

H10775

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-40-3-97
Registry No. H-10775

LOCALITY

State Alaska
General Locality Northwest Prince William Sound
Sublocality Culross Passage to Kings Bay

1997

CHIEF OF PARTY
CAPT Alan D. Anderson, NOAA

LIBRARY & ARCHIVES

DATE JAN 27 1999

HYDROGRAPHIC TITLE SHEET

H-10775

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-40-3-97

State Alaska

General locality Northwest Prince William Sound

Locality Culross Passage to Kings Bay

Scale 1:40,000 Date of survey Sept. 11 to Oct 19, 1997

Instructions dated 8/27/97, Change #1 10/1/97 Project No. OPR-P125-RA

Vessel NOAA Ship RAINIER

Chief of party CAPT Alan D. Anderson, NOAA

Surveyed by NOAA Ship RAINIER Personnel

Soundings taken by echo sounder, ~~and lead, pole~~ Hydrochart II (IDSS) Multibeam

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: L. Deodato Automated plot by HP Design Jet 650C

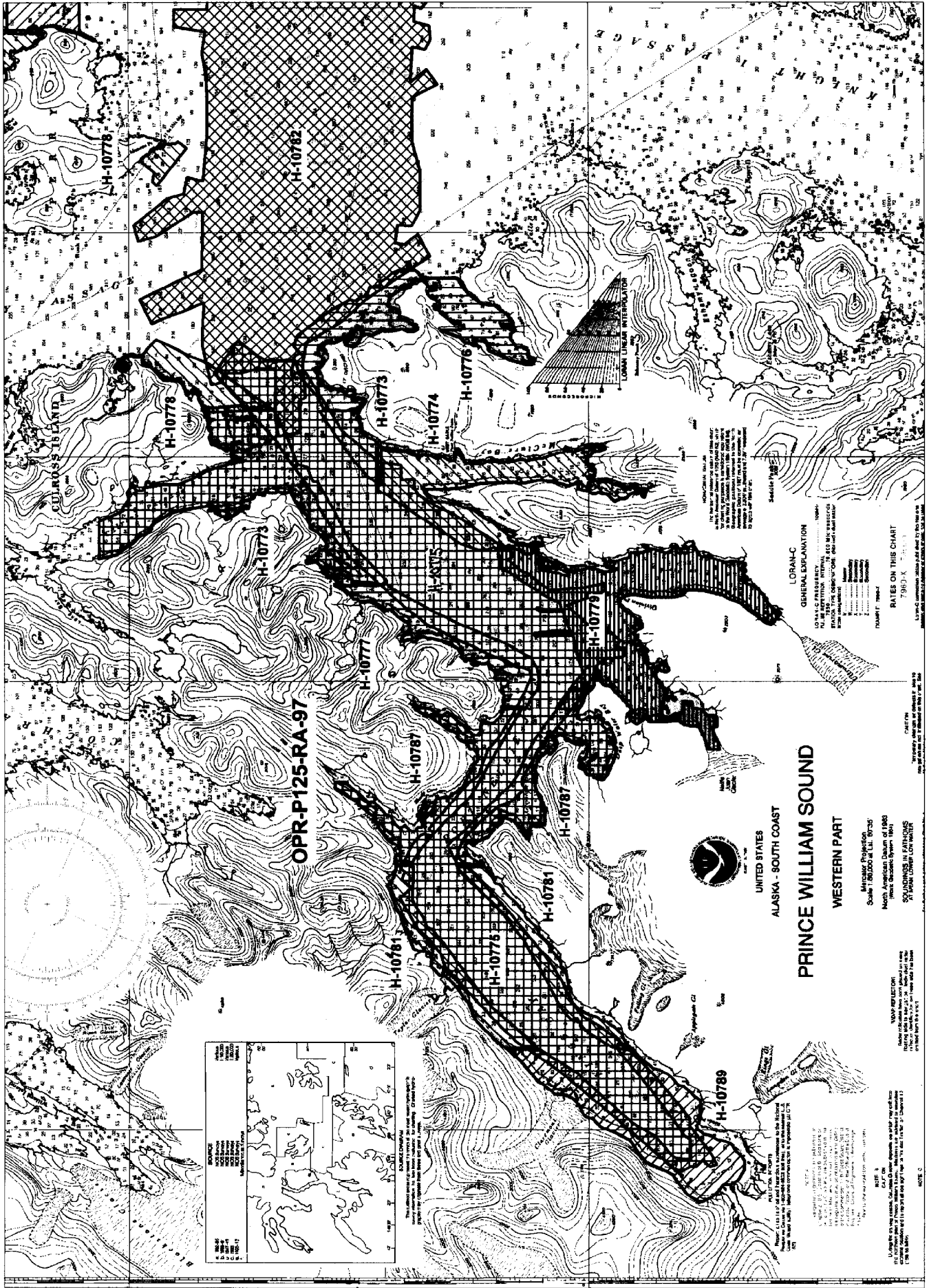
Verification by M. Bigelow, D. Doles, E. Domingo, R. Mayor, G. Nelson

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

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

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

AWOIS/SWRF 1/26/99



OPR-P125-RA-97

UNITED STATES
ALASKA - SOUTH COAST

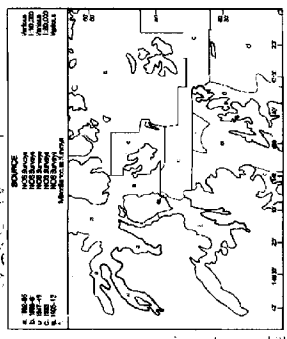
PRINCE WILLIAM SOUND
WESTERN PART

Magnetic Projection
Scale 1:80,000 at L.L. 1975
North American Datum of 1983
(Mean Sea Level System 1981)
SOUNDINGS IN FATHOMS
AT MEAN LOW WATER

LORAN-C
GENERAL EXPLANATION

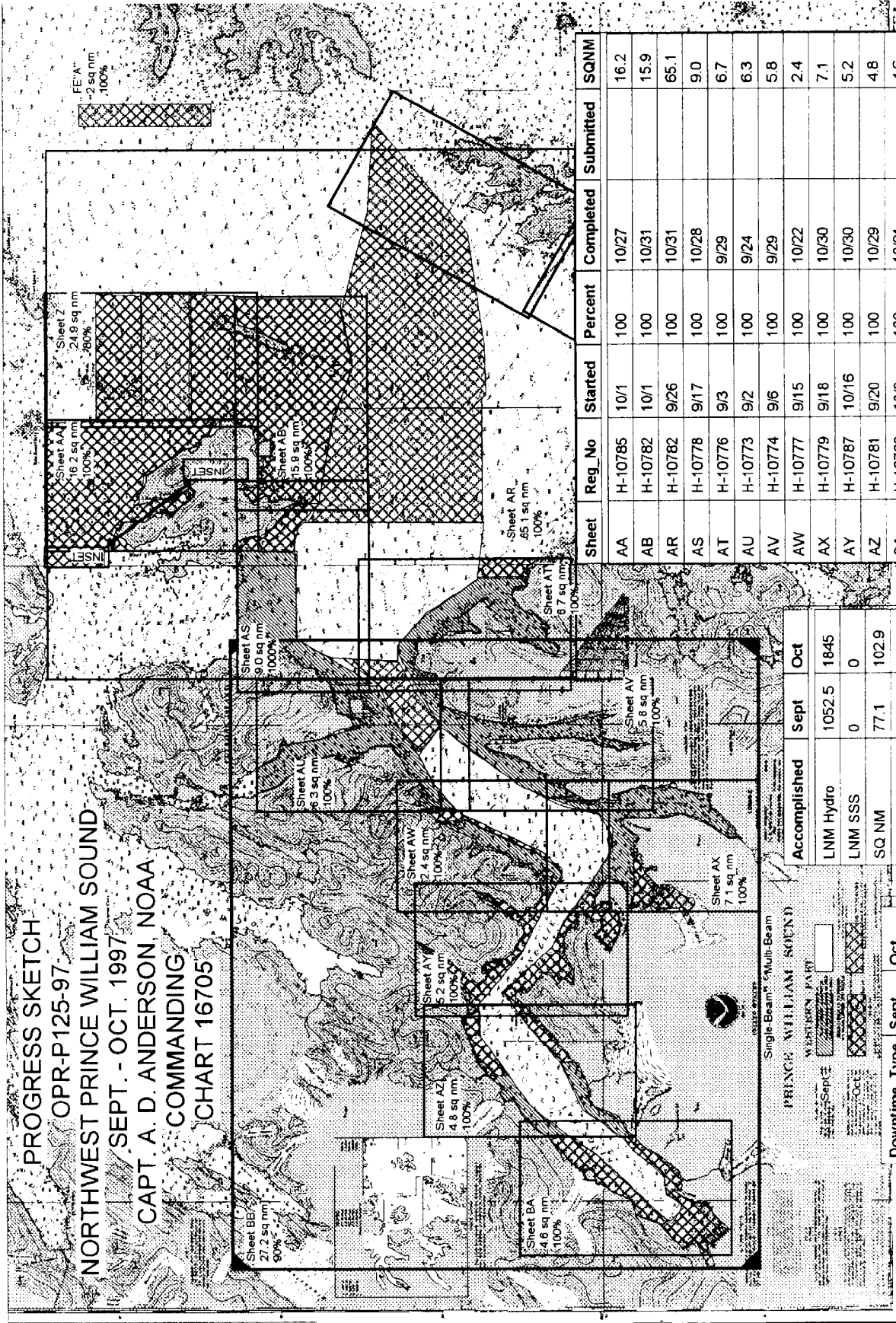
GENERAL EXPLANATION	SYMBOL
LORAN-C STATION	(Symbol)
STATION NAME	(Symbol)
STATION CLASSIFICATION	(Symbol)
STATION STATUS	(Symbol)
STATION TYPE	(Symbol)
STATION NUMBER	(Symbol)
STATION FREQUENCY	(Symbol)
STATION RANGE	(Symbol)
STATION POWER	(Symbol)
STATION ANTENNA	(Symbol)
STATION COORDINATES	(Symbol)
STATION ELEVATION	(Symbol)
STATION DIRECTION	(Symbol)
STATION BEARING	(Symbol)
STATION COURSE	(Symbol)
STATION SPEED	(Symbol)
STATION TIME	(Symbol)
STATION DATE	(Symbol)
STATION SOURCE	(Symbol)
STATION NOTES	(Symbol)

RATES ON THIS CHART
7963-X



NOTE: 1. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 2. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 3. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 4. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 5. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 6. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 7. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 8. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 9. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart. 10. This chart is a reproduction of the original chart published by the Hydrographic Office, Washington, D.C., in 1975. It is not to be used for navigation without the original chart.

PROGRESS SKETCH
 OPR-P125-97
 NORTHWEST PRINCE WILLIAM SOUND
 SEPT. - OCT. 1997
 CAPT. A. D. ANDERSON, NOAA
 COMMANDING
 CHART 16705



Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
AA	H-10785	10/1	100	10/27		16.2
AB	H-10782	10/1	100	10/31		15.9
AR	H-10782	9/26	100	10/31		65.1
AS	H-10778	9/17	100	10/28		9.0
AT	H-10776	9/3	100	9/29		6.7
AU	H-10773	9/2	100	9/24		6.3
AV	H-10774	9/6	100	9/29		5.8
AW	H-10777	9/15	100	10/22		2.4
AX	H-10779	9/18	100	10/30		7.1
AY	H-10787	10/16	100	10/30		5.2
AZ	H-10781	9/20	100	10/29		4.8
BA	H-10789	10/8	100	10/21		4.6
BB	H-10775	9/11	100	10/21		27.2
Z	H-10791	9/11	80			24.9
FE'A	AR INSET	10/5	100	10/5		2.0

Accomplished	Sept	Oct
LNM Hydro	1052.5	1845
LNM SSS	0	0
SQ NM	77.1	102.9
AWOIS Invest.	0	1
Other Invest.	3	16
LNM Multibeam	164.4	241.5
Days At Sea	28	29

Downtime_Type	Sept	Oct
Weather - Days	3	0
Mechanical -Hr	0	2
Electronic -Hr	0	1

16705
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Descriptive Report to Accompany Hydrographic Survey H-10775

Field Number RA-40-03-97

Scale 1:40,000

September-October 1997

NOAA Ship RAINIER

Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed in Northwest Prince William Sound as specified by Project Instructions OPR-P125-RA dated August 27, 1997 and Change Number 1 dated ~~September 24~~ ^{October 1}, 1997. Survey H-10775 corresponds to sheet BB as defined in the sheet layout. Requests for hydrographic surveys and updated charts in this area have been received from the Defense Mapping Agency, the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

B. AREA SURVEYED ✓ *See Eval Report, Section B*

The survey area is Port Nellie Juan between Culross ~~Pass~~ ^{Passage} and Kings Bay. The survey's eastern limit is longitude $148^{\circ} 05' 46''$ W at the entrance to Port Nellie Juan. The remaining limits are defined by the area of safe ship navigation within Port Nellie Juan, approximately one half mile from the shoreline. Data acquisition was conducted from September 11 to October 19, 1997 (DN 254-292).

C. SURVEY VESSELS ✓

The RAINIER (vessel number 2120) was the only vessel to acquire swath data, sound velocity casts, and bottom samples for this survey. No unusual vessel configurations or problems exist for this survey. *Concur*

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Data were acquired and processed using the Intermediate Depth Swath Survey System (IDSSS). A complete listing of all programs used to acquire and process data is included in Appendix VI.* The final field sheet was generated using combined offline processed (VAXCOP-minimum only) soundings processed on a 200 meter grid and exported to a personal computer running MapInfo (Version 4.1) and MapBasic software developed by N/CS32 and modified by Rainier personnel. Final field sheet contours are based on a 40-meter grid cell size surface representative of the soundings in the VAXCOP data set.

E. SONAR EQUIPMENT ✓

No side scan sonar operations were conducted on this survey. *Concur. Multibeam sonar system was used on this survey.*

F. SOUNDING EQUIPMENT ✓

The IDSSS configuration consisted of a data acquisition system (DAS) comprised of a Digital Equipment Corporation's (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, a Trimble P-code GPS system. Hydrochart II is a multibeam sonar system that uses two 36 kHz transducer arrays of 9 beams each, to produce an athwartship swath of bathymetric data approximately 2.5 times the water depth.

* Filed with the hydrographic data.

The DEC VAX Station 4000-90 computer collected input from the Hydrochart II, HIPPY, gyrocompass, and the navigation system. Guidance was also provided to the helmsman and a near real time contour map was plotted. The DEC VAX Station 4000-90 computer was used to process the data and create corrected merge files, selected sounding files, and processing sheets. 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
DATAWELL Hippy
ZETA 24" Plotter
DEC monitor

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Three sound velocity casts were acquired within the survey limits as shown in the appended Survey Information Summary report. The sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated December 15, 1996. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.3 (1997), in accordance with Field Procedures Manual (FPM) section 2.4.3. Printouts of the sound velocity profile, data, and correctors used in field processing are included in the "Separates to be Included with Survey Data, IV.*Sounding Equipment Calibrations and Corrections".

The static draft and offsets for RAINIER, 2120, were collected in 1995. Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.3. Correctors are included with project data for OPR-P125-RA-97. The GPS antenna offset tables*are included with project data for OPR-P125-RA-97.

Predicted tides for the project were provided for the Cordova, Alaska reference station (945-4050) in an IDSSS compatible format from ONCO, Software Engineering Branch. IDSSS listings of the data used in generating tidal correctors are included in Appendix V* of this report. Tidal correctors as provided in the project instructions for H-10775 are shown on the appended Survey Information Summary report

Valdez, Alaska (945-4240) and Cordova, Alaska (945-4050) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 tide gages at Applegate Island (945-4794) on September 1, Blue Fiord on September 5, and Kings Bay on September 10, 1997.

Refer to the Field Tide Notes and supporting data in Appendix V* for individual gage performance and level closure information. This information has been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3 on November 3, 1997. *Approved tide note dated February 5, 1998 is attached.*

H. CONTROL STATIONS ** ✓ *See Eval Report, Section H.*

The horizontal datum for this project is NAD 83. Station ROCK, recovered in 1996 and checked using program MONITOR in 1997, was used to verify and establish local geodetic control for this survey. See the OPR-P125-RA-97 Horizontal Control Report for more information. ***Copy attached to this report.*

** Filed with the hydrographic data.*

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

All soundings were positioned using differential GPS. Primary hydrographic control was based on the USCG beacons located at the Kenai Peninsula and Cape Hinchinbrook. Stations on Kodiak Island and Potato Point were also received in this area. VHF differential reference stations ROCK and DON were installed by RAINIER personnel and available as supplemental control.

RAINIER used program SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacons while at anchor. Periodic comparisons and occasional performance checks were logged with the SHIPDIM system. Some outliers were noted, but none indicated systematic or continuous errors in the beacons. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-P125-RA-97.

J. SHORELINE ✓ See Eval Rpt., Section J.

The shoreline manuscript from Coastal Mapping survey CM-92012 was supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital files from DM-10188, DM-10192, DM-10193, and DM-10194 were projected to the survey grid with OPR-P125-RA-97 geodetic parameters using program Shore version 2.0, provided by N/CS32, and plotted on the final field sheet using MapInfo for orientation only. Shoreline verification was not conducted for this survey. *Concur*

K. CROSSLINES ✓

Crosslines agreed within 4 meters with mainscheme hydrography, except in areas of steep bathymetry. There were a total of 16.8 nautical miles of crosslines, comprising 14.8% of mainscheme hydrography.

L. JUNCTIONS ✓ See Eval Report, Section L.

Survey H-10775 junctions with the following 1:10,000 scale 1997 single-beam surveys:

Survey	Junction Edge
H-10789	West
H-10781	North & South
H-10787	North & South
H-10779	South
H-10777	North
H-10778	East
H-10776	East
H-10773	North
H-10774	South

H-10782 (Multi-beam) East

Comparisons to the contemporary surveys showed generally good agreement with the exception of surveys H-10774, H-10781, H-10787, and H-10789 in areas of 150-250 fathoms on steep slopes. In these areas of steep slopes, comparisons to single beam data from lines run in an offshore direction showed differences of between 12-14 meters in the southern portion of survey H-10787 and the northeast portion of H-10789. Comparisons with survey lines run in an offshore direction in the northern section of survey H-10781 resulted in differences between 20-60 meters. In all cases IDSSS soundings were deeper. In areas with deep, flat bottoms, comparisons were good. *Concur* A review of the data used for comparisons, as well as the systems used to collect that data, revealed no definitive cause for the differences of this magnitude. It is noted that the differences occur in areas with very steep slopes, deep water, and potential localized water column anomalies. Under these conditions inherent differences in measurement systems such as beam width, frequency, power output, receiver sensitivity, bottom tracking function and timing latency are

Concur with Certification

exaggerated. Agreement between this survey and five of the junction surveys, agreement with all junctions in flat bathymetry, and agreement within individual IDSSS swaths, adjacent IDSSS swaths, and crosslines support the confidence established in the accuracy of this survey. *Concur*

Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum. *Concur*

M. COMPARISON WITH PRIOR SURVEYS ✓ *See Eval Report, section M.*

The following prior surveys cover this survey:

Survey	Scale	Date
H-7794	1:40,000	1948
H-3973	1:20,000	1917
H-8606	1:10,000	1961
H-8491	1:10,000	1959

H-3570 1:40,000 1913

Three 1961 1:10,000 prior surveys H-8594, H-8594, and H-8595 were inshore and did not overlap this survey. Prior soundings from H-7794, H-8491, and H-3973 were in fair agreement with the present survey. Soundings from the IDSSS survey were found to be generally shoaler than these priors. Comparison of the present survey to prior survey H-8606 revealed areas in the deeper, flatter portions of the survey where *the present survey to be significantly deeper throughout the common area* ~~the survey was conducted in 1961~~ *revealed areas in the deeper, flatter portions of the survey where* prior survey soundings were found to be shoaler. In the opinion of the Hydrographer, comparisons with H-8606 could be attributed to 1) the penetration of the lower frequency IDSSS into accumulations of glacial silt, 2) subsidence resulting from the 1964 earthquake, or 3) the transport of the silt accumulations out of Port Nellie Juan. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey. *Concur with clarification*

N. ITEM INVESTIGATIONS ✓

None. *Concur*

O. COMPARISON WITH THE CHART ✓ *See Eval Report, section O.*

Chart 16705, ⁷13th Edition, September ²⁷199⁷ is the largest scale chart covering the survey area. Comparison of soundings is described in Section M. Final sounding comparisons will be made at PHB after reduction to final vertical datum. *Concur*

Dangers to Navigation

No dangers to navigation were discovered during this survey. *Concur*

P. ADEQUACY OF SURVEY ✓ *See Eval Report, Section P.*

Survey H-10775 is complete and adequate to supersede prior soundings and features in their common areas. *Concur*

Q. AIDS TO NAVIGATION ✓

Point Nellie Juan Light is discussed in survey H-10776. *Concur*

R. STATISTICS ✓

Refer to the Survey Information Summary attached to this report.

S. MISCELLANEOUS ✓

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions. A strong current was noticed north of Point Coxcomb near West Finger Inlet. No unusual magnetic variations were found during this survey. Secchi disk observations were not performed.

T. RECOMMENDATIONS ✓

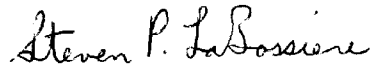
None.

U. REFERRAL TO REPORTS ✓

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

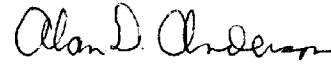
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-O328-RA Horizontal Control Report	November 1997	N/CS34
OPR-O328-RA 1997 Coast Pilot Report	December 1997	N/CS26
Project related data for OPR-O328-RA	Incremental	N/CS34
Secchi Disk Observations for OPR-O328-RA	January 1998	N/CS31

Respectfully Submitted,



Steven P. LaBossiere
Lieutenant, NOAA

Approved and Forwarded,



Alan D. Anderson
Captain, NOAA
Commanding Officer

Survey Information Summary

Project OPR-P125-97 **Project Name** Northwest Prince William Sound
Instructions Dated 8/27/97 **Project Change Info:** **Change #** 1 **Dated** 10/1/97
Sheet Letter BB **Registry Number** H-10775
Sheet Number RA-40-3-97
Survey Title Port Nellie Juan from Culross Passage to Kings Bay
Data Acquisition Dates **From** 9/11/97 **To** 10/19/97

Vessel Usage Summary

VESNO	MS	SPLIT	DEV	XL	S/L	DP	BS	DIVE
2120	2			1			1	

Vessel Usage Summary

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
		247	786	60/35/12	
				148/12/54	
		290	792	60/33/30	
				148/13/42	
		292	785	60/33/18	
				148/13/18	

Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS39	0	x0.95
PWS40	0	x0.96
PWS41	0	x0.97
PWS41A	0	x0.97
PWS42	0	x0.95
PWS43	0	x0.94

Tide Gauge Information

Tide Gauge #	Gage Name	Installed	Removed
945-4794	Applegate Island	9/1/97	10/30/97
945-4818	Blue Fjord	9/5/97	10/30/97
945-4951	Kings Bay Inside	9/10/97	10/22/97

Statistics Summary

Type	Total
BS	9
DEV	0
DP	0
MS	113.4
S/L	0
SPLIT	0
XL	16.8

Percent XL:	14.8
SQNM:	27.2

CONTROL STATIONS as of 9 Dec 1997 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Uel Code	MM/DD/YY	Station Name
1		060:14:18.000	146:38:48.000	0	0	0.0	0.0	04/06/96	CAPE HINCHINBROOK USCG BECON
2		060:27:20.117	148:39:54.333	0	0	0.0	0.0	10/01/97	DON DGPS
3		060:03:25.000	146:41:48.000	0	0	0.0	0.0	03/01/96	POTATO POINT USCG BEACON
4		060:39:17.513	147:58:26.500	18	0	0.0	0.0	00/00/00	ROCK

APPROVAL SHEET

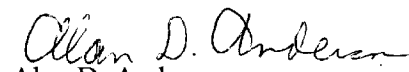
For

H-10775

RA-40-03-97

Standard procedures were followed in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Guidelines; and the 1994 version of the Field Procedures Manual in producing this survey. The data were examined daily during data acquisition and processing.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.


Alan D. Anderson
Captain, NOAA
Commanding Officer



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 5, 1998

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA-97
HYDROGRAPHIC SHEET: H-10775

LOCALITY: Northwest Prince William Sound, AK

TIME PERIOD: Sep 11 - Oct 19, 1997

TIDE STATION USED: 945-4691 Herring Point, Knight Island Passage
Lat. 60° 28.5'N Lon. 147° 47.5'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.326 meters

TIDE STATION USED: 945-4729 Pt. Perry, Perry Island
Lat. 60° 45.1'N Lon. 147° 57.8'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.386 meters

TIDE STATION USED: 945-4794 Applegate Island
Lat. 60° 37.4'N Lon. 148° 09.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.385 meters

TIDE STATION USED: 945-4818 Blue Fjord
Lat. 60° 29.5'N Lon. 148° 14.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.407 meters

TIDE STATION USED: 945-4951 Kings Bay Inside
Lat. 60° 27.4'N Lon. 148° 39.9'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.418 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: PWS38, PWS39, PWS40, PWS41, PWS41A,
PWS 42, PWS43 & PWS52

Refer to attachments for zoning information.

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

Note 2: Use tide data from the appropriate station for each zone according to the order in which they are listed in the "Tidezone" corrector files. For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available. All zones within a survey sheet may not have the same order of applicable tide stations.

[Signature]
CHIEF, OPERATIONAL ANALYSIS BRANCH



Final tide zone node point locations for OPR P125-RA-97,
Sheet H-10775.

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

		Tide Station Order	AVG Time Correction	Range Correction
Zone PWS38				
-147.78401	60.368002	945-4691	0	1.00
-147.766126	60.390181	945-4794	0	0.98
-147.638164	60.475795	945-4729	0	0.99
-147.643214	60.497618			
-147.595271	60.527063			
-147.560712	60.570642			
-148.101183	60.592465			
-148.114598	60.574838			
-148.128786	60.481602			
-148.012385	60.476742			
-148.011446	60.457767			
-148.054039	60.428791			
-148.006895	60.382627			
-148.00016	60.375912			
-147.78401	60.368002			
Zone PWS39				
-148.114598	60.574838	945-4818	0	1.00
-148.135079	60.580714	945-4794	0	1.01
-148.237563	60.621003	945-4951	0	1.00
-148.288683	60.597501			
-148.274604	60.483349			
-148.296492	60.428791			
-148.133173	60.449775			
-148.114598	60.574838			
Zone PWS40				
-148.288683	60.597501	945-4818	0	1.00
-148.380845	60.567284	945-4951	0	1.00
-148.466181	60.516083	945-4794	0	1.01
-148.296492	60.428791			
-148.274604	60.483349			
-148.288683	60.597501			
Zone PWS41				
-148.380845	60.567284	945-4951	0	1.00
-148.394499	60.600858	945-4818	0	1.00
-148.534449	60.567284	945-4794	0	1.01

-148.466181 60.516083
-148.380845 60.567284

Zone PWS41A

-148.534449 60.567284	945-4951	0	1.00
-148.789986 60.446154	945-4818	0	1.00
-148.68369 60.398869	945-4794	0	1.01
-148.466181 60.516083			
-148.534449 60.567284			

Zone PWS42

-148.101183 60.592465	945-4794	0	0.99
-147.93198 60.657934	945-4729	0	1.00
-147.957558 60.686216	945-4691	0	1.01
-148.000248 60.724243			
-148.149283 60.748856			
-148.18628 60.710814			
-148.164093 60.631914			
-148.158371 60.62628			
-148.140411 60.624813			
-148.135079 60.580714			
-148.114598 60.574838			
-148.101183 60.592465			

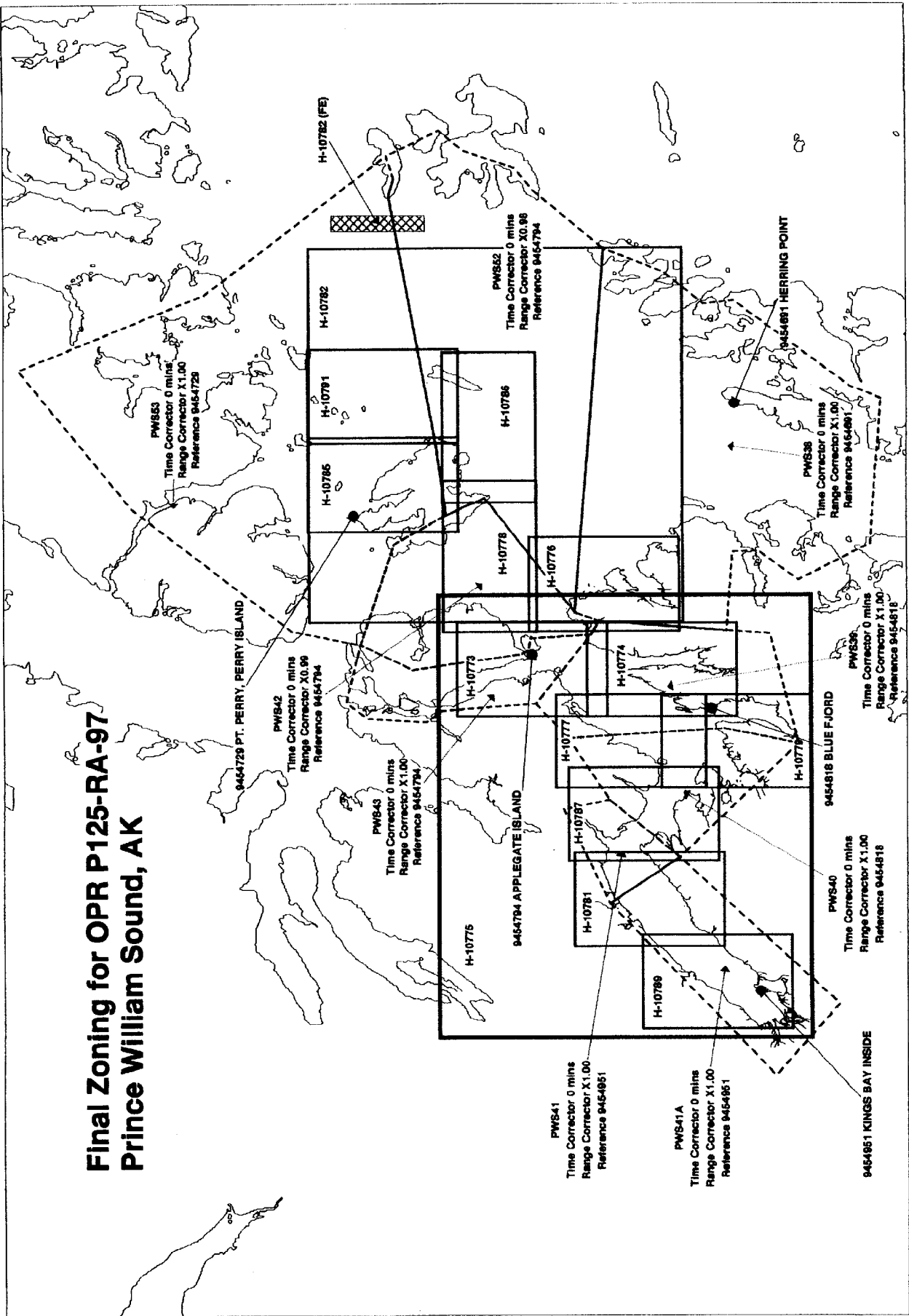
Zone PWS43

-148.135079 60.580714	945-4794	0	1.00
-148.140411 60.624813	945-4818	0	0.99
-148.158371 60.62628	945-4729	0	1.00
-148.164093 60.631914			
-148.18628 60.710814			
-148.149283 60.748856			
-148.234314 60.759316			
-148.241973 60.755184			
-148.259058 60.743334			
-148.264789 60.700742			
-148.247722 60.68983			
-148.237563 60.621003			
-148.135079 60.580714			

Zone PWS52

-147.93198 60.657934	945-4794	0	0.98
-147.957558 60.686216	945-4729	0	0.99
-147.848006 60.693887	945-4691	0	1.00
-147.48158 60.72734			
-147.456957 60.723688			
-147.422995 60.72893			
-147.385582 60.690765			
-147.416199 60.672546			
-147.441099 60.63539			
-147.474131 60.622033			
-147.560712 60.570642			
-148.101183 60.592465			
-147.93198 60.657934			

Final Zoning for OPR P125-RA-97 Prince William Sound, AK



GEOGRAPHIC NAMES

H-10775

Name on Survey	A ON CHART NO. 16700, 1605 B ON PREVIOUS SURVEY 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										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X		X							1	
APPLEGATE ISLAND	X		X							2	
BLUE FIORD	X		X							3	
COXCOMB POINT	X		X							4	
CULROSS ISLAND	X		X							5	
CULROSS PASSAGE	X		X							6	
DEEP WATER BAY	X		X							7	
DERICKSON BAY	X		X							8	
DIVISION POINT	X		X							9	
EAST FINGER INLET	X		X							10	
GREYSTONE BAY	X		X							11	
KINGS BAY	X		X							12	
KINGS POINT	X		X							13	
McCLURE BAY	X		X							14	
MINK ISLAND	X		X							15	
PORT NELLIE JUAN	X		X							16	
PRINCE WILLIAM SOUND (title)	X		X							17	
SHADY COVE	X		X							18	
WEST FINGER INLET	X		X							19	
										20	
										21	
										22	
										23	
										24	
										25	

[Signature]
Chief Geographer

JUN 9 1998

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	NA
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	NA

DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES					
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

SHORELINE MAPS (List): **DM-10188, DM-10192, DM-10193, DM-10194**

PHOTOBATHYMETRIC MAPS (List): **NA**

NOTES TO THE HYDROGRAPHER (List): **NA**

SPECIAL REPORTS (List): **NA**

NAUTICAL CHARTS (List): **16705 17th Ed., 9/27/97**

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	177		177
COMPARISON WITH PRIOR SURVEYS AND CHARTS		77.5	77.5
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		39	39
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		126	126
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	177	242.5
		77.5	419.5

Pre-processing Examination by Pacific Hydrographic Branch	Beginning Date 3/5/98	Ending Date 3/5/98
Verification of Field Data by M. Bigelow, D. Doles, E. Domingo, R. Mayor, G. Nelson	Time (Hours) 177	Ending Date 10/18/98
Verification Check by B. Olmstead	Time (Hours) 4	Ending Date 11/24/98
Evaluation and Analysis by L. Deodato	Time (Hours) 242.5	Ending Date 10/27/98
Inspection by B. Olmstead	Time (Hours) 7	Ending Date 12/14/98

EVALUATION REPORT

H-10775

A. PROJECT

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

B. AREA SURVEYED

The survey area is adequately discussed in the hydrographer's report. A page-size plot of the charted area depicting the limits of supersession accompany this report as Attachment A.

The bottom consists mainly of mud and gravel. Depths range from 35 to 345 fathoms.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Hydrochart II (Seabeam, Inc.) Intermediate Depth Swath Survey System (IDSSS) was used by the field for acquisition and some processing of swath data. The bulk of field processing was accomplished using the Mutibeam Support Vax system. Office processing was accomplished using Hydrographic Processing System (HPS) and MicroStation 95.

Processed digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., .dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

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

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

E. SONAR EQUIPMENT

Sonar equipment has been adequately addressed in the hydrographer's report.

F. SOUNDING EQUIPMENT

Sounding equipment has been adequately addressed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

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

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from approved hourly heights zoned direct from the following tide gauges: Herring Point, Knight Island Passage, AK, 945-4691, Applegate Island, AK, 945-4794, Blue Fjord, AK, 945-4818, and Kings Bay Inside, AK, 945-4951. Pt. Perry, Perry Island, AK, 945-4729 was listed on the approved tide note but not used for sounding reduction.

H. CONTROL STATIONS

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

The positions of horizontal control stations used during hydrographic operations are field values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -2.127 seconds (-65.816 meters)
Longitude: 7.499 seconds (114.413 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. In the event that the differential GPS corrector signal is lost, a switch to P-Code is made automatically by the Trimble receiver. Although P-Code accuracy is less than DGPS, at 0.5mm or better, it is adequate for survey operations at 1:40,000 scale. The satellite configuration, as indicated by HDOP and number of satellites, is monitored visually on the IDSSS and Trimble displays, and data are not collected when HDOP exceeds 15. DGPS performance checks were conducted in the field and found adequate.

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

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

J. SHORELINE

Shoreline maps DM 10188, DM 10192, DM 10193, and DM 10194, scale 1:20,000, were compiled on NAD83 and apply to this survey. Shoreline drawn in black on the smooth sheet originates from the above digital manuscripts as provided in digital format by the Coastal Mapping Program. The digitized files and the survey file were merged during MicroStation processing.

There were no Mean High Water Line revisions on this survey.

K. CROSSLINES

Crosslines are adequately discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10775 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10773	1997	1:10,000	Southern Culross Passage
H-10774	1997	1:10,000	McClure Bay and Vicinity
H-10776	1997	1:10,000	Main Bay and Approaches
H-10777	1997	1:10,000	Port Nellie Juan, SW of Mink Island
H-10778	1997	1:10,000	Southern Approaches to Perry Passage
H-10779	1997	1:10,000	Blue Fjord and Derickson Bay
H-10781	1997	1:10,000	Entrance to Kings Bay
H-10782	1997	1:40,000	Offshore Knight Island to Perry Passage
H-10787	1997	1:10,000	The Finger Inlets, Greystone & Deep Water Bays
H-10789	1997	1:10,000	Head of Kings Bay

The junction with H-10774 is poor. However, standard depth curves in common with both surveys are in good agreement. A comparison with depths in the junction area reflect differences of 10-40 fathoms, the multibeam data being consistently deeper. The area is defined between the 100 and 200 fathom depth curves and located as follows: Lat. 60/32/00N, Lat. 60/34/00N and from Lon. 148/11/15W to Lon. 148/13/45W. The DSF 6000N was used to collect sounding data on H-10774 and is believed to have been operated with an improper gain setting and excessive vessel speed along the steep bottom relief. Agreement with multibeam data outside the specified area is satisfactory (0-3 fathoms) and reflects no consistent pattern of being shoaler and or deeper. Analysis of these discrepancies during office processing provided no obvious problems with any systematic positional errors. It is believed the multibeam data provides a more accurate representation of the bottom and should supersede data within the overlap area specified above.

The junctions with the remaining surveys are good. General differences of 0-3 fathoms are noted throughout the common areas and standard depth curves are in good agreement. During office processing many suspected depth discrepancies with H-10775 were further analyzed and found to originate from the poor performance of the echo sounder on steep slope which was surveyed at excessive vessel speed and improper gain setting. In many instance the hydrographer attempted to correct the problem by editing the raw sounding data. However the quality of the echo sounder trace is so poor that the edits are likely based on judgment rather than quantifiable data. Office review of the problem has determined that the exception of obviously erroneous depths (rejected/rescanned), further editing is not reasonable since no corrective action can be taken to improve the quality of the trace. Generally, the affected depths are deep in excess of 125 fathoms and will have little negative effect on the quality of nautical charts at scales less then 1:40,000. After additional office processing, depth agreement with the multibeam data is good except as noted in the discussion with survey H-10774 and in the list tabulated below. A joins note has been added to the smooth sheet where applicable.

Several depths from H-10775 were rejected along the junctional limits with H-10774, H-10778, H-10779, H-10781, and H-10787. Many of these soundings fall inshore of the 100 fathom depth curve on the junction surveys and were consistently 10-50 fathoms deeper than the single beam data. These depths are not plotted on the smooth sheet and are listed below.

<u>Sounding FMS</u>	<u>Latitude N</u>	<u>Longitude W</u>	<u>Junction Survey</u>
139	60/32/48.901	148/12/35.401	H-10774
119	60/32/55.713	148/12/29.853	"
110	60/33/01.754	148/12/23.260	"
158	60/33/11.710	148/12/18.096	"
116	60/33/23.468	148/12/07.275	"
105	60/33/29.289	148/11/59.584	"
101	60/33/32.353	148/11/54.914	"
141	60/32/45.523	148/12/39.634	"
126	60/33/19.334	148/12/12.113	"
140	60/33/15.349	148/12/15.462	"
116	60/37/18.491	148/07/46.569	H-10778
118	60/37/21.568	148/07/38.991	"
201	60/30/30.746	148/16/57.261	H-10779
234	60/31/45.704	148/35/15.343	H-10781
115	60/33/11.218	148/31/51.769	"
236	60/31/30.416	148/35/43.086	"
115	60/33/02.029	148/25/18.734	H-10787
105	60/32/57.153	148/25/11.918	"
107	60/31/07.511	148/22/24.600	"
117	60/32/19.758	148/25/52.402	"
129	60/33/17.865	148/25/56.748	"
96	60/32/47.446	148/24/44.952	"
81	60/32/42.118	148/24/34.350	"

M. COMPARISON WITH PRIOR SURVEYS

The present survey was compared to the following prior survey work.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-3570	1913	1:40,000	Valdez
H-3973	1917	1:20,000	Valdez

These prior survey cover the deeper portion of Port Nellie Juan and were conducted using leadlines and visual positioning techniques. Present survey depths were generally found to differ from 1-8 fathoms. These appear to be no consistent pattern of shoaling or an increase in depth. A few larger differences in depth with the prior surveys is largely attributed to erroneous leadline readings. The 100 and 200 fathom depth curves reflect little movement either seaward and or shoreward since 1913. Depth differences with the leadline surveys are largely attributed to better positioning, sounding methods and relative accuracy of the data acquisition techniques.

The present survey is adequate to supersede the prior surveys within the common area.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-7794	1948	1:40,000	Valdez
H-8491	1959	1:10,000	NAD 27
H-8606	1961	1:10,000	NAD 27

These prior surveys primarily cover the area from Culross Passage to Kings Bay and includes both the deeper and inshore areas of Port Nellie Juan and Kings Bay. Comparison of the present survey depths with H-7794 from Coxcomb Point to Derickson Bay reflects general

differences of 1-5 fathoms in depths ranging from 150-200 fathoms. The present survey depicts consistently deeper depths. However a comparison of depths from Kings Bay to Coxcomb Point reflects a consistently shoaler bias of 1-5 fathoms in depths ranging from 200-250 fathoms. Extreme depth difference (20-50 fathoms) with the 1948 survey work are noted in several instances in depths of 125-200 fathoms where the bottom slopes rapidly into Port Nellie Juan.

Comparison with H-8491 and H-8606 reflects similar depth differences as noted with H-7794 along the areas where the bottom slopes rapidly into Port Nellie Juan. Agreement with prior survey depths to 100 fathoms and beyond 225 fathoms reveals a general difference of 1-5 fathoms. In all cases discussed above the present survey portrays a deeper bias.

The large depth differences with the prior surveys along the areas from 100 to 225 fathoms is likely due to the operational characteristics of the echo sounder systems used in 1948-61 and the multibeam sonar system. Similar depth discrepancies (10-50 fathoms) were also noted during the conduct of prior survey H-8606. The EDO and 808 fathometers were used during the 1961 survey and revealed similar depth differences in areas of steep relief.

Survey H-10775 is adequate to supersede all of the above prior surveys within the common area.

In accordance with Hydrographic Survey Guideline No. 39, the effects of the 1964 Prince William Sound Earthquake were considered in the comparison of this survey. However, no reasonable adjustment value for prior soundings could be determined.

N. ITEM INVESTIGATIONS

There were no AWOIS items assigned to this survey.

O. COMPARISON WITH CHART

Survey H-10775 was compared with the following chart.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	17th	Sept. 27, 1997	1:80,000	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys. The prior surveys have been adequately addressed in section M and require no further discussion.

Survey H-10775 is adequate to supersede charted hydrography within the charted area.

b. Dangers to navigation

No dangers to navigation were discovered during survey operations and/or during office processing.

P. ADEQUACY OF SURVEY

With the exception of the rejected data listed in section ^LM, hydrography contained on survey H-10775 is adequate to:

mcr 12/1/99

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

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition, with the exception of the following.

In the event that the field units submission of survey data will exceed four weeks from the completion of work, the Chief of Party will submit a written explanation for the delay indicating the anticipated transmittal date to the Chief of the appropriate processing section. Marine Center ships will forward their explanation through the Marine Center Director. Fieldwork for survey H-10775 was completed on October 19, 1997 but not received for office processing until March 5, 1998.

Q. AIDS TO NAVIGATION

Point Nellie Juan Light was transferred from H-10776 to the smooth sheet. Refer to the descriptive report and smooth sheet for H-10776 regarding this fixed aid. There were no floating aids to navigation within the survey area.

There are no charted landmark within the area of this survey. The hydrographer made no charting recommendation for new landmarks within the area of this survey.

R. STATISTICS

Statistics are adequately itemized in the hydrographer's report.

S. MISCELLANEOUS

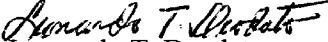
Miscellaneous information is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

T. RECOMMENDATIONS

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

U. REFERRAL TO REPORTS

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


Leonardo T. Deodato
Cartographer

APPROVAL SHEET
H-10775

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: 12/14/98
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

James C. Gardner Date: 1/22/99
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Andrew A. Armstrong III Date: Jan 27, 1999
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

