

H110733

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-10-2-97  
Registry No. .... H-10733

### LOCALITY

State ..... Alaska  
General Locality ..... Northern Stephens Passage  
Sublocality ..... Horse Island to Young Bay...

1997

CHIEF OF PARTY  
CAPT Alan D. Anderson, NOAA

### LIBRARY & ARCHIVES

DATE ..... MAY 13 1998

HYDROGRAPHIC TITLE SHEET

H-10733

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-10-2-97

State Alaska

General locality Northern Stephens Passage

Locality Horse Island to Young Bay

Scale 1:10,000 Date of survey March 20, to April 7, 1997

Instructions dated 12/20/96, Change #1 4/3/97 Project No. OPR-0328-RA

Vessel RA-1(2121), RA-2(2122), RA-3(2123), RA-4(2124), RA-5(2125), RA-6(2126)

Chief of party CAPT Alan D. Anderson, NOAA

Surveyed by CAPT A. Anderson, LT G. Noll, LT S. LaBossiere, LT S. Lemke, CST J. Fleischmann, SST J. Jacobson, ST N. Quanbeck, ST K. Callahan

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: R.A. Shipley Automated plot by HP Design Jet 650L

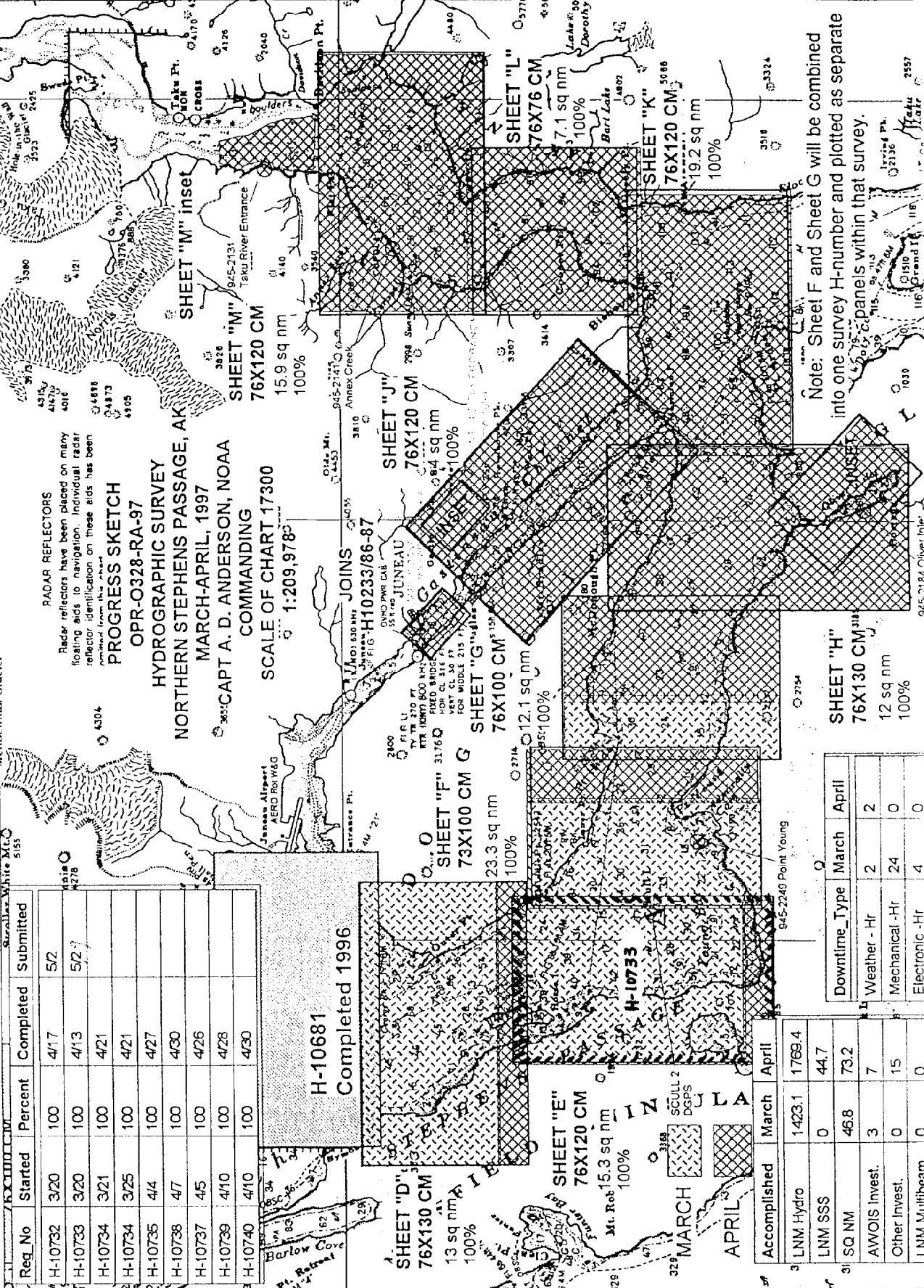
~~Processed by~~ Verification by M. Bigelow, D. Doles, R. Mayor, E. Domingo

Soundings in fathoms ~~XXX~~ at ~~MLLW~~ MLLW and tenths

REMARKS: All times are 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 mean lower low water unless otherwise noted.

*AWOIS and SURF 3/98 RWD*

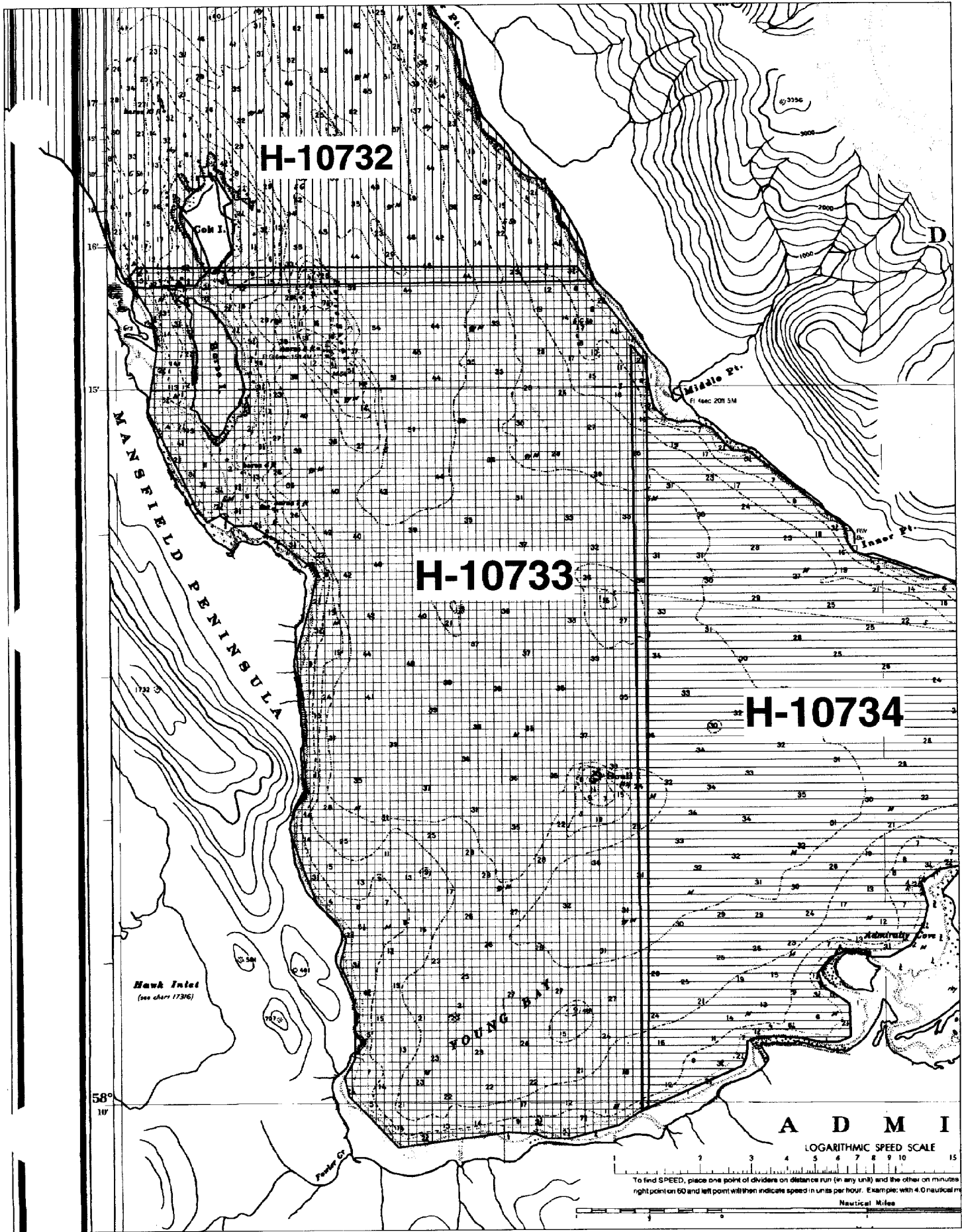


Note: Sheet F and Sheet G will be combined into one survey H-number and plotted as separate panels within that survey.

Req. No	Started	Percent	Completed	Submitted
H-10732	3/20	100	4/17	5/2
H-10733	3/20	100	4/13	5/2
H-10734	3/21	100	4/21	
H-10735	3/25	100	4/21	
H-10738	4/4	100	4/27	
H-10737	4/7	100	4/30	
H-10739	4/10	100	4/26	
H-10740	4/10	100	4/28	
H-10740	4/10	100	4/30	

Accomplished	March	April
LNM Hydro	1423.1	1769.4
LNM SSS	0	44.7
SQ NM	46.8	73.2
AWOIS Invest.	3	7
Other Invest.	0	15
LNM Multibeam	0	0

Downtime Type	March	April
Weather - Hr	2	2
Mechanical - Hr	24	0
Electronic - Hr	4	0



H-10732

H-10733

H-10734

MANSFIELD PENINSULA

YOUNG BAY

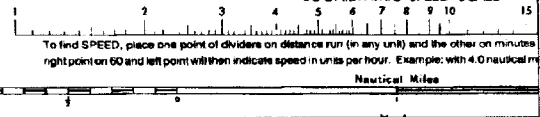
Hawk Inlet  
(see chart 17306)

Suido Pt.  
Fl Rec 20M 5M

Inner Pt.

A D M I

LOGARITHMIC SPEED SCALE



58°  
10'

# Descriptive Report to Accompany Hydrographic Survey H-10733

Field Number RA-10-2-97

Scale 1:10,000

March - April 1997

**NOAA Ship RAINIER**

Chief of Party: Captain Alan D. Anderson, NOAA

## A. PROJECT ✓

This hydrographic survey was completed as specified by Project Instructions OPR-O328-RA dated December 20, 1996 and Change number 1 dated April 3, 1997. Survey H-10733 corresponds to sheet E as defined in the sheet layout. This survey will provide contemporary hydrographic survey data as part of a continuing program to improve chart coverage of the Inside Passage in southeast Alaska. Requests for hydrographic surveys and updated charts in this area have been received from the United States Coast Guard (USCG), Southeastern Alaska Pilot's Association (SEAPA), the Alaska Department of Transportation, and the Alaska Department of Environment and Conservation in support of cruise line, commercial fishing, mining, and logging industries.

## B. AREA SURVEYED ✓ SEE EVAL REPORT, SECTION B

The survey area is in Northern Stephens Passage from Horse Island to Young Bay. The survey's northern limit is latitude  $58^{\circ} 15' 30''$  N. The survey's eastern limit is  $134^{\circ} 38' 10''$  W. The survey is bound by Douglas Island at the northeastern edge and by Admiralty Island to the south and to the west. Data acquisition was conducted from March 20 to April 7, 1997 (DN 079-097).

## C. SURVEY VESSELS ✓

Data were acquired by RAINIER and her survey launches as noted on the survey information list. \*

## D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

All data were acquired and preliminary processing was accomplished using the Hydrographic Data Acquisition and Processing System (HDAPS). Using exported HDAPS data in MapInfo facilitated the charted and prior survey comparisons. Final Detached Positions and soundings based on predicted tides were saved in MapInfo 4.1 format and submitted on floppy disk. A complete listing of software for HDAPS is ~~included in Appendix VI~~ ATTACHED.

## E. SONAR EQUIPMENT ✓

Neither Side Scan Sonar nor multi-beam echo sounder equipment was used on this survey. CONCUR

## F. SOUNDING EQUIPMENT ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts. \* No new problems, which affect survey data, were encountered. All DSF-6000N soundings were acquired in meters using the High + Low, high frequency digitized setting.

## G. CORRECTIONS TO ECHO SOUNDINGS ✓

Two sound velocity casts were acquired within the survey limits. Refer to the survey information summary. \*

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated December 15, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.3

\* FILED WITH SURVEY RECORDS

(1997), in accordance with Hydrographic Survey Guideline (HSG) No. 69. A printout of the Sound Velocity Corrector Tables used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections".

A static transducer depth was determined using FPM Fig 2.2 for vessels 2121, 2122, 2123, and 2125 in the spring of 1997. The static draft and offsets for RAINIER, 2120, were collected in 1995. Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2., using FPM Fig. 2.3, and are included with project data for OPR-O328-RA. The data for vessels 2121, 2122, and 2123 were collected in Shilshole Bay, Washington in March 1997. The data for 2124 and 2126 were collected in 1996. The data for vessel 2125 were collected in Young Bay, Alaska in March 1997. All offset tables\* contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 0-6 correspond to the last digit of the vessel number. The offset tables are included with project data for OPR-O328-RA. The launches are not equipped with heave, roll and pitch sensors.

The Coastal and Estuarine Oceanography Branch (N/OES334) through N/CS31 provided predicted tides for the project on diskette for the Juneau, Alaska reference station (945-2210). HDAPS listings of the data used in generating tidal corrector tables are included in Appendix V\* of this report. Tidal correctors as provided in the project instructions for H-10733 are listed in the survey information summary.\*

Juneau, Alaska (945-2210) and Ketchikan, Alaska (945-0460) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed a Sutron 8200 tide gage at Point Young (945-2249) on March 19, 1997.

Refer to the Field Tide Notes and supporting data in Appendix V\* for individual gage performance and level closure information. This information and the boundaries of the survey have been forwarded to N/OES212 in accordance with the project instructions. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3.

APPROVED TIDE NOTE DATED SEPTEMBER 11, 1997 IS ATTACHED.

H. CONTROL STATIONS ✓ SEE EVALUATION REPORT, SECTION H.

The horizontal datum for this project is NAD 83. Station SCULL 2, located on Scull Island, is located within the bounds of this survey. The control stations used for this survey are listed in ~~Appendix III~~ <sup>THIS REPORT</sup>. See the OPR-O328-RA-96 Horizontal Control Report for more information.

I. HYDROGRAPHIC POSITION CONTROL SEE EVAL. REPORT, SECTION I.

All soundings were positioned using differential GPS. Primary control was SCULL 2, the VHF differential "flyaway" reference station. The US Coast Guard Beacon at GUSTAVUS was used when not using the flyaway. Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two different DGPS base stations, SCULL 2 and GUSTAVUS, while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacon. SCULL 2 was compared to GUSTAVUS during ~~periodic~~ daily comparisons and occasional performance checks. Some outliers were noted, but none indicated systematic or continuous errors in the GUSTAVUS beacon. The SHIPDIM OUTLIER.SUM results are included on a floppy in the project data for OPR-O328-RA.

SERIAL NUMBERS FOR VESSEL GPS EQUIPMENT ARE ANNOTATED ON THE RAW DATA PRINTOUTS.\*

J. SHORELINE See Eval Rpt., section J.

The shoreline manuscript from Coastal Mapping survey CM-8904 was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital files from DM-10047 were projected to the survey grid with OPR-O328-RA-97 geodetic parameters using program Shore version 2.0, provided by N/CS32, and plotted on the survey using HDAPS.

\* FILED WITH SURVEY RECORDS

Limited shoreline verification was conducted in accordance with the Project Instructions. For this survey the limit of safe navigation of a survey launch is 5-50 meters offshore of apparent low tide, generally 3-5 meters of depth at Mean Lower Low Water. Features shown inshore of the NALL are the hydrographer's representation of the shoreline while slowly transiting along the shore, and are intended to aid chart compilation. Inshore prior survey features in the tidal flats are not positioned, and do not supersede the prior surveys in this area. <sup>(Concur)</sup> FEATURES PORTRAYED ON THE DETACHED POSITION PLOT WERE ANALYZED DURING OFFICE PROCESSING AND SHOWN ON THE SMOOTH SHEET AS WARRANTED. Shoreline manuscript and field features were compared to an enlargement of chart 17315, which is included in the submittal. Generally, the charted features matched the shoreline as observed with one notable exception; the vicinity of the south end of Horse Island and the foul area (Horse Shoal) east of the island were found to be more foul than charted. Discrepancies between charted and field shoreline should be resolved in favor of the manuscript shoreline and fieldwork as shown on the submitted MapInfo digital file. *Concur*

The following table summarizes new shoreline features not shown on the chart or manuscript:

Feature	Depth (Meters)	Fix Number	Latitude (N)	Longitude (W)
Rock	0.2 exposed	30637	58/11/11.37	134/41/57.65
Rock	0.9 submerged	10435	58/15/38.29	134/42/22.20
Rock	1.7 submerged	<del>30364</del>	58/14/11.67	134/43/13.95

<sup>Predicted Tides</sup>  
 One manuscript rock at position <sup>30359</sup> 58° 11' 54.41"N, 134° 42' 15.88"W, was not found. A rock <sup>was</sup> found at position <sup>12'</sup> 58° 11' 53.41"N, <sup>14'</sup> 134° 42' 39.93"W (fix no. 60961), 35 meters from the manuscript position. This rock is thought to be the manuscript rock. The hydrographer recommends removing the manuscript rock and placing one at the surveyed position. *Concur*

**K. CROSSLINES ✓**

Crosslines agreed within 1 meter with mainscheme hydrography, except in areas of steep bathymetry. There was a total of 27.5 nautical miles of crosslines, comprising 8.3% of mainscheme hydrography.

**L. JUNCTIONS ✓ SEE EVAL. REPORT, SECTION L.**

This survey junctions with H-10732, 1:10,000, 1997 on the north, and H-10734, 1:10,000, 1997 on the east. Soundings and contours on these surveys were found to be in good agreement based on predicted tides. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.

**M. COMPARISON WITH PRIOR SURVEYS ✓ SEE EVAL. REPORT, SECTION M.**

Prior survey H-6269, 1:10,000, 1937, covers the vicinity of Horse Island. H-6273, 1:20,000, 1937, covers the rest of the area surveyed. H-2055, 1:40,000, 1890, and H-3987-WD, 1:20,000, 1917, were also compared to the current survey in relevant areas. Most areas of this survey agreed well with the prior survey results. There were significant differences in shoal areas between the prior and current surveys. The current survey found shoals in the vicinity of Horse Island and Horse Shoal to be roughly half as deep as previously determined, probably due to increased sounding density and possibly the effects of earthquakes and glacial rebound. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

**N. ITEM INVESTIGATIONS ✓**

AWOIS 52278, the Green's Creek Mining Company Dock, is depicted properly on the chart and shoreline manuscript. Findings and photographs are included on an item investigation form included with this report.

*Smooth Sheet*  
 \* (1)  
 \* Cor 2ft  
 Review  
 Smooth  
 Sheet

**ITEM INVESTIGATION REPORT ✓**

<b>AWOIS # : 52278 ✓</b>	<b>DN: 089</b>
<b>CHART #: 17315</b>	<b>VESNO: 2123</b>
<b>ITEM DESCRIPTION: Green's Creek Mining Company Dock</b>	
<b>SOURCE: COE</b>	

**GEOGRAPHIC POSITION**

	<b>LATITUDE</b>	<b>LONGITUDE</b>	<b>POSITION #</b>
<b>CHARTED:</b>	58°10'23"N	134°41'50"W	30622-30629
<b>OBSERVED:</b>	58°10'18.9"N	134°41'48.1"W	30622
<b>POSITIONED BY:</b>	DGPS	<b>DATUM:</b>	MLLW (NAD 83)
<b>METHOD OF INVESTIGATION:</b> DGPS launch position			
<b>FINDINGS:</b> Position (30622 -30624) describe a floating barge secured off shore of the charted pier. A floating platform supported by two pontoons is attached to the pier (30625-30626). A large steel dolphin is located at the NW corner of the floating pier (30629). Two thirds of the way offshore perpendicular to the length of the pier a line of three piles spaced approximately 20 meters apart in a southern direction, the first pile is at the pier face (30627). Pier is charted adequately. <i>Concua</i>			

**CHARTING RECOMMENDATIONS**

Retain pier as charted.

*CONCUA*





1. AWOIS 52278. Pier and barge looking southwest.



2. AWOIS 52278. Pier, pontoon platform, and tripod looking west.

A 12.3 meter sounding (fix # 60929.06) (6 1/2 fathoms) was found on a charted 7 fathoms with 25 m line spacing, south and offshore of the 8 fathom wire drag grounding from H-3987WD, (PSR #4).<sup>\*\*</sup> The area was found to be gradually sloping with no discernable features. <sup>\*\* An E-tide depth was found on the present survey near the Pressure Review station. A G-tide depth was found 400 meters south of Item 4 and should be charted at latitude 54°15'46.5" N, longitude 134°38'51.1" W.</sup> **O. COMPARISON WITH THE CHART ✓ SEE EVAL. REPORT, SECTION O.**

Chart 17315, 1:40,000, 21st Edition, 8/3/91 is the largest scale chart covering the survey area. Comparison of soundings is described in Section M. Perhaps due to cartographic license in the placement of the soundings, the charted soundings near the western shore of Young Bay in steeply sloping areas were found to be shoaler by as much as 20 meters. <sup>CHART COMPARISON CHART COMPARISON SHOWS 0-2 FATHOMS (0-3.6 METERS)</sup> Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

### **Dangers to Navigation ✓**

Six dangers were reported to the Seventeenth Coast Guard District on April 18, 1997. Copies of the correspondence can be found in Appendix I of this report.

### **P. ADEQUACY OF SURVEY ✓ SEE EVAL. REPORT, SECTION P.**

Survey H-10733 is complete and adequate to supersede prior soundings and features in their common areas. CONCUR

### **Q. AIDS TO NAVIGATION ✓**

Horse Shoal Light<sup>1</sup> was positioned using static GPS methods from station SCULL 2 on April 14, 1997. See the attached Section Q insert for detailed comparison of this position to the charted and Light List positions.

### **R. STATISTICS ✓**

Refer to the survey information summary.<sup>\*</sup>

### **S. MISCELLANEOUS ✓**

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions. No unusual tidal currents or magnetic variations were found during this survey. Secchi disk observations were not performed on this survey because cloud cover was greater than the allowable amount as per change 1 to project instructions dated April 6, 1997.

### **T. RECOMMENDATIONS ✓**

The hydrographer recommends removal of the wire drag green tint from the charts common to this survey. The wire drag tint without wire depth now confuses the mariner with non-bathymetric information. This information was useful when most soundings were derived from sparse leadline surveys. Modern surveys such as this one supersede wire drag clearances and hangs, prior survey soundings, and features seaward of the launch navigational limit by investigating, with high-percentage echosounder coverage, diver, side scan or visual investigation, all shoals and features that may pose a hazard to navigation. <sup>CONCUR</sup> SEE EVAL. REPORT, SECTION M

### **U. REFERRAL TO REPORTS ✓**

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

\* Filed with survey records.

**Title**

**Date Sent**

**Office**

OPR-O328-RA Horizontal Control Report  
OPR-O328-RA 1997 Coast Pilot Report  
Project related data for OPR-O328-RA

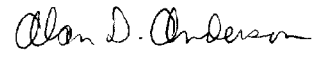
May 1997  
May 1997  
May 1997

N/CS34  
N/CS26  
N/CS34

Respectfully Submitted,

Approved and Forwarded,

  
Steven A. Lemke  
Lieutenant, NOAA

  
Alan D. Anderson  
Captain, NOAA  
Commanding Officer

**NONFLOATING AIDS OR LANDMARKS FOR CHARTS**

Replaces C&GS Form 567

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)  
**RAINIER**

STATE  
**ALASKA**

LOCALITY  
**Young Bay  
Northern Stephens Passage**

DATE  
**15-Apr-97**

ORIGINATING ACTIVITY  
 HYDROGRAPHIC PARTY  
 GEODETIC PARTY  
 PHOTO FIELD PARTY  
 COMPILATION ACTIVITY  
 FINAL REVIEWER  
 QUALITY CONTROL & REVIEW GRP.  
 COAST PILOT BRANCH  
(See reverse for responsible personnel)

The following objects

HAVE  HAVE NOT  been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.  
**OPR-0328-RA**

JOB NUMBER

SURVEY NUMBER  
**H-10732**

DATUM

POSITION  
LATITUDE      LONGITUDE  
° ' "      ° ' "      D.P., Meters

METHOD AND DATE OF LOCATION  
(See instructions on reverse side)  
OFFICE      FIELD

CHARTS  
AFFECTED

CHARTING NAME  
(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)

L.L.#  
**23790**

DESCRIPTION  
**Horse Shoal Light 1  
Fl G 6s**

58 15      15.9      134 42      10.7  
491      174

F-GPS-L  
4/15/97

17300  
17315  
17316

RESPONSIBLE PERSONNEL		ORIGINATOR	
TYPE OF ACTION	NAME	PHOTO FIELD PARTY	HYDROGRAPHIC PARTY
OBJECTS INSPECTED FROM SEAWARD		<input type="checkbox"/>	<input checked="" type="checkbox"/>
POSITIONS DETERMINED AND/OR VERIFIED	Capt. A. D. Anderson	<input type="checkbox"/>	<input type="checkbox"/>
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW		<input type="checkbox"/>	<input type="checkbox"/>
		FIELD ACTIVITY REPRESENTATIVE	
		OFFICE ACTIVITY REPRESENTATIVE	
		<input type="checkbox"/>	REVIEWER
		<input type="checkbox"/>	QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

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

OFFICE	FIELD (Cont.)
<p>1. OFFICE IDENTIFIED AND LOCATED OBJECTS  Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.  EXAMPLE: 75E (C) 6042  8 - 12 - 75</p> <p>FIELD</p> <p>1. NEW POSITION DETERMINED OR VERIFIED  Enter the applicable data by symbols as follows:  F - Field  L - Located  V - Verified  1 - Triangulation  2 - Traverse  3 - Intersection  4 - Resection</p> <p>A. Field positions* require entry of method of location and date of field work.  EXAMPLE: F - 2 - 6 - L  8 - 12 - 75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.  EXAMPLE: P - 8 - V  8 - 12 - 75  74L (C) 2982</p> <p>II. TRIANGULATION STATION RECOVERED  When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.  EXAMPLE: Triang. Rec.  8 - 12 - 75</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH  Enter 'V-Vis.' and date.  EXAMPLE: V-Vis.  8 - 12 - 75</p> <p>** PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>

CONTROL STATIONS as of 24 Apr 1997 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
1	F	058:31:42.000	134:56:00.000	0	0	0.0	0.0		03/01/92	POUNDSTONE LIGHTLIST
2	F	058:31:42.860	134:56:03.680	0	0	0.0	0.0		03/01/92	POUNDSTONE HDAPS
3	F	058:30:16.042	134:52:09.349	2	250	0.0	0.0		03/20/96	GULL
4	F	058:17:04.466	134:44:25.552	0	0	0.0	0.0		04/05/97	COLT ISLAND LT LL#23792
5	F	058:18:55.499	134:42:02.285	0	0	0.0	0.0		04/05/97	GEORGE RK LT LL#23795
6	F	058:25:06.000	135:41:48.000	0	250	0.0	0.0		03/01/97	GUSTAVUS DGPR ID#892
7	F	058:12:16.867	134:38:44.450	6	250	0.0	0.0		03/01/97	SKULL 2 DGPS
8	F	058:09:29.640	134:10:36.025	0	0	0.0	0.0		03/01/97	PT. ARDEN LT LL#23655
9	F	058:07:12.193	134:04:56.697	0	250	0.0	0.0		03/01/97	CIRCLE DGPS



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

April 18, 1997

**ADVANCE  
INFORMATION**

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

Dear Sir:


Fifteen dangers to navigation have been discovered by NOAA SHIP RAINIER while conducting hydrographic surveys H-10732 and H-10733 in Northern Stephens Passage. These dangers affect the following charts:

<u>Number</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
17300	27TH ED.	93/08	1:209,978	NAD 83
17316	16TH ED.	91/01	1:80,000	NAD 83
17315	21 ST ED.	91/08	1:40,000	NAD 83

It is recommended that these dangers to navigation be included in the Local Notice to Mariners. Chartlets showing the position of these dangers relative to other hydrographic features at the largest charted scale are enclosed along with a listing of the positions and depths of each danger referenced to survey number.

Questions concerning this report should be directed to the Pacific Hydrographic Branch at (206) 526-6835.

Sincerely,

  
Alan D. Anderson  
Captain, NOAA  
Commanding Officer

Enclosure

cc: DMA/HTC  
PMC  
N/CS34





**ADVANCE  
INFORMATION**

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**DANGERS TO NAVIGATION**

OPR-0328-97

NORTHERN STEPHENS PASSAGE

REGISTRY NUMBER: H-10733

MESSAGE #: RA-02-1997

LOCALITY: YOUNG BAY

AFFECTED CHARTS:

<u>CHART</u>	<u>EDITION NUMBER</u>	<u>DATE</u>	<u>SCALE</u>
17315	21 ST ED.	91/08	1:40,000
17300	27 TH ED.	93/08	1:209,978

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<u>ITEM</u>	<u>FIX #</u>	<u>DANGER</u>	<u>CHART DEPTH</u>	<u>DEPTH (M)</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>
A	30537+5	SHOAL	COVERS 1 FM	2	058:14:18.261	134:43:23.658
B	10435+0	ROCK	AWASH 1/2 FM	0.9	058:15:38.290	134:42:22.196
C	60863+2	SHOAL	COVERS 1 1/2 FM	3.1	058:15:21.073	134:42:29.761
D	60701+0	ROCK	COVERS 2 FM	3.8	058:12:09.151	134:38:40.737
E	61026+0	SHOAL	COVERS 2 1/4	4.2	058:15:08.832	134:41:55.630
F	60346+7	SHOAL	COVERS 6 1/2 FM	12.4	058:15:22.202	134:38:53.370

**ADVANCE  
INFORMATION**

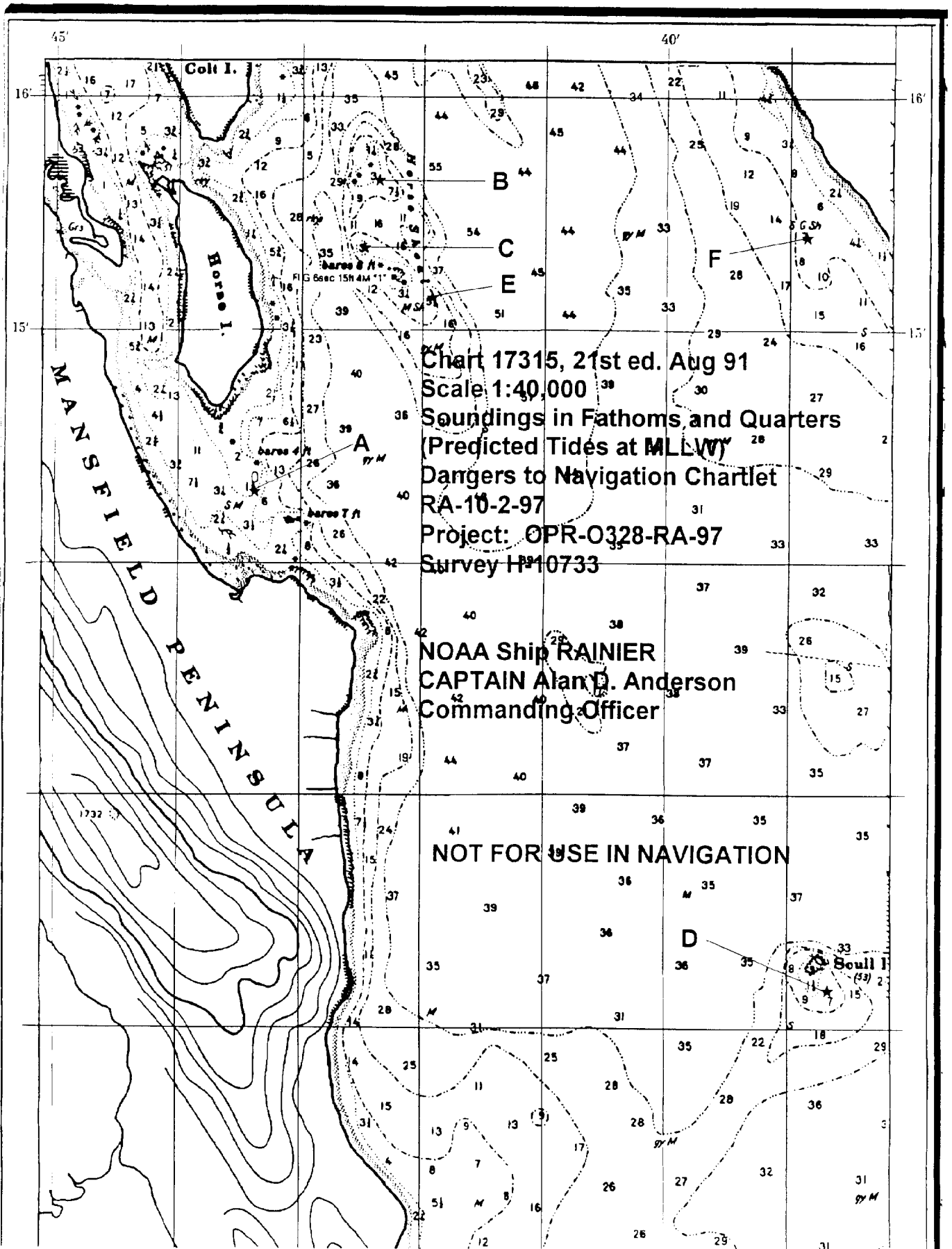


Chart 17315, 21st ed. Aug 91  
Scale 1:40,000  
Soundings in Fathoms and Quarters  
(Predicted Tides at MLLW)  
Dangers to Navigation Chartlet  
RA-10-2-97  
Project: OPR-0328-RA-97  
Survey HP10733

NOAA Ship RAINIER  
CAPTAIN Alan D. Anderson  
Commanding Officer

**NOT FOR USE IN NAVIGATION**

**ADVANCE  
INFORMATION**

DANGER TO NAV #: RA-02-1997

NOAA SHIP RAINIER HAS LOCATED 6 DANGERS TO NAVIGATION IN PROJECT OPR-0328-RA WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10733. THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

AFFECTED CHARTS:

CHART	EDITION NUMBER	DATE	SCALE
17315	21ST	91/08	1:40,000
17300	27TH	93/08	1:209,978

ALL CHART DATUM ARE NAD83.

ITEM	DANGER	DEPTH	LATITUDE (N)	LONGITUDE (W)	FIX NUMBER
A	SHOAL	1 FM	58:14:18.261	134:43:23.658	30537+5
B	ROCK	1/2 FM	58:15:38.290	134:42:22.196	10435+0
C	SHOAL	1 1/2 FM	58:15:21.073	134:42:29.761	60863+2
D	ROCK	2 FM	58:12:09.151	134:38:40.737	60701+0
E	SHOAL	2 1/4	58:15:08.832	134:41:55.630	61026+0
F	SHOAL	6 1/2 FM	58:15:22.202	134:38:53.370	60346+7

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

BT

APPROVAL SHEET

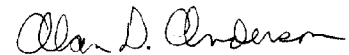
for

H-10733

RA-10-2-97

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Guidelines; and the 1994 version of 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.



Alan D. Anderson

Captain, NOAA

Commanding Officer



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** September 11, 1997

**HYDROGRAPHIC BRANCH:** Pacific

**HYDROGRAPHIC PROJECT:** OPR-0328-RA

**HYDROGRAPHIC SHEET:** H-10733

**LOCALITY:** Northern Stephens Passage, AK. (Sheet E)

**TIME PERIOD:** March 20 - April 21, 1997

**TIDE STATION USED:** 945-2249 Young Bay, AK.

Lat. 58° 11.0'N Lon. 134° 35.2'W

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters

**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 4.690 meters

**REMARKS:** RECOMMENDED ZONING


Use zone(s) identified as: SEA4A

Refer to attachments for zoning information.

**Note 1:** Provided time series data are tabulated in metric units (Meters), relative to MLLW and on Greenwich Mean Time.

**Note 2:**

Juneau, AK was used as control for datum determination for all subordinate tide stations for this survey. Relative sea level trends show that the areas of Juneau Alaska are undergoing continual uplift. The relative sea level trend observed at Juneau for the time period 1950 through 1993 is -0.0114 m/yr. with a standard error of 0.0005 m/yr. As a result of high rate of sea level change, the 1960 to 1978 Tidal Epoch value of Mean Lower Low Water (MLLW) used as chart datum and reference datum for NOS tidal predictions does not reflect present conditions. The data are under review to determine an updated value of MLLW. An interim value was computed for Juneau, based on the series of data from 1989 to 1991 and controlled by the 1960-1978 Epoch datums at Ketchikan which is more stable. The provided values adjust the chart datum to a more realistic level and in a direction that is more conservative for navigation purposes.

  
-----  
CHIEF, TIDAL ANALYSIS BRANCH

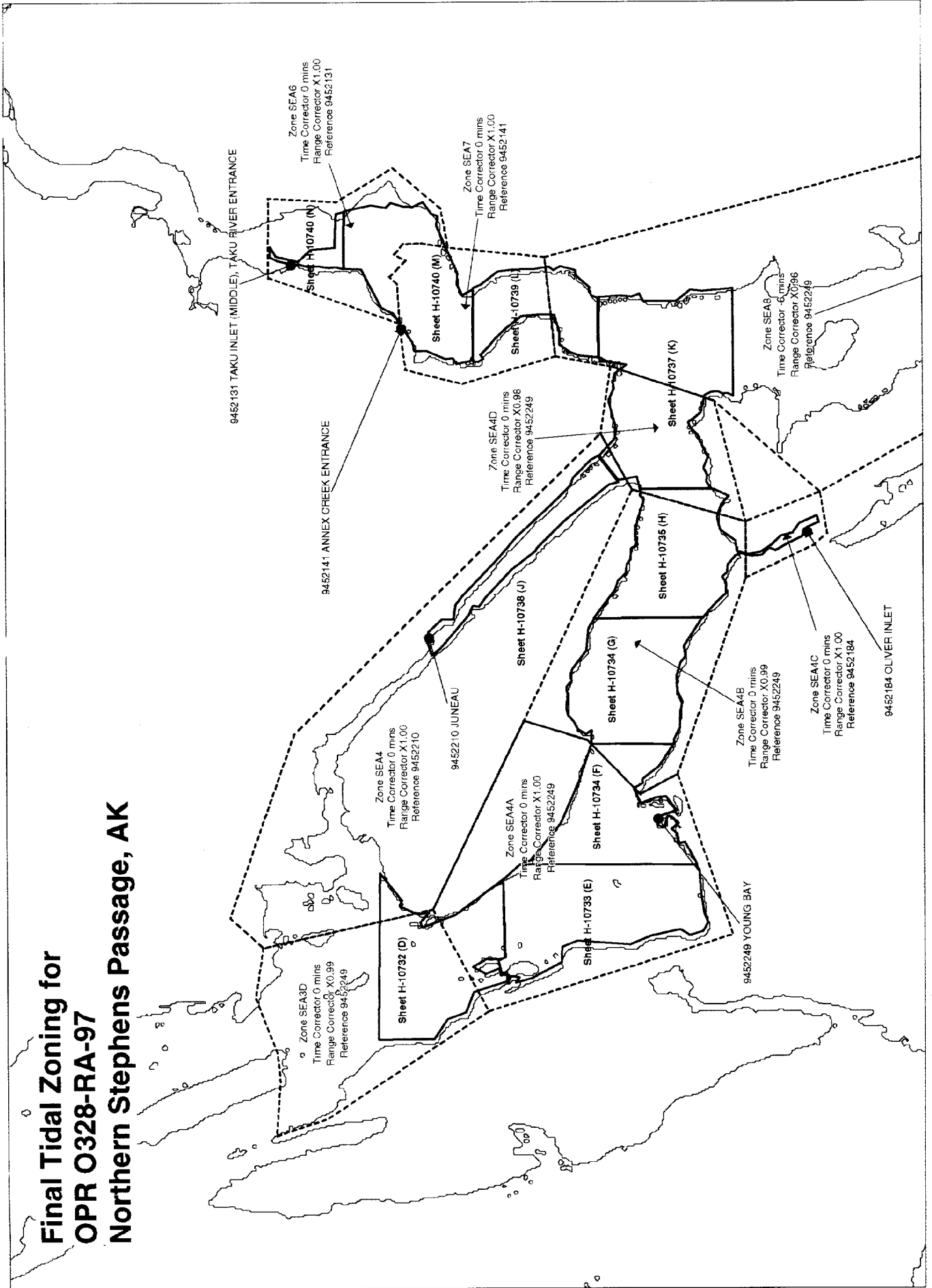


Final tide zone node point locations for OPR 0328-RA-97,  
Sheet H-10733 (E).

Format: Longitude in decimal degrees (negative value denotes  
Longitude West),  
Latitude in decimal degrees  
Tide Station (in recommended order of use)  
Average Time Correction (in minutes)  
Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone SEA4A			
-134.673853 58.297194	945-2249	0	1.00
-134.49203 58.251071			
-134.510592 58.219749			
-134.563302 58.193104			
-134.544003 58.174283			
-134.698759 58.146909			
-134.772288 58.269309			
-134.673853 58.297194			

# Final Tidal Zoning for OPR 0328-RA-97 Northern Stephens Passage, AK



GEOGRAPHIC NAMES

Name on Survey	1998 CHART NO. 17315, 17316, 17300 ON PREVIOUS SURVEY CON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP RAND McNALLY ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X		X								1
COLT ISLAND	X		X								2
DOUGLAS ISLAND	X		X								3
HORSE ISLAND	X		X								4
HORSE SHOAL	X		X								5
MANSFIELD PENINSULA	X		X								6
MIDDLE POINT	X		X								7
SCULL ISLAND	X		X								8
STEPHENS PASSAGE	X		X								9
YOUNG BAY	X		X								10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25

Approved:

*Charles C. Gray*  
Chief Geographer

JUN 30 1997



CURRENT HDAPS SOFTWARE LISTED ON NOAA Ship RAINIER  
14 Apr 1997

PROGRAM NAME	CURRENT PROGRAM VERSION	HDAPS VERSION DATE	FIELD UNIT LOAD DATE
BACKUP	2.00	27-Oct-93	03-Dec-99
BASLINE	1.14	07-Apr-93	03-Dec-99
BIGABST	2.08	27-Sep-95	01-Oct-96
BIGAUTOST	3.01	01-Feb-93	03-Dec-99
BLKEDIT	2.03	21-Aug-95	03-Dec-99
CARTO	2.19	31-May-96	06-Sep-99
CLASSIFY	2.14	13-Sep-95	01-Dec-99
CONTACT	2.49	27-Feb-96	24-May-96
CONVERT	3.67	16-May-95	03-Dec-99
DAS SURV	6.90	16 JAN 97	25-Mar-97
DIAGNOSE	3.06	10-Apr-95	03-Dec-99
DISC_UTIL	1.00	01-Feb-93	03-Dec-99
DP	2.50	17-Mar-97	01-Dec-99
DPCONVERT	1.03	24-Feb-95	03-Dec-99
DSNEDITS	1.06	05-Jun-95	03-Dec-99
EXCESS	4.33	21-Jun-95	03-Dec-99
EXPORT	1.03	13-Mar-96	03-Dec-99
FILESYS	3.46	26-Mar-96	03-Oct-96
GRAFEDIT	1.10	07-Jul-95	30-Nov-99
HIPSTICK	1.01	28-Jul-93	03-Dec-99
HPRAZ	1.26	22-May-93	03-Dec-99
INVERSE	2.02	06-Feb-95	10-Sep-96
LISTDATA	1.02	19-Apr-93	03-Dec-99
LOADNEW	2.13	24-Feb-95	03-Dec-99
LSTAWDIS	3.12	26-Mar-96	28-Aug-96
MAINMENU	1.30	06-Jul-95	10-Apr-96
MAN DATA	3.15	28-Jun-96	01-Dec-99
NEWPOST	6.13	26-Sep-94	03-Dec-99
PLOTALL	2.37	17-Aug-95	10-Sep-96
POINT	2.12	24-Feb-95	03-Dec-99
PREDICT	2.01	07-Apr-93	03-Dec-99
PRESURV	7.14	07-Mar-96	12-Apr-97
PRINTOUT	4.05	11-Jul-95	03-Dec-99
QUICK	2.09	15-Sep-95	03-Dec-99
RAMSAVER	1.02	07-Apr-93	02-Dec-99
REAPPLY	3.00	25-Dec-96	04-Apr-97
RECOMP	1.04	24-Feb-95	03-Dec-99
SCANNER	1.00	10-Jul-93	03-Dec-99
SELPRINT	2.05	07-Jun-94	03-Dec-99
SHOREPLT	7.14	07-Mar-96	30-Nov-99
SYMBOLS	2.11	08-Nov-95	03-Dec-99
VERSIONS	1.02	08-Nov-95	03-Dec-99
ZOOMEDIT	2.50	31-Oct-96	02-Nov-96

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER			
<b>HYDROGRAPHIC SURVEY STATISTICS</b>				H-10733			
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.							
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION			
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS			
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS			
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS		
ACCORDION FILES	2						
ENVELOPES							
VOLUMES							
CAHIERS							
BOXES							
<b>SHORELINE DATA</b>							
SHORELINE MAPS (List):		DM 10047					
PHOTOBATHYMETRIC MAPS (List):		NA					
NOTES TO THE HYDROGRAPHER (List):		NA					
SPECIAL REPORTS (List):		NA					
NAUTICAL CHARTS (List):		17315 21st Ed., August 3, 1991					
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>							
PROCESSING ACTIVITY				AMOUNTS			
				VERIFICATION	EVALUATION	TOTALS	
POSITIONS ON SHEET							
POSITIONS REVISED							
SOUNDINGS REVISED							
CONTROL STATIONS REVISED							
				TIME-HOURS			
				VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION							
VERIFICATION OF CONTROL							
VERIFICATION OF POSITIONS							
VERIFICATION OF SOUNDINGS							
VERIFICATION OF JUNCTIONS							
APPLICATION OF PHOTOBATHYMETRY							
SHORELINE APPLICATION-VERIFICATION							
COMPILATION OF SMOOTH SHEET				61.5		61.5	
COMPARISON WITH PRIOR SURVEYS AND CHARTS					16.0	16.0	
EVALUATION OF SIDE SCAN SONAR RECORDS							
EVALUATION OF WIRE DRAGS AND SWEEPS							
EVALUATION REPORT					45.0	45.0	
GEOGRAPHIC NAMES							
OTHER*							
*USE OTHER SIDE OF FORM FOR REMARKS				TOTALS	61.5	61.0	122.5
Pre-processing Examination by <b>Pacific Hydrographic Branch</b>				Beginning Date 5/5/97	Ending Date 9/18/97		
Verification of Field Data by <b>M. Bigelow, E. Domingo, R. Mayor</b>				Time (Hours) 61.5	Ending Date 10/9/97		
Verification Check by <b>B. Olmstead</b>				Time (Hours) 5	Ending Date 1/26/98		
Evaluation and Analysis by <b>R. Shipley</b>				Time (Hours) 61.0	Ending Date 1/22/98		
Inspection by <b>B. Olmstead</b>				Time (Hours) 6.5	Ending Date 1/29/98		

## EVALUATION REPORT

H-10733

### A. PROJECT

The hydrographer's report contains a complete discussion of the project information.

### B. AREA SURVEYED

The limits of hydrography have been adequately described in section B of the hydrographer's report.

The hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line throughout the survey area. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. A page-size plot of the charted area depicting the limits of supersession accompanies this report as Attachment 1.

The bottom consists mainly of green and gray mud. Other constituents include broken shells, pebbles, gravel and sand. Depths range from 0 to 56 fathoms.

### C. SURVEY VESSELS

The hydrographer's report contains information relating to survey vessels.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS), AutoCad (Version 12.0) and MicroStation 95.

Digital data for this survey exists in the standard HPS format, that is a database format using the .dbf extension. In addition, the plot is filed both in the MicroStation drawing format, i.e., .dgn (extension), and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHB until data forwarded to headquarters has been accepted and approved. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 35 and No. 75.

The data is plotted using a Transverse Mercator projection and is depicted on a single sheet.

### E. SONAR EQUIPMENT

Neither side scan sonar nor multibeam echo sounder equipment was used on survey H-10733.

### F. SOUNDING EQUIPMENT

The hydrographer's report contains a discussion on sounding equipment.

## **G. CORRECTIONS TO SOUNDINGS**

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from approved hourly heights zoned direct from Young Bay, Alaska, gage 945-2249.

## **H. CONTROL STATIONS**

Section H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick 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:	-1.201 seconds	(-37.164 meters)
Longitude:	6.420 seconds	(104.835 meters)

The year of establishment of control stations originate with the horizontal control records for this survey.

## **I. HYDROGRAPHIC POSITION CONTROL**

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 meters was computed for survey operations. The quality of a few positions exceeds limits in terms of horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, suggests 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. Daily DGPS performance checks were conducted in the field and found adequate.

NAD 83 is used as the horizontal datum for plotting and position computations.

Additional information concerning calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and corrections to position data.

## **J. SHORELINE**

Shoreline has been shown in black on the smooth sheet from the most current digital shoreline manuscripts.

Shoreline map DM-10047, scale 1:20,000, was compiled on NAD 83 and applied to this survey. Shoreline drawn on the smooth sheet originates from the above digital manuscript as provided in digital form by the Coastal Mapping Program. The digitized file and the survey file were merged during MicroStation processing.

The inshore limit of safe navigation (Navigable Area Limit Line, NALL) was determined by the field hydrographer based on depth, bottom topography, dangers to navigation, marine

traffic, and area usage within the survey boundaries. Changes to alongshore and offshore features shown on the shoreline map were verified and revised as warranted during survey operations. These changes are shown on the smooth sheet. There are no revisions to the mean high water line.

#### K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

#### L. JUNCTIONS

Survey H-10733 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10732	1997	1:10,000	Northern limit
H-10734	1997	1:10,000	Eastern limit

The junctions with H-10732 and H-10734 are complete. Soundings and depth curves are in satisfactory agreement within the common areas. A "Joins" note is shown on the smooth sheet.

#### M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-6269	(1937)	1:10,000
H-6273	(1937)	1:20,000
H-2055	(1890)	1:40,000

Prior surveys H-6269, H-6273, and H-3987 WD cover the entire area of the present survey. Comparisons with these surveys were generally in good agreement with differences of 0-3 fathoms. There appears to be no consistent pattern of shoaling or an increase in depths throughout the survey area. Differences can be largely attributed to better bottom coverage and relative accuracy of the data acquisition techniques between 1937 and the present work. All critical depths originating from the prior survey were adequately addressed during survey operations.

Ledges have been transferred to the smooth sheet from prior survey H-6273 in order to complete their depiction and facilitate chart compilation. The areas are listed below:

<u>Lat. (N)</u>	<u>Long. (W)</u>
58/13/45	134/42/45
58/12/45	134/42/30
58/12/15	134/38/45
58/10/20	134/41/50

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
T-3681	(1917)	1:20,000
T-3848	(1921)	1:20,000

The above prior shoreline maps cover the entire area common to survey H-10733 and compare well to the present survey. Ledges have been transferred to the smooth sheet from T-3681 in

order to complete their depiction and facilitate chart compilation.

The areas are listed below:

<u>Lat. (N)</u>	<u>Long. (W)</u>
58/15/30	134/44/15
58/14/45	134/43/30

Survey H-10733 is adequate to supersede the prior surveys within the common area.

H-3987WD (1917) 1:20,000

The above wire-drag survey covers portions of the present survey. Questions concerning the supersession of the charted green tint denoting the area of sweep coverage arose during this survey. Discussions between the hydrographer and the Hydrographic Surveys Division resulted in an agreement to allow supersession if the common area was covered by acceptable modern hydrography and did not contain hangs or uninvestigated groundings. A review of the prior survey area common to the present survey does not disclose any unusual problems precluding supersession. Accordingly, the wire-drag survey coverage common to the present survey is considered superseded.

#### **N. ITEM INVESTIGATIONS**

AWOIS item 52278, Green's Creek Mining Company Dock, was adequately addressed in section N of the hydrographer's report.

#### **O. COMPARISON WITH CHART**

Survey H-10733 was compared with the following chart:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
17315	21st	Aug. 3, 1991	1:40,000	NAD83

##### **a. Hydrography**

Charted hydrography originates with the previously discussed prior surveys and the Corps of Engineers. See Section N, Item Investigations. The prior surveys have been adequately addressed in section M and require no further discussion.

The green tint denoting wire drag coverage has been adequately investigated. See section M above for a discussion. The green tint common to the present survey should be removed from the chart.

Survey H-10733 is adequate to supersede charted hydrography within the common area of coverage.

##### **b. Dangers to Navigation**

Six (6) dangers to navigation were discovered during survey operations and reported to the Seventeenth Coast Guard District, NIMA, PMC and N/CS34 on April 18, 1997. No additional dangers to navigation were noted during office processing.

**P. ADEQUACY OF SURVEY**

Hydrography contained on survey H-10733 is adequate to:

- a. Delineate the bottom configuration, determine least depths, and draw the required 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.

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, April 1994 Edition.

**Q. AIDS TO NAVIGATION**

One fixed aid to navigation exists within the survey area. Horse Shoal Light 1 was located and adequately marks the feature intended. See the Descriptive Report and NOAA Form 76-40 (attached) for specific information. No floating aids to navigation exist within the survey area.

There were no features of landmark value located within the area of this survey.

**R. STATISTICS**

Statistics are itemized in the hydrographer's report.

**S. MISCELLANEOUS**

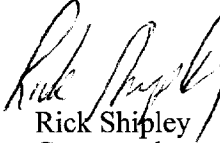
Miscellaneous information is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

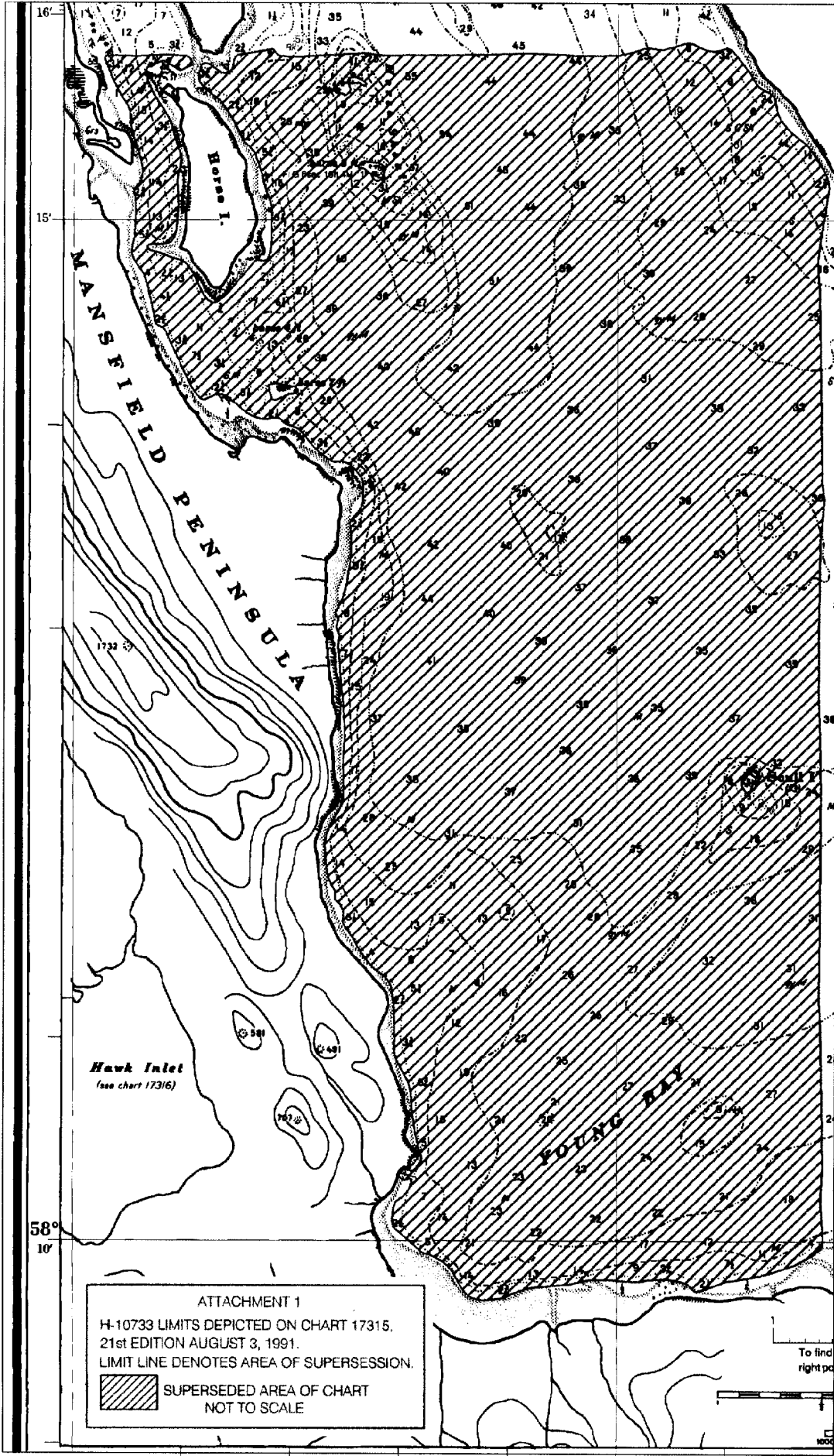
**T. RECOMMENDATIONS**

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

**U. REFERRAL TO REPORTS**

Referral to reports is discussed in the hydrographer's report.

  
Rick Shipley  
Cartographer




16°  
15°  
58°  
10'

MANSFIELD PENINSULA

*Hawk Inlet*  
(see chart 17316)

YOUNG BAY

ATTACHMENT 1  
H-10733 LIMITS DEPICTED ON CHART 17315,  
21st EDITION AUGUST 3, 1991.  
LIMIT LINE DENOTES AREA OF SUPERSESSION.  
 SUPERSEDED AREA OF CHART  
NOT TO SCALE

To find  
right po  
1000



APPROVAL SHEET  
H-10733

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 survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 2/3/98  
Bruce A. Olmstead  
Senior Cartographer, Cartographic Section  
Pacific Hydrographic Branch

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.

Kathy Timmons Date: 2/19/98  
Kathy Timmons  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

\*\*\*\*\*

Final Approval

Approved:  
Andrew A. Armstrong III Date: May 13, 1998  
Andrew A. Armstrong III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

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

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10733

**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
17315	1/7/98	Rick Shipley	<del>Full Part Before After Marine Center Approval Signed Via</del> Drawing No. Full application of soundings and features from smooth sheet.
			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.
			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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