

H10635

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-10-13-95
Registry No. H-10635

LOCALITY

State Alaska
General Locality Prince William Sound
Sublocality 3 NM West of Point Esther

1995

CHIEF OF PARTY

D.R. Seidel

LIBRARY & ARCHIVES

DATE April 7, 1997

DIAGRAM 8551-4

Charts

Ⓐ

Ref: BP 161046

PRODUCTS

CP9

16711

16705

16700

16013NC

HYDROGRAPHIC TITLE SHEET

H-10635A&B

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-10-13-95

State Alaska

General locality Prince William Sound

Locality 3 NM West of Point Esther

Scale 1:10,000 Date of survey Aug 23 - Sept 26, 1995

Instructions dated 7/18/95, Change #1, 8/30/95 Project No. OPR-P125-RA

Vessel NOAA Ship Rainier (2120), (2124), (2125)

Chief of party CAPT D. R. Seidel, NOAA

Surveyed by CAPT D. Seidel, LCDR A. Francis, LT D. Haines, LT M. Larsen, ENS S. Maenner, ENS J. Becker, ENS N. Bennett

Soundings taken by echo sounder, ~~and DSR-6000~~ DSR-6000N, Seabeam Inc-Hydrochart III Sonar System

Graphic record scaled by RAINIER personnel

Graphic record checked by RAINIER personnel

Evaluation ~~Processed~~ by C. R. Davies Automated plot by HP 650C Inkjet Plotter

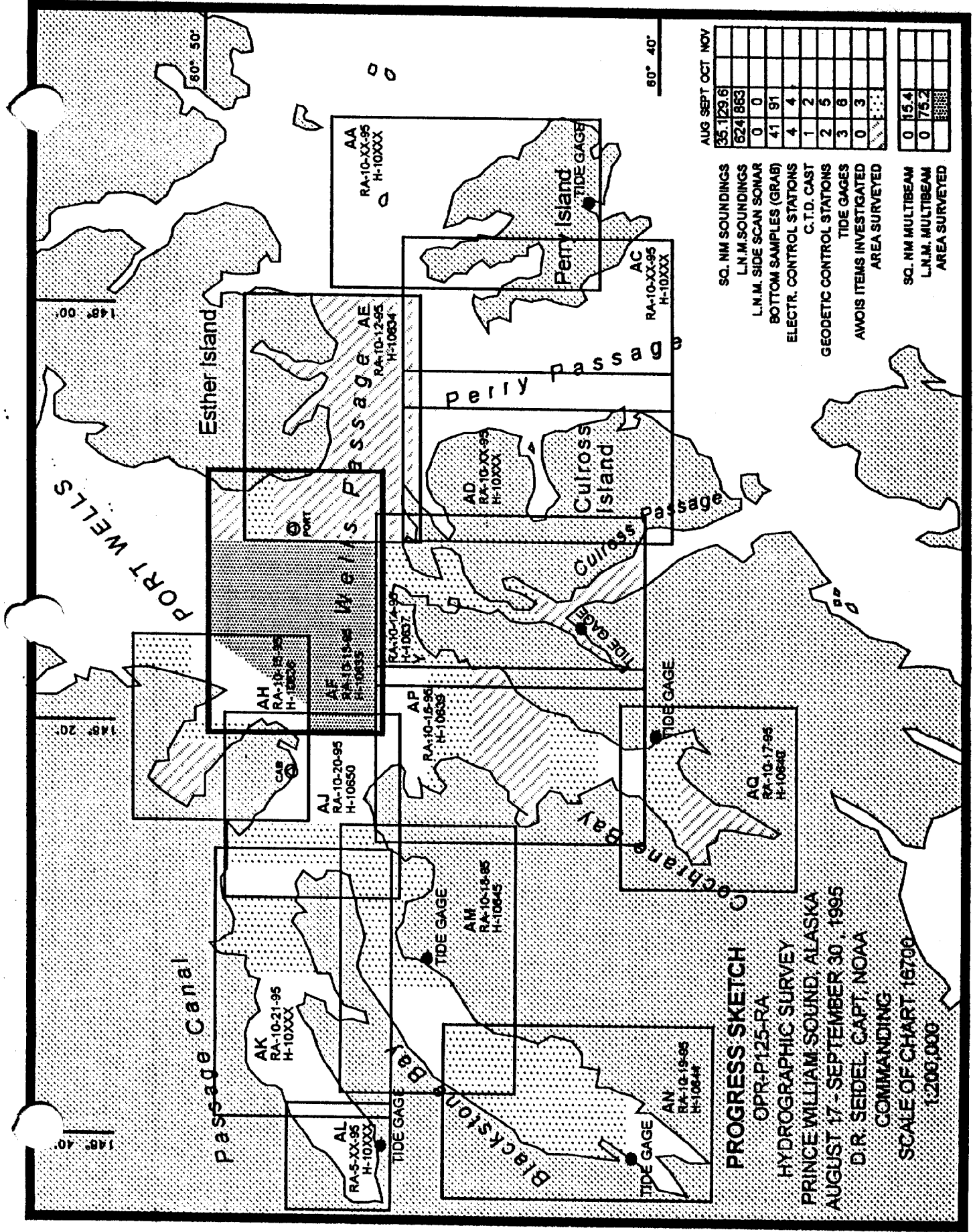
Verification by E. Domingo

Soundings in fathoms ~~MLLW~~ at MLW MLLW _____

REMARKS: Time in UTC, revisions and marginal notes in black were generated during office processing. All separates are filled 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.

AW012/SURF 3/28/97 mkr

SA 4-8-97



AUG SEPT OCT NOV	
SQ. NM SOUNDINGS	35 129 6
LN.M. SOUNDINGS	624 863
LN.M. SIDE SCAN SONAR	0 0
BOTTOM SAMPLES (GRAB)	41 91
ELECTR. CONTROL STATIONS	4 4
C.T.D. CAST	1 2
GEODEIC CONTROL STATIONS	2 5
TIDE GAGES	3 6
AWOIS ITEMS INVESTIGATED	0 3
AREA SURVEYED	0 15.4
SQ. NM MULTIBEAM	0 75.2
LN.M. MULTIBEAM	
AREA SURVEYED	

SQ. NM SOUNDINGS
 LN.M. SOUNDINGS
 LN.M. SIDE SCAN SONAR
 BOTTOM SAMPLES (GRAB)
 ELECTR. CONTROL STATIONS
 C.T.D. CAST
 GEODEIC CONTROL STATIONS
 TIDE GAGES
 AWOIS ITEMS INVESTIGATED
 AREA SURVEYED
 SQ. NM MULTIBEAM
 LN.M. MULTIBEAM
 AREA SURVEYED

PROGRESS SKETCH
 OPR-P125-RA
 HYDROGRAPHIC SURVEY
 PRINCE WILLIAM SOUND, ALASKA
 AUGUST 17 - SEPTEMBER 30, 1995
 D.R. SEIDEL, CAPT, NOAA
 COMMANDING
 SCALE OF CHART 16700
 1:200,000

Descriptive Report to Accompany Hydrographic Survey H-10635

Field Number RA-10-13-95

Scale 1:10,000

August - September 1995

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel, NOAA

A. PROJECT ✓

This basic hydrographic survey was completed in Northwest Prince William Sound, Alaska, as specified by Project Instructions OPR-P125-RA dated July 18, 1995 and change number 1 dated August 30, 1995.

Survey H-10635 corresponds to "sheet AF" 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 Defense Mapping Agency, the Southwest Alaska Pilot's Association, and private interests such as cruise ship lines and local fishermen.

Survey H-10635 employed both single beam data acquisition and multibeam data acquisition. Single beam data acquisition was conducted from August 23, 1995 (DN 235) to September 10, 1995 (DN 253). Multibeam data acquisition was conducted on September 22, 1995 (DN 265) and September 26, 1995 (DN 269).

B. AREA SURVEYED ✓ See Eval Rpt, Section B

The survey area is located 3 nautical miles west of Point Esther. The survey sheet limits were partitioned to facilitate multibeam and single beam operations.

The single beam limits are as follows: the eastern limit is $148^{\circ} 08.0'W$, the western limit is $148^{\circ} 11.0'W$, the northern limit is $60^{\circ} 50.2'N$ and the southern limit is $60^{\circ} 48.5'N$.

The multibeam limits are as follows: the eastern limit is $148^{\circ} 11.0'W$, the western limit is $148^{\circ} 20.8'W$, the northern limit is $60^{\circ} 50.2'N$ and the southern limit is $60^{\circ} 46.3'N$.

The survey's limits including both single and multibeam operations are as follows: the eastern limit is $148^{\circ} 08.0'W$, the western limit is $148^{\circ} 20.8'W$, the northern limit is $60^{\circ} 50.4'N$, and the southern limit is $60^{\circ} 46.3'N$.

C. SURVEY VESSELS ✓

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

<u>Vessel</u>	<u>EDP #</u>	<u>Operation</u>
RAINIER	2120	Bottom Samples Sound Velocity Casts Multibeam Swath Data
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Shoreline Verification

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Single beam data were acquired and processed using HDAPS Programs. A complete listing is included in ~~Appendix VI~~, *the separates.**

Multibeam data were acquired and processed using IDSSS and Hydrochart II (Seabeam Inc.) programs. A complete listing is included in ~~Appendix VI~~, *the separates.**

Velocity corrections were determined using:

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

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on H-10635.

* Filed with the hydrographic data.

F. SOUNDING EQUIPMENT ✓

Single Beam System ✓

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.

Multibeam Swath System ✓

The IDSSS "Phase III" configuration consisted of a data acquisition system (DAS) and a data processing system (DPS). No other sounding equipment was used during this survey. The data acquisition system (DAS) consisted of a DEC VAX Station 4000-90 computer system interfaced with a Seabeam Instruments Inc. Hydrochart II sonar system, Datawell heave-roll-pitch sensor (HIPPY), Sperry gyrocompass and an Ashtech DGPS system. Hydrochart II, is a multibeam sonar system that uses two transducer arrays to produce an athwartship swath of bathymetric data; the width of which is approximately 2.5 times the water depth.

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

DAS EQUIPMENT

Hydrochart II Sonar System

DEC Server DSRVW-7C

DEC VAX Station 4000-90 (DAS)

TTi 8212 Tape Drive

Sperry MK 227 Gyrocompass

DATAWELL Hippy

ZETA 24 in. Plotter

DEC monitor

The data processing system (DPS) was also controlled by a DEC VAX Station 4000-90

* Filed with the hydrographic data.

computer. A second graphic workstation was used to process the data and created corrected merge files, selected sounding files, and final field sheets. The DPS consisted of the following equipment:

DPS EQUIPMENT ✓

DEC VAX Station 4000-90 (DPS)

TTi 8212 Tape Drive

DEC Monitor

BRUNING 36 in. Plotter

Problems ✓

Preliminary contour plots revealed three artifacts in areas of rapidly shoaling depths. The erroneous data producing these artifacts was windowed out. The final field plots reflect these changes. Changes made to the window files are cataloged in the digital data at the head of each file.

The multibeam and single beam plots were overlaid and examined for continuity. While the latitude and longitudinal grids matched, the easting and northing grids produced by the multibeam and HDAPS system did not match. For this reason, only latitude and longitude was used for multibeam data acquisition and survey line planning. Final field plots use only latitude and longitude.

A GPS positioning flyer appears on the final field track plot at position 60° 46.5'N 148° 12.1'N and time 16:53:30. *This flyer was rejected during office processing.*

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>
1	1	234	60° 45' 42" N 148° 09' 48" W	600	235-244 (<i>outside survey area</i>)
2	1	239	60° 45' 42" N 148° 09' 48" W	600	239 (<i>outside survey area</i>)

<u>Velocity Table #</u>	<u>Cast #</u>	<u>DN</u>	<u>Cast Position</u>	<u>Deepest Depth (m)</u>	<u>Applicable DN</u>
3	2	248	60° 47' 12" N 148° 13' 42"W	534.7	248-253
4	2	253	60° 47' 12" N 148° 13' 42"W	534.7	253
6	3	264	60° 47' 38" N 148° 19' 15"W	546.2	265-269

Velocity tables 1 and 3 were used for single beam launch data acquisition. Velocity tables 2 and 4 were used for ship bottom samples collection. Velocity table 6 was used for ship multibeam data acquisition.

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

A printout of the Sound Velocity Corrector Table used in the HDAPS Post Survey program is included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections". *A printout of the Sound Velocity Corrector Tables used for input into the Hydrochart II subsystem is included in the data cahier.

Static Draft ✓

A transducer depth was determined using FPM Fig 2.2 for vessels 2124-2125 in the spring of 1995. These values were entered into the offset tables for each survey platform.

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

Settlement and Squat ✓

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 2124-2125 was collected in Shilshole Bay, Washington in the Spring of 1995.

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

* Filed with the hydrographic data

Offset Tables ✓

Offset tables contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 4-5 correspond to the number of the vessel, offset table 1 is used for RAINIER. The offset tables were compiled with new measurements in the spring of 1995 and are contained in the "Separates to be Included with Survey Data". *

Parameter Tables ✓

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

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

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

Heave ✓

The launches are not equipped with heave, pitch and roll (HRP) sensors. RAINIER is equipped with a HRP sensor, which was used during multibeam operations.

Bar Check and Lead Lines ✓

Bar check lines were calibrated by RAINIER personnel during the winter inport 1994-1995. Calibration forms are included with project data for OPR-P125-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 by N/OES334 through N/CS31 for the Cordova, Alaska reference station (945-4050). Tidal correctors as provided in the project instructions for H-10635 are:

* Filed with the hydrographic data.

Time Correction

0 hr 0 min

Height Correction

X0.96

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

Valdez, AK (945-4240) was used as the primary control station for datum determination at all subordinate stations.

RAINIER personnel installed an 8200 digital gage at Perry Island, South Bay (945-4721) on August 22, 1995. The staff was connected to five benchmarks during the opening levels run on August 22, 1995. The tide gage ran without problems during data acquisition.

The station description, field tide record, preliminary field tide note and data (Appendix V)* have been forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 in accordance with FPM 4.2.3. *Approved Tide Note dated April 18, 1996 is attached.*

H. CONTROL STATIONS ✓ *See Eval 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 PORT and CAB. Station PORT is located on Esther Rock and station CAB is located on a prominent point west of Pigot Point light. 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.

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

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

Method of Position Control ✓

All soundings and features were positioned using differential GPS. Serial numbers for Ashtech GPS equipment are annotated on the data printouts.* The serial number for the shipboard Ashtec GPS equipment is 70041B1205.

* Filed with the hydrographic data

Ashtech GPS ✓

VHF differential shore stations were established at stations CAB and PORT. The difference between the computed location and the published positions at station CAB and PORT 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 any station. Scatterplot results are included in the "Project related data for OPR-P125-RA".

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-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 maps DM-10062 was supplied by N/CS341 in Mylar and Standard Digital Data Exchange Format (SDDEF). The digital files were projected using OPR-P125 geodetic parameters with the program Shore Version 1.5, provided by N/CS32, and stored in HYPACK (*.DIG) format. Shoreline was plotted at survey scale on boat sheets and processing sheets.

Method of Shoreline Verification ✓

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

Shoreline verification was accomplished by taking detached positions (DPs) and assigning sequential reference numbers.

Shoreline and DM features verified via visual inspection were assigned sequential reference numbers, described, and recorded in the field using reference forms and corresponding 1:10,000 photocopies of the DM. Reference numbers, descriptions, and heights corrected to MLLW using predicted tides are recorded on the reference form. DPs taken during shoreline verification were recorded on DP forms. *These indicate significant DM features and features not found on the DM.

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.

Detailed 1:10,000 "Bottom Sample and Detached Position Plots" are provided showing all reference numbers, and notes relating to each feature. The information from these plots was transferred to a final field plot where possible. Verified DM features were retained and shown in black. Changes to the DM are shown in red. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and decimeters and are corrected to predicted MLLW.

Changes and New Features ✓

There were several changes and new features found during shoreline verification. Most of the rocks on the digital maps are high points of ledges. Several ledges are new shoreline features. *New revisions and features of the mean high water line have been shown on the smooth sheet as warranted. There are no revisions to the mean high water line.*

Disprovals ✓

None.

Recommendations ✓

The hydrographer recommends that the shoreline changes from the survey be used to supersede prior shoreline information compiled on DM-10062. *Concur*

Charted Features

Charted rocks were identified as either high points or extensions of DM ledges with the following exceptions:

Fix: 3203, 3204 **DN:** 237 **Position:** 60°49.7'N 148°08.8'W
Feature: Charted Rock

Method: Visual search in a 50-meter radius, search time 20 min. Average water depth 10 meters, visibility 6 meters. Search was conducted at or below MLLW. The area was free of kelp.

The hydrographer recommends deleting the charted rock at 60° 49.7'N 148° 08.8'W. *Concur*
This charted rock is likely part of the ledge as shown on the smooth sheet.

Fix: 3208

DN: 237

Position: 60° 50.25'N 148° 08.1'W

Feature: Charted Rock

Method: Visual search in a 50-meter radius, search time 10 min. Average water depth 7 meters, visibility 8 meters. Search was conducted at or below MLLW. The area was free of kelp. A new ledge including 3 DM rocks is 20m west of charted rock position.

The hydrographer recommends deleting the charted rock at 60° 50.25'N 148° 08.1'W. *Do not concern*
The hydrographer found a ledge in the area and that is portrayed on the smooth sheet. At
chart scale the ledge will be a rock. Retain rock symbol on chart, source will be the present
survey.

Feature: Charted cable areas

There are two charted cable areas within the survey limits. These were not investigated and should remain as charted. *conclude*

Problems ✓

None

K. CROSSLINES ✓

Crosslines are within 1-2 meter parameter agreement with mainscheme hydrography except in areas of complex bathymetry. Total single beam mileage was 3.6 nautical miles or 11.0 % of total mainscheme single beam hydrography. Total multibeam mileage was 7.9 nautical miles or 12.7% of total mainscheme multibeam hydrography.

L. JUNCTIONS *See EVAK Report, section L*

This survey junctions as follows:

North limit:	H-10443	(1:20,000, 1993) ²
Northwest limit:	H-10636	(1:10,000, 1995)
West limit:	H-10650	(1:10,000, 1995)
Southwest limit:	H-10639	(1:10,000, 1995)
South limit:	H-10637	(1:10,000, 1995)
East limit:	H-10634	(1:10,000, 1995)

Soundings were found to be in general agreement. Final comparison will be made at the Pacific Hydrographic Branch (PHB).

M. COMPARISON WITH PRIOR SURVEYS See Eum Report, section M

One prior survey was compared: H-7618 (1:20,000, 1947-1948). Preliminary comparisons revealed prior least depths shoaler than the current survey. However, the comparison was difficult because the prior survey was skewed and used the Valdez datum. Final comparisons will be done at PHB.

N. ITEM INVESTIGATIONS ✓

No AWOIS item investigations were assigned to H-10635. Concur

O. COMPARISON WITH THE CHART See Eum Report, section O

This survey was compared to NOS chart 16705, 15th Edition, September 1, 1990 1:80,000, (NAD83). 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 PHB.

Dangers to Navigation ✓

No dangers to navigation were submitted for H-10635. Concur

P. ADEQUACY OF SURVEY

Survey H-10635 is complete and adequate to supersede charted depths and features in their common areas. Concur

Q. AIDS TO NAVIGATION ✓

No aids to navigation were within the limits of survey H-10635. Concur

R. STATISTICS ✓

Single Beam NM Hydrography	40.4
Multibeam NM Hydrography	70.0
Velocity Casts	3
Detached Positions	17
Selected Soundings	1676
Bottom Samples	8
Tide Stations	1
Single Beam NM ² Hydrography	2.3
Multibeam NM ² Hydrograph	15.4

S. MISCELLANEOUS ✓

Bottom samples were collected but not retained in accordance with Project Instructions.

No unusual magnetic variations were noted.

Tidal current predictions for Wells Passage, north of Point Culross are available. The maximum average ebb and flood are 0.3 knots. The hydrographer did not notice any unusual tidal currents within the area surveyed.

T. RECOMMENDATIONS ✓

The multibeam system is an accurate and efficient method for acquiring data in deep depths. The system would be most effectively utilized by overlaying a smaller scale survey, i.e. 1:40,000, over multiple 1:10,000 scale surveys for future projects. This would allow RAINIER to acquire 100% bottom coverage and still obtain inshore accuracy with single beam hydrography.

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 1995 Horizontal Control Report for OPR-P125-RA.	November, 1995	N/CS34
Fall 1995 Coast Pilot Report for OPR-P125-RA.	November, 1995	N/CS26

Secchi Disk Observations for
OPR-P125-RA

November, 1995

N/CS31

Respectfully Submitted,



Natalie G. Bennett
Ensign, NOAA

Approved and Forwarded,



Dean R. Seidel
Captain, NOAA
Commanding Officer

CONTROL STATIONS as of 26 Sep 1995 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
100	F	060:14:18.000	146:38:48.000	0	250	0.0	0.0	08/22/95	CAPE WINCHINBROOK (BEACON)	
101	F	061:03:24.000	146:41:48.000	0	250	0.0	0.0	08/22/95	POTATO PT (BEACON)	
102	F	060:48:12.825	148:23:12.976	19	250	0.0	0.0	08/22/95	CAB 1914 (GPS STATION)	
103	F	060:48:05.091	148:10:45.240	17	250	0.0	0.0	08/22/95	PORT 1914 (GPS STATION)	

APPROVAL SHEET

for

H-10635

RA-10-13-95

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: April 18, 1996

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA

HYDROGRAPHIC SHEET: H-10635

LOCALITY: 3 Nautical Miles West of Point Esther, Prince William
Sound, Alaska

TIME PERIOD: August 23 - September 26, 1995

TIDE STATION USED: 945-4721 Perry Island (South Bay), Ak.
Lat. 60° 40.8'N Lon. 147° 55.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -1.42 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 10.9 ft.

REMARKS: RECOMMENDED ZONING

In Wells Passage, east of 148° 20.0'W, and west of 148° 07.0'W,
times are direct, and apply a X1.02 range ratio to heights using
Perry Island, Ak. (945-4721).

Note: Times are tabulated in Greenwich Mean Time.

William M. Helton
CHIEF, DATUMS SECTION



H-10635

GEOGRAPHIC NAMES

Name on Survey	A CHART NO. 1605, 1600 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								
ESTHER ISLAND	X		X									2
ESTHER, POINT *	X		X									3
ESTHER ROCK	X		X									4
PIGOT, POINT *	X		X									5
PORT WELLS (bay)	X		X									6
PRINCE WILLIAM SOUND	X		X									7
(title)												8
WELLS PASSAGE *	X		X									9
												10
												11
												12
												13
												14
												15
												16
												17
* Geographic Names												18
plot outside survey area.												19
												20
												21
												22
												23
												24
												25

Approved

Arthur Colby
Chief Geographer

MAR 29 1996

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
ACCORDION FILES	2		
ENVELOPES			
VOLUMES			
CAHIERS			
BOXES			1

SHORELINE DATA

SHORELINE MAPS (List): **DM-10063**

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): **16705 15th Edition**

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	156.5		156.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		14	14
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	14	170.5

Pre-processing Examination by P. Haines	Beginning Date	10-19-96	Ending Date	10-19-96
Verification of Field Data by D. Doles, E. Domingo, R Mayor	Time (Hours)	156.5	Ending Date	5-30-96
Verification Check by R. Davies, B. Olmstead	Time (Hours)	2	Ending Date	7-30-96
Evaluation and Analysis by R. Davies	Time (Hours)	14	Ending Date	6-5-96
Inspection by B. Olmstead	Time (Hours)	4	Ending Date	7-31-96

**EVALUATION REPORT
H -10635A&B**

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This survey was conducted in Prince William Sound, Alaska, and is located in Port Wells, three nautical miles west of Point Esther. The bottom consists mainly of sand and broken shells. Depths range from 0 fathoms to 236 fathoms.

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 Multibeam Support Vax system for the multibeam portion of the survey and Hydrographic Data Acquisition/Processing System (HDAPS) for the single beam portion of the survey. The Hydrographic Processing System (HPS) and AutoCad, Versions 12 and 13, were used during office processing.

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 was created with .dbf (extension) and enhanced using the AutoCad system, are filed both in the AutoCad drawing format, .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. All multibeam merge files (full resolution format), selected soundings and support files will also be retained at PHS.

The drawing files necessarily contain information which is not part of the HPS data set such as geographic 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. 75.

The field sheet parameters have been revised to center the hydrographer on the office plot. The 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-10635.

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 tides, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications. Actual tide reductions are derived from the Perry Island (South Bay), Alaska gage, (945-4721).

H. CONTROL STATIONS

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H -10635 is attached to this report.

The positions of horizontal control stations used during hydrographic operations are published and 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.

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

Latitude: -2.157 seconds (-66.751 meters)
Longitude: 7.451 seconds (112.679 meters)

The year of establishment of the control stations originates with the above mentioned horizontal control report and the hydrographer's signal list.

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. No positions exceeded this limit. 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

The following registered shoreline map compiled on NAD 83 applies to this survey.

<u>Map Number</u>	<u>Photo Date</u>	<u>Scale</u>
DM-10063	June, July 1989	1:20,000

Shoreline from DM-10063 was digitized at PHB and merged with the survey file during office ACAD processing. Changes to alongshore and offshore features shown on the shoreline manuscript were verified and revised as warranted during survey operations.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10635 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10443	1992	1:20,000	North
H-10634	1995	1:10,000	East
H-10636	1995	1:10,000	Northwest
H-10637	1995	1:10,000	South
H-10639	1995	1:10,000	Southwest
H-10650	1995	1:10,000	West

The junctions with surveys H-10443 has not been formally completed. This survey has been previously processed and forwarded for charting. This junction was made using a copy. Depths in the area are in satisfactory agreement within the common area.

The junction with all of the other surveys have been completed. There is good agreement between depth curves and soundings within the common areas.

M. COMPARISON WITH PRIOR SURVEYS

Survey H-10635 was compared with the following prior surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-7618(1947-48)		1:20,000
H-7187(1947)		1:10,000

Surveys H-7618 and H-7187 cover the entire area of the present survey. The sounding agreement is good between the present and prior survey. Comparison with the prior soundings reveals general differences of 1-2 meters (0.5-1.0 fathoms). Differences between the prior surveys and the present survey can be attributed to increased bottom coverage and less accurate positioning and sounding methods available in 1947.

Comparison of the depths with the prior surveys reveals good agreement. There appears to be no consistent pattern of shoaling or an increase in depths. As such an accurate assessment as to the specific effects of the 1964 Prince William earthquake cannot be made.

H-10635 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

There were no item investigations assigned to survey H-10635.

O. COMPARISON WITH CHART

Survey H-10635 was compared with the following chart.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	15th	September 1, 1990	1:80,000	NAD 83

a. Hydrography

Charted data originates from the previously discussed prior survey and shoreline source documents and requires no further discussion.

Survey H-10635 is adequate to supersede the charted data within the common area.

b. Dangers to Navigation

The hydrographer did not report any dangers to navigation. No additional dangers to navigation were discovered during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10635 is adequate to:

- 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 1995 Edition.

Q. AIDS TO NAVIGATION

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

There are no features of landmark value located within the area of this survey.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous items are 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 work is recommended.

U. REFERRAL TO REPORTS

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

Charles R. Davies
Charles R. Davies
Cartographer

APPROVAL SHEET
H-10635

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disapproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 8/2/96
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: 8/6/96
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:
Andrew A. Armstrong III Date: April 7, 1997
Andrew A. Armstrong III
Captain, NOAA
Chief Hydrographic Surveys Division

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10635A1B

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16705	7/1/96	Romas Dancisi	Full Part Before After Marine Center Approval Signed Via Full application of
			Drawing No. <i>judgs & dates from smooth sheet</i>
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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