

H10640

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic
Field No.	RA-10-17-95
Registry No.	H-10640
LOCALITY	
State	Alaska
General Locality	Prince William Sound
Sublocality	Southern Portion of Cochrane Bay
1995	
CHIEF OF PARTY CAPT Dean R. Seidel, NOAA	
LIBRARY & ARCHIVES	
DATE	APR 5 1997

H-10640

**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-10-17-95

State Alaska

General locality Prince William Sound

Locality Southern Portion of Cochrane Bay

Scale 1:10,000 Date of survey August 29-October 12, 1995

Instructions dated July 18, 1995 \* Project No. OPR-P125-RA

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

Chief of party CAPT Dean R. Seidel, NOAA

Surveyed by LT D.Haines, LT M.Larsen, LTJG G.George, ENS S. Smith, ENS S.Maenner, ENS E.Christensen, ENS N.Bennett, ENS J.Crocker, ENS J.Becker, CST F.Paranada, SST J.Fleischmann, ST.S.Baum

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

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: Bruce A. Olmstead Automated plot by HP-Design Jet 650C

Verification by Elias Domingo

Soundings in fathoms feet at MHW MLLW and tenths

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.

AWCIS/SURF 4/2/97 mcr

\* Change No. 1, dated August 30, 1995

SC 43-97



# Descriptive Report to Accompany Hydrographic Survey H-10640

Field Number RA-10-17-95

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-10640 corresponds to "sheet AQ" 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, section B*

The survey area is located in the southern portion of ~~Blackstone Bay~~ <sup>Cochrane Bay</sup>. The survey's northern limit is bounded 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 29, 1995 (DN 241) to October 12, 1995 (DN 285).

## C. SURVEY VESSELS ✓

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

Vessel	EDP #	Operation
RAINIER	2120	Sound Velocity Casts
RA-2	2122	Hydrography
RA-3	2123	Hydrography
RA-4	2124	Hydrography Shoreline Verification

Vessel	EDP #	Operation
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 was acquired with RA-2 on DN's 254, 256, 262, and 267 using Coastal Oceanographics' HYPACK for Windows, v. 5.2, with the following program updates.

Program Name	Version	Date Installed
WDESIGN	8/7/95	16 August 1995
WSETUP	3/22/95	16 August 1995
WSHORE	8/2/95	16 August 1995
WSURVEY	7/14/95	16 August 1995
DSF6000.DLL	8/20/95	21 August 1995
INN_NOAA.DLL	8/9/95	21 August 1995
NMEA.DLL	7/25/95	16 August 1995

Processing was conducted using the HDAPS HP system. HYPACK for Windows files were translated to an HDAPS format using a Visual Basic program HYPMENU version 2.36 provided by N/CS32. The files were then loaded into HDAPS and processed in the same manner as HDAPS data. HYPMENU produces a conversion abstract which shows the converted depth for the first depth of each line, any positions which were dead reckoned, and

\* Filed with the survey data.

any other error condition encountered during conversion. The abstracts were checked against the Raw Master Printout,\* and appropriate edits made. The files were then loaded into HDAPS and processed in the same manner as HDAPS data.

**Problems** ✓

When the data was first collected, HYPMENU incorrectly dead reckoned positions, created duplicate fix numbers, and produced a number of other problems. After the problems with HYPMENU were resolved, the data was reconverted and reprocessed, so no errors remain in the digital data submitted. *Data was analyzed during office processing and found to contain no significant problems.*

HYPACK (Windows) Raw Master Printouts do not contain the HDOP or number of satellites used. The HDOP was monitored on-line and any time HDOP exceeded the threshold (3.75 for USCG beacon or 6.0 for fly-away stations), data acquisition was suspended. High HDOP was flagged by HDAPS during processing, and the data abstracts\* were checked for any suspect positions. *Data was analyzed during office processing and found to contain no significant problems.*

**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-10640. *Concur*

**F. SOUNDING EQUIPMENT** ✓

The Raytheon DSF-6000N is a dual frequency (100 kHz, 24 kHz), paper trace echo sounder. Serial numbers are included on the headers of the daily Raw Master Printouts.\* No problems which affect survey data were encountered. All DSF-6000N soundings were acquired using the High + Low, high frequency digitized setting.

**G. CORRECTIONS TO ECHO SOUNDINGS** ✓

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

\* Filed with the survey data.

Velocity Table #	Cast #	DN	Cast Position	Deepest Depth (m)	Applicable DN
1	1	234	60° 45' 42" N 148° 09' 48" W	551	241-242
3	2	248	60° 47' 12" N 148° 13' 42" W	535	248-257
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	277-285

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. Casts 1, 2, 3, and 4 plot outside the survey area.

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 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).

#### 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. The offset tables are contained in the "Separates to be Included with Survey Data".

\* Filed with the survey records.

**Heave** ✓

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

**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-10640 are:

	<u>Time Correction</u>	<u>Range Ratio</u>
Cochrane Bay	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.

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

RAINIER personnel installed 8200 digital gages 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, 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.

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.

\* Filed with the survey data



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

## **I. HYDROGRAPHIC POSITION CONTROL** *See Eval Rpt, Section I*

### **Method of Position Control**

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

### **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".

### **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** ✓

HYPACK (Windows) Raw Master Printouts<sup>\*</sup> do not contain HDOP or number of satellites. For launch to launch system checks, the HDOP and number of satellites were assumed to be the same for both boats. RAINIER is pursuing other ideas for working around this problem until the printout is corrected.

## **J. SHORELINE** *See Eval Rpt, Section J.*

Shoreline map DM-10187 and DM-10188 were supplied by N/CS341 in Standard Digital Data Exchange Format (SDDEF). The digital files were 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.

\* Filed with the survey records.

## 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 (Res Master Printout)

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.

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. Feature heights have been corrected on the smooth sheet for approved tides. Heights are shown in feet. There was one change to the mean high water line. See discussion of Changes and New Features  
Three Fingers Cove below.

There were numerous changes and some 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. The new revisions and features offshore of the mean high water line have been shown on the smooth sheet as warranted.

### Disprovals

A DM obstruction at position 60° 39' 07" N, 148° 21' 13" W, was not found. The item was investigated (Pos# 7930, DN 242, VN 2126) by visual echosounder search. The average depth at the reported position is 10 m, search time of 15 min, search radius 30 m; fifty meter line spacing was run in the area. The hydrographer recommends the rock symbol from the shoreline manuscript not be charted. The symbol on DM-10188 is shown as an obstruction not as a rock. Do not agree with hydrographer on not to chart. Line spacing and visual search in 10 meter depths is not sufficient to disprove feature. Feature has been shown on smooth sheet as submerged obstruction.  
Problems

On the east side of Cochrane Bay in locally known Three Fingers Cove at position 60° 39.0' N,

\* Filed with the survey records.

148° 20.5'W, a small bight is shown on the DM in the eastern tip of the middle cove. This bight was not found and the corrected shoreline is annotated on the final depth and B.S./D.P. plots. *Shoreline has been revised and shown in red on the Smooth Sheet.* Concur

### Recommendations ✓

The hydrographer recommends that the shoreline as depicted on the final field sheet from the survey be used to supersede shoreline information compiled on DM-10187 and DM-10188. Concur

### Charted Features ✓

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

A charted rock at position 60° 40' 26"N, 148° 21' 37"W, was not found. The item was investigated (Pos# 7800, DN 241, VN 2126) by visual and echosounder search. The average depth at the charted position was 12 m, search time 15 min, search radius 30 m, visibility 8 m; fifty meter line spacing was run in the area. The hydrographer recommends deleting the rock symbol from the chart. *A ledge plots approximately fifty meters south of charted rock. Based on charting scale, chart ledge symbol as isolated rock at survey position.* Concur

A charted rock at position 60° 40' 14"N, 148° 21' 38"W, was not found. The item was investigated (Pos# 7806, DN 241, VN 2126) by visual and echosounder search. The average depth at the charted position was 10 m, search time 15 min, search radius 30 m, visibility 8 m; fifty meter line spacing was run in the area. The hydrographer recommends deleting the rock symbol from the chart. *An isolated rock and ledge were found during survey operations that plot approximately fifty meters northeast of charted rock. Chart rock at survey position.* Concur

A charted rock at position 60° 39' 41"N, 148° 21' 28"W, was not found. The item was investigated (Pos# 7817, DN 241, VN 2126) by visual and echosounder search. The average depth at the charted position was 15 m, search time 15 min, search radius 30 m, visibility 8 m; fifty meter line spacing was run in the area. The hydrographer recommends deleting the rock symbol from the chart. *The charted rock is likely part of the fowl area as defined by the hydrographer and graphically portrayed on the smooth sheet. Chart area as islets with foul notation.* Concur

A charted islet, approximately 100 X 30 meters, at position 60° 38.5'N, 148° 24.2'W, was searched for on DN 242 by VN 2126 and not found. In addition, hydrography run in the area yielded no signs of an islet. Depths over the islet ranged from 32 to 61 meters. The prior survey, H-7732 (1:40,000, 1948), did not show the islet, nor did the DM; consequently, the hydrographer recommends deleting the islet symbol from the chart. *Depths of 15 to 32 fathoms plot on the smooth sheet within the area of the charted islet.* Concur

### Problems ✓

None

#### K. **CROSSLINES** ✓

Crosslines agreed to within 1 meter with mainscheme hydrography in over 100 m of water. Total mileage was 10.4 nautical miles or 14 % of total mainscheme hydrography.

#### L. **JUNCTIONS** See Eval Rpt, Section L

This survey junctions with survey H-10639 (1:10,000, 1995) at the northern 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, Section M.

One prior survey was compared: H-7732 (1:40,000, 1948). The thirty-two sounding from the prior survey were in general agreement with the present survey. The prior survey only had sparse soundings in the center of the bay. Final comparisons will be done at PHB.

#### N. **ITEM INVESTIGATIONS** ✓

Survey H-10640 contained no AWOIS items. Concur

#### O. **COMPARISON WITH THE CHART** See Eval Rpt, Section O.

This survey was compared to NOS chart 16705, 15th Edition, September 1, 1990 1:80,000, (NAD83). The nine charted soundings were found to be in general agreement. Final comparisons will be made at PHB.

#### **Dangers to Navigation** ✓

Twelve dangers to navigation within the limits of H-10640 were reported to the Seventeenth Coast Guard District, October 13, 1995. Copies of the correspondence can be found in Appendix I of this report.

#### P. **ADEQUACY OF SURVEY** See Eval Rpt, Section P.

Survey H-10640 is complete and adequate to supersede charted depths and features in their common areas. Concur

Two additional areas were developed after the final field sheet was plotted. The sheet was not replotted but the data is in the digital records. The survey was reexcessed and shoal sounding from the developments were manually pulled through to the final field sheet. These two areas are the least depths for reported dangers to navigation, items J, K, letter dated October 13, 1995 (see attached)

**Q. AIDS TO NAVIGATION** ✓

No Aids to Navigation exist within the survey area.

**R. STATISTICS** ✓

NM Hydrography	159.2
Velocity Casts	4
Detached Positions	112
Selected Soundings	7339
Bottom Samples	12
Tide Stations	1
NM <sup>2</sup> Hydrography	4.8
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:

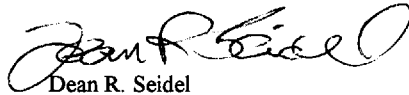
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Fall 1995 Horizontal Control Report for OPR-P125-RA.	November, 1995	N/CS34
Fall 1995 Coast Pilot Report for OPR-P125-RA.	November, 1995	N/CS26
Project related data for OPR-P125-RA.	Incremental	N/CS34
Secchi Disk Observations for OPR-P125-RA	November, 1995	N/CS31

Respectfully Submitted,



Joel R. Becker  
Ensign, NOAA

Approved and Forwarded,



Dean R. Seidel  
Captain, NOAA  
Commanding Officer



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 13, 1995

**ADVANCE  
INFORMATION**

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

Dear Sir:

While conducting hydrographic survey operations in Northwestern Prince William Sound, Alaska, NOAA Ship RAINIER discovered twelve 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 dark 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 13, 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 cursive script, appearing to read "Dean R. Seidel".

Dean R. Seidel  
Captain, NOAA  
Commanding Officer

Enclosures

cc: DMAHTC  
N/CG221  
PMC





**ADVANCE  
INFORMATION**

T  
 PTTUZYUW RUHPTEF2861 2861920-UUUU-RUHPSUU.  
 ZNR UUUUU  
 P 131920Z OCT 95  
 FM NOAA S RAINIER  
 TO CCGDSEVENTEEN JUNEAU AK  
 DMAHTCCNAVWARN WASHINGTON DC//MCNM//  
 INFO NOAA MOP SEATTLE WA  
 ACCT CM-VCAA

BT  
 UNCLAS

NOAA SHIP RAINIER HAS LOCATED 12 DANGERS TO NAVIGATION IN  
 NORTHWESTERN PRINCE WILLIAM SOUND, ALASKA (PROJECT  
 OPR-P125-RA) WITHIN THE LIMITS OF HYDROGRAPHIC SURVEY H-10634.  
 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	FLA	CIAM
A.	SHOAL	COVERS 1 1/4 FMS	60/40/27.3N	148/23/37.7W	1818+2	2.5
B.	REEF	UNCOVERS 1 FT	60/39/35.7N	148/25/17.3W	3209+0	-0.4
C.*	SHOAL	COVERS 2 FMS (2 1/4)	60/39/38.4N	148/25/12.0W		
			60/39/21.9N	148/25/43.9W	1592+2	4.1
D.	SHOAL	COVERS 5 3/4 FMS	60/39/11.4N	148/26/02.1W	5692+2	10.8
E.*	SHOAL	COVERS 4 1/4 FMS (4 1/2)	60/37/30.0N	148/25/37.1W	1086+3	8.2
F.	SHOAL	COVERS 2 1/4 FMS	60/38/11.1N	148/24/43.9W	5830+2	4.3
G.*	<del>SHOAL</del> Reef	COVERS 1/4 FM (Awash)	60/39/25.5N	148/21/39.7W	7737+0	0.6
H.*	SHOAL	COVERS 2 FMS (1 3/4)	60/39/14.0N	148/21/12.9W	10330+1	3.9
I.	ROCK	UNCOVERS 3 FT	60/39/36.8N	148/21/22.1W	7819+0	-1.0
J.	SHOAL	COVERS 3/4 FMS	60/39/53.8N	148/21/35.2W	11145+0	1.4
K.	SHOAL	COVERS 2 3/4 FMS	60/38/14.5N	148/25/16.8W	1642+153	
L.*	SHOAL	COVERS 3 FMS (2 3/4)	60/39/42.6N	148/21/43.7W	1790+3	5.5

\* Revised values on smooth sheet based on actual tides.

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  
 2861



## CONTROL STATIONS as of 4 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)
<del>101</del>	<del>F</del>	<del>060:03:24.000</del>	<del>146:41:48.000</del>	<del>0</del>	<del>250</del>	<del>0.0</del>	<del>0.0</del>	<del>08/22/95</del>	<del>POTATO PT (BEACON)</del>
102	F	060:48:12.825	148:23:12.976	19	250	0.0	0.0	08/22/95	CAB 1914 (GPS STATION)
103	F	060:48:05.091	148:10:45.240	17	250	0.0	0.0	08/22/95	PORT 1914 (GPS STATION)

APPROVAL SHEET

for

H-10640  
RA-10-17-94

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

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



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

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 18, 1996

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA

HYDROGRAPHIC SHEET: H-10640

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

TIME PERIOD: August 29 - October 12, 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 and heights are direct on Cochrane Bay, Ak. (945-4851).

Note: Times are tabulated in Greenwich Mean Time.

  
CHIEF, DATUMS SECTION



**HYDROGRAPHIC SURVEY STATISTICS**

H-10640

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

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

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	1				
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., 9/1/90, 1:80,000

**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			

PROCESSING ACTIVITY	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	67		67	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		32	32	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT				
GEOGRAPHIC NAMES				
OTHER				
USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	67	32	99

Pre-processing Examination by <b>LT P. Haines</b>	Beginning Date 10/19/95	Ending Date 10/26/95
Verification of Field Data by <b>E. Domingo</b>	Time (Hours) 67	Ending Date 9/25/96
Verification Check by <b>B.A. Olmstead</b>	Time (Hours) 3	Ending Date 09/18/96
Evaluation and Analysis by <b>B.A. Olmstead</b>	Time (Hours) 32	Ending Date 10/9/96
Inspection by <b>B.A. Olmstead</b>	Time (Hours) 8	Ending Date 10/12/96

**EVALUATION REPORT  
H-10640**

**A. PROJECT**

Project information is discussed in the hydrographer's report.

**B. AREA SURVEYED**

This survey was conducted in Alaska, and is located in the southern portion of Cochrane Bay, in northwest Prince William Sound. The bottom consists mainly of sand and broken shells. Depths range from the zero curve out to 132 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 12.0.

At the time of the survey certification the format for transmission of digital data had not been formally approved. In the interim, digital data for this survey exists in the standard HPS format which is a database format using the .dbf extension. In addition, the sounding plot was created with .dbf (extension) and enhanced using the AutoCad system, are filed both in the AutoCad drawing format, .dwg (extension); and in the more universally recognized graphics transfer format, .dxf (extension). Copies of these files will be retained at PHB 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 Hydrographic Survey Guideline No. 75.

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



#### **E. SONAR EQUIPMENT**

Side scan sonar was not used on survey H-10640.

#### **F. SOUNDING EQUIPMENT**

Sounding equipment is discussed in the hydrographer's report.

#### **G. CORRECTIONS TO SOUNDINGS**

The sounding data have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for actual tides, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications. Actual tide reductions are derived from the Cochrane Bay, Alaska gage, (945-4851).

#### **H. CONTROL STATIONS**

Control stations are discussed in the hydrographer's report and separates. A list of control stations used on survey H-10640 is attached to this report.

The positions of horizontal control stations used during hydrographic operations are published and field values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON.

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

Latitude: -2.226 seconds (-68.899 meters)  
Longitude: 7.473 seconds (113.571 meters)

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

#### **I. HYDROGRAPHIC POSITION CONTROL**

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations. Several positions exceed this limit in terms of horizontal dilution of precision (HDOP). These positions are isolated and occur randomly throughout the survey area. A review of the data, however, indicates that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable. Additional information concerning calibrations and system checks can be found in the hydrographer's report and in the separates related to Horizontal Position Control and Corrections to Position Data.

## J. SHORELINE

The following registered shoreline maps compiled on NAD 83 apply to this survey.

<u>Map Number</u>	<u>Photo Date</u>	<u>Scale</u>
DM-10187	July 1993	1:20,000
DM-10188	July 1993	1:20,000

Shoreline from DM-10087 and DM-10188 were supplied in a 'Standard Digital Data Exchange Format. Shoreline from DM-10063 and DM-10188 were digitized at PHB and merged with the survey file during office ACAD processing. Changes to alongshore and offshore features shown on the shoreline manuscript were verified and revised as warranted during survey operations. These changes have been shown on the smooth sheet as applicable. One mean high water line revision was noted during survey operations and has been adequately discussed in section J of the hydrographer's report. This revision is shown in red on the smooth sheet.

## K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

## L. JUNCTIONS

Survey H-10640 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10639	1995	1:10,000	North

The junction with survey H-10639 has been formally completed. There is good agreement between depth curves and soundings within the common area.

## M. COMPARISON WITH PRIOR SURVEYS

Survey H-10640 was compared with the following prior survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-7732	(1948)	1:40,000

Surveys H-7732 cover the center and northern portion of the present survey. The sounding agreement is good between the present and prior survey. Comparison with the prior soundings reveals general differences of 1 fathom. There appears to be no consistent pattern of shoaling or an increase in depths. Differences between the prior surveys and the present survey can be attributed to increased bottom coverage and less accurate positioning and sounding methods available in 1948. Agreement between the prior and present shoreline reveal adequate agreement.

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

H-10640 is adequate to supersede the prior survey within the common area.

#### **N. ITEM INVESTIGATIONS**

There were no item investigations assigned to survey H-10640.

#### **O. COMPARISON WITH CHART**

Survey H-10640 was compared with the following chart.

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

##### **a. Hydrography**

Charted data originates from the previously discussed prior survey and miscellaneous sources. The prior survey is discussed in section M and requires no further discussion. Charted items originating from miscellaneous sources were investigated during survey operations and have been adequately addressed in section O of the hydrographer's report.

Survey H-10640 is adequate to supersede the charted data within the common area.

##### **b. Dangers to Navigation**

The hydrographer reported twelve dangers to navigation. These dangers were reported to the local United States Coast Guard District, DMAHTC and N/CS261. A copy of this report is attached. No additional dangers to navigation were discovered during office processing.

#### **P. ADEQUACY OF SURVEY**

Hydrography contained on survey H-10640 is adequate to:

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

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change

No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition with the following exception. The obstruction shown on DM-10188 at latitude 60/39/07N, longitude 148/21/13W, was not adequately investigated. Reduced line spacing over this item would have provided better bottom coverage to determine whether or not this feature remains as submerged.

The following comments originate with Hydrographic Survey Guideline No. 66 and are meant to be considered for future guidance.

The hydrographer is urged to use extreme caution in identifying dangers to navigation's in areas where there is very little and or no charted data. Where newly discovered dangers are too complex to be adequately addressed via a Local Notice to Mariners, an immediate notice of a general nature should be generated. A copy of the field sheet would then be sent to the Nautical Data Section, N/CG261, with a recommendation for preparation of a chartlet for inclusion in the Notice to Mariners.

#### **Q. AIDS TO NAVIGATION**

There are no fixed or floating aids to navigation located within the survey area. There are no features of landmark value located within the area of this survey.

#### **R. STATISTICS**

Statistics are itemized in the hydrographer's report.

#### **S. MISCELLANEOUS**

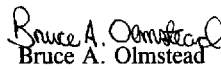
Miscellaneous information is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

#### **T. RECOMMENDATIONS**

This is a good hydrographic survey. Additional work is recommended on a low priority basis to investigate the obstruction as discussed in section P.

#### **U. REFERRAL TO REPORTS**

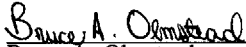
Referral to reports is discussed in the hydrographer's report.

  
Bruce A. Olmstead  
Senior Cartographer

APPROVAL SHEET  
H-10640

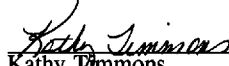
Initial Approvals:

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  
Senior Cartographer, Cartographic Section  
Pacific Hydrographic Branch

Date: 10/15/96

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.

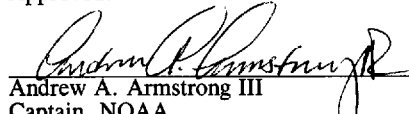
  
\_\_\_\_\_  
Kathy Timmons  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

Date: 10/30/96

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Final Approval

Approved:

  
\_\_\_\_\_  
Andrew A. Armstrong III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

Date: Apr 7, 1997

