H10568

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-10-15-94

Office No. H-10568

LOCALITY

State Alaska

General Locality Prince William Sound

Locality Two Nautical Miles East of Glacier Island

1994

CHIEF OF PARTY
CAPT Russell C. Arnold, NOAA

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10568

HYDROGRAPHIC TITLE SHEET

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

FIELD NO.
RA-10-15-94

State: Alaska

General locality: Prince William Sound

Locality: Two Nautical Miles East of Glacier Island

Scale: 1:10,000 Date of survey: September 8 - October 9,1994

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: LT D.Neander, LT D.Haines, LTJG D.Lemke, 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

Evaluation by: R.A. Shipley Automated plot by: HP Design Jet 650L

Verification by: R.A. Shipley

Soundings in ~~fathoms~~ ~~feet~~ Meters at ~~MLW~~ MLLW

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

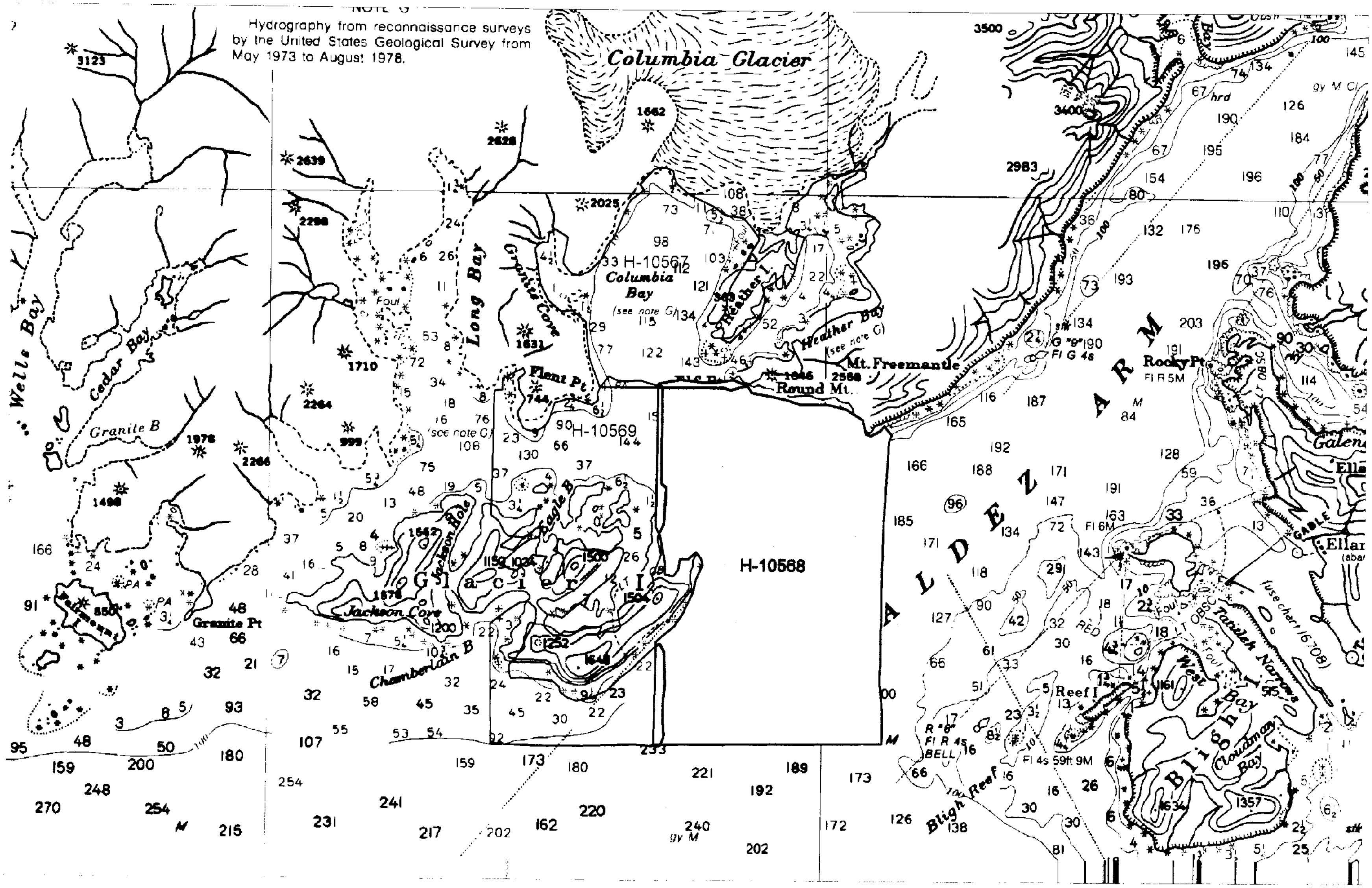
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

Awois & Surf 4/1/97 mcR

SC 4-7-97

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

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


NOTE G
Hydrography from reconnaissance surveys by the United States Geological Survey from May 1973 to August 1978.
Columbia Glacier
Columbia Bay
(see note G)
H-10567
H-10568
H-10569
Long Bay
Granite Cove
Flent Pt
Heather I
Heather Bay
(see note G)
Mt. Freemantle
Round Mt.
Rocky Pt
Fl R 5M
Wells Bay
Cedar Bay
Granite B
Granite Pt
Jackson Hole
Jackson Cove
Eagle B
Chamberlain B
Glacier I
VALDEZ ARM
Galena
Ellamar
GABLE
Tatitlek Narrows
(use chart 16708)
West Bay
Reef I
Bligh Reef
Bligh I
Cloudman Bay
Fl 4s 59ft 9M
BELL
Fl 6M
Fl G 4s
Columbia Glacier

Descriptive Report to Accompany Hydrographic Survey H-10568

Field Number RA-10-15-94
Scale 1:10,000
September- October 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-10568 corresponds to "sheet T" 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 REPORT, SECTION B

The survey area is located in Northwest Prince William Sound, at the east end of Glacier Island. The survey's eastern limit is bounded by 146°58.0'W, and the western limit is bounded by 147°06.0' W. The northern limit is bounded by latitude 60°56.7' N, and the southern limit is bounded by 60°50.5' N.

Data acquisition was conducted from September 8, 1994, Day Number (DN) 251, through October 12, 1994, DN 285.

C. SURVEY VESSELS ✓

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

Vessel	EDP #	Operation
RAINIER	2120	Hydrography Sound Velocity Casts Bottom Samples
RA-3	2123	Hydrography
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 T. Concur

F. SOUNDING EQUIPMENT ✓ SEE EVAL REPORT, SECTION P

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. THE DSF-6000N EXPERIENCED NUMEROUS PROBLEMS TRYING TO ACCURATELY RECORD DEPTHS OVER THE STEEP SLOPING BOTTOM. SEVERAL ANOMALOUS DEPTHS WERE EITHER LEFT UNCHANGED OR RESCANNED BASED ON THE QUALITY OF THE FATHOGRAM TRACE.

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
2,12	2	253	60°49'11" N 147°19'05" W	579	251 - 258
3,13	3	268	60°49'25" N 147°19'05" W	565	263 - 272
5,15	5	283	60°51'08" N 147°04'50" W	561	282 - 285

RAINIER used velocity tables 12,13, and 15 while tables 2,3, and 5 were used by the launches. CASTS 2 & 3 PLOT OUTSIDE 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".

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 for the launches was collected in Shilshole Bay, Washington in March of 1994. RAINIER's settlement and squat data was collected in Shelikof Strait, Alaska on July 14, 1994.

Offset Tables ✓

Offset tables* contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset table 1 corresponds to the RAINIER. Offset tables 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 HYDROGRAPHIC DATA

Heave ✓

RAINIER and the launches are not equipped with heave, pitch and roll sensors. DATA WAS ANALYZED DURING OFFICE PROCESSING AND FOUND TO HAVE NO SIGNIFICANT PROBLEMS

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

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 all 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. Columbia Bay tide data were continuous from installation to September 6, when the orifice tubing was removed by ice. The orifice was reinstalled on September 6 and the gage ran continuously through September 18, when it was again destroyed by ice. On September 21, 1994, the orifice was repaired and a secondary gage and orifice was installed at Columbia Bay. Tide data were collected continuously at the Storey Island during data acquisition. On September 21, 1994, a new station was installed 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. Closing levels at Columbia Bay gage were conducted on October 9, and closing levels at both Storey Island gages will be performed at the end of the project.

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.

The station description, field tide records, and Preliminary Field Tide Note (Appendix V)* were forwarded to N/OES212 in accordance with HSG 50 and FPM 4.3 at the end of September. The final tide package will be forwarded to N/OES212 at the end of the project. A request for approved tides was forwarded to N/OES2 in accordance with FPM 4.2.3. APPROVED TIDE NOTE DATED JANUARY 17, 1995 IS ATTACHED.

H. CONTROL STATIONS ✓ SEE EVAL REPORT, SECTION H

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

* FILED WITH HYDROGRAPHIC DATA

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. In addition, Coast Guard differential GPS beacon stations at Cape Hitchenbrook and Potato Point were used according to specifications listed in Section 6.2 of the Project Instructions. DGPS STATION ELF WAS NOT USED.

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 REPORT, 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.

Calibrations & Systems Check Methods

System checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made using correctors from two independent DGPS base stations. The results were transferred to forms which are included in the project data for OPR-P125. An abstract of the system checks is included in the "Separates to be Included with Survey Data, III. Horizontal Position Control and Corrections to Position Data". *

Problems

None

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 EVAL REPORT, SECTION J

The shoreline maps (T-sheets) used to transfer shoreline detail to the final sheets were TP-*00264 and TP-00265 (enlarged to 1:10,000 from 1:20,000, NAD 27).

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.

* FILED WITH HYDROGRAPHIC DATA

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 REVISED AFTER APPLICATION OF ACTUAL TIDES AND SHOWN ON THE SMOOTH SHEET AS WARRENTED. THERE WERE

New Features NO REVISIONS TO THE HIGH WATER LINE.

Many new features were found and are depicted in black on the final field plot. T-sheet rocks were often identified as high points of new ledges or reefs. THE NEW FEATURES AND REVISIONS OFFSHORE OF THE MEAN HIGHWATER LINE HAVE BEEN SHOWN

Recommendations ON THE SMOOTH SHEET AS WARRENTED,

The hydrographer recommends that the shoreline from this survey be used to supersede prior shoreline information compiled on TP-00264 and TP-00265. 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. CONCUR

A charted rock in the vicinity of 60°55'41"N, 146°58'23"W was searched for on DN 251 and not found (position 5424). A visual and echo sounder search were conducted for 10 minutes, with a search radius of 100 meters. The water visibility was 4 meters and the average depth was 30 meters. THE CHARTED ROCK IS ACTUALLY PART OF A REEF AS FOUND BY THE PRESENT SURVEY.

Recommendation

The hydrographer recommends deleting the rock noted above from the chart. CONCUR, CHART THIS AREA AS LEDGE THAT FRINGES THE SHORELINE SOUTH OF POINT

K. CROSSLINES ✓ FREEMANTLE.

Crosslines are within 1-2 meter agreement with mainscheme hydrography except in areas of complex bathymetry. Crosslines totaled 31.6 nautical miles, representing 12.2% of the total mainscheme hydrography.

L. JUNCTIONS ✓ SEE EVAL REPORT, SECTION L.

This survey junctions with survey H-10567 (1:10,000, 1994) at the northern limit, H-10569 (1:10,000, 1994) at the western limit, H-10571(1:20,000, 1994) at the southwest corner. These soundings were found to be in general agreement with this survey.

* FILED WITH HYDROGRAPHIC DATA

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

M. COMPARISON WITH PRIOR SURVEYS ✓ SEE EVAL REPORT, SECTION M.

Three prior surveys were compared: H-9388 (1:20,000, 1973), H-9382 (1:40,000, 1973), H-2807 (1:100,000, 1905). Soundings from the prior surveys were in general agreement with the present survey. However, the present survey, due to much greater sounding density, revealed numerous shoal soundings not found during the prior surveys. There were no instances where prior survey soundings were shoaler in a corresponding area.

Final comparjsons will be made at PHS.

N. ITEM INVESTIGATIONS ✓

Two AWOIS items were assigned to survey H-10568.

AWOIS ITEM 52117 ✓

1. Area of Investigation

State:	Alaska
Locality:	Prince William Sound
Reported Latitude:	60°55'52"N to 60°56'10"N
Reported Longitude:	146°59'00"W to 147°00'06"W
Datum:	NAD83
Depth:	Unknown
Feature:	Uncharted Rocks

2. Description of Source Item

BP 104500/78-USGS TCPO/Hydro survey, 1978; A dangerous group of uncharted rocks are shown from positions 60°55'52"N, 146°59'00"W to 60°56'10"N, 147°00'06"W (NAD83).

12

3. Survey Requirements

Conduct a search to determine the extent and least depths of the rocks. Techniques to be used are echo sounder search or visual search.

4. Method of Investigation

A visual search was conducted on DN 251 at low water for 15 minutes in a 150 meter radius . In addition, 25 and 50 m line spacing was conducted in the area.

5. Results of Investigation

Eight new rocks were discovered in the search area west of Point Freemantle. Positions 5420 - 5421 describe a group of six new rocks, while positions 5418 - 5419 describe two separate new rocks. POSITIONS 5420-5421 CENTERED AT LATITUDE 60/55/57 N, LONGITUDE 146/59/12 N DESCRIBE

6. Comparison with Prior Surveys AN AREA FOUL WITH ROCKS.

No contemporary prior surveys cover this area.

7. Comparison with the Chart and Charting Recommendations

The item was compared to NOS chart 16708, 20th Edition, May 1, 1993, 1:79,291(NAD83).

This item was submitted as a danger to navigation.

Recommendation

Delete the charted "Rks rep" symbol, and chart the eight rocks* as depicted on the ~~final field~~ SMOOTH SHEET plot. CONCUR
* CHART REPRESENTATIVE ROCK SYMBOLOGY IN ACCORDANCE WITH SCALE.
AWOIS ITEM 52118 ✓

1. Area of Investigation

State:	Alaska
Locality:	Prince William Sound
Reported Latitude:	60°56'10"N
Reported Longitude:	147°03'11"W
Datum:	NAD27
Depth:	27 FT (4 1/2 FM)
Feature:	Shoal Area

2. Description of Source Item

BP104500/78-USGS TCPO/Hydro survey, 1978; A 27 FT (4 1/2 FM) sounding shown in approximately position 60°56'10"N, 147°03'11"W (NAD27). Positioning was by radar. Also, a 29 FT and 46 FT sounding were located within the shoal area charted with blue tint.

3. Survey Requirements

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

4. Method of Investigation

Twenty-five and ten meter line spacing was conducted over the area on DN 282 (positions 1367 - 1396).

5. Results of Investigation

A shoal of ~~8.9 m~~ 8.9 m (4 3/4, ~~29~~ FM 2 FT) was found at position 60°56'12.372"N, 147°03'18.047"W. In addition, a shoal of ~~8.6 m~~ (4 1/2 FM, 28 FT) to the east of the search area at 60°56'15.882"N, 147°02'40.187"W was discovered using 10 m line spacing on DN 282 (positions 1343 - 1366).

6. Comparison with Prior Surveys

No contemporary prior surveys cover this area.

7. Comparison with the Chart and Charting Recommendations

The item was compared to NOS chart 16708, 20th Edition, May 1, 1993, 1:79,291(NAD83).

Recommendation

The hydrographer recommends that present survey data be used to supersede the chart in their common areas. CONCUR

O. COMPARISON WITH THE CHART ✓ SEE EVAL REPORT, SECTION O

This survey was compared to NOS chart 16708, 20th Edition, May 1, 1993, 1:79,291 (NAD83). The charted soundings were found to be in general agreement with the present survey.

In addition, several soundings originating from USGS BP-104500 (1:20,000, 1978) and USGS BP-43214 (1:200,000,1947) were compared and found to be in general agreement with the present survey

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

Final comparisons will be made at PHS.

Dangers to Navigation ✓

Five dangers to navigation within the limits of survey H-10568 were reported to the Seventeenth Coast Guard District on October 14 1994. Copies of the correspondence can be found in ~~Appendix I of~~ this report.

P. ADEQUACY OF SURVEY SEE EVAL REPORT, SECTION P.

Prior to final approval, survey H-10568 is complete and adequate to supersede charted depths and features in their common areas. CONCUR

Q. AIDS TO NAVIGATION ✓ SEE EVAL REPORT, SECTIONS P, Q.

One Aid to Navigation , Glacier Island Light (Light List #: 25665), was located within the boundaries of survey H-10568. The light was positioned to Third Order, Class I specifications using static GPS methods. The computed field position compared well with the charted position. Detailed information is located in ~~Appendix VI.~~ THIS REPORT.

R. STATISTICS ✓

Vessel:	2120	2123	2124	2125	Total
Number of Positions	563	602	800	355	2320
NM Hydrography	132.8	76.1	111.8	42.3	363.0

Velocity Casts	3
Detached Positions	37
Bottom Samples	16
Tide Stations	2
NM^2 Hydrography	19.7

S. MISCELLANEOUS ✓

Due to the fact that Columbia Glacier is undergoing a period of drastic retreat, prodigious quantities of ice are flowing out of Columbia Bay. The direction and amount of ice flow is ever changing, determined daily by wind and current conditions. Small bays along the north side of Glacier Island and the entrance to Long Bay would at times be blocked off by large ice flows. In addition, large ice bergs the size of houses would routinely hang up on shoals along the shoreline.

Bottom samples were collected in accordance with Project Instructions.

No tidal current predictions are available within the sheet limits.

No unusual magnetic variations were noted.

T. RECOMMENDATIONS ✓

None

U. REFERRAL TO REPORTS ✓

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

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,

Joel R. Becker
Ensign, NOAA

Approved and Forwarded,

Russell C. Arnold
Captain, NOAA
Commanding Officer

Section Q: Descriptive Report Insert

Name of Aid: Glacier Island Light
Light List #: 25865
Pos. # N/A Method of Positioning: 3rd Order

Positioning Info

	Latitude N	Longitude W
Charted Pos.	60 52 18	147 05 30
Survey Pos.	60 52 19.817	147 05 31.195
	Easting	Northing
Charted Pos.	95236.3	60118.1
Survey Pos.	95217.8	60174.2

Vector from Charted to Survey Position: 59.1 m 341.7 deg T

Characteristics
Do Characteristics Match Light List? (y/n): yes
If NO, what are the characteristics?

New/Uncharted Aids (if info is known or easily obtained)
Date Established:
Maintained By: Private (y/n) ☐
Frequency of Maintenance:
Purpose:

Section Q: Descriptive Report Insert

Name of Aid:
Light List #:
Pos. # Method of Positioning: 3rd Order Hydro

Positioning Info

	Latitude N	Longitude W
Charted Pos.		
Survey Pos.		
	Easting	Northing
Charted Pos.		
Survey Pos.		

Difference Between Survey/Charted Position: 0.0 m #DIV/0! deg T

Characteristics
Do Characteristics Match Light List? (y/n):
If NO, what are the characteristics?

New/Uncharted Aids (if info is known or easily obtained)
Date Established:
Maintained By: Private (y/n) ☐
Frequency of Maintenance:
Purpose:

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

October 14, 1994

ADVANCE INFORMATION

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

Dear Sir:

NOAA Ship RAINIER has located eighteen dangers to navigation in Northwest Prince William Sound (Project OPR-P125-RA) within the limits of hydrographic surveys H-10568 and H-10569. 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-10568

Survey Title: State: Alaska
Locality: Northwest Prince William Sound
Sublocality: Two Nautical Miles East of Glacier Island

~~Hydrographic Survey Registry Number: H-10569~~

~~Survey Title: State: Alaska~~
~~Locality: Northwest Prince William Sound~~
~~Sublocality: Central Glacier Island~~

Previously submitted with Final approved survey.

Project Number: OPR-P125-RA

Survey Date: September - October 1994

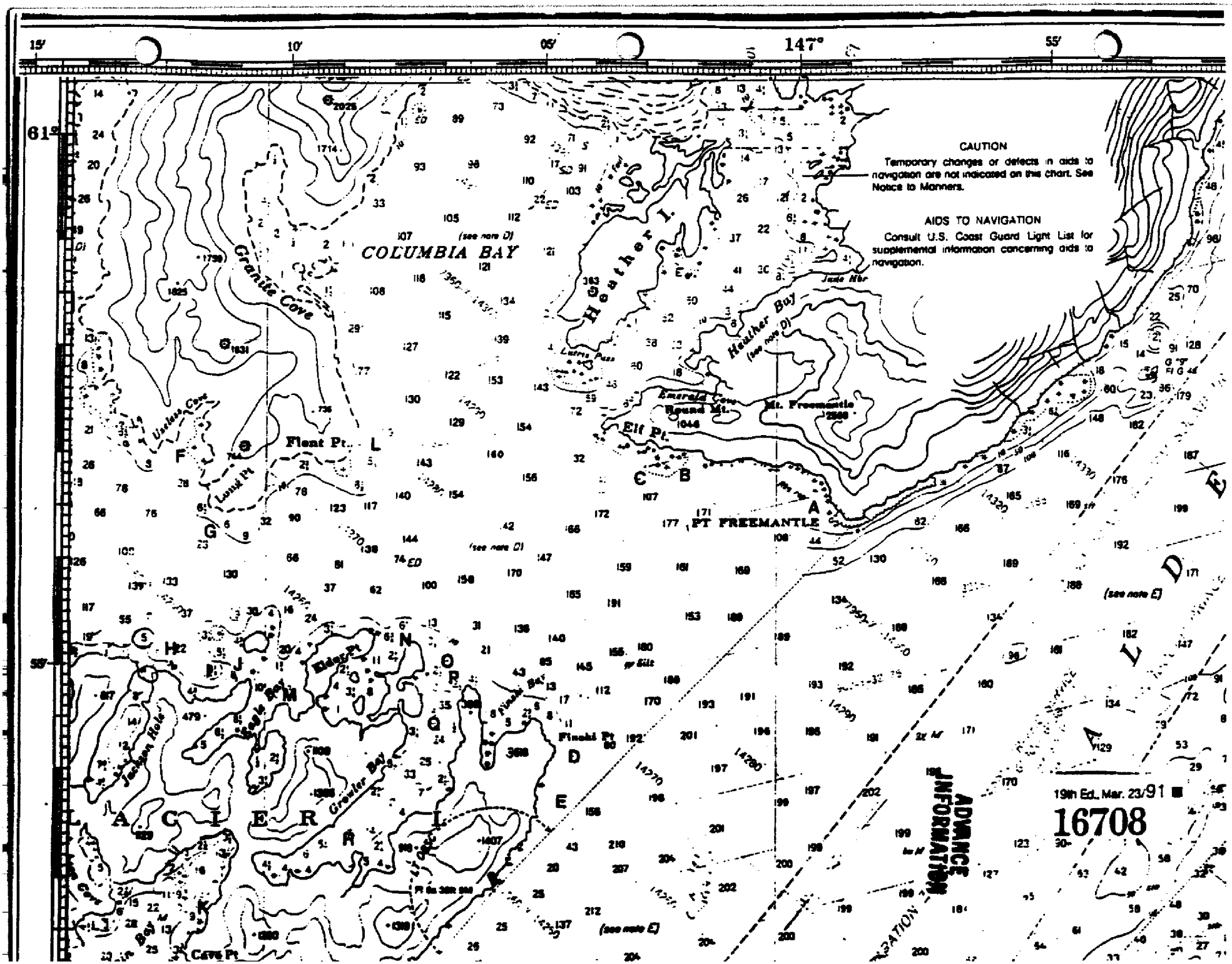
Features are reduced to mean lower low water using predicted tides.

Affected Nautical Charts:

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

	Danger to Navigation	Latitude (N)	Longitude (W)	Pos.	Depth(m) (L)
Survey H-10568					
A.	Rock, uncovers 4 FT	60° 55' 56.8"	146° 59' 12.8"	5420	$\frac{}{(L^2)}$
B.	Shoal, covers 3 3/4 FM	60° 56' 16.4"	147° 01' 50.2"	1233^{+2}	7
C.	Shoal, covers 4 1/2 FM	60° 56' 15.9"	147° 02' 40.2"	1353^{+2}	8^6
D.	Shoal, covers 5 1/2 FM	60° 53' 36.2"	147° 03' 56.8"	3253^{+7}	10^5
E.	Shoal, covers 6 1/4 FM	60° 53' 09.5"	147° 04' 09.0"	6976^{+2}	11^5

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


15'
10'
05'
147°
55'
61°
CAUTION
Temporary changes or defects in aids to navigation are not indicated on this chart. See Notice to Mariners.
AIDS TO NAVIGATION
Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
COLUMBIA BAY
Granite Cove
Heather I.
Heather Bay
(see note D)
Jade Hbr
Emerald Cove
Round Mt.
1044
Mt. Freemantle
2566
Elf Pt.
Flint Pt.
Lunch Pt.
Useless Cove
PT FREEMANTLE
(see note D)
(see note E)
Kidney Pt.
Finnish Pt.
Finnish Bay
Eagle Bay
Jackson Hole
Growler Bay
ACLER
Cave Pt.
ADVANCE INFORMATION
19th Ed., Mar. 23/91
16708

CONTROL STATIONS as of 12 Oct 1994

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
101	G	060:50:49.581	147:27:05.696	13	250	0.0	0.0		09/04/94	QUOTE 1947(DGPS)
102	G	060:54:23.798	147:12:24.812	5	250	0.0	0.0		09/04/94	EXIT 1947(DGPS)
~~103~~	~~G~~	~~060:56:36.616~~	~~147:03:24.109~~	~~6~~	~~250~~	~~0.0~~	~~0.0~~		~~09/05/94~~	~~ELF 1947(DGPS)~~
~~104~~	~~G~~	~~060:42:51.179~~	~~147:21:43.053~~	~~16~~	~~250~~	~~0.0~~	~~0.0~~		~~10/04/94~~	~~LUMPY 1947(DGPS)~~
~~105~~	~~G~~	~~060:14:18.000~~	~~146:38:48.000~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~		~~10/04/94~~	~~CAPE HINCHINBROOK(DGPS BEACON)~~
~~106~~	~~G~~	~~061:03:00.000~~	~~146:42:00.000~~	~~0~~	~~250~~	~~0.0~~	~~0.0~~		~~10/04/94~~	~~POTATO PT(DGPS BEACON)~~

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [X] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (If field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA Ship RAINIER	Alaska	Prince William Sound	5/30/96

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-P125-RA		H-10568	NAD 83

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° / // D.M. Meters	POSITION LONGITUDE ° / // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
L.L. NO 25665	Glacier Island Light	60°52 19.817	147°05 31.195		F-9-L Sept/Oct 94	16708 16700
				X		

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	CAPT R. C. Arnold	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	CAPT R. C. Arnold	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64.

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant
	9 - GPS

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-665-073/1030 Region 6

APPROVAL SHEET

for

H-10568
RA-10-15-94

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

NOAA FORM 76-155 (11-72)

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

SURVEY NUMBER

H-10568

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 16708, 16707, 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
COLUMBIA BAY	X		X							2
ELF POINT	X		X							3
FINSKI BAY	X		X							4
FINSKI POINT	X		X							5
FREEMANTLE, POINT	X		X							6
GLACIER ISLAND	X		X							7
PRINCE WILLIAM SOUND	X		X							8
										9
										10
										11
										12
										13
										14
										15
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										18
										19
										20
										21
										22
										23
										24
										25

Approved

Curtis Colby

Chief Geographer

JAN 19 1996

NOAA FORM 76-155 SUPERSEDES C&GS 197

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-10568

LOCALITY: Two NM East of Glacier Island, Prince William Sound, Alaska

TIME PERIOD: September 8 - October 12, 1994

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).

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

2. Data for Columbia Bay, Ak. (945-4476) are temporarily stored in file #745-4476.

CHIEF, DATUMS SECTION

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

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10568

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	0
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	0

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-00264, TP-00265

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List): 16708, 20th Ed.

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS 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	157		157
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		61	61
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	157	61	218

Pre-processing Examination by LT M. Larsen	*Beginning Date* 10/19/94	*Ending Date* 11/21/94
Verification of Field Data by R.A. Shipley	*Time (Hours)* 127	*Ending Date* 5/28/96
Verification Check by B.A. Olmstead	*Time (Hours)* 3	*Ending Date* 5/16/96
Evaluation and Analysis by R.A. Shipley	*Time (Hours)* 61	*Ending Date* 5/30/96
Inspection by B.A. Olmstead	*Time (Hours)* 24	*Ending Date* 5/30/96

EVALUATION REPORT

H-10568

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This survey was conducted in area of Northwest Prince William Sound. It covers the area at the east end of Glacier Island and vicinity. The bottom is made up of mud and pebble. Depths range from -1.4 to 432.0 meters.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Survey data were processed using the same Hydrographic Data Acquisition/Processing System (HDAPS) software used by the hydrographer, the Hydrographic Processing System (HPS) and AutoCad, Version 12.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot, created with .dbf (extension) and enhanced using the AutoCad system, is filed both in the AutoCad drawing format, i.e., .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHS until data transfer protocols are developed and improved.

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

The field sheet parameters have been revised to center the hydrography on the office plot. Data is plotted using a Modified Transverse Mercator projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

Side scan sonar was not used on survey H-10568.

F. SOUNDING EQUIPMENT

Sounding equipment is discussed in the hydrographer's report.

G. CORRECTIONS TO SOUNDINGS

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with present NOS specifications. Actual tide reduction is derived from Columbia Bay, Alaska gage (945-4476). Refer to the tide note attached to this report concerning recommended tidal zoning.

H. CONTROL STATIONS

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

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

Latitude: -1.957 seconds (-60.560 meters)
Longitude: 7.343 seconds (110.747 meters)

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

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. There are a few positions where the maximum allowable horizontal dilution of precision (HDOP) limits of 3.75 have been exceeded during this survey. A review of the data, however, shows that the positioning of soundings located by these fixes is consistent with the surrounding information and is considered acceptable. None of these survey positions are used to locate dangers to navigation. Daily DGPS performance checks were conducted in the field and found adequate.

J. SHORELINE

The following registered shoreline maps compiled on NAD 27 apply to this survey.

Map Number	Photo Date	Scale
TP-00264	July 1972	1:20,000
TP-00265	July 1972	1:20,000

Shoreline drawn on the smooth sheet originates from 1:10,000 scale photographic enlargements of the shoreline maps.

Shoreline from TP-00264 and TP-00265 were digitized at PHB and merged with the survey file during office ACAD processing. There were no changes to the photogrammetric mean high water line. Changes to alongshore and offshore features shown on the shoreline manuscript were verified and revised as warranted during survey operations. These changes have been shown on the smooth sheet.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10568 junctions with the following surveys.

Survey	Year	Scale	Area
H-10567	1994	1:10,000	North
H-10569	1994	1:10,000	West
H-10571	1994	1:20,000	Southwest

The junctions are complete and the soundings are in satisfactory agreement. There are no contemporary surveys to the south or east of this survey.

M. COMPARISON WITH PRIOR SURVEYS

H-2807 (1905) 1:100,000

A relatively small percentage of charted depth information originates from the prior survey listed above. Comparison with the limited prior data reveal general differences in depths, ranging from 10 to 30 meters (2.2 to 16.4 fathoms). The present survey appears to be consistently shoaler. Depth differences with this prior survey are largely attributed to more

modern data acquisition, positioning techniques and increased bottom coverage. However, the effects of the 1964 Prince William Sound earthquake are known to have caused bottom uplift from 1.2 to 9.8 meters (0.6 to 5 fathoms). H-2807 was a reconnaissance survey undertaken by the USC&GS and the sparce soundings were not reduced for tides.

H-9382 (1973) 1:40,000
H-9388 (1973) 1:20,000

Present survey depths are generally 1 to 2 meters (0.5 to 1 fathom) deeper than the prior surveys. Depth differences are largely attributed to data acquisition techniques and increased bottom coverage.

H-10568 is adequate to supersede the prior surveys within the common areas.

The depths of water sounded in 1973 are approximately 200 fathoms (365 meters). This depth of water prevents making an accurate assessment as to the specific effects of the 1964 Prince William Sound earthquake. However, comparison with these more recent prior surveys, seem to indicate a trend of subsidence within this portion of Prince William Sound.

N. ITEM INVESTIGATIONS

There are two (2) AWOIS item investigations conducted within the area of this survey. These items originate from BP 104500/78-USGS TCPO/Hydro survey. All items have been adequately discussed and disposed of in the hydrographer's report.

O. COMPARISON WITH CHART

Survey H-10568 was compared with the following chart.

Chart	Edition	Date	Scale	Datum
16708	20th	May 1, 1993	1:79,291	NAD83
16707	8th	May 18, 1996	1:40,000	NAD83

a. Hydrography

Charted hydrography originates with the previously discussed prior surveys and miscellaneous sources. The prior surveys are disussed in section M and require no futher discussion.

Charted miscellaneous source data originates from BP-43214 (1:200,000) 1947, USGS and BP 104500 (1:20,000) 1978, USGS. These documents contain several of the presently charted depths and reveal general differences of 10-20 meters (fathom values) with the present survey depths generally deeper. Additionally, the three charted rocks centered at Lat. 60/55/54 N, Long. 146/58/09 W on Chart 16707, were not specifically investigated and/or addressed during

survey operations. The present survey found depths of 5-13 meters (2.7-7.1 fathoms). The evaluator believes these rocks to be from a miscellaneous source and may be positioned further offshore to reflect the foul nature of the inshore area. These items should be retained on the chart unless the Marine Chart Division has additional information tto discredit theses features.

Survey H-10568 is adequate to supersede charted hydrography within the common area of coverage.

b. Dangers to Navigation

Five dangers to navigation were reported by the hydrographer to the Seventeenth Coast Guard District at the completion of survey operations. A copy of this report is attached. No additional dangers were discovered during office processing.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10568 is adequate to:

a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;

b. reveal there are no significant discrepancies or anomalies requiring further investigation; and

c. show the survey was properly controlled and soundings are correctly plotted.

With the exception of those items listed below, the hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No.3, the Hydrographic Survey Guidelines, and the Field Procedure Manual, April 1994 Edition.

Some anomalous soundings were acquired during this survey. They originate from the poor performance of the echo sounder on steep slopes which were surveyed at excessive vessel speed. The hydrographer attempted to correct the problem by editing the raw sounding data, however, the quality of the echo sounder trace is so poor in some areas that the edits are most likely based on judgement rather that quantifiable data, Office review of the problem has determined that, with the exception of obviously erroneous depths, further editing is not reasonable since no corrective action can be taken to improve the quality of the trace, The judgement of the hydrographer has been accepted and generally the data was not altered during office processing. Generally, the affected depths are deep, in excess of 70 meters, and will have little negative effect on the quality of nautical charts if compiled at scales smaller than 1:20,000.

A form 76-40 was not included in the hydrographer's report for Glacier Island Light.

Survey H-10568 adequately complies with the project instructions.

Q. AIDS TO NAVIGATION

There was one fixed aid to navigation located within the survey area. Glacier Island Light was positioned to Third Order, Class I specifications using static GPS methods. The aid agrees well with the chart and serves the intended purpose. There were no features of landmark value.

R. STATISTICS

Statistics are 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 procssing.

T. RECOMMENDATIONS

This is a good hydrographic survey. Additional field work to resolve the three rocks listed in section O of the Evaluator's Report is recommended on a low priority basis.

U. REFERRAL TO REPORTS

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

Richard A. Shipley
Cartographer

APPROVAL SHEET
H-10568

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: 5/30/96
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: 5/31/96
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Branch

****

Final Approval

Approved:

Andrew A. Armstrong III Date: Apr 7, 1997
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-10568

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
16707	3/10/97		Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and curves from smooth sheet
16708	2/14/97		Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. Full application of soundings and curves thru Chart 16707
			within common area and from smooth sheet west of longitude 146/59/30 W
			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.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.