

H10634

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-10-12-95  
Registry No. .... H-10634

### LOCALITY

State ..... Alaska  
General Locality ..... Prince William Sound  
Sublocality ..... Wells Passage and Vicinity

1995

CHIEF OF PARTY  
CAPT Dean R. Seidel, NOAA

### LIBRARY & ARCHIVES

DATE ..... APR 7 1997

**HYDROGRAPHIC TITLE SHEET**

H-10634

**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-10-12-95

State Alaska

General locality Prince William Sound

Locality Wells Passage and Vicinity

Scale 1:10,000 Date of survey August 23-September 23, 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 E. Christensen,  
ENS N. Bennett, ENS J. Becker, CST F. Paranada, SST J. Fleischmann, ST B. 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: I. Almacen Automated plot by HP Design Jet 650C  
~~Produced by~~

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

Soundings in fathoms ~~feet~~ at MLLW ~~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.

AWDIS/SURF 3/28/96 MCR

804397



# Descriptive Report to Accompany Hydrographic Survey H-10634

Field Number RA-10-12-95

Scale 1:10,000

August - September 1995

NOAA Ship RAINIER

Chief of Party: Captain Dean R. Seidel, NOAA

## A. PROJECT ✓

This basic hydrographic survey was completed in Northwest Prince William Sound, Alaska, as specified by Project Instructions OPR-P125-RA dated July 18, 1995, and Change Number 1 dated August 28, 1995.

Survey H-10634 corresponds to "sheet AE" 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 Wells Passage. The survey's eastern limit is bounded by 147° 59.8'W, and the western limit bounded by 148° 11.0'W. The northern limit is bounded by 60° 48.8'N, and the southern limit is 60° 45.3'N.

Data acquisition was conducted from August 23, 1995 (DN 230<sup>5</sup>) through September 2<sup>3</sup>, 1995 (DN 266).

## C. SURVEY VESSELS ✓

Data were acquired by RAINIER and six survey vessels as noted below:

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

Vessel	EDP #	Operation
RA-5	2125	Hydrography Shoreline Verification Bottom Samples
RA-6	2126	Hydrography Shoreline Verification
RA-9	2129	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. \*

##### HYPACK ✓

Data were acquired with RA-2 and RA-9 using Coastal Oceanographics' HYPACK. Data acquired on DN 235 and 236 were collected using HYPACK for Windows, v. 5.2, with the following program updates.

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

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 2.28 provided by N/CS32. The files were then loaded into HDAPS and processed in the same manner as HDAPS data.

Data acquired on DN 238 were collected using HYPACK (DOS), v. 5.2, with the following program updates:

\* Filed with the survey records.

Program Name	Version	Date Installed
HYSPEED	3/24/95	4/1/95
IOTEST	3/17/95	4/1/95

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

### Problems ✓

Data collected with HYPACK for Windows on DN 235 and 236 contained discrepancies between the records on the Raw Master Printout produced by HYPACK and the digital records produced for HDAPS by HYPMENU. HYPMENU uses the raw sensor data to compile records for HDAPS, and the algorithm used differed slightly from the algorithm used by HYPACK for record selection. The result was slightly different positions and/or depths in the digital record than appeared on the RMPO. *Nearshore data collected with HYPACK (Windows) for DN 235 & 236 were checked for discrepancies. Data looks ok.*

Additionally, the dead-reckoning algorithm built into HYPMENU's convert program did not function correctly when lines ended without positioning.

RAINIER considered these problems serious enough to cease data collection with HYPACK (Windows) and revert to HYPACK (DOS) until the problems could be resolved.

Hydrographic Survey Division was notified of the problems by a letter dated August 27, 1995 (Appendix V). *Copy attached to this report.*

*HYPACK (DOS) was used for the rest of the survey.*

All data collected with HYPACK (Windows) was scanned for the above problems, comparing the depth, position and time of the RMPO produced on line to a RMPO produced after the fact in HDAPS. Depths in the HDAPS RMPO differing materially from the original RMPO were changed. Records which differed in time by more than two seconds were rejected. *Sounding records were scanned and corrections were adequately applied.*

### VELOCITY ✓

Velocity corrections were determined using:

Program Name	Version	Date Installed
VELOCITY	2.11	3/5/95

**E. SONAR EQUIPMENT** ✓

Sonar equipment was not used on H-10634.

**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 is plotted in fathoms based on easterly tides. Depths range from 0 to 232 fathoms.*

An INNERSPACE 448, Serial Number 300, is a single frequency (208 kHz) thermal paper trace echo sounder, was used on vessel 2129.

**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, 2	1	239	60° 45' 42" N 148° 09' 48" W	600	235-244
3, 4	2	253	60° 47' 12" N 148° 13' 42" W	535	248-258
5,6	3	264	60° 47' 38" N 148° 19' 15" W	546	262-266

*Casts # 2 & 3 plot outside the survey limits.*

Sound velocity tables 1 and 3 are for the launches and 2, 4 are for the ship.

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". *Filed with the survey records.*

\* Filed with the survey records.

**Static Draft** ✓

A transducer depth was determined using FPM Fig 2.2 for RAINIER and vessels 2122-2129 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 and 2129 were collected in Shilshole Bay, Washington in the Spring of 1995. The data for 2122 were collected in Windham Bay, Alaska in May, 1995 (OPR-O136). The data for RAINIER was determined during the 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 2-9 correspond to the number of the vessel, offset table 1 is used for RAINIER. The offset tables were compiled with new measurements in the spring of 1995 and are contained in the "Separates to be Included with Survey Data". \*

**Heave** ✓

The launches and skiffs are not equipped with heave, pitch and roll (HRP) 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 H-10634 are:

Time Correction	Height Correction
0 hr 0 min	X0.96

*Tide Note dated April 18, 1996 is attached to this report.*

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

*\* Filed with the survey records.*



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

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

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

#### H. CONTROL STATIONS *(See EVAL RPT., Sec. H)*

A listing of the geodetic stations used to control this survey is ~~included in Appendix III~~ *attached to* 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.

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 any station. Scatterplot results are included in the "Project related data for OPR-P125-RA". \*

##### Calibrations & Systems Check Methods ✓

System checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two independent DGPS base stations. The results were transferred to forms which are included in the project data for OPR-P125-RA. \*

*\* Filed with the survey records.*

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-10063 and DM-10188 were supplied by N/CS341 in Mylar and Standard Digital Data Exchange Format (SDDEF). The digital files were projected using OPR-P125 geodetic parameters using program Shore Version 1.5, provided by N/CS32, and stored in HYPACK (\*.DIG) format. One portion of the shoreline at the south end of Esther Island was not covered with recent photogrammetry, a copy of T-9133 (1949) was provided by N/CS32 to cover the area. This was digitized by RAINIER personnel. Shoreline was plotted at survey scale on boat sheets and processing sheets.

**Method of Shoreline Verification** ✓

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

Shoreline verification was accomplished by assigning sequential reference numbers and taking detached positions (DPs), as explained later in this section.

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. \*

DP's taken during shoreline verification were recorded on the DP forms.\* These indicate significant DM features and features not found on the DM. Where possible, positions of some DM 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 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 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. Features have been corrected on the smooth sheet for approved tides. Heights are shown in feet.

**Changes and New Features** ✓

There were numerous changes and some new features found during shoreline verification. 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**

There were four <sup>(4)</sup> DM features that were investigated and disproved during the survey. Three were labeled as "Fish Traps" on the DM, and the fourth was depicted as a small islet in the north end of Quillian Bay.

**Fix:** 1217    **DN:** 236    **Position:** 60/47/17.96 N 148/04/23.81 W ✓  
**Feature:** Fish Trap

**Method:** Visual search in a 50-meter radius, search time 5 min. Water depth 60-meters, visibility 5-meters. No evidence of the trap was found.

**Recommendation:** Remove feature from DM and chart area as depicted <sup>on the SS.</sup> by hydrography. *Concur.*

**Fix:** 8033    **DN:** 238    **Position:** 60/47/40.07 N 148/05/04.66 W ✓  
**Feature:** Fish Trap

**Method:** Visual search in a 50-meter radius, search time 5 min. Water depth 17 - 20 meters, visibility 5-meters. No evidence of the trap was found.

**Recommendation:** Remove feature from DM and chart area as depicted <sup>on the SS.</sup> by hydrography. *Concur.*

**Fix:** 8038    **DN:** 238    **Position:** 60/47/19.09 N 148/04/45.53 W ✓  
**Feature:** Fish Trap

**Method:** Visual search in a 50-meter radius, search time 5 min. Water depth 26-meters, visibility 5-meters. No evidence of the trap was found.

**Recommendation:** Remove feature from DM and chart area as depicted <sup>on the SS.</sup> by hydrography. *Concur.*

**Fix:** 8056    **DN:** 266    **Position:** 60/48/36.15 N 148/01/59.99 W ✓  
**Feature:** Islet

**Method:** Visual search in a 50-meter radius, search time 2 min. Water depth 9-meters, visibility 5-meters. No evidence of the islet was found.

**Recommendation:** Remove feature from DM and chart area as depicted *on the smooth sheet.* by hydrography. *CONCUR.*

### Charted Features

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

**Fix:** 3717    **DN:** 238    **Position:** 60/48/19.31 N 148/02/19.32 W ✓  
**Feature:** Charted Rock

**Method:** Visual search in a 30-meter radius, search time 15 min. Water depth 10-meters, visibility 10-meters. No evidence of the rock was found.

**Recommendation:** Remove charted rock and chart area as depicted *on the smooth sheet.* by hydrography. *CONCUR.*

**Fix:** 8042    **DN:** 238    **Position:** 60/47/06.45 N 148/05/02.97 W ✓  
**Feature:** Charted Rock

**Method:** Visual search in a 100-meter radius, search time 15 min. Water depth 50-meters, visibility 5-meters. No evidence of the rock was found. *Charted rock is likely part of ledge found during survey operations which plots 50 meters directly north of rock.*

**Recommendation:** Remove charted rock and chart area as depicted *on the smooth sheet.* by hydrography. *CONCUR.*

**Fix:** 6116    **DN:** 240    **Position:** 60/47/30.51 N 148/03/22.82 W ✓  
**Feature:** Charted Rock

**Method:** Visual search in a 50-meter radius, search time 5 min. Water depth 15-meters, visibility 5-meters. No evidence of the rock was found. *A rock (3) was found 50 meters south of the charted feature and is likely the same item.*

**Recommendation:** Remove charted rock and chart area as depicted *on the smooth sheet.* by hydrography. *CONCUR.*

**Fix:** 6229    **DN:** 255    **Position:** 60/47/09.11 N 148/03/44.03 W ✓  
**Feature:** Charted Rock

**Method:** Visual search in a 30-meter radius, search time 20 min. Water depth 18-meters, visibility 4-meters. No evidence of the rock was found.

**Recommendation:** Remove charted rock and chart area as depicted <sup>on the smooth sheet</sup> by hydrography. *concur.*

### **Problems** ✓

On several occasions significant discrepancies were noted when comparing the digital shoreline (in SDDEF) with the DM's provided by N/CS341. In some cases rocks were depicted on the DM but were not included in the digital records. To resolve this problem, the boat sheet was overlaid on the DM and any features that were not included in the digital dataset were manually transferred to the boat sheet.

A memorandum addressing these problems in detail was sent to N/CS31 for resolution. A copy of the memorandum (dated August 27, 1995) has been included in <sup>the report</sup> Appendix V.

When a plot of the shoreline from the SDDEF dataset was overlaid on the mylar copy of DM-10063, there was a shift to the north ranging from 20 meters at the western end to 30 meters at the eastern end of the survey.

Approximately 1600 meters of the high water line in the vicinity of 60° 47' 45" N and 148° 02' 45" W was not accurately depicted on either the digital format or DM-10063. *Extent of revised shoreline is from latitude 60/47/09N to latitude 60/47/51N and centered along longitude 148/02/45W.*

Hydrography in the area indicated that the mean high water line needed to be shifted approximately 200 meters to the east. This change in the mean high water line was delineated with DP's 3700 to 3714 on DN 238 and DP's 8058 to 8071 on DN 266. This area is shown in red on the final field sheet. *The mean high water line was delineated by hydrographic positioning and has been shown in dashed red on the smooth sheet.*

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, and was used to plot the Final Field Sheet and DP overlay plots.

### **K. CROSSLINES** ✓

Crosslines agree within 1-2 meters in deep water with mainscheme hydrography except in areas of complex bathymetry. Total mileage was 21.6 nautical miles or 14% of total mainscheme hydrography.

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

This survey junctions with surveys H-10517 (1993, 1:10,000) at the northeast limit, H-10635A+B (1995, 1:10,000) at the western limit and, H-10637 (1995, 1:10,000) at the southwest. 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)

Three prior surveys were compared: H-7618 (1947-1948, 1:20,000), H-7678 (1948-1949, 1:20,000), and H-3408 (1912, 1:20,000). Due to a higher density of sounding data, many least depths were found to be shoaler. During preliminary comparisons with prior surveys, two soundings were found to be shoaler than this survey.

A 38 fm (69 m) sounding at 60/46/36 N 148/03/00 W, the least depth in the area from this survey was 78 m (42 fm). The area around the feature was developed with 50 meter line spacing. The hydrographer recommends charting this feature with soundings from this survey. *Concur.*  
*40 fm sounding plots at latitude 60/46/41.5N, longitude 148/02/54W.*

A 103 fm (188 m) sounding at 60/46/00 N 148/05/24 W, the least depth in the area from this survey was 196 m (107 fm). The area was developed using 100 meter line spacing. The hydrographer recommends charting this feature with soundings from this survey. *Concur*  
*Chart 104 fm sounding at latitude 60/45/58N, longitude 148/05/15W.*

Final comparisons will be done at the Pacific Hydrographic Branch (PHB).

## N. ITEM INVESTIGATIONS ✓

There were no AWOIS item investigations assigned to this survey. *Concur*

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

This survey was compared to NOS chart 16705, 15th Edition, September 1, 1990 1:80,000, (NAD83). Charted soundings were found to be in general agreement.

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

Non-sounding shoreline features are discussed in Section J, Shoreline. Final comparisons to be made at the Pacific Hydrographic Branch (PHB).

## Dangers to Navigation ✓

*Eight (8)*  
~~Seven~~ dangers to navigation within the limits of H-10634 were reported to the Seventeenth Coast Guard District, September 25, 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-10634 is complete and adequate to supersede charted depths and features in their common areas. *Concur*

**Q. AIDS TO NAVIGATION** (See EVAL RPT., Sec. Q)

*(i) fixed*

One Aid to Navigation exists within the survey area, Point Esther Light (LL 25870). This mark was positioned using static GPS positioning techniques. The position is the same as published in the light list. A summary is provided in Appendix VI. ✕

The arc of visibility of Point Esther Light was compared with the chart and was found to be in agreement with the chart. The light was observed to be obscured from 108° to 276° true. The light characteristics were observed and found to be consistent with the charted light characteristics.

*(\*) (lighted)*  
Four mooring buoys located in Lake Bay were positioned using hydrographic methods. A summary is provided in Appendix VI. *included in this report.*

**R. STATISTICS** ✓

NM Hydrography	217.2
Velocity Casts	3
Detached Positions	129
Selected Soundings	9539
Bottom Samples	17
Tide Stations	2
NM <sup>2</sup> Hydrography	15.9

**S. MISCELLANEOUS** ✓

Bottom samples were collected in accordance with Project Instructions. ✕

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

No unusual magnetic variations were noted.

*\* Filed with the survey records.*

**T. RECOMMENDATIONS** ✓

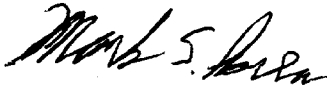
None

**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,



Mark S. Larsen  
Lieutenant, NOAA

Approved and Forwarded,



Dean R. Seidel  
Captain, NOAA  
Commanding Officer











## Section Q: Descriptive Report Insert

Name of Aid: Mooring Buoy #4 *(Lighted)*  
Light List #: None

Method of Positioning                      GPS:     DGPS:                       Other: HYDRO

### Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	None	None
Survey Pos: <i>#1223</i>	60/47/26.05	148/04/53.39

	<u>Easting</u>	<u>Northing</u>
Charted Pos.		
Survey Pos.	41407.5	51016.4

Difference between Charted and Surveyed Position:                      Distance:    meters  
(Bearing from Surveyed to Charted Position)                      Bearing:    deg T

### Characteristics

Do characteristics match Light List?                      Yes                       No

If no, what are the characteristics?                      Fl Y

Does the aid adequately serve its apparent purpose?                      Yes                       No

If no, why not?                      \_\_\_\_\_

### New/Uncharted Aids

(if information is known or easily obtained)

Date Est: Unknown

Maintained By: Alyeska Pipeline Co.

Private?                      Yes                       No

Is aid seasonally maintained?                      Yes                       No

Frequency of Maintenance: \_\_\_\_\_

Apparent Purpose:                      Storage of oil spill response equipment

### Other Information:


Fishing vessels frequently use the buoy for tying up at night or when the weather is bad.



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Office of NOAA Corps Operations  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3787

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 encountered 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 currently 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  
PHB - Timmons



**ADVANCE  
INFORMATION**

P 250041Z SEP 95  
FM NOAA RAINIER  
TO CCGDSEVENTEEN JUNEAU AK  
DMAHTCCNAVWARN WASHINGTON DC//MCNM//  
INFO NOAAAMOP SEATTLE WA  
ACCT CM-VCAA

BT

UNCLAS

NOAA SHIP RAINIER HAS LOCATED <sup>8</sup> 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:

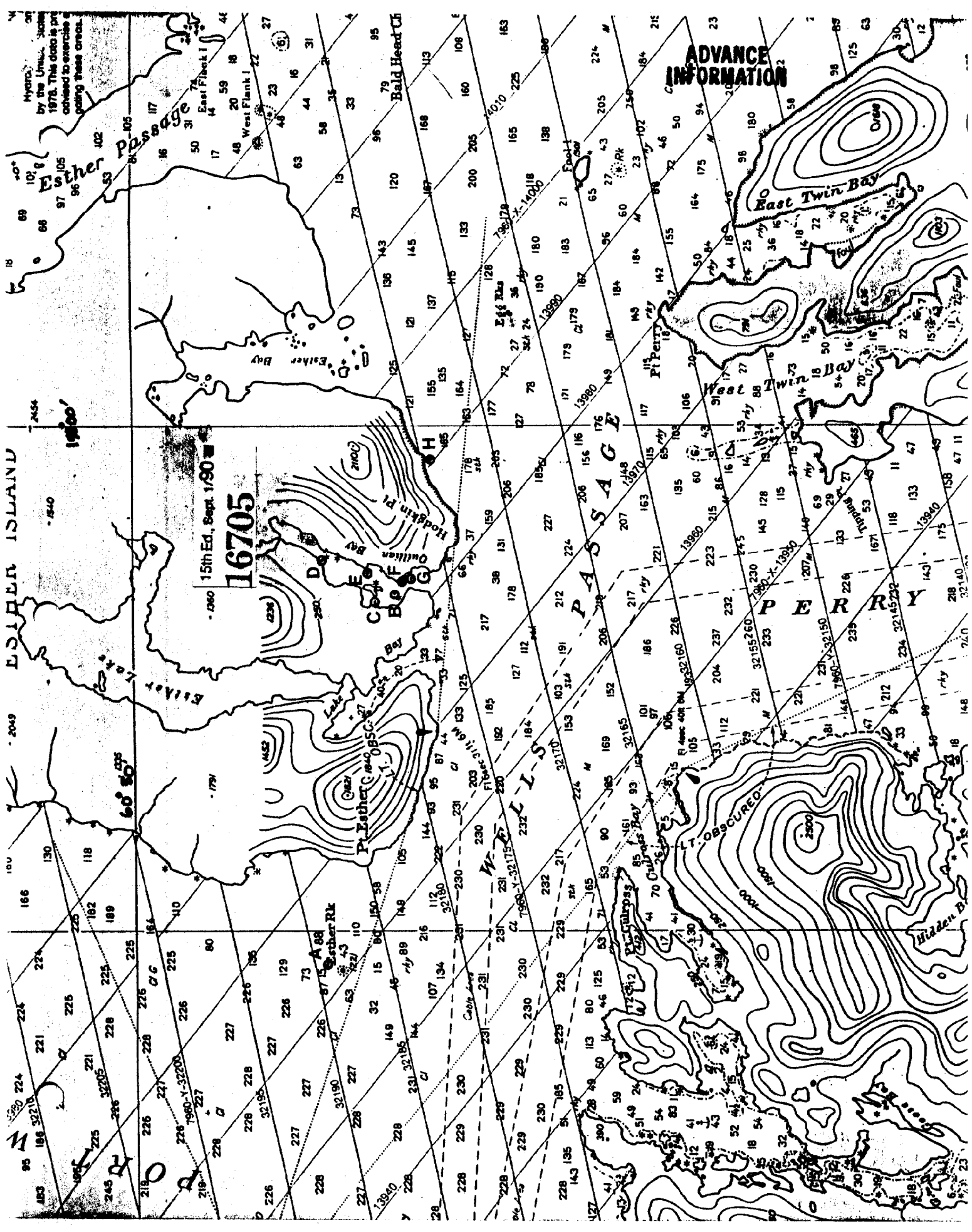
DEPTHS ARE REDUCED TO MLLW BASED ON PREDICTED TIDES.

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	Depth(m)	LATITUDE	LONGITUDE	Fix
A. W	SHOAL	COVERS 4 1/4fms	$\frac{78}{78}$	60/48/11.1N	148/10/41.9	3671 <sup>+7</sup>
B. W	ROCK	COVERS 1 fm	2'	60/47/29.1N	148/03/21.3	6115
C. W	SHOAL	COVERS 1 3/4fms	3 <sup>5</sup>	60/47/43.7N	148/03/31.5	1472 <sup>+2</sup>
D. W	ROCK	AWASH	0 <sup>4</sup>	60/48/12.5N	148/02/40.4	8044
E. W	SHOAL	COVERS 1 fm	2'	60/47/46.9N	148/02/53.8	1492 <sup>+4</sup>
F. W	SHOAL	COVERS 1/4fm	0 <sup>6</sup>	60/47/26.7N	148/03/03.6	1664 <sup>+5</sup>
G. W	SHOAL	COVERS 6 1/2fms	12'	60/47/21.0N	148/03/00.7	1440 <sup>+3</sup>
H. W	SHOAL	COVERS 2 1/2fms	4 <sup>6</sup>	60/47/11.0N	148/00/38.9	8082 <sup>+2</sup>

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



ADVANCE INFORMATION

Myra's...  
by the U.S. Coast Guard...  
1978. This data is not...  
advised to exercise...  
getting these areas.

15th Ed., Sept. 1950  
16705

EASTERN ISLAND

East Twin Bay

PASSAGE

PERRY

100

130

166

182

189

204

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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Office of NOAA Corps Operations  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

NOAA Ship RAINIER

September 25, 1995

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





UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
Office of NOAA Corps Operations  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

NOAA Ship RAINIER

September 24, 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 six 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,

Dean R. Seidel  
Captain, NOAA  
Commanding Officer

Enclosures





RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	CAPT D. R. Seidel
POSITIONS DETERMINED AND/OR VERIFIED	CAPT D. R. Seidel
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW	CAPT D. R. Seidel
<b>INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'</b> <i>(Consult Photogrammetric Instructions No. 64)</i>	
<b>OFFICE</b> <b>1. OFFICE IDENTIFIED AND LOCATED OBJECTS</b> 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	<b>FIELD (Cont.)</b> <b>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.</b> EXAMPLE: P - 8 - V 8 - 12 - 75 74L (C) 2982
<b>FIELD</b> <b>1. NEW POSITION DETERMINED OR VERIFIED</b> Enter the applicable data by symbols as follows: F - Field L - Located V - Verified Vis - Visually 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field identified 6 - Theodolite 7 - GPS 8 - Sextant 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	<b>II. TRIANGULATION STATION RECOVERED</b> 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 <b>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH</b> Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8 - 12 - 75 <b>**PHOTOGRAMMETRIC FIELD POSITIONS are</b>

NOAA FORM 76-40 (8-74)

SUPERSEDES NOAA FORM 76-40 (2-71) WHICH IS OBSOLETE, AND EXISTING STOCK SHOULD BE DESTROYED UPON RECEIPT OF REVISION.

☆ U. S. GPO : 1975-0-565-080/1155

CONTROL STATIONS as of 28 Sep 1995 ✓

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
100	F	060:14:18.000	146:38:48.000	0	250	0.0	0.0		08/22/95	CAPE HINCHINBROOK(BEACON)
<del>101</del>	<del>F</del>	<del>061:03:24.000</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**

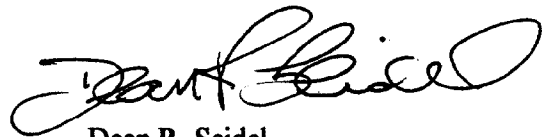
for

**H-10634**

**RA-10-12-95**

**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 20810

ORIGINAL

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 18, 1996

HYDROGRAPHIC SECTION: Pacific

HYDROGRAPHIC PROJECT: OPR-P125-RA

HYDROGRAPHIC SHEET: H-10634

LOCALITY: Wells Passage, Prince William Sound, Alaska

TIME PERIOD: August 23 - September 23, 1995

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

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

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

REMARKS: RECOMMENDED ZONING

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

Note: Times are tabulated in Greenwich Mean Time.

*William M. Huber*  
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

Name on Survey	1 CHART 16700 2 16705, 16700 3 ON PREVIOUS SURVEY 4 NO. 5 CON U.S. QUADRANGLE 6 MAPS 7 FROM LOCAL 8 INFORMATION 9 ON LOCAL MAPS 10 P.O. GUIDE OR MAP 11 RAND McNALLY 12 ATLAS 13 U.S. LIGHT LIST 14 15 16 17 18 19 20 21 22 23 24 25											
ALASKA (title)	X		X									1
CULROSS BAY	X		X									2
CULROSS, POINT	X		X									3
<del>ESTHER BAY</del> *	X		X									4
ESTHER ISLAND	X		X									5
<del>ESTHER LAKE</del> *	X		X									6
ESTHER, POINT	X		X									7
ESTHER ROCK	X		X									8
HODGKINS POINT	X		X									9
LAKE BAY	X		X									10
PORT WELLS	X		X									11
PRINCE WILLIAM SOUND	X		X									12
(title)												13
QUILLIAN BAY	X		X									14
WELLS PASSAGE	X		X									15
												16
* Not shown on smooth sheet												17
												18
												19
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												24
												25

Approved

*Chris Carter*  
Chief Geographer

APR 4 1996

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		NA
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		NA
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

**SHORELINE DATA**

SHORELINE MAPS (List):	DM-10063, DM-10188, T-9133
PHOTOBATHYMETRIC MAPS (List):	N/A
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16705, 15th Ed., Sept. 1, 1990

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 <del>REVISED</del> on Sheet			9539
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	154.5		154.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		25.0	25.0
GEOGRAPHIC NAMES			
OTHER*			
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	154.5	25.0
			179.5

Pre-processing Examination by PHB	Beginning Date 10/04/95	Ending Date 10/04/95
Verification of Field Data by E. Domingo, D.Doles, J.Stringham, R.Mayor, I.Almacen	Time (Hours) 154.5	Ending Date 7/19/96
Verification Check by B. Olmstead	Time (Hours) 4	Ending Date 8/20/96
Evaluation and Analysis by I.Almacen	Time (Hours) 25.0	Ending Date 7/30/96
Inspection by B. Olmstead	Time (Hours) 17	Ending Date 9/3/96

## **EVALUATION REPORT**

**H-10634**

### **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 area along Wells Passage between Esther Island and Culross Island including Lake Bay and Quillian Bay. The inshore area is generally comprised of islets, ledges, scattered rocks and reefs. The bottom is mainly composed of sand, pebble and mud mixed with shells. Depths range from 0.0 to 233.0 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 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.

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## **E. SONAR EQUIPMENT**

Side scan sonar was not used on survey H-10634.

## **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 Perry Island (South Bay), Alaska gage (945-4721). 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 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 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: -2.150 seconds (-66.557 meters)  
Longitude: 7.398 seconds (111.949 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-10062, DM-10063 and DM-10188 are the photogrammetric source available for this survey. A copy of topographic map T-9133 (1949) was provided by N/CS32 to depict a certain portion of the shoreline along the south end of Esther Island that was not covered by the recent photogrammetric compilation. Some shoreline changes were noted along the eastern shore of Quillian Bay and detached positions were taken at the high water line to delineate the present shoreline configuration of the area. The shoreline maps DM-10063 and DM-10188 compiled in mylar apparently portrayed a more complete and accurate shoreline information than its digital copy in SDDEF format provided by N/CS34. A memorandum concerning this discrepancy was forwarded by the ship to the Chief, Hydrographic Survey Division. A copy of the memorandum is attached to this report.

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 often 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. There were no significant changes noted to the mean high water line, except along the area mentioned above. The shoreline along this particular area was shown in dashed red on the smooth sheet.

## **K. CROSSLINES**

Crosslines are discussed in the hydrographer's report.

## **L. JUNCTIONS**

Survey H-10634 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10517	1993	1:10,000	Northeast
H-10635A&B	1995	1:10,000	West
H-10637	1995	1:10,000	Southwest
H-10657	1995	1:10,000	South
H-10658	1995	1:10,000	South

The junction with H-10517 has not been formally completed since this survey was previously processed and forwarded for charting. The junction comparison was made using a copy and it is considered satisfactory.

The junctions with surveys H-10635, H-10637 and H-10657 are complete. The depth curves and soundings within the junction areas are in satisfactory agreement.

The office processing of survey H-10658 has not been started at the time of this report. The junction will be addressed in the Evaluation Report for this survey.

#### **M. COMPARISON WITH PRIOR SURVEYS**

Survey H-10634 was compared with the following prior surveys.

H-3408 (1912), scale 1:20,000  
H-7618 (1947-48), scale 1:20,000  
H-7678 (1948-49), scale 1:20,000

The above listed prior surveys cover the area of Wells Passage. Comparisons with prior surveys H-3408, H-7618 and H-7678 are considered satisfactory. The present survey appears to be generally shoaler by about 1.0 to 15 fathoms around the inshore portion of the survey. No significant differences in depths, except in the areas mentioned below, were noted within the deeper section of Wells Passage. These differences are primarily attributed to the accuracy of the present positioning and sounding methods used, increase in bottom coverage and the natural effects of the past Alaska earthquakes around the area of Prince William Sound. Comparisons with the prior surveys seems to indicate an uplifting trend common around the area of Prince William Sound.

The following prior survey soundings are significantly shoaler than the present survey and were not specifically addressed by the hydrographer. No indications of shoaler depths were noted in the vicinity of their respective locations. Considering the depth and the lesser degree of accuracy of positioning and sounding determination used during the past, these depths should be superseded. It is recommended that these areas be charted based on the latest survey information.

<u>Charted/Survey Depth</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Prior Survey</u>
112 FM (188)	60/46/20.0	148/04/25.0	H-3408 (1912)
203 FM (232)	60/46/50.0	148/07/00.0	H-7618 (1947-48)

H-10634 is adequate to supersede the prior surveys within the common area.

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

There are no items for investigation assigned to survey H-10634.

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

Survey H-10634 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	NAD83

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. Miscellaneous source data originates from T-9133 (1947-51), BP-108564-68 (1979) and BP-43214 (1947). These documents largely comprise the charted nearshore rocks, reefs, ledge information and a few soundings located in Lake Bay. No prior work has ever been undertaken around the area of Quillian Bay. With the exception of the items mentioned in section M of this report, the charted soundings were found to be in satisfactory agreement with the present survey.

Survey H-10634 is adequate to supersede charted hydrography within the common area of coverage.

b. Dangers to Navigation

Eight (8) dangers to navigation were reported to the USCG, DMAHTC, N/CG221 and N/CS34 on September 24,1995. A copy of the report is attached. No additional dangers were found during office processing.

**P. ADEQUACY OF SURVEY**

The hydrography on survey H-10634 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-10634 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-10634 adequately complies with the project instructions.

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

There is one (1) existing fixed light and four (4) lighted mooring buoys found within the survey area. These aids were located using GPS positioning system. These aids were found in good condition and adequately serve their intended purpose.

<u>Name of Aid</u>	<u>Lt. List#</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
Point Esther Light	25870	60/47/07.89	148/06/01.48
Mooring Buoy #1		60/47/42.41	148/04/50.32
Mooring Buoy #2		60/47/34.84	148/04/51.84
Mooring Buoy #3		60/47/33.80	148/04/52.19
Mooring Buoy #4		60/47/26.05	148/04/53.39

#### **R. STATISTICS**

Statistics are itemized in the hydrographer's report.

#### **S. MISCELLANEOUS**

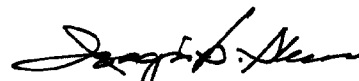
Miscellaneous information concerning this survey is discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

#### **T. RECOMMENDATIONS**

Survey H-10634 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. Almacan  
Cartographer

APPROVAL SHEET  
H-10634

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: 9/3/96  
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 Simmons Date: 9/30/96  
Kathy Simmons  
Commander, NOAA  
Chief, Pacific Hydrographic Branch

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Final Approval

Approved:

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

