H10570

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-10-17-94

Registry No. H-10570

LOCALITY

State Alaska

General Locality Prince William Sound

Sublocality Western End of Glacier Island

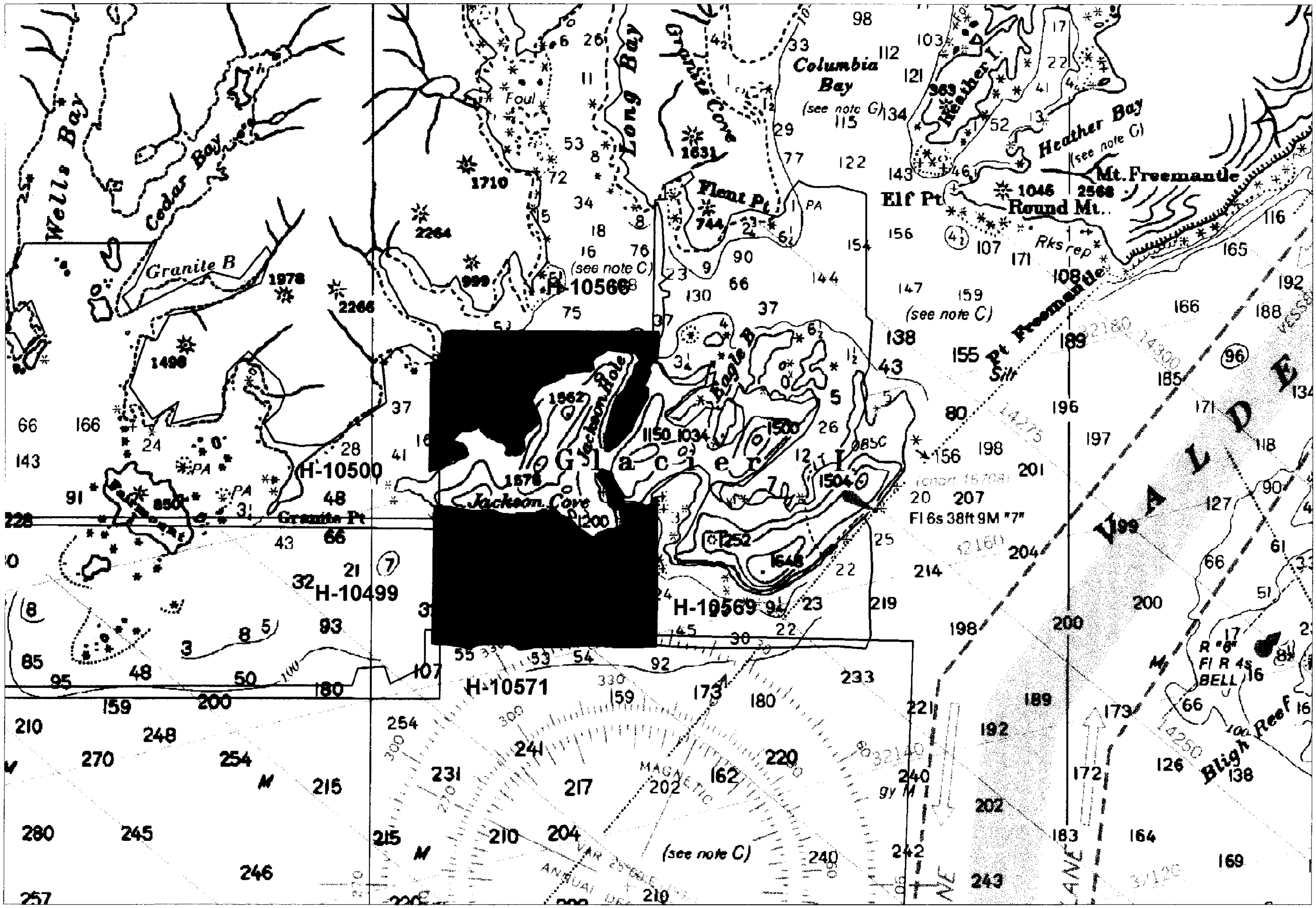
1994

CHIEF OF PARTY
Captain Russell C. Arnold, NOAA

LIBRARY & ARCHIVES

DATE FEB 21 1996

☆U.S. GOV. PRINTING OFFICE: 1987—756-980


Wells Bay
Cedar Bay
Granite B
Long Bay
Granite Cove
Columbia Bay
(see note G)
Heather Bay
Mt. Freemantle
Round Mt.
Elf Pt
Flent Pt
Pt Freemantle
Jackson Hole
Jackson Cove
Eagle B
Glacier I
Granite Pt
Bligh Reef
Fl 6s 38ft 9M "7"
R "6" Fl R 4s BELL
H-10566
H-10500
H-10499
H-10569
H-10571
(see note C)
MAGNETIC
VALDEZ
Rks rep
Foul

NOAA FORM 77-28 (11-72) | U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION | REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-10570

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-10-17-94

State: Alaska

General locality: Prince William Sound

Locality: Western End of Glacier Island

Scale: 1:10,000 Date of survey: September 5-29, 1994

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

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

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 ENS J.Becker, SST J.Fleischmann, ST J. Jacobson

Soundings taken by echo sounder, hand lead, pole: DSF-6000N

Graphic record scaled by: RAINIER PERSONNEL

Graphic record checked by: RAINIER PERSONNEL

Verification by: R. Mayor, G. Kay Automated plot by: HP Design Jet 650C

Evaluation by: G. Kay

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

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.

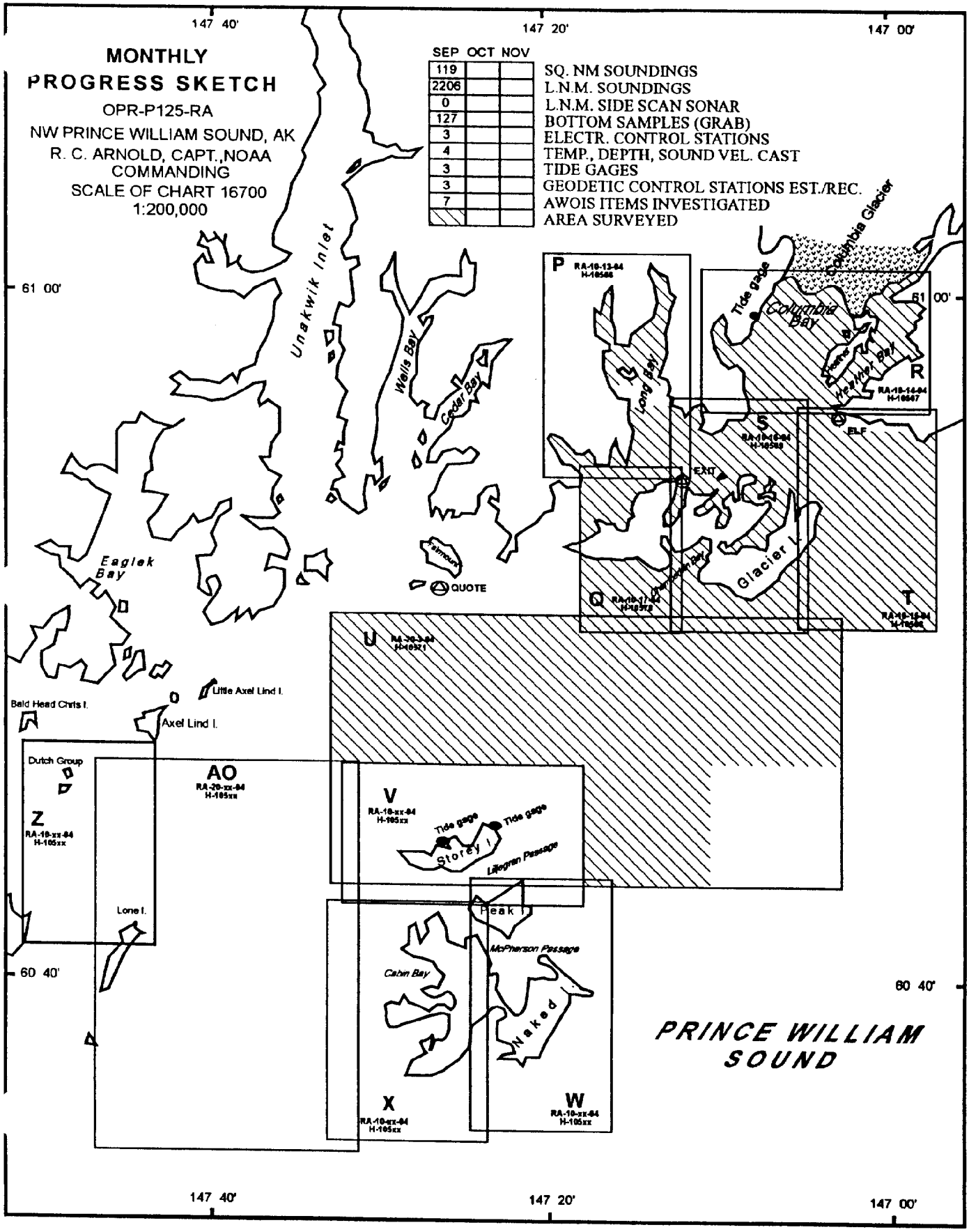
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

Awois/ surf 2/21/96 mcr

FEB 21 1996

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174


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
2206
0
127
3
4
3
3
7
SQ. NM SOUNDINGS
L.N.M. SOUNDINGS
L.N.M. SIDE SCAN SONAR
BOTTOM SAMPLES (GRAB)
ELECTR. CONTROL STATIONS
TEMP., DEPTH, SOUND VEL. CAST
TIDE GAGES
GEODETIC CONTROL STATIONS EST./REC.
AWOIS ITEMS INVESTIGATED
AREA SURVEYED
147 40'
147 20'
147 00'
61 00'
60 40'
Unakwik Inlet
Wells Bay
Cedar Bay
Eaglek Bay
QUOTE
Columbia Glacier
Tide gage
Columbia Bay
Long Bay
Heather Bay
Harriet Bay
ELF
EXIT
Glacier I.
Bald Head Chris I.
Little Axel Lind I.
Axel Lind I.
Dutch Group
Lone I.
Storey I.
Tide gage
Tide gage
Lillegren Passage
Peak I.
McPherson Passage
Cabin Bay
Naked I.
P
Q
R
S
T
U
V
W
X
Z
AO
PRINCE WILLIAM
SOUND

Descriptive Report to Accompany Hydrographic Survey H-10570

Field Number RA-10-17-94
Scale 1:10,000
September 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-10570 corresponds to "sheet Q" 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, Section B

The survey area is located in Northwest Prince William Sound, in the vicinity of the west end of Glacier Island. The survey's eastern limit is bounded by 147°12.0'W, and the western limit is bounded by 147°18.4' W. The northern limit is bounded by latitude 60°54.8' N, and the southern limit is bounded by 60°50.4' N.

Data acquisition was conducted from September 5, 1994, Day Number (DN) 248, through September 29, 1994, DN 272.

C. SURVEY VESSELS

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

Vessel	EDP #	Operation
RAINIER	2120	Sound Velocity Casts Bottom Samples
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:

Program Name	Version	Date Installed
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

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	2.10	15 Mar 1994

E. SONAR EQUIPMENT

Sonar equipment was not used on sheet Q. 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.

G. CORRECTIONS TO ECHO SOUNDINGS

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

Velocity Table #	Cast#	DN	Cast Position	Deepest Depth	Applicable DN
1,11	1	253	60°55'16" N 147°11'56" W	311	249 - 258
2,12	2	253	60°49'11" N 147°19'05" W	579	249 - 258
3,13	3	268	60°49'25" N 147°19'05" W	565	263 - 272
4,14	4	268	60°55'03" N 147°13'36" W	314	263 - 272

RAINIER used velocity tables 11-14, while tables 1-4 were used by the launches. Velocity tables 1 and 4 were used for data collected on the north side of Glacier Island, and tables 2 and 3 were applied to data collected on the south side of Glacier Island. Casts 1-4 were taken outside of the survey limits.

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". filed with the survey records.

Static Draft

A transducer depth was determined using FPM Fig 2.2 for launches 2123, 2124, and 2125 in the spring of 1994. RAINIER's transducer depth was determined during the 1990 winter inport. These depths 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 used was collected in Shilshole Bay, Washington in March of 1994.

* 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 table 1 corresponds to the RAINIER. Offset tables 3-5 correspond to the number of the launch. The offset tables were compiled with new measurements in the spring of 1994 and are contained in the "Separates to be Included with Survey Data". filed with the survey records

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. ✓

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 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 for the Cordova, Alaska reference station (945-4050).

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

Time Correction	Height Correction Range Ratio
0 hr 0 min.	X 0.96

✓

filed with the survey records.

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

RAINIER personnel installed an 8200 digital gage at Columbia Bay (945-4476) and Storey Island (945-4553) on September 4, 1994. Opening levels to the staff and bench marks were conducted upon installation. A new staff was installed and leveled at Columbia Bay, when the staff was destroyed by ice on September 9. Tides data were collected continuously at the Storey Island during data acquisition. Columbia Bay was continuous from installation to September 6, when the orifice tubing was pulled out by ice. The orifice was reinstalled on September 6 and the gage run continuously through September 18, when it was again destroyed by ice. A new secondary gage and orifice was installed at Columbia Bay on September 21 and the original orifice was repaired on this date. A new station was installed on September 21, on the north side of Storey Island (945-4571) to serve as a secondary gage for Storey Island (945-4553). Open levels were conducted on September 22. Bracketing levels were completed by RAINIER personnel at the end of September at all three gages. *

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 will be completed by RAINIER personnel during the final inport October 28-31, 1994.

filed with the survey records.

The station description, field tide records, and Preliminary Field Tide Note (Appendix V) will be 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.

* Final Tide data is adequate.

H. CONTROL STATIONS See Eval Rpt, section H

A listing of the geodetic stations used to control this survey is ~~included in Appendix III~~ attached of this report. The horizontal datum for this project is NAD83.

DGPS stations were installed on existing stations QUOTE, EXIT and ELF. Station QUOTE is located on a small islet east of Outpost Island, station EXIT is located on small islet at the entrance to Jackson Hole, and ELF is located on Elf Point on the east side of Columbia Bay. These stations were recovered in accordance with methods stated in Section 5.2.4 of the FPM. Station ELF was not used for survey operations.

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

I. HYDROGRAPHIC POSITION CONTROL See Eval Rpt, section I

Method of Position Control

All soundings and features were positioned using differential GPS. Serial numbers for Ashtech GPS equipment are annotated on the data printouts.*

Ashtech GPS

VHF differential shore stations were established at stations QUOTE, EXIT and ELF. 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. Station ELF was not used for survey operations.

Calibrations & Systems Check Methods

System checks were performed by launch to launch comparisons of position. Two observations of position were made by each launch using correctors from two independent DGPS base stations. System checks were performed in accordance with Section 3.4.4 of the FPM. 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

Offset

The launch GPS antenna offsets are stored in the HDAPS Offset Tables as listed in Section G. Copies of the Offset Tables are included in the "Separates to be Included with Survey Data".*

J. SHORELINE See Evaluation Report.

The shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets were TP-00265 (enlarged to 1:10,000 from 1:20,000, NAD 27) and DM-10065 (enlarged to 1:10,000 from 1:20,000, NAD83).

* Filed with the survey records.

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. There were no revisions to the mean high water line.

Changes and New Features

Many new features and changes to the T-sheet shoreline were found and are depicted on the final field plot. ✓
Ledges were found to extend further than their depicted positions on the T-sheet, and rocks were often identified as high points of ledges or reefs. Concur

Recommendations

The hydrographer recommends that the shoreline changes from this survey be used to supersede prior shoreline information compiled on TP-00265 and DM-10065. Concur

Charted Features

Charted rocks were either identified as T-sheet rocks, high points or extensions of ledges and reefs or disproved as noted below.

A charted rock at 60°52'07"N, 147°16'03"W was searched for on DN 249 and not found (position 1106). A visual and echo sounder search were conducted for 4 minutes, with a search radius of 100 meters. The water visibility was 4 meters and the average depth was 10 meters. A Rock was located 110 meters closer to shore. This New rock should be charted. Chart AREA As shown on smooth sheet.

A charted rock at 60°54'30"N, 147°18'04"W was searched for on DN 252 and not found (position 3112). A visual and echo sounder search were conducted for eight minutes, with a search radius of 100 meters. The water visibility was 4 meters and the average depth was 14 meters. The charted rock is likely part of a ledge which exists approximately 150 meters to the north. Chart this area based on the present survey information.

Recommendations

The hydrographer recommends deleting the above two charted rocks from the chart. Concur

* Filed with the hydrographic data.

K. CROSSLINES

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 26.8 nautical miles, representing 15.6% of the total mainscheme hydrography.

L. JUNCTIONS SEE Evaluation Report

This survey junctions with survey H-10566 (1:10,000, 1994) at the northern limit, H-10569 (1:10,000, 1994) at the eastern limit, H-10571(1:20,000, 1994), and H-10499 (1:10,000, 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~~ Branch (PHB).

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

One prior survey was compared: H-9637 (1:10,000, 1976). Soundings from the prior survey 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 survey. There were no instances where prior survey soundings were shoaler in a corresponding area.

Final comparisons will be made at PHB.

N. ITEM INVESTIGATIONS

One AWOIS item was assigned to survey H-10570.

AWOIS ITEM 52012

1. Area of Investigation

State:	Alaska
Locality:	Prince William Sound
Reported Latitude:	60°53'35.08"N
Reported Longitude:	147°15'37.40"W
Datum:	NAD83
Depth:	Unknown
Feature:	Wreck

2. Description of Source Item

LNM 28/79--17th CGD, on July 4, 1979, the F/V Brown Bear sank in Campbell Bay in position 60°53'37"N, 147°15'30"W (NAD27), depth of water unknown.

3. Survey Requirements

Verify or disprove, determine least depth and position. Techniques to be used are echo sounder search, bottom drag, dive investigation, visual search, or 200% side scan sonar.

4. Method of Investigation

A visual search was conducted on DN 250 at low water for 10 minutes in a 150 meter radius . Ten meter line spacing was run over the area on DN 266. A dive was conducted on DN 272.

5. Results of Investigation

The visual search was conducted with 4 meter water visibility, no visual evidence of the wreck was found (position 5411). The 10 meter line spacing found nothing significant extending off the bottom (positions 2310-2363). The dive investigation was conducted in water with 4 meters of visibility. 30 minutes was spent searching an area of a 150 meter radius. A detached position (position 2406) was taken on the center of the search area. ✓

This item did not originate with a prior survey.

7. Comparison of with the Chart and Charting Recommendations

The item was compared to NOS chart 16708, 19th Edition, March 23, 1991, 1:79,291(NAD83). ✓
This item was not submitted as a danger to navigation.

Recommendation

Delete the wreck symbol at latitude 60°53'35.08"N, longitude 147°15'37.40"W. Concur, chart area as shown on smooth sheet.

O. COMPARISON WITH THE CHART See Eval Rpt, section O

This survey was compared to NOS chart 16708, 19th Edition, March 23, 1991, 1:79,291 (NAD83), NOS chart 16705, 15th Edition, September 1, 1990, 1:80,000 (NAD83), and NOS chart 16700, 24th Edition, January 11, 1992, 1:200,000 (NAD83). The charted soundings were found to be in general agreement with the present survey, except as noted below.

* Several soundings originating from USGS BP-104500 (1:20,000, 1978) were shoaler than present survey soundings. In these cases, positioning methods used by USGS are suspect. Concur

Non-sounding charted features are discussed in Section J, Shoreline. ✓

Final comparisons will be made at PHB. ✓

Dangers to Navigation

Five dangers to navigation within the limits of survey H-10570 were reported to the Seventeenth Coast Guard District on September 30, 1994. Copies of the correspondence ~~can be found in Appendix I~~ are attached this report.

P. ADEQUACY OF SURVEY See Eval Rpt, Section P

Prior to final approval, survey H-10570 is complete and adequate to supersede charted depths and features in their common areas. Concur

Q. AIDS TO NAVIGATION

None

* Project instructions do not require a comparison with this survey.

R. STATISTICS

Vessel:	2120	2123	2124	2125	Total
Number of Positions	29	1657	940	729	3355
NM Hydrography	0	195.8	85.9	99.5	377.2

Velocity Casts	4
Detached Positions	52
Dives	3
Bottom Samples	36
Tide Stations	2
NM^2 Hydrography	8.8

S. MISCELLANEOUS

Bottom samples were collected in accordance to the Project Instruction.

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:

Title	Date Sent	Office
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,

for Donald W. Haines
Lieutenant, NOAA

Approved and Forwarded,

Russell C. Arnold
Captain, NOAA
Commanding Officer

NOTE: This table not on disk.

For Information Only

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

September 30, 1994

ADVANCE INFORMATION

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

Dear Sir:

NOAA Ship RAINIER has located five dangers to navigation in Northwest Prince William Sound (Project OPR-P125-RA) within the limits of hydrographic survey H-10570. 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

ADVANCE INFORMATION

Hydrographic Survey Registry Number: H-10570

Survey Title: State: Alaska
Locality: Northwest Prince William Sound
Sublocality: Western End of Glacier Island

Project Number: OPR-P125-RA

Survey Date: September 1994

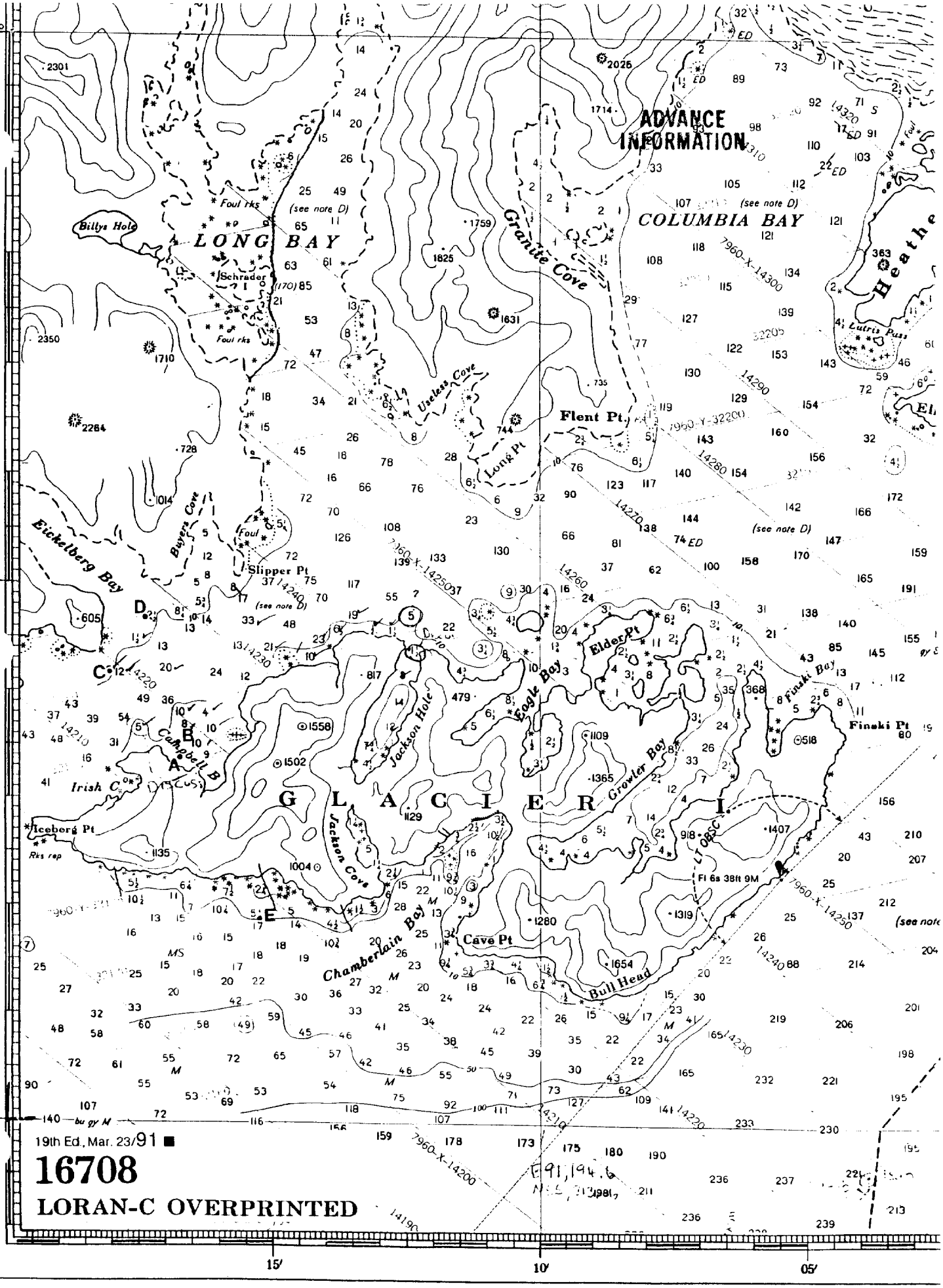
Features are reduced to mean lower low water using predicted tides.

Affected Nautical Charts:

Chart	Edition/Date	Scale	Datum
16700	24th Ed., 1/11/92	1:200,0000	NAD83
16705	15th Ed., 9/1/90	1:80,000	NAD83
16708	20th Ed., 5/1/93	1:79,291	NAD83

	Danger to Navigation	Latitude (N)	Longitude (W)		
A.	Rock, uncovers 4 ft	60° 53' 22.2"	147° 16' 40.3"	(1^4)	pos 5412
B.	Shoal, covers 3 1/4 fm	60° 53' 31.2"	147° 16' 44.2"	6^1	1790+8
C.	Shoal, covers 2 3/4 fm	60° 54' 12.6"	147° 17' 59.8"	$5'$	5705+6
D.	Shoal, covers 1 1/2 fm	60° 54' 38.3"	147° 17' 18.5"	2^5	4341+23
E.	Shoal, covers 3 3/4 fm	60° 51' 54.7"	147° 15' 11.8"	7^2	2403+0

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


ADVANCE INFORMATION
LONG BAY
COLUMBIA BAY
Billys Hole
Schrader
Foul rks
(see note D)
Granite Cove
Useless Cove
Long Pt
Flent Pt.
Lutris Pass
Buyers Cove
Foul
Slipper Pt
Eickelberg Bay
Elder Pt
Eagle Bay
Finski Bay
Finski Pt
Jackson Hole
Campbell Bay
Irish Cove
Iceberg Pt
Rks rep
GLACIER I
Jackson Cove
Chamberlain Bay
Grower Bay
Cave Pt
Bull Head
LT OBSC
Fl 6s 38ft 9M
A
B
C
D
E
19th Ed., Mar. 23/91
16708
LORAN-C OVERPRINTED
61°
55'
50'
15'
10'
05'

APPROVAL SHEET

for

H-10570

RA-10-17-94

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

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: January 17, 1995

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA

HYDROGRAPHIC SHEET: H-10570

LOCALITY: Western End of Glacier Island, Prince William Sound, Alaska

TIME PERIOD: September 5 - 27, 1994

TIDE STATION USED: 945-4240 Valdez, Prince William Sound, Ak.
Lat. 61° 7.5'N Lon. 146° 21.7'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 6.65 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 11.1 ft.

TIDE STATION USED: 945-4476 Columbia Bay, Prince William Sound, Ak.
Lat. 60° 59.8'N Lon. 147° 7.1'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -4.29 ft.
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 11.0 ft.

REMARKS: RECOMMENDED ZONING

Times and heights are direct on Columbia Bay, Ak. (945-4476). Where data for Columbia Bay, Ak. (945-4476) is not available, times are direct, and apply a X0.98 range ratio to heights using Valdez, Ak. (945-4240).

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

2. Data for Valdez, Ak. (945-4240), and Columbia Bay, Ak. (945-4476) are temporarily stored in files #745-4240 and #745-4476 respectively.

CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10570

Name on Survey	A ON CHART NO. 16708, 16705, 16700	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X		X							1
CAMPBELL BAY	X		X							2
CHAMBERLAIN BAY	X		X							3
GLACIER ISLAND	X		X							4
IRISH COVE	X		X							5
JACKSON COVE	X		X							6
JACKSON HOLE	X		X							7
PRINCE WILLIAM SOUND	X		X							8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
				Approved:						19
										20
				Curtis C. Lay						21
				Chief Geographer						22
				DEC 8 1995						23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10570

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

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

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):	TP-00265, DM-10065
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	NA
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16708, 19th Ed.,3/23/91; 16705,15th Ed.,9/1/90;16700,24th Ed.,1/11/92

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS: VERIFICATION	AMOUNTS: EVALUATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			

	TIME-HOURS: VERIFICATION	TIME-HOURS: EVALUATION	TIME-HOURS: TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	68		68
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	94		94
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		30	30
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	162	30	192

Pre-processing Examination by: LT M. Larsen , J. Stringham	Beginning Date: 11/14/94	Ending Date: 12/13/94
Verification of Field Data by: R. Mayor, D. Doles, L. Deodato	Time (Hours): 95	Ending Date: 9/11/95
Verification Check by: B.A. Olmstead	Time (Hours): 3	Ending Date: 1/17/96
Evaluation and Analysis by: G.E. Kay	Time (Hours): 30	Ending Date: 12/10/95
Inspection by: B.A. Olmstead	Time (Hours): 14	Ending Date: 1/26/96

EVALUATION REPORT
SURVEY H-10570

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

Survey H-10570 is situated along the western portion of Glacier Island in Prince William Sound, Alaska. The bottom consists of mud, sand and clay. Depths range from 0 to 156 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 with the dbf extension. In addition, the sounding plot data, created with dbf extension and enhanced using the AutoCad system, is 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 PHB until data transfer protocols are developed and improved.

The drawing files necessarily contain information that is not part of the HPS data set such as geographic name's 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 hydrography on the office plot. Data is plotted using a Modified Transverse Mercator (MTM) projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used on survey H-10570.

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 an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications. Actual tide reduction is derived from Valdez, Prince William Sound, Alaska, gage 945-4240 and Columbia Bay, Prince William Sound, Alaska, gage 945-4476.

H. CONTROL STATIONS

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H-10570 is attached to this report.

The positions of horizontal control stations used during hydrographic operations are field values 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 NAD 27 may be referenced to this survey by applying the following corrections.

Latitude:	-1.939 seconds	(-60.003 meters)
Longitude:	7.383 seconds	(111.393 meters)

The year of establishment of control stations shown on the smooth sheet originates with the above mentioned horizontal control report and the hydrographer's signal.

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. The quality of several positions exceeds limits with the computed horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

J. SHORELINE

Shoreline shown on survey H-10570 originates from the following shoreline maps.

MAP	PHOTO DATE	SCALE	DATUM
TP-00265	July 1972	1:20,000	NAD 27
DM-10065	Jun/July 1989	1:20,000	NAD 83

The shoreline drawn on the smooth sheet originates from a 1:10,000 scale digital file provided by the Coastal Mapping Program and a TP manuscript which has been digitized at the Pacific Hydrographic Branch. Both files have been merged with the survey file during ACAD processing. Changes to alongshore and offshore features shown on the shoreline maps were verified and revised as warranted during survey operations. Some of the islets and rocks depicted on the maps were identified in the field as part of reefs, high points, or extensions of the newly located ledges. These changes have been shown on the smooth sheet. There were no revisions to the mean high water line.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report

L. JUNCTIONS

Survey H-10570 junctions with the following surveys.

Survey	Year	Scale	Area
H-10499	1993	1:10,000	Southwest
H-10500	1993	1:10,000	Northwest
H-10566	1994	1:10,000	North
H-10569	1994	1:10,000	East
H-10571	1994	1:20,000	South

The junctions with surveys H-10566, H-10569 and H-10571 are complete. Soundings and depth curves are in good agreement within the common areas.

The junctions with surveys H-10499 and H-10500 have not been completed because these surveys have been previously forwarded to headquarters. A comparison with a copy of these surveys indicate adequate agreement between soundings and depth curves within the common areas.

M. COMPARISON WITH PRIOR SURVEYS

Survey H-10570 was compared with the following prior survey.

Survey	Year	Scale
H-9637	1976	1:10,000

Survey H-9637 covers the southern portion of Glacier Island west of Chamberlain Bay. However, the prior survey essentially stops in depths of 8 fathoms (14.6 meters). The survey area has been developed with greater sounding density utilizing more modern survey methods and as a result the present survey has revealed more shoals not found during the prior survey work. A comparison with the present survey generally appears to reflect a shoaling trend of 1.0 to 5.0 meters (0.5 to 2.5 fathoms). A comparison of depths

ranging from 50 to 156 meters shows some differences up to 11 meters (6 fathoms). These differences can be attributed to greater sounding coverage, relative accuracy of the data acquisition techniques and the effects of the 1964 Prince William Sound Earthquake.

A study of prior survey data, in accordance with Hydrographic Survey Guideline No. 39, the effect of the 1964 Prince William Sound earthquake seems to indicate a trend of uplifting within this portion of Prince William Sound.

H-10570 is adequate to supersede the prior survey within the common area.

N. ITEM INVESTIGATIONS

There was one AWOIS Item assigned for investigation within the limits of this survey. Discussion and disposition of this item has been adequately discussed in the hydrographer's report.

O. COMPARISON WITH CHART

Survey H-10570 was compared with the following charts.

Chart	Edition	Date	Scale	Datum
16708	20th	May 1, 1993	1:79,291	NAD 83
16705	15th	September 1, 1990	1:80,000	NAD 83
16700	24th	January 11, 1992	1:200,000	NAD 83

1. Hydrography

Charted hydrography originates with the previously discussed prior survey and miscellaneous source data from BP-104500 (1978), BP-43214 (1947) and TP-00264/265 (1972). The blueprints comprise those depths around the northern portion of Glacier Island while the shoreline manuscripts are the source for the nearshore rocks, reefs and ledge information.

Depth comparisons reflect the same general differences as mentioned in section M. However, a few considerably shoaler soundings originating form BP-104500 (1978) were not found at their charted positions. The present survey satisfactorily addressed these shoaler soundings and found similiar depths within 250 meters. Differences can be attributed to the data acquisition techniques and more thorough bottom ensonification associated with the present survey.

Chart 16708 portrays the charted shoreline around Glacier Island as dashed, however, on charts 16705 and 16700 the shoreline is portrayed as solid and originates from shoreline maps TP-00264 and TP-00265. The present survey has thoroughly investigated the shoreline within the survey area. The present charted shoreline and hydrographic data on all three charts should be updated with data from the present survey.

Survey H-10570 is adequate to supersede the charted hydrography within the area of common coverage.

2. Dangers to Navigation

Five dangers to navigation were reported by the hydrographer to the USCG, DMAHTC, and N/CG221, dated September 30, 1994. A copy of this report is attached. No dangers were noted during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10570 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 1994 Edition.

Q. AIDS TO NAVIGATION

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

R. STATISTICS

Statistics are identified in the hydrographer's report.

S. MISCELLANEOUS

Miscellaneous information is discussed in the hydrographer's report The were no other miscellaneous items noted during office processing.

T. RECOMMENDATIONS

This is an adequate hydrographic survey. Additional work is not recommended.

U. REFERRAL TO REPORTS

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

Bruce A. Olmstead
for Gordon E. Kay
Cartographer

APPROVAL SHEET
H-10570

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. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report. Final control, position and sounding printouts have been included with the survey records.

Bruce A. Olmstead Date: 1/26/96
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: 2/6/96
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

Andrew A. Armstrong III Date: 2-16-96
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Surveys Division

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10570

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
1670~~8~~5	1/26/96	ALMACEN	Full ~~Part Before~~ After Marine Center Approval ~~Signed Via~~ Full application of
			Drawing No. sndgs. & features from SS.
1670~~5~~8	1/31/96	ALMACEN	Full ~~Part Before~~ After Marine Center Approval ~~Signed Via~~ Full application of
			Drawing No. sndgs. & features from SS thru 16705.
16700			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED