0010 000000

TP-1
292 0 58 07 04050 135 19 06680 254 0000 000000

SPASSKI ISLAND LIGHT
294 0 58 07 59095 135 16 11717 250 0010 000000

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

Hydrographic Index No. 111E



HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8658	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-9316	1972	20000
H-9317	1972	20000
H-9318	1972	20000
H-9332	1972	10000
H-9333 (2 areas)	1972	10000
H-9343	1972	10000
H-9392	1973	10000
H-9393	1973	10000
H-9394	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-9638	1976	5000
FE No. 2 & 3, 1976	1976	2,500

GULF OF ALASKA

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

☆ U.S. Government Printing Office: 1986-652-007/21088 Region No. 6

FORM CD-14 (2-76) Prescr. by DAO 214-2 U.S. DEPT. OF COMM. TRANSMITTAL SLIP	DATE Tues 3/10/87
TO: Maureen	REF. NO. OR ROOM, BLDG.
FROM: Marlene	REF. NO. OR ROOM, BLDG.

ACTION

☐ NOTE AND FILE	☐ PER OUR CONVERSATION
☐ NOTE AND RETURN TO ME	☐ PER YOUR REQUEST
☐ RETURN WITH MORE DETAILS	☐ FOR YOUR APPROVAL
☐ NOTE AND SEE ME ABOUT THIS	☒ FOR YOUR INFORMATION
☐ PLEASE ANSWER	☐ FOR YOUR COMMENTS
☐ PREPARE REPLY FOR MY SIGNATURE	☐ SIGNATURE
☐ TAKE APPROPRIATE ACTION	☐ INVESTIGATE AND REPORT

COMMENTS:

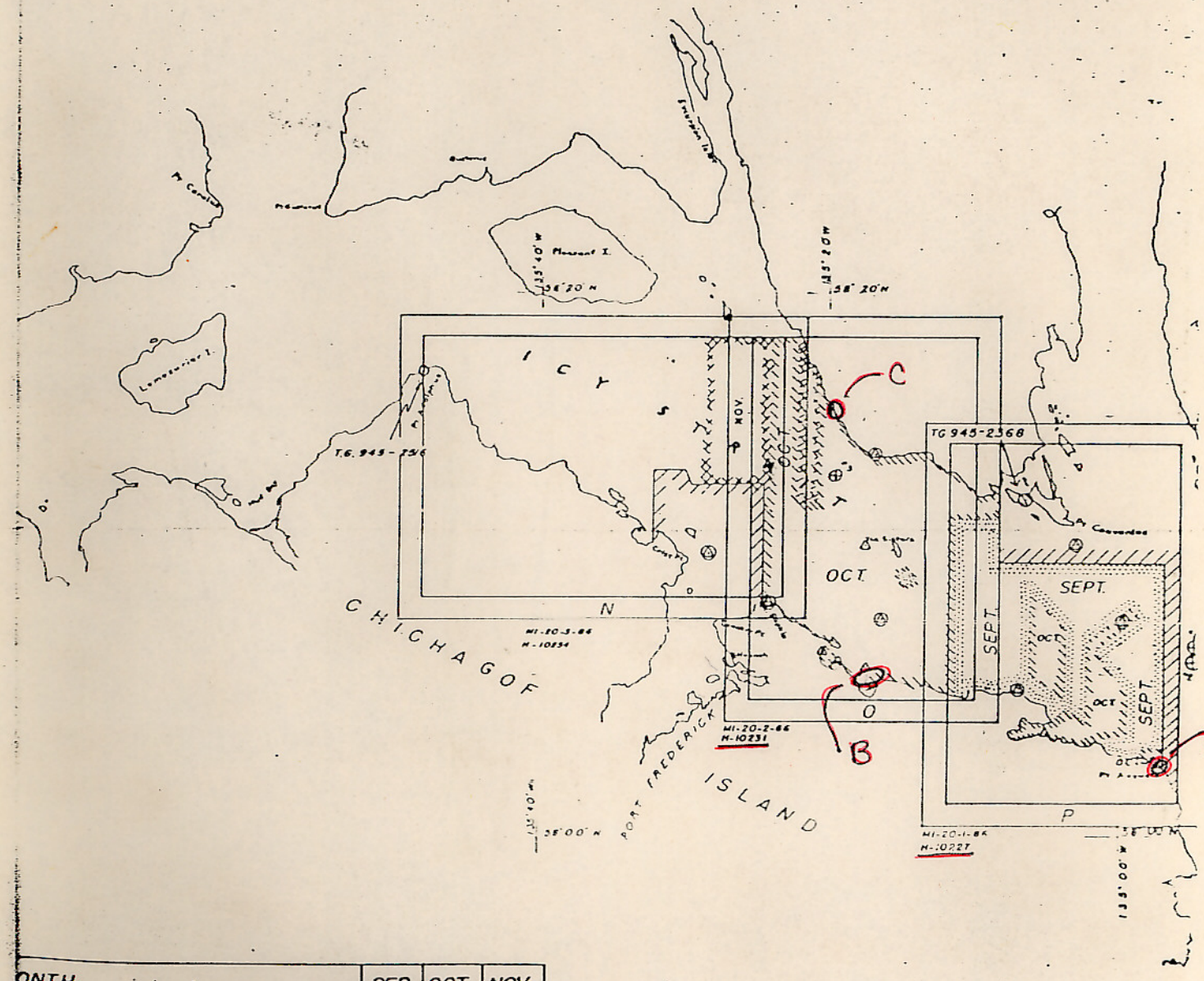
Attached is a blurb I'd sent to Andy Armstrong re 3 items which Mt Mitchell didn't complete. Andy says they should be completed in '87 field season and, if completed early in season, can be incorporated into Mt Mitchell's surveys BEFORE verification of the surveys is finished.

Items will be included either in the '87 Project Instructions for Icy Strait or in one of the Changes to the P.I's.

OPR-0186-MI-86
ICY STRAIT, AK.
SEPT - NOV 1986

NOAA SHIP MT. MITCHELL
FIDEL T. SMITH CAPTAIN, NOAA
COMMANDING

FROM CHART 17300-



MONTH	SEP	OCT	NOV
NM SOUNDINGS	35.8	80.6	163
M SOUNDINGS	546.2	1375	398
M MISC. DISTANCE	248	383	122
M TO AND FROM	276	523	84
TTOM SAMPLES	0	91	37
NSEN CAST ⊕	1	1	1
NTROL STATIONS △	1	4	1
E GAGE ⊙	1	0	1

N. AIDS TO NAVIGATION

There are two fixed aids to navigation located in the survey area. They are Hanus Reef Light (Light List # 24120) and Point Augusta Light (Light List # 24105).

Hanus Reef Light serves to mark a hazard to navigation. This hazard is a reef which is partially visible at low tide. The light marks the western-most portion of the reef which extends mainly in a east-west direction; an area approximately 220 meters in diameter. The daymark and light is established on a skeleton tower on a concrete pier. The aid is characterized as a diamond-shaped special purpose daymark divided in four diamond-shaped colored sectors with the sectors at the side corners white and the sectors at the top and bottom corners red. Hanus Reef Light is charactertized as follows: Fl W 2.5 sec 25 ft 6 M. This aid is maintained by the U.S. Coast Guard.

A geographic position for the light (HANUS REEF LIGHT 13) was computed by Pacific Marine Center personnel. A comparison of this geographic position with the positions listed in the latest edition of the Light List and on Chart No. 17316, 14th Edition, October 30, 1982 (see DIPFILE printout) is listed below:

Survey Position	Light List	Chart 17316
58°07'51.56"N 134°59'53.27"W	58°07'54"N 134°59'48"W	58°07'51.54"N 134°59'53.28"W

The new position computed for Hanus Reef Light is 0.64 meter south (195°T) of the charted position obtained from the DIPFILE listing. The revised position of this light is included on Form 76-40 (Nonfloating Aids or Landmarks for Chart). See Appendix X.

Point Augusta Light is located in the northeast portion of Chichagof Island. It serves as a navigational aid for vessels transiting the area. It is characterized as a diamond-shaped special purpose daymark divided in four diamond-shaped colored sectors with the sectors at the side corner white and the sectors at the top and bottom corners red. The light is mounted on a square frame. The characteristics of the light is as follows: Fl W 4 sec 45 ft 6M. This aid is obscured from 328° to 135°. It is maintained all year and adequately serves the purpose for which it was established. No revised position was computed for this aid. The charted position for this aid is Latitude 58°02'24"N, Longitude 134°57'12"W. It is recommended that NOAA Ship FAIRWEATHER establish a third-order position for Point Augusta Light when conducting hydrographic operations in that area during the 1987 field season.

designated "A" on attached progress sketch.

There is a submarine cable that runs along the northern limit of this survey. There is a ferry which transits through Lynn Canal to Hoonah, Alaska and from Hoonah to Chatham Strait. The ferry runs on a weekly schedule and its route should not be displayed on the chart. There are no overhead cables or pipelines within the limit of this survey.

135° 14.72'W, -0.3 fms. position an uncharted reef.

Recommendation: The area southeast of The Sisters be recharted to show more accurately this reef.

A 1.75 fathom sounding on Chart No. 17302 was searched for with 25 meter spaced lines and not found. This sounding was from a wire drag survey [H-4227 WD 1922-23, 1:40,000]. This survey (H-10231) indicates 80 fms. of water in the area of the 1.75 fms. sounding. The reef mentioned in the above paragraph are some 200 meters to the north of this 1.75 fms sounding.

Recommendation: Carry forward the 1.75 fms. sounding from H-4227WD survey.

Comparison with NOAA Chart No. 17316 14th Edition October 30, 1982, 1:80,000

H-10231 compares well will this chart except for discrepancies on features common to other charts which were mentioned previously. Soundings generally agree to within 10 fms. in 100 fms of water. Difference in scale can be contributed to some disagreement between soundings.

M. ADEQUACY OF SURVEY

This survey is considered complete and is adequate to supersede all prior surveys of the area excepa as mentioned below.

(Designated "B" and "C" on attached progress sketch.)

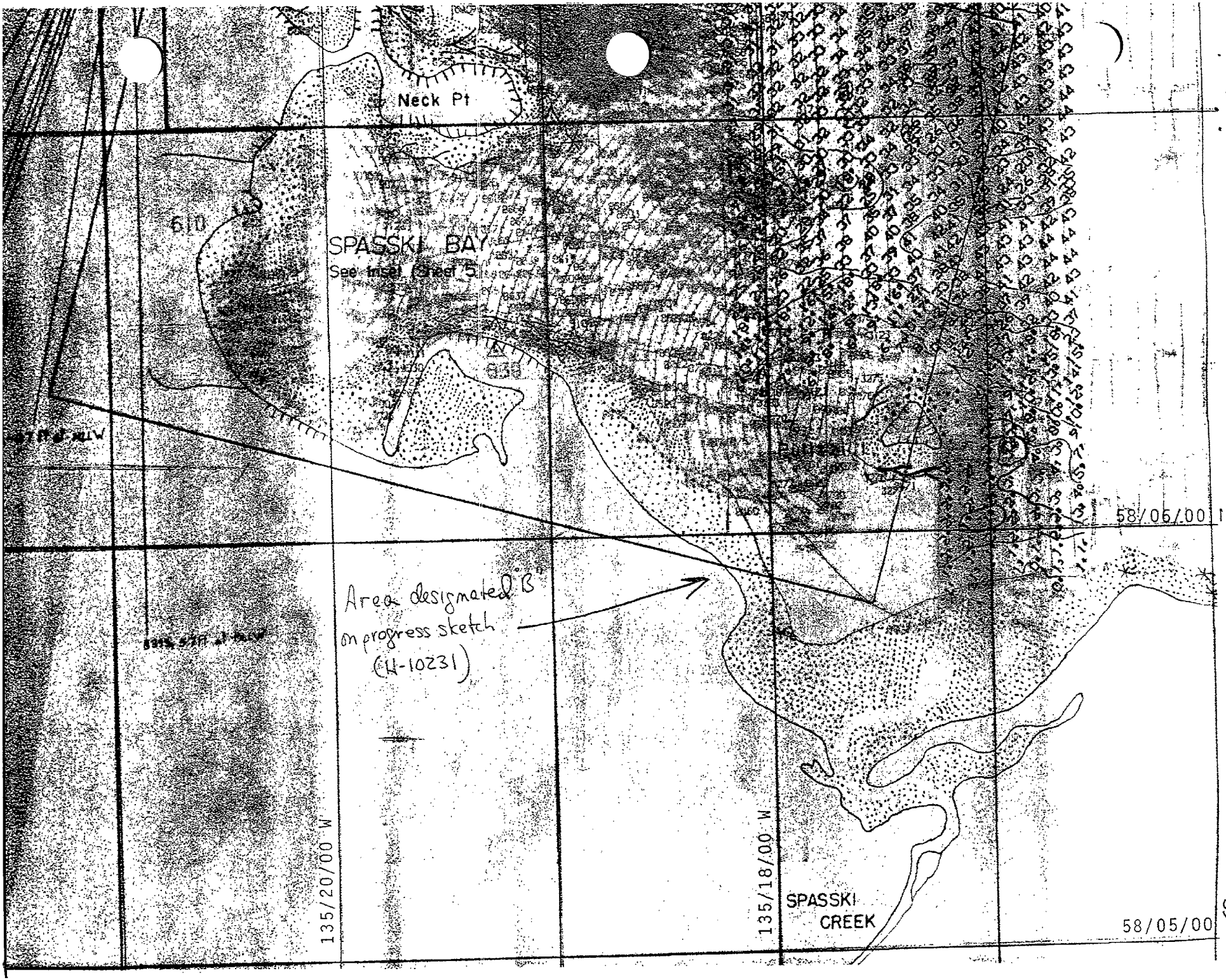
An area southwest of Pulizzi Island (58° 06' 00" N, 135° 17' 35" W) was not surveyed because it was over looked. An area along the north shore of Icy Strait (135° 20' 00"W, 58° 15' 48"N), where survey coverage did not meet requirements.

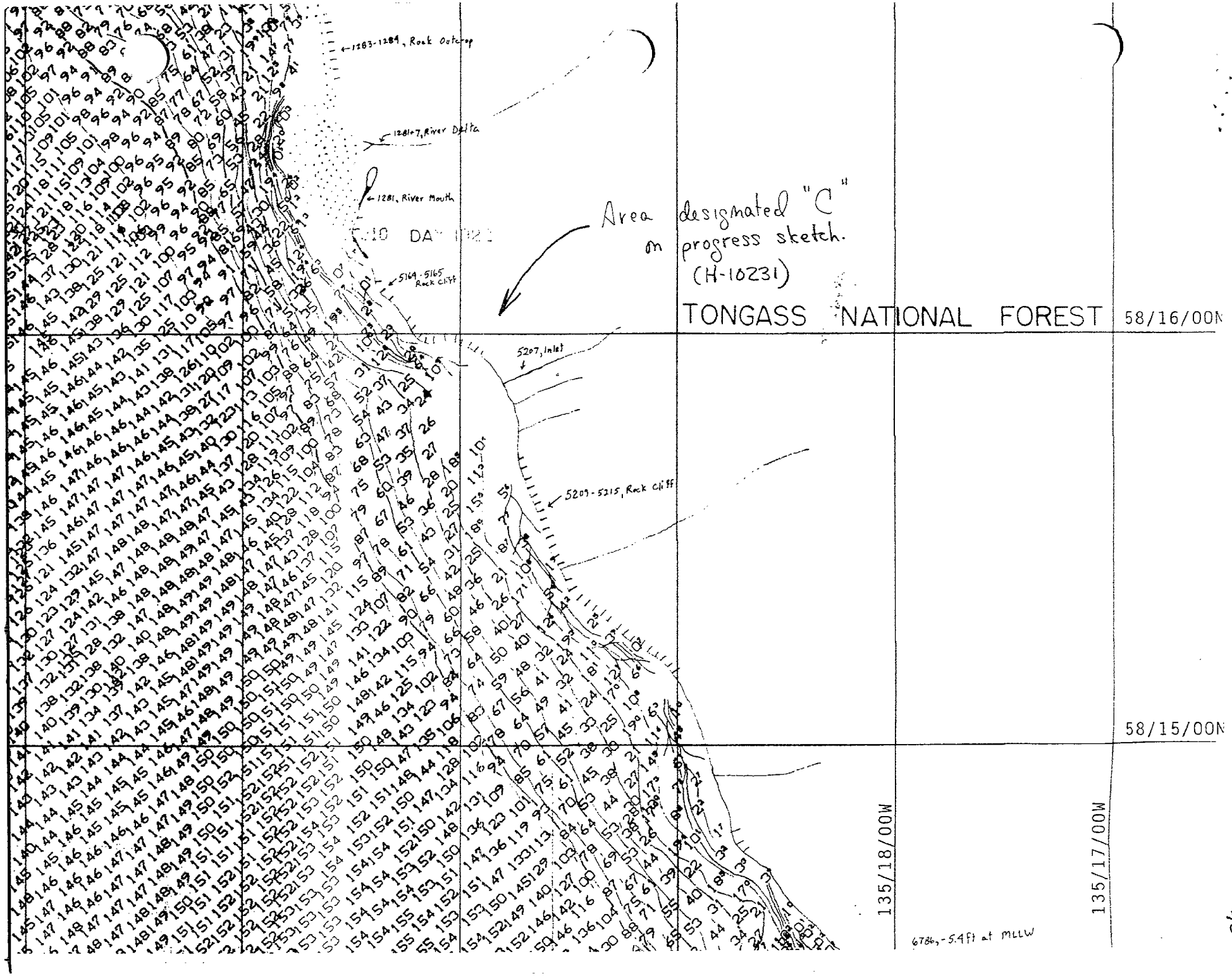
It is recommended that these areas be surveyed during future operations in this area.

N. AIDS TO NAVIGATION

There are no floating aids to navigation within the limits of this survey. There are two fixed aids to navigation Sisters Island Light and Spasski Island Light. Both of these lights are maintained by the United States Coast Guard.

The Sisters Light (Light List #24135) is 69 feet above the water on the southern end of the northern (larger) part


Neck Pt
SPASSKI BAY
See Inset Sheet 5
610
630
Area designated "B"
on progress sketch
(H-10231)
58/06/00
58/05/00
135/20/00 W
135/18/00 W
SPASSKI
CREEK


1283-1284, Rock Outcrop
1281+7, River Delta
1281, River Mouth
5169-5165 Rock Cliff
Area designated "C" in progress sketch. (H-10231)
TONGASS NATIONAL FOREST
58/16/00N
5207, Inlet
5209-5215, Rock Cliff
58/15/00N
135/18/00W
135/17/00W
6786, -5.4 ft at MLLW

December 3, 1986 N/CG243:GHM

TO: N/MOA2 - Charles B. Ellis

FROM: N/CG243 - George H. Mastrogianis G.H.M.

SUBJECT: Assignment of Registry Number

The following hydrographic registry number, H-10234, is assigned in accordance with the information listed below:

Registry No.	Field No.	Area	Project No.
H-10234	MI-20-3-86 (Sheet N)	ALASKA ICY STRAIT POINT SOPHIA TO POINT ADOLPHUS	OPR-0186

Note: This registry number (H-10234) had recently been rescinded and is now being reissued to a different project area.

cc:
N/MOA2x1 - Bouchard
N/MOA23 - MacFarland
N/MOP21 - Richards
N/CG24x2 - Wellman

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 6 1988 N/MOP211C/IAA

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

Dear Sir:

During office review of hydrographic survey H-10231, The Sisters and Vicinity to include Point Sophia, Icy Strait, Alaska, the following additional changes affecting Charts 17300 and 17316 were noted. Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following statements are recommended for inclusion in the Local Notice to Mariners:

"The following rocks and shoals in the vicinity of The Sisters Island and Spasski Island, Icy Strait, should be added to Charts 17300 and 17316 (depths are reduced to MLLW based on actual tides and the positions are on NAD 1927).

An uncharted rock covered by 1.1 fathoms at MLLW discovered; latitude 58°08'02.79"N, longitude 135°17'08.67"W; distance 0.50 nautical mile, bearing 277 degrees true from Spasski Island Light 12 (LL 24140).

An uncharted shoal covered by 1.4 fathoms at MLLW discovered; latitude 58°08'23.15"N, longitude 135°22'29.81"W; distance 3.34 nautical miles, bearing 277 degrees true from Spasski Island Light 12.

An uncharted shoal covered by 3.1 fathoms at MLLW discovered; latitude 58°08'13.50"N, longitude 135°21'54.06"W; distance 3.02 nautical miles, bearing 275 degrees true from Spasski Island Light 12.

An uncharted shoal covered by 3.8 fathoms at MLLW discovered; latitude 58°08'06.63"N, longitude 135°21'33.88"W; distance 2.84 nautical miles, bearing 273 degrees true from Spasski Island Light 12.

An uncharted rock covered by 4.4 fathoms at MLLW discovered; latitude 58°08'20.01"N, longitude 135°17'24.19"W; distance 0.78 nautical mile, bearing 299 degrees true from Spasski Island Light 12.

An uncharted rock (previously reported covered by 1.6 fathoms at MLLW, based on predicted tides) covered 1.2 fathoms at MLLW discovered; latitude 58°07'17.90"N, longitude 135°19'00.80"W; distance 1.64 nautical miles, bearing 246 degrees true from Spasski Island Light 12.

An uncharted rock covered by 3.4 fathoms at MLLW discovered; latitude 58°07'34.94"N, longitude 135°19'25.84"W; distance 1.75 nautical miles, bearing 257 degrees true from Spasski Island Light 12.

An uncharted shoal covered 1.7 fathoms at MLLW discovered; latitude 58°06'36.09"N, longitude 135°20'01.35"W; distance 2.45 nautical miles, bearing 236 degrees true from Spasski Island Light 12.

An uncharted shoal covered 1.5 fathoms at MLLW discovered; latitude 58°06'36.48"N, longitude 135°19'34.00"W; distance 2.25 nautical miles, bearing 232 degrees true from Spasski Island Light 12.

An uncharted shoal covered 4.7 fathoms at MLLW discovered; latitude 58°07'32.87"N, longitude 135°19'09.51"W; distance 1.64 nautical miles, bearing 254 degrees true from Spasski Island Light 12.

An uncharted shoal covered 7.5 fathoms at MLLW discovered; latitude 58°10'36.17"N, longitude 135°16'50.56"W; distance 0.83 nautical mile, bearing 291 degrees true from The Sisters Light (LL24135).

An uncharted shoal covered 1.6 fathoms at MLLW discovered; latitude 58°05'37.03"N, longitude 135°11'11.01"W; distance 1.59 nautical miles, bearing 154 degrees true from The Sisters Light (LL24135).

Sincerely,

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

IX. Approval Sheet for H-10233

The final field sheet and the accompanying records have been reviewed for accuracy, completeness, compliance with the project instructions, and adherence to required standards and procedures. The data is forwarded for final review and processing.

Submitted by:

Lillian J. Cone
Ensign, NOAA

Reviewed by:

Maureen R. Kenny
Maureen R. Kenny
Lieutenant Commander, NOAA
Field Operations Officer

Approved by:

John W. Carpenter
Captain, NOAA
Commanding Officer

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

DATE: August 12, 1987

Marine Center: Pacific

OPR: 0186

Hydrographic Sheet: H-10231

Locality: Point Sophia to Two Miles East of the Sisters, Icy Strait, Alaska

Time Period: April 16 - May 15, 1987

Tide Station Used: 945-2368 Swanson Harbor, AK

Plane of Reference (Mean Lower Low Water): 3.14 ft.

Height of Mean High Water Above Plane of Reference: 14.0 ft.

Remarks: Recommended Zoning:

1. Zone Direct

Chief, Tidal Datum Quality
Assurance Section

FILE COPY

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

MAR 23 1987 N/MOP21x2/MM

TO: Commanding Officer
NOAA Ship MT MITCHELL

FROM: N/MOP - Robert L. Sandquist

SUBJECT: Preprocessing Examination of:
H-10227 Alaska, Icy Strait,
Two Miles East of The Sisters to Point Augusta

H-10231 Alaska, Icy Strait,
Point Sophia to Two Miles East of The Sisters

H-10234 Alaska, Icy Strait,
Point Sophia to Point Adolphus

Hydrographic surveys H-10227, H-10231, and H-10234 have been reviewed in accordance with Hydrographic Survey Guideline No. 15, and the Preprocessing Examination Critique for these surveys is attached. Surveys H-10227, H-10231, and H-10234 are accepted for Pacific Marine Center processing.

The majority of the area within survey H-10234 could not be completed during the 1986 field season. The data acquired for H-10234 will be merged with that from adjacent survey H-10231 and survey number H-10234 will be rescinded. For purposes of this critique, items within H-10231 and H-10234 are discussed separately.

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

Attachment

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

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

March 19, 1987 N/MOP21x2/MM

TO: N/MOP - Robert L. Sandquist

FROM: N/MOP 21 - Thomas W. Richards FOR Dennis Hall

SUBJECT: Preprocessing Examination for H-10227, H-10231 and H-10234

I. SURVEY INFORMATION

A. Field No. MI-20-1-86, MI-20-2-86, MI-20-3-86 Registry No. H-10227, H-10231, H-10234

B. State: Alaska

General Locality: Icy Strait

Sublocalities: Two Miles East of The Sisters to Point Augusta
Point Sophia to Two Miles East of The Sisters
Point Sophia to Point Adolphus

C. Project Instructions: OPR-0186-MI-86

Original dated: July 29, 1986

Change No. 1 dated: August 4, 1986

D. Dates:

	H-10227	H-10231	H-10234
Field Work Commenced:	Sept. 19, 1986	Oct. 19, 1986	Nov. 5, 1986
Field Work Completed:	Nov. 13, 1986	Nov. 14, 1986	Nov. 12, 1986
plus 6 weeks	Dec. 26, 1986	Dec. 29, 1986	Dec. 24, 1986
Data received at PMC	Jan. 21, 1987	Feb. 6, 1987	Dec. 30, 1986
plus 2 months	Mar. 23, 1987	Apr. 6, 1987	Mar. 3, 1987

Examination critique transmitted to field March 23, 1987

Target for completion of Marine Center processing August 23, 1987

II. PREPROCESSING EXAMINATION CRITIQUE

Hydrographic surveys H-10227, H-10231, and H-10234 were performed by personnel of the NOAA Ship MT MITCHELL, CAPT Fidel T. Smith, Commanding Officer. The following personnel supervised portions of the data acquisition: LCDR Greenawalt, LT Diaz, LT(jg) Harris, ENS Jeffers, ENS Montgomery, ENS Bradley, ENS Schattgen, ENS Steger and ENS Hoffman.

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

A. Danger to Navigation Report

The hydrographer reported no dangers to navigation within the areas of the three surveys.

Three dangers were identified within the limits of H-10231 during the preprocessing examination. In addition, five previously uncharted shoals with depths greater than 11 fathoms were reported to the 17th Coast Guard District as information items for local fishermen (see Attachments A, B).

B. Compliance with Instructions

Surveys H-10227, H-10231, and H-10234 generally comply with the Project Instructions and Change 1. There are two AWOIS items within the limits of surveys H-10227 and H-10231.

Surveys H-10227 and H-10231 were submitted 4 and 6 weeks after the six-week data submission deadline, respectively. No copy of a request for an extension of the six-week submission deadline was received by this office.

C. Final Field Sheets

AWOIS Item #51073 (H-10231) was investigated with 10m line spacing and a minimum observed depth of 1.6 fathoms was determined by echo sounder. A sounding pole, leadline or divers should have been utilized to accurately determine the least depth of this item [HM 1.4.1, 1.4.3, 4.5.9.2]. The least depth of a point feature in water less than 20 fathoms should be determined to an absolute accuracy of less than one foot [HM 4.3.4].

The hydrographer states that shoreline items (ledge) shown in red on the final field sheets within H-10227 were not verified but approximate limits were observed while sounding. The hydrographer states no shoreline verification was conducted for H-10231 due to lack of shoreline manuscripts within the survey area. Shoreline features from the chart or USGS quad sheet which were verified or positioned by the hydrographer will be compared by PMC with the 1987 shoreline manuscripts of the area to determine which features need to be examined during the 1987 field season.

The depth curves for H-10231 are not continuous between east and west final field sheets. Careful sheet alignment and drafting of depth curves will allow for smooth curves to be drawn from one sheet to another.

One quarter of the bottom samples collected within surveys H-10227 and H-10231 exceeded specified spacing requirements. Bottom samples within inshore surveys should not exceed 6cm at the scale of the survey [HM 1.6.3].

Some rock symbols on the final field sheets for H-10227 and H-10231 are difficult to see due to congestion of depth curves and soundings (see Attachment C). Rock symbols should not be obliterated by soundings or other symbols [HM 1.5.6].

Poor position intersection angles were found within the southern half of a 1.0mm x 0.5mm area of sounding lines within H-10231 (see Attachment D). Four nautical miles of soundings (0.3% of the total linear nautical miles of hydrography) constitute the area of poor intersection angles. The angle of intersection for each position fix should not be less than 30 degrees or greater than 150 degrees [HM 4.4.3.2.2].

The hydrographer used three larger scale insets to aid in depicting features in harbors and bays within surveys H-10227 and H-10231. The chart compiler would have been aided had the hydrographer stated if these areas should be shown at larger scales on subsequent chart editions.

Most of the area within H-10231 was developed using reduced line spacing because of the irregular bottom topography. The characteristics of this irregular bottom would have been better illustrated had supplemental depth curves been added at 120, 140, 160 and 180 fathoms.

D. Descriptive Report

The Hydrographic Title Sheet (NOAA Form 77-28) for surveys H-10227 and H-10231 states MT MITCHELL was used for sounding operations when, in fact, several launches were used for both surveys. Vessel numbers and EDP numbers for all vessels acquiring hydrographic data should be listed within the Hydrographic Title Sheet [HM 5.3.2; PMC OPORDER, Appendix Q, Attachment B, Title Sheet, Section 5.a].

Section A (Project) of the Descriptive Report for H-10227 does not state the sheet letter specified within the Project Instructions. The designated sheet letter should be included in this section of the Descriptive Report [HM 5.3.4.A; PMC OPORDER Appendix Q, Attachment B, Section A.4].

Section F (Control Stations) for H-10231 defers discussion of all information in this section to the Horizontal Control Report and signal tape listing. This section in H-10227 contains signal numbers and station names but no general information regarding how control stations were established. The Hydrographic Manual (Section 5.3.4.F) and the PMC OPORDER (Appendix Q, Attachment B, Section F.1) specifically identifies information which should be included in this section of the report.

Section G (Hydrographic Position Control) for H-10227 and H-10231 defers discussion of all information regarding control equipment, calibration methods, evaluation of calibration data, and correctors applied to final soundings to the Horizontal Position Control Report for OPR-0186-MI-86. The Hydrographic Manual (Section 5.3.4.G) and the PMC OPORDER (Appendix Q,

Section G) specifically identifies items to be included in this section of the Descriptive Report.

Section K (Comparison with Prior Surveys) for H-10231 incorrectly states the prior surveys within the survey area are H-2662 and H-10231. The correct prior survey affecting H-10231 is H-2562.

Section L (Comparison with the Chart) for H-10231 recommends charting AWOIS item #51073 in an incorrect position. The hydrographer does not note that the position of this item in the AWOIS listing differs by 1 nm from the charted position. The position of #51073 (rock (PD); chart 17316), scaled from the 1:5000 inset plotted by ship personnel, is latitude 58°07'18"N, longitude 135°19'01"W.

Section L for H-10231 recommends deleting a rock awash charted at 58°6.9'N, 135°18.8'W (Chart 17302) but states that no search was conducted to verify or disprove this feature. The rock awash appears not on Chart 17302 but on Charts 17300 and 17316. The hydrographer recommends adding a rock awash symbol at 58°07.0'N, 135°18.9'W, based on a 2.9-fathom sounding which was not further investigated for least depth or positive identification. This 2.9-fathom sounding should have been classified as either a submerged rock covered 3 fathoms or a 3-fathom shoal.

Section L of H-10231 states a 1.75 fm depth charted at 58°08'00"N, 135°17'06"W originating from H-4227 WD (1922-23; 1:40,000) was not found on 25m line spacing. The hydrographer recommends the sounding be retained on the chart. Survey H-10231 should have either verified or disproved this depth. This item has been brought to the attention of N/CG241 for possible inclusion in the 1987 Project Instructions for Icy Strait.

Section M (Adequacy of Survey) for H-10227 incorrectly states that survey H-10231 is considered adequate to supersede all prior surveys.

Section M for H-10231 states two areas were not surveyed and should be investigated in the future. These items have been brought to the attention of N/CG241 for inclusion in the 1987 Project Instructions for Icy Strait. All incomplete field work should be noted in the Remarks section of the Hydrographic Title Sheet [HM 5.3.2; PMC OPORDER, Appendix Q, Attachment B, Title Sheet].

Section N (Aids to Navigation) for H-10227 recommends a 3rd order position be determined for Point Augusta Light. This item will be included in the 1987 Project Instructions for Icy Strait. This item should also appear in the Remarks column of the Hydrographic Title Sheet [HM 5.3.2; PMC OPORDER, Appendix Q, Attachment B, Title Sheet].

Section N for H-10231 does not state the source of the positions given for two fixed aids to navigation (The Sisters Light (#24135) and Spasski Island Light 12 (#24140)). The source of the positions in the Descriptive Report is survey work conducted in 1986 by the Pacific Photo Party (MOP222). This section also makes no comparison between the surveyed position and published positions (Light List and chart). Positions of all fixed aids to navigation should be compared with the survey, latest edition of the Light

List and the largest scale of the chart [HM 5.3.4.N; PMC OPORDER, Appendix Q, Attachment B, Section N.3].

Section N for H-10231 incorrectly states the position of The Sisters Light (Light List #24135). The unadjusted position of Sisters Light as determined by the Pacific Photo Party is latitude 58°10'18.600"N, longitude 135°15'22.602"W.

Section O (Statistics) for H-10231 does not include the number of bottom samples, tide stations, current stations, velocity casts or magnetic stations for the survey. This information should be provided [HM 5.3.4.O; PMC OPORDER, Appendix Q, Attachment B, Section O.3].

Section O (Statistics) for all surveys does not include the total days of production for each vessel used [HSG 53; PMC OPORDER, Appendix Q, Attachment B, Section O.2].

E. Echograms

Some non-standard abbreviations were used in annotating echograms on all surveys (e.g., RP, tbdb, O/S, DLBDB). Abbreviations used in annotating data should originate from either the listing of standard NOS abbreviations (from HM Tables B, E) or non-standard abbreviations defined at the beginning of the sounding records [HM 4.8.2].

F. Sounding Volumes and/or Raw Data Printouts

Sounding volumes forwarded with survey data for all three surveys had volume information written on temporary paper covers; the permanent cover labels glued to the volumes were blank. The information required on the cover label of each volume should be written on the attached covers in black ink [HM 4.8.3.1].

Few sounding volumes contain complete stamp (personnel and electronic) information. Header information of some master printouts were not completed. All applicable stamp information for the beginning of each day should be completed [HM 4.8.4.1, 4.8.4.2].

Bottom sample descriptions for H-10227 and H-10231 within the sounding volumes contain incomplete information regarding bottom sample depths, descriptions, and latitude and longitudes.

All saw-tooth records for the ARGO positioning system used during all surveys were poorly annotated. There is lack of consistent annotation of position numbers, opening/closing calibrations, and lane counts while on line and particularly during turns. Requirements for proper annotation of saw-tooth records is given in Section 4.8.6 of the Hydrographic Manual.

K. Special and/or Ancillary Reports

The Corrections to Echo Soundings Report, Electronic Control Report, and Horizontal Position Control Report were briefly examined during the preprocessing examination. No significant errors were evident in procedures or techniques used for determining horizontal and vertical corrections.

The Horizontal Position Control Report contains an abundance of information which affects all 3 surveys. If a separate report containing information for all surveys within a project area is forwarded with other project reports, it would be beneficial to verifiers if the report would specify which information is associated with each survey.

L. Automated Data Check

The arrangement of data tapes (by vessel and then by day number) and color coding the corrector tapes allowed for very rapid and efficient spooling of the survey data.

Positions designated "N.S.P." on corrector tapes were not labelled as such in the Abstract of Positions. The Abstract of Positions was used by PMC to determine all data which was to be designated "N.S.P.".

Several data tapes were mispunched (the spacing between consecutive rows of hole punches was greater than standard spacing), causing several errors during the spooling of survey H-10227. These tapes were repunched by PMC. It is suggested that MT MITCHELL's paper tape punches be checked for proper alignment and tension.

M. General Comments

The Descriptive Report for H-10231 contains several errors, both typographical and conceptual, which should have been rectified during proof-reading (see Attachment E). Specific items which are required by the Hydrographic Manual to be included in the Descriptive Report were omitted, poorly or inaccurately described, or deferred to other reports. Critical information such as the position of an AWOIS item was incorrectly stated. The hydrographer should ensure that the text of each Descriptive Report accurately and completely describes not only the data depicted on the final field sheets but also the methods and results used during data acquisition.

N. Survey Acceptance

The preprocessing examination of H-10227, H-10231 and H-10234 were conducted under the time constraints of HSG 15. All comments contained herein are based on a spot check of the data, and it is possible that some problem areas have not been addressed.

Except for the items noted in the critique, H-10227, H-10231 and H-10234 are in compliance with the Project Instructions. I recommend that H-10227, H-10231 and H-10234 be accepted for Nautical Chart Branch processing.

Prepared by:

Marlene Mozgala

Marlene Mozgala

ATTACHMENT A

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

N/MOP21x2/MW

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

Dear Sir:

During office review of hydrographic survey H-10227, Icy Strait (Two Miles East of The Sisters to Point Augusta), Alaska, the following changes affecting charts 17300 and 17316 (NAD27 datum) were noted. While not considered dangers to surface navigation, the location of these shoals is deemed to be of significant interest to local fishermen. Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following statements are recommended for inclusion in the Local Notice to Mariners:

"An uncharted shoal covered 16.5 fathoms (MLLW, based on predicted tides) is at latitude 58°08'27", longitude 135°00'18"W."

"An uncharted shoal covered 19.6 fathoms (MLLW, based on predicted tides) is at latitude 58°07'45"N, longitude 135°00'54"W."

"An uncharted shoal covered 19.9 fathoms, (MLLW, based on predicted tides) is at latitude 58°08'32"N, longitude 135°00'48"W."

Sincerely,

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

bc:N/CG222

TJG

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE
N/MOP21	Richards		N/MOP	Sandquist	
N/MOP2	Mordock				
N/MOPx1	Petersen				

NOAA FORM 61-2

* U.S. GPO: 1985-567-601

ATTACHMENT B

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

N/MOP21x2/MM

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

Dear Sir:

During office review of hydrographic survey H-10231, Icy Strait (Point Sophia to Two Miles East of The Sisters), Alaska, the following changes affecting charts 17300 and 17316 (NAD27 datum) were noted. Questions concerning the survey may be directed to Cdr. Thomas W. Richards, Chief, Nautical Chart Branch, telephone (206) 526-6835.

The following statements are recommended for inclusion in the Local Notice to Mariners:

"An uncharted shoal covered by 1.6 2 RK fathoms (MLLW, based on predicted tides) is at latitude 58°07'18"N, longitude 135°19'01"W."

"An uncharted shoal covered by 1.8 2.0 fathoms (MLLW, based on predicted tides) is at latitude 58°06'53"N, longitude 135°18'09"W."

"An uncharted shoal covered by 15.3 fathoms (MLLW, based on predicted tides) is at latitude 58°07'46"N, longitude 135°14'47"W."

"An uncharted shoal covered by 11.3 fathoms (MLLW, based on predicted tides) is at latitude 58°11'05"N, longitude 135°22'06"W."

"An uncharted shoal covered by 11.8 9 fathoms (MLLW, based on predicted tides) is at latitude 58°07'24"N, longitude 135°17'12"W."

Sincerely,

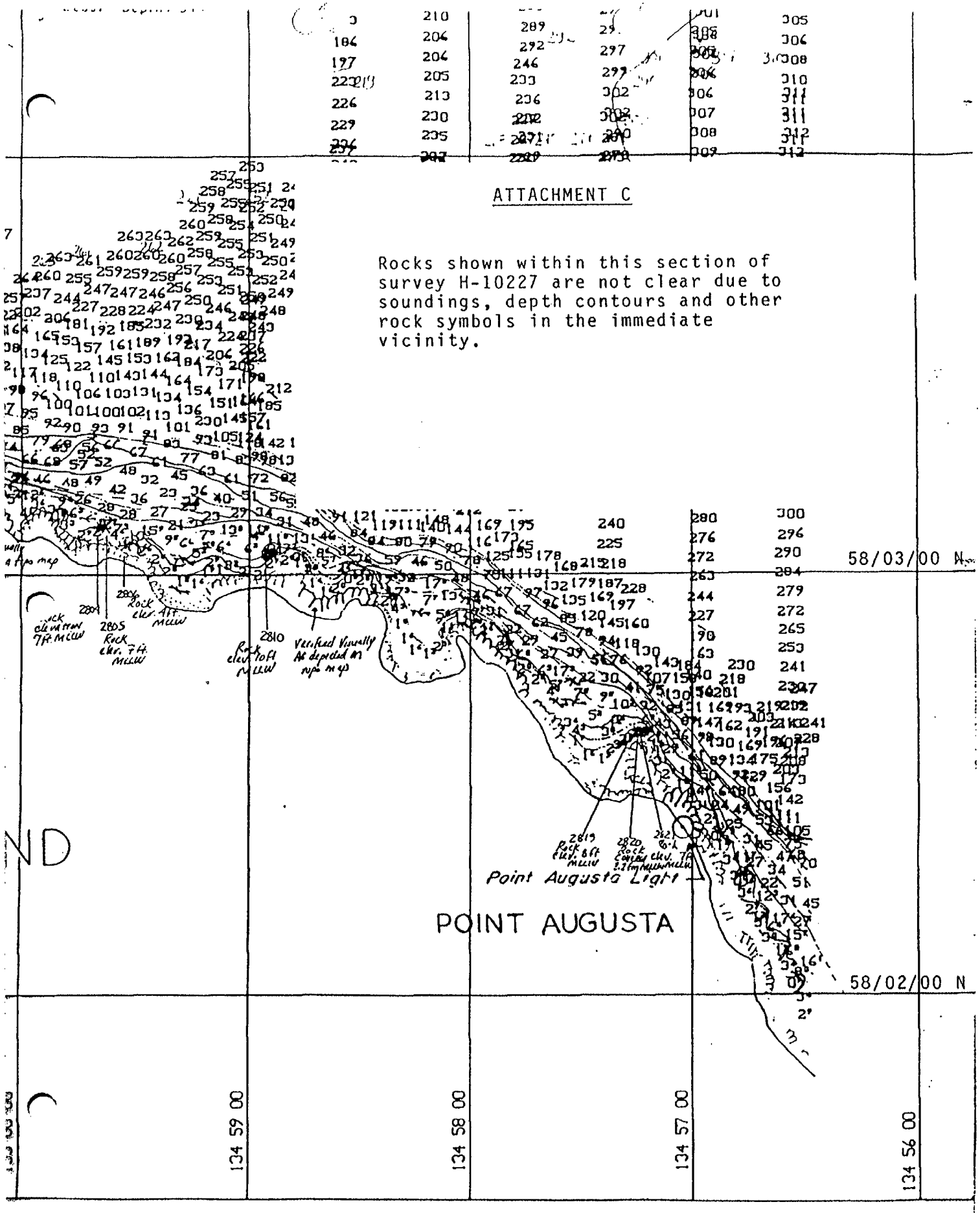
Robert L. Sandquist
Rear Admiral, NOAA
Director, Pacific Marine Center

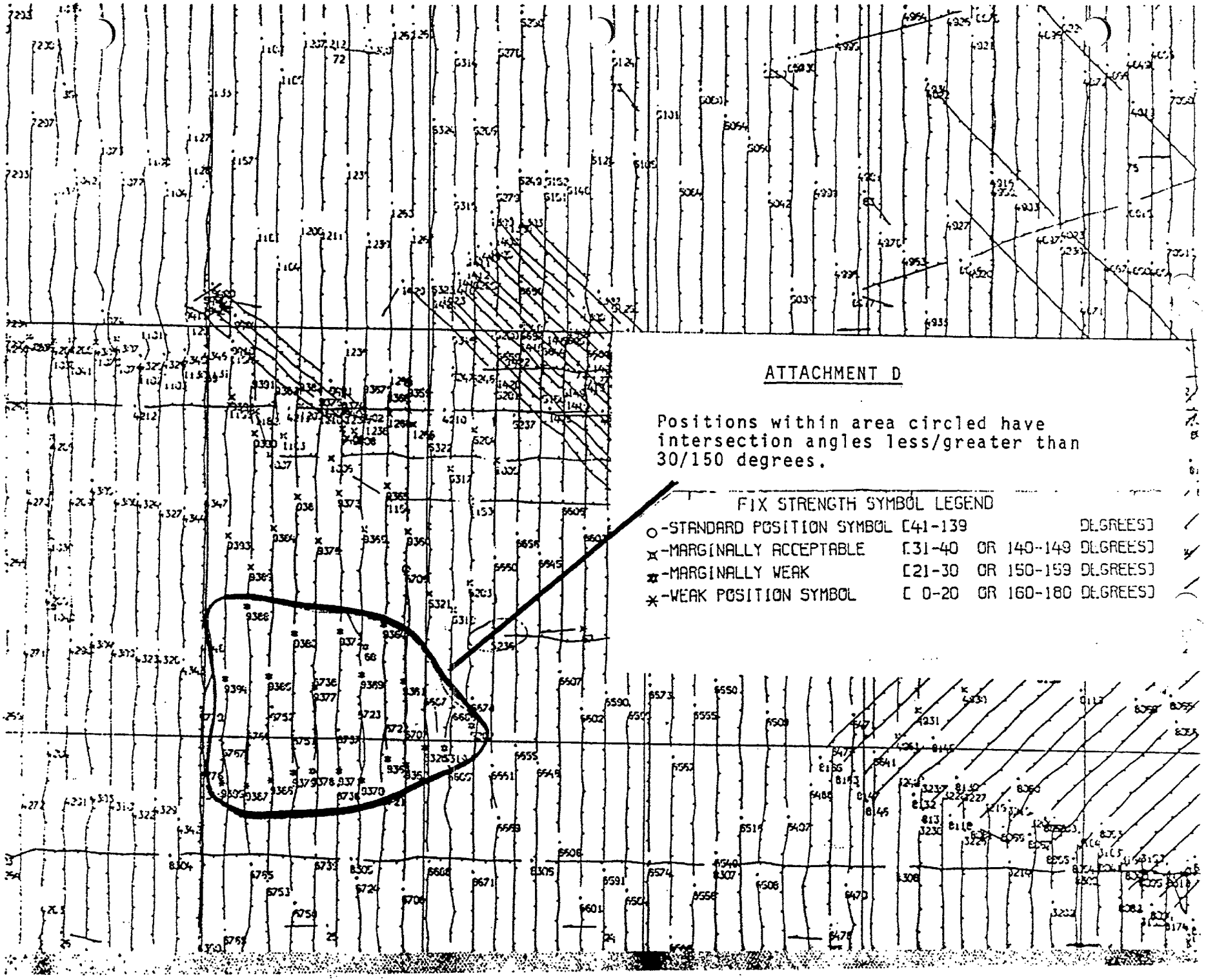
bc:N/CG222

FILE COPY 559

CODE	SURNAME	DATE	CODE	SURNAME	DATE
N/MOP21	Richards		N/MOP	Sandquist	
N/MOP2	Mordock				
N/MOPx1	Petersen				

NOAA FORM 61-2


ATTACHMENT C
Rocks shown within this section of survey H-10227 are not clear due to soundings, depth contours and other rock symbols in the immediate vicinity.
58/03/00 N
58/02/00 N
POINT AUGUSTA
Point Augusta Light
134 59 00
134 58 00
134 57 00
134 56 00


ATTACHMENT D
Positions within area circled have intersection angles less/greater than 30/150 degrees.
FIX STRENGTH SYMBOL LEGEND
○-STANDARD POSITION SYMBOL [41-139 DEGREES]
⧖-MARGINALLY ACCEPTABLE [31-40 OR 140-149 DEGREES]
⧗-MARGINALLY WEAK [21-30 OR 150-159 DEGREES]
✳-WEAK POSITION SYMBOL [0-20 OR 160-180 DEGREES]

ATTACHMENT E

Some errors which should have been discovered during the review of report and final field sheets.

L. COMPARISON WITH CHART

Comparison with NOAA Chart No. 17300 24th Edition June 15, 1985

The investigation of AWOIS item 51073 is indicated on Charts 17300 and 17316, as a rock position doubtful, revealed shoaling approximately 400 meters south by southeast of the charted position. The least depth of 1.6 fathoms is at ~~58° 07.49~~ 58° 07'18"N, ~~135° 19.30~~ 135° 19'01"W. This shoal is 370 meters bearing 146° from the charted position doubtful. This search was conducted by first running 25-meter spaced lines then 10-meter spaced lines over the charted position and suspect areas. This AWOIS item was reported by a vessel which grounded on this shoal. The method which the vessel positioned itself while aground is unknown.

Latitude 58°07'18"N, Longitude 135°19'01"W.

Latitude 58°06'.5 is value reported in AWOIS Listing, not the charted value.

Recommendation: Delete position doubtful charted at LAT. ~~58° 06.5~~ 58°07'.5N, LONG. 135° 19.25'W and chart as a ~~rock~~ shoal at 58° ~~07.49~~ 07'18"N, 135° ~~19.30~~ 19'01"W.

A charted sounding of 146 fms. at 58° 14.0'N, 135° 18.2'W compares to 122 fms. sounding from H-10231. The steeply sloping bottom combined with errors from transferring the charted sounding are contributing factors in the 42 fms. discrepancy.

Recommendation: Supersede ~~prior survey.~~ charted sounding

At 58° 12.2'N, 135° 21.0'W the prior survey indicates a depth of 145 fms. H-10231 shows a depth of 130 fms. which is 15 fms. shoaler.

Recommendation: Supersede ~~prior survey.~~ charted sounding

Comparison with NOAA Chart No. 17302 14th Edition October 3, 1981:

Chart 17302 junctions with the western edge of H-10231. Soundings along longitude 135° 23.5'W agree to within 5% except for a 127 fms. sounding which compares to a 116 fms. sounding on H-10231 at LAT. 58° 17.4'N, LONG 135° 23.5'W.

Latitude 58°06'.9N

In Spasski Bay, Chart No. ~~17302~~ 17316 shows a rock awash symbol just to the southeast of Neck Point ~~58° 10.9'N~~, 135° 18'.9 ~~10.0~~'W. Spasski Bay inset (sheet 5 of 6) shows a 2.9 fms. to the north of the rock awash symbol. A search was not conducted to disprove the rock awash at that location.

delete without investigating??

Recommendation: Delete the charted rock symbol at 58° 06.9'N, 135° 18.9'W, and add ~~rock awash~~ submerged rock symbol .... at 58/07.0N, 135/18.8W. Also the rock ledge around Neck Point should be redefined using the H-10231 survey data.

(from pp.9 of Descriptive Report)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

FILE COPY

APR 2 8 1987

N/CG241:AAA

MEMORANDUM FOR: Commander Thomas W. Richards, NOAA
Chief, Nautical Chart Branch

FROM: Captain Roy K. Matsushige, NOAA
Chief, Hydrographic Surveys Branch

SUBJECT: Oversized Smooth Sheet H-10231

REF: N/MOP211/DJH Memorandum, April 10, 1987

You are authorized to compile the results of hydrographic survey H-10231, Alaska, Icy Strait, on an oversized smooth sheet, not to exceed 106 x 152 cm.

NOAA FORM 77-27(H) (9-83) | U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-10231

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	9
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	11

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	6					
ENVELOPES						
VOLUMES	11				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			6195
POSITIONS REVISED			1830
SOUNDINGS REVISED			304
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL	230.5		230.5
VERIFICATION OF POSITIONS	379.5		379.5
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	142		142
COMPARISON WITH PRIOR SURVEYS AND CHARTS		18	18
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	8.0	41	49
GEOGRAPHIC NAMES			
OTHER* Digitizing			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	760	59	

Pre-processing Examination by LT Marlene Mozgala	*Beginning Date*	*Ending Date* 3/23/87
Verification of Field Data by Thelma O. Jones	*Time (Hours)* 760	*Ending Date* 5/18/88
Verification Check by Bruce A. Olmstead, James L. Stringham	*Time (Hours)* 88	*Ending Date* 5/12/88
Evaluation and Analysis by Isagani Almacen	*Time (Hours)* 59	*Ending Date* 6/19/88
Inspection by Dennis J. Hill	*Time (Hours)* 6	*Ending Date* 7/01/88

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

PACIFIC MARINE CENTER
Evaluation Report
H-10231

1. INTRODUCTION

Survey H-10231 is a basic hydrographic survey accomplished by the NOAA Ship MT. MITCHELL and NOAA Ship FAIRWEATHER under the following Project Instructions.

OPR-0186-MI-86, dated July 29, 1986
Change No. 1, dated August 4, 1986

OPR-0186-FA-87, dated July 29, 1986
CHANGE No. 1, dated August 4, 1986
CHANGE No. 2, dated December 24, 1986
CHANGE No. 3, dated February 2, 1987
CHANGE No. 4, dated March 17, 1987
CHANGE No. 5, dated April 13, 1987
CHANGE No. 6, dated April 29, 1987

Survey H-10231 was started by NOAA Ship MT. MITCHELL during the later part of the 1986 field season and was completed in 1987 by NOAA Ship FAIRWEATHER.

NOAA Ship MT. MITCHELL worked in the eastern portion of the survey area in 1986 and registered the data as H-10234. The field data acquired were merged with and made a part of survey H-10231. The registry number H-10234 was rescinded.

This survey is in Alaska and covers the portion of Icy Strait off Point Sophia including the waters around The Sisters Island, Spasski Island, Pulizzi Island and Sisters Reef. The survey extends across the northern and southern shores of the strait from longitude 135°11'00.0"W to longitude 135°28'00.0"W. The shores are generally steep and rugged. They are comprised mostly of ledges, off-lying islets, rocks, reefs and kelp with patches of sand and gravel beaches. The bottom generally consists of mud, sand and gravel with some rocky areas particularly around the small islands. Depths range from 0.0 to 242 fathoms.

A request to compile this survey on an oversized smooth sheet (not to exceed 106 x 152 cm.) was approved by the Chief, Nautical Chart Branch (N/CG2). Copy of the letter of approval is attached.

Predicted tides for Juneau, Alaska, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Swanson Harbor, Alaska, gage 945-2368 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. The TRA, sound velocity and electronic control correctors are adequate. 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 Guidelines No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. Certain

descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Sections F and G of the hydrographer's report and the Horizontal and Electronic Control Reports for OPR-0186-MI-86 and OPR-0186-FA-87 contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are NGS published and 1986 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: + 1.221 seconds (+ 37.8 meters)
longitude: - 6.492 seconds (- 106.2 meters).

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

Several stations are labeled on the smooth sheet with two station numbers. This numbering system originated with the hydrographer during the 1986 and 1987 seasons and was caused by the lack of transfer of signal identification information between the different field parties.

There are 145 weak fixes (angles of intersection less than 30 degrees or more than 150 degrees) noted on this survey. However, there are no significant plotting differences between the soundings located by these fixes and those in adjacent areas. Also, none of these fixes are used to position dangers to navigation except for one taken over an inshore rock at latitude 58°14'00.12"N, longitude 135°16'38.75"W. The difference between the field and photogrammetric positions of this rock, which is the most inshore among the group of rocks in the area, was found to be within the allowable tolerance. These fixes are considered acceptable.

The following shoreline maps apply to this survey.

	Photo Date	Class
TP-01310	May, June, July 1985	III
TP-01311	May, June, July 1985	III
TP-01313	May, June 1985	III
TP-01314	May, June 1985	III

Shoreline maps of the area were not available during the 1986 survey and therefore no shoreline verification was done at that time. Shoreline verification was accomplished later by NOAA Ship FAIRWEATHER during the 1987 additional field work on survey H-10231. The shoreline and features from the above listed maps with applicable changes determined during this survey have been applied to the smooth sheet.

3. HYDROGRAPHY

With the exceptions noted in this report, hydrography is adequate to:

a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;

b. reveal there are no significant discrepancies or anomalies requiring further investigation; and

c. show the survey was properly controlled and soundings are correctly plotted.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3; the Hydrographic Survey Guidelines; and the PMC OPORDER, except as noted in the attached copy of the Preprocessing Examination, dated March 23, 1987 and as follows.

A landmark, (aero beacon) on the island, The Sisters, charted at latitude 58°10'16"N, longitude 135°15'21"W, was not located during the course of this survey.

5. JUNCTIONS

Survey H-10231 junctions with the following surveys.

Survey	Year	Scale	Area
H-9990	1981	1:10,000	West
H-10227	1986	1:20,000	East
H-10257	1987	1:10,000	North

The junction with survey H-9990 has not been formally completed since this survey was previously processed and forwarded for charting. The junction comparison was made using a copy. Comparison is good; however, some soundings have been transferred to H-10231 to better portray the bottom configuration in the common area. Portions of the depth curves on survey H-9990 should be adjusted to conform with survey H-10231.

The junctions with surveys H-10227 and H-10257 are complete. Comparisons are good. Some soundings were transferred to H-10231 to justify depth curves and portray shoaler information within the adjoining area.

6. COMPARISON WITH PRIOR SURVEYS

H-2562 (1901) 1:40,000

Survey H-2562 covers the entire area of the present survey. Taking into consideration the differences in the scales of the surveys and the methods of surveying, comparison with this prior survey is satisfactory. Survey H-10231 was accomplished with more accurate positioning and determination of critical depths through closer line spacing, supplemented by dive investigations.

Some discrepancies between the two surveys were noted, however, and are discussed in section K of the hydrographer's report.

Overall the surveyed area seems to have decreased in depth since 1901. In accordance with HSG 39 prior survey data has been evaluated to determine the cause, the amount and the time of the uplift. No positive conclusion were reached and it cannot be established whether the uplift is a result of isostatic rebound or tectonic uplift.

H-4227 WD (1922-23) 1:40,000

The wire drag survey H-4227 of 1922 and 1923 covers the area of the present survey. The shoal soundings located by echo sounder and dive investigations over the previously dragged area are shallower in many cases. These discrepancies could be due to the differences in the methods of positioning and the accuracy of depth determination between the two surveys. The shallower depths determined from the survey are shown on the smooth sheet and should be used for charting.

There are no AWOIS items originating from the priors applicable to the present survey.

Survey H-10231 is adequate to supersede survey H-2562 and H-4227 within the common areas.

7. COMPARISON WITH CHART

Chart 17300, 24th Edition, dated June 15, 1985; scale 1:209,978.
Chart 17302, 14th Edition, dated October 3, 1981; scale 1:80,000.
Chart 17316, 14th Edition, dated October 30, 1982; scale 1:80,000.

a. Hydrography Charted information originates with surveys H-2562, H-4227 WD and other miscellaneous sources.

The cable area off the northern shore of the strait was not specifically investigated and should be retained as charted.

With the exception of those items discussed in the preceding section of this report, survey H-10231 is adequate to supersede charted hydrography within the common area.

b. AWOIS Item 51073, a submerged rock (position doubtful) charted at latitude 58°07'28.0"N, longitude 135°19'15.0"W, originates from Chart Letter No. 397/39. This item is adequately discussed in section L of the hydrographer's report and H-10231 Addendum.

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

d. Aids to Navigation The Sisters Light and Spasski Island Light 12 were reobserved during this survey and positions established to Third-Order accuracy. These aids were found in good condition and adequately serve their intended purpose. A copy of the NOAA Form 76-40 is attached. There are no floating aids located within the limits of this survey. The aero beacon on The Sisters was not located during the course of this survey.

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

f. Dangers to Navigation Dangers to navigation were found during office processing and were reported to USCG and DMA. Copies of the reports are attached.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10231 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is a good hydrographic survey. No additional field work is required.

for Arsenio A. Luceno
Isagani A. Almacen
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-10231. This survey meets or exceeds Charting and Geodetic Services' standards for products in support of nautical charting.

Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:LWMordock

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

7/9/88

Director, Pacific Marine Center (Date)

chart
17302 R.B. Ross 10-26-88 Appl'd in full

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10231

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
~~17302~~	~~12/6/89~~	~~S.H. Obst~~	~~Full Part Before After Marine Center Approval Signed Via full application~~
~~"~~			~~Drawing No. of Sndgs applied~~ ~~Previously applied~~ EdM 5-91
			this^e application thru 17316 accepted to prevent confusion EdM 5-30-91
17316	12/15/89	Stanley Obst	Full ~~Part Before~~ After Marine Center Approval Signed Via full application
			Drawing No. of Sndgs from 85
17300	2/21/90	ALMACEN	Full ~~Part Before~~ After Marine Center Approval Signed Via FULL APPLICATION
			Drawing No. OF SNDGS. FROM S.S THRU 17316
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE

EXAMINED FOR NM
GDBU
[signature] 11-14-89
[signature] 12/7/89

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10231

INSTRUCTIONS

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CHART	DATE	CARTOGRAPHER	REMARKS
17302	10-26-88	Ralph B. Rose	(Full) Part Before (After) Marine Center Approval Signed Via
			Drawing No. appl'd in full.
~~17316~~	~~11-14-89~~	~~Ann-Marie Sumner~~	~~Full Part Before After Marine Center Approval Signed Via~~
			~~Drawing No. 14 APPLIED CRITICAL CORRECTIONS ONLY~~
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.