10377

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-10-3-91

Registry No. H-10377

LOCALITY

State Alaska

General Locality Cross Sound

Sublocality South Portion of Port Althorp & Approaches

1991-92

CHIEF OF PARTY
CAPT T.W. Richards

LIBRARY & ARCHIVES

DATE February 4, 1994

☆U.S. GOV. PRINTING OFFICE: 1987—756-980

10377

PRODUCTS
CP8
17302
17300
16760
16016 NC

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-10377

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-10-3-91

State Alaska

General locality Cross Sound

Locality South Portion of Port Althorp and Approaches

Scale 1:10,000 Date of survey May 2-5, 1991, Nov. 12-16,1991 Mar. 24-May 5, 1992

Instructions dated Feb.21, 1991-Feb. 18, 1992 Project No. OPR-0106-RA

Vessel NOAA Ship RAINIER (2120),(2123), (2124), (2125), (2126)

Chief of party CAPT Thomas W. Richards, NOAA

Surveyed by LT J. Waddell, LT R. Huddleston, LT J. Griffin, LTJG E. Nelson, LTJG S. Lemke, LTJG D. Simmons, LTJG P. Weber, LTJG C. Ward, LTJG H. Johnson, ENS J. Klay, ENS R. Ramos

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by: M. Sanders, J. Stringham Automated plot by PHS Xynetics Plotter

Evaluation by: R. Davies

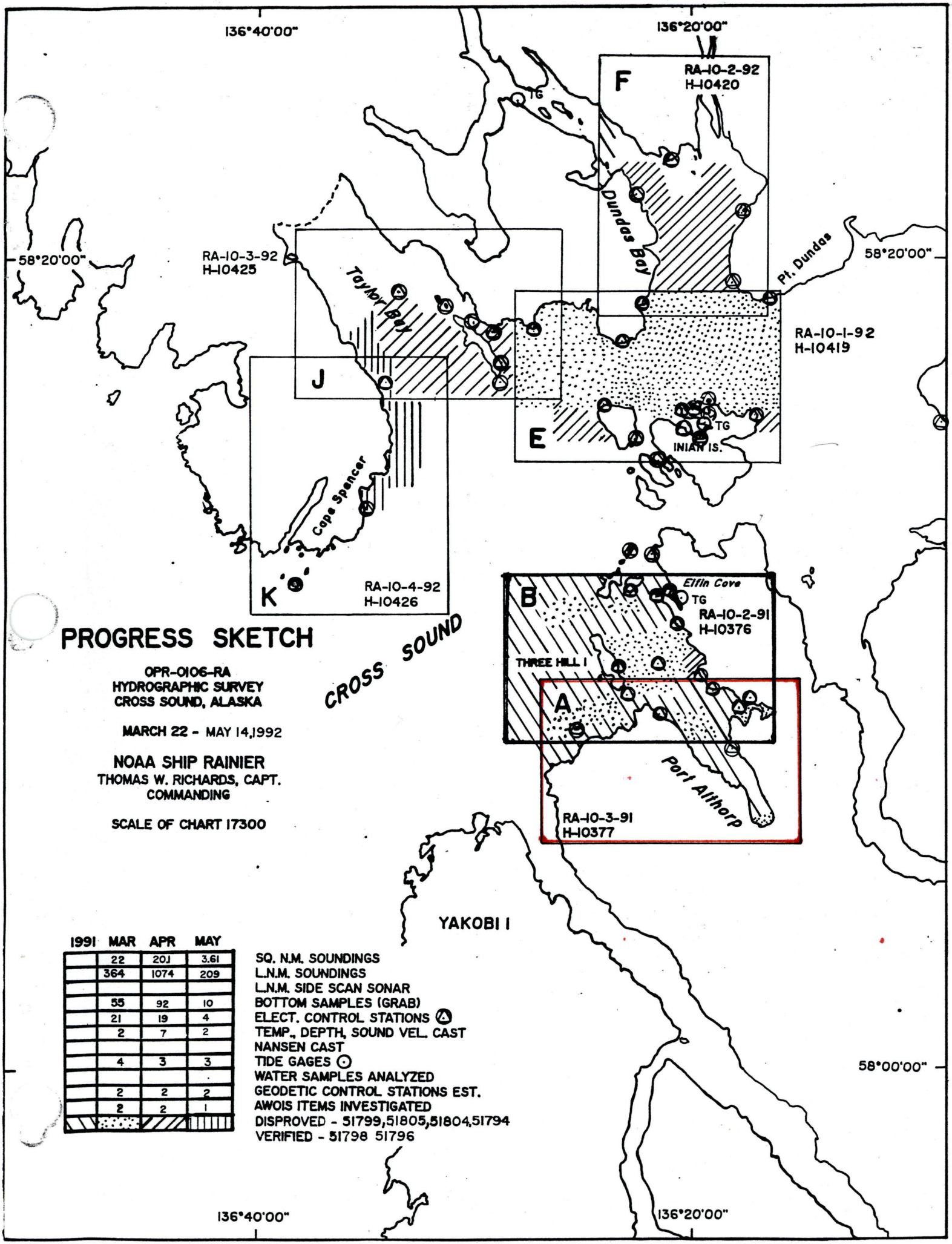
Soundings in ~~xfathoms~~ ~~feet~~ at ~~xMkW~~ MLLW meters and decimeters

REMARKS: Time in UTC. 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. All depths listed in this report are referenced to MLLW unless otherwise noted.

SURF AND AWOIS chk
3/11/94 MCR

KWW 5/12/94

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215



PROGRESS SKETCH

OPR-0106-RA
HYDROGRAPHIC SURVEY
CROSS SOUND, ALASKA

MARCH 22 - MAY 14,1992

NOAA SHIP RAINIER
THOMAS W. RICHARDS, CAPT.
COMMANDING

SCALE OF CHART 17300

1991	MAR	APR	MAY
SQ. N.M. SOUNDINGS	22	201	361
L.N.M. SOUNDINGS	364	1074	209
L.N.M. SIDE SCAN SONAR			
BOTTOM SAMPLES (GRAB)	55	92	10
ELECT. CONTROL STATIONS △	21	19	4
TEMP., DEPTH, SOUND VEL. CAST	2	7	2
NANSEN CAST			
TIDE GAGES ⊙	4	3	3
WATER SAMPLES ANALYZED			
GEODETIC CONTROL STATIONS EST.	2	2	2
AWOIS ITEMS INVESTIGATED	2	2	1
DISPROVED - 51799,51805,51804,51794			
VERIFIED - 51798 51796			

Descriptive Report to Accompany Hydrographic Survey H-10377

Field Number RA-10-3-91
Scale 1:10,000
May 1991 - May 1992

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, 1991, February 18, 1992, and Change Number 1 dated September 5, 1991. This survey is designated Sheet A 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 fishermen have requested a detailed survey to aid in preventing the loss of trolling gear.

B. AREA SURVEYED ✓

See Evaluation Report, section I

This survey, approximately 70 NM west of Juneau, encompasses Port Althorp and the coastal waters from Point Lucan to Column Point. The survey northern limit is 058°09'15"N and its southern limit is 058°05'50"N. The eastern and western limits are 136°15'40"W and 136°27'00"W respectively. Data acquisition was conducted from May 02 - 05, 1991 (DN 122 - 125), November 12 - 16, 1991 (DN 316 - 320), and March 24 - May 5, 1992 (DN 84 - 126).

C. SURVEY VESSELS ✓

All data were acquired by NOAA Ship RAINIER and the four automated survey launches shown below:

Vessel	EDP No.	Operation
RAINIER	2120	Velocity Casts
RA-3	2123	Shoreline Verification Sounding Operations Dive Operations
RA-4	2124	Sounding Operations Shoreline Verification Dive Operations

RA-5	2125	Sounding Operations Shoreline Verification Bottom Samples Velocity Casts
RA-6	2126	Sounding Operations

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, tide station installation/maintenance, and shoreline verification.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

Program Name	Version1	Update1	Version2	Update2
SURVEY	5.11	6.04	6.10	6.11
POSTSUR	5.10	5.17	5.20	5.21
PLOTALL	1.91	1.97	2.01	2.02
POINT	1.30	1.31	2.04	----
BACKUP	2.00	----	----	----
CONVERT	2.40	2.42	3.02	----
PRINTOUT	2.30	----	3.00	----
DIAGNOSTIC	2.70	----	3.00	----
INVERSE	1.30	1.31	1.51	----
INSTALL	2.00	2.01	3.00	----
BASELINE	1.10	----	1.11	1.12
QUICK	1.10	----	----	----
LISTAWOIS	1.20	1.32	2.00	2.01
LOADNEW	1.30	----	1.50	----
REJECT	1.00	----	1.05	----
CARTO	1.20	----	2.01	2.02
Vers	0.00	0.00	0.00	0.00
BACKOLD	1.10	1.11	1.12	----
NEWCONT	1.10	----	1.17	----
DISC_UTIL	1.00	----	----	----
MB	0.00	0.00	1.00	----
HJ	0.00	0.00	1.00	----
AUTOST	1.10	----	2.00	----
GLOBAL	1.10	1.11	1.12	----
MAKEFIX	1.00	----	1.02	----
BIGABST	1.11	1.12	1.60	2.00
REAPPLY	1.30	1.33	----	----
PREDICT	1.10	1.11	----	----
READPROJS	1.06	1.07	1.08	----
SOFTCHECK	1.10	1.11	1.12	1.13
HPRAZ	1.21	1.23	1.24	----
FILESYS	2.11	----	2.16	----
DP	1.10	1.11	1.12	2.00
MANU_DATA	1.10	1.11	1.12	----

RAMSAVER	1.00	----	----	----
GRAPHEDIT	0.00	1.02	Renamed to ZOOMEDIT	
ZOOMEDIT	See GRAPHEDIT		1.10	----
EXCESS	0.00	3.02	3.03	3.04
RECOMP	NA	NA	2.00	----
COPRINTOUT	NA	NA	1.00	----
DAS_SURV	NA	6.05	6.20	6.21
UNIXSYS	NA	NA	NA	2.00
SYMBOLS	NA	NA	NA	1.00
CARTOTRANS	NA	NA	NA	1.00

** "----" signifies that no new version was issued, and "NA" signifies that the program did not exist at that time.

Version1 software was in effect from April 19, 1991 to May 30, 1991.

Software versions for the time period of May 31, 1991 to Sept 17, 1991 were not included since no data acquisition or processing occurred during this time period.

Update1 was an update to Version1 software and was installed on various dates during the fall project. This listing represents the final program updates from the fall project and is effective from Sept 18, 1991 to Mar 08, 1992.

Version2 software was in effect from Mar 09, 1992 to Apr 15, 1992.

Update2 is an update to Version2 software and was installed on Apr 15, 1992. The listed program updates were in effect from Apr 15, 1992 to the end of the survey.

During spring 1992, RAINIER personnel made necessary changes to SURVEY, MAKEFIX, and PLOTALL programs. The HDAPS office was notified of all changes, and written copies of the changes were forwarded to the HDAPS office.

On April 20, 1992, RAINIER launch OIC's began to have problems booting the survey program with correct C-O correctors and performing critical systems checks. The raw master printout (RMPO) showed the correct station number with the correct code, but the C-O corrector had not updated to the current code's value. Notification of the problem and sample data sets were sent to the HDAPS office. On April 21, 1992, a new set of C-O tables were created for all launches and no further problems have been identified. On May 4, the HDAPS office identified the problem as having exceeded the maximum allowable entries in the C-O tables. HDAPS only recognized 60 entries and RAINIER's tables had as many as 72 entries. The creation of new C-O tables alleviated the problem. The data sets affected are addressed in Section I.*

Velocity corrections were determined using:

Program Name	Version	Date Installed
Velocity	1.11	09 Mar 1990

* Filed with the hydrographic data.

E. SONAR EQUIPMENT ✓

Side scan sonar was not used during 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

Vessel	Serial No.	DN	Year
2123	A117N	124	1991
	A114N	316-320	1991
	B044N	097-125	1992
2124	A103N	122-124,	1991
		317-319	1991
	B039N	084-097	1992
	A103N	098-119	1992
2125	B048N	124-125,	1991
		320	1991
		083-126	1992
2126	A117N	317-320	1991
		083-114	1992

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. While running over steep or irregular areas, the echo sounders sometimes failed to track properly. Running at minimum speeds usually alleviated this problem, but marginal analog traces could not always be avoided. All data was analyzed during office processing and found to be consistent with the surrounding depth information.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Corrections to echo soundings were determined for static draft, heave, 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, except heave, are included in the Corrections to Echo Sounding Data Packages (Spring 1991, Fall 1991, and Spring 1992) for OPR-O106-RA.

Offset Tables

Vessel	Offset Table No.	Year
2123	3	1991
	2	1992
2124	4	1991
	7	1992
2125	5	1991
	8	1992
2126	6	1991
	9	1992

Sound Velocity ✓

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

SV Corr. Table No.	Cast No.	Deepest Depth (m)	Day	Cast Position	Applicable Day No.	Year	
3	4A	296.9	109	58°07'06"N, 136°34'12"W	105-127	1991	(OFF sheet limits)
N/A	4B	52.5	109	58°07'06"N, 136°34'12"W	N/A	1991	
N/A	5A	102.4	116	58°10'39"N, 136°21'31"W	N/A	1991	
N/A	5B	111.3	116	58°10'39"N, 136°21'31"W	N/A	1991	
N/A	6	205.3	124	58°09'14"N, 136°26'20"W	N/A	1991	
7	7	211.1	320	58°09'11"N, 136°20'37"W	316-321	1991	
8	1	89.5	083/4	58°09'41"N, 136°27'00"W	081-086	1992	WAS NOT USED
11	4	293.9	098	58°09'24"N, 136°27'25"W	081-101	1992	
13	6	188.5	113	58°09'35"N, 136°26'28"W	104-128	1992	

Sound velocity casts numbered 4A, 5A, 6, and 7 were acquired with an SBE SEACAT Profiler, S/N 281, which was calibrated at the Northwest Regional Calibration Center (NRCC) in Bellevue, WA, on January 21, 1991. Sound velocity casts numbered 4B and 5B were acquired with an AML SVP, S/N 3042, which was calibrated at NRCC on March 11, 1991. As a system check, Cast Nos. 4A (SEACAT) and No. 4B (AML) were performed on the same day, as were Nos. 5A (SEACAT) and 5B (AML). The casts showed excellent agreement both times; therefore, Cast Nos. 4B and 5B were not applied to echosoundings. Cast No. 4A was used to generate Sound Velocity Corrector Table No. 3. Cast Nos. 5A and 6 showed no significant change in water column characteristics and weren't used to generate correctors. Cast No. 8 was used to generate sound velocity corrector table no. 8, however, it was

determined that the cast was not deep enough, so Cast No. 11 was performed and used to generate sound velocity correctors.

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 Corrections to Echo Sounding Data Packages (Spring 1991, Fall 1991, and Spring 1992) for OPR-O106-RA.

Static Draft ✓

For all launches, the distance from the transducer face to the gunwhale was measured with a large metal square. Static draft measurements were then determined by dropping a leadline from the gunwhale to the water and subtracting this distance from the distance measured with the square. The measurements from the gunwhale 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. This transducer depth agrees with the launches' historical records. Transducer depths were determined again on March 21-22, 1992, and the depths were still 0.6 m. Transducer housings were replaced on launches 2123, 2124, and 2126. No significant change to static draft was noted.

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, and 2126 on October 2, 1991. All 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, 1991, and S/N 87102 on October 2, 1991) to a rod held vertically on deck, directly over the transducer. Correctors were determined again for launch 2123 on March 11, 2124 on March 16, and launches 2125 and 2126 on March 18, 1992. Tests were conducted at the same location and under the same conditions as aforementioned. Observations were made through a Zeiss Ni2 leveling instrument (S/N 103453). 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 Corrections to Echo Sounding Data Packages (Spring 1991, Fall 1991, and Spring 1992) for OPR-O106-RA.

Heave ✓

Corrections for heave were applied while scanning echograms. The scanning technique used in comparing the analog trace with the digital record eliminated significant fluctuations resulting from sea action.

Pneumatic Depth Gage ✓

The 3D Instrument, Inc. Depth Gauge S/N 8504192N was calibrated by Pacific Operations Section on March 2, 1991, and again on February 25, 1992. During both tests, the depth gauge was calibrated against a Digiquartz 0-45 PSI Transducer #1107. In addition, field systems checks were performed via comparison with diver depth gauges each time the pneumatic depth gauge was used. Calibration data and correctors are included in the Corrections to Echo Sounding Packages (Spring 1991, Fall 1991, and Fall 1992) for OPR-O106-RA.

Bar Check Lines ✓

Bar check lines were calibrated by RAINIER personnel during January and October 1991, and again on February 19, 1992 at PMC. Calibration forms are included in the Corrections to Echo Sounding Data Packages (Spring 1991, Fall 1991, and Spring 1992) for OPR-O106-RA.

Tide Correctors ✓

Tidal zoning and correctors applicable to predicted tides for the Sitka, Alaska, reference station (945-1600) were provided on the Tidal Zoning Chart accompanying the Project Instructions. The time corrector for Sheet A is direct, and the range ratio is x1.13.

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 stations in Inian Cove, Inian Island (945-2629) and in Elfin Cove, Port Althorp, Cross Sound (945-2634). The tide station descriptions, field tide records, and Field Tide Notes have been forwarded to N/OES212 in accordance with HSG #50 and FPM 4.3. Requests for approved tides have been forwarded to N/OES2. Copies of the Field Tide Notes and the request for approved tides are included in Appendix V.* The approved tide note has been attached to this report.

H. CONTROL STATIONS See FOAC Report, section 2

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. 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 and Global Positioning System (GPS) to meet third-order class I standards. Further information can be found in the Horizontal Control Reports (Spring 1991, Fall 1991, and Spring 1992) for OPR-O106-RA.

I. HYDROGRAPHIC POSITION CONTROL ✓

Method of Sounding Position Control ✓

Soundings, bottom samples, and detached positions (DPs) were located using the Motorola Mini Ranger Falcon 484 microwave positioning system in either the multiple-range or range-azimuth mode. One exception was a DP collected using an 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

* Filed with the hydrographic data.

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 data were usually rejected and the area rerun 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 intended track. There were 495 positions which exceed the specified limits at the scale of the survey. All were reviewed and found acceptable. The loss of one or more LOP's frequently occurred when collecting 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, based upon time and course steered, the data were retained. Some data were acquired with only two LOP's because stations were blocked or deselected. When this occurred, critical system checks using multiple LOP hydrography were acquired when ECR's and maximum residuals fell within survey specifications.

Range-azimuth accuracy requirements were met in accordance with Section 4.4.4. of the Hydrographic Manual. The R/T unit of the sounding vessel was the target for all observed azimuths. All angles were read to the nearest minute of arc or better to produce a positional accuracy of 0.5 mm at this survey scale.

Equipment ✓

A Wild T-2 theodolite was used for range-azimuth observations. Serial numbers for all R/T units and RPU's are annotated on the RMPO for each day of hydrography. A complete list of all electronic equipment serial numbers is included in the Electronic Control Data Packages (Spring 1991, Fall 1991, and Spring 1992).

Calibrations & Systems Check Methods ✓

Baseline calibrations were conducted in accordance with FPM 3.1.2.1 and 3.1.3.2. On February 5-6, 1991 (DN 035-036), and on March 6, 1991 (DN 065) calibrations were conducted at the SANDPOINT BASELINE over a published distance of 1058.1876 m. During the Spring 1991 season, two shore transponders (codes A & E) were returned to PMC for repairs. Replacement transponders were calibrated on April 14, 1991 (DN 104) and again on April 26, 1991 (DN 116) over a measured range of approximately 1265m from VESNO 2123 (in davits) at the U.S. Coast Guard Pier in Juneau to the Union Oil dock across the harbor. The range was measured by EDMI and was checked frequently during the calibrations. The calibrations on April 26, 1991 (DN 116) were conducted in order to improve the quality of the data for the replacement codes because of unusually high minimum acceptable signal strengths (MASS) found during the April 14, 1991 (DN 104) calibrations. The high MASS problem was later resolved by increasing the allocated space on floppy disk media to allow more ranges to be processed by the HDAPS baseline program. Calibration data and a description of the baseline is included in the Spring 1991 Electronic Control Data Package.

On September 23-27, 1991 (DN 266-270) calibrations for the Fall 1991 operations were conducted at the SANDPOINT BASELINE in accordance with FPM requirements. Calibration data for Fall 1991 work is included in the Fall 1991 Electronic Control Data Package.

On February 13-14 (DN 044-045) and 25-26, 1992 (DN 056-057) calibrations for Spring 1992 operations were conducted at the SANDPOINT BASELINE in accordance with FPM requirements. Calibration data for Spring 1992 work is included in the Spring 1992 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 to serve as critical system checks. Static critical systems checks were performed in accordance with FPM 3.1.3.3. when multiple LOP system checks were not possible. In addition, azimuth checks for range-azimuth hydrography were performed by sighting on another third order control station. The check was considered satisfactory if the azimuth difference before and after hydrography was less than 30 seconds of arc.

Other Factors✓

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

Incorrect C-O values were called up in the HDAPS survey program on DN 111. Fourteen lines of 5-meter development (Pos. Nos. 5589-5590, 5595-5620), and two DPs (Pos. Nos. 5621, 5622) were collected with a C-O value of 11.68 m instead of -1.94 m on code A, and -3.63 m instead of 2.73 m on code #6. No critical features were positioned with these incorrect C-O values. These positions have not been recomputed. Position 5621 was recomputed during office processing. None of the other positions were recomputed because these codes (stations) were not used for controlling of the above positions.

J. SHORELINE

See Evac Report, section 2

The shoreline map (T-sheet) used to transfer shoreline detail to the final field sheets was a 1:10,000-scale enlargement of TP-01330 (June 1985 - photography, 1:20,000; NAD27). Aerial photography was not flown for the southern portion of Port Althorp. Chart 17302 (1:10,000 enlargement, 1989) was used to augment the exisiting registered shoreline manuscripts.

Shoreline verification was conducted below or near predicted lower low water in accordance with FPM 7.1. Shoreline verification was mostly accomplished by assigning sequential reference numbers and taking DPs in a manner explained later in this section. Optimum shoreline verification tide levels did not exist during daylight hours in fall of 1991, however, during the spring of 1991 and 1992 suitable shoreline verification tides frequently occurred.

The significant number of misinterpreted features found during this survey suggests that T-sheet photography was flown at a stage of tide too high to allow accurate interpretation. Many T-sheet rocks were actually high points of ledges. In some areas it is believed that the photogrammetrist interpreted kelp as rocks. DPs and inshore hydrography show, however, that photogrammetric and hydrographic positioning are in excellent agreement.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers and recorded in the field using sounding volumes and corresponding 1:10,000 scale photocopies of the T-sheet. Reference numbers, descriptions and heights, corrected to predicted MLLW, are recorded in the sounding volumes. Shoreline verification conducted during the spring 1991 project was reviewed in spring 1992. Several features that were revisited were redescribed. In these cases, the original reference number and

* Filed with the hydrographic data.

description were rejected, and a new number and description assigned. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. Changes to shoreline features are described in the sounding volumes where applicable. The annotated photocopies of the T-sheet are attached to the sounding volume which are included with this survey.

DPs taken during shoreline verification were recorded on the RMPOs and indicate significant 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 RMPO.

Some T-sheet rocks were found to be isolated boulders, reefs, islets or high points within foul areas or ledges in the intertidal zone. These posed no danger to navigation. T-sheet features that were verified were retained and shown on the final field sheets (FFS). Verified shoreline and new features are shown in black on the FFS, and changes to the shoreline are shown in red. Shoreline taken from NOS chart 17302 is shown in brown. Kelp symbols are shown on the FFS in areas where surface kelp was visible. The kelp symbols were transferred to the smooth sheet in areas where kelp was noted in the raw data. Detailed 1:10,000-scale paper plots showing all DPs and reference numbers and notes relating to each feature are included with the sheets submitted with this survey. All DPs were plotted using the "+" symbol because the majority of DPs describe features that are slightly offset from the DP. To accurately depict features, the offset and bearing of the feature were applied and the feature hand drawn. Position numbers for all DPs are plotted on the two DP overlays along with a brief description of the DP. Heights are recorded in meters and are corrected to predicted MLLW.

Disprovals

The following disprovals were conducted near lower low water. A visual and echosounder search was conducted for each item lasting an average of fifteen minutes. Positioning was accomplished via Range/Azimuth, or by using two or more ranges from Falcon Mini-Rangers with ECRs and maximum residuals within acceptable limits for a 1:10,000 scale survey.

The vicinity of the T-sheet rock at 58°07'20"N, 136°26'58"W was inspected (Pos. No. 4000) and the rock was not seen. Water visibility was 1 to 2 meters and the search radius was 25m from the DP. The average depth was 9m. In addition, this area was developed using 5m line spacing. The shoalest depth recorded was 6.3 meters. ✓

The vicinity of the T-sheet rock at 58°08'16"N, 136°24'30"W (Pos. No. 5072) was inspected visually and with echo sounder and the rock not found. The water visibility was 5m, the bottom could be seen, and the search radius was 30m. Kelp was present. This rock is likely a part of ledge feature as portrayed by the hydrographer and shown on the smooth sheet. ✓

The vicinity of the charted islet at 58°07'57'N, 136°19'57"W (Pos. No. 2561) was inspected visually and with echo sounder, and the islet not found. The water visibility was 2-3m, and the bottom could be seen. Piles exist where the islet is depicted. The search radius was 50m. ✓

The vicinity of the charted islet at 58°07'53"N, 136°19'57"W (Pos. No. 2572) was inspected visually and with echo sounder, and the islet not found. The area is a gently sloping sand and mud bottom near the mouth of a stream, exposed at low water. ✓

The vicinity of the T-sheet shoal at 58°07'32"N, 136°18'54"W (Pos. Nos. 7001-7057) was

inspected visually and with echo sounder, and the shoal not found. An area 75m by 475m was developed using 5m line spacing and no anomalies were recorded. Water visibility was 6-7m. ✓

The vicinity of the charted islet at 58°07'15"N, 136°18'48"W (Pos. No. 5689) was inspected visually and with echo sounder, and the islet not found. The area is a gently sloping mud and sand beach exposed at low water. The search radius was 100m. ✓

The vicinity of the charted rock at 58°07'17"N, 136°18'28"W (Pos. No. 5686) was inspected visually and with echo sounder, and the rock not found. The average depth was 5m, and the bottom could be seen. The charted rock position is in close proximity to T-sheet rocks (R5-12), and the hydrographer believes they are the same feature. Concur. The T-sheet rocks are actually part of a ledge as portrayed by the hydrographer and shown on the smooth sheet. ✓

The vicinity of the charted rock at 58°07'17"N, 136°18'02"W (Pos. No. 6065) was inspected visually and with echo sounder, and the rock not found. The average water depth was 20m, and the search radius was 50m. ✓

The vicinity of the charted islet at 58°07'16"N, 136°17'08"W (Pos. No. 2002) was inspected visually and with echo sounder, and the islet not found. The area was a gravel beach with no large boulders present. The search radius was 50m. ✓

The vicinity of the charted rock at 58°07'28"N, 136°17'28"W (Pos. No. 5685) was inspected visually and with echo sounder, and the rock not found. The average water depth was 10m, with a steeply sloping bottom. The search radius was 50m. This position is in close proximity to T-sheet rock (R3-3), and the hydrographer believes they are the same feature. Concur ✓

The vicinity of the charted rock at 58°07'37"N, 136°17'52"W (Pos. No. 5684) was inspected visually and with echo sounder, and the rock not found. The average water depth was 20m, with a steeply sloping bottom. The search radius was 100m. This position is in close proximity to T-sheet rock (R3-5), and the hydrographer believes they are the same feature. ✓

The vicinity of the T-sheet rock at 58°08'21"N, 136°18'12"W (Pos. No. 4176) was inspected visually and with echo sounder, and the rock not found. The average water depth was 2-3m, and visibilty clear to the bottom. The search radius was 25m from the position and extended 100m along the shore in each direction. ✓

The vicinity of the T-sheet rock at 58°09'10"N, 136°18'03"W (Pos. No. 4169) was inspected visually and with echo sounder, and the rock not seen. The average depth was 2-3 m and the visibility clear to the bottom. The search radius was 25m from the position and extended 100m in each direction along the shore. Kelp was seen in the area. ✓

Recommendation: The hydrographer recommends that details seaward of the high waterline from this survey be used to supersede TP-01330 and chart 17302 in the common area. Concur

New Features

The following are significant new features found during shoreline verification near lower low water. The following features are located in navigable areas and not depicted on the T-sheet. All new features are as shown on the FFS, and smooth sheet. ?

Position Nos. 4094 and 4096 describe the N and S limits respectively of a reef at 58°08'40"N, 136°22'49"W that ~~bares~~ uncovers 1.5m MLLW. Pos's 4094 and 4096 are high points of a submerged reef.

Position No. 6002 describes a rock at 58°08'52"N, 136°22'27"W that ~~covers~~ submerged 1.0 ~~0.9~~m MLLW.

Position No. 5577 describes a rock at 58°09'10"N, 136°23'02"W that ~~covers~~ submerged 0 ~~1~~.8m MLLW.

Position No. 6004 describes a rock at 58°08'59"N, 136°22'12"W that ~~bares~~ uncovers 2 0.3m MLLW. awash

Position No. 6057 describes a rock at 58°08'02"N, 136°20'03"W that ~~bares~~ uncovers 1 0.2m MLLW, and represents the NE limit of a foul area.

Position No. 5078 describes a pile remnant at 58°07'45"N, 136°19'51"W that is ~~awash~~ covered 0.1m at MLLW. submerged

Position No. 6063 describes a rock at 58°07'07"N, 136°18'08"W that ~~bares~~ uncovers 8 0.9m MLLW. Awash

Position Nos. 2562 and 2563 describe the E and W limits respectively of a pile row (4 total) at 58°07'58"N, 136°19'57"W that bares ~~10.7~~8.1m ~~MLLW~~ mHW.

Position Nos. 2561 and 2564 describe the E and W limits respectively of a pile row (3 total) at 58°07'57"N, 136°19'57"W that bares ~~10.7~~7.9m ~~MLLW~~ mHW.

Position Nos. 2567 and 2568 describe the N and S limits respectively of a pile row (5 total) at 58°07'56"N, 136°19'54"W that bares ~~10.9~~8.2m ~~MLLW~~ mHW.

Position Nos. 7000 and 2569 describe the N and S limits respectively of a pile row (6 total) at 58°07'52"N, 136°19'53"W that bares from ~~3.9~~1.0m to ~~11.0~~8.3m ~~MLLW~~ mHW.

Recommendation: The hydrographer recommends that shoreline detail from this survey be used to supersede prior shoreline information. Concur

K. CROSSLINES ✓

A total of 19 nautical miles of crosslines were run perpendicular to or at a 45° angle to mainscheme lines, representing 9% of the mainscheme hydrography. Crossline soundings agree to within 2 meters with mainscheme soundings, except in areas of steep bottom topography. The vessel acquiring crossline data did not always collect the corresponding mainscheme data. Agreement between soundings acquired by different echo sounders in a common area is as stated above.

L. JUNCTIONS See Evaluation Report, section 5

This survey junctions with H-10376 (1:10,000; 1991) to the north and H-10374 (1:20,000; 1991) to the west. Agreement between overlapping soundings is good, with most comparisons within 2 m.

M. COMPARISON WITH PRIOR SURVEYS See Evaluation Report, section 6

This survey was compared to three prior surveys. In general, the present survey compares well with the prior surveys. Shallower soundings from the present survey replaced a majority of prior survey least depths. The most likely reasons for shoaling throughout the

area are stream derived sediment deposition and isostatic rebound.

The following prior surveys were compared to the present survey:

H-2558 (1:40,000; 1901):

Overall agreement with the present survey is good with most sounding comparisons within 2 m.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-2558 within their common area. concur

H-2559 (1:20,000; 1923):

Overall agreement with the present survey is good with most sounding comparisons within 2 m in Port Althorp and 4 m west of Point Lucan. Discrepancies between the present survey and H-2559 at the head of Port Althorp and in Salt Chuck Bay indicate shoaling, perhaps due to stream derived sediment deposition.

Recommendation: The hydrographer recommends the soundings and least depths acquired from the present survey be used to supersede those of H-2559 within their common areas. Concur

H-6766 (1:5,000; 1942):

Overall agreement with the present survey is good with most sounding comparisons within 2 m. Cultural features (e.g. Port Althorp dock) portrayed on H-6766 have been removed or drastically altered. Changes in this area will continue as construction is currently underway to set new piles.

Recommendation: The hydrographer recommends the soundings, least depths, and non-sounding features acquired from the present survey be used to supersede those of H-6766 within their common areas. Concur

N. COMPARISON WITH THE CHART See Evac Report, section 7

The hydrographer compared all of the soundings from a 1:10,000-scale enlargement of NOS chart 17302, 15th Edition, 20 May 89, 1:80,000 (NAD 83) to this survey. All charted soundings originate from the prior surveys discussed in Section M. During office processing the 16th edition of Chart 17302 was used for comparison.

Comparison of Sounding Features

Not Applicable.

Comparison of Non-Sounding Features

The following are changes to charted features noted during shoreline verification. Charted feature disprovals were addressed in Section J.

The charted rock in the vicinity of 58°07'35"N, 136°26'13"W is actually T-sheet rock (R4-21), 40 m to SW. T-sheet is an islet (2³) Chart islet.

The charted rock in the vicinity of 58°08'02"N, 136°24'57"W is actually part of ledge (R4-41), 20 m to SE. Concur

The charted rock in the vicinity of 58°08'13"N, 136°24'08"W is actually part of ledge (Pos. No. 4088), 10 m to E. Concur

The charted islet in vicinity of 58°08'49"N, 136°22'24"W is actually a rock (Pos. No. 5622). which uncovers 2 ft at MLLW

The charted rock in the vicinity of 58°09'00"N, 136°22'08"W is actually a T-sheet rock (Pos. No. 5621), 50 m to SW. Concur

The charted rock in the vicinity of 58°07'45"N, 136°18'02"W is actually a T-sheet rock (R3-9), 35 m to N. Concur

Islets in the vicinity of 58°08'40"N, 136°17'20"W are as depicted correctly on the T-sheet, not the chart. Islets are shown on the smooth sheet with revisions as provided by the hydrographer.

The charted rock in the vicinity of 58°08'51"N, 136°17'41"W is actually part of the adjacent islet. Concur

Recommendation:

The hydrographer recommends that charted non-sounding features be changed to reflect corrections made from shoreline verification during this survey. concur

AWOIS Items ✓

Not applicable.

Dangers to Navigation ✓

~~Eleven~~ Fourteen dangers to navigation within the limits of this survey were reported by radio message and hard copy to the Seventeenth Coast Guard District and DMAHTC. Copies of the correspondence are included in ~~Appendix I of~~ this report. Position numbers associated with each reported danger are included on the copy of the radio message.

O. ADEQUACY OF SURVEY ✓

This survey is complete and adequate to supersede the areas common to the prior surveys listed in Section 6.10 of the Project Instructions. concur

P. AIDS TO NAVIGATION ✓

Not applicable. one aid, Three Hill Light, is within the limits of this survey. It was located during survey H-10376 and serves its intended purposes.

Q. STATISTICS ✓

Vessel:	2123	2124	2125	2126	Total
# of Pos	565	1425	1045	785	3820

NM Hydro	62	91	131	47	331

NM^2 Hydrography	6.96	Velocity Casts	5
Detached Positions	96	Tide Stations	2
Bottom Samples	28	Current/Magnetic Stations	0

R. MISCELLANEOUS ✓

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

All bottom samples were submitted to the Smithsonian Institution.

S. RECOMMENDATIONS ✓

The hydrographer recommends that future aerial photgraphy be flown at a stage of tide closer to MLLW. Concur

The hydrographer also recommends that a 1:50,000 scale chart be compiled in order to better delineate the complexity of this area. This recommendation was forwarded to the Chief, Hydrographic Survey Branch.

T. REFERRAL TO REPORTS ✓

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

Title	Date Sent to N/CG245
Horizontal Control Reports for OPR-O106-R:	
Spring 1991	June 1991
Fall 1991	December 1991
Spring 1992	June 1992
Electronic Control Data Packages for OPR-O106-RA:	
Spring 1991	May 1991
Fall 1991	December 1991
Spring 1992	June 1992
Corrections to Echo Soundings Data Packages for OPR-O106-RA:	
Spring 1991	May 1991
Fall 1991	December 1991
Spring 1991	June 1992
Coast Pilot Reports for OPR-O106-RA:	
Spring 1991	June 1991
Fall 1991	January 1992
Spring 1992	June 1992

User Evaluation Reports for OPR-0106-RA:
Spring 1992

July 1992

Respectfully Submitted,

Eric P. Nelson

Eric P. Nelson
Lieutenant(jg), NOAA

Approved and Forwarded,

Thomas W. Richards

Thomas W. Richards
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 21 Jun 1992

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name	Quad No's
~~123~~	~~F~~	~~058:21:36.578~~	~~136:22:40.132~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~5~~	~~04/22/92~~	~~DELTA 1985~~	
~~112~~	~~F~~	~~058:11:41.777~~	~~136:20:55.983~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~WHARF~~	
~~159~~	~~F~~	~~058:22:45.029~~	~~136:24:36.049~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~CONIC(ADJ)~~	
135	F	058:11:51.574	136:38:27.489	16	250	0.0	0.0	1	03/22/92	CAPE 1925	581363✓
188	F	058:16:48.210	136:34:30.689	8	250	0.0	0.0	6	04/22/92	MORAIN 1985	581363✓
153	F	058:08:18.190	136:25:21.164	27	250	0.0	0.0	4	04/23/92	RAIN 1991	581362✓
187	F	058:10:58.916	136:20:46.250	7	250	0.0	0.0	9	04/22/92	ISLE NO 1 1938	581362✓
~~165~~	~~F~~	~~058:23:11.968~~	~~136:24:59.403~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~LEG(ADJ)~~	
~~166~~	~~F~~	~~058:23:50.735~~	~~136:25:25.253~~	~~2~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~MIRE(ADJ)~~	
~~167~~	~~F~~	~~058:22:07.672~~	~~136:23:53.456~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~NEEDLE(ADJ)~~	
189	F	058:08:49.315	136:17:34.409	5	250	0.0	0.0	A	04/07/92	HIP 1992	581362✓
190	F	058:17:51.075	136:27:03.058	9	250	0.0	0.0	0	04/15/92	LUMBER 1991	581362✓
284	Z	058:08:52.207	136:17:35.478	7	250	0.0	0.0		00/00/00	POCKET(R/AZ)	581362✓
217	Z	058:09:16.155	136:19:07.423	5	250	0.0	0.0		00/00/00	BOW(R/AZ), 1942	581362✓
~~173~~	~~F~~	~~058:22:11.340~~	~~136:21:07.733~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~04/22/92~~	~~MUCK 1991~~	
~~191~~	~~F~~	~~058:16:20.937~~	~~136:24:00.922~~	~~10~~	~~250~~	~~0.0~~	~~0.0~~	~~8~~	~~04/30/92~~	~~ACHE 1991~~	
~~175~~	~~F~~	~~058:21:48.838~~	~~136:23:58.304~~	~~2~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~HOOK 1991(ADJ)~~	
~~192~~	~~F~~	~~058:19:03.968~~	~~136:15:34.968~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~2~~	~~04/14/92~~	~~AID 1991~~	
~~193~~	~~F~~	~~058:17:50.935~~	~~136:23:07.344~~	~~27~~	~~250~~	~~0.0~~	~~0.0~~	~~7~~	~~05/08/92~~	~~BALD 1991~~	
~~194~~	~~F~~	~~058:16:08.427~~	~~136:16:52.405~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~	~~7~~	~~04/30/92~~	~~INIAN 1990~~	
~~195~~	~~F~~	~~058:18:48.354~~	~~136:22:09.805~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~7~~	~~03/30/92~~	~~JAB 1991~~	
~~196~~	~~F~~	~~058:16:04.118~~	~~136:20:28.242~~	~~10~~	~~250~~	~~0.0~~	~~0.0~~	~~8~~	~~05/08/92~~	~~NATTY 1991~~	
~~100~~	~~F~~	~~058:15:48.046~~	~~136:07:57.536~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~	~~4~~	~~04/16/92~~	~~YAK 1991~~	
~~223~~	~~Z~~	~~058:21:36.578~~	~~136:22:40.132~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~DELTA(R/AZ)~~	
~~197~~	~~F~~	~~058:16:21.417~~	~~136:19:13.944~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~7~~	~~04/30/92~~	~~BAIL 1991~~	
~~259~~	~~Z~~	~~058:22:45.029~~	~~136:24:36.049~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~CONIC(R/AZ)~~	
~~115~~	~~F~~	~~058:20:02.107~~	~~136:18:17.253~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~	~~1~~	~~05/05/92~~	~~BAN 1991~~	
~~198~~	~~F~~	~~058:16:12.143~~	~~136:20:05.798~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~4~~	~~04/21/92~~	~~LOUT 1991~~	
~~199~~	~~F~~	~~058:15:31.561~~	~~136:19:34.548~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~6~~	~~04/17/92~~	~~SHAKE 1992~~	
~~400~~	~~F~~	~~058:15:47.021~~	~~136:19:32.367~~	~~2~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~INIAN COVE 8 1964~~	
~~265~~	~~Z~~	~~058:23:11.968~~	~~136:24:59.403~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~LEG(R/AZ)~~	
~~266~~	~~Z~~	~~058:23:50.735~~	~~136:25:25.253~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~MIRE(R/AZ)~~	
~~267~~	~~Z~~	~~058:22:07.672~~	~~136:23:53.456~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~NEEDLE(R/AZ)~~	
~~122~~	~~F~~	~~058:21:04.673~~	~~136:17:37.174~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~	~~4~~	~~04/22/92~~	~~DEED 1991-1986~~	
~~401~~	~~F~~	~~058:15:45.433~~	~~136:20:28.213~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~04/08/92~~	~~BAKE 1991~~	
~~402~~	~~Z~~	~~058:15:45.433~~	~~136:20:28.213~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~BAKE(R/AZ)~~	
~~403~~	~~Z~~	~~058:15:31.561~~	~~136:19:34.548~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~SHAKE(R/AZ)~~	
~~273~~	~~Z~~	~~058:22:11.340~~	~~136:21:07.733~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~MUCK(R/AZ)~~	
~~404~~	~~Z~~	~~058:15:47.021~~	~~136:19:32.367~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~INIAN COVE 8 1964(R/AZ)~~	
~~275~~	~~Z~~	~~058:21:48.838~~	~~136:23:58.304~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~HOOK 1991(R/AZ)~~	
289	Z	058:08:49.315	136:17:34.409	5	250	0.0	0.0		00/00/00	HIP(R/AZ), 1992	581362✓
~~405~~	~~Z~~	~~058:16:12.143~~	~~136:20:05.798~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~LOUT(R/AZ)~~	
~~406~~	~~Z~~	~~058:16:11.778~~	~~136:19:08.839~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~JUJU(R/AZ)~~	
~~407~~	~~F~~	~~058:16:11.778~~	~~136:19:08.839~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~05/01/92~~	~~JUJU 1992~~	
~~408~~	~~Z~~	~~058:20:02.107~~	~~136:18:17.253~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~		~~04/14/92~~	~~BAN 1991~~	
~~409~~	~~Z~~	~~058:18:48.354~~	~~136:22:09.805~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~JAB(R/AZ)~~	
~~410~~	~~Z~~	~~058:17:50.935~~	~~136:23:07.344~~	~~27~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~BALD(R/AZ)~~	
~~411~~	~~Z~~	~~058:16:21.417~~	~~136:19:13.944~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~BAIL(R/AZ)~~	
~~412~~	~~F~~	~~058:15:38.643~~	~~136:22:27.396~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~05/01/92~~	~~HYENA 1991~~	
~~413~~	~~F~~	~~058:16:55.103~~	~~136:28:47.210~~	~~20~~	~~250~~	~~0.0~~	~~0.0~~		~~04/19/92~~	~~END 2~~	
~~414~~	~~F~~	~~058:10:41.902~~	~~136:31:10.409~~	~~13~~	~~250~~	~~0.0~~	~~0.0~~	~~2~~	~~04/22/92~~	~~TAYLOR 1985~~	
~~415~~	~~F~~	~~058:10:31.239~~	~~136:30:34.804~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~04/20/92~~	~~LOBO 1991~~	
~~416~~	~~F~~	~~058:12:43.819~~	~~136:22:51.081~~	~~9~~	~~250~~	~~0.0~~	~~0.0~~	~~5~~	~~04/23/92~~	~~ADZE 1991~~	
~~417~~	~~F~~	~~058:17:59.613~~	~~136:29:08.752~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~05/06/92~~	~~DEPT 1991~~	
~~418~~	~~Z~~	~~058:10:31.239~~	~~136:30:34.804~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~LOBO(R/AZ)~~	
~~419~~	~~F~~	~~058:15:04.557~~	~~136:21:48.256~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~	~~A~~	~~05/01/92~~	~~EMBO 1991~~	
~~106~~	~~F~~	~~058:11:41.367~~	~~136:21:06.313~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~7~~	~~03/22/92~~	~~FINN 1930~~	
~~107~~	~~F~~	~~058:11:29.612~~	~~136:20:36.949~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~CHICH~~	
~~108~~	~~F~~	~~058:11:18.689~~	~~136:20:21.268~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~KOFF NO 1~~	
~~149~~	~~F~~	~~058:15:09.304~~	~~136:21:18.505~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~		~~00/00/00~~	~~TONGI~~	

✓ KRL

133	F	058:15:15.230	136:23:02.253	13	250	0.0	0.0	00/00/00	SUR, 1992	581362✓
~~136~~	~~F~~	~~058:11:47.673~~	~~136:20:50.459~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~SKY~~	
~~141~~	~~F~~	~~058:14:14.254~~	~~136:21:47.078~~	~~1~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~URSA~~	
~~206~~	~~Z~~	~~058:11:41.367~~	~~136:21:06.313~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~FINN(R/AZ)~~	
~~207~~	~~Z~~	~~058:11:29.612~~	~~136:20:36.949~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~CHICH(R/AZ)~~	
~~208~~	~~Z~~	~~058:11:18.689~~	~~136:20:21.268~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~KOFF NO 1(R/AZ)~~	
~~219~~	~~Z~~	~~058:15:02.304~~	~~136:21:18.505~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~CANAL(R/AZ)~~	
~~233~~	~~Z~~	~~058:15:15.230~~	~~136:23:02.253~~	~~15~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~SUR(R/AZ)~~	
~~236~~	~~Z~~	~~058:11:47.673~~	~~136:20:50.459~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~SKY(R/AZ)~~	
~~241~~	~~Z~~	~~058:14:14.254~~	~~136:21:47.078~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~URSA(R/AZ)~~	
~~420~~	~~Z~~	~~058:15:04.557~~	~~136:21:48.256~~	~~3~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~EMBO(R/AZ)~~	
~~421~~	~~Z~~	~~058:15:38.643~~	~~136:22:27.396~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~HYENA(R/AZ)~~	
117	F	058:09:16.155	136:19:07.423	5	250	0.0	0.0	6 04/20/92	BOW 1942	581362✓
134	F	058:07:28.094	136:18:51.778	3	250	0.0	0.0	00/00/00	TOWN 1942	581362✓
139	F	058:09:58.282	136:21:33.918	7	250	0.0	0.0	6 04/22/92	DALI 1991	581362✓
170	F	058:08:31.134	136:20:53.813	5	250	0.0	0.0	B 04/04/92	ZEN 1991	581362✓
~~120~~	~~F~~	~~058:11:43.986~~	~~136:22:37.906~~	~~9~~	~~250~~	~~0.0~~	~~0.0~~	~~A 03/22/92~~	~~GRAN 1938~~	
~~129~~	~~F~~	~~058:12:08.063~~	~~136:21:21.384~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~HOLE~~	
131	F	058:11:39.817	136:21:29.942	19	250	0.0	0.0	A 04/04/92	NITE 1938	581362✓
~~137~~	~~F~~	~~058:12:36.107~~	~~136:21:49.754~~	~~19~~	~~250~~	~~0.0~~	~~0.0~~	~~6 04/22/92~~	~~DUNK NO 2 1938~~	
152	F	058:09:57.989	136:23:25.066	6	250	0.0	0.0	4 04/20/92	RUDE 2 1991	581362✓
154	F	058:09:12.755	136:23:04.548	20	250	0.0	0.0	4 04/21/92	DREAD 1991	581362✓
~~155~~	~~F~~	~~058:11:38.436~~	~~136:23:48.166~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~WEST~~	
~~156~~	~~F~~	~~058:11:51.099~~	~~136:23:28.690~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~DALE~~	
157	F	058:07:39.977	136:17:50.319	3	250	0.0	0.0	1 05/04/92	LLAMA 1991	581362✓
183	F	058:06:17.744	136:16:23.124	1	250	0.0	0.0	00/00/00	BUZZ, 1991	581362✓
184	F	058:08:52.207	136:17:35.478	7	250	0.0	0.0	A 04/07/92	POCKET 1991	581362✓
185	F	058:08:52.900	136:16:22.959	4	250	0.0	0.0	00/00/00	CLAM, 1991	581362✓
186	F	058:09:41.099	136:19:39.784	7	250	0.0	0.0	6 04/04/92	INIAN 1970	581362✓
234	Z	058:07:28.094	136:18:51.778	5	250	0.0	0.0	00/00/00	TOWN(R/AZ)	581362✓
257	Z	058:07:39.977	136:17:50.319	3	250	0.0	0.0	00/00/00	LLAMA(R/AZ), 1942	581362✓
283	Z	058:06:17.744	136:16:23.124	3	250	0.0	0.0	00/00/00	BUZZ(R/AZ), 1991	581362✓
270	Z	058:08:31.134	136:20:53.813	3	250	0.0	0.0	00/00/00	ZEN(R/AZ), 1991	581362✓
239	Z	058:09:58.282	136:21:33.918	7	250	0.0	0.0	00/00/00	DALI(R/AZ), 1991	581362✓
~~422~~	~~F~~	~~058:13:37.890~~	~~136:35:00.197~~	~~13~~	~~250~~	~~0.0~~	~~0.0~~	~~7 05/02/92~~	~~APRIL 1992~~	
~~423~~	~~F~~	~~058:17:24.870~~	~~136:28:55.119~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~A 05/02/92~~	~~FERN 1992~~	
~~424~~	~~F~~	~~058:19:04.579~~	~~136:33:30.893~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~A 05/07/92~~	~~SPIT IP 1992~~	
125	F	058:16:11.116	136:24:18.155	12	250	0.0	0.0	8 05/07/92	EX 1901	581362✓
~~323~~	~~Z~~	~~058:17:24.870~~	~~136:28:55.119~~	~~5~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~FERN(R/AZ)~~	
~~517~~	~~Z~~	~~058:17:59.613~~	~~136:29:08.752~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~DEPT(R/AZ)~~	
~~390~~	~~Z~~	~~058:17:51.075~~	~~136:27:03.058~~	~~9~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~LUMBER(R/AZ)~~	
~~316~~	~~Z~~	~~058:12:43.819~~	~~136:22:51.081~~	~~9~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~ADZE(R/AZ)~~	
~~214~~	~~Z~~	~~058:18:41.982~~	~~136:31:10.409~~	~~13~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~TAYLOR 1985(R/AZ)~~	
~~317~~	~~Z~~	~~058:17:59.613~~	~~136:29:08.752~~	~~4~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~DEPT(R/AZ)~~	
~~113~~	~~F~~	~~058:12:43.819~~	~~136:22:51.081~~	~~7~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~ADZE 1901~~	
~~116~~	~~F~~	~~058:12:07.020~~	~~136:22:15.121~~	~~8~~	~~250~~	~~0.0~~	~~0.0~~	~~00/00/00~~	~~BEER~~	
142	F	058:08:31.134	136:20:53.813	4	250	0.0	0.0	00/00/00	ZEN 1991	581362✓
285	Z	058:08:52.900	136:16:22.959	6	250	0.0	0.0	00/00/00	CLAM 1991	581362✓

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS
NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington 98102-3767

June 20, 1991

Director
DMAHTC
Attn: MCNA
6500 Brooks Lane
Washington, D.C. 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Cross Sound, Alaska, NOAA Ship RAINIER discovered 3 dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS

NOAA Ship RAINIER S221
1801 Fairview Avenue East
Seattle, Washington
98102-3767

June 20, 1991

Commander
Seventeenth Coast Guard District
Post Office Box 3-5000
Juneau, Alaska 99802

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC

PTTUZYUW RUHPTEF0012 1702330-UUUU--RUHPTEF.
ZNR UUUUU
P 192202Z JUN 91
FM NOAAS RAINIER
TO CGGDSEVENTEEN JUNEAU AK
DMAHTCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS

ADVANCE INFORMATION

NOAA SHIP RAINIER HAS FOUND 3 DANGERS TO NAVIGATION IN CROSS SOUND, ALASKA (PROJECT OPR-0106-RA) WITHIN THE LIMITS OF THE HYDROGRAPHIC SURVEY H-10377 (SOUTH PORTION OF PORT ALTHORP AND APPROACHES). THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

CHART AFFECTED: 17302 15TH ED MAY 20/89 1:80,000 NAD83

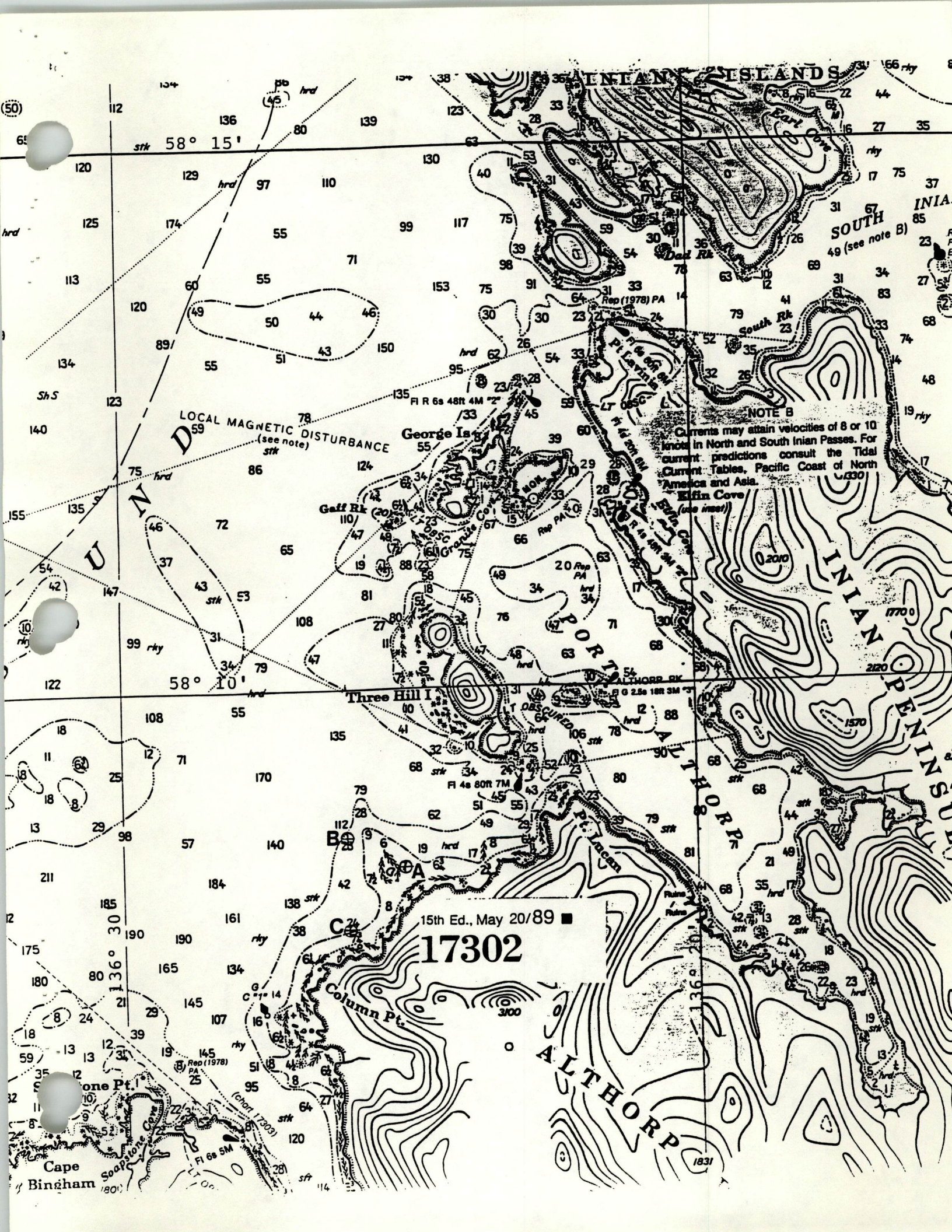
DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE
A.	SHOAL	17302	3 1/4FM	NAD83	58-08-19.90N	136-25-06.52W
B.	SHOAL	17302	9 3/4FM	NAD83	58-08-37.49N	136-26-04.25W
C.	SHOAL	17302	1 1/2FM	NAD83	58-07-46.08N	136-26-05.36W

THIS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. THE HYDROGRAPHIC SURVEY IN THIS AREA HAS NOT BEEN COMPLETED AND IT IS LIKELY THAT ADDITIONAL SHOAL DEPTHS EXIST IN THE IMMEDIATE AREA. QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC HYDROGRAPHIC SECTION AT (206)526-6835. A LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO CONFIRM THIS MESSAGE.
BT
#0012

NOJ / 192354Z JUN 91
JH / 6260.0 KHZ

NNNN


INIAN ISLANDS
58° 15'
58° 10'
LOCAL MAGNETIC DISTURBANCE
(see note)
George Is.
Gaff Rk
Three Hill I.
Pt. Lucan
Column Pt.
Cape Bingham
Soapstone Pt.
Elfin Cove
(see inset)
East Cove
South Rk
Dall Rk
Pt. Lavinia
ALTHORP RK
ALTHORP
INIAN PENINSULA
SOUTH
NOTE B
Currents may attain velocities of 8 or 10 knots in North and South Inian Passes. For current predictions consult the Tidal Current Tables, Pacific Coast of North America and Asia.
15th Ed., May 20/89
17302

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

June 9, 1992

Director
DMAHTC
Attn: MCNM
6500 Brookes Lane
Washington, DC 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Cross Sound, Alaska, NOAA Ship RAINIER discovered eleven dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102-3767

NOAA Ship RAINIER

June 9, 1992

Commander
Seventeenth Coast Guard District
Post Office Box 3-5000
Juneau, AK 99802

Dear Sir:

Attached is a confirmation copy of the radio message sent to your office regarding the dangers to navigation which I recommend for inclusion in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,

Thomas W. Richards
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CG221
PMC

P 261655Z MAY 92
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS

ADVANCE INFORMATION

NOAA SHIP RAINIER HAS FOUND 11 DANGERS TO NAVIGATION IN CROSS SOUND, ALASKA (PROJECT OPR-0106-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10377, SOUTH PORTION OF PORT ALTHORP AND APPROACHES.

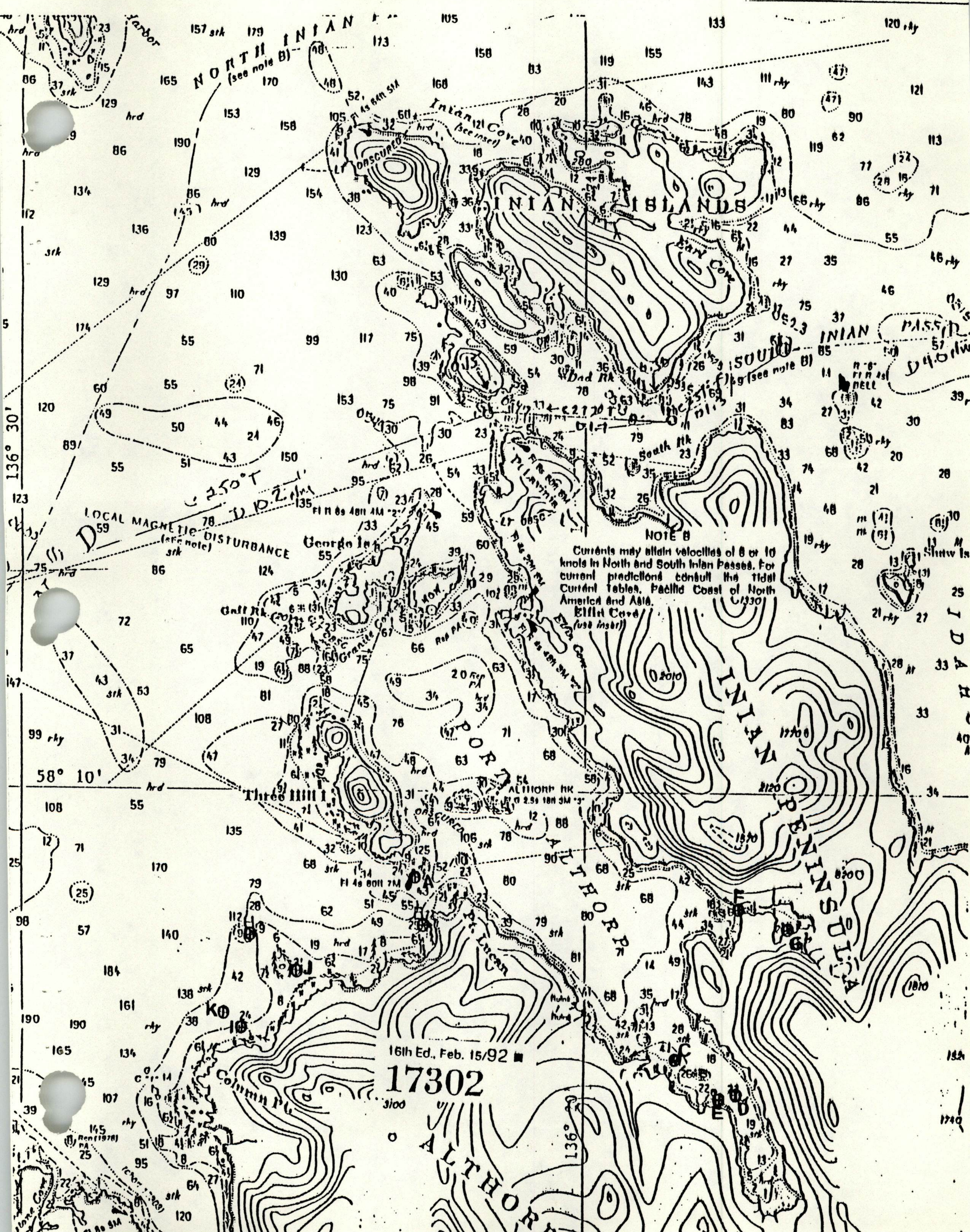
THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

CHARTS AFFECTED: 17302 16TH ED FEB 15/92 1:80,000 NAD83
17303 7TH ED AUG 25/90 1:40,000 NAD 83
17300 25TH ED APR 29/89 1:209,978 NAD 83

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	CHART	DEPTH	DATUM	LATITUDE	LONGITUDE
A.	ROCK COVERS	17302 17300	1 fm	NAD 83	58/09/10.14N	136/23/02.20W
B.	ROCK UNCOVERS	17302	3 ft	NAD 83	58/08/43.21N	136/22/52.16W
C.	SHOAL	17302	2 1/2 fm	NAD 83	58/07/24.48N	136/18/27.12W
D.	SHOAL	17302	10 fm	NAD 83	58/07/04.58N	136/17/24.68W
E.	SHOAL	17302	1 3/4 fm	NAD 83	58/07/03.17N	136/17/41.51W
F.	SHOAL	17302	5 fm	NAD 83	58/08/51.77N	136/17/20.28W
G.	SHOAL	17302	1 1/4 fm	NAD 83	58/08/40.35N	136/16/29.22W
H.	SHOAL	17302	8 fm	NAD 83	58/08/36.31N	136/25/55.81W
I.	SHOAL	17302 17303	3/4 fm	NAD 83	58/07/45.76N	136/26/05.52W
J.	SHOAL	17302	2 3/4 fm	NAD 83	58/08/17.90N	136/25/07.33W
K.	SHOAL	17302 17303	6 1/2 fm	NAD 83	58/07/53.88N	136/26/24.59W

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW. QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHEIF, PACIFIC HYDROGRAPHIC SECTION AT (206) 526-6835. A LETTER WITH ATTACHED CHARTLET IS BEING MAILED TO CONFIRM THIS MESSAGE.
BT


NORTH INIAN (see note B)
Inian Cove (see inset)
INIAN ISLANDS
SOUTH INIAN PASS (see note B)
LOCAL MAGNETIC DISTURBANCE (see note)
George Is
Gull Rk
Granite Cove
Dad Rk
South Rk
NOTE B
Currents may attain velocities of 8 or 10 knots in North and South Inian Passes. For current predictions consult the tidal Current Tables, Pacific Coast of North America and Asia.
Elfin Cove (see inset)
INIAN PENINSULA
PORT ALTHORP
Althorp Rk
Three Hill I
Pt Lucan
Column Pt
58° 10'
136° 30'
136°
16th Ed., Feb. 15/92
17302

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

August 11, 1992

Commander
Seventeenth Coast Guard District
Post Office Box 3-5000
Juneau, AK 99802

Dear Sir:

During the office processing of hydrographic survey H-10377, Cross Sound, Alaska, four additional dangers to navigation have been discovered and two previously reported by the NOAA Ship RAINIER by radio message on May 26, 1992 revised. These dangers affect the following chart:

Chart	Edition/date	Datum
17302	15th Ed., 5/20/89	NAD 83

It is recommended that the revised Report of Dangers to Navigation be included in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

Sincerely,

Douglas G. Hennick

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

Enclosure

cc: DMA/TC
N/CG221
RAINIER

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number and Title:

Survey Number	Title	
H-10377	State:	Alaska
	Locality:	Cross Sound
	Sublocality:	South Portion of Port Althorp and Approaches

Project Number: OPR-O106-RA

All soundings reduced to Mean Lower Low Water using actual tides.

Affected nautical chart:

Chart	Edition/date	Datum
17302	15th Ed., 5/20/89	NAD 83

Danger to Navigation	LATITUDE(N)	LONGITUDE(W)
1 3/4 fm. shoal	58/07/51.0	136/25/37.5
2 1/4 fm. shoal	58/08/31.5	136/23/22.0
2 1/4 fm. shoal	58/08/23.0	136/24/36.0
3 3/4 fm. shoal	58/08/06.0	136/25/38.0
8 fm. shoal *	58/08/38.0	136/25/55.0

addition, depths in the channel leading into Salt Chuck Bay, latitude 58/08/52N, longitude 36/16/42W, and the bay itself have shoaled to above MLLW. This replaces the previously reported 1 1/4 fathom shoal at latitude 58/08/40.35, longitude 136/16/29.22.

*This revises the previously reported position of the 8 fathom shoal at latitude 58/08/36.3N, longitude 136/25/55.8W.

Questions concerning this report should be directed to the Pacific Hydrographic Section at (206) 526-6853.

APPROVAL SHEET

for

H-10377

RA-10-3-91

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

ORIGINAL

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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 28, 1991

MARINE CENTER: Pacific

OPR: O106-RA

HYDROGRAPHIC SHEET: H-10377

LOCALITY: South Portion of Port Althrop and Approaches,
Cross Sound, Alaska

TIME PERIOD: May 2, 1991 - May 5, 1991

TIDE STATIONS USED: 945-2634 (945-2635) Elfin Cove, Alaska
Lat. 58° 11.6'N Lon. 136° 20.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 10.53 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 10.0 ft.

REMARKS: RECOMMENDED ZONING

1. East of 136° 24.5', times and heights are direct on Elfin Cove.
2. West of 136° 24.5', times are direct and apply a x0.99 range ratio to Elfin Cove.

Notes: Elfin Cove station # is 945-2634, however, the data is in file # 945-2635.
Times are tabulated in Greenwich Mean Time.

for Brick T. Cue

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

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 4, 1992

MARINE CENTER: Pacific

OPR: 0106-RA

HYDROGRAPHIC SHEET: H-10377 (Additional)

LOCALITY: South Portion of Port Althrop and Approaches,
Cross Sound, Alaska

TIME PERIOD: November 12, 1991 - November 16, 1991

TIDE STATIONS USED: 945-2634 (945-2635) Elfin Cove, Alaska
Lat. 58° 11.6'N Lon. 136° 20.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 10.53 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 10.0 ft.

REMARKS: RECOMMENDED ZONING

1. East of 136° 24.5', times and heights are direct on Elfin Cove.
2. West of 136° 24.5', times are direct and apply a x0.99 range ratio to Elfin Cove.

Notes: Elfin Cove station # is 945-2634, however, the data is in file # 945-2635.
Hourly heights are tabulated in Greenwich Mean Time.

CHIEF, TIDAL DATUM QUALITY
ASSURANCE SECTION

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: August 18, 1992

MARINE CENTER: Pacific

OPR: O106-RA

HYDROGRAPHIC SHEET: H-10377 (Additional)

LOCALITY: North Portion of Port Althrop, Cross Sound, Alaska

TIME PERIOD: March 23 - May 7, 1992

TIDE STATIONS USED: 945-2634 (945-2635) Elfin Cove, Alaska
Lat. 58° 11.6′N Lon. 136° 20.8′W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 10.60 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 9.9 ft.

REMARKS: RECOMMENDED ZONING

1. East of 136° 24.5′, times and heights are direct on Elfin Cove.
2. West of 136° 24.5′, times are direct and apply a x0.99 range ratio to Elfin Cove.

Notes: Elfin Cove station # is 945-2634, however, the data is in file # 945-2635.

Hourly heights are tabulated in Greenwich Mean Time.

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10377

Name on Survey	A ON CHART NO. 17302	B ON PREVIOUS SURVEY NO.	C TP-01330	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X		X							1
ALTHORP PENINSULA	X		X							2
ALTHORP, PORT	X		X							3
CHICHAGOF ISLAND	X		X							4
COLUMN POINT	X		X							5
CROSS SOUND	X		X							6
INIAN PENINSULA	X		X							7
LUCAN, POINT	X		X							8
PORT ALTHORP (locale)			X							9
SALT CHUCK BAY			X							10
THREE HILL ISLAND	X		X							11
										12
										13
										14
				Approved:						15
										16
				Charles E. Harrington						17
				Chief Geographer - NCG2x5						18
				SEP 24 1992						19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H)
(9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10377

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	3
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	4

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES	3					
CAHIERS						
BOXES				2		

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			3820
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			

	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	77		77
VERIFICATION OF SOUNDINGS	253.5		253.5
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	145		145
COMPARISON WITH PRIOR SURVEYS AND CHARTS		15	15
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		14	14
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	475.5	29	504.5

Pre-processing Examination by	J. Griffin	*Beginning Date* 7-6-92	*Ending Date* 8-6-92
Verification of Field Data by	M. Sanders, J. Stringham	*Time (Hours)* 475.5	*Ending Date* 11-15-93
Verification Check by	E. Domingo, J. Stringham	*Time (Hours)* 36.5	*Ending Date* 11-19-93
Evaluation and Analysis by	R. Davies	*Time (Hours)* 29	*Ending Date* 11-22-93
Inspection by	B. Olmstead	*Time (Hours)* 25	*Ending Date* 1-12-94

EVALUATION REPORT
H-10377

1. INTRODUCTION

Survey H-10377 is a basic hydrographic survey accomplished by the NOAA Ship *Rainier* under the following Project Instructions.

OPR-O106-RA, dated February 21, 1991 and February 18, 1992
CHANGE NO. 1, dated September 5, 1991

This survey was conducted in Alaska and covers a portion of Cross Sound between the Althorp and Inian Peninsulas on Chichagof Island. This survey also includes the southern portion of Port Althorp. The surveyed area extends from latitude 58/06/06N to latitude 58/09/19N, and from longitude 136/16/12W to longitude 136/27/05W. The shoreline in the area is characterized by rock and gravel beaches, rock ledges, isolated reefs and numerous small islets. The bottom consists of mud and pebbles. Depths range from zero along the shoreline to 263 meters offshore.

Predicted tides for Sitka, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned from Elfin Cove, Alaska, gage 945-2635, 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 offset values and sound velocity correctors were recomputed and reapplied during office processing. 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 Guidelines 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 Spring 1991, Fall 1991 and Spring 1992 Horizontal Control Reports for OPR-O106-RA, contain adequate discussions of horizontal control and hydrographic positioning.

The positions of the horizontal control stations used during hydrography are 1991 and 1992 field and published 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: -1.363 seconds (-42.169 meters)
Longitude: 6.609 seconds (108.161 meters)

The quality of several positions exceeds limits in terms of error circle radius and residual or have angles of intersection less than 30 degrees or more than 150 degrees. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

The following shoreline map was compiled on NAD 27 and applies to this survey. A supplemental projection grid based on NAD 83 is shown on the shoreline map.

	Photo Date	Class	Scale
TP-01330	June, 1985	III	1:20,000

Chart 17302, 15th edition, was used for the shoreline source south of latitude 58/06/58N. This shoreline was drawn in brown on the smooth sheet and should be used for orientation purposes only.

The following shoreline changes are depicted on the smooth sheet with a red line, and were transferred from the final field sheet with supporting position information. These revisions are adequate to supersede the common photogrammetrically delineated shoreline.

	Latitude(N)	Longitude(W)
Islet	58/07/34	136/26/15
Islet	58/08/40	136/17/54

The following shoreline changes are depicted on the smooth sheet with a dashed red line, and were transferred from the final field sheet without supporting position information. These revisions are approximate but are adequate to supersede the common photogrammetrically delineated shoreline.

	Latitude(N)	Longitude(W)
HWL	58/07/42	136/17/48
HWL	58/07/44	136/17/45
HWL	58/08/39	136/17/21
HWL	58/08/41	136/17/18
HWL	58/08/38	136/16/24
HWL	58/08/39	136/16/26
HWL	58/08/50	136/17/39
HWL	58/08/51	136/17/40

3. HYDROGRAPHY

Except as noted below and eslewhere 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;

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

Because of the steep sloping and rocky shoreline, the zero meter curve could not be adequately drawn and developed but the hydrography is adequate for charting.

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 Field Procedures Manual, March 1991 and 1992 editions.

5. JUNCTIONS

Survey H-10377 junctions with the following surveys.

Survey	Year	Scale	Area
H-10374	1991	20,000	West
H-10376	1991-92	10,000	North

The junction with survey H-10376 is complete. The junction between survey H-10374 was not formally completed since this survey was previously processed and forwarded for

charting. The junction comparison was made using a copy. There is good agreement between surveys although the depth curves should be adjusted to those found on survey H-10377. Soundings have been transferred to survey H-10377 from survey H-10376 to better portray the bottom in the common areas. There are no contemporary surveys that junction to southwest. A comparison with the chart reveals good agreement between charted depths and this present survey soundings.

6. COMPARISON WITH PRIOR SURVEYS

H-2558(1901) 1:40,000
H-2559(1901) 1:20,000

Surveys H-2558 and H-2559 cover the entire area of the present survey. The shoreline in the area has remain relatively stable throughout the years. Generally, the soundings agree between zero and five meters, with extreme cases of ten meters. Survey H-10377 is shoaler. The area has experienced earthquakes, possible isostatic rebound and natural accretion and erosional processes. These processes, the different horizontal datums, the greater sounding coverage and the relative accuracy of the data acquisition techniques account for the differences between the soundings on the prior surveys.

H-6766(1942) 1:5,000

Survey H-6766 is centered around Port Althorp between latitude 58/07/13N and latitude 58/08/06N, and from longitude 136/18/06W and longitude 136/20/10W. This survey compares favorably with the present survey, with a difference in depth of between one to two meters. The cultural features, i.e., docks and piles, centered in the vicinity of latitude 58/07/25N, longitude 136/20/06W, are now in ruins.

There are no AWOIS Items within the survey area that originate with the prior surveys.

In accordance with Hydrographic Survey Guideline No. 39, the effects of the 1964 Prince William Sound earthquake were considered in the comparison of this survey. No reasonable adjustment value for prior soundings could be determined.

Survey H-10377 is adequate to supersede the prior surveys within the common area.

7. COMPARISON WITH CHART

Chart 17302, 17th Edition August 14, 1993; scale 1:80,000

a. Hydrography

Charted hydrography originates with the prior surveys mentioned in section 6 and

miscellaneous sources, including the dangers to navigation submitted by the hydrographer and requires no further discussion.

Survey H-10377 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are no AWOIS items located within the survey area.

c. Controlling Depths

There are no controlling depths found within the survey area.

d. Aids to Navigation

There is one fixed aid within the survey area. This aid was located and serves its intended purpose. There are no floating aids to navigation within the survey area.

There are no charted landmarks within the survey area. The hydrographer recommended no features which would warrant landmark designation.

e. Geographic Names

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

f. Dangers to Navigation

The hydrographer reported fourteen dangers to navigation to the Seventeenth District of the United States Coast Guard, Juneau, Alaska. Copies of the messages are attached. Four additional dangers to navigation were discovered during office processing and two revisions to the previous reported dangers were reported to the Coast Guard, DMAHTC and N/CG221, see attached letter.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10377 adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

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

Charles R. Davies

C. R. Davies
Cartographer

APPROVAL SHEET
H-10377

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.

for Bruce A. Olmstead Date: Jan. 12, 1994
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: 1/20/94
Commander Douglas G. Hennick, NOAA
Chief, Pacific Hydrographic Section

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Final Approval

Approved:

J. Austin Yeager Date: 5/11/94
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

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-10377

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	8-12-98	Sehm	[✓ Full] Part Before [✓ After] Marine Center Approval Signed Via
			Drawing No.
~~17300~~			
17300	8-12-98	Sohen	[✓ Full] Part Before [✓ After] Marine Center Approval Signed Via
			Drawing No.
16760	8-12-98	Sohen	[✓ Full] Part Before [✓ After] Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED