

10438

10438

Diagram No. 8551-3

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-20-4-92

Registry No. .... H-10438

#### LOCALITY

State ..... Alaska

General Locality ..... Prince William Sound

Sublocality ..... Approaches to College

..... Fiord & Barry Arm

..... 1992

CHIEF OF PARTY  
CAPT T.W. Richards

#### LIBRARY & ARCHIVES

DATE ..... November 19, 1993

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16700

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HYDROGRAPHIC TITLE SHEET

H-10438

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

FIELD NO.

RA-20-4-92

State Alaska

General locality Prince William Sound

Locality Approaches to College Fiord and Barry Arm

Scale 1:20,000 Date of survey August 17 - October 8, 1992

Instructions dated July 7, 1992 Project No. OPR-P125-RA

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

Chief of party CAPT Thomas W. Richards, NOAA

Surveyed by LT J. Waddell, LT M. Brown, LTJG E. Nelson, LTJG D. Simmons,  
LTJG H. Johnson, ENS J. Klay, ENS R. Ramos, ENS D. Pitts, SGT J  
SST J. Fleischmann, ST M. Frost

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by: Elizabeth Brown Automated plot by PHS Xynetics Plotter

Evaluation by: Gordon E. Kay

Soundings in meters and decimeters  
~~fathoms~~ ~~feet~~ at MLLW

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.

*Surf & AWOIS check  
11/19/93 MCR*

*SC 12-13-96  
X.V.W. 12/13/92*

# PROGRESS SKETCH

OPR-PI25-RA  
HYDROGRAPHIC SURVEY  
PRINCE WILLIAM SOUND, ALASKA

AUGUST 10 - SEPTEMBER 30, 1992

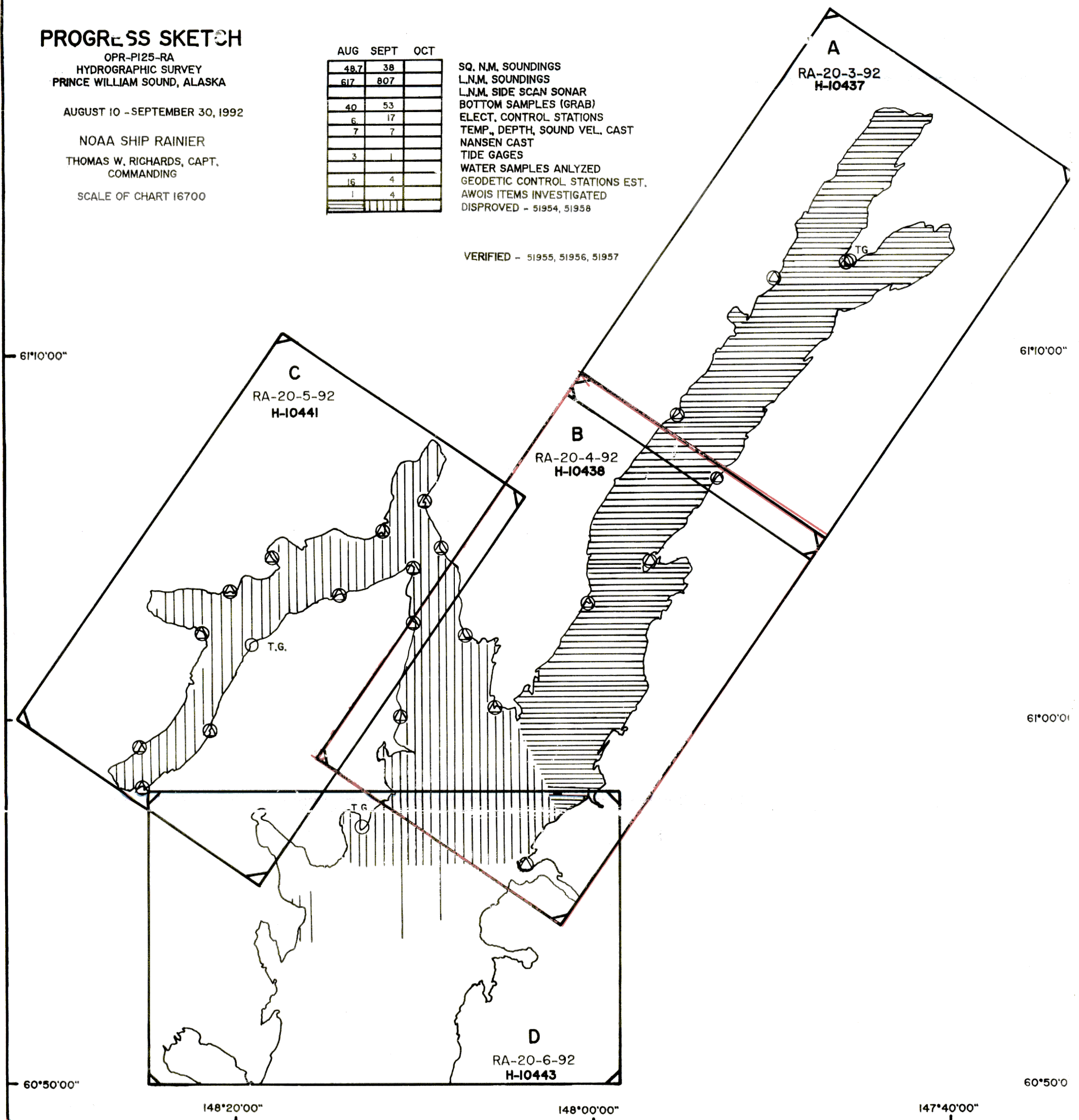
NOAA SHIP RAINIER  
THOMAS W. RICHARDS, CAPT.  
COMMANDING

SCALE OF CHART 1:6700

AUG	SEPT	OCT
487	38	
617	807	
40	53	
6	17	
7	7	
3	1	
16	4	
1	4	

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  
GEODETIC CONTROL STATIONS EST.  
AWOIS ITEMS INVESTIGATED  
DISPROVED - 51954, 51958

VERIFIED - 51955, 51956, 51957



**Descriptive Report to Accompany Hydrographic Survey H-10438**  
Approaches to College Fiord and Barry Arm

Field Number RA-20-4-92  
Scale 1:20,000  
August-October 1992

NOAA Ship RAINIER  
Chief of Party: Captain Thomas W. Richards

**A. PROJECT**

This basic hydrographic survey was completed in Northwestern Prince William Sound, Alaska as specified by Project Instructions OPR-P125-RA dated ~~July 7~~<sup>Jun 30</sup>, 1992, and Change Number One dated August 28, 1992. ✓

Survey H-10438 corresponds to "Sheet B" as defined in the Project Instructions. ✓

This survey is one in a series that will update existing nautical charts. Requests for hydrographic surveys and updated charts have been received from the Defense Mapping Agency, Southwest Alaska Pilots Association, cruise ship lines, and local fishermen. ✓

**B. AREA SURVEYED**

The survey is located in Barry Arm, Southern College Fiord, and Northern Port Wells, northwest Prince William Sound, 25 NM northeast of Whittier, Alaska. The northern sheet<sub>3</sub> limit in Barry Arm extends from 61°04'<sup>20</sup>"N, 148°07'<sup>42</sup>"W to 61°02'<sup>45</sup>"N, 148°09'<sup>57</sup>"W while in<sub>3</sub> College Fiord from 61°07'30"N, 147°56'<sup>57</sup>"W to 61°06'<sup>21</sup>"N, 147°53'<sup>12</sup>"W. This sheet's southern limit is 60°57'30"N. The eastern and western limits are the mainland. Topographical relief consists of steep U-shaped glaciated valleys, and many tidewater glaciers. The receding glaciers have left several terminal and medial moraines, depicted as submerged shoal areas. ✓

Data were acquired from August 17, Day Number (DN) 230, through October 08, DN 282. ✓

### C. SOUNDING VESSELS

Data were acquired by NOAA Ship RAINIER's four survey launches as noted below:

<u>Vessel</u>	<u>EDP No.</u>	<u>Operations</u>
RAINIER	2120	Bottom Sample
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Shoreline Verification Velocity Casts Bottom Samples
RA-6	2126	Hydrography Shoreline Verification

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

Data acquisition and processing were accomplished with the following HDAPS programs:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
AUTOST	2.00	4/14/92
BACKOLD	1.12	4/14/92
BACKUP	2.00	4/14/92
BASELINE	1.12	4/14/92
BIGABST	2.00	4/14/92
CARTO	2.02	4/14/92
CONVERT	3.02	4/14/92
DAS_SURV	6.21	4/14/92
DAS_SURV	6.23	7/02/92
DIAGNOSTIC	3.00	4/14/92
DISC_UTIL	1.00	4/14/92
DP	2.11	7/02/92
DP	2.00	4/14/92
EXCESS	3.04	4/14/92
FILESYS	2.16	4/14/92
GLOBAL	1.12	4/14/92
INVERSE	1.51	4/14/92

LISTAWOIS	2.01	4/14/92
LOADNEW	1.50	4/14/92
MAKEFIX	1.02	4/14/92
MANU_DATA	1.12	4/14/92
NEWCONT	1.17	4/14/92
PLOTALL	2.02	4/14/92
POSTSUR	5.21	4/14/92
PREDICT	1.11	4/14/92
PRINTOUT	3.00	4/14/92
QUICK	1.20	4/14/92
RAMSAVER	1.00	4/14/92
READPROJS	1.08	4/14/92
REAPPLY	1.33	4/14/92
REJECT	1.05	4/14/92
SOFTCHECK	1.13	4/14/92
SURVEY	6.11	4/14/92
SYMBOLS	1.00	4/14/92
ZOOMEDIT	1.10	4/14/92

Velocity corrections were determined using the program VELOCITY, Version 1.11, installed on March 9, 1990. ✓

#### E. SONAR EQUIPMENT

Side scan sonar operations were not performed 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. ✓

### Raytheon DSF-6000N Echo Sounders

<u>Vessel No.</u>	<u>Serial No.</u>	<u>DN</u>
2120	A119N	270
2123	B044N	244-274
2124	A103N	243-281
2125	B048N B039N	231-233 238-281
2126	A117N B048N	230-242 244-271

The echo sounders were continuously monitored during <sup>data</sup> 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 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 1992 Corrections to Echo Sounding Data Package for OPR-P125-RA." ✓

#### Sound Velocity

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

<u>Cast No.</u>	<sup>Velocity</sup> <u>HDAPS Table No.</u>	<u>Deepest Depth</u>	<u>Applicable Days</u>	<u>Position of Cast</u>	<u>Day of Cast</u>
1	21	106.5	226-234	61/03/41N 147/58/12W	226
8	<del>283</del> 4	487.6	237-248	60/55/54N 148/07/24W	246
10	283 6	383.0 <del>334.0</del>	252-262	60/56/52N 148/0750W	261
13	27	483.0	265-276	60/55/48N 148/06/35W	270
16	283 10	529.5	279-290	60/51/05N 148/11/47W	284

Tables corrected during verification

The sound velocity casts were acquired with a SBE SEACAT Profiler, S/N 811, which was calibrated by Northwest Regional Calibration Center in Bellevue, WA, on March 3, 1992. ✓

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 1992 corrections to Echo Sounding Data Package for OPR-P125-RA." ✓

#### Static Draft

The distance from the transducer face to the gunwale was measured with a large metal square for all launches. 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 on board. A transducer depth of 0.6 meters was determined for launches 2123, 2124, 2125, and 2126 on March 21-22, 1992. ✓

#### Settlement and Squat

Settlement and squat correctors were determined in Shilshole Bay, Washington, for launch 2123 on March 11, 2124 on March 16, and 2125 and 2126 on March 18, 1992. Tests were conducted over a hard bottom in depths well exceeding seven times the vessels' drafts. Both sea and wind were calm. Observations were made through a Zeiss Ni2 leveling instrument 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 1992 Corrections to Echo Sounding Data Package for OPR-P125-RA." Revised settlement and squat correctors were received from Pacific Marine Center on October 21. These revised correctors were not applied to the data on sheet B, as the final field sheet (FFS) was complete at that time. ✓

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



## Heave

Data acquired during periods of significant sea action were checked scanned to remove any errors introduced into the digital data by vessel heave. ✓

## Bar Check and Lead Lines

Bar check and lead lines were calibrated by RAINIER personnel on February 19, 1992 at PMC. Calibration forms are included in the "Fall 1992 Corrections to Echo Sounding Package for OPR-P125-RA." ✓

## Tide Correctors

A 0 hr. 0 min. time correction and a x0.97 range ratio were applied to predicted tides for the Cordova, Alaska, reference station (945-4050). These correctors were provided in the Project Instructions for sheet B's tidal zone. ✓

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 Whittier (945-4949), Granite Mine, Port Wells (945-4806), and College Fiord (945-4672). The control station was Valdez, Alaska (945-4240). Opening levels were completed by POS personnel in June, 1992. Closing levels were completed by RAINIER personnel on October 16, 1992. Whittier (945-4672) was used for the observed tides. ✓

The 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. \* ✓

## 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~~ <sup>Appendix V</sup> of this report.

Positions for all existing stations are from the National Geodetic Survey (NGS) data base. All existing stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. New stations were positioned via traverse methods to meet third-order class I standards. Further information can be ✓

\* Filed with the survey records

found in the "Fall 1992 Horizontal Control Report for OPR-P125-RA."

## I. HYDROGRAPHIC POSITION CONTROL

### Method of Position Control

Soundings, bottom samples, and detached positions were positioned using either Ashtech Differential GPS, or Motorola Mini Ranger Falcon 484 microwave system. See Eval Rpt, sect 2 ✓

### Falcon 484

Accuracy requirements specified in the Hydrographic Manual and in FPM 3.1.3.1 were met. When maximum residuals exceeded the specified limits, the launch was held at a constant speed and course while the station(s) causing the problem was deselected and hydrography was continued. These data were reviewed, and any off track data were smoothed (T&C'd) between good positions. No editing was done when the maximum Error Circle Radius (ECR) value was exceeded for one or two soundings, the data plotted on track, and was bracketed by good positioning information. If the data plotted off track but was still bracketed by good positions, it was smoothed between the good positions during processing. ✓

### Ashtech GPS

Accuracy requirements as stated in the FPM were met. Occasionally, the data from the Ashtech was interrupted due to extreme corrector age. The HDAPS dead reckons the launch position during short periods of data interruption. The data were retained if the interruption lasted for only one or two soundings and was bracketed by good positions. No editing was performed if the soundings plotted on line. If they plotted off line, they were smoothed during processing. ✓

Serial numbers for Falcon R/T units, RPUs and Ashtech equipment are annotated on the data printouts. Lists of all positioning equipment serial numbers are included in the "Fall 1992 Electronic Control Data Package for OPR-P125-RA." ✓

### Calibrations and System Check Methods

#### Falcon 484

Baseline calibrations were conducted in accordance with the FPM 3.1.2.1. and 3.1.3.2. Calibrations were performed at the MATTHEWS PARK BEACH BASELINE on May 21-28, 1992 (DN 142-149). ✓

Calibration data and a description of the baseline is included in the "Fall 1992 Electronic Control Data Package for OPR-P125-RA." ✓

In accordance with FPM 3.1.3.3, formal system checks were not documented for multiple LOP hydrography. Data acquired with two LOPs were always bracketed by multiple LOP data acquired with ECR and maximum residuals within acceptable limits, which serves as critical system checks. ✓

#### Ashtech GPS

VHF Differential shore stations were established at stations COGHILL and PORT. After each station was established, a remote sensor was directly connected to the MXII shore station and its antenna was collocated with the shore station. The computed position was transmitted back to the ship via VHF radio modem link. The difference between the computed location and the stations published position were recorded by the MONITOR program on a PC. Data from a 24-hour period were recorded and examined for signs of multi-path signal reflection, which was not evident at either station. ✓

Launch system checks were performed by a direct comparison of the Falcon position with the GPS position. HDAPS Survey Screen Two was used for this comparison, and was dumped to the system printer to record the results. Three such dumps were made for each system check. System checks were normally made each day, and days with no system checks are always bracketed by days with good checks. ✓

#### Problems

The differential GPS stations ran without problems for sheet B. ✓

#### Offsets

The launch GPS antenna is mounted on the mast of the Falcon R/T unit. Antenna offsets are stored in the HDAPS Offset Tables as listed in Section G. Copies of the Offset Tables are included in the "Separates to be Included with Survey Data, III. Horizontal Position Control and Corrections to Position Data." ✕ ✓

#### J. SHORELINE

Shoreline maps (T-sheets) used to transfer shoreline detail to the final field sheet were TP-01419, TP-01420, and TP-01421 (June-August 1988-photography, 1:20,000, NAD83). Chart 16700 (1:20,000 enlargement, 1992) was used to augment the existing registered shoreline manuscripts. No shoreline from the chart is shown on the smooth sheet. ✓

\* Filed with the survey records

Unpublished United States Geological Survey (USGS) bathymetric maps developed in 1980 by Austin Post were used to augment rock information shown on the existing registered shoreline manuscripts. Copies of these bathymetric maps were borrowed from Nancy and Jim Lethcoe in Valdez, Alaska and returned later during the project. Of the 16 USGS rocks shown on the studies, 10 rocks were verified as new\*or existing T-sheet features while the remaining 6 rocks were disproved by taking a detached position (DP) and including full disproof descriptions in the raw master printout. These rocks are discussed later in this section. ✓

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 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 1:20,000 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. ✓

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. ✓

Detailed 1:20,000 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 the 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. ✓

\* Position for these rocks were acquired during this survey.

## Disprovals

The vicinity of the T-sheet rock at 61°02'26"N, 148°07'04"W was inspected (Pos. No. 2382) and the rock was not seen. The water visibility was 0.5 m, and the average water depth was 3.0 m. The stage of tide was 1.0 meter. The search was conducted for 10 minutes and the search radius was 30 meters from the DP. The launch was unable to get to the T-sheet position because of shallow depths. No rock was seen in the search area or on the nearby beach. ✓

The vicinity of the T-sheet rock at 60°59'46"N, 147°58'44"W was inspected (Pos. No. 4586) and the rock was not seen. The water visibility was 3.0 m, and the average water depth was 2.0 m. The stage of tide was 0.2 meters. The search was conducted for 10 minutes and the search radius was 30 meters from the DP. The launch was unable to get to the T-sheet position because of shallow depths. No rock was seen in the search area or on the nearby beach. ✓

The vicinity of the T-sheet rock at 61°04'52"N, 148°00'10"W was inspected (Pos. No. 2987) and the rock was not seen. The water visibility was 2.0 m, and the average water depth was 2.0 m. The stage of tide was 0.4 meters. The search was conducted for 10 minutes and the search radius was 30 meters from the DP. The launch was unable to get to the T-sheet position because of shallow depths. No rock was seen in the search area or on the nearby beach. ✓

The vicinity of the T-sheet rock at 61°02'58"N, 148°00'30"W was inspected (Pos. No. 4585) and the rock was not seen. The water visibility was 1.0 m, and the average water depth was 2.0 m. The stage of tide was 0.1 meters. The search was conducted for 10 minutes and the search radius was 30 meters from the DP. The launch was unable to get to the T-sheet position because of shallow depths. No rock was seen in the search area or on the nearby beach. ✓

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

## Other

Six rocks (Pos. Nos. 9202, 9210, 9211, 9212, 9214, & 9215), originating from a preliminary 1:20,000 USGS bathymetric map borrowed from Jim and Nancy Lethcoe in Valdez, Alaska, were not found. They were searched for by echo sounder near mean lower low water. The average water visibility was 2-3 meters. Search time was approximately 10 min. for each rock with an average search radius of 20 meters from the DP. *These rocks are considered disproven.*

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

#### K. CROSSLINES

Crosslines were used for comparisons with mainscheme hydrography. These totaled 37.67 NM, representing 11% of the total hydrography; this percentage does not reflect developments run during additional investigations. ✓

Crossline soundings agree with mainscheme soundings to within 2.0 meters in areas that were not steep slopes. Differences are believed to be attributable to predicted tides or bottom slope. *With application of approved tides, differences are less than 1 meter.* ✓  
The vessels acquiring crossline data did not always acquire the corresponding mainscheme data. ✓

#### L. JUNCTIONS *See Eval. Rpt., sect. 5*

This survey junctions with surveys H-10437 (1:20,000, 1992) and H-10441 (1:20,000, 1992) to the north<sup>west</sup> and survey H-10443 (1:20,000, 1992) to the south. No irregularities were found when comparing soundings and depth curves. Agreement between overlapping soundings is less than two meters. ✓

#### M. COMPARISON WITH PRIOR SURVEYS *See Eval. Rpt., sect 6*

This survey was compared with H-7618 (1:20,000, 1947-1948) in the vicinity of 60°58'00"N 148°10'00"W. The area common to these surveys lies deeper than 150 ~~meters~~ <sup>feet</sup>. Soundings from H-10438 vary from 60 meters deeper to 50 meters shallower. The hydrographer believes that this ~~extreme~~ variation is due to the less accurate positioning and sounding techniques used on H-7618 and the effects of the 1964 earthquake. ✓

**Recommendation:** The hydrographer recommends that the sounding data from the present survey supersede that of H-7618 within their common area. *Concur*

## N. COMPARISON WITH THE CHART

This survey was compared to NOS chart 16700 (1:200,000, 24th edition, January 11, 1992, NAD83). Charted soundings from the prior surveys are discussed in Section M. Although there have been some reconnaissance investigations in the area, College Fiord and Barry Arm have never fully been surveyed. Subsidence from the 1964 earthquake is evident and has an effect on the accuracy of pre-earthquake blue print and chart letter data in the area. Comparison with USGS bathymetric maps show submergence as do dead trees along the shoreline and the horizontal control stations that cover at higher stages of tide. The bottom has been relatively stable since the 1964 earthquake. ✓

**Recommendation:** Sounding data from the present survey should be used to supersede ~~the prior~~ soundings. *the charted* **Concur**

**AWOIS Item 51955:** Shoreline map depicts a dashed line shoal area of unknown depth in the vicinity of 61°02'42"N, 148°00'15"W. Photogrammetry (1988) shows no indication of this feature as charted. This item was investigated by 25-meter line spacing mainscheme around the noted position. A least depth of 0.8<sup>6</sup> meters was found at 61°02'<sup>44</sup>'<sup>45.56</sup>N, 148°00'<sup>32</sup>'<sup>21.15</sup>W. *Por # 4052/2*

**Recommendation:** The hydrographer recommends sounding data from the present survey should be used to supersede AWOIS item 51955. **Concur**

**AWOIS Item 51956:** An elongated spit-like feature extending from Point Pakenham seaward 2000 meters into the entrance of College Fiord in the vicinity of 60°59'15"N, 148°03'20"W was investigated by 25-meter line spacing around the noted position. A least depth of 0.8 meters was found at 60°59'<sup>21</sup>'<sup>50.53</sup>N, 148°03'<sup>52</sup>'<sup>50.53</sup>W. *Por # 9047*  
*A rock uncovering 0.4 meters is shown on the smooth sheet.*

**Recommendation:** The hydrographer recommends sounding data from the present survey should be used to supersede AWOIS item 51956. **Concur**

*Shl rep 1983 PA*

**AWOIS Item 51957:** A spit of land extending 1000 meters eastward of the seaward extent of the charted spit in the vicinity of 60°59'00"N, 148°09'00"W was investigated by 50-meter line spacing around the noted position. A least depth of 0.2<sup>3</sup> meters was found at 60°59'<sup>14</sup>'<sup>13.16</sup>N, 148°09'<sup>42</sup>'<sup>42.14</sup>W. *Por # 2575/4*

**Recommendation:** The hydrographer recommends sounding data from the present survey should be used to supersede AWOIS item 51957. **Concur**

## Dangers to Navigation

Fourteen dangers to navigation within the limits of this survey were reported to the Seventeenth Coast Guard District and DMAHTC. Copies of the radio message and correspondence are ~~included in Appendix I~~ <sup>attached to</sup> of this report. ✓

## O. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior survey H-7618, ~~blue prints, and chart letters~~ in the common area. Concur

## P. AIDS TO NAVIGATION

No fixed or floating aids to navigation are located on this survey. ✓

## Q. STATISTICS

Vessel	2123	2124	2125	2126	Totals
# of Pos.	1103	612	732	1328	3775
NM Hydro	217.58	115.30	139.20	194.45	666.53

NM <sup>2</sup> of Hydrography	38.83	Velocity Casts	4
Detached Positions	32	Tide Stations	3
Reference Numbers	43	Bottom Samples	46

 ✓

## R. MISCELLANEOUS

Loran C comparisons were sent to DMAHTC and the U.S. Coast Guard in accordance with the Project Instructions. ✓

Bottom samples were not sent to the Smithsonian Institution in accordance with the Project Instructions. ✓

Cruise ships and recreational boats transit College Fiord and Barry Arm enroute to the glaciers. The deepest draft vessel presently navigating these waters is the cruise ship SAGAFJORD (Southwest Alaska Pilots Association, Homer, Alaska) with a ✓



reported draft of 30 feet. During the height of the summer tourist season, as many as five large cruise ships a day transit this area enroute to College Fiord. Numerous day excursion boats have also been seen transiting Barry Arm enroute to Harriman Fiord.

Ice was noted drifting through the survey area, though never in high concentrations. Most ice is brash or growler type from calving glaciers. This calving ice generally reduces as the weather cools and the areas near the glaciers begin to freezing near the end of October. ✓

Good anchorages for large ships can be found on the terminal moraine in College Fiord and Barry Arm. Shallow draft recreational vessels can anchor at Golden, Harrison Lagoon, and in some inlets along Barry Arm. ✓

#### S. RECOMMENDATIONS


Mapping and Charting Branch should produce a preliminary 1:100,000 scale metric chart of this area as soon as possible to serve the needs of Southwest Alaska Pilots Association and numerous cruise lines, who frequent this area. *Concur*  
*Recommendation forwarded to MCB.*

#### T. REFERRAL TO REPORTS


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

Title	Date Sent	Office
Fall 1992 Horizontal Control Report for OPR-P125-RA	November 1992	N/CG2333
Fall 1992 Electronic Control Data Package for OPR-P125-RA	November 1992	N/CG245
Fall 1992 Corrections to Echo Sounding Data Package for OPR-P125-RA	November 1992	N/CG245 ✓
Fall 1992 Coast Pilot Report for OPR-P125-RA	November 1992	N/CG245
Fall 1992 User Evaluation Report for OPR-P125-RA	November 1992	N/CG245
Cruising Guide to Prince William Sound by Jim & Nancy Letchoe, Valdez, Alaska	October 1992	N/CG241
USGS Bathymetric Maps, 1980	See Section J	

Respectfully Submitted by,

  
David K. Simmons  
Lieutenant (junior grade), NOAA

Approved and Forwarded,

  
Thomas W. Richards  
Captain, NOAA  
Commanding Officer

CONTROL STATIONS as of 28 Oct 1992

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/00/YY	Station Name
100	F	061:04:13.341	147:56:49.572	44	250	0.0	0.0	C	08/16/92	COGHILL(GPS) 1947
101	F	061:08:24.394	147:55:01.669	4	250	0.0	0.0	2	08/16/92	HOLY 1992
102	F	061:03:11.820	148:00:04.900	5	250	0.0	0.0	D	08/16/92	IORD 1992
103	F	061:06:34.024	147:52:56.711	9	250	0.0	0.0	6	08/27/92	UPPER 1947
104	F	061:11:57.292	147:49:44.750	5	250	0.0	0.0	9	08/19/92	VASS 1992
105	F	061:12:20.473	147:45:41.198	4	250	0.0	0.0	1	08/27/92	COLLEGE 1947
106	F	061:00:20.003	148:05:28.784	5	250	0.0	0.0	1	09/02/92	HAM 1947
107	F	061:00:07.172	148:10:38.719	5	250	0.0	0.0	B	09/02/92	BARRY RM1 1947
108	F	061:02:20.039	148:07:02.598	4	250	0.0	0.0	7	09/02/92	ORDER 1947
109	F	060:56:03.207	148:03:32.090	56	250	0.0	0.0	4	10/20/92	PREP(GPS) 1992
110	F	061:04:44.163	148:08:27.593	11	250	0.0	0.0	0	09/10/92	GLASS 1947
111	F	061:04:08.365	148:09:53.474	4	250	0.0	0.0	4	09/10/92	DORAN RM1 1947
112	F	061:02:42.590	148:09:51.591	4	250	0.0	0.0	3	09/10/92	BARN 1992
113	F	061:05:58.301	148:09:12.319	8	250	0.0	0.0	A	09/13/92	ACUTE 1947
114	F	061:05:09.058	148:11:28.016	6	250	0.0	0.0	E	09/13/92	LIND 1992
115	F	060:48:05.062	148:10:45.275	7	250	0.0	0.0		09/15/92	PORT(GPS) 1914
116	F	061:03:20.244	148:15:14.930	7	250	0.0	0.0	D	09/15/92	JOINT 1947
<del>117</del>	<del>F</del>	<del>061:00:07.990</del>	<del>148:21:21.276</del>	<del>10</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>6</del>	<del>09/22/92</del>	<del>GNOME 1992</del>
<del>118</del>	<del>F</del>	<del>061:03:28.730</del>	<del>148:20:28.179</del>	<del>6</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>7</del>	<del>09/22/92</del>	<del>SUPR 1992</del>
119	F	061:02:25.699	148:21:40.950	8	250	0.0	0.0	8	09/22/92	FAIRY 1992
<del>120</del>	<del>F</del>	<del>061:04:33.081</del>	<del>148:18:12.690</del>	<del>6</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>5</del>	<del>10/06/92</del>	<del>SEAP 1992</del>
<del>121</del>	<del>F</del>	<del>060:59:07.956</del>	<del>148:22:25.717</del>	<del>29</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>2</del>	<del>10/06/92</del>	<del>CALVE 1992</del>
<del>122</del>	<del>F</del>	<del>060:59:27.312</del>	<del>148:25:26.823</del>	<del>7</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>3</del>	<del>09/28/92</del>	<del>ROAR 1992</del>
<del>123</del>	<del>F</del>	<del>061:01:05.907</del>	<del>148:22:25.927</del>	<del>17</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>3</del>	<del>10/07/92</del>	<del>HARR 1992</del>
<del>124</del>	<del>F</del>	<del>060:46:37.188</del>	<del>148:40:34.304</del>	<del>6</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>4</del>	<del>10/10/92</del>	<del>MARGIN 1956</del>
<del>125</del>	<del>F</del>	<del>060:47:50.465</del>	<del>148:40:06.242</del>	<del>4</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>E</del>	<del>10/10/92</del>	<del>TRIP 1914</del>
<del>126</del>	<del>F</del>	<del>060:46:48.574</del>	<del>148:39:26.332</del>	<del>4</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>0</del>	<del>10/10/92</del>	<del>PUNT 2 1956</del>
<del>127</del>	<del>F</del>	<del>060:57:29.915</del>	<del>148:13:01.522</del>	<del>45</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>6</del>	<del>10/19/92</del>	<del>TESE 1992</del>
<del>128</del>	<del>F</del>	<del>060:56:09.124</del>	<del>148:03:20.681</del>	<del>47</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>7</del>	<del>10/19/92</del>	<del>PARR 1992</del>
<del>129</del>	<del>F</del>	<del>060:54:48.628</del>	<del>147:59:03.402</del>	<del>4</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>8</del>	<del>10/21/92</del>	<del>BERM 1992</del>
<del>130</del>	<del>F</del>	<del>060:55:21.619</del>	<del>148:01:13.320</del>	<del>4</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>E</del>	<del>10/23/92</del>	<del>TION 1992</del>
<del>131</del>	<del>F</del>	<del>060:53:31.788</del>	<del>147:57:06.079</del>	<del>5</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>5</del>	<del>10/23/92</del>	<del>DELY 1992</del>
<del>132</del>	<del>F</del>	<del>060:52:07.247</del>	<del>147:54:38.050</del>	<del>4</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>D</del>	<del>10/23/92</del>	<del>WISP 1951</del>
<del>133</del>	<del>F</del>	<del>060:51:02.341</del>	<del>147:54:57.598</del>	<del>6</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>9</del>	<del>10/23/92</del>	<del>TOTAL 1947</del>



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 Ave. E.  
Seattle, Washington  
98102-3767

October 23, 1992

Director  
DMAHTC  
Attn: MCNM  
6500 Brookes Lane  
Washington, D.C. 20315-0030

Dear Sir:

While conducting hydrographic survey operations in College Fiord and Barry Arm, Alaska, NOAA Ship RAINIER discovered 14 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,

A handwritten signature in black ink, appearing to read "Thomas W. Richards".

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 Ave. E.  
Seattle, Washington  
98102-3767

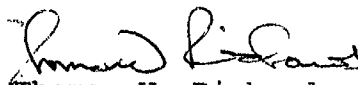
October 23, 1992

Commander  
Seventeenth Coast Guard District  
Post Office Box 25517  
Juneau, Alaska 99802-5517

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



11:47 Thursday, 27 October 1992  
tPostOUT : Hellickson

RA-PMC-204-242

R 221754Z OCT 92  
FM NOAA S RAINIER  
TO CCGDSEVENTEEN JUNEAU AK  
DMAHTONAUWARN WASHINGTON DC//MCNM//  
INFO NOAAADP SEATTLE WA  
ACCT CM-VCAA  
BT  
UNCLAS

**ADVANCE  
INFORMATION**

NOAA SHIP RAINIER HAS FOUND 14 DANGERS TO NAVIGATION IN PRINCE  
WILLIAM SOUND, ALASKA (PROJECT OPR-P125-RA) WITHIN THE LIMITS OF  
HYDROGRAPHIC SURVEY H-10438, APPROACHES TO COLLEGE Fjord AND  
BARBY ARM.  
THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL  
NOTICE TO MARINERS:

CHART AFFECTED: 16700 24TH ED JAN 11/92 1:200 000 NAD83

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	DEPTH	LATITUDE	LONGITUDE
A.	SHOAL	4 1/4 FM	61/06/58N	147/56/47W
B.	SHOAL	2 1/2 FM	61/06/08N	147/58/19W
C.	SHOAL	1 1/4 FM	61/02/45N	147/57/02W
D.	SHOAL	2 FM	61/01/02N	147/58/27W
E.	SHOAL	0 FM	61/00/35N	147/58/23W
F.	SHOAL	3/4 FM	61/00/04N	147/59/12W
G.	SHOAL	1 1/4 FM	60/59/53N	147/59/33W
H.	SHOAL	3 1/2 FM	60/58/48N	148/00/51W
I.	SHOAL	1 1/4 FM	61/00/47N	148/05/59W
J.	SHOAL	3 FM	60/59/16N	148/06/00W
K.	SHOAL	4 3/4 FM	60/59/03N	148/06/41W
L.	SHOAL	4 FM	60/59/07N	148/09/22W
M.	SHOAL	0 FM	60/59/14N	148/09/42W
N.	THE HIGHWATER LINE CHARTED AT 60/59/20N, 148/10/36W IS SUBMERGED EAST OF 148/10/30W AT MLLW.			

BECAUSE OF THE SMALL SCALE OF CHART 16700 IT IS RECOMMENDED THAT  
THESE DANGERS BE REPORTED IN THE LOCAL NOTICE TO MARINERS AS  
DEGREES AND DECIMAL MINUTES.

QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO:  
COMMANDING OFFICER, NOAA SHIP RAINIER, 1801 FAIRVIEW AVE E,  
SEATTLE, WA 98102-3767 OR VIA RADIO CONTACT ON 2182 MHZ OR VHF  
CHANNELS 13 AND 16. CALL LETTERS WTEF. A LETTER WITH ATTACHED  
CHARTLET IS BEING MAILED TO CONFIRM THIS MESSAGE.  
BT

**ADVANCE  
INFORMATION**

30'

20'

10'

148

50

## LORAN-C GENERAL EXPLANATION

LORAN-C FREQUENCY .....100kHz.  
 PULSE REPETITION INTERVAL  
 7960 .....79,600 Microseconds  
 STATION TYPE DESIGNATORS: (Not individual station letter designators)  
 M ..... Master  
 W ..... Secondary  
 X ..... Secondary  
 Y ..... Secondary  
 Z ..... Secondary

EXAMPLE: 7960-X

## RATES ON THIS CHART

7960-X 7960-Y

Loran-C correction tables published by the Defense Mapping Agency or others should not be used with this chart. The lines of position shown have been adjusted based on theoretically determined overland signal propagation delays. They have not been verified by comparison with survey data. Every effort has been made to meet the 1/2 nautical mile accuracy criteria established by the U.S. Coast Guard. Mariners are cautioned not to rely solely on the lattices in inshore waters.

## RADAR REFLECTORS

Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

## POLLUTION REPORTS

Report all spills of oil and hazardous substances to the National Response Center via 800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

## NOTE X

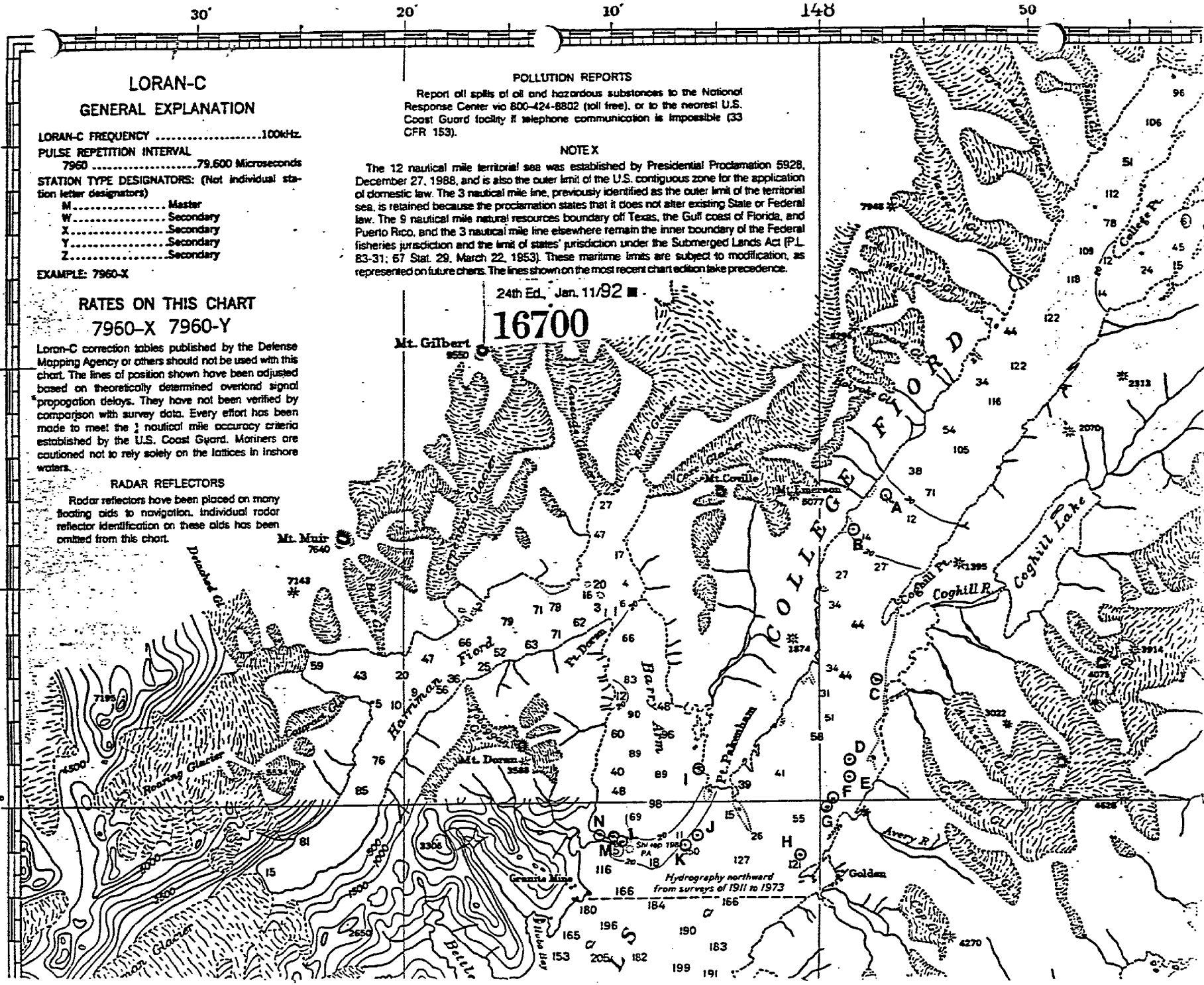
The 12 nautical mile territorial sea was established by Presidential Proclamation 5928, December 27, 1988, and is also the outer limit of the U.S. contiguous zone for the application of domestic law. The 3 nautical mile line, previously identified as the outer limit of the territorial sea, is retained because the proclamation states that it does not alter existing State or Federal law. The 9 nautical mile natural resources boundary off Texas, the Gulf coast of Florida, and Puerto Rico, and the 3 nautical mile line elsewhere remain the inner boundary of the Federal fisheries jurisdiction and the limit of states' jurisdiction under the Submerged Lands Act (P.L. 83-31, 67 Stat. 29, March 22, 1953). These maritime limits are subject to modification, as represented on future charts. The lines shown on the most recent chart edition take precedence.

24th Ed., Jan. 11/92

16700

10°

61°



# APPROVAL SHEET

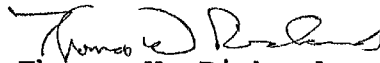
for

**H-10438**

**RA-20-4-92**

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 15, 1993

**MARINE CENTER:** Pacific

**OPR:** P-125-RA

**HYDROGRAPHIC SHEET:** H-10438

**LOCALITY:** Approaches to College Fiord and Barry Arm, Prince William Sound, Alaska

**TIME PERIOD:** August 17 - October 8, 1992

**TIDE STATION USED:** 945-4949 Whittier, Passage Canal  
Lat.  $60^{\circ} 46.5'N$  Long.  $148^{\circ} 41.5'W$

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 945-4949 = 10.41 ft.  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 945-4949 = 11.2 ft.

**REMARKS: RECOMMENDED ZONING**

1. In Port Wells and Barry Arm, apply a x0.99 range ratio correction to hourly heights.
2. In College Fiord north of  $61^{\circ} 00.0'N$ , apply a x1.03 range ratio correction to hourly heights.

**NOTE:** Hourly heights are tabulated on Greenwich Mean Time.

*for B. H. Curran*  
-----  
CHIEF, DATUMS SECTION



H-10438

GEOGRAPHIC NAMES

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">A ON CHART NO. 16700</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">B ON PREVIOUS SURVEY NO.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">C ON U.S. QUADRANGLE MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D FROM LOCAL INFORMATION</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">E ON LOCAL MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F P.O. GUIDE OR MAP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">G RAND McNALLY ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">H U.S. LIGHT LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">K</div> </div>												
	ALASKA (title)	X											
BARRY ARM	X												2
COGHILL POINT	X												3
COGHILL RIVER	X												4
COLLEGE FIORD	X												5
GOLDEN	X												6
HARRISON LAGOON	X												7
PAKENHAM, POINT	X												8
WELLS, PORT	X												9
													10
													11
													12
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													23
													24
													25

Approved:

*Charles E. Harrington*  
Chief Geographer

JUN - 9 1993

**HYDROGRAPHIC SURVEY STATISTICS**

H-10438

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

**SHORELINE DATA**

SHORELINE MAPS (List):	TP-01419, TP-01420, TP-0144
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16700 24th Ed., 1/11/92 scale 1:200,000 NAD83

**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			3504	
POSITIONS REVISED			12	
SOUNDINGS REVISED			11	
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	35.0		35.0	
VERIFICATION OF SOUNDINGS	134.5		134.5	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILATION OF SMOOTH SHEET	57.0		57.0	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		5.5	5.5	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		8.0	8.0	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	226.5	13.5	240.0
Pre-processing Examination by <b>John Griffin</b>	Beginning Date 11/20/92	Ending Date 1/19/93		
Verification of Field Data by <b>Elizabeth Brown, James Stringham</b>	Time (Hours) 226.50	Ending Date 7/8/93		
Verification Check by <b>Stanley Otsubo</b>	Time (Hours) 57.50	Ending Date 7/16/93		
Evaluation and Analysis by <b>Gordon Kay</b>	Time (Hours) 13.5	Ending Date 8/2/93		
Inspection by <b>Dennis Hill</b>	Time (Hours) 2	Ending Date 9/28/93		

**EVALUATION REPORT  
H-10438**

**1. INTRODUCTION**

Survey H-10438 is a basic hydrographic survey accomplished by the NOAA Ship *Rainier*, under the following Project Instructions.

OPR-P125-RA, dated June 30, 1992  
CHANGE NO. 1, dated August 28, 1992

This survey was conducted in Alaska, in Prince Williams Sound, and covers an area in Port Wells. The survey extends into Barry Arm and College Fiord. Barry Arm and College Fiord once carried glaciers down to their termini in Port Wells. The sea floor, as defined by the soundings on this survey, portray terminal moraines in Barry Arm and College Fiord. These terminal moraines, that rise abruptly from the sea floor, have become items for investigation.

The northern survey limit in Barry Arm extends from latitude 61/04/17N, longitude 148/07/42W, to latitude 61/02/43N, longitude 148/09/54W. While in College Fiord the northern survey limit is from latitude 61/07/30N, longitude 147/56/54W, to latitude 61/06/18N, longitude 147/53/13W. The survey's southern limit is latitude 60/57/30N. The sea floor consists of gray mud. Depths range from zero along the shore to 349 meters.

Predicted tides for Cordova, Alaska, were used for the reduction of soundings during field processing. Approved hourly heights zoned from Whittier, Passage Canal, Alaska, gage 945-4949, 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 computations. 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 feature 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 1992 Horizontal and Electronic Control Reports for OPR-P125-RA, dated November 1992, contain adequate discussions of horizontal control and hydrographic positioning.

Positions of horizontal control stations used during hydrography are 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 using the NAD 83 projection by applying the following correction.

Latitude: -2.016 seconds (-62.406 meters)  
Longitude: 7.441 seconds (111.698 meters)

The year of establishment of control stations shown on the smooth sheet originates with the previously listed horizontal control report and the published data.

One hundred and seventy-nine soundings were positioned by DGPS with high HDOP values. These positions were verified by ensuring consistency with surrounding data and are considered acceptable. No critical soundings or dangers to navigation were positioned with DGPS with unacceptable HDOP values.

Forty soundings were positioned by Mini-Ranger with weak control, but were verified by ensuring consistency with surrounding soundings and are considered acceptable. No critical soundings or dangers to navigation were positioned by Mini-Ranger with weak control.

The following final reviewed shoreline maps apply to this survey.

<u>Number</u>	<u>Photography Date</u>	<u>Scale</u>	<u>Datum</u>
TP-01419	June, August 1988	1:20,000	NAD 1983
TP-01420	June, August 1988	1:20,000	NAD 1983
TP-01421	June, August 1988	1:20,000	NAD 1983

A change has been made to the high-water line (an islet) shown on the shoreline map at latitude 60/58/09N, longitude 148/11/35W. This feature is shown on the smooth sheet as a dashed red line. This change is considered adequate to supersede the common photogrammetrically delineated shoreline.

### 3. HYDROGRAPHY

Except as noted below, 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.

Several standard depth curves could not always be drawn continuously because of the steep slope encountered in the fiords.

#### 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 1992 Edition.

#### 5. JUNCTIONS

Survey H-10438 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10437	1992	1:20,000	Northeast
H-10441	1992	1:20,000	Northwest
H-10443	1992	1:20,000	South

The junction with survey H-10443 is complete. The junctions with surveys H-10437 and H-10441 have not been formally completed since these surveys are in preliminary stages of processing.

#### 6. COMPARISON WITH PRIOR SURVEYS

Survey H-10438 was compared with the following prior survey.

H-7618 (1947-48) 1:20,000

Prior survey H-7618 covers the southern tip of present survey area, from longitude 148/11/00W east to longitude 148/04/30W, and as far north as latitude 60/58/36N. Prior survey soundings fall in water depths greater than 200 meters. Differences in sounding depths are attributed to positioning and sounding techniques used on survey H-7618, coupled with the effects of the 1964 earthquake.

There are no AWOIS items for investigation from prior survey H-7618.

Survey H-10438 is adequate to supersede prior survey H-7618 within the common area. There are no registered hydrographic surveys for most of the area covered by this survey.

#### 7. COMPARISON WITH CHART

Survey H-10438 was compared to the following chart.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16700	24th	January 11, 1992	1:200,000	NAD 83

a. Hydrography

Charted hydrography originates with the prior survey H-7718 and miscellaneous sources. There are only four charted soundings that originate from this prior survey. See section N of the hydrographer's report for the comparison with charted features.

Survey H-10438 is adequate to supersede charted hydrography within the common area.

b. AWOIS

There are three AWOIS items within the limits of this survey. These items are adequately discussed and disposed of by the hydrographer in his report, section N.

c. Controlling Depths

There are no channels with controlling depths on survey H-10438.

d. Aids to Navigation

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

e. Geographic Names

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

f. Dangers to Navigation

Fourteen dangers to navigation were reported by the hydrographer during this survey. These dangers were reported to the Seventeenth Coast Guard District, DMAHTC and N/CG221. Copies of the correspondence are attached.

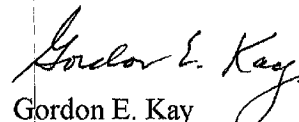
No additional dangers were found during the office processing of this survey.

**8. COMPLIANCE WITH INSTRUCTIONS**

Survey H-10438 adequately complies with the Project Instructions.

**9. ADDITIONAL FIELD WORK**

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

  
Gordon E. Kay  
Cartographer

APPROVAL SHEET  
H-10438

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: 9/28/93

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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: 11/8/93

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

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Final Approval

Approved:

*J. Austin Yeager*

Date: 11/29/93

\_\_\_\_\_  
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-10438

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
16700	9/18/95	ALMACEN	Full Part Before After Marine Center Approval Signed Via Full application of Drawing No. <u>endgs. &amp; features from 55.</u>
16711	8/23/96	ANGELA WILKS	Full Part Before After Marine Center Approval Signed Via Drawing No. <u>1, 1<sup>st</sup> Ed., Fully Applied 9/20/96 KRO</u>
			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 Drawing No.
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED

MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10438

**INSTRUCTIONS**

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CHART	DATE	CARTOGRAPHER	REMARKS
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			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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