

H-10578

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-10-18-94
Registry No. H-10578

LOCALITY

State Alaska
General Locality Prince William Sound
Sublocality Storey Island and Vicinity

19 94

CHIEF OF PARTY
CAPT Russell C. Arnold, NOAA

LIBRARY & ARCHIVES

DATE FEB 20 1996

H-10578

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-10-18-94

State Alaska

General locality Prince William Sound

Locality Storey Island and Vicinity

Scale 1:10,000 Date of survey Oct. 4 - Nov. 1, 1994

Instructions dated July 25, 1994 Project No. OPR-P125-RA

Vessel 2120 (RAINIER), 2122 (RA-2), 2123 (RA-3), 2124 (RA-4), 2125 (RA-5)

Chief of party CAPT Russell C. Arnold, NOAA

Surveyed by CAPT R. Arnold, LT D. Neander, LT D. Haines, LTJG G. Glover, ENS S. Smith

Soundings taken by echo sounder, hand lead, pole
ENS S. Maenner, ENS J. Becker, SST J. Fleischmann, ST B. Roraback,
ST. B. Judson, ST M. Frost, ST R. Baum DSF-6000N

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by I. Almacen Automated plot by HP Design Jet 650 Plotter

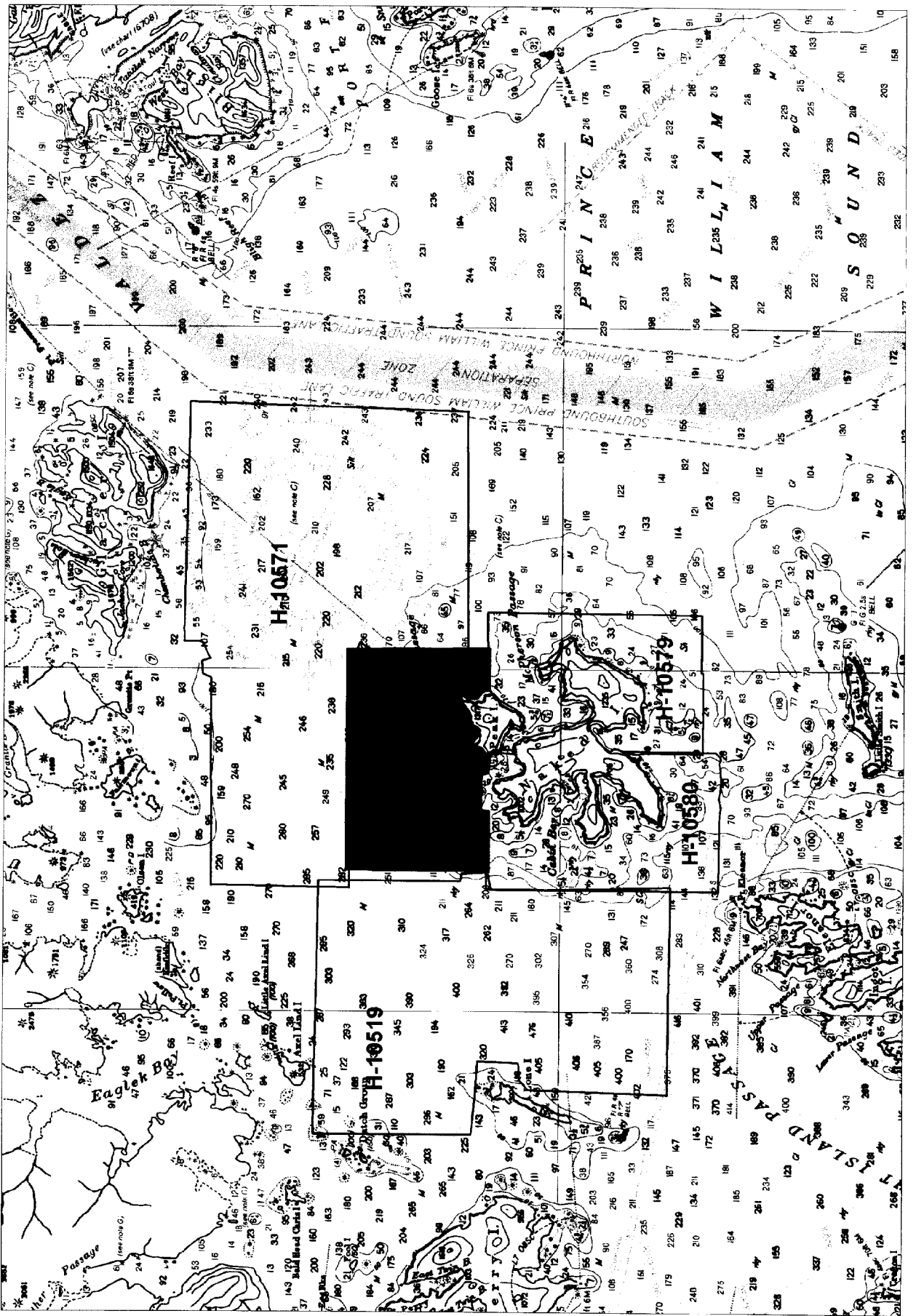
Verification by D. Doles, L. Deodato, G. Kay, E. Domingo, J. Stringham

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

SURF/AWSIS chlc 2/22/96 MCR

FEB 20 1996 *ES*



MONTHLY PROGRESS SKETCH

OPR-P125-RA
NW PRINCE WILLIAM SOUND, AK
R. C. ARNOLD, CAPT., NOAA
COMMANDING
SCALE OF CHART 16700
1:200,000

SEP OCT NOV

119	85	
2206	2595	
0	0	
127	129	
3	2	
4	3	
3	2	
3	2	
7	3	

SQ. NM SOUNDINGS
L.N.M. SOUNDINGS
L.N.M. SIDE SCAN SONAR
BOTTOM SAMPLES (GRAB)
ELECTR. CONTROL STATIONS
SOUND VELOCITY CAST
TIDE GAGES
GEODETIC CONTROL STATIONS EST./REC.
AWOIS ITEMS INVESTIGATED
AREA SURVEYED

61 00'

Bald Head Chris I.

Dutch Group

Perry I.

Tide gage

60 40'

AO
H-10510

147 40'

Unakwik Inlet

QUOTE

U
H-10674

1993 Survey

V H-10578
H-10578

Peak

Chugh Bay

Chugh Bay

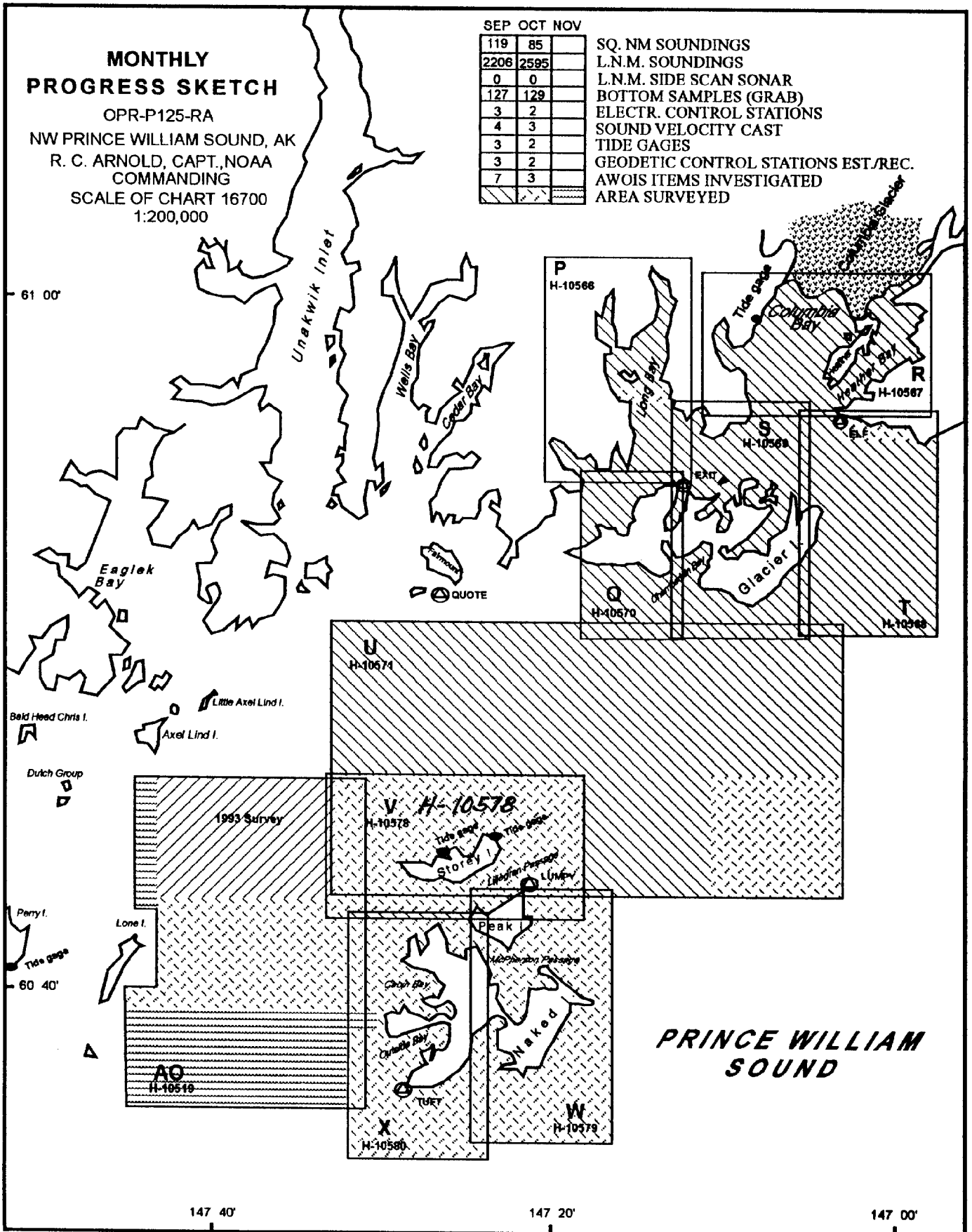
X
H-10580

W
H-10579

147 20'

147 00'

PRINCE WILLIAM
SOUND



Descriptive Report to Accompany Hydrographic Survey H-10578

Field Number RA-10-18-94

Scale 1:10,000

October - November 1994

NOAA Ship RAINIER

Chief of Party: Captain Russell C. Arnold

A. PROJECT

This basic hydrographic survey was completed in Northwestern Prince William Sound, Alaska, as specified by Project Instructions OPR-P125-RA dated July 25, 1994. ✓

Survey H-10578 corresponds to "sheet V" as defined in the Project Instructions.

This survey will provide contemporary hydrographic survey data for updating existing nautical charts, and for constructing two 1:50,000 scale charts covering the fiords and bays within the project area. Requests for hydrographic surveys and updated charts have been received from the Defense Mapping Agency, the Southwest Alaska Pilot's association, cruise ship lines and local fishermen. ✓

B. AREA SURVEYED (See EVAL RPT., Sec. B)

The survey area is located in Northwest Prince William Sound, in the vicinity of Storey Island and northern portion of Peak Island. The survey's eastern limit is bounded by 147°19.0'W, and the western limit is bounded by 147°32.0' W. The northern limit is bounded by latitude 60°46.0' N, and the southern limit is bounded by 60°42.0' N. ✓

Data acquisition was conducted from October 4, 1994, Day Number (DN) 277, through November 1, 1994, DN 305.

C. SURVEY VESSELS

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

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

RA-3	2123	Hydrography Shoreline Verification
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Bottom Samples Shoreline Verification

D. AUTOMATED DATA ACQUISITION AND PROCESSING

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

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
BACKUP	2.00	3/7/94
BASELINE	1.14	3/7/94
BIGABST	2.07	3/7/94
BIGAUTOST	3.01	3/7/94
BLKEDIT	2.02	3/7/94
CARTO	2.15	8/29/94
CLASSIFY	1.05	3/7/94
CONVERT	3.63	8/29/94
DAS_SURV	6.74	8/29/94
DIAGNOSE	3.05	8/29/94
DISC-UTIL	1.00	3/7/94
DP	2.15	8/29/94
EXCESS	4.31	8/29/94
FILESYS	3.27	8/29/94
GRAFEDIT	1.06	3/7/94
LISTDATA	1.02	3/7/94
LOADNEW	2.10	3/7/94
LSTAWOIS	3.07	5/12/94
MAINMENU	1.20	3/7/94
MAN_DATA	2.01	3/7/94
NEWPOST	6.12	8/29/94
PLOTALL	2.30	8/29/94
POINT	2.10	3/7/94
PREDICT	2.01	3/7/94
PRESURV	7.09	8/29/94
PRINTOUT	4.04	8/29/94
QUICK	2.05	8/29/94
RAMSAVER	1.02	3/7/94

REAPPLY	2.11	8/29/94
SCANNER	1.00	3/7/94
SELPRINT	2.05	8/29/94
SYMBOLS		3/7/94
VERSIONS	1.00	3/7/94
ZOOMEDIT	2.30	8/29/94

<u>HYPACK Program Name</u>	<u>Version</u>	<u>Date Installed</u>
HYPACK.EXE	4.16	2/24/94
PLOTFILE.EXE	4.16	2/25/94
SETUP.EXE	4.16	2/15/94
VIEW.EXE	4.16	12/12/93
DESIGN.EXE	4.16	2/1/94
VOLUME.EXE	4.16	1/27/94
FORGP.EXE	4.16	11/12/93
NAVITRACK.EXE	4.16	2/1/93
CONTPICK.EXE	4.16	12/8/92
DIGITIZE.EXE	4.16	1/12/94
HYDROLIN.EXE	4.16	8/20/93
UPLOAD.EXE	4.16	8/12/92
TESTFIG.EXE	4.16	11/30/93
INVERSE.EXE	4.16	11/12/94
NAV.EXE	4.16	2/21/94
DATUM.EXE	4.16	11/23/94
GRIDCONV.EXE	4.16	12/21/93
DXF.EXE	4.16	2/11/94
MENUCOLO.EXE	4.16	8/12/92
IOTEST.EXE	4.16	2/22/94, 9/23/94
TRANS.EXE	4.16	1/6/94
OVERLAY.EXE	4.16	5/19/93
UNITCONV.EXE	4.16	11/12/93
POINTFIG.EXE	4.16	11/12/93
TRACKS.EXE	4.16	12/12/93
MANDIG.EXE	4.16	9/30/92
DATADIRS.EXE	4.16	12/17/93
COM1SET.EXE	4.16	9/15/92
NEWSETUP.EXE	4.16	2/22/94
IONEW.EXE	4.16	2/9/94
MANAGER.EXE	4.16	12/13/93
PRINTFIG.EXE	4.16	10/25/93

Some hydrography was acquired using Coastal Oceanographics' HYPACK software on launch 2122, which was equipped with an Ashtech DGPS and a DSF-6000N echosounder.

Post processing was conducted using the HDAPS HP system. HYPACK files were translated to a PC-DAS format using a modified PowerBasic program provided by N/CG24. The PowerBasic program, CONV_HYP.BAS (ver 3, 9/27/94), was run through an accompanying batch routine called HYPCON.BAT (2/14/94). OSWEGO HPCOPY was used to copy the data onto a HP formatted disk. Data were then processed in the same manner as PC-DAS on the HP system. ✓

In addition, the following batch routine, 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	2.10	15 Mar 1994

 ✓

E. SONAR EQUIPMENT

Sonar equipment was not used on ~~sheet V~~. *survey H-10578* *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.

<u>Velocity Table #</u>	<u>Cast#</u>	<u>DN</u>	<u>Cast Position</u>	<u>Deepest Depth</u>	<u>Applicable DN</u>
6,16	6	284	60°44'55" N 147°06'15" W	608	277-287

 ✓

* Filed with the survey records.

7,17	7	295	60°45'58" N 147°31'57" W	665	291-301	✓
8	8	308	60°37'30" N 147°38'54" W	945	305	

Casts 6 and 8 plot outside the survey limits.

RAINIER used velocity tables 16-17, while tables 6-8 were used by the launches. The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 811), calibrated 12/17/93. 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 vessels 2123-2125 in the spring of 1994 and for 2122 in the summer of 1994. RAINIER's transducer depth was determined during the 1990 winter inport. These values were entered into the offset tables* for each launch.

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-P125-RA*. The data for 2123-2125 was collected in Shilshole Bay, Washington in the Spring of 1994, and for 2122 in Long Bay, Alaska in September 1994. RAINIER's settlement and squat data was collected in Shelikof Strait, Alaska July 14, 1994.

Offset Tables

Offset tables contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset table 1 corresponds to the RAINIER. Offset tables 2-5 correspond to the number of the vessel. The offset tables were compiled with new measurements in the spring and summer of 1994 and are contained in the "Separates to be Included with Survey Data". *

Heave

The launches are not equipped with heave, pitch and roll sensors. Data acquired during periods of significant sea action were scanned to account for inaccuracies caused by heave.

** Filed with the survey records.*

Bar Check and Lead Lines

Bar check and lead lines were calibrated by RAINIER personnel during the winter inport 1993-1994. Calibration forms are included with project data for OPR-P125-RA. Bar checks were performed in accordance with FPM 2.2.2.4 and served as a functional check of the DSF-6000N. ✓

Tide Correctors

Predicted tides for the project were provided on diskette by N/OES334 for the Cordova, Alaska reference station (945-4050).

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

<u>Time Correction</u>	<u>Height Correction</u> <u>Range Ratio</u>
0 hr 0 min.	X 0.94

 ✓

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

RAINIER personnel installed an 8200 digital gage at Storey Island (945-4553) on September 4, 1994. Opening levels to the staff and all bench marks were conducted upon installation. On September 21, 1994, a new station was installed on the North Storey Island (945-4571) to serve as a secondary gage for Storey Island (945-4553). Opening levels were conducted on September 22. Bracketing levels were completed by RAINIER personnel at the end of September at both gage sites. Due to the staff being destroyed at Storey Island gage (945-4553), closing levels were not conducted, and the gage was removed on October 26. Closing levels were completed at North Storey Island gage (945-4571) on November 1 and the gage was removed on November 3. ✓

The control station was Valdez, Alaska (945-4240). Opening levels of the control station were performed by RAINIER personnel on September 16, 1994. Closing levels at Valdez, Alaska were completed by RAINIER personnel on October 28, 1994. ✓

The station description, field tide records, and Preliminary Field Tide Note (Appendix V)* were forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3 at the end of September. The final tide package will be forwarded to N/OES212 at the end of the project. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. *Approved tide note dated January 17, 1995 is attached.* ✓

H. CONTROL STATIONS (*See EVAL RPT., Sec 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 QUOTE, ^{EXIT}LUMPY and TUFT. Station QUOTE is located on a small islet east of Outpost Island, station LUMPY is located on small peninsula at the northwest tip of Peak Island, and TUFT is located on the southwest tip of Naked Island. These stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. In addition, Coast Guard differential beacon stations at Cape Hinchinbrook and Potato Point were used according to specifications listed in Section 6.2 of the Project Instructions. *Control stations QUOTE and EXIT were used during this survey.*

For further information see the "Fall 1994 Horizontal Control Report" that will be submitted at the end of the project. *

I. HYDROGRAPHIC 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

Method of Position Control

VHF differential shore stations were established at stations QUOTE, LUMPY and TUFT. The difference between the computed location and the station's published position was recorded by the MONITOR program on a PC. Data from a 24-hour period were recorded and examined for signs of multi-path signal reflection, which was not evident at any of the stations. Scatterplot results are included in the "Project related data for OPR-P125-RA". * The scatterplot results for station QUOTE were obtained last year. The area around station QUOTE remains undeveloped, and the geography unchanged.

Calibrations & Systems Check Methods

System checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two independent DGPS base stations. The results were transferred to forms which are included in the project data for OPR-P125. 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

* Filed with the survey records.

J. SHORELINE *(See EVAL RPT., Sec. J)*

The shoreline maps (T-sheet) used to transfer shoreline detail to the final sheets were ³⁸DM-10191 (enlarged to 1:10,000 from 1:20,000). ✓

Method of Shoreline Verification

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1. Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs), as explained later in this section. ✓

Shoreline and T-sheet features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:10,000 photocopies of the T-sheet. Reference numbers, descriptions, and heights corrected to MLLW using predicted tides are recorded on the reference form. Corresponding notes were annotated on the photocopies of the T-sheet when deemed necessary. The annotated photocopies of the T-sheet and the reference forms are included with the survey data. ✓

DPs taken during shoreline verification were recorded on the master printouts^{*} and on the DP forms.^{*} These indicate significant T-sheet features and features not found on the T-sheet. Where possible, positions of some T-sheet features were verified during inshore mainscheme 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 plot, which serves as an overlay (FPM 6.1.2.5). Verified T-sheet features were retained and shown in black. Changes to the shoreline 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 actual tides and shown on the smooth sheet.* ✓
*** Changes to the HWL are shown on the smooth sheet in dashed red lines where Changes and New Features warranted.*

Several changes and new features were found and are depicted on the final field plot. T-sheet islets and rocks were often identified ^{in the field} as high points of new ledges or reefs. *Refer to the smooth sheet for graphic portrayal of features and revisions as found during this survey.* ✓

** Filed with the survey records.*

Disprovals

Five T-sheet rocks were searched for and not found as listed below:

The T-sheet rock in the vicinity of $60^{\circ}43.6^{\prime}N$, $147^{\circ}29.7^{\prime}W$ was searched for on DN 277 and not found (position 5400). Visual and echosounder searches were conducted for 15 minutes, with a search radius of 100 meters. The water visibility was 4 meters and average depth was 3 meters. *A second T-sheet rock plotting ten meters from the feature listed above was verified.*

The T-sheet rock in the vicinity of $60^{\circ}43.8^{\prime}N$, $147^{\circ}29.0^{\prime}W$ was searched for on DN 277 and not found (position 5403). Visual and echosounder searches were conducted for 12 minutes, with a search radius of 30 meters. The water visibility was 4 meters and average depth was 3 meters. *This rock is likely the seaward extent of a ledge shown on the smooth sheet.*

The T-sheet rock in the vicinity of $60^{\circ}43.6^{\prime}N$, $147^{\circ}27.0^{\prime}W$ was searched for on DN 280 and not found (position 3101). Visual and echosounder searches were conducted for 10 minutes, with a search radius of 30 meters. The water visibility was 3 meters and average depth was 3 meters. *(Pos # 3101 was duplicated on DN 297)*

The T-sheet rock in the vicinity of $60^{\circ}44.1^{\prime}N$, $147^{\circ}24.6^{\prime}W$ was searched for on DN 280 and not found (position 3106). Visual and echosounder searches were conducted for 5 minutes, with a search radius of 30 meters. The water visibility was 3 meters and average depth was 3 meters.

The T-sheet rock in the vicinity of $60^{\circ}44.3^{\prime}N$, $147^{\circ}24.3^{\prime}W$ was searched for on DN 280 and not found (position 3107). Visual and echosounder searches were conducted for 5 minutes, with a search radius of 50 meters. The water visibility was 3 meters and average depth was 5 meters.

Recommendations

The hydrographer recommends that the shoreline changes and disprovals from this survey be used to supersede prior shoreline information compiled on DM-10191. *Concur.*

Charted Features

Charted rocks were either identified as new rocks, T-sheet rocks, high points or extensions of T-sheet ledges and reefs. *Concur.*

K. CROSSLINES

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 42.6 nautical miles, representing 12.6% of the total mainscheme hydrography.

L. JUNCTIONS (*See EVAL RPT., Sec. L*)

This survey junctions with survey H-10579 (1:10,000, 1994) and H-10580 (1:10,000, 1994) at the southern limit, H-10571 (1:20,000, 1994) at the northern limit, and to survey H-10519 (1:20,000, 1993) at the western limit. These soundings were found to be in general agreement with this survey. ✓

Final comparisons will be made at the Pacific Hydrographic Section (PHS).

M. COMPARISON WITH PRIOR SURVEYS (*See EVAL RPT., Sec. M*)

Five prior surveys were compared: H-2807 (1:100,000, 1905), H-3315 (1:20,000, 1911), H-7762 (1:10,000, 1949), and H-7765 (1:20,000, 1949). Soundings from these prior surveys were in general agreement with the present survey. However, the present survey, due to much greater sounding density, revealed numerous shoal soundings not found during the prior surveys. There were no instances where prior survey soundings were shallower in a corresponding area. ✓

Final comparisons will be conducted by PHS.

N. ITEM INVESTIGATIONS

No AWOIS items were assigned to survey H-10578. *Concur.* ✓

O. COMPARISON WITH THE CHART (*See EVAL RPT., Sec. O*)

This survey was compared to NOS chart 16705, 15th Edition, Sept 1, 1990, 1:80,000 (NAD 83). The charted soundings were found to be in general agreement with the present survey. Non-sounding charted features are discussed in Section J, Shoreline.

Final comparisons will be made at PHS.

Dangers to Navigation

Twenty-eight dangers to navigation within the limits of this survey were reported to the Seventeenth Coast Guard District on November 9, 1994. Copies of the correspondence ~~can be found in Appendix I~~ *is attached to* of this report.

P. ADEQUACY OF SURVEY (*See EVAL RPT., Sec. P*)

Prior to final approval, survey H-10578 is complete and adequate to supersede charted depths and features in their common areas.

Q. AIDS TO NAVIGATION ✓

None

R. STATISTICS ✓

<u>Vessel:</u>	<u>2120</u>	<u>2122</u>	<u>2123</u>	<u>2124</u>	<u>2125</u>	<u>Total</u>
Number of Positions	376	2649	1748	953	1854	7850
NM Hydrography	67.4	66.7	211.5	147.0	157.8	650.4

Velocity Casts 3
Detached Positions 34
Bottom Samples 44
Tide Stations 1
NM² Hydrography 21.5

S. MISCELLANEOUS (*See EVAL RPT., Sec. 5*) ✓

Bottom samples were collected in accordance with Project Instructions.

No tidal current predictions are available within the sheet limits.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

None

U. REFERRAL TO REPORTS

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

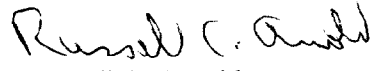
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Fall 1994 Horizontal Control Report for OPR-P125-RA	November 1994	N/CG245
Fall 1994 Coast Pilot Report for OPR-P125-RA	November 1994	N/CG245
Project related data for OPR-P125-RA	Incremental	N/CG245

Respectfully Submitted,



Donald W. Haines
Lieutenant, NOAA

Approved and Forwarded,



Russell C. Arnold
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 8 Nov 1994

No	Type	Latitude	Longitude	H	Cart	Freq	Vel Code	MM/DD/YY	Station Name
101	G	060:50:49.581	147:27:05.696	13	250	0.0	0.0	09/04/94	QUOTE 1947(DGPS)
102	G	060:54:23.798	147:12:24.812	5	250	0.0	0.0	09/04/94	EXIT 1947(DGPS)
103	G	060:56:36.616	147:03:24.109	6	250	0.0	0.0	09/05/94	ELF 1947(DGPS)
104	G	060:42:51.179	147:21:43.053	16	250	0.0	0.0	10/04/94	LUMPY 1947(DGPS)
105	G	060:14:10.000	146:30:40.000	0	250	0.0	0.0	10/04/94	CAPE HINCHINBROOK(DGPS BEACON)
106	G	061:03:00.000	146:42:00.000	0	250	0.0	0.0	10/04/94	POTATO PT(DGPS BEACON)
107	G	060:37:06.009	147:29:09.075	0	250	0.0	0.0	10/04/94	TUFT 1905(DGPS)



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

NOAA Ship RAINIER

November 9, 1994


**ADVANCE
INFORMATION**

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

Dear Sir:

NOAA Ship RAINIER has located twenty-eight dangers to navigation in Northwest Prince William Sound (Project OPR-P125-RA) within the limits of hydrographic survey H-10578. The attached information is provided for publication in the Local Notice to Mariners for the Seventeenth Coast Guard District. A copy of the chart showing the areas in which the dangers exist is also attached.

Sincerely,


Russell C. Arnold
Captain, NOAA
Commanding Officer

Attachments

cc: DMAHTC
N/CG221
PMC



Hydrographic Survey Registry Number: H-10578

**ADVANCE
INFORMATION**

Survey Title: State: Alaska
 Locality: Northwest Prince William Sound
 Sublocality: Vicinity of Storey Island and Northern Portion
 of Peak Island

Project Number: OPR-P125-RA

Survey Date: October - November 1994

Features are reduced to mean lower low water using predicted tides.

Affected Nautical Charts:

Chart	Edition/Date	Scale	Datum
16700	24th Ed., 1/11/92	1:200,000	NAD83
16705	15th Ed., 9/1/90	1:80,000	NAD83

	<u>Danger to Navigation</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Pos #</u>	<u>Depth (m)</u>
A.	Shoal, covers 3 3/4 FM	60° 43' 50.7"	147° 29' 35.8"	3288 ¹	7 ²
B.	Shoal, covers 3 1/2 FM	60° 43' 58.4"	147° 29' 24.3"	8010 ⁺²	6 ⁶
C.	Shoal, covers 2 FM	60° 43' 50.6"	147° 29' 17.2"	7031 ⁺²	3 ⁷
D.	Shoal, covers 6 3/4 FM	60° 44' 09.7"	147° 28' 37.0"	5963 ⁺¹	12 ⁷
E.	Shoal, covers 3 FM	60° 44' 01.8"	147° 28' 23.9"	5951 ⁺⁵	5 ⁹
F.	Reef, uncovers 5 FT	60° 43' 50.9"	147° 26' 17.0"	3104	(1 ⁸)
G.	Shoal, covers 3 FM	60° 44' 12.5"	147° 26' 59.8"	6610 ⁺²	5 ³
H.	Shoal, covers 2 1/2 FM	60° 44' 29.9"	147° 26' 36.9"	6560 ⁺³	4 ⁷
I.	Shoal, covers 3 1/2 FM	60° 44' 11.8"	147° 24' 56.0"	3164 ⁺¹	6 ⁵
J.	Shoal, covers 6 FM	60° 44' 24.0"	147° 24' 46.1"	5760 ⁺¹⁰	11 ⁴
K.	Shoal, covers 5 FM	60° 44' 36.2"	147° 24' 32.8"	5750 ⁺³	9 ⁴
L.	Shoal, covers 9 1/2 FM	60° 44' 45.3"	147° 22' 58.6"	13514	17 ⁶
M.	Shoal, covers 6 1/2 FM	60° 43' 56.8"	147° 22' 50.4"	3475 ⁺²	12 ³
N.	Shoal, covers 4 1/4 FM	60° 43' 30.5"	147° 23' 22.6"	3517 ⁺¹	8 ²
O.	Shoal, covers 4 3/4 FM	60° 42' 47.6"	147° 21' 17.8"	8330 ⁺⁴	9 ¹
P.	Shoal, covers 5 1/2 FM	60° 43' 26.9"	147° 22' 50.7"	8338 ⁺¹	10 ⁵
Q.	Shoal, covers 4 1/4 FM	60° 43' 21.3"	147° 23' 42.0"	6460 ⁺⁹	8 ⁰
R.	Shoal, covers 4 1/4 FM	60° 42' 51.2"	147° 23' 52.0"	8226 ⁺¹⁰	8 ⁸
S.	Shoal, covers 4 1/4 FM	60° 42' 43.5"	147° 24' 33.9"	13715	7 ⁸
T.	Shoal, covers 1 3/4 FM	60° 42' 50.1"	147° 24' 58.0"	8187 ⁺²	3 ³
U.	Shoal, covers 3 3/4 FM	60° 42' 22.1"	147° 25' 37.7"	8167 ⁺⁴	6 ⁹
V.	Shoal, covers 3 FM	60° 42' 26.2"	147° 27' 26.4"	2984 ⁺³	5 ²

	<u>Danger to Navigation</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Pos #</u>	<u>Depth (m)</u>
W.	Shoal, covers 3 3/4 FM	60° 42' 17.2"	147° 28' 04.2"	3070 ⁺²	7 ⁰
X.	Shoal, covers 4 3/4 FM	60° 42' 47.3"	147° 28' 03.8"	8145 ⁺³	8 ¹
Y.	Shoal, covers 6 3/4 FM	60° 42' 59.2"	147° 29' 31.1"	8135 ⁺²	12 ⁶
Z.	Shoal, covers 9 1/2 FM	60° 42' 44.0"	147° 30' 19.4"	7273 ⁺⁶	17 ⁵
AA.	Shoal, covers 9 1/2 FM	60° 43' 00.1"	147° 30' 48.1"	7301 ⁺³	17 ⁵
AB.	Shoal, covers 8 3/4 FM	60° 42' 35.1"	147° 31' 09.4"	6166 ⁺⁶	16 ⁴

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

**ADVANCE
INFORMATION**

APPROVAL SHEET

for

H-10578
RA-10-18-94

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.



Russell C. Arnold
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: January 17, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA

HYDROGRAPHIC SHEET: H-10578

LOCALITY: Vicinity of Storey Island and Northern Portion of Peak
Island, Prince William Sound, Alaska

TIME PERIOD: October 4 - November 1, 1994

TIDE STATION USED: 945-4571 North Side of Storey Island, Ak.
Lat. $60^{\circ} 43.9'N$ Lon. $147^{\circ} 26.2'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -6.33 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 11.2 ft.

REMARKS: RECOMMENDED ZONING

1. West of $147^{\circ} 24.0'W$, times and heights are direct on North Side of Storey Island, Ak. (945-4571).
2. East of $147^{\circ} 24.0'W$, times are direct, and apply a X0.98 range ratio to heights using North Side of Storey Island, Ak. (945-4571).

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

2. Data for North Side of Storey Island, Ak. (945-4571) are temporarily stored in file #745-4571.



CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	ON CHART NO. 16705										
	A	B	C	D	E	F	G	H	K		
	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST				
ALASKA (title)	X		X								1
ELK HEAD POINT	X		X								2
LILJEGREN PASSAGE	X		X								3
PEAK ISLAND	X		X								4
PRINCE WILLIAM SOUND	X		X								5
STOREY ISLAND	X		X								6
											7
											8
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Approved

Charles C. Cox
Chief Geographer

OCT 4 1995

NOAA FORM 77-27(H) (9-83)			U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10578
HYDROGRAPHIC SURVEY STATISTICS					
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-10191			
PHOTOBATHYMETRIC MAPS (List):		N/A			
NOTES TO THE HYDROGRAPHER (List):		None			
SPECIAL REPORTS (List):		None			
NAUTICAL CHARTS (List):		16705, 15th Edition, September 1, 1990			
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					7850
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS			24.0		24.0
VERIFICATION OF SOUNDINGS					
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTORATHYMETRY					
SHORELINE APPLICATION VERIFICATION					
COMPILATION OF SMOOTH SHEET			145.0		145.0
COMPARISON WITH PRIOR SURVEYS AND CHARTS					
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				17.0	17.0
GEOGRAPHIC NAMES					
OTHER*					
*USE OTHER SIDE OF FORM FOR REMARKS			TOTALS	169.0	17.0
					186.0
Pre-processing Examination by LT M. Larsen			Beginning Date 11/14/94	Ending Date 12/13/94	
Verification of Field Data by D.Doles, L.Deodato, G.Kay, E.Domingo, J.Stringham			Time (Hours) 165.0	Ending Date 11/03/95	
Verification Check by J. Stringham			Time (Hours) 4.0	Ending Date 9/11/95	
Evaluation and Analysis by I.Almacen			Time (Hours) 17.0	Ending Date 11/20/95	
Inspection by B. Olmstead			Time (Hours) 16.0	Ending Date 11/30/95	

EVALUATION REPORT

H-10578

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This survey was conducted in Alaska, on the northwestern part of Prince William Sound. It covers the area around Storey Island and the northern portion of Peak Island including Liljegren Passage. The coast is comprised mostly of ledges, reefs and isolated off-lying rocks and islets. Rocky pinnacles that rise up very near the surface were found throughout the survey area. The bottom is made up of sand, gravel and mud mixed with shells. Depths range from 0.0 to 513.0 meters.

C. SURVEY VESSELS

Survey vessel information is found in the hydrographer's report.

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, Version 12.

At the time of the survey certification the format for transmission of digital data had not been formally 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 .dbf (extension) and enhanced using the AutoCad system, is filed both in the AutoCad drawing format, i.e., .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHS until data transfer protocols are developed and improved.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes, remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by the 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-10578.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with present NOS specifications. Actual tide reduction is derived from North Side of Storey Island, Alaska gage (945-4571). Refer to the approved tide note attached to this report concerning recommended tidal zoning.

H. CONTROL STATIONS

Sections H and I of the hydrographer's descriptive report contain adequate discussions of horizontal control and the hydrographic positioning. The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are also based on NAD 83. The AutoCAD generated smooth sheet is annotated with an NAD27 adjustment tick based on values determined with NGS program NADCON.

Data based on NAD 27 may be referenced to this survey by applying the following corrections:

Latitude: -2.098 seconds (-64.951 meters)
Longitude: 7.245 seconds (109.799 meters)

The year of establishment of the control stations originates with the horizontal control records and the hydrographer's signal list. Control stations plot outside sheet limits.

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. There are a few positions where the maximum allowable horizontal dilution of precision (HDOP) limits of 3.75 have been exceeded during this survey. A review of the data, however, shows that the positioning of soundings located by these fixes is consistent with the surrounding information and is considered acceptable. These positions are isolated and occur randomly throughout the survey. None of these positions are used to locate critical depths and dangers to navigation.

Daily DGPS performance checks were conducted in the field and found adequate.

J. SHORELINE

The following digitally compiled shoreline map on NAD83 datum applies to this survey.

<u>Map Number</u>	<u>Date of Photography</u>	<u>Scale</u>
DM-10191	June 1994	1:20,000

Shoreline changes and new features in the area were noted during this survey. Most of the islets and rocks depicted on the map were identified in the field as reefs and high points or extensions of new ledges. These features have been adequately depicted on the AutoCad generated smooth sheet based on the latest survey information. Further information concerning shoreline changes noted during this survey is contained in the hydrographer's report.

The following approximate changes to the HWL noted during this survey are shown in dashed red lines on the smooth sheet. These changes are considered adequate to supersede the photogrammetrically delineated shoreline.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude (W)</u>
High water line	60/42/24	147/24/49
High water line	60/43/12	147/25/05
High water line	60/43/21	147/28/35
High water line	60/43/53	147/26/48
High water line	60/44/10	147/24/39
High water line	60/44/11	147/22/57

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10578 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10519	1993-94	1:20,000	West
H-10571	1994	1:20,000	North,East
H-10579	1994	1:10,000	South
H-10580	1994	1:10,000	South

The junctions with the above listed surveys are complete. The depth curves and soundings

within the junction areas are in satisfactory agreement.

M. COMPARISON WITH PRIOR SURVEYS

Survey H-10578 was compared with the following prior surveys.

- H-2807 (1905), scale 1:100,000
- H-3315 (1911), scale 1:20,000
- H-7762 (1949), scale 1:10,000
- H-7765 (1949), scale 1:20,000

Comparisons with the above listed prior surveys dating back from 1905 to 1949 are considered satisfactory. However, the present survey appears to be generally shoaler from 1.0-5.0 meters (0.5-2.5 fathoms) in most areas. Survey H-10578 has been developed with greater sounding density utilizing a more modern surveying methods and as a result it revealed more shoals not found during the earlier surveys. Some of the changes in the bottom configuration noted in the area are attributed in part to the effects of the 1964 Alaska earthquake. Comparison with the prior surveys listed above, seems to indicate a trend of uplifting within this portion of Prince William Sound.

H-10578 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There are no AWOIS items for investigation from prior surveys and other miscellaneous sources.

O. COMPARISON WITH CHART

Survey H-10578 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	15th	Sept. 1, 1990	1:80,000	NAD83
16700	24th	Jan. 11, 1992	1:200,000	NAD83

a. Hydrography

Charted hydrography originates with the previously mentioned prior surveys and miscellaneous sources from survey work conducted between 1905 and 1949. These prior surveys are discussed in section M and require no further discussion.

Charted miscellaneous source data originates from BP-43214 USC&GS reconnaissance survey conducted in 1947. Depth comparisons reflect the same general differences as

mentioned in section M. Most of the charted rocks were identified in the field as high points or extensions of ledges and reefs along the coast.

The charted rock awash at latitude 60/43/19N, longitude 147/24/25W, originating from a miscellaneous source was not shown on the latest shoreline map and not found during this survey. This feature should be deleted from the chart.

The charted rock awash at latitude 60/43/14N, longitude 147/24/55W, originating from miscellaneous source was found to be an islet as shown on the latest shoreline map of the area. It is recommended that this feature be depicted as an islet on the chart.

Survey H-10578 is adequate to supersede charted hydrography within the common area of coverage.

P. ADEQUACY OF SURVEY

The hydrography on survey H-10578 is adequate to:

- a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;
- b. reveal there are no significant discrepancies or anomalies requiring further investigation; and
- c. show the survey was properly controlled and soundings are correctly plotted.

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 Procedure Manual, April 1994 Edition.

Survey H-10578 adequately complies with the project instructions.

Q. AIDS TO NAVIGATION

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

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information concerning this survey is discussed in the hydrographer's report. Twenty-eight (28) dangers to navigation were reported to the USCG, DMAHTC, and

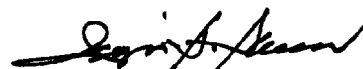
N/CG221, on November 9, 1994 and a copy of the report is attached. No additional dangers were found during office processing.

T. RECOMMENDATIONS

Survey H-10578 is a good hydrographic survey and no additional field work is required.

U. REFERRAL TO REPORTS

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



Isagani A. Almacén
Cartographer

APPROVAL SHEET
H-10578

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: 12/4/95
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: 12/7/95
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:
Andrew A. Armstrong III Date: 2-21-96
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

