

H-10593 A&B

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-20-1-95
Registry No. H-10593A

LOCALITY

State Alaska
General Locality .. Southern Stephens Passage
Sublocality 5 NM Southeast of Point Hugh

1995

CHIEF OF PARTY

CAPT D. R. Seidel

LIBRARY & ARCHIVES

DATE JUN 24 1996

HYDROGRAPHIC TITLE SHEET

H-10593A

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-20-1-95

State Alaska

General locality Southern Stephens Passage

Locality 5 NM Southeast of Point Hugh

Scale 1:20,000 Date of survey April 12 - May 3, 1995

Instructions dated 2/13/95, Change #1-3/28/95 Project No. OPR-0136-RA

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

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by CAPT D.Seidel, LT D.Haines, LT M.Larsen, SST J.Jacobson

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. Davies Automated plot by HP Design Jet 650C

Verification by E. Domingo

Soundings in ~~fathoms~~ ~~fms~~ at ~~MLW~~ Meters & Decimeters 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.
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

JUN 24 1996 *[Signature]* AWOIS and SURF - RND

PROGRESS SKETCH

OPR-0136-RA

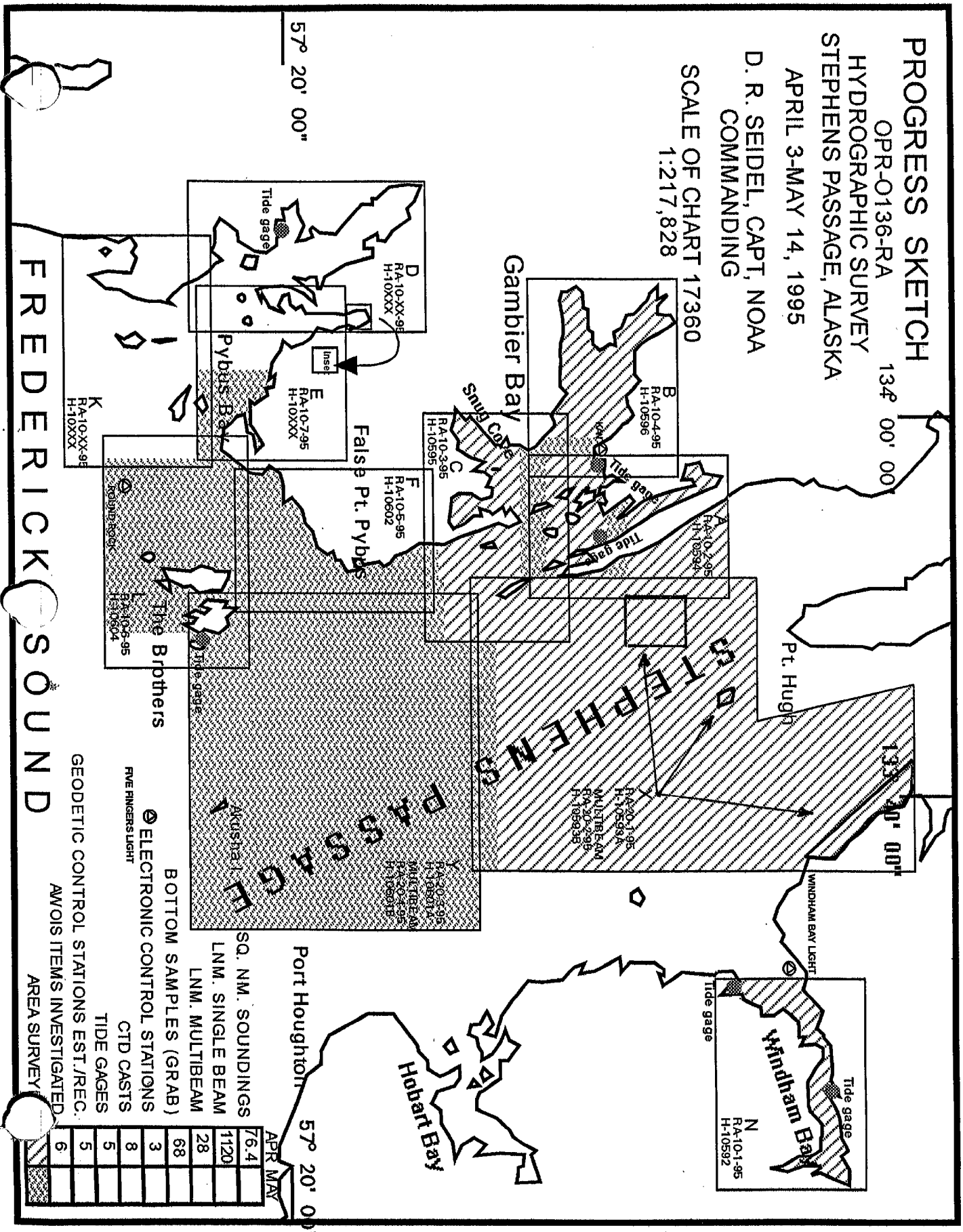
HYDROGRAPHIC SURVEY

STEPHENS PASSAGE, ALASKA

APRIL 3-MAY 14, 1995

D. R. SEIDEL, CAPT, NOAA
COMMANDING

SCALE OF CHART 17360
1:217,828



- ⊙ ELECTRONIC CONTROL STATIONS
- ⊙ FIVE RINGERS LIGHT
- ⊙ GEODETIC CONTROL STATIONS EST./REC.
- ⊙ AWOIS ITEMS INVESTIGATED
- ⊙ AREA SURVEY
- ⊙ BOTTOM SAMPLES (GRAB)
- ⊙ CTD CASTS
- ⊙ TIDE GAGES
- ⊙ LNM. MULTIBEAM
- ⊙ LNM. SINGLE BEAM
- ⊙ SQ. NM. SOUNDINGS

FREDERICK SOUND

APR	MAY
76.4	
1120	
28	
68	
3	
8	
5	
5	
6	

Descriptive Report to Accompany Hydrographic Survey H-10593A

Field Number RA-20-1-95

Scale 1:20,000

April-May 1995

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel

A. PROJECT ✓

This basic hydrographic survey was completed in Southern Stephens Passage, Alaska, as specified by Project Instructions OPR-O136-RA dated February 13, 1995, and change # 1 dated March 28, 1995.

Survey H-10593A corresponds to "sheet X" as defined in the Project Instructions. This survey is the first hydrographic survey that was conducted in conjunction with a multi-beam survey (H-10593B) using the HydroChart II system. Dual beam hydrography was used during this survey in the area too shallow for RAINIER to safely operate and to conduct developments on shoals found during multi-beam survey operations.

This survey will provide contemporary hydrographic survey data for updating existing nautical charts. Requests for hydrographic surveys and updated charts have been received from the United States Coast Guard (USCG), the Southeast Alaska Pilot's Association, the Alaska Department of Transportation, and private interests such as cruise ship lines and local logging and fishing industries.

B. AREA SURVEYED *See EVAL Report, section B*

The survey area is located in Southern Stephens Passage. The survey's eastern limit is bounded by $133^{\circ}37.7'W$, and the western limit bounded by $133^{\circ}52.0'W$. The northern limit is bounded by $57^{\circ}38.0'N$, and the southern limit is $57^{\circ}25.5'N$.

The two surveys H-10593A and H-10593B were combined into one AutoCAD smooth sheet.

C. SURVEY VESSELS ✓

Data were acquired by the four survey launches and the RAINIER as noted below:

Vessel	EDP #	Operation
RAINIER	2120	Bottom Samples Sound Velocity Casts

Vessel	EDP #	Operation
RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography
RA-5	2125	Hydrography
RA-6	2126	Hydrography

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Data were acquired and processed using HDAPS Programs. A complete listing is included in Appendix VI. *

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	2.11	5 Mar 1995

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on sheet X. 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 problems which affect survey data were encountered. All DSF-6000N soundings were acquired using the High + Low, high frequency digitized setting or the low frequency digitized setting, depending on water depth.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

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

* Filed with the hydrographic data.

Velocity Table #	Cast #	DN	Cast Position	Deepest Depth (m)	Applicable DN
2	2	103	57° 32' N 133° 36' W	360	093-105
3	3	111	57° 28' N 133° 58' W	360	108-117
6 5	6 6	122 122	57° 23' N 133° 44' W	380 38	121-139 121-139 (2125)

OUTSIDE Survey Area

OUTSIDE Survey Area

OUTSIDE Survey Area

The ship used velocity table 6 and the launches used velocity tables 2, ⁵ and 3. The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 811), calibrated 03/31/95. Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) No. 69.

A printout of the Sound Velocity Corrector Table used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV* Sounding Equipment Calibrations and Corrections".

Static Draft ✓

A transducer depth was determined using FPM Fig 2.2 for the RAINIER and vessels 2123-2126 in the spring of 1995. These values were entered into the offset tables for each survey platform.

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-O136-RA. The data for 2123-2126 was collected in Shilshole Bay, Washington in the Spring of 1995. The data for RAINIER was determined the Southern Alaska Peninsula in the Summer of 1994.

Offset Tables ✓

Offset tables ^{*} contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 3-6 correspond to the number of the vessel, offset table 1 is used for the RAINIER. The offset tables were compiled with new measurements in the spring of 1995 and are contained in the "Separates to be Included with Survey Data".*

* Filed with the hydrographic data.

Heave ✓

The launches are not equipped with heave, pitch and roll sensors. The RAINIER is equipped with a HRP sensor, however the ship was not used for dual beam hydrography on this survey.

Bar Check and Lead Lines ✓

Bar check lines were calibrated by RAINIER personnel during the winter inport 1994-1995. Calibration forms are included with project data for OPR-O136-RA. Bar checks were performed weekly and served as a functional check of the DSF-6000N.

Tide Correctors ✓

Juneau, Alaska tide station (945-2210) served as control for datum for determination at all subordinate stations for this project.

Predicted tides for the project were provided on diskette by N/CG241 for the Juneau, Alaska reference station (945-2210).

Tidal correctors as provided in the project instructions for this sheet are:

Time Correction		Height Correction	
<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
0.00	0.00	-1.1	-0.1

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

RAINIER personnel installed 8200 digital gages at Windham Bay (945-1962) and Good Island (945-1909) on April 10, 1995 and at The Brothers (945-1785) on April 11, 1995. The staff was connected to five benchmarks at each station during all level runs. Opening levels were conducted on April 10, 1995 at Windham Bay and on April 12, 1995 at Good Island and The Brothers. Closing levels were conducted at Windham Bay (945-1962) on April 26, 1995. On April 16, 1995, at 1610 UTC, the Windham Bay tide gage stopped recording the data. The problem was discovered and resolved on April 18 at 2042 UTC. Otherwise, all tide gages operated continuously during data acquisition.

The station descriptions, field tide records, and Preliminary Field Tide Notes (Appendix V)* have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. The final tide package will be forwarded to N/OES212 at the end of the project. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. Approved Tide Note, dated August 29, 1995 is attached.

H. CONTROL STATIONS ✓ See Encl Rpt, Section H.

* Filed with the hydrographic data.

A listing of the geodetic stations used to control this survey is included in Appendix III of this report. The horizontal datum for this project is NAD83.

DGPS stations were installed on existing stations INDX, WIND and KAN. Station INDX is located on top of Five Fingers Light House, and station WIND is located on top of Windham Bay Light, which is located on a small islet south of Point Windham. Station KAN is located on a prominent point in the northern section of Gambier Bay. These stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. Station INDX, 993 was the only station used to control 11-10593A.

For further information see the "Spring 1995 Horizontal Control Report" that will be submitted at the end of the project.

I. HYDROGRAPHIC POSITION CONTROL ✓ See Eval Rpt, section I.

Method of Position Control

All soundings and features were positioned using differential GPS. Serial numbers for Ashtech GPS equipment are annotated on the data printouts.*

Ashtech GPS ✓

VHF differential shore stations were established at stations INDX, WIND and KAN. The difference between the computed location and the published positions at stations WIND and KAN were recorded by the MONITOR 3.0 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. Scatterplot results are included in the "Project related data for OPR-O136-RA". The scatterplot results for station INDX were obtained in the Spring 1993 Project. The area around station INDX remains undeveloped, and the geography unchanged.

Calibrations & Systems Check Methods ✓

System checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two independent DGPS base stations. The results were transferred to forms which are included in the project data for OPR-O136-RA. An abstract of the system checks is included in the "Separates to be Included with Survey Data, III. Horizontal Position Control and Corrections to Position Data".*

Problems ✓

None

J. SHORELINE ✓ See Eval Rpt, Section J.

The shoreline map (T-sheet) was digitized using Hypack (Ver 5.2) and plotted on final sheets. The shoreline originated from TP-01371 (1:20,000).

Method of Shoreline Verification ✓

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1.

Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs), as explained later in this section. See following information regarding detached positions.

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:20,000 photocopies of the T-sheet. Reference numbers, descriptions, and heights corrected to MLLW using predicted tides are recorded on the reference form. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. The annotated photocopies of the T-sheet and the reference forms are included with the survey data.

No DPs were taken during shoreline verification as there were no changes required to the T-sheet covering the survey area. Where possible, positions of some T-sheet features were verified during inshore mainscheme hydrography and annotated on the master printouts.*

Detailed 1:20,000 "Bottom Sample and Detached Position Plots" are provided showing all reference numbers, and notes relating to each feature. The information from these plots was transferred to a final field plot where possible. Verified T-sheet features were retained and shown in black. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and are corrected to predicted MLLW. There are no features with associated heights plotting on the smooth sheet.

Changes and New Features ✓

There were no changes or new features found during shoreline verification. Concur

Disprovals ✓

None.

Recommendations ✓

The hydrographer recommends that the shoreline from TP-01371 be used to supersede prior shoreline information. *Concur*

Charted Features ✓

All charted features were accurately depicted.

K. CROSSLINES ✓

Crosslines are within 1-2 meter parameter agreement with mainscheme hydrography except in areas of complex bathymetry. Total mileage was 6.0 nautical miles or 12.8 % of total mainscheme hydrography.

L. JUNCTIONS ✓

This survey junctions with surveys H-10470 (1:10,000, 1993) at the eastern limit, H-10175 (1:20,000, 1985) at the northwest limit, H-10594 (1:10,000, 1995) at the northwest corner of the survey, and H-10595 (1:10,000, 1995) at the southwest corner of the survey. This survey also junctions with H-10593B (1:20,000 1995 HydroChart II) within the common area. Soundings were found to be in general agreement. Final comparison will be made at the Pacific Hydrographic Section (PHS). *See Enr Report, section L.*

M. COMPARISON WITH PRIOR SURVEYS ✓

One prior survey was compared: H-1996, 1:80,000, 1889, USCGS. Soundings from the prior survey were in general agreement with the present survey. *See Enr Report, section M.*

N. ITEM INVESTIGATIONS

One AWOIS item was assigned to H-10593A.

AWOIS Item 51268

1. Area of Investigation

State: Alaska
Locality: Stephens Passage
Reported Latitude: 57/30/52.78N
Reported Longitude: 133/44/48.22W
Datum: NAD83
Feature: Sounding

2. Description and Source of Item

Item is an echosounder depth of 47.8 fm (87.4 m) reported by the Holland America Line. Position was obtained by using radar bearing and distance, and visual bearings.

3. Survey Requirements

Verify or disprove, determine least depth and position. Technique to be used is echo sounder search or 200% Side Scan Sonar coverage.

4. Method of Investigation

The area was surveyed using the HydroChart II multibeam system with RAINIER. A shoal was located 200 meters northeast of the search area. This area was developed using dual beam echosounder.

5. Results of Investigation

Date:	DN 123
Time (UTC):	17:31
Depth:	82.6 m (45.2 fm)
Position #:	5622+2
Vessel:	2125

A shoal of 81 m (44.3 fm) was located 200 m northeast of the search area. The area of the shoal was developed using dual beam echosounder with 50 meter line spacing. *The 81 meter sounding is approximately 1,000 meters northeast of the reported position. A 100 meter sounding plots approximately 1,000 meters south of the reported position.*

6. Comparison with Prior Surveys

The item was compared to H-1996, 1:80,000, 1889, USCGS. This item did not originate with a prior survey.

7. Comparison with the Chart and Charting Recommendations

The item was compared to NOS chart 17360, 29th Edition, July 9, 1994 (NAD83). The item is shown as a reported feature.

This item was not submitted as a danger to navigation.

Recommendation

Remove rep. annotation and the 48 fathom sounding at 57° 30' 52.78"N and 133° 44' 48.22"W. Chart shoal depth of 82' m (45 fm) at latitude 57° 31' 16.7"N, longitude 133° 44' 12.2"W. *CONCUR*

O. COMPARISON WITH THE CHART *See Eval Rpt., section O.*

This survey was compared to NOS chart 17360, 29th Edition, July 9, 1994, 1:217,828, (NAD83), and charted soundings were found to be in general agreement.

Non-sounding charted features are discussed in Section J, Shoreline. Final comparisons to be made at PHS.

Dangers to Navigation ✓

No dangers to navigation were within the limits of survey H-10593A. *CONCUR*

P. ADEQUACY OF SURVEY ✓ *See Eval Rpt., section P.*

Survey H-10593A is complete and adequate to supersede charted depths and features in their common areas. *CONCUR*

Q. AIDS TO NAVIGATION ✓

None.

R. STATISTICS ✓

NM Hydrography	106.6
Velocity Casts	3
Detached Positions	0
Selected Soundings	2193
Bottom Samples	9
Tide Stations	3
NM ² Hydrography	2.4

S. MISCELLANEOUS ✓

Bottom samples were collected in accordance with Project Instructions. Samples have been stored and shipped to the Smithsonian Institution in accordance with Section 4.7.1 of the Hydrographic Manual.

No unusual tidal currents were experienced within the sheet limits.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

None

U. REFERRAL TO REPORTS ✓

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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Spring 1995 Horizontal Control Report for OPR-O136-RA.	May 1995	N/CG245
Spring 1995 Coast Pilot Report for OPR-O136-RA.	May 1995	N/CG245
Project related data for OPR-O136-RA.	Incremental	N/CG245

Respectfully Submitted,



Mark S. Larsen
Lieutenant, NOAA

Approved and Forwarded,



Dean R. Seidel
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 4 May 1995 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
100	F	057°33'42.067	133°32'35.061	19	250	0.0	0.0	04/03/95	04/03/95	WINDHAM BAY LIGHT(GPS STATION)
101	F	057°16'13.398	133°37'53.480	30	250	0.0	0.0	04/03/95	04/03/95	INDX(GPS STATION) 1993
102	F	057°20'37.036	133°50'16.960	6	250	0.0	0.0	04/12/95	04/12/95	KAN-1924(GPS STATION)

APPROVAL SHEET

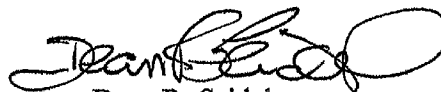
for

H-10593A

RA-20-1-95

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.



Dean R. Seidel
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

ORIGINAL

DATE: August 29, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-0136

HYDROGRAPHIC SHEET: H-10593A

LOCALITY: 5 Nautical Miles Southeast of Point Hugh, Stephens
Passage, Alaska

TIME PERIOD: April 12 - May 3, 1995

TIDE STATION USED: 945-1962 Windham Bay, Stephens Passage, AK
Lat. $57^{\circ} 32.6'N$ Lon. $133^{\circ} 29.9'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -5.95 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.4 ft.

REMARKS: RECOMMENDED ZONING

1. South of $57^{\circ} 30.0'N$, times are direct and apply a x0.99 range ratio to heights using Windham Bay, AK (945-1962).
2. North of $57^{\circ} 30.0'N$, times and heights are direct using Windham Bay, AK (945-1962).

Notes: 1. Times are tabulated in Greenwich Mean Time.

2. Data for Windham Bay, AK (945-1962) are temporarily stored in file #745-1962.


CHIEF, DATUMS SECTION



HYDROGRAPHIC SURVEY STATISTICS

H-10593A

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES				1	

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	VERIFICATION	EVALUATION	TOTALS	
POSITIONS REVISED Selected Soundings			2193	
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	291		291	
COMPARISON WITH PRIOR SURVEYS AND CHARTS				
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		20	20	
GEOGRAPHIC NAMES				
OTHER:				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	291	20	311

Pre-processing Examination by LT P. Haines	Beginning Date 5/18/95	Ending Date 5/18/95
Verification of Field Data by E. Domingo	Time (Hours) 291	Ending Date 4/8/96
Verification Check by R. Davies	Time (Hours) 5	Ending Date 2/6/96
Evaluation and Analysis by R. Davies	Time (Hours) 20	Ending Date 4/8/96
Inspection by B. Olmstead	Time (Hours) 13	Ending Date 5/6/96

**EVALUATION REPORT
H-10593A**

A. PROJECT

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

B. AREA SURVEYED

This survey was conducted in Southern Stephens Passage, Alaska. Specifically, the survey area is centered five nautical miles southeast of Point Hugh and includes the following three areas which were too shallow for the multi-beam survey system.

- 1.) latitude 57/37/4.8N to latitude 57/40/22.8N and from longitude 133/37/4.8W to longitude 133/41/56.4W.
- 2.) latitude 57/31/4.8N to latitude 57/31/40.8N and from longitude 133/43/9.6W to longitude 133/45/3.6W.
- 3.) latitude 57/27/57.6N to latitude 57/30.00N and from longitude 133/47/49.2W to longitude 133/50/56.4W.

Depths range from 0 to 364 meters. The bottom consists primarily of mud and pebbles.

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) and AutoCad, Versions 12 and 13.

At the time of the survey certification the format for the transmission of digital data had not been finally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot, created with the .dbf data and enhanced using the AutoCad system, is filed both in the AutoCad drawing format, i.e., .dwg; and in the more universally recognized graphics transfer format, .dxf. Copies of these data files will be retained at PHS until data transfer protocols are developed and approved.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic name text, line-type, 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. 75.

The field sheet parameters have been revised to center the hydrography on the office plot. Data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used on survey H-10593A.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

Predicted tides for Juneau, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned direct from Windham Bay, Stephens Passage, gage 945-1962, was used during office processing. Soundings have been corrected for dynamic draft, actual tides and sound velocity. The offset values and velocity correctors are adequate.

H. CONTROL STATIONS

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

The positions of the horizontal control stations used during hydrography are published values based on NAD 83. The smooth sheet is annotated with a NAD 27 adjustment tick based on values determined with 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: -1.224 seconds (-37.865 meters)
Longitude: 6.214 seconds (103.214 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 7.5 was computed for survey operations. No positions exceeded the limits in terms of horizontal dilution of precision (HDOP). NAD 83 is used as the

horizontal datum for plotting and position computations.

J. SHORELINE

Shoreline map TP-01371, photography dated May, June 1987, scale 1:20,000 was compiled on NAD 83 and applies to this survey.

Shoreline drawn on the smooth sheet originates from a 1:10,000 scale photogrammetric enlargement of the shoreline map. Shoreline from TP-01371 has been digitized during office processing and merged with the survey file during ACAD processing.

There were no MHW revisions on this survey.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10593A junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10175	1985	1:20,000	Northwest
H-10470	1993	1:10,000	Northeast
H-10594	1995	1:10,000	West
H-10595	1995	1:10,000	West
H-10593B	1995	1:10,000	All areas

The junction with surveys H-10594, H-10595 and H-10593B are complete. The junction with surveys H-10175 and H-10470 were not formally completed since these surveys were previously processed and forwarded for charting. Soundings are in good agreement.

M. COMPARISON WITH PRIOR SURVEYS

H-1996(1889-92) 1:80,000

Survey H-1996 covers the entire area of the present survey. Present survey depths are generally shoaler with an average difference of 5.0 meters (2.7 fathom). There appears to be no consistent pattern of shoaling or an increase of depths. These differences can be attributed to greater sounding coverage and the relative accuracy of the data acquisition techniques. All critical depths originating from the prior survey were adequately addressed during survey operations.

Survey H-10593A is adequate to supersede the prior survey within the common area.

N. ITEM INVESTIGATIONS

One AWOIS Item originating from a miscellaneous source was investigated during survey operations. Discussion and disposition of item 51268 has been adequately addressed in the hydrographer's report.

O. COMPARISON WITH CHART

Survey H-10593A was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
17360	29th	July 9, 1994	1:217,828	NAD 83
17362	9th	May 5, 1990	1:40,000	NAD 83

a. Hydrography

Charted hydrography originates with the prior survey mentioned in section M. The prior survey is discussed in section M and requires no further discussion.

Survey H-10593A is adequate to supersede charted hydrography within the common area.

b. Dangers to Navigation

There were no dangers to navigation found during survey operations or office processing.

P. ADEQUACY OF SURVEY

Hydrography is adequate:

- a. delineate the bottom configuration, determine least depth, and draw the standard curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigations; 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

There are no floating aids or fixed aids to navigation located within the survey area.

There are no charted landmarks or features of landmark value within the survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information is found in the hydrographer's report. There were no additional miscellaneous items noted during office processing.

T. RECOMMENDATIONS

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

U. REFERRAL TO REPORTS

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

Bruce A. Olmsted
for C.R. Davies
Cartographer

APPROVAL SHEET
H-10593A

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

Bruce A. Olmstead Date: 5/6/96
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 Simmons, CDN NOAA Date: 5/14/96
Kathy Simmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: July 3, 1996
Andrew A. Armstrong III
Captain, NOAA
Chief Hydrographic Surveys Division

H-10593B

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.

RA-20-2-95

State Alaska

General locality Southern Stephens Passage

Locality 5 NM Southeast of Point Hugh

Scale 1:20,000 Date of survey April 23, - May 3, 1995

Instructions dated 2/13/95, Change #1-3/28/95 Project No. OPR-0136-RA

Vessel NOAA Ship RAINIER (2120)

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by RAINIER Personnel

Soundings taken by echo sounder, hand lead, pike Multibeam Hydro Chart II

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: R. Davies Automated plot by HP Design Jet 650C

Verification by E. Domingo

Soundings in ~~fathoms~~ Meters at ~~MLW~~ 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.
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

PROGRESS SKETCH
 OPR-0136-RA
 HYDROGRAPHIC SURVEY
 STEPHENS PASSAGE, ALASKA

APRIL 3-30, 1995
 D. R. SEIDEL, CAPT, NOAA
 COMMANDING

SCALE OF CHART 17360
 1:217,828

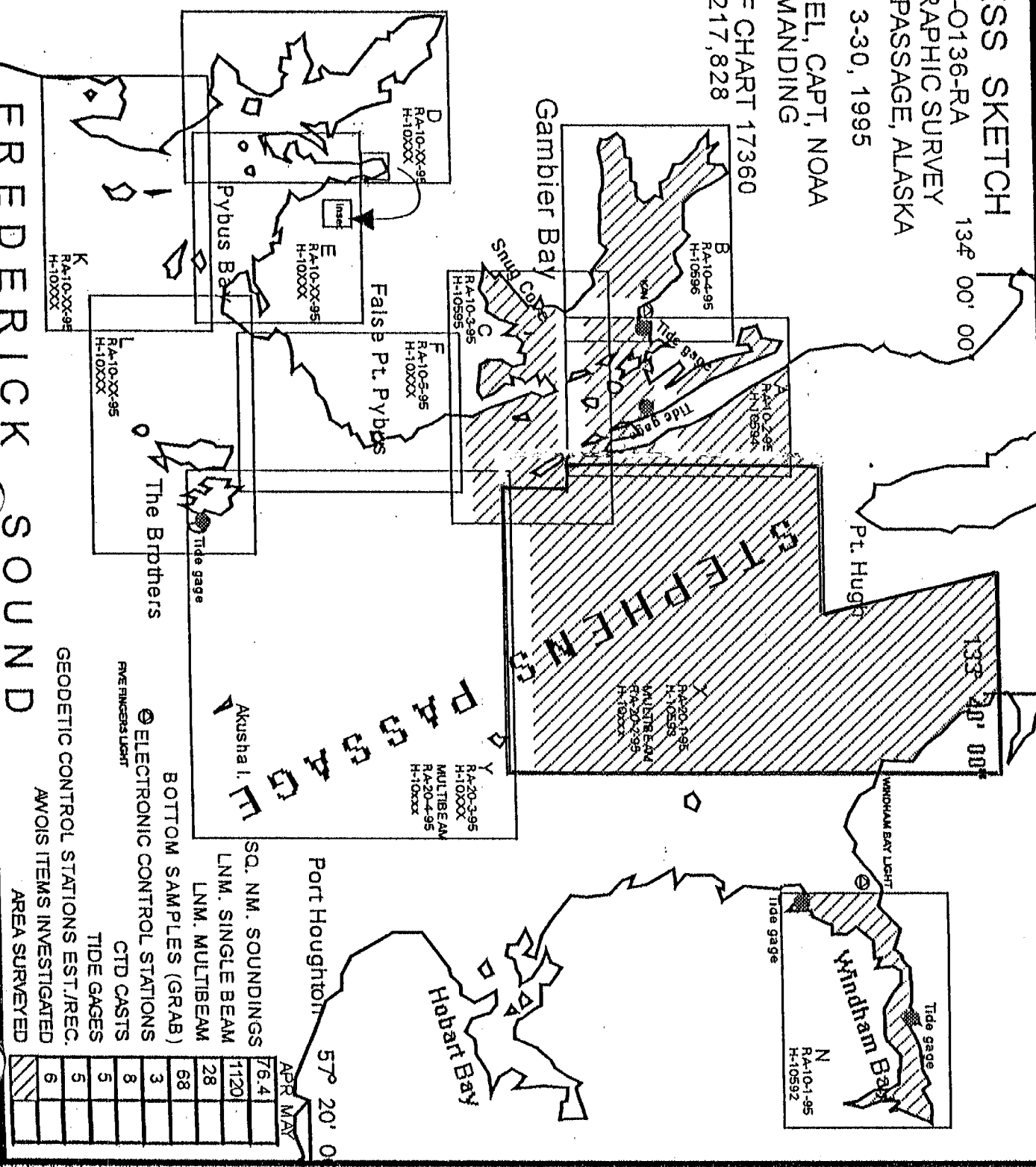
57° 20' 00"

134° 00' 00"

133° 20' 00"

57° 20' 00"

FREDERICK SOUND



- ⊙ ELECTRONIC CONTROL STATIONS
- ⊙ FIVE FINGERS LIGHT
- ⊙ BOTTOM SAMPLES (GRAB)
- ⊙ CTD CASTS
- ⊙ TIDE GAGES
- ⊙ GEODETIC CONTROL STATIONS EST./REC.
- ⊙ AWOIS ITEMS INVESTIGATED
- ⊙ AREA SURVEYED

76.4	APR MAY
1120	
28	
68	
3	
8	
5	
5	
6	

AKUSAHA I.

SQ. NM. SOUNDINGS
 LNM. SINGLE BEAM
 LNM. MULTIBEAM

Port Houghton

Hobart Bay

Wingham Bay
 Tide gage
 N
 RA-10-1-95
 H-10592

WINGHAM BAY LIGHT

Pt. Hugo

STEPHENS

Gambier Bay

Snub Cove

False Pt. Pybus

Pybus Bay

The Brothers

K
 RA-10-XX-95
 H-10XXX

L
 RA-10-XX-95
 H-10XXX

E
 RA-10-XX-95
 H-10XXX

D
 RA-10-XX-95
 H-10XXX

C
 RA-10-3-95
 H-10595

F
 RA-10-5-95
 H-10XXX

Y
 RA-20-3-95
 H-10XXX
 RA-20-4-95
 H-10XXX

X
 RA-20-1-95
 H-10595

W
 RA-20-2-95
 H-10XXX

V
 RA-20-1-95
 H-10595

B
 RA-10-4-95
 H-10596

A
 RA-10-2-95
 H-10594

Descriptive Report to Accompany Hydrographic Survey H-10593B

Field Number RA-20-2-95

Scale 1:20,000

April-May 1995

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel

A. PROJECT ✓

This basic hydrographic survey was completed in Southern Stephens Passage, Alaska, as specified by Project Instructions OPR-O136-RA dated February 13, 1995, and change # 1 dated April 3, 1995. In addition, the bathymetric survey operations were conducted in accordance with the Standing Bathymetric Instructions, dated November 22, 1989.

Survey H-10593B corresponds to "sheet X" as defined in the Project Instructions. This survey is the first hydrographic survey that was conducted in conjunction with a multi-beam survey using the HydroChart II system. Dual beam hydrography was used during this survey in the area too shallow for RAINIER to safely operate and to conduct developments on shoals found during multi-beam survey operations.

This survey will provide contemporary hydrographic survey data for updating existing nautical charts. Requests for hydrographic surveys and updated charts have been received from the United States Coast Guard (USCG), the Southeast Alaska Pilot's Association, the Alaska Department of Transportation, and private interests such as cruise ship lines and local logging and fishing industries.

B. AREA SURVEYED ✓

The survey area is located in Southern Stephens Passage. The survey's eastern limit is bounded by $133^{\circ}37.7'W$, and the western limit bounded by $133^{\circ}51.0'W$. The northern limit is bounded by $57^{\circ}38.0'N$, and the southern limit is $57^{\circ}25.5'N$.

The two surveys H-10593A and H-10593B were combined into one AutoCAD smooth sheet.

C. SURVEY VESSELS ✓

The RAINIER (EDP# 2120) was the only vessel used to acquire swath data on this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data were acquired and processed using IDSSS and HydroChart II (Seabeam Inc.) programs. A complete listing is included in Appendix VI. *

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	2.11	5 Mar 1995

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on sheet X. *Concur*

F. SOUNDING EQUIPMENT ✓

The IDSSS "Phase III" configuration consisted of a data acquisition system (DAS) and a data processing system (DPS). No other sounding equipment was used during this survey.

The data acquisition system (DAS) consisted of a DEC VAX Station 4000-90 computer system interfaced with a Seabeam Instruments Inc. HydroChart II sonar system, Datawell heave-roll-pitch sensor (HIPPY), Sperry gyrocompass and an Ashtech DGPS system. HydroChart II, is a multibeam sonar system that uses two transducer arrays to produce an athwartship swath of bathymetric data; the width of which is approximately 2.5 times the water depth.

The DEC VAX Station 4000-90 computer collected input from the HydroChart II, gyrocompass, and the navigation system. It also provided guidance to the helmsman and plotted a near real time contour map. The DAS consisted of the following equipment:

ITEM
HydroChart II Sonar System
DEC Server DSRVW-7C
DEC VAX Station 4000-90 (DAS)
TTi 8212 Tape Drive
Sperry MK 227 Gyrocompass

Filed with the hydrographic data.

ITEM
DATAWELL Hippy
ZETA 24 in. Plotter
DEC monitor

The data processing system (DPS) was also controlled by a DEC VAX Station 4000-90 computer. A second graphic workstation was used to process the data and created corrected merge files, selected sounding files, and final field sheets. The DPS consisted of the following equipment:

ITEM
DEC VAX Station 4000-90 (DPS)
TTi 8212 Tape Drive
DEC Monitor
BRUNING 36 in. Plotter

Problems

During the post processing of the data, soundings in a steep (nearly vertical) cliff at 57° 27' 30" N and 133° 43' 30" W approximately 100 meters of the line were removed by VAXCOP. RAINIER ran several lines over the area at various speeds and directions without any success. After researching the prefilter options that VAXCOP uses to filter out data, the limit parameter was changed from the default value of 10 meters to 30 meters. This allowed more of the data to pass through the filter without degrading the data quality.

This same steep area also caused some artifacts to appear. Those that were not removed by VAXCOP were edited using EXCLUDE statements in the window file. The largest artifact appeared at 57° 28' 00" N and 133° 44' 00" W, approximately 600 meters of the line had to be excluded. *Sounding coverage was adequate with adjoining lines of hydrography.*

G. CORRECTIONS TO ECHO SOUNDINGS ✓

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

Cast #	DN	Cast Position	Deepest Depth (m)	Applicable DN
3	111	57° 28' N 133° 58' W	360	108-115
5	115	57° 22' N 133° 47' W	360	116-117
6	122	57° 23' N 133° 44' W	380	121-127
7	128	57° 21' N 133° 47' W	530	128-133

Outside survey area.

Outside survey area.

Outside survey area.

Outside survey area.

The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 811), calibrated 03/31/95. Velocity correctors were computed using the PC program VELOCITY in accordance with Hydrographic Survey Guideline (HSG) No. 69.

A printout of the Sound Velocity Corrector Tables used for input into the HydroChart II subsystem is included in the data cahier. *

A zone comparison was made between cast numbers 3 (DN 111) and 7 (DN 128) to determine the magnitude of the change that occurred in the sound velocity profile before the survey was started and after it was complete. The results showed that the maximum difference in depth was 1.3 meters in 400 meters of water (0.3%). The maximum cross track difference was 0.75 meters in 400 meters of water (0.15 %). Both of these are considered to be in reasonable agreement.

Static Draft ✓

A transducer depth was determined using FPM Fig 2.2 for the RAINIER during the drydocking in spring of 1995. The draft of the ship was determined to be 4.4 meters.

Filed with the hydrographic data

Settlement and Squat ✓

The multibeam data acquired by the ship was not corrected for settlement or squat. Historical values have been 0.1 meters at standard speed (12 kts). Since IDSSS does not account for settlement and squat, a draft of 4.5 meters was used for this survey to account for the settlement and squat.

Parameter Table ✓

The parameter table contains offsets for the GPS antenna, as well as static draft measurements, pitch, roll and gyro biases, as well as plotter sheet parameters. The parameter table is contained in the data cahier.

Roll-bias tests were conducted in Frederick Sound, Alaska at 57° 02' 30" N and 134° 06' 30" W on April 18, 1995 (DN 108) and April 19, 1995 (DN 109). A patch test was also conducted in Frederick Sound, Alaska at 57° 08' 45" N and 133° 38' 30" W on April 20, 1995 (DN 110).

The gyro bias was determined to be 2.5° West. This was based on several measurements to visual ranges and sun azimuths taken prior to the beginning of the survey and after the survey was completed. The value of -2.5 was entered into the parameter table and was applied to all datasets

Tide Correctors ✓

Juneau, Alaska tide station (945-2210) served as control for datum for determination at all subordinate stations for this project.

Predicted tides for the project were provided on diskette by N/CG241 for the Juneau, Alaska reference station (945-2210).

Tidal correctors as provided in the project instructions for this sheet are:

Time Correction		Height Correction	
<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
0.00	0.00	-1.1	-0.1

Tidal correctors were generated using TIDEGEN using the above correctors.

RAINIER personnel installed 8200 digital gages at Windham Bay (945-1962) and Good Island (945-1909) on April 10, 1995 and at The Brothers (945-1785) on April 11, 1995. The staff was connected to five benchmarks at each station during all level runs. Opening levels were conducted on April 10, 1995 at Windham Bay and on April 12, 1995 at Good Island and The Brothers.

Closing levels were conducted at Windham Bay (945-1962) on April 26, 1995. On April 16, 1995, at 1610 UTC, the Windham Bay tide gage stopped recording the data. The problem was discovered and resolved on April 18 at 2042 UTC. Otherwise, all tide gages operated continuously during data acquisition.

The station descriptions, field tide records, and Preliminary Field Tide Notes (Appendix V) have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. The final tide package will be forwarded to N/OES212 at the end of the project. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. *Approved Tide Note dated August 29, 1995 is attached.*

H. CONTROL STATIONS *See Eval Rpt., Section H.*

A listing of the geodetic stations used to control this survey is included in ~~Appendix III~~ of this report. The horizontal datum for this project is NAD83.

DGPS stations were installed on existing stations INDX, WIND and KAN. Station INDX is located on top of Five Fingers Light House, and station WIND is located on top of Windham Bay Light, which is located on a small islet south of Point Windham. Station KAN is located on a prominent point in the northern section of Gambier Bay. These stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM.

For further information see the "Spring 1995 Horizontal Control Report" that will be submitted at the end of the project.

I. HYDROGRAPHIC POSITION CONTROL *✓ See Eval Rpt., Section I.*

Method of Position Control

All soundings were positioned using differential GPS. The serial numbers for the Ashtech GPS equipment is listed below:

ITEM	SERIAL NUMBER
Ashtech GPS Sensor	700417B1205
TAD VHF Transceiver, MD-150	53968

⁶
* Filed with the hydrographic data

Ashtech GPS ✓

VHF differential shore stations were established at stations INDX, WIND and KAN. The difference between the computed location and the published positions at stations WIND and KAN were recorded by the MONITOR 3.0 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. Scatterplot results are included in the "Project related data for OPR-O136-RA". The scatterplot results for station INDX were obtained in the Spring 1993 Project. The area around station INDX remains undeveloped, and the geography unchanged.

Calibrations & Systems Check Methods ✓

System checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two independent DGPS base stations. The results were transferred to forms which are included in the project data for OPR-O136-RA. An abstract of the system checks and the applicable system checks are included in the data cahier.*

Problems ✓

None

J. SHORELINE ✓

There was no shoreline in the survey area covered by the swath system. Shoreline was addressed in the HDAPS survey in the common area (H-10593A). *Shoreline was drawn on the autocad plot - H-10593 A+B.*

K. CROSSLINES ✓

Crosslines are within 1-2 meter parameter agreement with mainscheme hydrography except in areas of complex bathymetry. Total mileage was 26.1 nautical miles or 10.8% of total mainscheme hydrography.

L. JUNCTIONS ✓

This survey junctions with surveys H-10470 (1:10,000, 1993) at the eastern limit, H-10175 (1:20,000, 1985) at the northwest limit, H-10468 (1:10,000, 1993) at the southeast limit, H-10594 (1:10,000, 1995) at the northwest corner of the survey, H-10595 (1:10,000, 1995) at the southwest corner of the survey, and H-10601A and H-10601B (1:20,000, 1995) to the south.

Filed with the hydrographic data.

This survey also junctions with H-10593A (1:20,000 1995 HDAPS) within the common area. Soundings were found to be in general agreement. Final comparison will be made at Pacific Hydrographic Section (PHS). *See Envr Report, section L*

M. COMPARISON WITH PRIOR SURVEYS ✓

One prior survey was compared: H-1996, 1:80,000, 1889, USCGS. Soundings from the prior survey were in general agreement with the present survey. This survey achieved essentially 100% coverage of the bottom. There were no instances where prior survey soundings were shoaler in a corresponding area. *See Envr Report, section M.*

N. ITEM INVESTIGATIONS ✓

One AWOIS item was assigned to H-10593B. This item investigation was addressed in the descriptive report for H-10593A. *Concur*

O. COMPARISON WITH THE CHART ✓

This survey was compared to NOS chart 17360, 29th Edition, July 9, 1994, 1:217,828, (NAD83), and charted soundings were found to be in general agreement.

Non-sounding charted features are discussed in Section J, Shoreline. Final comparisons to made at PHS. *See Envr Report, section O.*

Dangers to Navigation ✓

No dangers to navigation were within the limits of survey H-10593B. *Concur*

P. ADEQUACY OF SURVEY ✓

Survey H-10593B is complete and adequate to supersede charted depths and features in their common areas. *CONCUR*

Q. AIDS TO NAVIGATION ✓

None.

R. STATISTICS ✓

NM Hydrography 299.4
Velocity Casts 3
Detached Positions 0
Selected Soundings N/A
Bottom Samples 0
Tide Stations 3
NM² Hydrography 50

S. MISCELLANEOUS ✓

There is a charted underwater cable crossing within the limits of this survey. This item was not investigated and therefore it should remain as charted. *Comment*

No unusual tidal currents were experienced within the sheet limits.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

None

U. REFERRAL TO REPORTS ✓

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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Spring 1995 Horizontal Control Report for OPR-O136-RA.	May 1995	N/CG245
Spring 1995 Coast Pilot Report for OPR-O136-RA.	May 1995	N/CG245
Project related data for OPR-O136-RA.	Incremental	N/CG245

Respectfully Submitted,



Mark S. Larsen
Lieutenant, NOAA

Approved and Forwarded,



Dean R. Seidel
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 4 May 1995 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
100	F	057:33:42.067	133:32:35.861	19	250	0.0	0.0	0.0	04/03/95	WINDHAM BAY LIGHT (GPS STATION)
101	F	057:16:13.398	133:37:53.480	30	250	0.0	0.0	0.0	04/03/95	INDX(GPS STATION) 1993
102	F	057:20:37.036	133:50:16.968	6	250	0.0	0.0	0.0	04/12/95	KAN 1924(GPS STATION)

APPROVAL SHEET

for

H-10593B

RA-20-2-95

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.



Dean R. Seidel
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

ORIGINAL

DATE: August 29, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-0136

HYDROGRAPHIC SHEET: H-10593B

LOCALITY: 5 Nautical Miles Southeast of Point Hugh, Stephens
Passage, Alaska

TIME PERIOD: April 21 - May 3, 1995

TIDE STATION USED: 945-1962 Windham Bay, Stephens Passage, AK
Lat. $57^{\circ} 32.6'N$ Lon. $133^{\circ} 29.9'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -5.95 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.4 ft.

REMARKS: RECOMMENDED ZONING

1. South of $57^{\circ} 30.0'N$, times are direct and apply a x0.99 range ratio to heights using Windham Bay, AK (945-1962).
2. North of $57^{\circ} 30.0'N$, times and heights are direct using Windham Bay, AK (945-1962).

Notes: 1. Times are tabulated in Greenwich Mean Time.

2. Data for Windham Bay, AK (945-1962) are temporarily stored in file #745-1962.


CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 17360, 17362 B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K											
	ALASKA (title)	X		X								
LEAGUE, POINT	X		X									2
STEPHENS PASSAGE	X		X									3
												4
												5
												6
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												22
												23
												24
												25

Approved:

William C. Coy
Chief Geographer

JAN 18 1996

HYDROGRAPHIC SURVEY STATISTICS

H-10593B

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES				1	

SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	VERIFICATION	EVALUATION	TOTALS	
POSITIONS ON SHEET				
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	291		291	
COMPARISON WITH PRIOR SURVEYS AND CHARTS				
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		20	20	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	291	20	311

Pre-processing Examination by LT P. Haines	Beginning Date 5/18/95	Ending Date 5/18/95
Verification of Field Data by G. Nelson, E. Domingo, J. Stringham	Time (Hours) 291	Ending Date 4/8/96
Verification Check by R. Davies	Time (Hours) 5	Ending Date 2/21/96
Evaluation and Analysis by R. Davies	Time (Hours) 20	Ending Date 4/8/96
Inspection by B. Olmstead	Time (Hours) 13	Ending Date 5/6/96

**EVALUATION REPORT
H-10593B**

A. PROJECT

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

B. AREA SURVEYED

This survey was conducted in Southern Stephens Passage, Alaska, and is situated five nautical miles southeast of Point Hugh. Depths range from 62 to 367 meters. The bottom consists primarily of mud and pebbles.

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 Multibeam Support Vax system; the Hydrographic Processing System (HPS) and AutoCad, Versions 12 and 13.

At the time of the survey certification the format for the transmission of digital data had not been finally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot, created with the .dbf data and enhanced using the AutoCad system, is filed both in the AutoCad drawing format, i.e., .dwg; and in the more universally recognized graphics transfer format, .dxf. Copies of these data files will be retained at PHS until data transfer protocols are developed and approved. All multibeam merge files (full resolution format), selected soundings files and support files will also be retained at PHS.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic name text, line-type, 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. 75.

The field sheet parameters have been revised to center the hydrography on the office plot. Data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used on survey H-10593B.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

Predicted tides for Juneau, Alaska were used for the reduction of soundings during field processing. Approved hourly heights zoned direct from Windham Bay, Stephens Passage, gage 945-1962, was used during office processing. Soundings have been corrected for dynamic draft, actual tides and sound velocity. The offset values and velocity correctors are adequate.

H. CONTROL STATIONS

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

The position of the horizontal control station used during hydrography is a published value based on NAD 83. The smooth sheet is annotated with a NAD 27 adjustment tick based on values determined with 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: -1.224 seconds (-37.865 meters)
Longitude: 6.214 seconds (103.214 meters)

The year of establishment of the control station originates 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 7.5 was computed for survey operations. No positions exceeded the limits in terms of horizontal dilution of precision (HDOP). NAD 83 is used as the horizontal datum for plotting and position computations.

J. SHORELINE

There is no shoreline common to the present survey.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10593B junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10175	1985	1:20,000	Northwest
H-10468	1993	1:10,000	Southeast
H-10470	1993	1:10,000	Northeast
H-10593A	1995	1:10,000	Three areas
H-10594	1995	1:10,000	West
H-10595	1995	1:10,000	West
H-10601A	1995	1:20,000	South
H-10601B	1995	1:20,000	South

The junction with surveys H-10594, H-10595, H-10593A, H-10601A and H-10601B are complete. H-10593A is comprised of three specific areas that fall within H-10593B. These areas are listed in section B of the Evaluators Report and cover those areas too shallow for multibeam operations. Sounding agreement within these areas and the limits of multibeam coverage is satisfactory.

The junction with surveys H-10175, H-10468 and H-10470 were not formally completed since these surveys were previously processed and forwarded for charting. Soundings are in good agreement.

M. COMPARISON WITH PRIOR SURVEYS

H-1996(1889-92) 1:80,000

Survey H-1996 covers the entire area of the present survey. Present survey depths are generally shoaler with an average difference of 5.0 meters (2.7 fathom). There appears to be no consistent pattern of shoaling or an increase in depths. These differences can be attributed to greater sounding coverage and the relative accuracy of the data acquisition techniques. All critical depths originating from the prior survey was adequately addressed during survey operations.

Survey H-10593B is adequate to supersede the prior survey within the common area.

N. ITEM INVESTIGATIONS

One AWOIS Item originating from miscellaneous sources was investigated during survey operations. Discussion and disposition of this item has been adequately addressed in the hydrographer's report for survey H-10593A.

O. COMPARISON WITH CHART

Survey H-10593B was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
17360	29th	July 9, 1994	1:217,828	NAD 83
17362	9th	May 5, 1990	1:40,000	NAD 83

a. Hydrography

Charted hydrography originates with the prior survey mentioned in section M. The prior survey is discussed in section M and requires no further discussion.

Survey H-10593B is adequate to supersede charted hydrography within the common area.

b. Dangers to Navigation

There were no dangers to navigation found during survey operations or office processing.

P. ADEQUACY OF SURVEY

Hydrography is adequate:

- a. delineate the bottom configuration, determine least depth, and draw the standard curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigations; 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, the Field Procedures Manual, April 1994 Edition and the Standing Bathymetric Mapping Project Instructions, dated February 11, 1991.

Q. AIDS TO NAVIGATION

There are no floating aids or fixed aids to navigation located within the survey area.

There are no charted landmarks or features of landmark value within the survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information is found in the hydrographer's report. There were no additional miscellaneous items noted during office processing.

T. RECOMMENDATIONS

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

U. REFERRAL TO REPORTS

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

for Bruce A. Olmstead
C.R. Davies
Cartographer

APPROVAL SHEET
H-10593B

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

Bruce A. Olmstead Date: 5/6/96
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 Simmons, CDR NOAA Date: 5/14/96
Kathy Simmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: July 3, 1996
Andrew A. Armstrong III
Captain, NOAA
Chief Hydrographic Surveys Division

