

H10604

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. RA-10-6-95
Registry No. H-10604

LOCALITY

State Alaska
General Locality Southern Stephens Passage
Sublocality The Brothers and Vicinity

1995

CHIEF OF PARTY
CAPT Dean R. Seidel, NOAA

LIBRARY & ARCHIVES

DATE JUN 12 1996

HYDROGRAPHIC TITLE SHEET

H-10604

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

FIELD NO.

RA-10-6-95

State Alaska

General locality Southern Stephens Passage

Locality The Brothers and Vicinity

Scale 1:10,000 Date of survey May 3 - 18, 1995

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

Vessel NOAA Ship RAINIER(2120), (2122), (2123), (2124), (2125), (2126)

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by CAPT D. Seidel, LT D. Haines, LT M. Larsen, ENS S. Maenner, ENS E. Christensen, ENS N. Bennett, CST F. Paranada, ST J. Jacobson, STB. Roraback, ST R. Baum

Soundings taken by echo sounder, ^{Dive} DSF-6000N, MOD III Diver Depth Gauge, Pneumatic Gauge

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

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

Verification by C.R. Davies

Soundings in meters & decimeters at MLLW

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

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

JUN 12 1996

AWOL and SURF ✓ 2nd 6/96

PROGRESS SKETCH

OPR-0136-RA
 HYDROGRAPHIC SURVEY
 STEPHENS PASSAGE, ALASKA

APRIL 3-MAY 20, 1995

D. R. SEIDEL, CAPT, NOAA
 COMMANDING

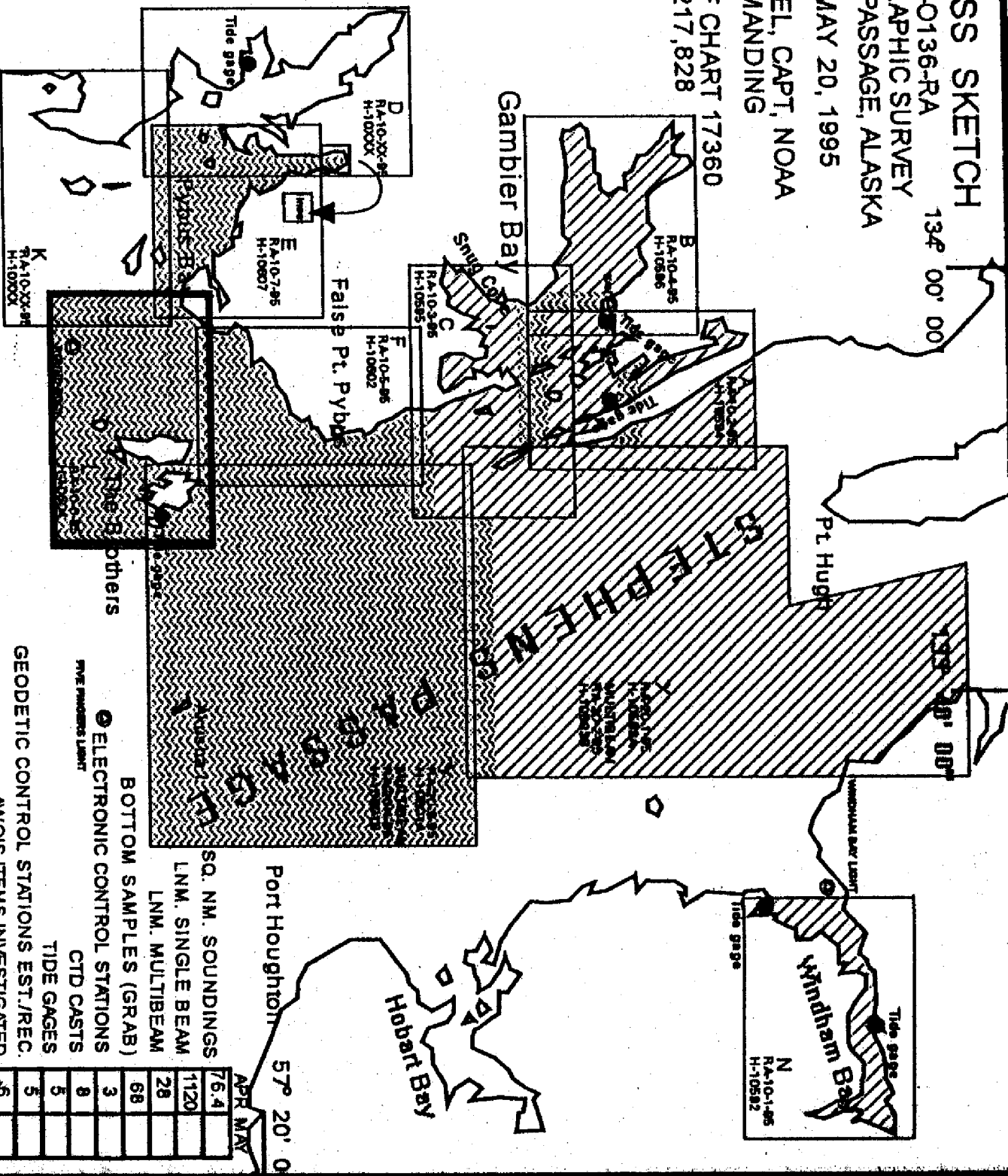
SCALE OF CHART 17360
 1:217,828

57° 20' 00"

134° 00' 00"

132° 30' 00"

57° 20' 00"



FREDERICK SOUND

● ELECTRONIC CONTROL STATIONS
 ○ FIVE POUND LIGHT

● BOTTOM SAMPLES (GRAB)
 ○ GEODETIC CONTROL STATIONS EST./REC.
 ○ AVOIS ITEMS INVESTIGATED
 ○ AREA SURVEYED

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

APR	MAY
76.4	
1120	
28	
68	
3	
8	
5	
5	
5	
5	

Port Houghton

Hobart Bay

Windham Bay

Pt. Hugh

Gambier Bay

Tide gage

Tide gage

Tide gage

False Pt. Pydra

others

Descriptive Report to Accompany Hydrographic Survey H-10604

Field Number RA-10-6-95

Scale 1:10,000

May 1995

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed in the vicinity of The Brothers, Stephens Passage, Alaska, as specified by Project Instructions OPR-O136-RA dated February 13, 1995, and change no. 1 dated March 28, 1995.

Survey H-10604 corresponds to "sheet L" as defined in the Project Instructions.

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 in the vicinity of The Brothers, Southern Stephens Passage, Alaska. The survey's eastern limit is bounded by 133°46.5'W. The western limit is bounded by 133°57.3'W. The survey's northern limit is bounded by 57°19.0'N. The southern limit is bounded by 57°15.0'N.

C. SURVEY VESSELS ✓

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

<u>Vessel</u>	<u>EDP #</u>	<u>Operation</u>
RAINIER	2120	Sound Velocity Cast Bottom Samples
RA-2	2122	Hydrography Shoreline Verification

<u>Vessel</u>	<u>EDP #</u>	<u>Operation</u>
RA-3	2123	Hydrography
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Bottom Samples Shoreline Verification
RA-6	2126	Hydrography Shoreline Verification

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

Data were acquired on RA-2 using Coastal Oceanographics' HYPACK, v 5.2, with the following program updates.

<u>HYPACK Program Name</u>	<u>Version</u>	<u>Date Installed</u>
HYSPEED.EXE	3/24/95	4/1/95
IOTEST.EXE	3/17/95	4/1/95

Processing was conducted using the HDAPS HP system. HYPACK (DOS) files were translated to a PC-DAS format using a Visual Basic program, B1.6 (installed 5/3/95), provided by N/CG24. The files were then loaded into HDAPS and processed in the same manner as PC-DAS data.

In addition, GPSINIT.BAT(5/19/94), was used to initialize the Ashtech GPS receiver.

Velocity corrections were determined using:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
VELOCITY	2.11	5 Mar 1995

* Filed with the hydrographic data

E. SONAR EQUIPMENT ✓

Sonar equipment was not used to acquire data for H-10604.

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.

G. CORRECTIONS TO ECHO SOUNDINGS

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

<u>Velocity Table #</u>	<u>Cast#</u>	<u>DN</u>	<u>Cast Position</u>	<u>Deepest Depth (m)</u>	<u>Applicable DN</u>
5	6	122	57°22.6'N	494	121-132 <i>outside survey area</i>
6	6	122	133°44.4' W " "	494	121-132 (Ship)
7	8	133	57°21.2'N 133°44.5'W	600	133-138 <i>outside survey area</i>

The sound velocity cast was 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 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 RAINIER and vessels 2122-2126 in the spring of 1995. These values were entered into the offset tables* for each vessel.

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 March of 1995, and for

Filed with the survey data.

2122 in Windham Bay, Alaska in April 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 2-6 correspond to the number of the vessel. 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". *Offset and layback were applied for RA-2 for hydrography, but not for shoreline verification. Corrections were applied on-line based on CMG. Horizontal corrections were not applied for the HDAPS launches.

Heave ✓

The launches are not equipped with heave, pitch and roll sensors.

Bar Check ✓

Bar check lines were calibrated by RAINIER personnel during the winter inport 1994-1995. Calibration forms are included with project and 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 for Port Houghton 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:

	<u>Time Correction</u>	<u>Height Correction</u>
High Water	-0:21	-0.8 ft
Low Water	-0:17	-0.1 ft

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 The Brothers (945-1785) on April 11, 1995 and Cannery Cove (945-1781) on May 2, 1995. The staff was connected to five benchmarks at each station during all level runs. Opening levels were completed at The Brothers on April 12, 1995 and Cannery Wharf on May 2, 1995. Both tide gages operated continuously during data acquisition. Closing levels were completed at The

* Filed with the hydrographic data.

Brothers and Cannery Cove on May 17, 1994. During closing levels at Cannery Cove, the difference in elevation agreed to within 0.001m. The difference between opening and closing levels was 0.006m. The section that exceeded 0.003m between opening and closing levels, staff to 1781B, was re-run and closed to within 0.001m. During closing levels at The Brothers, 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 to within 0.000m.

The station descriptions, field tide records, and Final Field Tide Notes (Appendix V)* have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. The final tide package has been forwarded to N/OES212. 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 Etbl Rpt., section 4.*

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 Etbl 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

* Filed with the hydrographic data

in the "Project related data for OPR-O136-RA". The scatterplot results for station INDX were obtained in the Spring 1993 Project. Personnel familiar with the INDX site noted no changes in structures or topography.

Calibrations & Systems Check Methods ✓

System checks were performed in accordance with Section 3.4.4 of the FPM. Two launches recorded their positions from two independent DGPS base stations. A systems check was performed with RAINIER and RA-3 (2123) in the davits on DN 130 and used offsets measured by RAINIER personnel. RAINIER was only used for bottom samples during survey H-10604. 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.*

Shoreline map (T-sheet) DM-10030 were supplied by N/CG24 in paper and Standard Digital Data Exchange Format (SDDEF). The digital files were projected using OPR-O136 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 and was provided in digital form to the HYPACK boats. ✓

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. ✓

Detached positions were not taken on DM shoreline and features when the DM position was accurate. These features were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:10,000 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 on the master printouts* and on the DP forms*. These indicate significant DM features and features not found on the DM. Where possible, positions of some DM features were verified during inshore mainscheme ✓

* Filed with the hydrographic data

hydrography and annotated on the master printouts.*

Detailed 1:10,000 "Bottom Sample and Detached Position Plots" are provided showing all DPs, reference numbers, and notes relating to each feature. The information from these plots was transferred to a final field plot where possible. Where such information would interfere with the legibility of the final plot the appropriate cartographic symbol has been transferred, but height and position number information remains on the rough plot, which serves as an overlay (FPM 6.1.2.5). Verified DM features were retained and shown in black. Changes to the shoreline features were shown in red, and new features are depicted in black. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and are corrected to predicted MLLW. *Field values have been changed after application of approved tides and shown on the smooth sheet. There was one minor revision to the mean high water line.*
Changes and New Features

Several changes and new features 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*

17360 A DM rock in the vicinity of 57° 16' 26.0" N, 133° 51' 04.5" W was not verified during shoreline verification. 50 m line spacing was conducted in the vicinity and a least depth of 16.4 m was found at the location of the rock. The hydrographer doubts the existence of the DM rock but recommends that the rock be retained on the DM until the item can be investigated.

Concur, chart rock at the above position.

Disprovals ✓

A DM rock in the vicinity of 57° 17' 25.8" N 133° 49' 00.9" W was searched for and not found (Pos. #10006). Depths in the vicinity are approximately 4 m, water visibility 2 m. A 50 m search radius was conducted at or below MLLW. This area has a high kelp concentration. The hydrographer recommends deleting the DM rock at 57° 17' 25.8" N 133° 49' 00.9" W. *Concur, Two rocks were located at lat. 57/17/24 N, long. 133/49/04 W and lat. 57/17/27 N, 133/49/03 W.*

17360 A DM rock in the vicinity of 57° 18' 42.5" N 133° 56' 38.7" W was searched for and not found (Pos. #5603, #5612). Depths in the vicinity are approximately 4 m, water visibility 3 m. A 50 m search radius was conducted at or below MLLW. A new rock (Pos. #5602) was found at 57° 18' 41.9" N 133° 56' 38.8" W. This area has a high kelp concentration. The hydrographer recommends deleting the DM rock at 57° 18' 42.5" N 133° 56' 38.7" W and charting the rock at pos # 5602, above.

Recommendations ✓

The hydrographer recommends that the shoreline changes from this survey be used to supersede prior shoreline information compiled on DM-10030. *Concur*

Charted Features

A charted rock (Pos. #3201) at latitude $57^{\circ} 56' 4.8''$ ^{16' 54.2"}N, longitude $133^{\circ} 52' 3.0''$ ^{33.0"}W was not found during shoreline verification. A 100m area search radius was conducted at or below MLLW with a water visibility of 3m. The average water depth was 50m. The area is free of kelp. The hydrographer recommends deleting the charted rock at $57^{\circ} 56' 4.8''$ ^{16' 54.2"}N $133^{\circ} 52' 3.0''$ ^{33.0"}W. Rock is likely part of a ledge that plots approximately 180 meters to the northeast. Chart area based on current survey data. *Concur*

A charted rock (Pos. #10835) at latitude $57^{\circ} 17' 04.0''$ N, longitude $133^{\circ} 49' 19.9''$ W was not found during shoreline verification. A 25m area search radius was conducted at or below MLLW with a water visibility of 2m. The average water depth was 31m. *Delete charted rock*
Rock is likely part of shoal area that plots approximately 180 meters to the east. Chart area based on current survey data.

A charted piling at latitude $57^{\circ} 18' 54.0''$ N $133^{\circ} 56' 37.1''$ W was not identified during shoreline verification. A 50 m radius search radius was conducted at or below MLLW with a water visibility of 3 m. The average water depth was 6m. The hydrographer recommends deleting the charted piling symbol. *Do not concur, pile was brought down from prior survey T-3804. Chart pile as submerged. There was an indication that this feature still exists.*

A foul area is charted south of East Brother Island in the vicinity of $57^{\circ} 16' 45''$ N $133^{\circ} 49' 16''$ W. Due to the scale of NOS chart 17360, the hydrographer recommends retaining the foul area. *Concur*

All other charted rocks were either identified as new rocks, DM rocks, high points or extensions of ledges and reefs. *Concur*

K. CROSSLINES ✓

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 27.8 nautical miles, representing 7.3% of the total mainscheme hydrography. While the percent of actually crosslines is below the required 8%, there were numerous instances of crosslines. In order to run perpendicular to the contours of the shore line, many of the main scheme lines that were run in the east-west direction were crossed with north-south lines. In all circumstances the soundings were in general agreement.

L. JUNCTIONS *See Eval Rpt, Sec L.*

This survey junctions with survey H-10289 (1:20,000, 1988) and H-10269⁹⁶ (1:20,000, 1989) at the southern limit. H-10462 (1:10,000, 1993) at the eastern limit. Surveys H-10601B₁ (1:20,000, 1995) and H-10602 (1:10,000, 1995) junction at the northern limit. Survey H-10607 (1:10,000, 1995) junctions at the western limit. Soundings were found to be in general agreement. The final comparisons will be made at Pacific Hydrographic Section (PHS).

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

Charted soundings originated from the following USC&GS prior surveys: H-1996 (1:80,000 1889-1892), H-4143AWD AD.WK (1:40,00, 1921), H-4143WD (1:40,00, 1920) and NOS survey H-10296 (1:20,000 1989).
(Junction survey)

Due to higher density of sounding data, many least depths were found to be shoaler and several new features were located. Preliminary comparisons revealed no prior least depths which were shoaler than the current survey. Final comparisons will be done at PHS. See Eval Rpt.

N. ITEM INVESTIGATIONS ✓

There was one AWOIS Item assigned to H-10604.

AWOIS ITEM 51267

1. Area of Investigation

State: Alaska
Locality: The Brothers, Southern Stephens Passage
Reported Latitude: 57° 16' 58.8" N
Reported Longitude: 133° 56' 42.2" W
Datum: NAD 83
Depth: 47.3 m (25.9 fm)
Feature: Sounding

2. Description of Source Item

The item was originally identified by HOLLAND AMERICA LINE in 1987 at 57°16.0'N, 133°56.6'W at depth of 25.9 fm. A 27.8 fm depth was observed on a different date within 600 m of the item.

3. Survey Requirements

Verify or disprove, determine least depth and position. Echo sounder was the required investigation technique.

4. Method of Investigation

The area was investigated using an echosounder with 25m line spacing.

5. Results of Investigation

Date: DN 138
Time (UT): 173100
Measured Depth: 30.9 m
Draft corrector: 0.6 m
Sound velocity corrector: - 0.7 m
Predicted tide corrector: 0.8 m
Corrected Least Depth: 31.6 m (17 1/4 fm)

Position Number 6425.2
Latitude 57° 17' 01.9" N
Longitude 133° 56' 58.1" W
Datum: NAD 83

6. Comparison with Prior Surveys

The recorded depth for this location from prior survey H-1996 (1:80,000 1889-1892) was 22 fathoms.

7. Comparison with the Chart and Charting Recommendations

The sounding is charted on NOS chart 17360, 21st Edition, July 9, 1994, 1:217,828 (NAD 83) and NOS chart 17363, 11th Edition, April 27, 1991, 1:40,000 as a 26 fm sounding, *Rep (1987)*

Recommendation

The hydrographer recommends that 17 fm be charted at 57° 17' 01.9" N, 133° 56' 58.1" 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 NOS chart 17363, 11th Edition, April 27, 1991, 1:40,000.

There is a charted underwater cable crossing within the limits of H-10604. The cable crossing was not investigated and is shown in brown on the field sheet. The hydrographer recommends retaining the cable crossing as charted.

CONCUR

AWOIS Item #51207, a 9 fm ^{rock} shoal at 57° 15' 59.5"N 133° 56' 41.2"W, was not assigned to H-10604. However, 25 meter survey lines were run over the shoal area. The least depth was 9.4 fm at approximately the same position as Item #51207. This AWOIS item was investigated during 1989 season with a diver least depth. The hydrographer recommends the shoal remain as charted. *confirm, Retain charted 9 RK at the above position*

Round Rock is marked by a fixed aid to navigation discussed in Section Q. The hydrographer recommends adding an islet symbol with blue tint to the chart in addition to the light symbol. *confirm*

A small cove in the southwest corner of West Brother at approximately 57° 16' 45.0"N 133° 51' 10.0"W was not investigated during H-10604. The hydrographer recommends retaining the cove as charted. *confirm*

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 Eval Report*

Dangers to Navigation ✓

Due to the small scale of NOS Chart 17360, there were several shoals not reported as dangers to navigation within the limits of H-10604. All non reported shoals fell within blue shoal areas on NOS Chart 17360.

Six dangers to navigation within the limits of H-10604 were reported to the Seventeenth Coast Guard District, June 11, 1995. Copies of the correspondence can be found in Appendix I of this report. *no other dangers were found in office processing*

P. ADEQUACY OF SURVEY ✓

Survey H-10604 is complete and adequate to supersede charted depths and features in their common areas with the following exceptions:

Retain Cable area as charted and discussed in Section O.
AWOIS #51207 as discussed in section O. *9 RK (16 meters) brought forward from H-10296*

Rock requiring additional investigation as discussed in section J. *chart rak at lat. 57/16/26 N, long. 133/51/04 W*

Cove discussed in section O. *(Retain as charted)*
The subm pile at lat. 57/18/54 N, long. 133/56/39 W (Brought forward from T-3804) ✓

Q. AIDS TO NAVIGATION ✓ *See Eval Rpt., section Q.*

Round Rock Light was positioned to 3rd order in 1989 during project OPR-O358-RA. It

was not repositioned for survey H-10604.

R. STATISTICS ✓

# Selected Soundings	23936
NM Hydrography	590.0
Velocity Casts	2
Detached Positions	96
Bottom Samples	72
Tide Stations	2
NM ² Hydrography	19.7

S. MISCELLANEOUS ✓

An incorrect tide table was applied on DN 128 to data collected by VN 2125. The corrected data does not appear on the final field plots. However, the data sent to PHS on tape is complete and corrected.

Several soundings* in the vicinity of 57°18'46.82"N, 133°56'53.86"W were edited. The echosounder digitized on a large, dense kelp bed. On DN 137, VN 2124 was sent to investigate shoal soundings. Two 50 m search areas were investigated with water visibility of 6m. In both cases the shoal soundings were disproved (Pos. #4779, #4780). These changes do not appear on the final field plots. The data sent to PHS on tape is complete and corrected. *The bathogram reveals strong evidence that shoal soundings may exist. These soundings have been retained on the smooth sheet.*

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.

Tidal currents of 3 knots were observed between The Brothers. The 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	June 1995	N/CG245
Spring 1995 Coast Pilot Report for OPR-O136-RA	June 1995	N/CG245
Spring 1995 Secchi Disk	June 1995	N/CG211
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 10 Mar 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	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	0.0	04/03/95	INDX(GPS STATION), 1993
102	F	057°28'37.836	133°58'16.968	6	250	0.0	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	0.0	05/09/95	ROUND ROCK(GPS STATION), 1971



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

NOAA Ship RAINIER

June 11, 1995

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 six 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



P 300336Z JUN 95
FM NOAA S RAINIER
TO CCGDSEVENTEEN JUNEAU AK
DMAHTCCNAVWARN WASHINGTON DC//MCNM//
INFO NOAMOP SEATTLE WA
ACCT CM-VCAA
BT

UNCLAS

NOAA SHIP RAINIER HAS LOCATED 6 DANGERS TO NAVIGATION IN SOUTHERN STEPHENS PASSAGE, ALASKA (PROJECT OPR-0136-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10604. THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

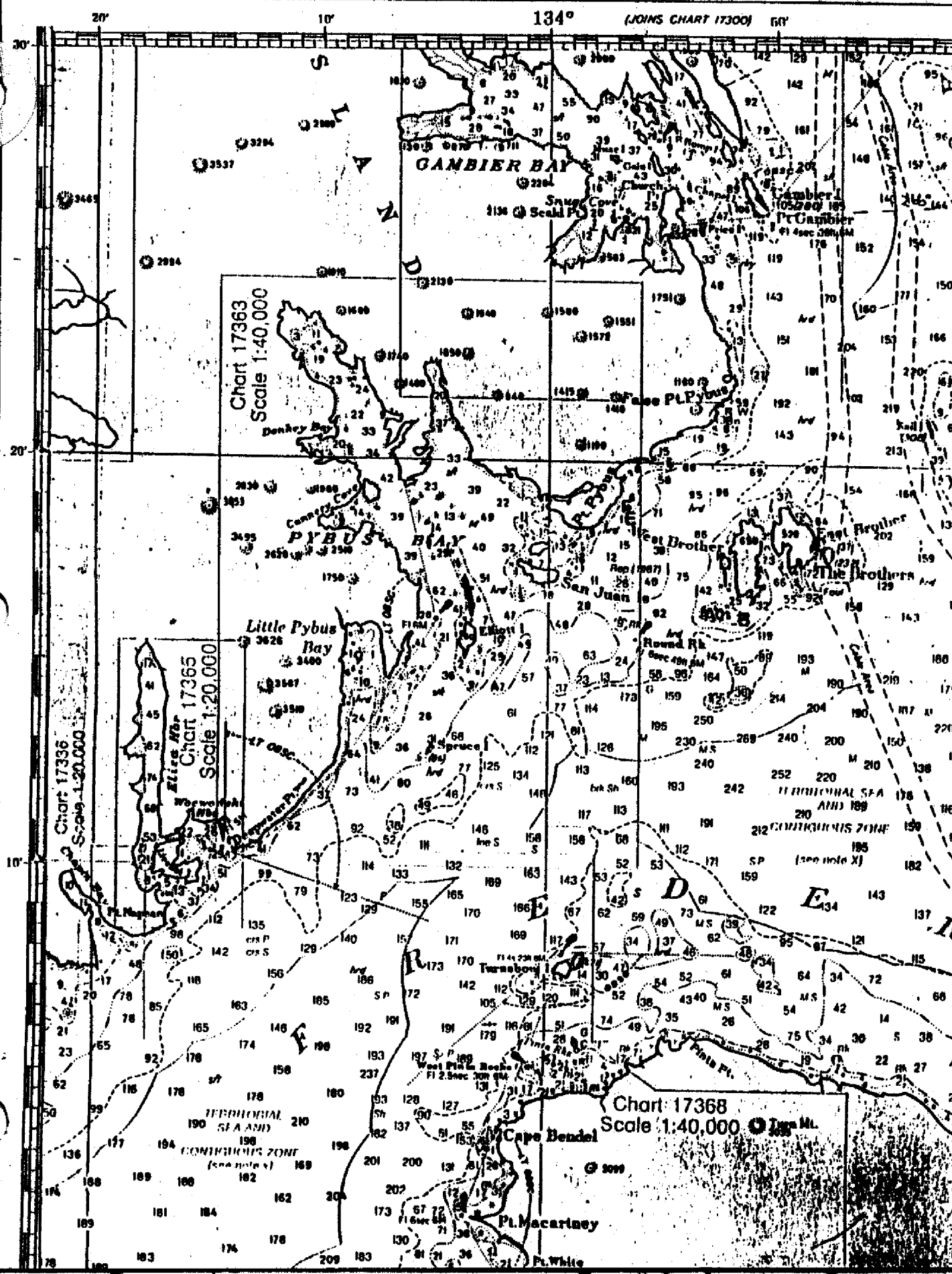
CHART AFFECTED: 17360 29TH ED JUL 9/94 1:217,828 (NAD83)
17363 11TH ED APR 27/91 1:40,000 (NAD83)

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

ITEM	DANGER	DEPTH	LATITUDE	LONGITUDE	DEPTH (m)	FIX
A.	SHOAL	COVERS 7 1/4 fms	57/16/16.8N	133/53/00.7W	13 ⁴	4846+3
B.	SHOAL	COVERS 6 fms	57/16/10.5N	133/51/26.3W	11 ⁰	4892+2
C.	SHOAL	COVERS 4 fms	57/18/04.2N	133/48/05.5W	7 ⁶	4289+1
D.	SHOAL	COVERS 6 3/4 fms	57/17/32.0N	133/52/18.9W	12 ⁶	6252+2
E.	ROCK	UNCOVERS 1 ft	57/18/43.9N	133/56/38.8W	Rk(Q ⁵)	5602+0 ✓
F.	SHOAL	COVERS 1 fm	57/18/49.2N	133/56/48.8W	2 ⁰	4138+4 ✓

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

173



APPROVAL SHEET

for

H-10604

RA-10-6-95

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-10604

LOCALITY: The Brothers & Vicinity, Stephens Passage, Alaska

TIME PERIOD: May 3 - 18, 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.

TIDE STATION USED: 945-0460 Ketchikan, AK
Lat. 55° 20.0'N Lon. 131° 37.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 6.23 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 14.5 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on The Brothers, AK (945-1785).

If data are needed beyond May 18, 1995 at 19:00 GMT, use Ketchikan, AK (945-0460) and apply a +20 minute time correction and a X0.96 ratio to heights.

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

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

William M. Fisher
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

H-10604

Name on Survey	A 1950-1953 1360 1733 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								
BROTHERS, THE (islands)	X		X									2
EAST BROTHER ISLAND	X		X									3
FREDERICK SOUND	X		X									4
ROUND ROCK	X		X									5
STEPHENS PASSAGE	X		X									6
WEST BROTHER ISLAND	X		X									7
												8
												9
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Approved

Charles G. ...

Chief Geographer

JAN 18 1966

HYDROGRAPHIC SURVEY STATISTICS

H-10604

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	2				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA	
SHORELINE MAPS (List):	DM-10030
PHOTOBATHYMETRIC MAPS (List):	NA
NOTES TO THE HYDROGRAPHER (List):	NA
SPECIAL REPORTS (List):	NA
NAUTICAL CHARTS (List):	17360 29th Ed., 17363 11th Ed.

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	VERIFICATION	EVALUATION	TOTALS	
POSITIONS REVIS Selected Soundings			23936	
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	175		175	
COMPARISON WITH PRIOR SURVEYS AND CHARTS				
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		8	8	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	175	8	183

Pre-processing Examination by LT P. Haines	Beginning Date 6/21/95	Ending Date 6/21/95
Verification of Field Data by R. Davies, J. Stringham, D. Doles	Time (Hours) 175	Ending Date 2/21/96
Verification Check by B. Olmstead	Time (Hours) 3	Ending Date 2/26/96
Evaluation and Analysis by R. Davies	Time (Hours) 8	Ending Date 2/29/96
Inspection by B. Olmstead	Time (Hours) 13	Ending Date 3/1/96

**EVALUATION REPORT
H-10604**

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 includes the Brothers and vicinity. Depths range from 0 to 415 meters. The bottom consists primarily of sand 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-10604.

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. 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: -1.221 seconds (-37.771 meters)
Longitude: 6.244 seconds (104.611 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. NAD 83 is used as the horizontal datum for plotting and position computations. 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).

J. SHORELINE

Shoreline map DM-10030 was compiled on NAD 83 and applies to this survey.

The shoreline drawn on the smooth sheet originates from a 1:10,000 scale digital file provided by the Coastal Mapping Program. This file has been merged with the survey file during ACAD processing. Changes along the shoreline and new features in the area were noted on this survey. Some of the islets and rocks depicted on the map were identified in

the field as part of reefs, high points or extensions of the newly located ledges. The previously compiled configuration of ledges and reefs were updated to conform to the present hydrography. There was one revision to the mean high water line at latitude 57/18/18N, longitude 133/48/24W. All revisions have been depicted on the ACAD generated smooth sheet as applicable and are adequate to supersede prior photogrammetric shoreline maps.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10604 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10289	1988	1:20,000	South
H-10296	1989	1:20,000	Southwest
H-10462	1993	1:10,000	East
H-10601A&B	1995	1:10,000	Northeast
H-10602	1995	1:10,000	Northwest
H-10607	1995	1:10,000	West

The junctions with H-10601A&B, H-10602 and H-10607 are complete. Soundings and depth curves within the common area are in good agreement. The junction with H-10289, H-10296, and H-10462 could not be formally completed since these surveys were previously processed and forwarded for charting. Soundings area in good agreement. Soundings have been transferred from H-10289, H-10296 and H-10462 to better portray the bottom in the common areas.

M. COMPARISON WITH PRIOR SURVEYS

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

T-3804 (1920) 1:20,000

FE-240(1982) 1:10,000

Surveys H-1996, T-3804 and FE-240 cover the entire area of the present survey. Present survey depths are generally shoaler with an average difference of 5 meters (2.7 fathoms). These differences can be attributed to greater sounding coverage, relative accuracy of the data acquisition techniques and natural accretion and erosional processes. All features and critical depths originating from the above listed prior surveys were adequately addressed during survey operations, except for the following.

One feature, a pile, originating from prior survey T-3804 at latitude 57/18/54N, longitude 133/56/37W, was not adequately investigated or disproved. There is an indication on the fathogram that this feature still exist. This feature was brought forward from the prior survey as a submerged pile.

A few charted depths originating from H-1996, are suspect as to positioning and depth accuracy. The present survey found similar depths with the 1889-92 prior work within approximately 200 meters. Current hydrography provided sufficient bottom coverage in these areas to disprove the questionable depths at their charted locations. Differences are likely attributed to the relative accuracy of the data acquisition techniques between the present and prior survey. The geographic positions of these prior depths are as follows:

<u>Depth</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
15 fms	57/17/55	133/56/42
19 fms	57/18/03	133/56/57
13 fms	57/15/45	133/56/42

With the exception of the submerged pile, survey H-10604 is adequate to supersede the prior surveys within the common area.

H-4143WD(1920) 1:140,000
H-4143AWD(1921) 1:40,000

The above wire-drag surveys cover the entire area of the present survey. All hangs depths were adequately investigated and should be supersede by this survey.

N. ITEM INVESTIGATIONS

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

There was no requirement to investigate AWOIS Item 51207 (9 Rk) as this feature was adequately addressed during 1989 survey work. (H10296)

O. COMPARISON WITH CHART

Survey H-10604 was compared with the following chart

<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
17363	11th	April 27, 1991	1:40,000	NAD 83

A. Hydrography

Charted hydrography originates with the prior surveys mentioned in section M and miscellaneous sources and requires no further discussion.

Except for the items mentioned in section P of the Hydrographers' Report, survey H-10604 is adequate to supersede charted hydrography within the common area.

b. Dangers to Navigation

Six dangers to navigation were reported to the USCG, DMAHTC and NCG 221 on June 11, 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 are no floating aids to navigation located within the survey area. There is one fixed aid to navigation within the survey area. Round Rock Light was located and serves its intended purpose. There were no charted landmarks in the survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

No additional miscellaneous items were noted during office processing.

T. RECOMMENDATIONS

This is a good hydrographic survey. Additional field work is recommended to investigate the submerged pile, mention in section M and the rock mention in the hydrographers report, section J on a low priority basis.

U. REFERRAL TO REPORTS

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

Charles R. Davies
C.R. Davies
Cartographer

APPROVAL SHEET
H-10604

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 3/1/96
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: 3/11/96
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

