

10408

10408

Diagram No. 8202-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. RA-10-5-91
Registry No. H-10408

LOCALITY

State Alaska
General Locality Cross Sound
Sublocality Southwestern Portion
of Dundas Bay

1991

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE October 5, 1992

NO

10408-10408

PRODS

17302

17303

15760

CPD

HYDROGRAPHIC TITLE SHEET

H-10408

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RA-10-5-91

State Alaska

General locality Cross Sound

Locality Southwestern Portion of Dundas Bay

Scale 1:10,000

Date of survey October 20-November 6, 1991

Instructions dated February 21, 1990 *

Project No. OPR-0106-RA

Vessel NOAA Ship RAINIER(2120), RA-3(2123), RA-4(2124), RA-5(2125), RA-6(2126)
RA-8(2128)

Chief of party CAPT Thomas W. Richards, NOAA

Surveyed by LT Waddell, LTJG Nelson, LTJG Weber, LTJG Ward, LTJG Johnson, & ENS Klay

Soundings taken by echo sounder, ~~has been replaced~~ DSF 6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by: E. Brown, E. Domingo, T. Jones,

~~Produced by~~ S. Otsubo, R. Shipley

Automated plot by PHS Xynetics Plotter

Evaluation by: R.N. Mihailov

~~Verification by~~ Meters & Decimeters

Soundings in ~~fathoms~~ ~~feet~~ at ~~MLW~~ MLLW

REMARKS: All times are Universal Coordinated Time (UTC).

*
Change No. 1 dated September 5, 1991

Revisions and marginal notes in black were generated during office
processing. All separates are filed with the hydrographic data,
as a result page numbering may be interrupted or non-sequential.

AWOIS/SURF 10/28/92
MLR

ZWWL 9/30/93

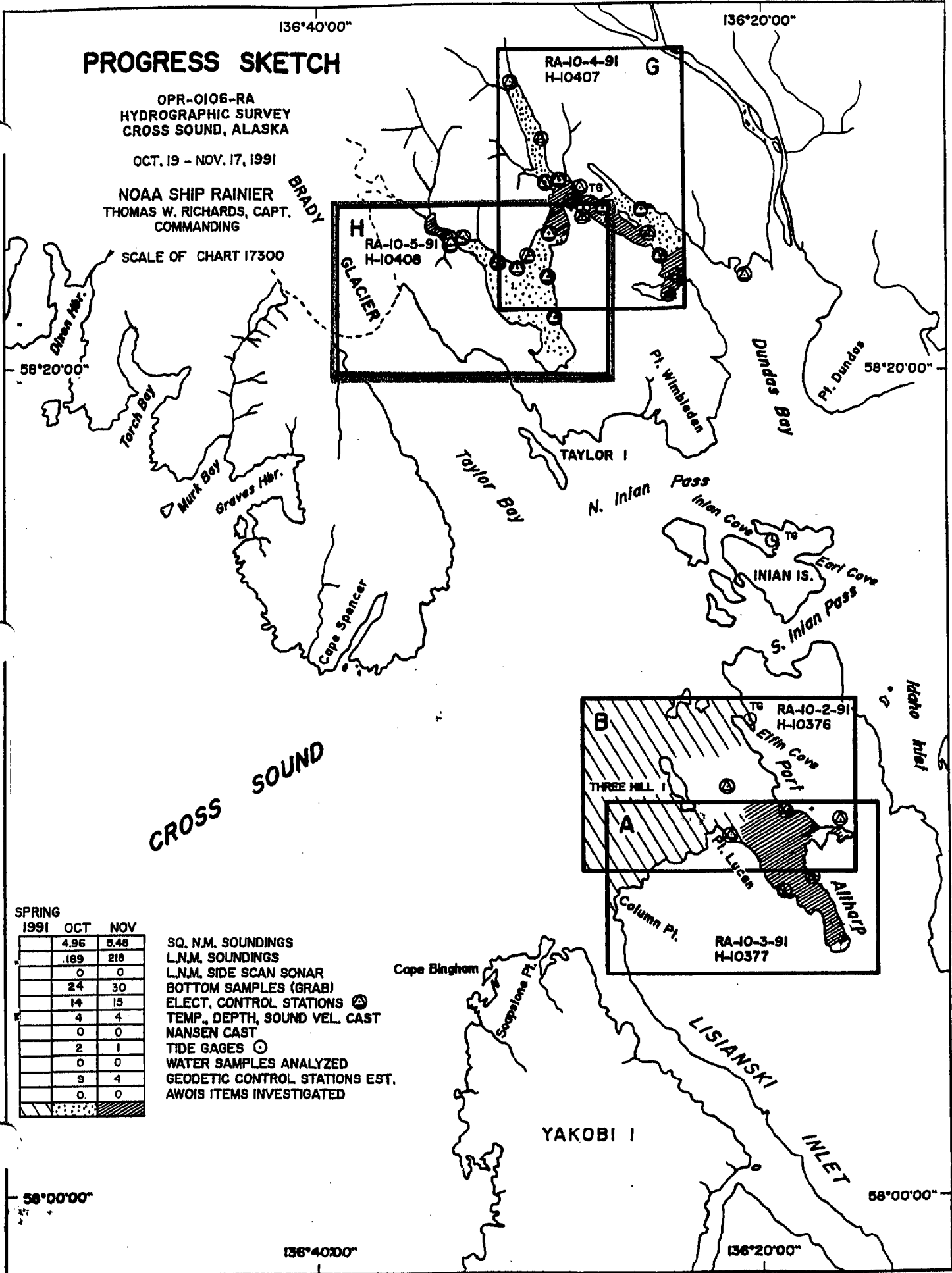
PROGRESS SKETCH

OPR-0106-RA
HYDROGRAPHIC SURVEY
CROSS SOUND, ALASKA

OCT. 19 - NOV. 17, 1991

NOAA SHIP RAINIER
THOMAS W. RICHARDS, CAPT.
COMMANDING

SCALE OF CHART 17300



SPRING

1991	OCT	NOV
	4,96	5,48
	.189	218
	0	0
	24	30
	14	15
	4	4
	0	0
	2	1
	0	0
	9	4
	0	0
	(Patterned box)	

- SQ. N.M. SOUNDINGS
- L.N.M. SOUNDINGS
- L.N.M. SIDE SCAN SONAR
- BOTTOM SAMPLES (GRAB)
- ELECT. CONTROL STATIONS (⊙)
- TEMP., DEPTH, SOUND VEL. CAST
- NANSEN CAST
- TIDE GAGES (⊙)
- WATER SAMPLES ANALYZED
- GEODETTIC CONTROL STATIONS EST.
- AWOIS ITEMS INVESTIGATED

58°00'00"

136°40'00"

136°20'00"

58°00'00"

Descriptive Report to Accompany Hydrographic Survey H-10408

Field Number RA-10-5-91

Scale 1:10,000

October-November 1991

NOAA Ship RAINIER

Chief of Party: Captain Thomas W. Richards

A. PROJECT ✓

This basic hydrographic survey was completed in Cross Sound, southeastern Alaska, as specified by Project Instructions OPR-O106-RA dated February 21, 1990 and Change No. 1 dated September 5, 1991. This survey is designated Sheet H on the sheet layout dated June 1, 1990.

This survey is one in a series that will provide contemporary hydrographic data for updating existing nautical charts and planned larger scale chart coverage of the Cross Sound area. There have been numerous reports of shoals, rocks, and inaccurately charted depths and landmarks from the Southeastern Alaska Pilots' Association and NOAA field personnel. In 1959, the U.S. Coast and Geodetic Survey Ship PATTON reported that survey investigations in several areas revealed depths significantly shoaler than those charted. Troller fisherman have requested a detailed survey to aid in preventing the loss of trolling gear.

B. AREA SURVEYED ✓ See evaluation report, Section 1.

The survey, located in southeastern Alaska, 60 NM west of Juneau, encompasses the southwest portion of Dundas Bay. The survey limit is the enclosed portion of Dundas Bay south of $58^{\circ}22'30''N$ and west of $136^{\circ}28'30''$. Data acquisition was conducted from October 20 through November 06, 1991 (DN 293 to 310).

This survey is entirely within Glacier Bay National Park and Preserve. Shoreline from the northwest to southeast are steep rocky slopes heavily wooded with dense undergrowth at the shore. Shorelines to the south and southwest are low, heavily wooded lands bordered by grassy marshes and shallow tidal flats.

C. SURVEY VESSELS

Data were acquired by NOAA Ship RAINIER's four automated survey launches and a Boston Whaler as noted below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operation</u>
RA-3	2123	Hydrography Bottom Samples Shoreline Verification

RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Velocity Casts Bottom Samples
RA-6	2126	Hydrography Shoreline Verification
RA-8	2128	Shoreline verification

In addition to the survey vessels listed above, two 17' Boston Whalers, a 19' MonArk, and a 12' Zodiac were used to support operations for horizontal control and tide station installation/maintenance.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data acquisition and processing were accomplished with Hewlett-Packard (HP) 340M workstations and the following HDAPS programs:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
SURVEY	6.04	12 Jul 1991
POSTSUR	5.17	16 Aug 1991
PLOTALL	1.97	16 Aug 1991
POINT	1.31	12 Jul 1991
BACKUP	2.00	20 Mar 1991
CONVERT	2.42	12 Jul 1991
PRINTOUT	2.30	20 Mar 1991
DIAGNOSTIC	2.70	20 Mar 1991
INVERSE	1.31	12 Jul 1991
INSTALL	2.01	12 Jul 1991
BASELINE	1.10	20 Mar 1991
QUICK	1.10	20 Mar 1991
LISTAWOIS	1.32	12 Mar 1991
LOADNEW	1.30	20 Mar 1991
REJECT	1.00	20 Mar 1991
CARTO	1.20	20 Mar 1991
Vers	N/A	20 Mar 1991
BACKOLD	1.11	12 Jul 1991
NEWCONT	1.10	20 Mar 1991
DISC_UTIL	1.00	20 Mar 1991
MB	N/A	20 Mar 1991
HJ	N/A	20 Mar 1991
AUTOST	1.10	19 Apr 1991
GLOBAL	1.11	12 Jul 1991
MAKEFIX	1.00	20 Mar 1991
BIGABST	1.12	12 Jul 1991
REAPPLY	1.33	16 Aug 1991
PREDICT	1.11	12 Jul 1991

READPROJS	1.07	12 Jul 1991
SOFTCHECK	1.11	12 Jul 1991
HPRAZ	1.23	12 Jul 1991
FILESYS	2.11	19 Apr 1991
DP	1.11	12 Jul 1991
MANU_DATA	1.11	12 Jul 1991
RAMSAVER	1.00	20 Mar 1991
GRAPHEDIT	1.02	18 Sept 1991
EXCESS	3.02	3 Sept 1991
DAS_SURV	6.05	12 Jul 1991
CAT_KEYS	0.99B	12 Jul 1991
CSTAT_UP	1.00	12 Jul 1991
BIGAUTOST	1.10	12 Jul 1991
ABST	3.05	12 Jul 1991

On October 28, RAINIER received adjusted positions for stations that had been positioned in spring of 1991 using GPS. For stations that had already been used for range-range hydrography, the adjusted position was entered in as a new station, usually a 300 series station number. For stations that had not been used for range-range hydrography the adjusted position was substituted for the old position and maintained the original station number. All manual range-azimuth hydrography was calculated using the new station numbers with the adjusted positions. The adjusted range-range stations are marked in the control station table with "(ADJ)" while the adjusted range-azimuth stations are marked with "(R/Az)".

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	1.11	09 Mar 1990

E. SONAR EQUIPMENT ✓

Not Applicable. No side scan sonar used on this survey

F. SOUNDING EQUIPMENT ✓

All survey launches were equipped with the Raytheon DSF-6000N echo sounders shown below. The echo sounders were operated in the HIGH + LOW (HIGH DIGITIZED) function, using manual gain controls on both high and low frequencies to obtain the best analog trace. Soundings were recorded in meters and tenths of meters. Six-meter bar checks were conducted and recorded daily, using both the LOW and the HIGH + LOW (HIGH DIGITIZED) functions. The echo sounders were operated in accordance with the Provisional Instructions "Raytheon DSF-6000N Echo-Sounder Operating and Processing Instructions", dated July 5, 1983, and the Field Procedures Manual for Hydrographic Surveying (FPM).

Raytheon DSF-6000N Echo Sounders

<u>Vessel</u>	<u>Serial No.</u>	<u>DN</u>
2123	A114N	295-305
2124	A103N	297-309
2125	B048N	293-296
2126	A117N	293-307

The echo sounders were continuously monitored during data acquisition. All sounding data were scanned at least two times, to ensure all significant peaks were inserted, and to verify the digitized depths.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Corrections to echo soundings were determined for static draft, velocity of sound through water, settlement and squat. Predicted tides were used for all plots. Sounding correctors apply to both narrow and wide beams of the DSF-6000N echo sounder. Supporting data and computations for all corrections to echo soundings are included in the Fall 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Offset Tables

<u>Vessel</u>	<u>Offset Table No.</u>
2123	3
2124	4
2125	5
2126	6

Sound Velocity

Correctors for the velocity of sound through water were determined from the casts listed below:

<u>Velocity Table No.</u>	<u>Cast No.</u>	<u>Deepest Depth (m)</u>	<u>Applicable DN</u>	<u>Cast Position</u>	<u>Day</u>
-	1	39.0	N/A	58°22'59" N 136°29'55" W	293 outside survey limits
4	2	63.3	291-298	58°24'10" N 136°28'40" W	296 outside survey limits

5	3	66.8	303-312	58°23'50" N 136°29'01" W	306 <i>outside</i> <i>survey limits</i>
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All sound velocity casts were acquired with an AML SVP, S/N 3042, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on March 11, 1991 and a SBE SEACAT Profiler, S/N 811, which was calibrated at NRCC on January 21, 1991. Though both instruments computed similar sound velocity correctors, only the AML cast data was used because it recorded deeper depths.

Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) #69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program are included in the Fall 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Static Draft

For all launches, the distance from the transducer face to the gunwale was measured with a large metal square. Static draft measurements were then determined by dropping a lead line from the gunwale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwale to the waterline were conducted with the fuel tanks averaging 3/4 full and three people aboard. A transducer depth of 0.6 meter was determined for launches 2123, 2124, and 2125 on March 23-24, 1991. A transducer depth of 0.6 meter was determined for launch 2126 on October 20, 1991.

Settlement and Squat

Settlement and squat correctors were determined in Shilshole Bay, WA, for launches 2123 and 2125 on February 25, 2124 on March 12, 1991, and 2126 on October 2, 1991. Tests were conducted over a hard bottom in depths well exceeding 7 times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument (S/N 103453 on February 25 and March 12 and S/N 87102 on October 2) to a rod held vertically on deck, directly over the transducer. Correctors were computed in accordance with Hydrographic Manual 4.9.4.2., using FPM Fig. 2.2 and 2.3, and are included in the Fall 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Heave

Heave correctors were not needed during this survey.

Pneumatic Depth Gage

Not Applicable.

Bar Check and Lead Lines

Bar check and lead lines were calibrated by RAINIER personnel during October 1991 at PMC. Calibration forms are included in the Fall 1991 Corrections to Echo Sounding Data Package for OPR-O106-RA.

Tide Correctors

Tidal zoning and correctors applicable to predicted tides for the Sitka, Alaska, reference station (945-1600) were provided in the Project Instructions as amended by Change No. 1, dated September 5, 1991. The time corrector for Sheet H is +0 hr. 10 min., while the range ratio is x1.27.

HDAPS listings of the data used in generating tide corrector tables are included in Appendix V* of this report.

Tide gages were installed and maintained by RAINIER personnel at Dundas Bay, Inside (945-2648) and at Inian Cove, Inian Island (945-2629). The control station was Sitka, Alaska (945-1600). Opening levels were completed by Pacific Operation Section personnel on June 9, 1991 in accordance to Change No. 1. Closing levels were completed by RAINIER personnel on November 10, 1991.

Estimated real-time tides were created for DN 294-296 to establish the accuracy of predicted tides for Dundas Bay. This was done by comparing raw digital tide data from the Dundas Bay, Inside station (945-2648) with predicted tides for Sheet H's (H-10408) geographic area using LOTUS 1-2-3 graphics. A copy of the graphs are included in Appendix V*. The graph shows a potential difference between real-time and predicted of 0.6 meters, with the greatest variation occurring at times of high and low tides.

The station descriptions, field tide records, and Field Tide Notes have been forwarded to N/OMA1212 in accordance with HSG 50 and FPM 4.3. Requests for approved tides have been forwarded to N/OMA12. Copies of the Field Tide Notes and the request for approved tides are included in Appendix V. *

H. CONTROL STATIONS ✓

Geographic positions for all control stations are based on the North American Datum of 1983 (NAD83) and the Geodetic Reference System 1980 Ellipsoid.

A listing of the geodetic stations used to control this survey is included in ~~Appendix III~~ ^{this report.}

Positions for all existing stations are from the NGS data base and the Pacific Photo Party. All existing stations were recovered in accordance with methods stated in Section 5.2.4 of the Field Procedures Manual. New stations were positioned via traverse methods to meet third-order class I standards. Further information can be found in the Fall 1991 Horizontal Control Report for OPR-O106-RA.

I. HYDROGRAPHIC POSITION CONTROL

Method of Sounding Position Control

Soundings, bottom samples, and detached positions were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in multiple-range and manual range-azimuth modes. Manual range-azimuth was conducted from a small boat using

* Filed with hydrographic records.

a Hewlett-Packard electronic distance measuring instrument (EDMI) and retro prism in conjunction with a wild T-2 theodolite.

Accuracy Requirements/Problems

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were generally met. When maximum residuals exceeded the specified limits, OIC's deselected the station(s) with the highest residual value and continued hydrography. Occasionally, ECR's and maximum residuals exceeded the specified limits. When this happened, the data were usually rejected and the area re-run with different control. If maximum residuals exceeded tolerances, they were flagged and reviewed. Data between good positions were smoothed when maximum residuals showed unusual accelerations off the expected track.

The loss of one or more LOP's frequently occurred when acquiring data close inshore. If this loss generated high ECR's and/or maximum residuals, the OIC's annotated the raw master printout (RMPO). If the data plotted on track and sounding intervals appeared correct, the data were retained. Some data were acquired with only two LOP's because stations were blocked or deselected. When this occurred, data were bracketed by multiple LOP hydrography providing continuous critical system checks when ECR's and maximum residuals fell within survey specifications.

See Evaluation Report, section 4

Equipment

A Wild T-2 theodolite was used for manual range/azimuth observations in conjunction with a Hewlett-Packard EDM. Serial numbers for all positioning equipment are annotated on the RMPO for each day of hydrography. A complete list of all electronic equipment serial numbers is included in the Fall 1991 Electronic Control Data Package.

Calibrations & Systems Check Methods

Baseline calibrations were conducted in accordance with FPM 3.1.2.1 and 3.1.3.2 on September 23-27 (DN266-DN270) at the SANDPOINT BASELINE over a known distance of 1058.1876 m. Calibration data and a description of the baseline are included in the Fall 1991 Electronic Control Data Package.

In accordance with FPM 3.1.3.3, formal system checks were not documented for multiple LOP hydrography. Data collected with two LOP's were always bracketed by multiple LOP data acquired with ECR's and maximum residuals within acceptable limits. These served as critical system checks.

See Evaluation Report, section 4

Other Factors

Antenna offset and layback correctors were applied via HDAPS offset tables, and are found in the separate* included with the survey data.

* Filed with hydrographic data.

J. SHORELINE ✓

Shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets were TP-01327 and TP-01328 (June 1985-photography, 1:10,000, NAD27). Chart 17302 (1:10,000 enlargement, 1989) was used to augment the existing registered shoreline manuscripts.

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1. Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs) as explained later in this section.

Inshore hydrography shows that photogrammetric and hydrographic positioning are in excellent agreement.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using sounding volumes and corresponding 1:10,000 photocopies of the T-sheet. Reference numbers, descriptions, and heights corrected to MLLW using predicted tides, are recorded in the sounding volume. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. The annotated photocopies of the T-sheet are attached to the sounding volumes which are included with the survey data.

DPs taken during shoreline verification were recorded on the master printouts and indicate significant T-sheet features, features not found on the T-sheet, and locations of disprovals. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts. *

The number of new features and disprovals found during this survey indicate that T-sheet photography may have been flown at a stage of tide above MLLW. However, DPs and inshore hydrography show that photogrammetric and hydrographic positioning are in excellent agreement despite the photogrammetric misinterpretation of some features.

T-sheet features which were verified were retained and shown on the final field sheets (FFS). Verified shoreline and new features are shown in black on the FFS, while changes to the shoreline are shown in red. *There were NO REVISIONS to the shoreline on this survey.*

VHS video of the Dundas Bay shoreline was taken on November 12 (DN 316) and is included with the survey data. *

Detailed 1:10,000 paper plots showing all DPs and reference numbers and notes relating to each feature are included with the sheets submitted with this survey. The HDAPS DP Program requires that cartographic codes be assigned to all DPs. These cartographic codes were not plotted because the majority of DPs describe features that are offset slightly from the DP. Position numbers for all DPs are plotted on the DP overlay. Heights are recorded in meters and are corrected to predicted MLLW.

* Filed with hydrographic data.

Disprovals

The vicinity of the T-sheet islet at ^{12.44}58°22'13.0"N, ^{38.08}136°32'39.0"W was inspected (Pos. No. 2157) and no islet was found. The hydrographer believes the islet is a boulder on the beach dry at MLLW. — CONCUR

New Features

Position Number 2330 describes a rock which ^{UNCOVERS 2.6}bares ~~3.2~~ ^{16.59}m at 58°21'17.0"N, 136°30'06.0"W. It is 6 m in diameter and was 10 m from a gravel beach at that tidal stage. ^{07.19}

Position Number 2331 describes a rock which ^{UNCOVERS 0.6}bares ~~1.1~~ ⁵⁴m at 58°21'12.0"N, 136°30'01.0"W and is 10 m in diameter. ^{00.63}

Position Numbers 2332 and 2333 describe the north and south limits of a reef which ^{UNCOVERS}bares ~~3.9~~ ^{28.96}m at 58°21'10.0"N, 136°30'01.0"W. It is 30 m long by 20 m wide with three distinct high points at Position Numbers 8076, 8077, 8174.

Position Number 8248 describes an islet which ^{UNCOVERS 1.1}bares ~~4.5~~ ^{45.78}m at 58°22'46"N, 136°33'36"W, and two rocks, one to the north which ^{UNCOVERS 2.5}bares ~~3.0~~ ^{11.6}m and one to the south which ^{UNCOVERS 1.0}bares ~~3.1~~ ^{11.6}m. The islet is 10 m in diameter and both rocks are approximately 8 m in diameter.

Unverified Features

Not Applicable.

K. CROSSLINES

A total of 5.1 nautical miles of crosslines were run perpendicular to mainscheme lines, representing 11% of the mainscheme hydrography; this percentage does not reflect additional splits or developments run during additional investigations.

Crossline soundings agree to within 1.0 meters with mainscheme soundings. These differences may be attributed to differences between real and predicted tides. Tides were likely influenced by the nearly enclosed shoreline geometry, and the freshwater influx at the northwest end of the sheet. A copy of the estimated real vs. predicted tides for DN 294 - 296 is included in Appendix V. *This graph shows a potential difference between estimated real-time and predicted tides of 0.6 meters, with the greatest variation occurring at times of high and low tide. Tidal influence is also evident in depth curves of mainscheme hydrography collected on different days.

The vessels acquiring crossline data did not always acquire the corresponding mainscheme data. Agreement between soundings acquired by different echo sounders in a common area is as stated above.

* Filed with hydrographic data.

L. JUNCTIONS ✓ See Evaluation Report, Section 5

This survey junctions with H-10407 (1:10,000; 1991) to the north. No irregularities were found when comparing soundings and depth curves. Agreement between overlapping soundings is between 0.8 and 1.0 meters on two overlying lines 50 meters apart. This survey's data was collected near high tide, while junctioning data on H-10407 was collected near high tide two days later. The difference in junction values may reflect predicted tide inaccuracies as discussed in section G.

M. COMPARISON WITH PRIOR SURVEYS ✓

Not Applicable.

N. COMPARISON WITH THE CHART ✓ See Evaluation Report, Section 7

The hydrographer compared the features from NOS chart 17302, 15th Edition, May 20/89, 1:80,000 (NAD83) to this survey. When overlain with the T-sheet, the charted shoreline is offset 100-150 m at 000° to 090° from the T-sheet shoreline.

Comparison of Sounding Features

No charted soundings were within the survey area.

Comparison of Non-Sounding Features

The vicinity of the charted rock at $58^{\circ}21'25.0''N$, $136^{\circ}30'01.0''W$ was inspected (Pos. No. 2336) and the rock was not seen. Water visibility was 0.6 m and 10 minutes were spent searching a 30 m radius from the DP. The fathometer trace showed a smooth and gently sloping bottom. The hydrographer believes the charted rock is the T-sheet islet at $58^{\circ}21'18.0''N$, $136^{\circ}30'01.5''W$. — CONCUR

The vicinity of the charted rock at $58^{\circ}22'31.0''N$, $136^{\circ}31'47.0''W$ was inspected (Pos. No. 4001) and the rock was not seen. Water visibility was 0.6 m and 10 minutes were spent searching a 30 m radius from the DP. The hydrographer believes the charted rock is T-sheet islet at $58^{\circ}22'32.0''N$, $136^{\circ}31'54.0''W$. — CONCUR

The vicinity of the charted rock at $58^{\circ}21'13.0''N$, $136^{\circ}30'01.0''W$ was inspected (Pos. No. 2335) and the rock was not seen. Water visibility was 0.6 m and 10 minutes were spent searching a 30 m radius from the DP. The hydrographer believes the charted rock is the same as the new feature described as a reef at $58^{\circ}21'10.0''N$, $136^{\circ}30'01.0''W$ (Pos. Nos. 2332, 2333). — CONCUR, reef shown on smooth sheet.

The vicinity of the charted rock at $58^{\circ}21'16.0''N$, $136^{\circ}30'00.0''W$ was inspected (Pos. No. 8236) and the rock was not seen. Water visibility was 0.6 m and the search radius was 30 m from the DP. The hydrographer believes the charted rock is the same as the new feature described as a rock at $58^{\circ}21'12.0''N$, $136^{\circ}30'01.0''W$ (Pos. No. 2331). — CONCUR

The charted island at $58^{\circ}23'00.0''N$, $136^{\circ}32'45.5''W$ was looked for (Pos. No. 1801) and was not seen. The island was searched for with a small boat and on foot using a Hewlett-Packard EDM and retro prism in conjunction with a Wild T-2 theodolite.

Atmospheric visibility was 5 miles and the search radius was 50 m from the DP. The position of the charted island is in the vicinity of T-sheet island R4-4 at 58°23'02.0"N, 136°32'51.0"W. The hydrographer believes the charted island and the T-sheet island are the same feature. —concur

The charted island at 58°21'^{08.00}~~07.0~~"N, 136°30'⁹⁸~~50.5~~"W was looked for (Pos. No. 1802) and was not seen. The island was searched for with a small boat and on foot using a Hewlett-Packard EDM and retro prism in conjunction with a Wild T-2 theodolite. Atmospheric visibility was 5 miles and the search radius was 50 m from the DP. The position of the charted island is in the vicinity of T-sheet island R3-13 at 58°21'03.0"N, 136°30'51.5"W. The hydrographer believes the charted island and the T-sheet island are the same feature. —concur However, what may have been an island at one time is now incorporated as AWOIS items part of the mean high waterline.

No AWOIS items were located within the survey area. —concur

Dangers to Navigation

Due to inadequate sounding density on the present chart, RAINIER chose to submit a 1:20,000 reduced-scale plot of this survey and survey H-10407 just to the northeast. The plotted sounding units are fathoms and tenths of fathoms because HDAPS' software does not allow plotting of soundings in fathoms and fractions. This 1:20,000 plot was submitted to the Nautical Data Section, N/CG221 in accordance with Hydrographic Survey Guideline No. 66. A copy was also sent to N/CG245. The recommendation was made that the 1:20,000 plot be used to compile a chartlet for publication in the Local Notice to Mariners as direct overlays for charts 17300 and 17302.

O. ADEQUACY OF SURVEY ✓

The survey area is complete and adequate to supersede the charted features.

It is anticipated that the anomalous depth curves shown on the survey will be eliminated when smooth tides are applied. Anomalous depth curves were eliminated after application of approved tides.

P. AIDS TO NAVIGATION ✓

No aids to navigation lie within the limits of the survey.

There are no floating aids to navigation, bridges, overhead cables, submerged pipelines, or ferry routes within the limits of the survey.

Q. STATISTICS

<u>Vessel:</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>2126</u>	<u>2128</u>	<u>Total</u>
# of Pos	489	21	149	255	2	916
NM Hydro	50.9	0.7	22.1	28.7	0	102.4

NM ² Hydrography	2.56	Velocity Casts	2
Detached Positions	26	Tide Stations	2
Reference Numbers	24	Current/Magnetic Stations	0
Bottom Samples	14		

R. MISCELLANEOUS ✓

Loran C comparisons were sent to DMAHTC and U.S. Coast Guard in accordance with the project instructions.

All bottom samples were submitted to the Smithsonian Institution.

S. RECOMMENDATIONS ✓

The hydrographer recommends that future charts of the area between the eastern shore of Lemesurier Is. and Cape Spencer be no smaller than 1:50,000 due to navigational complexity of the numerous narrow passages in this area.

Recommendation forwarded to N/CG22

T. REFERRAL TO REPORTS ✓

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

<u>Title</u>	<u>Date Sent to N/CG245</u>
Fall 1991 Horizontal Control Report for OPR-O106-RA	December 1991
Fall 1991 Electronic Control Data Package for OPR-O106-RA	December 1991
Fall 1991 Corrections to Echo Soundings Data Package for OPR-O106-RA	December 1991
Fall 1991 Coast Pilot Report for OPR-O106-RA	January 1992

Respectfully Submitted,

Jonathan M. Klay

Jonathan M. Klay
Ensign, NOAA

Approved and Forwarded,

Thomas W. Richards

Thomas W. Richards
Captain, NOAA
Commanding Officer

No	Type	Latitude	Longitude	H Cart	Freq	Vel	Code	MM/DD/YY	Station Name	QUAD.
123	F	050+21:36.570	136+22:40.132	4	250	0.0	0.0	00/00/00	DELTA(ADJ)	
158✓	F	050+24:36.658	136+29:52.343	8	250	0.0	0.0	8 10/19/91*	AUF 1991	581362
159	F	050+22:45.029	136+24:36.049	4	250	0.0	0.0	0 11/13/91	CONIC(ADJ)	
161	F	050+24:01.592	136+20:29.300	5	250	0.0	0.0	8 11/07/91	DUN 2(ADJ)	
162✓	F	050+22:31.968	136+31:54.197	6	250	0.0	0.0	6 10/19/91*	FREQ 1991	581363
165	F	050+22:42.772	136+30:34.619	5	250	0.0	0.0	1 10/24/91	KONA	
164✓	F	050+23:15.357	136+29:43.039	7	250	0.0	0.0	C 10/19/91*	LEAF 1991	581362
165	F	050+23:11.968	136+24:59.403	5	250	0.0	0.0	E 11/12/91	LEG(ADJ)	
166	F	050+23:50.735	136+25:25.253	4	250	0.0	0.0	2 11/06/91	MIRE(ADJ)	
167	F	050+22:07.672	136+23:53.456	5	250	0.0	0.0	B 11/05/91	NEEDLE(ADJ)	
168	F	050+23:53.865	136+27:09.325	4	250	0.0	0.0	2 11/12/91	NIGH(ADJ)	
169✓	F	050+22:11.364	136+29:49.036	7	250	0.0	0.0	A 10/19/91*	PETAL 1991	581362
171	F	050+23:30.702	136+27:44.004	4	250	0.0	0.0	A 11/07/91	SAT(ADJ)	
172✓	F	050+22:27.428	136+31:11.342	6	250	0.0	0.0	7 10/19/91*	ZION 1991	581363
173	F	050+22:11.340	136+21:07.733	5	250	0.0	0.0	2 10/19/91	MUCK(ADJ)	
174✓	F	050+24:41.386	136+29:10.517	7	250	0.0	0.0	6 10/19/91*	QUAG 1991	581362
175	F	050+21:48.030	136+23:58.304	4	250	0.0	0.0	2 11/12/91	HOOK 1991(ADJ)	
176✓	F	050+21:11.859	136+29:28.819	7	250	0.0	0.0	1 10/23/91*	LAUGH 1991	581362
177	F	050+23:12.405	136+26:19.962	4	250	0.0	0.0	B 11/13/91	MARCH 1991(ADJ)	
178	F	050+25:35.285	136+29:59.145	5	250	0.0	0.0	A 11/02/91	CHAOS(ADJ)	
179	F	050+27:07.768	136+31:23.143	8	250	0.0	0.0	E 11/14/91	DAS(ADJ)	
180✓	F	050+22:52.510	136+33:55.531	7	250	0.0	0.0	1 10/24/91*	LIMB 1991	581363
181✓	F	050+22:59.115	136+33:31.085	4	250	0.0	0.0	9 10/24/91*	TIMBER 1991	581363
223	Z	050+21:36.570	136+22:40.132	4	250	0.0	0.0	00/00/00	DELTA(R/AZ)	
250	Z	050+24:36.660	136+29:52.336	5	250	0.0	0.0	00/00/00	AUF(R/AZ)	
259	Z	050+22:45.029	136+24:36.049	4	250	0.0	0.0	00/00/00	CONIC(R/AZ)	
261	Z	050+24:01.592	136+20:29.300	5	250	0.0	0.0	00/00/00	DUN 2(R/AZ)	
262	Z	050+22:31.972	136+31:54.206	3	250	0.0	0.0	00/00/00	FREQ(R/AZ)	
263	Z	050+22:42.776	136+30:34.628	5	250	0.0	0.0	00/00/00	KONA(R/AZ)	
264	Z	050+23:15.357	136+29:43.054	5	250	0.0	0.0	00/00/00	LEAF(R/AZ)	
265	Z	050+23:11.968	136+24:59.403	5	250	0.0	0.0	00/00/00	LEG(R/AZ)	
266	Z	050+23:50.735	136+25:25.253	4	250	0.0	0.0	00/00/00	MIRE(R/AZ)	
267	Z	050+22:07.672	136+23:53.456	5	250	0.0	0.0	00/00/00	NEEDLE-	
268	Z	050+23:53.865	136+27:09.325	4	250	0.0	0.0	00/00/00	NIGH(R/AZ)	
269	Z	050+22:11.367	136+29:49.039	5	250	0.0	0.0	00/00/00	PETAL(R/AZ)	
271	Z	050+23:30.702	136+27:44.004	4	250	0.0	0.0	00/00/00	SAT(R/AZ)	
272	Z	050+22:27.427	136+31:11.330	3	250	0.0	0.0	00/00/00	ZION(R/AZ)	
Used 273	Z	050+22:11.340	136+21:07.733	5	250	0.0	0.0	00/00/00	MUCK(R/AZ) 1991	581362
274	Z	050+24:41.370	136+29:10.570	4	250	0.0	0.0	00/00/00	QUAG(R/AZ)	
275	Z	050+21:48.030	136+23:58.304	4	250	0.0	0.0	00/00/00	HOOK 1991(R/AZ)	
276	Z	050+21:11.859	136+29:28.806	5	250	0.0	0.0	00/00/00	LAUGH 1991(R/AZ)	
277	Z	050+23:12.405	136+26:19.962	4	250	0.0	0.0	00/00/00	MARCH 1991(R/AZ)	
278	Z	050+25:35.285	136+29:59.145	5	250	0.0	0.0	00/00/00	CHAOS(R/AZ)	
279	Z	050+27:07.768	136+31:23.143	8	250	0.0	0.0	00/00/00	DAS(R/AZ)	
280	Z	050+22:52.511	136+33:55.542	7	250	0.0	0.0	00/00/00	LIMB(R/AZ)	
281	Z	050+22:59.117	136+33:31.096	4	250	0.0	0.0	00/00/00	TIMBER(R/AZ)	
358	F	050+24:36.660	136+29:52.336	5	250	0.0	0.0	8 11/06/91*	AUF(ADJ) 1991	581362
362	F	050+22:31.972	136+31:54.206	4	250	0.0	0.0	9 11/01/91*	FREQ(ADJ) 1991	581363
363	F	050+22:42.776	136+30:34.628	5	250	0.0	0.0	6 11/03/91	KONA(ADJ)	
364	F	050+23:15.357	136+29:43.054	5	250	0.0	0.0	A 11/06/91	LEAF(ADJ)	
369	F	050+22:11.367	136+29:49.039	5	250	0.0	0.0	7 11/01/91*	PETAL(ADJ) 1991	581362
372	F	050+22:27.427	136+31:11.330	4	250	0.0	0.0	A 11/03/91*	ZION(ADJ) 1991	581363
374	F	050+24:41.370	136+29:10.570	4	250	0.0	0.0	B 11/13/91*	QUAG(ADJ) 1991	581362
376	F	050+21:11.859	136+29:28.806	5	250	0.0	0.0	C 11/03/91*	LAUGH(ADJ) 1991	581362
380	F	050+22:52.511	136+33:55.542	7	250	0.0	0.0	7 11/01/91*	LIMB(ADJ) 1991	581363
381	F	050+22:59.117	136+33:31.096	4	250	0.0	0.0	A 10/31/91*	TIMBER(ADJ) 1991	581363
106	F	050+11:41.367	136+21:06.313	7	250	0.0	0.0	00/00/00	FINN	
107	F	050+11:29.612	136+20:36.949	6	250	0.0	0.0	00/00/00	CHICH	* Field Position
108	F	050+11:18.689	136+20:21.268	6	250	0.0	0.0	00/00/00	KOFF NO 1	

ED 4/24/92



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

September 15, 1992

MEMORANDUM FOR: Captain Nicholas A. Prah, NOAA
Chief, Mapping and Charting Branch
Douglas G. Hennick
FROM: Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section
SUBJECT: Hydrographer's Recommendations

The hydrographer's recommendation contained in the attached extract from the descriptive report for hydrographic survey H-10408, conducted by NOAA Ship RAINIER for OPR-0106-RA, Cross Sound, Alaska, is forwarded for entry into the Chart Request Data Base.

Attachment
Extract from Descriptive Report for Survey H-10408



NM ² Hydrography	256	Velocity Casts	2
Detached Positions	26	Tide Stations	2
Reference Numbers	24	Current/Magnetic Stations	0
Bottom Samples	14		

R. MISCELLANEOUS

Loran C comparisons were sent to DMAHTC and U.S. Coast Guard in accordance with the project instructions.

All bottom samples were submitted to the Smithsonian Institution.

S. RECOMMENDATIONS

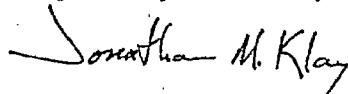
The hydrographer recommends that future charts of the area between the eastern shore of Lemesurier Is. and Cape Spencer be no smaller than 1:50,000 due to navigational complexity of the numerous narrow passages in this area.

T. REFERRAL TO REPORTS

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

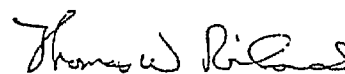
<u>Title</u>	<u>Date Sent to N/CG245</u>
Fall 1991 Horizontal Control Report for OPR-O106-RA	December 1991
Fall 1991 Electronic Control Data Package for OPR-O106-RA	December 1991
Fall 1991 Corrections to Echo Soundings Data Package for OPR-O106-RA	December 1991
Fall 1991 Coast Pilot Report for OPR-O106-RA	January 1992

Respectfully Submitted,



Jonathan M. Klay
Ensign, NOAA

Approved and Forwarded,



Thomas W. Richards
Captain, NOAA
Commanding Officer

APPROVAL SHEET


for

H-10408

RA-10-5-91

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

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


Thomas W. Richards
Captain, NOAA
Commanding Officer



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 20, 1992

MARINE CENTER: Pacific

OPR: O106-RA

HYDROGRAPHIC SHEET: H-10408

LOCALITY: Southwest Portion of Dundas Bay, Cross Sound, Alaska

TIME PERIOD: October 20, 1991 - November 6, 1991

TIDE STATIONS USED: 945-2648 Dundas Bay, Alaska
Lat. $58^{\circ} 23.8'N$ Lon. $136^{\circ} 27.8'W$

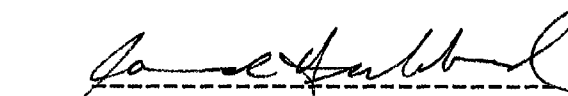
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 8.96 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 11.1 ft.

REMARKS: RECOMMENDED ZONING

1. Inside Dundas Bay, times and heights are direct on Dundas Bay (945-2648).
2. The progress sketch indicates that no hydrography was done in Taylor Bay on H-10408, therefore no zoning is provided for that area.

Notes: Hourly heights are tabulated in Greenwich Mean Time.


CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION



GEOGRAPHIC NAMES

H-10408

Name on Survey	A ON CHART NO. 17302 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										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X										1
CROSS SOUND (title)	X										2
DUNDAS BAY	X										3
											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
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											21
											22
											23
											24
											25

Approved

Charles B. Huntington
Chief Geographer - N 10245

APR 28 1992

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10408	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS	
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES	3				
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					881
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS			15.0		15.0
VERIFICATION OF SOUNDINGS			46.5		46.50
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION/VERIFICATION					
COMPILATION OF SMOOTH SHEET			53.5		53.50
COMPARISON WITH PRIOR SURVEYS AND CHARTS					
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				34.0	34.0
GEOGRAPHIC NAMES					
OTHER*					
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	115.0	34.0
					149.0
Pre-processing Examination by J. Stringham			Beginning Date 11/6/91	Ending Date 12/19/91	
Verification of Field Data by B. Brown, E. Domingo, T. Jones, R. Shipley, S. Otsubo			Time (Hours) 115	Ending Date 6/23/92	
Verification Check by J. Stringham, S. Otsubo			Time (Hours) 73	Ending Date 7/17/92	
Evaluation and Analysis by R. N. Mihailov			Time (Hours) 37	Ending Date 9/9/92	
Inspection by D. Hill			Time (Hours) 4	Ending Date 9/15/92	

EVALUATION REPORT H-10408

1. INTRODUCTION

Survey H-10408 is a basic hydrographic survey accomplished by the NOAA Ship RAINIER under the following Project Instructions.

OPR-0106-RA, dated February 21, 1990
CHANGE NO. 1, dated September 5, 1991

This survey was conducted in southeastern Alaska and is situated within the Glacier Bay National Park and Preserve. This is the initial hydrographic survey for the area and covers the southwest portion of Dundas Bay, approximately 60 nautical miles west of the city of Juneau, Alaska. Sheet limits extend from latitude 58/20/27N to latitude 58/23/17N and longitude 136/29/00W to longitude 136/34/27W. The bottom consists mainly of mud and silt. Soundings generally range from 0.0 meters along the shoreline to 15.9 meters in the north.

Predicted tides for Sitka, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned from Dundas Bay, Alaska, gage 945-2648, 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. NAD 83 is used as the horizontal datum for plotting and position computation. The TRA, sound velocity and electronic control correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey that includes categories of information required to comply with Hydrographic Survey Guideline No. 52, Standard Digital Data Exchange Format, April 15, 1986. 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 H and I of the hydrographer's report and the Fall horizontal control report for OPR-0106-RA, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 1991 field values based on NAD 83. These values were used during office processing for the computation of positions. The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -1.318 seconds (-40.795 meters)
Longitude: 6.668 seconds (108.435 meters)

The year of establishment of control stations shown on the smooth sheet originates with the horizontal control records.

The quality of several positions exceeds limits in terms of the error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data indicates that none of these fixes are used to position the dangers to navigation contained within the limits of this survey. The soundings located by these fixes are consistent with the surrounding data. Refer to section I of the hydrographer's report for a further discussion of this data.

The following shoreline maps apply to this survey.

<u>Map Number</u>	<u>Photo Date</u>	<u>Class</u>	<u>Scale</u>
TP-01327	June 1985	III	1:20,000
TP-01328	June 1985	III	1:20,000

Shoreline drawn on the smooth sheet originates from 1:10,000 scale photographic enlargements of the shoreline maps compiled on NAD 27. NAD 83 adjustment ticks are portrayed on the shoreline maps and are consistent with the values listed in section 2 of this report.

The following features were transferred from the final field sheet without supporting positional information. These revisions are considered adequate to supersede the common photogrammetrically delineated shoreline.

	<u>Latitude(N)</u>	<u>Longitude(W)</u>
rock	58/22/45	136/33/35
rock	58/22/45	136/33/35

3. HYDROGRAPHY

Although extensive mud flats exist on the southern and western portions of the survey area, 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

Except as follows, 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 Field Procedures Manual, March 1991 Edition.

In section I, the hydrographer discusses procedures used to verify the adequacy of positioning when using two LOP's. The explanation that this type of hydrography was bracketed with multiple LOP positioning fails to address the potential for significant deviations from assumed launch locations in situations other than those involving dead reckoning. Randomly located detached positions must be independently checked with multiple LOP's. A review of the survey data did not disclose any such deficiencies in

positioning, however, descriptive reports should be very specific in identifying positioning problems and their potential effect on the quality of the survey.

5. JUNCTIONS

Survey H-10408 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10407	1987	1:10,000	North

Survey H-10407 is in a preliminary stage of processing and the junction will be discussed in the report for this survey.

6. COMPARISON WITH PRIOR SURVEYS

There are no prior surveys applicable for this survey area.

7. COMPARISON WITH CHART

Chart 17302, 15th edition, dated May 20,1989; scale 1:80,000 (NAD 83)

a. Hydrography

There are no charted soundings within the area of this survey. There are several charted rocks and islands which originate from an unknown source. Shoreline differences noted by the hydrographer in Section N, Comparison with the Chart, are likely due to a combination of an antiquated source document(s), datum conversions and associated compilation portrayal. Evidence also indicates that there may have been some uplift in this area as a result of tectonic occurrences, such as the Prince William Sound earthquake of 1964. No historical hydrographic data for comparison exists for this survey area.

In accordance with Hydrographic Survey Guideline 39, the effects of the 1964 Prince William Sound earthquake were considered in the comparison with these charted features. No reasonable adjustments for these charted features could be determined.

Survey H-10408 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are no AWOIS items originating from miscellaneous sources.

c. Controlling Depths

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

d. Aids to Navigation

There are no fixed or floating aids to navigation located within the limits of survey H-10408.

There are no charted landmarks within the survey area. The hydrographer has recommended no features of landmark value.

e. Geographic Names

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

f. Dangers to Navigation

The hydrographer submitted a 1:20,000 reduced-scale plot of the surveyed area to N/CG221 with the recommendation that the plot be used to compile a chartlet for publication in the Local Notice to Mariners.

There were no additional dangers to navigation submitted during office processing.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10408 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

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

R. N. Mihailov
Robert N. Mihailov
Cartographer

APPROVAL SHEET
H-10408

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Dennis Hill

Date: 9-15-92

Dennis J. Hill
Chief, Hydrographic Processing Unit
Pacific Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Douglas G. Hennick

Date: 9/18/92

Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:

J. Austin Yeager

Date: 9/28/93

J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

Received 4/6/92

SOUNDINGS IN FATHOMS

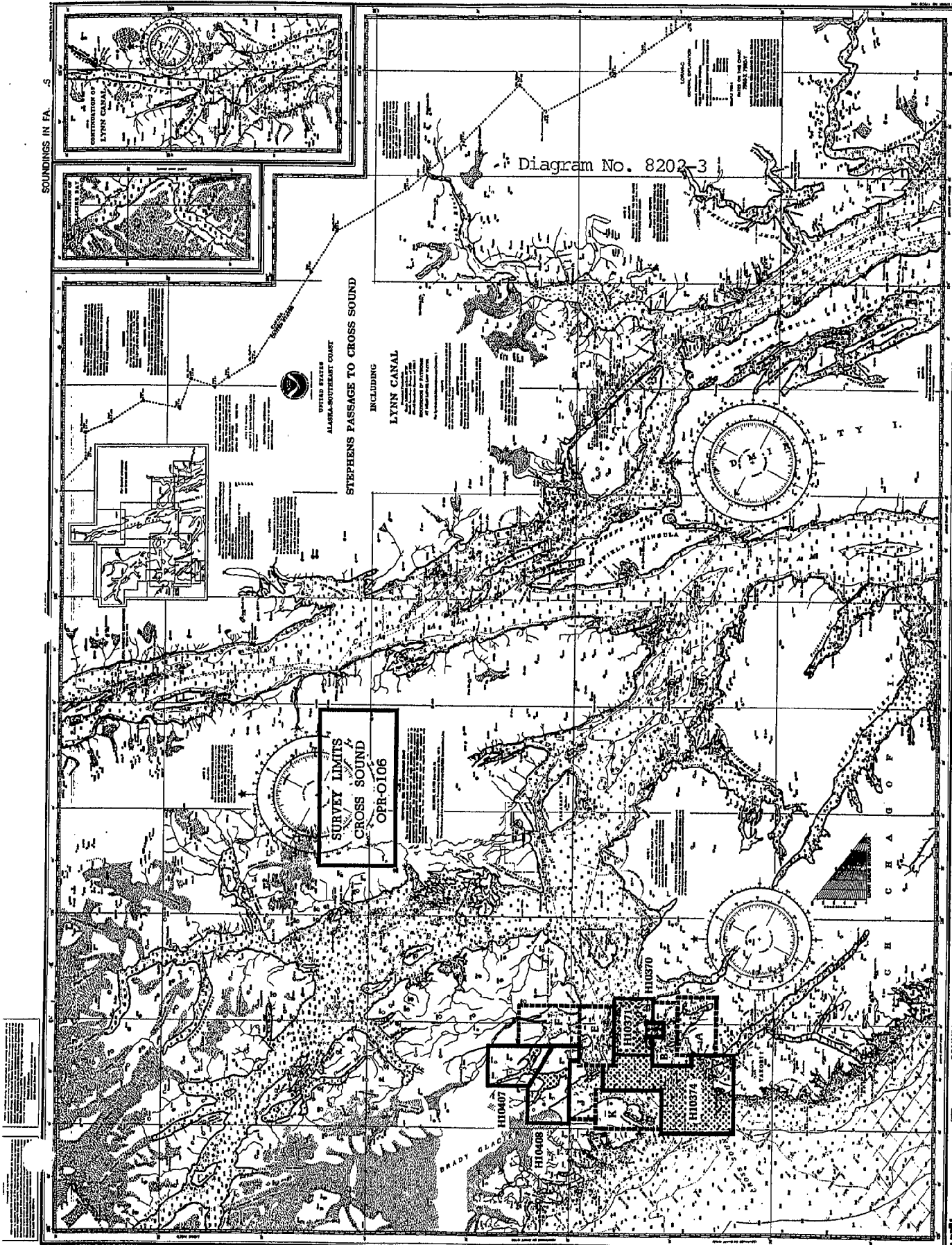
(Sounding Passage to Cross Sound)

17300
LORAN-C OVERPRINTED

17300
LORAN-C OVERPRINTED

SOUNDINGS IN FATHOMS

17300
LORAN-C OVERPRINTED



17300 LORAN-C OVERPRINTED

