H-10601 A&B

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-20-3-95

Office No. H-10601A

LOCALITY

State Alaska

General Locality Southern Stephens Passage

Locality 5 NM East of False Pybus Point

1995

CHIEF OF PARTY
CAPT Dean R. Seidel, NOAA

☆U.S. GOV. PRINTING OFFICE: 1980—786-230

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10601A

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-20-3-95

State: Alaska

General locality: Southern Stephens Passage

Locality: 5 NM East of False Pybus Point

Scale: 1:20,000 Date of survey: May 1-13, 1995

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

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

Chief of party: CAPT Dean R. Seidel, NOAA

Surveyed by: CAPT D.Seidel, LT D.Haines, LT M. Larsen, ENS N. Bennett, ST J. Jacobson, ST B. Roraback

Soundings taken by echo sounder, ~~hand lead, pole~~: DSF6000N

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: J. Stringham, E. Domingo

Soundings in ~~fathoms feet~~ Meters & Decimeters at ~~MLW~~ MLLW

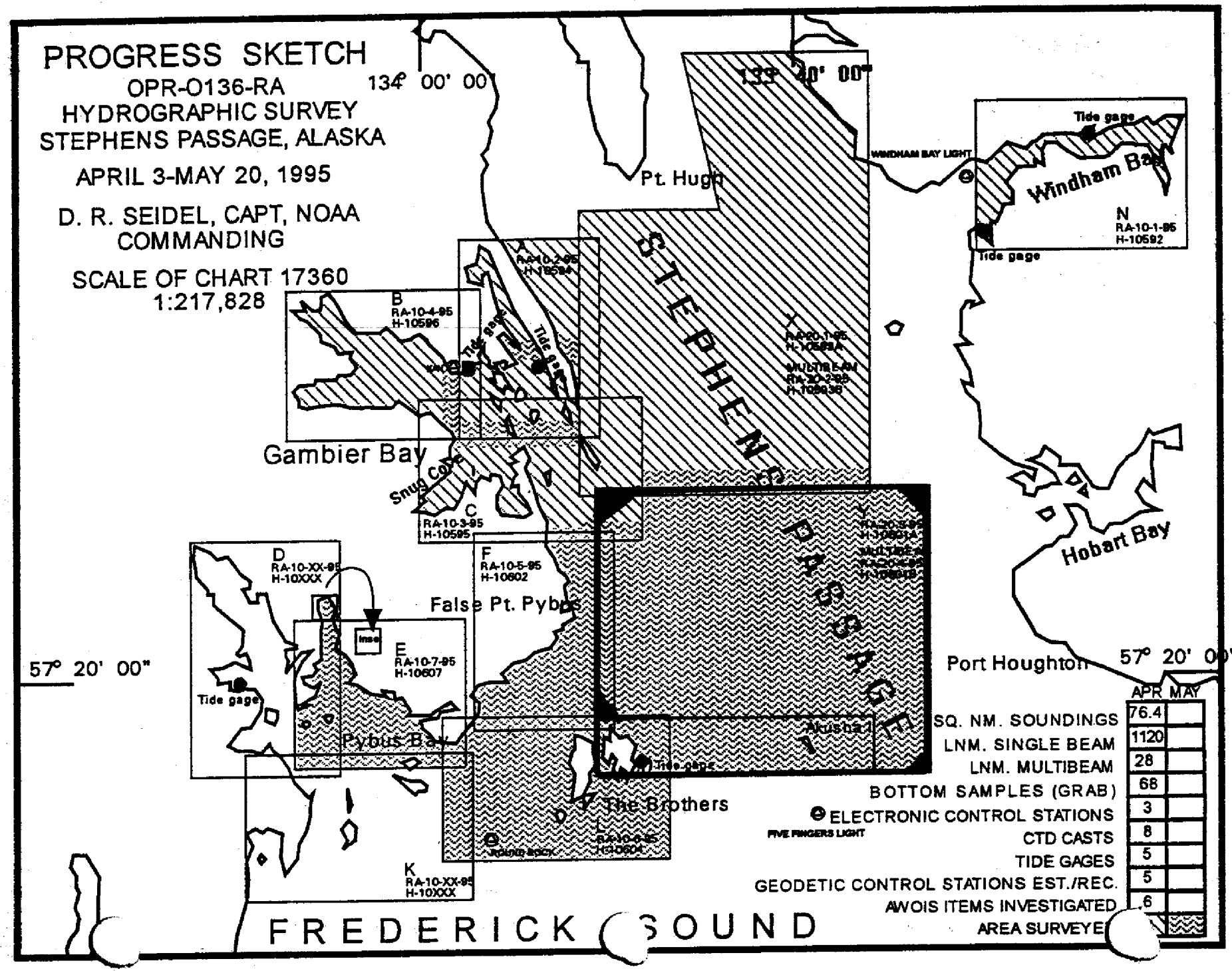
REMARKS: Time in UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.

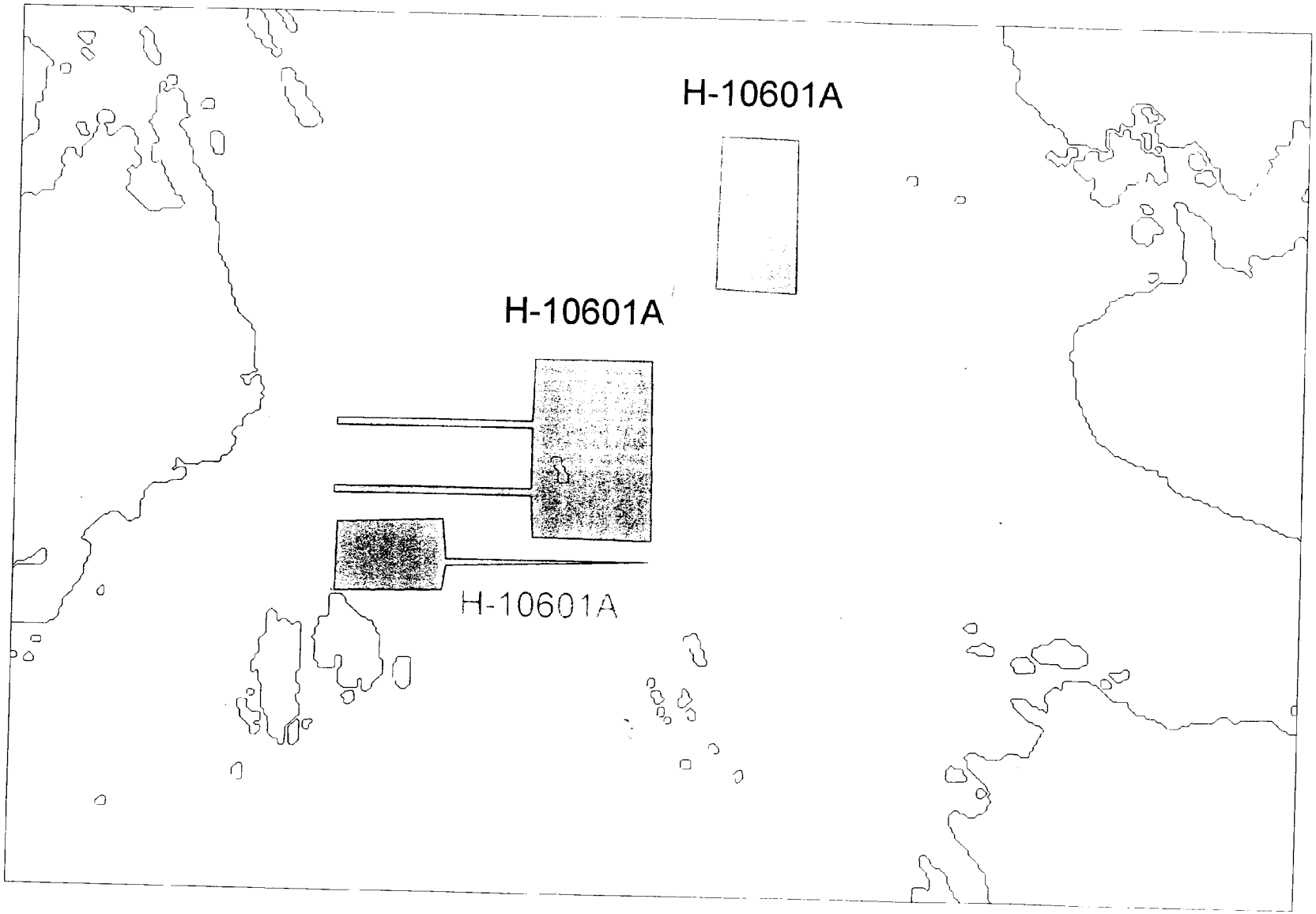
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

JUN 24 1996 AWOIS and SURF 6/96 RWD

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 482-007/41219


PROGRESS SKETCH
OPR-O136-RA
HYDROGRAPHIC SURVEY
STEPHENS PASSAGE, ALASKA
APRIL 3-MAY 20, 1995
D. R. SEIDEL, CAPT, NOAA
COMMANDING
SCALE OF CHART 17360
1:217,828
134° 00' 00"
133° 40' 00"
57° 20' 00"
Pt. Hugh
STEPHENS PASSAGE
Windham Bay
WINDHAM BAY LIGHT
Tide gage
N
RA-10-1-95
H-10592
Gambier Bay
Snug Cove
B
RA-10-4-95
H-10596
C
RA-10-3-95
H-10595
A
RA-10-2-95
H-10594
MULTIBEAM
RA-20-2-95
H-10593B
F
RA-10-5-95
H-10602
D
RA-10-XX-95
H-10XXX
E
RA-10-7-95
H-10607
K
RA-10-XX-95
H-10XXX
False Pt. Pybus
Pybus Bay
Hobart Bay
Port Houghton
Akusha I.
The Brothers
FIVE FINGERS LIGHT
FREDERICK SOUND
APR MAY
SQ. NM. SOUNDINGS 76.4
LNM. SINGLE BEAM 1120
LNM. MULTIBEAM 28
BOTTOM SAMPLES (GRAB) 68
ELECTRONIC CONTROL STATIONS 3
CTD CASTS 8
TIDE GAGES 5
GEODETIC CONTROL STATIONS EST./REC. 5
AWOIS ITEMS INVESTIGATED 6
AREA SURVEYED


H-10601A
H-10601A
H-10601A

Descriptive Report to Accompany Hydrographic Survey H-10601A

Field Number RA-20-3-95
Scale 1:20,000
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-10601A corresponds to "sheet Y" as defined in the Project Instructions. This survey is the second 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 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 Form Report, section B

The survey area is located in Southern Stephens Passage. The survey's eastern limit is bounded by 133°33.5'W, and the western limit bounded by 133°39.8'W. The northern limit is bounded by 57°25.5'N, and the southern limit is 57°19.0'N. The two surveys H-10601A and H-10601B are plotted together, labeled H-10601A+B.

C. SURVEY VESSELS ✓

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

Vessel	EDP #	Operation
RAINIER	2120	Bottom Samples Sound Velocity Casts

Vessel	EDP #	Operation
RA-3	2123	Hydrography
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Sound Velocity Bottom Samples

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 Y. 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
5	6	122	57° 22.6' N 133° 44.4' W	494.0	121-133
6	6	122	57°22.6' N 133° 44.4' W	494.0	121-133

The ship used velocity table 6 and the launches used velocity tables 5 and 6. 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 2123-2125 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 2123-2125 were collected in Shilshole Bay, Washington in the Spring of 1995. The data for RAINIER were collected during the Southern Alaska Peninsula project (OPR-P180) 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 3-5 correspond to the number of the vessel, offset table 1 is used for 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 ✓

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

Tidal correctors that were applied to the predicted tides at Juneau, as listed in table 2 of the West Coast of North and South America Tide tables for this sheet are:

Time Correction		Height Correction	
High	Low	High	Low
-0:21	-0:17	-0.8	-0.1

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

RAINIER personnel installed an 8200 digital gage at The Brothers (945-1785) on April 11, 1995. The staff was connected to five benchmarks at during both opening and closing level runs. Opening levels were completed on April 12, 1995. The tide gage operated continuously during data acquisition. Closing levels were completed on May 17, 1995. During closing levels the difference in elevation agreed to within 0.002m. The difference between opening and closing levels was 0.006m. The sections that exceeded 0.003m between opening and closing levels, staff to 1785B and 1785D to 1785E, were re-run and closed within 0.000m.

The station descriptions, field tide records, and Field Tide Notes (Appendix V)* have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. Approved Tide Note dated August 25, 1995 is attached.

H. CONTROL STATIONS ✓ See Evel 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.

* Filed with the hydrographic data.

DGPS stations were installed on existing stations INDX, ROUND ROCK and KAN. Station INDX is located on top of Five Fingers Light House, and station ROUND ROCK is located on a small islet southwest of West Brother. 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 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, ROUND ROCK and KAN. The difference between the computed location and the published positions at stations ROUND ROCK 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.
One ship to launch calibration with offsets was performed. 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".*

* Filed with the hydrographic data

Problems ✓

None

J. SHORELINE ✓ See Evl Rpt, Section J.

Shoreline map (T-sheet) DM-10029 were supplied by N/CG24 in paper and Standard Digital Data Exchange Format (SDDEF). The digital files were projected using OPR-0136 geodetic parameters using program Shore (update 2/6/95), provided by N/CG24, and stored in HYPACK (*.DIG) format. Shoreline was plotted at survey scale on boat sheets and processing sheets.

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.

Shoreline and DM 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 DM. 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 DM when deemed necessary. The annotated photocopies of the DM and the reference forms are included with the survey data.

DPs taken during shoreline verification were recorded and described on the DP forms* included in a binded folder with the survey. These indicate DM features and features not found on the DM. Where possible, positions of some DM 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 DM 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. Changes to features along the shoreline were revised by the hydrographer as warranted and shown on the smooth sheet corrected for approved tides. There were no changes to the mean high water line.

Changes and New Features ✓

Several changes were found and are depicted on the final field plot. DM islets and rocks were often identified as high points of new ledges or reefs. Concur

* Filed with the hydrographic data.

Disprovals ✓

None.

Recommendations ✓

The hydrographer recommends that changes from this survey be used to supersede prior shoreline information compiled on DM-10029. concur

Charted Features

The charted rock south of Sail Island was identified as a reef.
1. This change is due to chart scale. Retain rock as charted.

K. CROSSLINES ✓

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Total mileage was 7.2 nautical miles or 8.1 % of total mainscheme hydrography.

L. JUNCTIONS ✓ See Eval Rpt, section L.

This survey junctions as follows:

Survey	Scale	Year	Junction Limit
H-10595	1:10,000	1995	Northwest Corner
~~H-10593A~~	~~1:20,000~~	~~1995~~	~~North Limit~~
H-10593B	1:20,000	1995	North Limit
H-10468	1:10,000	1993	Northeast Corner
H-10463	1:10,000	1993	East Limit
H-10459	1:10,000	1993	Southeast Corner
H-10462	1:10,000	1993	South Limit
H-10604	1:10,000	1995	Southwest Corner
H-10602	1:10,000	1995	West Limit

This survey also junctions with Hydrochart II survey H-10601B (1:20,000 1995) within the common area. Soundings were found to be in general agreement. Final comparison will be made at the Pacific Hydrographic Section (PHS). See Eval Report, section L.

M. COMPARISON WITH PRIOR SURVEYS See Eval Rpt, Section M

Charted soundings originated from USC&GS prior survey H-1996 (1:80,000, 1889). Due to a

higher density of sounding data , many least depths were found to be shoaler. Preliminary comparisons revealed no prior least depths shoaler than the current survey. Final comparisons will be done at PHS. See Final Report, section M.

N. ITEM INVESTIGATIONS ✓

No AWOIS items were investigated. 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. See Final Report, section O.

Dangers to Navigation

Two dangers to navigation within the limits of H-10601A were reported to the Seventeenth Coast Guard District, May 29th, 1995. Copies of the correspondence can be found in ~~Appendix I of~~ this report.

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

Survey H-10601A is complete and adequate to supersede charted depths and features in their common areas. Concur

Q. AIDS TO NAVIGATION ✓

There was one floating aid to navigation on H-10601A. It was positioned using detached positions from two GPS stations. A summary is provided in ~~Appendix VI~~. this report.

R. STATISTICS

NM Hydrography	245.2
Velocity Casts	1
Detached Positions	11
Selected Soundings	5301
Bottom Samples	27
Tide Stations	1
NM^2 Hydrography	9.2

S. MISCELLANEOUS

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

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.

Strong tidal currents (maximum 2 knots) were experienced north of Sail Island.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS

None

U. REFERRAL TO REPORTS

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

Title	Date Sent	Office
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,

Natalie G. Bennett
Ensign, NOAA

Approved and Forwarded,

Dean R. Seidel
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 18 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~~	~~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	INOX(GPS STATION),1993
102	F	057:28:37.836	133:58:16.968	6	250	0.0	0.0	04/12/95	KAN 1924(GPS STATION)
~~103~~	~~F~~	~~057:15:35.178~~	~~133:56:12.978~~	~~21~~	~~250~~	~~0.0~~	~~0.0~~	~~05/09/95~~	~~ROUND ROCK(GPS STATION)~~

Section Q: Descriptive Report Insert

Name of Aid: McDonald Rock Buoy
Light List #: 23590
Pos. # 3373 Method of Positioning: 3rd Order Hydro

Positioning Info

	Latitude N	Longitude W
Charted Pos.	57°25.1	133°37.8
Survey Pos.	57°25.1	133°37.8
	Easting	Northing
Charted Pos.	57210.5	46592.5
Survey Pos.	57183.6	46624.0

Difference between Survey/Charted position: 0 m 0 deg T
Note: Positions round to same value with Light List significant digits.

Characteristics
Do Characteristics Match Light List? (y/n) y
If NO, what are the characteristics?

New/Uncharted Aids (if info is known or easily obtained)
Date Established:
Maintained By: Private (y/n)
Frequency of Maintenance:
Purpose:

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

May 30, 1995

ADVANCE INFORMATION

Director
DMAHTC
ATTN: MCNM
6500 Brookes lane
Washington, DC 20315-0030

Dear Sir:

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

Sincerely,

Dean R. Seidel
Captain, NOAA
Commanding Officer

Enclosures

PHS Copy

:
:
P 300336Z MAY 95
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS

ADVANCE
INFORMATION

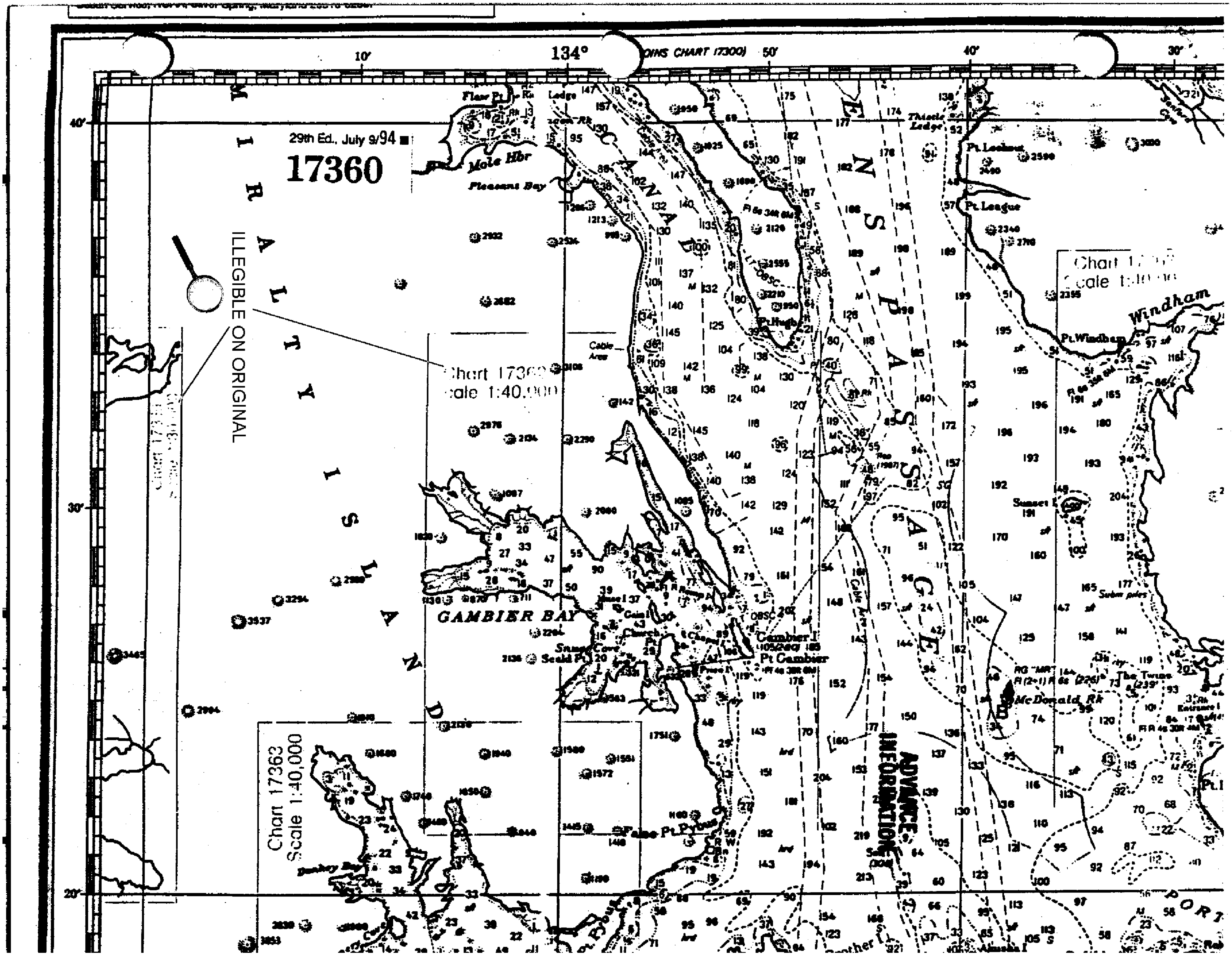
NOAA SHIP RAINIER HAS LOCATED 2 DANGERS TO NAVIGATION IN SOUTHERN STEPHENS PASSAGE, ALASKA (PROJECT OPR-0136-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10601. THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

CHART AFFECTED: 17360 29TH ED JUL 9/94 1:217,828 (NAD83)

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	DEPTH	LATITUDE	LONGITUDE	Depth	Fix
A.	SHOAL	COVERS 6 1/4 fms	57/22/12.1N	133/42/35.6W	11.6m	5765+2
B.	SHOAL	COVERS 3 1/4 fms	57/24/59.8N	133/37/48.8W	6.0m	3365+2

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


29th Ed., July 9/94
17360
ILLEGIBLE ON ORIGINAL
ADMIRALTY ISLAND
STEPHENS PASSAGE
CANAL
GAMBIER BAY
ADVANCE INFORMATION
Chart 17363
Scale 1:40,000
Chart 17362
Scale 1:40,000
Pt. Windham
Windham
Pt. League
Pt. Hugh
Gambier I
Pt Gambier
McDonald Rk
The Twins
Sunset I
Mole Hbr
Pleasant Bay
Flaw Pt
Snug Cove
Church Pt
Scald Pt
False Pt Pybus
Dunbar Bay
Thistle Ledge
Cable Area
Sewer poles
134°
10′
40′
30′
20′
50′

APPROVAL SHEET

for

H-10601A

RA-20-3-95

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

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: August 25, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-0136

HYDROGRAPHIC SHEET: H-10601A

LOCALITY: 5 Nautical Miles East of False Pybus Point, Stephens Passage, Alaska

TIME PERIOD: May 1 - 13, 1995

TIDE STATION USED: 945-1785 The Brothers, Stephens Passage, AK
Lat. 57° 17.7'N Lon. 133° 47.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -3.04 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.0 ft.

REMARKS: RECOMMENDED ZONING

1. South of 57° 20.0'N, times and heights are direct on The Brothers, AK (945-1785).
2. North of 57° 20.0'N and south of 57° 23.0'N, times are direct and apply a x1.01 range ratio to The Brothers, AK (945-1785).
3. North of 57° 23.0'N, times are direct and apply a x1.02 range ratio to The Brothers, AK (945-1785).

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

2. Data for The Brothers, AK (945-1785) are temporarily stored in files #745-1785.

William M. Hubbs

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10601

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 17360, 17362, 17363	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							1
McDONALD ROCK	X		X							2
SAIL ISLAND	X		X							3
STEPHENS PASSAGE	X		X							4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Curtis Colby					20
					Chief Geographer					21
					FEB 23 1996					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER
H-10601A

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): Chart 17362 9th ED , 17360 29th ED

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
Selected Sndgs	*VERIFICATION*	*EVALUATION*	*TOTALS*
[redacted]ON SHEET			5301
OSITIONS REVISED			
OUNDINGS REVISED			
CONTROL STATIONS REVISED			

	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
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OTHER*			
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Pre-processing Examination by LT P. Haines	*Beginning Date* 6/7/95	*Ending Date* 6/7/95
Verification of Field Data by E. Domingo, G. Nelson	*Time (Hours)* 118	*Ending Date* 4/6/96
Verification Check by R. Davies	*Time (Hours)* 8	*Ending Date* 2/23/96
Evaluation and Analysis by R. Davies	*Time (Hours)* 18	*Ending Date* 4/9/96
Inspection by B. Olmstead	*Time (Hours)* 17	*Ending Date* 4/19/96

EVALUATION REPORT
H-10601A

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 area is centered five nautical miles east of False Pybus Point and includes the following three areas which were too shallow for the multi-beam coverage.

1.) latitude 57/23/42N to latitude 57/26/02N and from longitude 133/36/54W to longitude 133/39/07W
2.) latitude 57/19/44N to latitude 57/22/33N and from longitude 133/40/59W to longitude 133/44/24W
3.) latitude 57/18/57N to latitude 57/19/59N and from longitude 133/46/55W to longitude 133/50/06W.

Depths range from 0 to 432 meters. The bottom consists primarily of sand and mud.

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-10601A.

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 The Brothers, Stephens Passage, gage 945-1785, was used during office processing. Soundings have been corrected for dynamic draft, actual tides and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

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: -1.232 seconds (-38.103 meters)
Longitude: 6.225 seconds (104.076 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 DM-10029, photography dated May 1989, scale 1:20,000 was compiled on NAD 83 and applies to this survey.

Shoreline drawn on the smooth sheet originates from 1:20,000 scale digital file provided by the Coastal Mapping Program. This file has been 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-10601A junctions with the following surveys.

Survey	Year	Scale	Area
H-10459	1993	1:10,000	Southeast
H-10462	1993	1:10,000	South
H-10463	1993	1:10,000	East
H-10468	1993	1:10,000	Northeast
H-10595	1995	1:10,000	Northwest
H-10593B	1995	1:20,000	North
H-10601B	1995	1:20,000	All areas
H-10602	1995	1:10,000	West
H-10604	1995	1:10,000	Southwest

The junction with surveys H-10595, H-10593B, H-10601B, H-10602 and H-10604 are complete. The junction with surveys H-10459, H-10462, H-10463 and H-10468 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
T-3805(1925) 1:20,000

Survey H-1996 covers the entire area of the present survey. Comparison with the present

survey generally reveals differences of 5 meters (2.7 fathoms) between survey depths. There appears to be no consistent pattern of shoaling or an increase of depths. These differences can be attributed to greater sounding coverage and relative accuracy of the data acquisition techniques. All critical depths originating from the prior survey were adequately addressed during survey operations.

Prior shoreline map T-3805 covers the shoreline of Sail Island and vicinity. The shoreline between the two surveys show excellent agreement.

Survey H-10601A is adequate to supersede the prior surveys within the common area.

H-4143A WD(1921) 1:40,000

Wire-drag survey H-4143A covers the entire area of the present survey. Two hang depths, 6.5 and 9 fathom (11.8 and 16.4 meters) at latitude 57/22/12N, longitude 133/42/20W and latitude 57/21/27N, longitude 134/42/57W, are superseded by a 11.8 and 16.4 meters (6.4 and 8.9 fathoms) depths on the present survey at latitude 57/22/12.5N, longitude 133/42/35.4W and latitude 57/21/20.7N, longitude 133/42/58.5W.

N. ITEM INVESTIGATIONS

There are no AWOIS items within the survey area.

O. COMPARISON WITH CHART

Survey H-10601A was compared with the following charts.

Chart	Edition	Date	Scale	Datum
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-10601A is adequate to supersede charted hydrography within the common area.

b. Dangers to Navigation

Two dangers to navigation were reported to the USCG, DMAHTC and N/CS 261 on May 30, 1995. A copy of the report is attached. No additional dangers to navigation were found during 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 is one floating aid to navigation located within the survey area. It was located and serves its intended purpose. There are no fixed aids to navigation within the survey area.

There are no charted landmarks or features that would be 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.

Charles R. Davies

C.R. Davies
Cartographer

APPROVAL SHEET
H-10601A

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: 4/17/96
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 Timmons Date: 4/26/96
Kathy Timmons
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

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10601B

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-20-4-95

State: Alaska

General locality: Southern Stephens Passage

Locality: 5 NM East of False Pybus Point

Scale: 1:20,000 Date of survey: May 2-13, 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, pole~~: Multibeam Hydro Chart II

Graphic record scaled by: RAINIER PERSONNEL

Graphic record checked by: RAINIER PERSONNEL

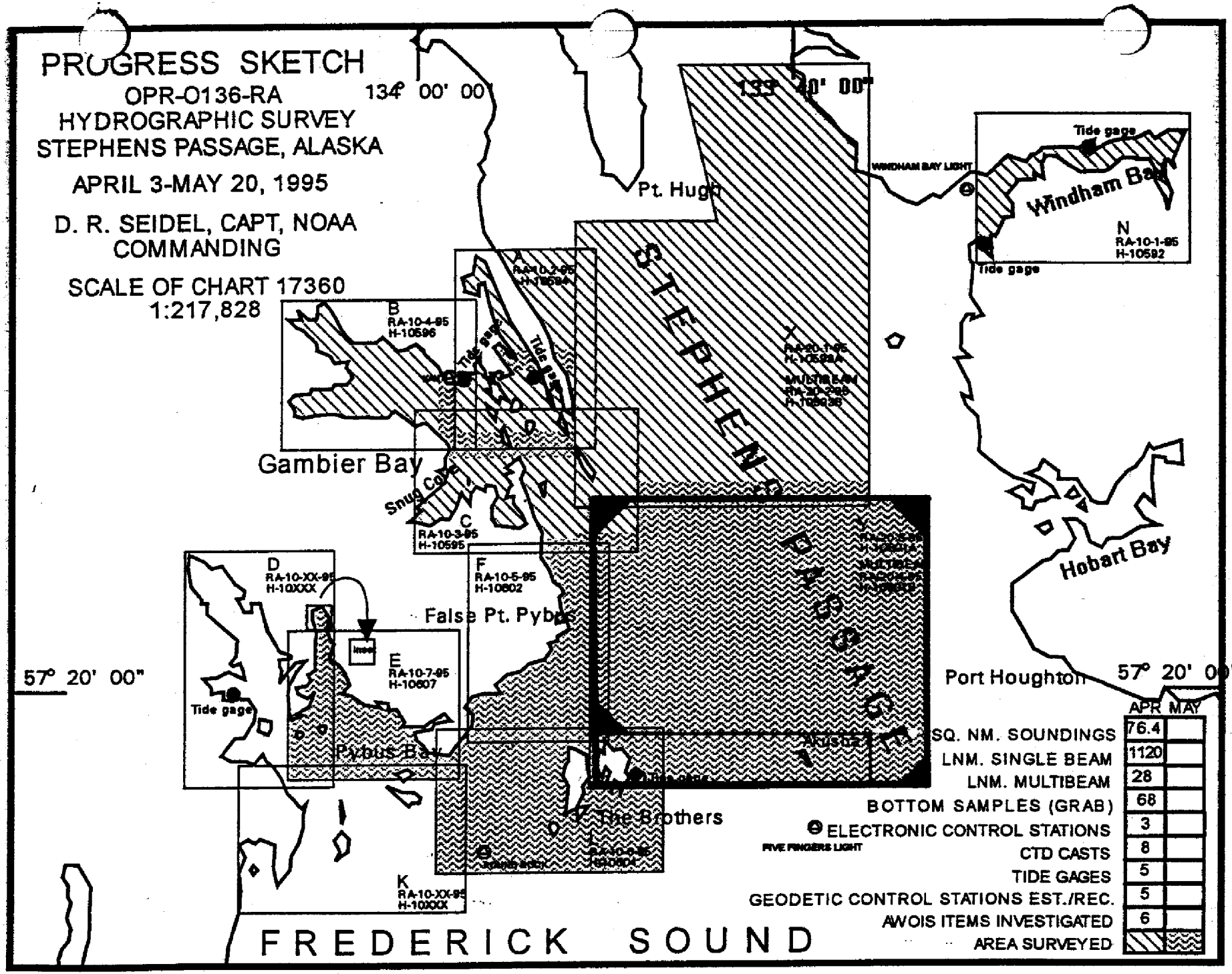
Evaluation by: R. Davies Automated plot by: HP Design Jet 650C

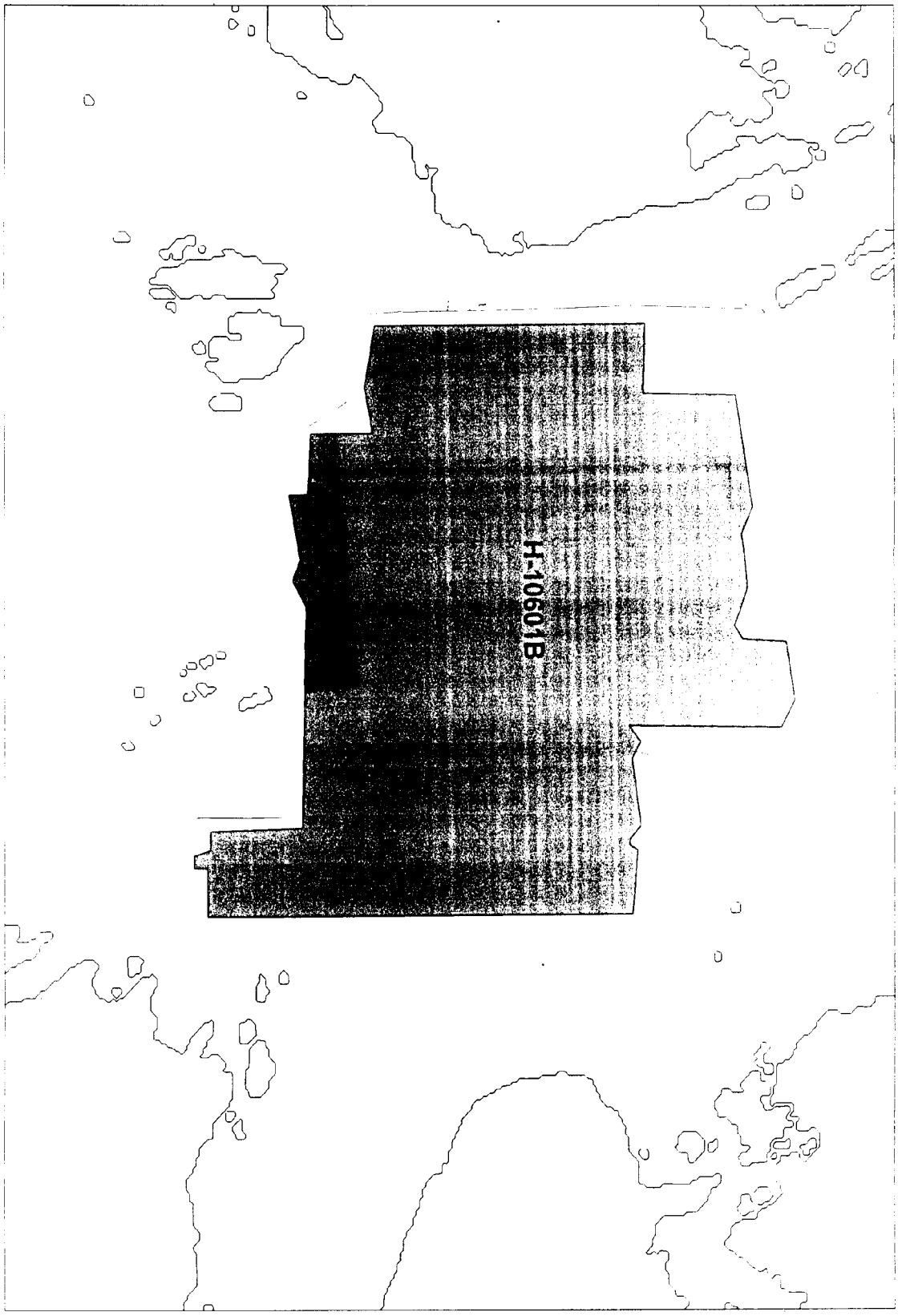
Verification by: G. Nelson, J. Stringham, E. Domingo

Soundings in Meters & Decimeters 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-O136-RA
HYDROGRAPHIC SURVEY
STEPHENS PASSAGE, ALASKA
APRIL 3-MAY 20, 1995
D. R. SEIDEL, CAPT, NOAA
COMMANDING
SCALE OF CHART 17360
1:217,828
134° 00' 00"
133° 40' 00"
57° 20' 00"
Pt. Hugh
STEPHENS PASSAGE
Windham Bay
WINDHAM BAY LIGHT
Tide gage
N
RA-10-1-95
H-10592
B
RA-10-4-95
H-10596
Gambier Bay
Snug Cove
C
RA-10-3-95
H-10595
D
RA-10-XX-95
H-10XXX
F
RA-10-5-95
H-10602
False Pt. Pybus
Hobart Bay
E
RA-10-7-95
H-10607
Pybus Bay
Port Houghton
Tide gage
The Brothers
K
RA-10-XX-95
H-10XXX
FIVE FINGERS LIGHT
FREDERICK SOUND
APR MAY
SQ. NM. SOUNDINGS 76.4
LNM. SINGLE BEAM 1120
LNM. MULTIBEAM 28
BOTTOM SAMPLES (GRAB) 68
ELECTRONIC CONTROL STATIONS 3
CTD CASTS 8
TIDE GAGES 5
GEODETIC CONTROL STATIONS EST./REC. 5
AWOIS ITEMS INVESTIGATED 6
AREA SURVEYED


H-10601B

Descriptive Report to Accompany Hydrographic Survey H-10601B

Field Number RA-20-4-95
Scale 1:20,000
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. In addition, the bathymetric survey operations were conducted in accordance with the Standing Bathymetric Instructions, dated November 22, 1989.

Survey H-10601B corresponds to "sheet Y" as defined in the Project Instructions. This survey is the second hydrographic survey that was conducted using the HydroChart II system. Dual beam hydrography was used during this survey in the area too shallow for RAINIER to safely operate.

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 Rpt, Section B

The survey area is located in Southern Stephens Passage. The survey's eastern limit is bounded by 133° 37.0'W, and the western limit bounded by 133° 38.8'W. The northern limit is bounded by 57°25.5'N, and the southern limit is 57° 17.5'N.
Survey H-10601A and H-10601B have been plotted together, labeled H-10601A&B

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 Y. 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:

DAS EQUIPMENT

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

DAS EQUIPMENT

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:

DPS EQUIPMENT

DEC VAX Station 4000-90 (DPS)

TTi 8212 Tape Drive

DEC Monitor

BRUNING 36 in. Plotter

Problems

Due to reduced beam widths over rapidly rising shoal depths, 100% coverage* was not achieved at locations 57°19.5'N, 133°40.3'W and 57°19.5'N, 133°42.5'W. Three artifacts appear over very steep areas on the contour plot at locations 57°19.5'N, 133°42.5'W, 57°22.7'N, 133°47.4'W and 57°22.8'N, 133°45.4'W. The erroneous data producing these artifacts was filtered out during post processing. Due to time constraints, the final plots do not reflect these changes. *These two areas were adequately surveyed as part of H-10601.

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
6	122	57° 23' N 133° 44' W	380	121-127
7	128	57° 21' N 133° 47' W	530	128-133
8	133	57°21'N 133°44W	500	

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 number 6 (DN 122) and closing cast 8 (DN 133) to determine the magnitude of the change that occurred in the sound velocity profile before the survey was started and after it was complete. Cast 8 was a closing cast used for comparison only. It was not used for data collection. The results showed that the maximum difference in depth was 0.8 meters in 480 meters of water (0.2%). The maximum cross track difference was 0.17 meters in 132 meters of water (0.13 %). Both of these are considered to be in reasonable agreement.

Static Draft ✓

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

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 HDSSS 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 in the vicinity of 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 in the vicinity of 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 ✓

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

Tidal correctors that were applied to the predicted tides at Juneau, as listed in table 2 of the West Coast of North and South America Tide tables for this sheet are:

Time Correction		Height Correction	
High	Low	High	Low
-0:21	-0:17	-0.8	-0.1

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

RAINIER personnel installed an 8200 digital gage at The Brothers (945-1785) on April 11, 1995. The staff was connected to five benchmarks at during both opening and closing level runs. Opening levels were completed on April 12, 1995. The tide gage operated continuously during data acquisition. Closing levels were completed on May 17, 1995. During closing levels the difference in elevation agreed to within 0.002m. The difference between opening and closing levels was 0.006m. The sections that exceeded 0.003m

* Filed with the hydrographic data.

between opening and closing levels, staff to 1785B and 1785D to 1785E, were re-run and closed within 0.000m.

The station descriptions, field tide records, and Field Tide Notes (Appendix V)* have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. Approved Tide Note dated August 25, 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, ROUND ROCK and KAN. Station INDX is located on top of Five Fingers Light House, and station ROUND ROCK is located on a small islet southwest of West Brother. 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

* Filed with the hydrographic data

Ashtech GPS ✓

VHF differential shore stations were established at stations INDX, ROUND ROCK and KAN. The difference between the computed location and the published positions at stations ROUND ROCK 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. One ship to launch calibration with offsets was performed. 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 ✓

There was no shoreline in the survey area covered by the swath system. Shoreline was addressed in the dual beam survey in the common area (H-10601A). Concur

K. CROSSLINES ✓

Crosslines are within 1-2 meter parameter agreement with mainscheme hydrography except in areas of complex bathymetry. Total mileage was 21.3 nautical miles or 9.4% of total mainscheme hydrography.

L. JUNCTIONS ✓

This survey junctions as follows:

* Filed with the hydrographic data.

Survey	Scale	Year	Junction Limit
H-10595	1:10,000	1995	Northwest Corner
H-10593B	1:20,000	1995	North Limit
H-10468	1:10,000	1993	Northeast Corner
H-10463	1:10,000	1993	East Limit
H-10459	1:10,000	1993	Southeast Corner
H-10462	1:10,000	1993	South Limit
H-10604	1:10,000	1995	Southwest Corner
H-10602	1:10,000	1995	West Limit

This survey also junctions with H-10601A (1:20,000 1995 HDAPS) within the common area. Soundings were found to be in general agreement. Final comparison will be made at the Pacific Hydrographic Section (PHS). See Eval Report, section L.

M. COMPARISON WITH PRIOR SURVEYS ✓

Charted soundings originated from USC&GS prior survey H-1996 (1:80,000, 1889). Due to a higher density of sounding data, many least depths were found to be shoaler. Preliminary comparisons revealed no prior least depths shoaler than the current survey. Final comparisons will be done at PHS. See Eval Report, section M

N. ITEM INVESTIGATIONS ✓

No AWOIS items. 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 Eval Report, section O.

Dangers to Navigation ✓

Two dangers to navigation are discussed in the descriptive report for dual beam survey H-10601A. Concur

P. ADEQUACY OF SURVEY See Eval Rpt, section P

Survey H-10601B is complete and adequate to supersede charted depths and features in

their common areas. concur

Q. AIDS TO NAVIGATION ✓

Structured Bouy "MR" marks McDonald Rock. This aid to navigation is discussed in the descriptive report for survey H-10601A. Concur

R. STATISTICS ✓

NM Hydrography	294.1
Velocity Casts	3
Selected Soundings	N/A
Tide Stations	1
NM^2 Hydrography	47.1

S. MISCELLANEOUS ✓

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

Tidal currents (2 knot maximum) were experienced north of Sail Island. Tidal currents flood in a generally north direction and ebb in a generally south direction.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

None

U. REFERRAL TO REPORTS ✓

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

Title	Date Sent	Office
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
Spring 1995 Secchi Disk Report for OPR-0136-RA	May 1995	N/CG245
Project related data for OPR-O136-RA.	Incremental	N/CG245

Respectfully Submitted,

Natalie G. Bennett
Ensign, NOAA

Approved and Forwarded,

Dean R. Seidel
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 18 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~~		~~04/03/95~~	~~WINDHAM BAY LIGHT(GPS STATION)~~
101	F	057:16:13.390	133:37:53.480	30	250	0.0	0.0		04/03/95	INOX(GPS STATION),1993
102	F	057:28:37.836	133:58:16.968	6	250	0.0	0.0		04/12/95	KAM 1924(GPS STATION)
~~103~~	~~F~~	~~057:15:35.178~~	~~133:56:12.978~~	~~21~~	~~250~~	~~0.0~~	~~0.0~~		~~05/09/95~~	~~ROUND ROCK(GPS STATION)~~

APPROVAL SHEET

for

H-10601B

RA-20-4-95

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 25, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-0136

HYDROGRAPHIC SHEET: H-10601B

LOCALITY: 5 Nautical Miles East of False Pybus Point, Stephens Passage, Alaska

TIME PERIOD: May 2 - 13, 1995

TIDE STATION USED: 945-1785 The Brothers, Stephens Passage, AK
Lat. 57° 17.7'N Lon. 133° 47.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -3.04 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.0 ft.

REMARKS: RECOMMENDED ZONING

1. South of 57° 20.0'N, times and heights are direct on The Brothers, AK (945-1785).
2. North of 57° 20.0'N and south of 57° 23.0'N, times are direct and apply a x1.01 range ratio to The Brothers, AK (945-1785).
3. North of 57° 23.0'N, times are direct and apply a x1.02 range ratio to The Brothers, AK (945-1785).

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

2. Data for The Brothers, AK (945-1785) are temporarily stored in files #745-1785.

William M. Hubbard

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-10601

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 17360, 17362, 17383	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							1
McDONALD ROCK	X		X							2
SAIL ISLAND	X		X							3
STEPHENS PASSAGE	X		X							4
										5
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										8
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					Approved:					18
										19
					Curtis Colby					20
					Chief Geographer					21
					FEB 23 1996					22
										23
										24
										25

COPY

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10601B

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 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	118		118
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		18	18
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	118	18	18

Pre-processing Examination by LT P. Haines	*Beginning Date* 6/7/95	*Ending Date* 6/7/95
Verification of Field Data by E. Domingo, G. Nelson	*Time (Hours)* 118	*Ending Date* 4/6/96
Verification Check by R. Davies	*Time (Hours)* 8	*Ending Date* 2/23/96
Evaluation and Analysis by R. Davies	*Time (Hours)* 18	*Ending Date* 4/9/96
Inspection by B. Olmstead	*Time (Hours)* 17	*Ending Date* 4/19/96

EVALUATION REPORT
H-10601B

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. Depths range from 17.1 to 434 meters. The bottom consists primarily of mud and sand.

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-10601B.

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 The Brothers, Stephens Passage, gage 945-1785, were 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: -1.232 seconds (-38.103 meters)
Longitude: 6.225 seconds (104.076 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 3.75 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 shown on the smooth sheet falls within the survey coverage for H-10601A and has been discussed in that report. There is no shoreline common to H-10601B.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10601B junctions with the following surveys.

Survey	Year	Scale	Area
H-10459	1993	1:10,000	Southeast
H-10462	1993	1:10,000	South
H-10463	1993	1:10,000	East
H-10468	1993	1:10,000	Northeast
H-10595	1995	1:10,000	Northwest
H-10593B	1995	1:20,000	North
H-10601A	1995	1:20,000	All areas
H-10602	1995	1:10,000	West
H-10604	1995	1:10,000	Southwest

The junction with surveys H-10595, H-10593B, H-10601A, H-10602 and H-10604 are complete. The junction with surveysH-10459, H-10462,H-10463 and H-10468 were not formally completed since these surveys were previously processed and forwarded for charting. Soundings are in good agreement.

H-10601A is comprised of three specific areas that fall within H-10601B. 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.

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). These differences can be attributed to greater sounding coverage, relative accuracy of the data acquisition techniques and natural accretion and erosional processes. All critical depths originating from the prior survey was adequately addressed during survey operations.

Survey H-10601B is adequate to supersede the prior survey within the common area.

N. ITEM INVESTIGATIONS

There were no AWOIS Items assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10601B was compared with the following charts.

Chart	Edition	Date	Scale	Datum
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-10601B is adequate to supersede the charted hydrography within the common area.

b. Dangers to Navigation

Two dangers to navigation were submitted as part of survey H-10601A. Correspondence concerning these dangers is attached to that descriptive report. There were no dangers reported as part of H-10601B.

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 that would be of landmark value within the

survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous items have been discussed 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-10601B

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: 4/25/96
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 Date: 4/26/96
Kathy Simmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

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

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10601B

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
17362	4-18-96	Russ Davis	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application
			Drawing No. of sndgs from smooth sheet
17360	6-21-96	Russ Davis	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application
			Drawing No. of sndgs from smooth sheet
17363	6-25-96	Russ Davis	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs from smooth sheet.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED