

H110639

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-10-16-95
Registry No.	H-10639
LOCALITY	
State	Alaska
General Locality	Prince William Sound
Sublocality	Northern Portion of Cochrane Bay
19 95	
CHIEF OF PARTY CAPT Dean R. Seidel, NOAA	
LIBRARY & ARCHIVES	
DATE	APR 0 1997

H-10639

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-10-16-95

State Alaska

General locality Prince William Sound

Locality Northern Portion of Cochrane Bay

Scale 1:10,000 Date of survey August 28 - October 5, 1995

Instructions dated July 18, 1995 Project No. OPR-P125-RA
Change #1 - August 30, 1995

Vessel NOAA Ship RAINIER (2120), RA-2(2122), RA-3(2123), RA-4(2124), RA-5(2125), RA-6(2126)

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by CAPT D. Seidel, LT D. Haines, LT M. Larsen, ENS S. Maenner, ENS S. Smith,
ENS E. Callahan, ENS N. Bennett, ENS J. Crocker, CST F. Paradana, SST J. Fleischmann, ST K. Callahan

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: I. Almacen Automated plot by HP Design Jet 650C Plot

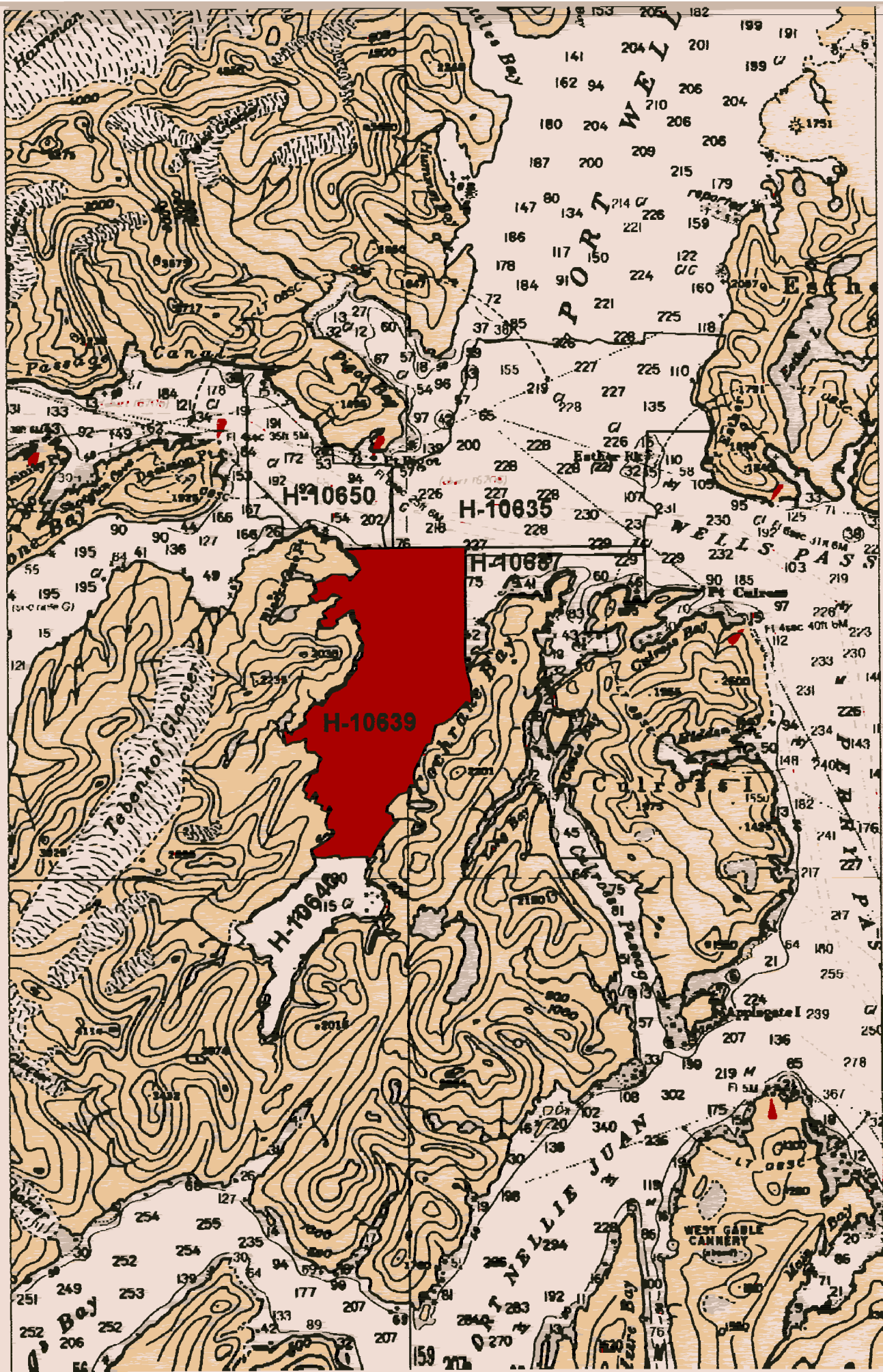
Verification by D. Doles, J. Stringham, E. Domingo, R. Mayor

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

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/SURE 3/28/97 mkr

SC 4397



Descriptive Report to Accompany Hydrographic Survey H-10639

Field Number RA-10-16-95

Scale 1:10,000

August - October 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-10639 corresponds to "sheet AP" 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. ✓

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

The survey area is located in the northern portion of Cochrane Bay. The survey's northern limit is bounded by 60° 46.3' N, the eastern limit is bounded by 148° 18.0' W, the southern portion by 60° 40.5' N and the rest of the survey is bound by the shoreline of Cochrane Bay. ✓

Data acquisition was conducted from August 28, 1995 (DN 240) to October 5, 1995 (DN 278).

C. SURVEY VESSELS ✓

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

Vessel	EDP #	Operation
RAINIER	2120	Sound Velocity Casts Bottom Samples
RA-2	2122	Hydrography Shoreline Verification
RA-3	2123	Hydrography Shoreline Verification

 ✓

Vessel	EDP #	Operation
RA-4	2124	Hydrography Shoreline Verification
RA-5	2125	Hydrography Bottom Samples
RA-6	2126	Hydrography Shoreline Verification

D. AUTOMATED DATA ACQUISITION AND PROCESSING

HDAPS

Data were acquired and processed using HDAPS Programs. A complete listing is included in Appendix VI. *

Problems

None

HYPACK

Data acquired on DN 242 were collected using HYPACK (DOS), v. 5.2, with the following program updates:

Program Name	Version	Date Installed
HYSPEED	3/24/95	1 April, 1995
IOTEST	3/17/95	1 April, 1995

Processing was conducted using the HDAPS HP system. HYPACK (DOS) files were translated to a PC_DAS format using a Power Basic program CONV_HYP.EXE (11/11/95) provided by N/CS32 and modified by RAINIER personnel. The files were then loaded into HDAPS and processed in the same manner as PC_DAS data.

In addition GPSINIT.BAT (5/19/94), was used to initialize the Ashtech GPS receiver.

Problems

None.

* Filed with the survey records.

Velocity ✓

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	2.11	5 Mar 1995

E. SONAR EQUIPMENT ✓

Sonar equipment was not used on H-10639. ✓

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. *The smooth sheet was plotted in fathoms based on actual tides. Depth range from 0 to 237.0 fathoms.*

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 (m)	Applicable DN
1	1	234	60° 45' 42" N 148° 09' 48" W	551	240-243
3	2	248	60° 47' 12" N 148° 13' 42" W	535	248-257
4	2	248	60° 47' 12" N 148° 13' 42" W	535	253
5	3	262	60° 47' 38" N 148° 19' 15" W	546	262-271
7	4	276	60° 48' 06" N 148° 16' 57" W	525	276-278

Cast 1, 2, 3 & 4 plot outside the survey limits.

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". *

Static Draft ✓

A transducer depth was determined using FPM Fig 2.2 for RAINIER and vessels 2122-2126 in the spring of 1995. These values were entered into the offset tables* for each survey platform.

Settlement and Squat ✓

Correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2., using FPM Fig. 2.3, and are included with project data for OPR-P125-RA. The data for 2123-2126 were collected in Shilshole Bay, Washington in the Spring of 1995. The data for 2122 was collected in Windham Bay, Alaska, in May 1995 (OPR-O136). The data for RAINIER was determined during Southern Alaska Peninsula project (OPR-P180) in the Summer of 1994.

Offset Tables ✓

Offset tables* contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables 2-6 correspond to the number of the vessel, offset table 1 is used for RAINIER. The offset tables are contained in the "Separates to be Included with Survey Data". *

Heave ✓

The launches are not equipped with heave, roll and pitch sensors.

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 sheet H-10639 are:

Time 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. *

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 Cochrane Bay (945-4851) on August 22, 1995. The staff was connected to five benchmarks during opening levels conducted August 24, 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., Sec. H)*

A listing of the geodetic stations used to control this survey is ^{*attached to*} ~~included in Appendix III~~ of this report. The horizontal datum for this project is NAD 83.

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., Sec. 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 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 either station. Scatterplot results are included in the "Project related data for OPR-P125-RA". *

** Filed with the survey records.*

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., Sec. J)

Shoreline maps DM-10188 and DM-10187 were supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). DM-10188 was also supplied on mylar. The digital file was projected to the survey grid with OPR-P125-RA geodetic parameters using program Shore version 2.0, provided by N/CS32, and stored in HYPACK (*.DIG) format. Shoreline was plotted at survey scale on boat sheets and processing sheets. *Shoreline maps listed above are the source documents for the smooth sheet.*

Method of Shoreline Verification ✓

Shoreline verification was conducted near predicted lower low water in accordance with FPM 7.1 except as noted below.

Shoreline verification was accomplished by taking detached positions (DP's) 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.* 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. DPs taken during shoreline verification were recorded on DP forms.* These indicate significant DM features and features not found on the DM. Some positions of DM features were verified during inshore hydrography and annotated on the RMPO (ie: Line ends at cliff face, etc.). *RMPO (Raw Master Printouts)*

Detailed 1:10,000 "Bottom Sample and Detached Position Plots" are provided showing all reference numbers, detached positions, and notes relating to each feature. The information from these plots was transferred to a final field plot where possible.

** Filed with the survey records.*

Verified DM features were retained and shown in black. Changes to the shoreline features are shown in red and the new features are depicted in black. Field cartographic codes were assigned using the HDAPS DP editor. Heights are recorded in meters and decimeters and are corrected to predicted MLLW. Heights on the smooth sheet are shown in feet and have been corrected for approved tides. Other than minor islets, there are no changes to the mean high water line as depicted on DM-10187 and DM-10188.

Changes and New Features ✓

There were numerous changes and new features found during shoreline verification. These are depicted on the "Bottom Sample and Detached Position Plots." DM rocks were often identified as high points of ledges or reefs. *Revisions and new features have been adequately portrayed on the smooth sheet as warranted.*

Disprovals

A DM rock at position 60° 45' 30" N, 148° 22' 13"W, was not found. The item was investigated on DN 240 (tide 0.1m) by visual search. The average depth at the reported position (position # 8052) is 65 m, search time of 15 min, search radius 50 m and water visibility was 5 m. The area was further investigated using an echosounder with fifty meter line spacing. The hydrographer recommends the rock symbol from the shoreline manuscript not be charted. *Concur. Chart the area based on the present survey. The investigation is not adequate to disprove the manuscript rock. However, due to the depth of water in which this rock plots, it is likely the feature was compiled in error. This is further substantiated by a letter dated August 27, 1995 in which the field cites problems with the shoreline manuscript and HYPACK (attached).*

The digital shoreline DM-10188 in SDDEF, was found to differ from the mylar copy of the same manuscript. When the hydrography was overlaid over the plotted DM and the mylar copy of the same manuscript, it was apparent that the mylar copy depicted the shoreline more accurately than the digital copy. Therefore, the mylar copy was considered to be our source document for shoreline verification. To eliminate source confusion, the mylar shoreline was referred to as the T-Sheet and the digital shoreline was referred to as DM. The boat sheet was overlaid on the mylar and any features that were not included in the digital dataset were manually transferred to the boat sheet. In many cases "DM" rocks were highpoints of "T-Sheet" ledges and reefs. In these cases only ledges were addressed. In the few cases that a rock appeared on the "DM" shoreline and not the "T-Sheet" shoreline, the rocks were addressed as "DM" rocks. ✓

A memorandum addressing these problems in detail was sent to N/CS31 for resolution. A copy of the memo (dated August 27, 1995) has been included in ~~Appendix VI~~ *This report.*

Recommendations

The hydrographer recommends that the shoreline as depicted on the final field sheet from the survey be used to ^{update} ~~supersede~~ shoreline information compiled on DM-10188. *Concur*

Charted Features

Charted rocks were either identified as rocks, high points or extensions of DM ledges and reefs, with the following exceptions: *These items could be adequately discussed in section O of this report.*

A charted rock in the vicinity of $60^{\circ} 46' 04''\text{N}$, $148^{\circ} 21' 48''\text{W}$, was not found. The rock was investigated on DN 240 (tide 0.2 m) by visual search during shoreline verification. On DN 278, the area was investigated by echosounder using 10 m line spacing. The echosounder investigation revealed a depth of 1.7 m (position #2059+7) at the charted position and a 0.3 m depth (position # 2086+4) shoreward of the charted position. The hydrographer recommends charting the above features as depicted on the final field sheet. *Concur.*

The charted rock plots very near to a ledge which extends offshore and has been depicted on the smooth sheet. It is likely this charted feature is the seaward most part of the ledge as found by this survey.

Three submerged rocks in the vicinity of $60^{\circ} 45' 51''\text{N}$, $148^{\circ} 21' 50''\text{W}$, were not found. The rocks were investigated DN 240 (tide 0.0 m) by visual search during shoreline verification. On DN 278, the area was further investigated by echosounder using 25 m line spacing. Depths were found to be greater than 15 m at the charted positions. The hydrographer recommends deleting the three submerged rock symbols from the chart. *Concur.*

These three submerged rock symbols originate from T-9133 (1947-51) and were likely used to represent the rocky nature of the area. An extensive ledge feature was found by the present survey which lies approximately 100 meters west of these charted features.

A charted rock in the vicinity of $60^{\circ} 45' 22''\text{N}$, $148^{\circ} 23' 48''\text{W}$, was not found. The rock was investigated on DN 240 (tide 0.2 m) by visual search during shoreline verification. On DN 251, the area was further investigated by echosounder using three buffer lines in the small cove. The echosounder investigation revealed a average depths of 5 m (position # 3570) at the charted position. The hydrographer recommends retaining the rock symbol on the chart. *Concur.*

A charted mooring buoy in the vicinity of $60^{\circ} 41' 39''\text{N}$, $148^{\circ} 23' 59''\text{W}$, was not found. This mooring buoy is listed as AWOIS item # 52227 and is discussed in section N of this descriptive report. The hydrographer recommends deleting the charted mooring buoy from position $60^{\circ} 41' 39''\text{N}$, $148^{\circ} 23' 59''\text{W}$. *Concur.*

Problems ✓

None

K. CROSSLINES ✓

Crosslines were generally run in over 100 m of water and agreed to within 1 meter with mainscheme hydrography. Total mileage was 21.7 nautical miles or 12.3 % of total mainscheme hydrography. ✓

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

This survey junctions with surveys H-10635 (1:10,000, 1995) and H-10650 (1:10,000, 1995) at the northern limit, H-10637 (1:10,000, 1995) at the eastern limit and H-10640 (1:10,000, 1995) at the southern limit. 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 EVAL RPT., Sec. M)

Two prior surveys were compared: H-7732 (1:40,000, 1948) and H-6981 (1:10,000, 1948). The soundings from the prior surveys were in general agreement with the present survey. Final comparisons will be done at PHB.

N. ITEM INVESTIGATIONS ✓

Survey H-10639 contained one AWOIS item. (52227)

AWOIS ITEM 52227

1. Area of Investigation

State: Alaska
Locality: Northern Portion of Cochrane Bay, Prince William Sound, AK
Reported Latitude: 60° 41' 39.8" N
Reported Longitude: 148° 23' 55.5" W
Datum: NAD 83
Depth: N/A
Feature: Obstruction (Forest Service public use mooring buoy)

2. Description of Source Item

The item was reported in the above location in 1986.

3. Survey Requirements

Verify or disprove. The required techniques to be used were visual search or salvage documentation.

4. Method of Investigation

A visual search was done in the area and echo sounder drift search.

5. Results of Investigation

Date: DN 241
Time (UT): 1907
Feature: Disproval
Position Number: 1179
Latitude: 60° 41' 40.0" N
Longitude: 148° 23' 54.9" W

The buoy is no longer located at the reported position. The mooring buoy was searched for on DN 241, average water depth was 17 m, water visibility was 7 m, search time was 30 min and the search radius was 50 m. No mooring buoy was observed.

6. Comparison with Prior Surveys

The mooring buoy does not appear on any prior surveys.

7. Comparison with the Chart and Charting Recommendations

The buoy is charted on NOS chart 16705, 15th Edition, September 1, 1990 1:80,000 (NAD 83).

This investigation did not warrant a Danger to Navigation.

Recommendation

The hydrographer recommends deleting the charted mooring buoy symbol at the position
60° 41' 39" N, 148° 23' 59" W. *Concur,*

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

This survey was compared to NOS chart 16705, 15th Edition, September 1, 1990 1:80,000, (NAD 83). The charted soundings were found to be in general agreement. Final comparisons will be made at PHB.

Dangers to Navigation

Seven dangers to navigation within the limits of H-10639 were reported to the Seventeenth Coast Guard District, October 31, 1995. Copies of the correspondence *is attached to* ~~can be found in~~ Appendix I of this report.

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

Survey H-10639 is complete and adequate to supersede charted depths and features in their common areas. *Concur*

Q. AIDS TO NAVIGATION ✓

No Aids to Navigation exist within the survey area. *Concur*

R. STATISTICS

NM Hydrography	285.2
Velocity Casts	4
Detached Positions	89
Selected Soundings	13177
Bottom Samples	17
Tide Stations	1
NM ² Hydrography	15.3
Dives	0

S. MISCELLANEOUS ✓

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

No unusual magnetic variations or tidal currents were noted.

T. RECOMMENDATIONS ✓


None

U. REFERRAL TO REPORTS ✓


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

<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Fall 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
Project related data for OPR-P125-RA.	Incremental	N/CS34
Secchi Disk Observations for OPR-P125-RA	November, 1995	N/CS31

Respectfully Submitted,


Stacy Maenner
Ensign, NOAA

Approved and Forwarded,



Dean R. Seidel
Captain, NOAA



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

August 27, 1995

MEMORANDUM FOR: Captain Andrew A. Armstrong III
Chief, Hydrographic Survey Division

FROM: 
Captain Dean R. Seidel
Commanding Officer, NOAA Ship RAINIER

SUBJECT: Problems with shoreline manuscript and HYPACK

While starting the fall project in Prince William Sound, AK (OPR-P125) RAINIER has encounter several problems with shoreline manuscript and HYPACK. RAINIER requests HSD address the following problems as soon as possible.

Shoreline Manuscript Problems

RAINIER currently has mylar copies of the DM's and the digital data sent by HSD at the beginning of the project. The mylar copies have ledges and reefs depicted on them. The digital data either neglects to show the ledges or uses a single rock symbol to represent the ledge. The mylar copies depict rocks that are not in the digital data. But, the converse is also true with the digital data showing rocks, usually on the shore above MLLW., not shown on the mylar copies.

While conducting shoreline RAINIER personnel have found the mylar copies better represent the area and contain the most accurately depicted shoreline features. In a comparison of the mylar copies to the digital data on sheet AE (H-10634), a shift of 20m between the two sources was found. The mylar copy appears to better fit the data. Also, during hydro on sheet AE and Y areas were discovered where the high water line was off by 100m, for a distance of 500m along the shore. This problem is the same from both sources.

RAINIER does not have mylar copies for the entire survey area. Currently features from both sources are being investigated and referenced or disproved. When RAINIER begins work in areas where mylar copies are unavailable, there is sure to be features that are not in the digital data and therefore, may not be investigated properly.

RAINIER would like to know the origin of both the sources and request direction on which data should be used as the field manuscript. RAINIER is curenly expending large quantities of time verifying shoreline.



HYPACK Conversion Problems

1) When there is no GPS positioning at the end of a line, the convert program disregards all depths after the last good position and reassigns the fix number of the end of the line to this position. The depth corresponds to the position. However, the line on the fathos corresponds to the time of the line break, not of the position that bears its name. There is no indication that this condition exists. The operator changes the depth to correspond to the RMPO, and typically a shoal sounding is moved offshore.

RAINIER had the same problem last fall with the Power Basic convert program, and reported the same problem this spring with the Visual Basic conversion program. RAINIER personnel modified the Power Basic program to test for this condition and removed all data back to the last good fix. There is an extensive discussion of this problem in the RAINIER end of year HYPACK report from field season 1994. RAINIER recommends either eliminating all data after the last good fix, as has been past practice, or DR-ing based on course and speed, using the last depth of the line, corresponding to the fathos trace.

2) HYPACK's RMPO does not correspond with the digital data. RAINIER's launch RA-2 uses a RMPO on line as is common practice in RAINIER boats. This printout is produced by HYPACK, and uses HYPACK's depth selection and position interpolation algorithms. This printout is used as the base document for comparison of soundings with the fathos trace. However, once the data has been converted and loaded into HDAPS, somewhat different depths and positions are observed. The positions vary by as much as five meters. The depths tend to vary the most on the first and last fixes of the line. This occurs when there is a bogus depth, either a very small depth (<0.5) or a missed depth, in the first or last depth record in the HYPACK raw data. HYPACK seems to window out this bogus depth and take the next depth, while HDAPS takes the bogus depth.

The only way to check for discrepancies is to print out another RMPO in HDAPS and compare the two. This is time consuming (approx 2 person-hours per boat day) and leads to a confusing data record. The other option for checking is to wait until the end of the day and print out a raw master printout with HDAPS to use as the master RMPO. This is more time consuming yet (4 person-hours extra). The best solution would be to compare the sounding selection and record rectifying algorithms in HSB's convert program vs the algorithms used by HYPACK. If HYPACK's is less rigorous, then we could suggest a change to their software. If ours is less rigorous, then we should change our routines. If they are equally rigorous, we should consider adopting HYPACK's algorithm so that the data is consistent. While this may not be important for other field units that do not use an on-line printout, it is very important to RAINIER.

3) The DP conversion routine is not working on our data. Positions produced by HYPMENU 2.28 are nonsensical (one data set had one position in Kansas, and one at -93° latitude). HYPMENU 2.29 gives a substring out of range error. A sample file is attached for troubleshooting.

4) The rocks are now displayed in HYPACK survey, but no other point features are displayed. RAINIER has used other point features to represent charted rocks (currently we are using tide

gages). This is a critical safety item in addition to providing the basis for shoreline verification of charted features.

There are ways to work around any of the above problems except the first, but the combination of them all puts an extraordinary burden on RAINIER personnel and jeopardizes data quality. The problem is exacerbated by RAINIER's isolated location, rendering communications with HSB difficult and file transfers expensive via Inmarsat. Consequently, RAINIER has decided to temporarily suspend using the Windows version of HYPACK and revert to the DOS version of HYPACK and the Power Basic version of convert until such time as the problems are resolved.

RAINIER requests that LTJG Chris George spend the next leg (Sept. 4-14) aboard to resolve the above issues and get HYPACK for windows back on line.

cc: PMC - Albright
PIIB - Timmons



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 29, 1995

**ADVANCE
INFORMATION**

Director
DMAHTC
ATTN: MCNM
6500 Brookes lane
Washington, DC 20315-0030

Dear Sir:

While conducting hydrographic survey operations in Prince William Sound, Alaska, NOAA Ship RAINIER discovered twenty-one dangers to navigation. They have been reported to DMAHTCNAVWARN and the Seventeenth Coast Guard District. A copy of the correspondence describing the dangers is enclosed.

Sincerely,

A handwritten signature in black ink, appearing to read "Dean R. Seidel".

Dean R. Seidel
Captain, NOAA
Commanding Officer

Enclosures





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 29, 1995

**ADVANCE
INFORMATION**

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

Dear Sir:

Attached is a confirmation copy of the radio messages sent to your office regarding the dangers to navigation which I recommend for inclusion 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,

A handwritten signature in black ink, appearing to read "Dean R. Seidel".

Dean R. Seidel
Captain, NOAA
Commanding Officer

Enclosures

cc: DMAHTC
N/CS26
PMC



NMC DE WTEF

T

PTTUZYUW RUWNTEF3042 3041942-UUUU--RUWNSUU.
 ZNR UUUUU
 P 311942Z OCT 95
 FM NOAAS RAINIER
 TO CCGDSEVENTEEN JUNEAU AK
 DMAHTCCNAVWARN WASHINGTON DC//MCNM//
 INFO NOAAMOP SEATTLE WA
 ACCT CM-VCAA

**ADVANCE
 INFORMATION**

BT

UNCLAS

NOAA SHIP RAINIER HAS LOCATED 7 DANGERS TO NAVIGATION IN NORTHWESTERN PRINCE WILLIAM SOUND, ALASKA (PROJECT OPR-P125-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10639. THE FOLLOWING INFORMATION IS PROVIDED FOR PUBLICATION IN LOCAL NOTICE TO MARINERS:

DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

CHARTS AFFECTED: 16705 15TH ED SEPT 1/90 1:80,000 (NAD83)
 16700 24TH ED JAN 11/92 1:200,000 (NAD83)

ITEM	DANGER	DEPTH	LATITUDE	LONGITUDE
A.	SHOAL	COVERS 5 FMS	60/42/06.8N	148/20/07.1W 1544+1 9.6
B.	REEF	UNCOVERS 4 FT	60/41/53.6N	148/20/04.9W 1029+0 -1.1
C.*	SHOAL	COVERS 4 1/4 FMS(4 1/2)	60/41/52.4N	148/20/06.9W 1030+0 -1.1
D.*	SHOAL	COVERS 2 1/4 FMS(2 3/4)	60/46/05.4N	148/21/43.6W 2064+4 8.1
E.*	SHOAL	COVERS 7 1/4 FMS(7 1/2)	60/44/36.7N	148/21/36.5W 8304+1 4.5
F.*	SHOAL	COVERS 2 1/2 FMS(2 3/4)	60/42/05.1N	148/23/08.5W 1917+5 13.3
G.*	LEDGE ROCK	UNCOVERS 2 FT	60/41/25.6N	148/22/50.5W 1230+1 4.7
			60/41/07.9N	148/22/55.5W 1173+0 -0.5

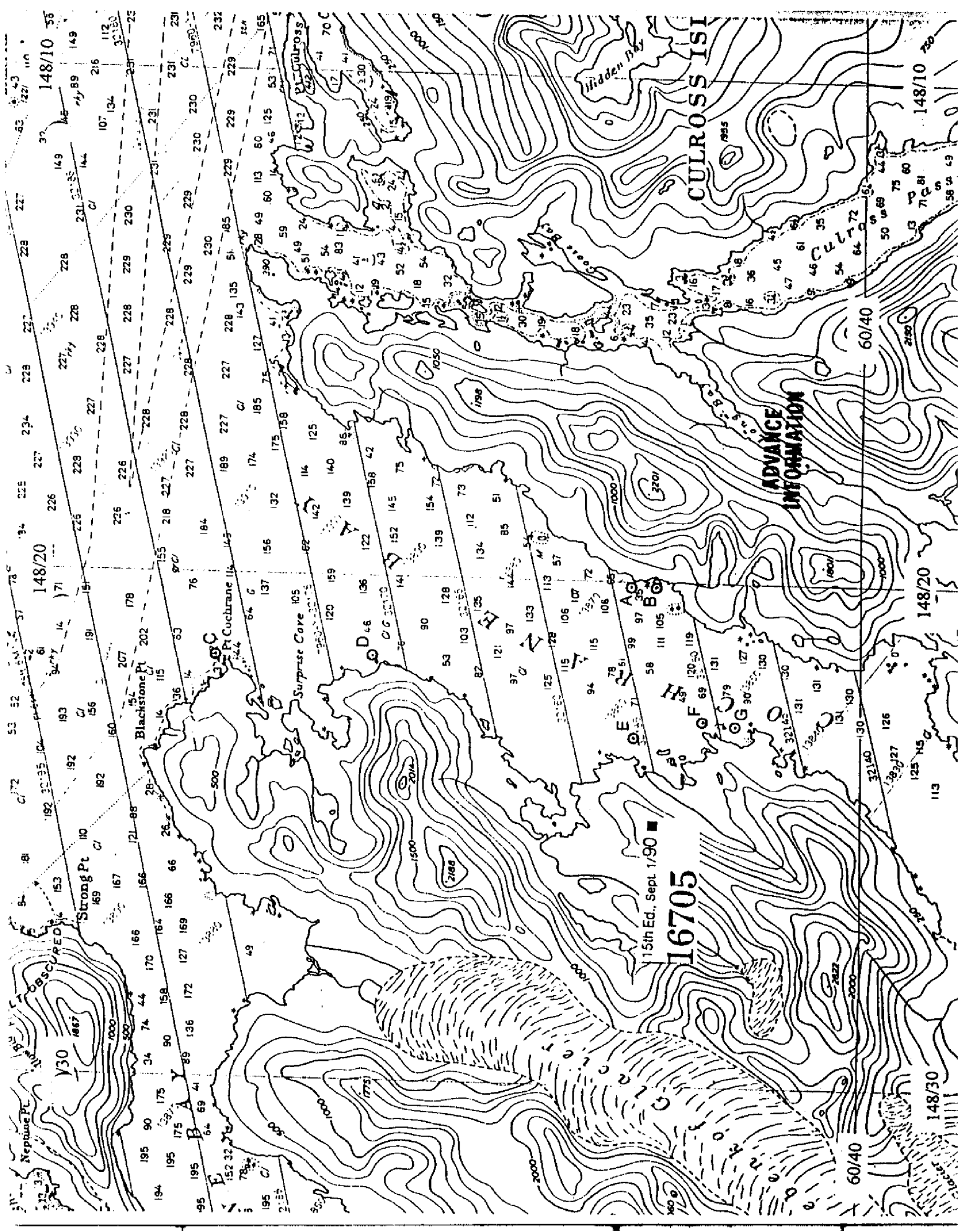
* Items C and D cannot be shown at chart scale due to the ledge features near these soundings.
 Items E, F and G have been revised to reflect approved tides and final graphic depiction on smooth sheet.

THIS IS ADVANCE INFORMATION SUBJECT TO OFFICE REVIEW.
 QUESTIONS CONCERNING THIS MESSAGE SHOULD BE DIRECTED TO THE CHIEF, PACIFIC HYDROGRAPHIC BRANCH AT (206)526-6835. A LETTER WITH ATTACHED CHARTLET WILL BE MAILED TO CONFIRM THIS MESSAGE.

BT

3042

NNNN



15th Ed., Sept 1990
16705

ADVANCE
INFORMATION

CULROSS ISL

Hidden Bay

Blackstone Pt 202

Pt Cochran 114

Surprise Cove 105

Strong Pt 100

148/30

148/20

148/10

60/40

60/40

60/40

CONTROL STATIONS as of 21 Oct 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 HINCHINBROOK(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)
104	F	060:43:26.498	148:01:11.543	19	250	0.0	0.0		10/20/95	ABOVE(GPS STATION), 1948

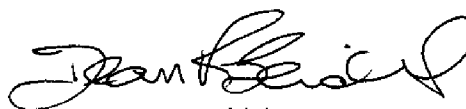
APPROVAL SHEET

for

H-10639
RA-10-16-95

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-10639

LOCALITY: Northern Portion of Cochrane Bay, Prince William
Sound, Alaska

TIME PERIOD: August 28 - October 5, 1995

TIDE STATION USED: 945-4851 Cochrane Bay, Ak.
Lat. 60° 39.8'N Lon. 148° 21.4'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): -1.79 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 11.3 ft.

REMARKS: RECOMMENDED ZONING

Times are direct, and apply a X0.99 range ratio to heights using
Cochrane Bay, Ak. (945-4851).

Notes: Times are tabulated in Greenwich Mean Time.

William M. Hildebrand
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	ON CHART NO. 16705, 16700 ON PREVIOUS SURVEY ON U.S. QUADRANGLE MAPS FROM LOCAL INFORMATION ON LOCAL MAPS P.O. GUIDE OR MAP GRAND McNALLY ATLAS U.S. LIGHT LIST										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X		X								1
COCHRANE BAY (title)	X		X								2
COCHRANE, POINT	X		X								3
PRINCE WILLIAM SOUND	X		X								4
(title)											5
SURPRISE COVE	X		X								6
											7
											8
											9
											10
											11
											12
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											25

Approved

Clara C. Coy
Chief Hydrographer

MAR 25 1996

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER H-10639	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION	
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS	
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS	
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List):		DM-10187, DM-10188			
PHOTOBATHYMETRIC MAPS (List):		None			
NOTES TO THE HYDROGRAPHER (List):		None			
SPECIAL REPORTS (List):		None			
NAUTICAL CHARTS (List):		16705, 15th Ed., Sept. 1, 1990 (1:80,000 scale)			
OFFICE PROCESSING ACTIVITIES <i>The following statistics will be submitted with the cartographer's report on the survey</i>					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					
POSITIONS REVISED					
SOUNDINGS REVISED on Sheet					13,177
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			184.5		184.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS					
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT				29.0	29.0
GEOGRAPHIC NAMES					
OTHER*					
*USE OTHER SIDE OF FORM FOR REMARKS					
TOTALS			184.5	29.0	213.5
Pre-processing Examination by LT G. Noll			Beginning Date 11/9/95	Ending Date 11/9/95	
Verification of Field Data by D. Doles, E. Domingo, R. Mayor, J. Stringham			Time (Hours) 184.5	Ending Date 10/23/96	
Verification Check by B. Olmstead			Time (Hours) 3	Ending Date 11/19/96	
Evaluation and Analysis by I. Almacen			Time (Hours) 29.0	Ending Date 10/25/96	
Inspection by B. Olmstead			Time (Hours) 7	Ending Date 11/23/96	

EVALUATION REPORT

H-10639

A. PROJECT

Project information is discussed in the hydrographer's report.

B. AREA SURVEYED

This basic hydrographic survey was conducted in Prince William Sound, Alaska. It covers the northern section of Cochrane Bay from latitude 60/40/30N up to the vicinity of Point Cochrane including Surprise Cove. The inshore area is generally comprised of small coves, islets, ledges, scattered off-lying rocks and reefs. The bottom is mainly composed of mud, pebble and sand mixed with broken shells. Depths range from 0.0 to 227.0 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 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 survey plot 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 PHB until data transfer protocols are developed and approved.

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 and No. 35.

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-10639.

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 Cochrane Bay, Alaska gage (945-4851). Refer to the approved tide note attached to this report concerning recommended tidal zoning.

H. CONTROL STATIONS

The use of Differential Global Positioning System (DGPS) is discussed in the hydrographer's report and a list of DGPS reference stations used during this survey is attached to this report.

The positions of DGPS reference stations used during hydrographic operations are published and field 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 NAD 27 adjustment tick based on values determined with NGS program NADCON.

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

Latitude: -2.173seconds (-67.269 meters)
Longitude: 7.406 seconds (112.293 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. NAD83 is used as the horizontal datum for plotting and position computations. A horizontal dilution of precision (HDOP) limits of 3.75 was computed for survey operations. There are a few positions where the maximum allowable HDOP limit has been exceeded during this survey. A review of the data, however, shows that the positioning of soundings located by these fixes is consistent with the surrounding information and is considered acceptable. These cases are isolated and occur randomly throughout the survey. None of these positions are used to locate critical soundings or dangers to navigation. The reference site confirmation test using the program MONITOR and the daily DGPS performance checks conducted in the field were adequate.

J. SHORELINE

Shoreline maps DM-10187 and DM-10188 are the photogrammetric source data available for this survey. Some changes and new features in the area not depicted on the shoreline maps were noted during this survey. In some cases, rocks shown on the shoreline maps were identified in the field as high point of ledges or reefs. These features have been adequately located and depicted on the AutoCad generated smooth sheet based on the latest survey information. A discussion concerning shoreline changes and the disproval of some of the features searched for during this survey is included in the hydrographer's report.

The shoreline maps DM-10187 and DM-10188 compiled in mylar apparently portrayed more complete and accurate shoreline information than its digital copy in SDDEF format provided by N/CS32. A memorandum dated August 27, 1995 addressing this discrepancy was forwarded by the ship to the Chief, Hydrographic Survey Division. A copy of the memorandum is attached to this report.

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10639 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10635	1995	1:10,000	North
H-10637	1995	1:10,000	East
H-10640	1995	1:10,000	South
H-10650	1995	1:10,000	North

The junctions with above listed surveys are complete. The depth curves and soundings within the junction areas are in satisfactory agreement.

M. COMPARISON WITH PRIOR SURVEYS

Survey H-10639 was compared with the following prior surveys.

H-6981 (1948), scale 1:10,000
H-7732 (1948), scale 1:40,000

Survey H-7732 covers only the navigable area of Cochrane Bay. There is no prior hydrographic survey information available for comparison along the inshore areas of the bay, including Surprise Cove. Survey H-6981 covers the surrounding areas off Point

Cochrane. Comparisons with prior surveys are considered satisfactory. The present survey appears to be generally shoaler by about 1.0 to 5.0 fathoms in most areas. Survey H-10639 has been accomplished with more accurate survey coverage utilizing modern positioning and sounding methods. As a result, the present survey revealed other significant features not found during the earlier surveys. The changes in the bottom configuration noted are largely attributed to better acquisition systems and in part to the effects of past earthquakes around the area. Although the specific effects of earthquake occurrences in the region particularly in 1964 cannot be determined, this survey seems to indicate the usual uplifting trend common around Prince William Sound.

H-10639 is adequate to supersede the prior surveys within the common area.

N. ITEM INVESTIGATIONS

AWOIS item 52227 was investigated during this survey. Discussion and disposition of this item is included in the hydrographer's report.

O. COMPARISON WITH CHART

Survey H-10639 was compared with the following chart.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	15th	Sept.1, 1990	1:80,000	NAD 83
16705	16th	Aug. 24,1996	1:80,000	NAD 83

The 16th edition of Chart 16705 reflects the most recently compiled chart information based on the 1992 to 1994 surveys around Prince William Sound. The specific dangers to navigation reported for the northern portion of Cochrane Bay, based on the attached letter dated October 29, 1995, were applied to this latest edition of the chart.

a. Hydrography

Charted hydrography originates with the previously mentioned prior surveys and miscellaneous sources. The prior surveys are discussed in the preceding section of this report and requires no further discussion. The charted depths reveal the same differences with the present survey as discussed in the preceding section of this report. Charted miscellaneous features except those mentioned below were adequately addressed during survey operations.

The three (3) islets charted in the vicinity of latitude 60/41/00N, longitude 148/21/10W, originating from miscellaneous source were not mentioned in the hydrographer's report. These features were not depicted on the shoreline maps of the area. However, these areas were covered by regular hydrography and no indications of the existence of these islets were

noted. It is therefore recommended that these islets be deleted and the area be charted based on the present survey.

Survey H-10639 is adequate to supersede charted hydrography within the common area of coverage.

b. Dangers to Navigation

Seven (7) dangers to navigation were reported to the USCG, DMAHTC, N/CG221 and N/CS34 on October 31, 1995. A copy of the report is attached. No additional dangers were found during office processing.

P. ADEQUACY OF SURVEY

The hydrography on survey H-10639 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.

Hydrography on survey H-10639 was acquired in the field in metric units while the AutoCAD generated smooth sheet for this survey was compiled in fathoms to conform to the sounding unit of the existing NOS charts of the area.

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

Survey H-10639 adequately complies with the project instructions.

Q. AIDS TO NAVIGATION

There are no existing fixed or floating aids found within the survey area.

R. STATISTICS

Statistics are itemized in the hydrographer's report.

S. MISCELLANEOUS

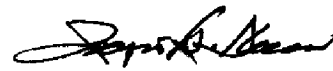
Miscellaneous information concerning this survey is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

T. RECOMMENDATIONS

Survey H-10639 is a good hydrographic survey and no additional field work is required.

U. REFERRAL TO REPORTS

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



Isagani A. Almacén
Cartographer

APPROVAL SHEET
H-10639

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: 11/23/96
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: 11/26/96
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

