

H10843

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-10-18-98 .....  
Registry No. .... H-10843 .....

### LOCALITY

State ..... Alaska .....  
General Locality ..... Southwest Prince William Sound .....  
Sublocality ..... 3 NM South of Naked Island .....

1998

### CHIEF OF PARTY

CAPT Alan D. Anderson, NOAA

### LIBRARY & ARCHIVES

DATE ..... JAN 9 2000 .....

**HYDROGRAPHIC TITLE SHEET**

H-10843

**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-10-18-98

State Alaska

General locality Southwest Prince William Sound

Locality 3 NM South of Naked Island

Scale 1:10,000 Date of survey 9/10/98 - 10/19/98

Instructions dated July 10, 1998 Project No. OPR-P139-RA  
Change #1 dated 9/8/98

Vessel RA-1(2121), RA-2(2122), RA-3(2123), RA-4(2124), RA-5(2125), RA-6(2126)

Chief of party CAPT Alan D. Anderson, NOAA

Surveyed by RAINIER Personnel

Soundings taken by echo sounder, ~~and lead~~ DSF-6000N, Knudsen 320M, RESON 8101 Multibeam

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: I. Almacen Automated plot by HP Design Jet 750C  
~~Processed by~~

Verification by M. Bigelow, R. Mayor, E. Domingo, G. Nelson, LCDR J. Ferguson

Soundings in fathoms ~~feet~~ at ~~MLLW~~ MLLW and tenths (data collected in Meters)

REMARKS: All times are 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.





*AWAIS / SURF 12/8/99 mcr*

# PROGRESS SKETCH

OPR-P139-98  
 Prince William Sound, AK  
 October

Capt A. D. Anderson  
 Commanding

Chart 16705\_1

-  July
-  Aug
-  Sept
-  Oct

Sheet E  
 13.80 sq nm  
 100%

Sheet D  
 7.97 sq nm  
 100%

Sheet U  
 17.50 sq nm  
 100%

Sheet V  
 16.78 sq nm  
 100%

Sheet W  
 126.9 sq nm  
 100%

Sheet X  
 28.49 sq nm  
 100%

Sheet Z  
 21.18 sq nm  
 100%

Sheet Y  
 17.53 sq nm  
 100%

Sheet AA  
 12.92 sq nm  
 100%

Sheet AB  
 24.50 sq nm  
 100%

Sheet F  
 10.15 sq nm  
 100%

Sheet G  
 10.67 sq nm  
 100%

Accomplished	July	Aug	Sept	Oct
LNM Hydro	618.57*	969.99	2045.14	1676.19
LNM SSS	0	0	0	0
SQ NM	17.16	20.95	63.92	195.69
AWOIS Invest.	0	6	2	6
Other Invest.	0	1 dive	3 dives	5 dives
LNM Multibeam	86.5	310.01**	429.9**	1113.9**

Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
G	H-10827	7/25	100	9/15		10.67
F	H-10829	7/28	100	9/15		10.15
E	H-10826	7/21	100	10/9		13.80
D	H-10838	8/23	100	9/6		7.97
Y	H-10837	8/21	100	10/14		17.53
U	H-10840	9/6	100	10/7		17.50
AA	H-10841	9/8	100	10/13		12.92
V	H-10843	9/10	100	10/19		16.78
W	H-10849	9/24	100	10/28		126.9
X	H-10846	9/19	100	10/26		28.49
AB	H-10847	9/21	100	10/26		24.50
Z	H-10855	10/21	100	10/28		21.18

Does not include SWMB  
 \*\* Includes both SWMB & IDSSS

Downtime_Type	July	Aug	Sept	Oct
Weather - Hr	0	20	0	22
Mechanical -Hr	0	7	22	8
Electronic -Hr	0	7	0	0

# Descriptive Report to Accompany Hydrographic Survey H-10843

Field Number RA-10-18-98

Scale 1:10,000

December 1998

**NOAA Ship RAINIER**

Chief of Party: Captain Alan D. Anderson, NOAA

## A. PROJECT ✓

This basic hydrographic survey was completed in the southwest portion of Prince William Sound, Alaska as specified by Project Instructions OPR-P139-RA dated July 10, 1998 and change #1 dated September 8, 1998. Survey H-10843 corresponds to sheet V as defined in the sheet layout. This survey will provide data to supersede prior surveys performed from 1905 through 1947 and will affect Charts 16700, 16705 and 16709. Requests for hydrographic surveys and updated charts in this area have been received from the National Imagery and Mapping Agency (NIMA), the U.S. Coast Guard, the Southwest Alaska Pilot's Association, cruise ship lines, and local fishermen.

Significant changes in depths and shoreline may have occurred in the project area as a result of the earthquake of March 27, 1964. *confirm*.

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

The survey area is 3 nautical miles south of Naked Island. The area surveyed comprises 16.78 sq. nautical miles in a region south of Naked Island. 318.75 nautical miles of hydrography were acquired from September 10 to October 19, 1998 (DN 253 to 292). The northernmost survey limit is 60-36-56.1 North latitude. The southern survey limit is 60-32-49.2 North latitude. The western survey limit is 147-27-33.0 West longitude and the eastern survey limit is 147-14-10.9 West longitude. Survey limits & sounding outlines are shown below (fig. #1 & fig. #2) based on Chart 16700.

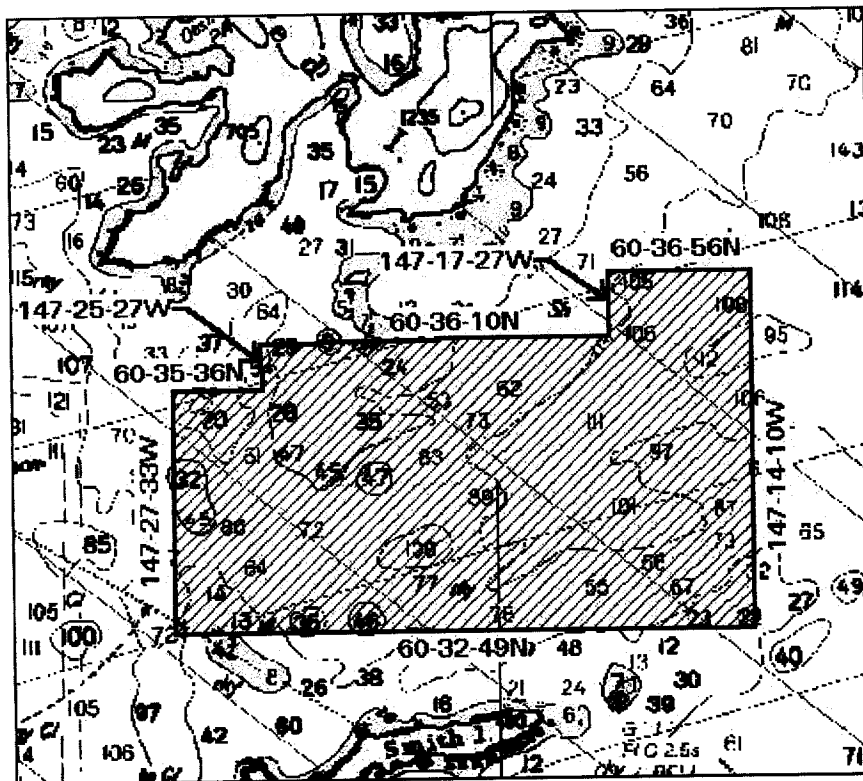


Fig. #1 A view of H-10843, survey limits in hatched area..

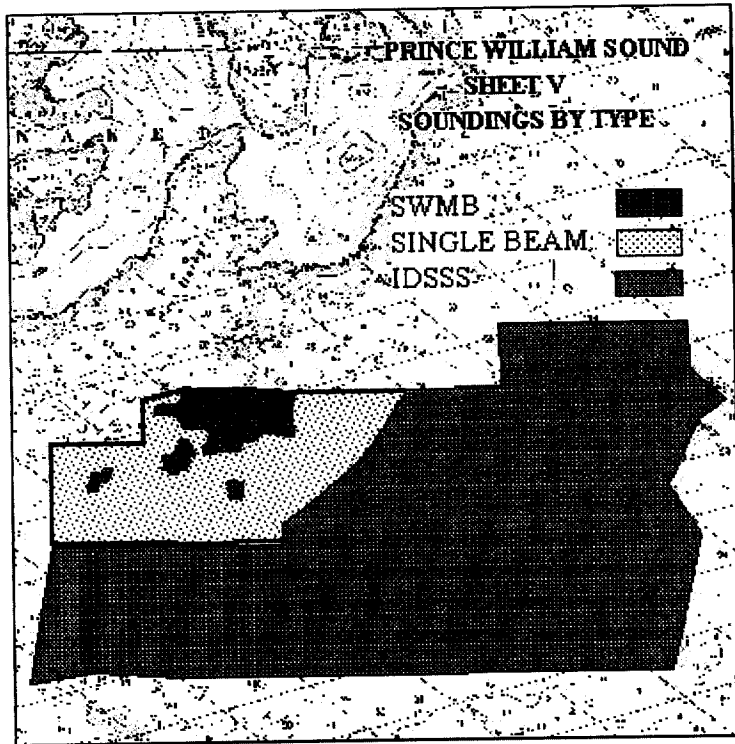


Fig. #2 A view of sounding outlines.

### C. SURVEY VESSELS ✓

Data were acquired by RAINIER and RAINIER survey launches (vessel numbers 2120, 2121, 2122, 2123, 2124, 2125 and 2126) as noted in the Survey Information Summary print out appended to this report.

This project included the use of a new vessel configuration. Launches 2121, 2123, and 2126 were recently configured with a Reson SeaBat 8101 Shallow Water Multibeam (SWMB) system. (See Section F., Sounding Equipment, for details.) The center of the launch keels were cut and modified to house the transducers. The originally installed DSF-6000N single beam transducers remained installed as before.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

Single beam echosounder data were acquired using HYPACK version 7.1a from Coastal Oceanographics and processed using Hydrographic Processing System (HPS). Swath data collected by the RAINIER were acquired and processed using Intermediate Depth Swath Survey System (IDSSS) and Hydrochart II (Seabeam Inc.) programs. Shallow water multibeam (SWMB) echosounder data were acquired using the Reson SeaBat 8101 with ISIS version 3.41 and processed using CARIS\_HIPS software. Raster image and shoreline data in MapInfo facilitated charted and prior survey comparisons. Final Detached Positions and soundings based on predicted tides were saved in MapInfo 4.5 format. A complete listing of software for HYPACK and HPS is included in Appendix VI. \*

### E. SONAR EQUIPMENT ✓

Side Scan Sonar (SSS) equipment was not used on this survey. *Concur.* However, it should be noted that the Reson Seabat 8101 SWMB system provides a low-resolution digital SSS record of the SWMB swath. This SSS imagery is primarily used to aid in final processing of the SWMB depth data but can also be used to provide imagery of features such as wrecks, rocks, and obstructions. *Concur.*

\* Filed with the hydrographic data.

## F. SOUNDING EQUIPMENT ✓

Three different categories of echosounder systems were used and are described below. The individual system(s) chosen for use in a given area were decided at the discretion of the Hydrographer using the guidance stated in the Project Instructions and depended upon the limitations of each system, the bottom topography, the water-depth, and the ability of the platform vessel to safely navigate the area.

### 1. Launch Singlebeam (VN 2122, 2124, 2125): ✓

The singlebeam sounding instruments for this survey were the Raytheon DSF-6000N and Knudsen 320M, which are dual frequency (100 kHz, 24 kHz), digital recording singlebeam fathometers with analog paper traces. Soundings were acquired in meters using the High + Low, high frequency digitized setting, but in depths over 300 meters, low frequency was scanned in place of the high when the fathometer lost its high frequency trace. Serial numbers are included in the Separates. Singlebeam launches were used to collect mainscheme hydrography in areas that were considered too hazardous or too shallow for shipboard IDSSS coverage, generally areas less than 150 meters of depth. In addition, singlebeam launches were used to perform all shoreline verification. *Concur.*

### 2. Launch Shallow Water Multibeam (SWMB) (VN 2121, 2123, 2126): ✓

The Reson SeaBat 8101 is a multibeam echosounder system that measures relative water depths across a wide swath perpendicular to the vessel's path. The Reson SeaBat 8101 ensonifies the seafloor with a 150° swath consisting of 101 individual 1.5° x 1.5° beams. The system was designed to meet International Hydrographic Organization standards to measure the seafloor at a maximum range of 320 meters. The system's maximum depth range under actual field conditions has proven to be much less. RAINIER has discovered that maximum attainable depths are approximately 80-150 meters, depending on sea conditions and bottom topography. Serial numbers are included in the Separates.\* SWMB launches were used to collect full-bottom coverage of select areas identified during singlebeam hydrography, generally all areas determined to be less than 60 meters deep that could safely be investigated without the risk of damaging the SWMB transducer. SWMB launches were not use for shoreline verification due to the extremely high risk of damaging the SWMB transducers on submerged rocks. *Concur.*

### 3. Shipboard Intermediate Depth Multibeam (IDSSS) (VN 2120): ✓

The IDSSS data acquisition system (DAS) consists of a Digital Equipment Corporation's (DEC) VAX Station 4000-90 computer system interfaced with a Seabeam Instruments Inc, for use in acquiring full-bottom coverage in navigable areas deeper than 150 meters. Hydrochart II sonar system, Datawell heave-roll-pitch sensor (HIPPY) is a multibeam sonar system that uses two transducer arrays (at 36 kHz) to produce an athwartship swath of bathymetric data approximately 2.5 times the water depth. The DEC VAX Station 4000-90 computer collected input from the Hydrochart II, HIPPY, gyrocompass, and the navigation system. It also provided guidance to the helmsman and plotted a near real time contour map. The DAS consisted of the following equipment:

#### DAS EQUIPMENT ✓

- |                               |                     |
|-------------------------------|---------------------|
| Hydrochart II Sonar System    | DEC Server DSRVW-7C |
| DEC VAX Station 4000-90 (DAS) | TTi 8212 Tape Drive |
| Sperry MK 227 Gyrocompass     | DATAWELL Hippy      |
| ZETA 24" Plotter              | DEC monitor         |

The ship speed was reduced to provide full ensonification of the sea floor and provide a minimum of 4 pings per plotable unit area (PUA). A PUA of 50 meters was used during processing of the Hydrochart II data. ✓  
The DEC VAX Station 4000-90 computer was used to process the data and create corrected merge files and selected sounding files which were exported and combined with single-beam data in HPS and in MapInfo.

\* Filed with the hydrographic data.

It should be noted that throughout the 1998 Field Season, Rainier's Intermediate Depth Swath System (IDSSS) tended to compare well with the Knudsen in steep areas of overlapping coverage. It was also observed that the launch SWMB systems tended to compare well with the Knudsen in steep areas of overlapping coverage. All echosounding systems compared extremely well in flat areas and in areas with moderate slope. *Concur*.

## G. CORRECTIONS TO ECHO SOUNDINGS ✓

### Sound Velocity Correctors: ✓

Sound velocity casts were acquired with SBE SEACAT Profiler (S/N 219), calibrated January 27, 1998, and (S/N 2543), calibrated January 10, 1998 and (S/N 2477), calibrated February 6, 1998. Velocity correctors were computed using the PC programs SEACAT and VELOCITY, version 3.1 (1997), in accordance with Field Procedures Manual (FPM) section 2.1.2 and Hydrographic Survey Guideline (HSG) No. 69.

For single beam launches, sound velocity correctors were applied to the raw sounding data in HPS during post-acquisition processing. For SWMB launches, sound velocity correctors were applied in CARIS during post-acquisition processing. For the RAINIER, sound velocity correctors were applied to the raw sounding data in Hydrochart's sound velocity program during data acquisition. *Concur*.

### Vessel Offset Correctors ✓

The following table shows when the vessel offset correctors used for this survey were last measured:

Vessel No.	Date of static draft and transducer offset measurements	Method of Settlement and Squat Measurement	Date of Settlement and Squat Measurement	Location of Settlement and Squat Measurement
2120	April, 1998 (ship dry-dock)	Rod leveling	September 21, 1997	Kings Bay, AK.
2121	March 26, 1998	OTF	July, 1998	Shilshole, WA
2122	March 26, 1998	Rod leveling	June 11, 1998	Shakan Strait, AK
2123	March 26, 1998	OTF	July, 1998	Shilshole, WA
2124	March 26, 1998	Rod leveling	June 11, 1998	Shakan Strait, AK
2125	March 26, 1998	Rod leveling	June 21, 1998	Chilkat Inlet, AK
2126	March 26, 1998	OTF	July, 1998	Shilshole, WA

Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.4, and are included with project data for OPR-P139-RA-98. \*All offset tables contain offsets for the GPS antenna, as well as static draft measurements, and settlement and squat data. Offset tables # 1-6 correspond to the last digit of the vessel number. Offset table #7 was used for the RAINIER (VN 2120). For singlebeam launches, offset tables were applied to the raw sounding data in HPS during post-acquisition processing. For SWMB launches, offsets were applied during Caris processing. For RAINIER IDSSS data, offsets were applied on-line during data collection.

The offset tables are included with project data for OPR-P139-RA-98. \*

### Predicted Tidal Correctors: ✓

The Oceanographic Products and Services Division, User Services Branch (N/CS41), through N/CS31, provided predicted tides for the project on diskette for the Cordova reference station (945-4050). The predicted tides at Cordova were entered into HPS.

\* Filed with the hydrographic data.

For Launch Singlebeam soundings, HPS tide tables were applied to raw sounding data during shipboard processing in HPS without adjusting for zoning. *concur.*

For Launch SWMB soundings, six-minute interval predicted tide data from the Cordova reference station (945-4050) were imported directly into CARIS (without adjusting for zoning) from commercial Tides and Currents software and applied to raw sounding data during shipboard processing in CARIS. *concur.*

For RAINIER IDSSS soundings, predicted tides from the Cordova reference station (945-4050) were imported from commercial Tides and Currents software into the DAS VAX computer (without adjusting for zoning) and applied during processing. Due to software limitations, a single average adjustment for all tide zones based on published tide tables was selected to represent the entire project and applied during processing.

#### Real Tidal Correctors: ✓

The operating tide stations at Cordova (945-4050) and Valdez (945-4240) served as control for datum determination. A Next Generation Water Level Measurement System (NGWLMS) Aquatrak is the only sensor at these stations. Consequently, RAINIER was not required to inspect or perform leveling of these stations.

The following Sutron 8200 Bubbler tide stations were established for this project in order to provide information on zoning, tidal datums (reducers), and harmonic constants for predictions:

Station name	Station Number	GOES XMTR	Type of gauge	Date Established	Date Removed
Snug Harbour	945-4662	No	30-day	8-5-98	10-30-98
Seal Island	945-4564	Yes	30-day	8-5-98	10-30-98

 ✓

Refer to the Field Tide Notes and supporting data in Appendix V for individual gauge performance and level closure information. Raw waterlevel data from these gauges has been forwarded to N/CS41 in accordance with HSG 50 and FPM 4.7 where it will be processed into final approved (smooth) tides. The Pacific Hydrographic Branch will apply final approved (smooth) tides to the survey data during final processing. A request for delivery of final approved (smooth) tides to the Pacific Hydrographic Branch has been forwarded to N/OES23 in accordance with FPM 4.8. *Approved Tide Note dated March 25, 1999 is attached.*

#### H. HYDROGRAPHIC POSITION CONTROL (See EVAL RPT., Secs. H & I)

The horizontal datum for this project is NAD 83. Station ROCK was used to verify and establish local geodetic control for this survey. See the OPR-P139-RA-98 Horizontal Control Report for more information. *A list of control stations used in this survey is included in this report.*

All soundings were positioned using differential GPS (DGPS). The VHF differential reference station at TUFT was the primary source for differential correctors for this survey. The USCG beacons located at Cape Hinchinbrook, AK, Kenai, AK and Potato Point, AK were used when the VHF reference station was unavailable.

Launch-to-launch DGPS performance checks were performed in accordance with Section 3.4.4 of the FPM. Two observations of position were made from two different DGPS base stations while the launches were rafted together with their GPS antennae within 2-3 meters of each other. RAINIER also used SHIPDIM, version 2.2R (April 1996) with a Trimble Centurion P-code receiver and an Ashtech sensor (both differentially-corrected) to monitor the performance of the USCG Beacon. Periodic comparisons and occasional performance checks were logged with the SHIPDIM system. Some outliers were noted, but none indicated systematic or continuous errors in the beacons. The SHIPDIM OUTLIER.SUM results are included in the project data for OPR-P139-RA-98. \*

*\* Filed with the hydrographic data.*



**I. SHORELINE** ✓

There was no shoreline associated with this survey. *concur.*

**J. CROSSLINES** ✓

Crosslines agreed with mainscheme hydrography. Depths generally agreed within one meter. See Section F, Sounding Equipment, for more details. There were a total of 23.1 nautical miles of crosslines, comprising 10.1% of mainscheme hydrography.

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

Below is a table and sketch (fig #3) that depict all contemporary surveys that junction with H-10843

Registry #	Scale	Date	Junction side
H-10840	1:10,000	1998	West
H-10846	1:10,000	1998	South
H-10849	1:40,000	1998	Surrounding East ✓
H-10579	1:10,000	1994	North
H-10580	1:10,000	1994	Northwest

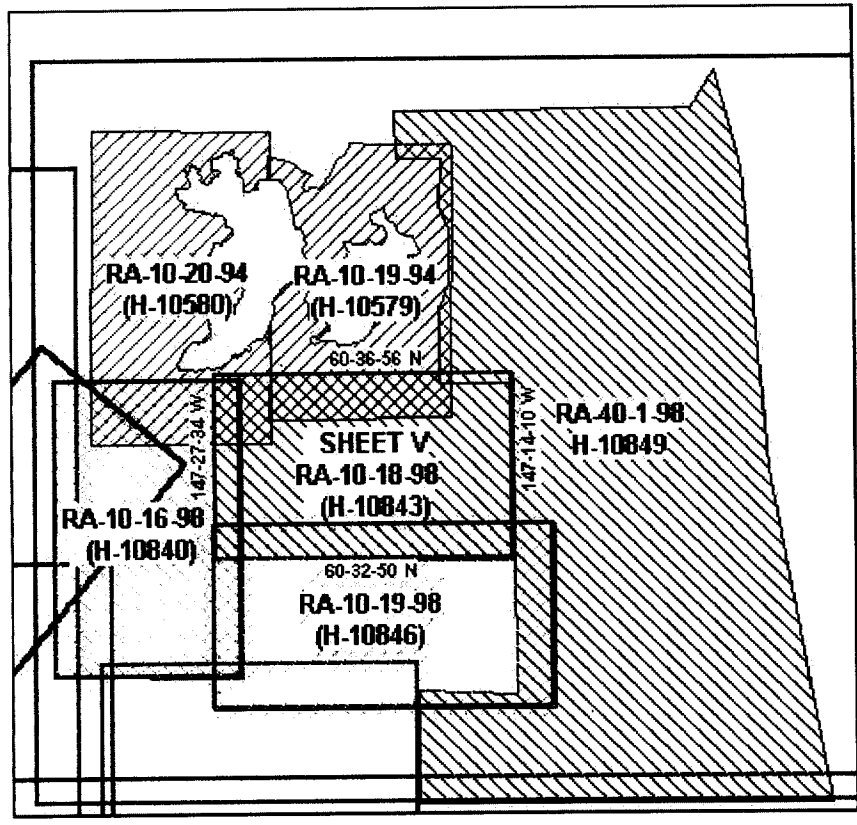


Fig #3 A sketch of surveys that junction with H-10843.

Soundings on the 1998 surveys were found to be in good agreement, matching within 3 meters. Soundings on the 1994 surveys were found to be in good agreement, matching within 1 meter, except at the northwest corner of this survey. In this region, below the 50 meter contour line of this survey, the soundings average approximately 5 meters deeper than soundings from survey junctions H-10579 and H-10580. The single beam data differs from the IDSSS data, because of beam width, power output and angle of incidence differences between the two systems. The deeper multibeam soundings are more accurate, thus the hydrographer recommends using the IDSSS data in areas where the single beam data overlaps. *concur.*

A holiday, approximately 150 meters x 3900 meters, was noted in the southwest corner of this survey between IDSSS and Single Beam soundings. Crossline soundings transecting the holiday area were analyzed revealing shoaler depths as compared to soundings in prior surveys that share this common area with survey H-10843. Within the holiday boundaries of H-10843, prior surveys H-2807 & H-7765 revealed soundings approximately 5 fathoms deeper than soundings from survey H-10843. Prior survey H-3341 showed no significant disparity in soundings within the holiday boundaries. *CONCUR.* (See EVAL RPT., Sec. P)

#### L. COMPARISON WITH PRIOR SURVEYS (See EVAL RPT., Sec. M)

Differences between the current survey and prior surveys can probably be attributed to scale and improved modern positioning and sounding equipment. It is also possible that glacial rebound and earthquake activity have contributed to these changes. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final sounding datum using tidal information collected concurrently with this survey.

Below is a table and sketch (fig #4) that depict prior surveys sharing common areas with H-10843

Registry #	Scale	Date (DATUM)	Area covered
H-2741	1:40,000	1911 <sup>46</sup> (Valdez)	Entire Area
H-2807	1:100,000	1905 ✓ (Valdez)	Entire Area
H-3321	1:20,000	1911 ✓ (Valdez)	Irregular limit covering the western 2/3 <sup>rd</sup> of H-10843.
H-7765	1:20,000	1947 <sup>9</sup> (NAD 27)	Polygonic shape covering approximately 80% of the west and southwest quadrants of H-10843.
H-7766	1:20,000 <sup>4</sup>	1927 <sup>49</sup> (NAD 27)	An hourglass shape covering the north and northwest quadrants of H-10843.

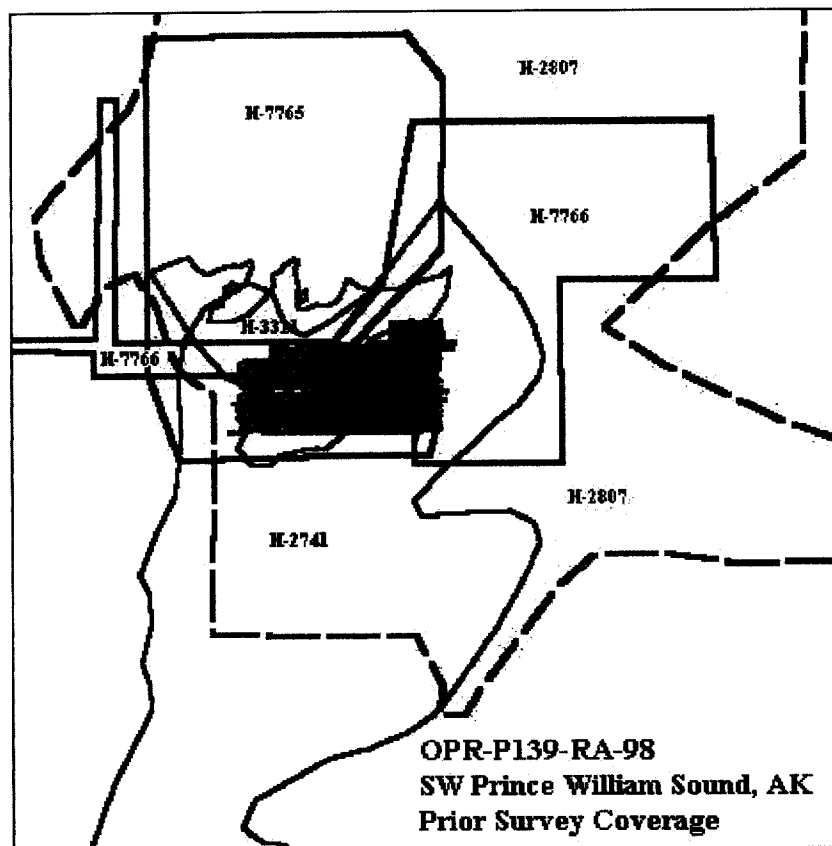


Fig #4 A sketch of surveys covering H-10843 (solid colored area).

Due to the illegibility of prior survey H-2741, a comparison with present survey H-10843 could not be made. *CONCUR.*

In general, prior soundings from H-2807 agree with the present survey except below the 100 fathom contour where soundings from H-10843 average approximately 5 fathoms deeper than soundings from prior survey H-2807.

Prior soundings from H-3321 & H-7765 agree in comparison to present survey H-10843 with differences noted approximately 5 fathoms deeper than soundings from H-10843.

Prior soundings from H-7766 agree in comparison to present survey H-10843 with differences noted approximately two fathoms deeper than soundings from H-10843.

Specific sounding comparisons between H-10843 and prior surveys are outlined in the table below. This comparison is based on an average sample of soundings from H-10843 in close proximity to a single sounding from a prior survey that shows significant differences in depth. Note: the IDSSS programs in Hydrochart do not label sounding data with fix numbers.

**Registry #H-2807**

Location of prior sounding	Depth (fm)	Depth of sounding on H-10843 (fm)	Fix Number
60-36-09.4N/147-14-38.8W	<sup>03</sup> <del>100.0</del>	91.4 ✓	IDSSS
60-35-58.2N/147-15-50.2W	<sup>3</sup> <del>98.0</del>	103.7 ✓	IDSSS
60-36-10.6N/147-18-11.5W	81.0	96.7 ✓	IDSSS
60-35-40.4N/147-21-49.9W	41.0 ✓	<del>45.4</del> 46.0	20,861
60-35-54.1N/147-20-25.3W	<sup>8</sup> <del>38.0</del>	<del>59.1</del> 61.0	20,460
60-35-54.4N/147-24-51.3W	<sup>81.0</sup> <del>36.0</del>	41.5 ✓	IDSSS

**Registry #H-3321** (*This survey was compiled in FEET*)

Location of prior sounding	Depth (fm) / FEET	Depth of sounding on H-10843 (fm)	Fix Number
60-36-07.1N/147-17-06.5W	122.6 / 736	110.0	IDSSS
60-33-12.6N/147-21-20.4W	99.3 / 596	72.3	IDSSS
60-33-34.8N/147-22-52.5W	111.5 / 669	93.2	IDSSS
60-33-27.9N/147-22-41.7W	116.3 / 698	98.5	IDSSS
60-33-16.4N/147-23-27.3W	106.2 / 637	87.5	IDSSS
60-33-11.3N/147-22-35.9W	93.1 / 589	76.1	IDSSS
60-33-28.9N/147-20-59.5W	104.5 / 627	79.5	IDSSS
60-35-55.2N/147-24-50.6W	25.3 / 152	42.0	30,398
60-35-15.6N/147-25-30.4W	37.6 / 226	76.5	51,340
60-35-00.3N/147-26-59.3W	<sup>2</sup> <del>39.15</del> / 225	65.0	40,851
60-35-10.4N/147-26-39.4W	56.6 / 340	35.2	41,086
60-35-23.2N/147-26-18.4W	73.6 / 442	45.2	21,645
60-35-14.9N/147-22-38.2W	66.1 / 397	44.6	41,195
60-33-29.5N/147-24-44.1W	88.3 / 530	73.8	IDSSS
60-33-44.2N/147-20-38.4W	117.5 / 705	88.2	IDSSS
60-33-03.5N/147-25-14.3W	87.3 / 524	61.2	IDSSS

Registry #7765

Location of prior sounding	Depth (fm)	Depth of sounding on H-10843 (fm)	Fix Number
60-35-20.8N/147-27-17.8W	63.0	48.4	51,535
60-35-21.6N/147-26-05.7W	45.0	37.6	21,589
60-35-18.9N/147-26-11.3W	28.0	45.6	80,074
60-35-42.7N/147-24-51.8W	52.0	34.6	30,756
60-36-01.8N/147-24-17.6W	42.0	24.7	81,383
60-35-36.0N/147-23-47.0W	37.0	49.6	30,962
60-34-34.6N/147-27-33.1W	85.0	59.0	40,089
60-34-57.7N/147-26-37.3W	70.0	61.9	40,678
60-35-13.6N/147-26-26.7W	20.0	40.3	80,075
60-34-47.2N/147-24-42.6W	80.0	62.8	40,413
60-33-55.3N/147-25-31.6W	75.0	84.8	IDSSS
60-33-37.8N/147-26-53.1W	36.0	62.9	IDSSS
60-33-47.5N/147-25-06.1W	85.0	74.9	IDSSS
60-35-55.2N/147-22-22.4W	29.5	42.0	30,440

Registry #H-7766

Location of prior sounding	Depth (fm)	Depth of sounding on H-10843 (fm)	Fix Number
60-33-58.9N/147-14-12.0W	80.0	71.0	IDSSS
60-33-17.1N/147-14-41.5W	60.0	53.9	IDSSS
60-33-30.8N/147-15-33.1W	68.0	59.1	IDSSS
60-33-08.4N/147-15-46.5W	65.0	60.5	IDSSS
60-34-15.9N/147-15-32.8W	108.0	102.2	IDSSS
60-34-39.7N/147-16-02.0W	90.0	82.6	IDSSS
60-35-26.9N/147-19-27.6W	80.0	85.3	IDSSS

\*Final comparisons will be made at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

M. ITEM INVESTIGATIONS (See EVAL RPT., Sec. N)

No AWOIS investigations were assigned for survey H-10843.

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

Below are tables and a sketch (fig #5) outlining the comparison of charts to survey H-10843.

Chart	Edition	Scale
16700 ✓	25 <sup>th</sup> Ed. September 21, 1996	1:200,000 ✓
16705 ✓	17 <sup>th</sup> Ed. <sup>March</sup> September 27, 1997 <sup>9</sup>	1:80,000 ✓
16709 ✓	21 <sup>st</sup> Ed. June, 29 1996	1:80,000 ✓

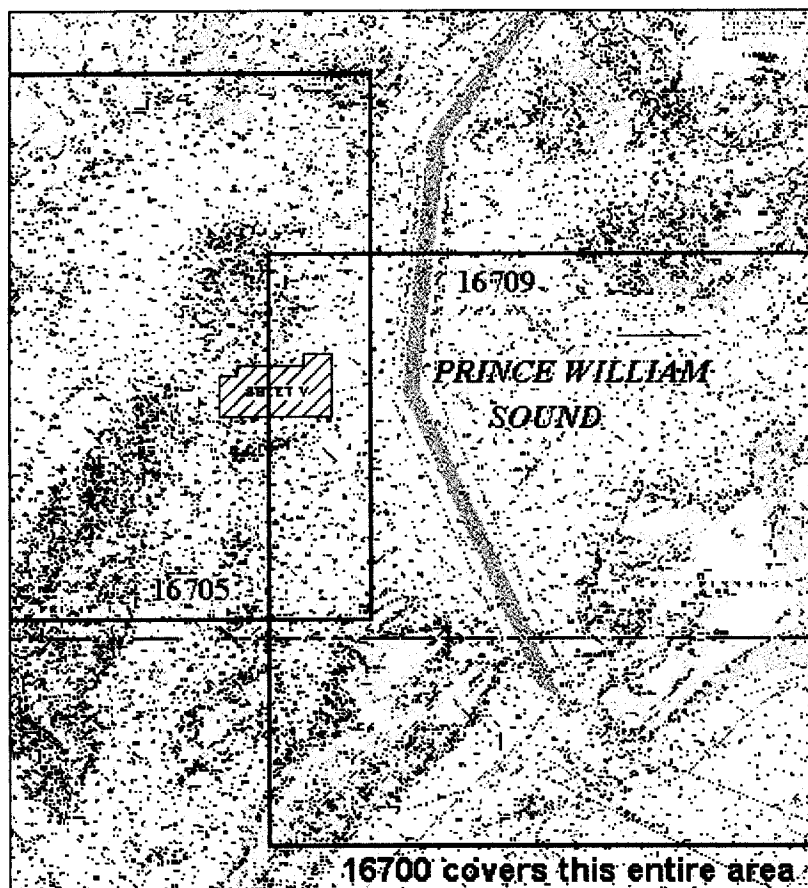


Fig #5 Chart coverage areas & H-10843 (blue hatched area).

This survey was compared with Charts 16700, 16705 & 16709 and was in good agreement, generally within one fathom, with the exception of the following soundings outlined in the table below:

Chart	Location	Charted depth (fm)	Comments
16700	60-33-17.14N/147-26-33.65W	14 ✓	plotted in the vicinity of a <del>17</del> fm sounding on survey H-10843.
16700 ✓	60-33-19.01N/147-17-47.45W	55 ✓	plotted in the vicinity of a <del>70</del> fm sounding on survey H-10843.
16705 ✓	60-35-35.81N/147-18-03.01W	129 ✓	plotted in the vicinity of a <del>110</del> <sup>08</sup> fm sounding on survey H-10843.
16705 ✓	60-35-20.61N/147-19-05.19W	132 ✓	plotted in the vicinity of a <del>113</del> <sup>6</sup> fm sounding on survey H-10843.
16709 ✓	60-35-36.89N/147-18-03.28W	129 ✓	plotted in the vicinity of a <del>110</del> <sup>08</sup> fm sounding on survey H-10843.
16709 ✓	60-35-21.34N/147-19-06.46W	132 ✓	plotted in the vicinity of a <del>113</del> <sup>6</sup> fm sounding on survey H-10843.

Final sounding comparisons will be made at PHB after reduction to final vertical datum.

**Dangers to Navigation** ✓

No dangers to navigation were reported on this survey. *CONCUR.*

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

Survey H-10843 is complete and adequate to supersede prior soundings and features in their common areas. With the exception of a small area in the northwest corner of the survey (as noted in section B) this survey accomplished 100% bottom ensonification using multibeam systems. *CONCUR.*

**P. AIDS TO NAVIGATION** ✓

No navigational aids exist within the survey area. *CONCUR.*

**Q. STATISTICS** ✓

Refer to the Survey Information Summary attached to this report.

**R. MISCELLANEOUS** ✓

Bottom samples were collected and sent to the Smithsonian in accordance with Project Instructions. No unusual tidal currents or magnetic variations were found during this survey.

**S. RECOMMENDATIONS** ✓

None.

**T. REFERRAL TO REPORTS** ✓

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

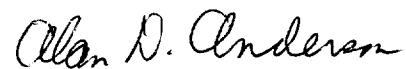
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
OPR-P139-RA-1998 Horizontal Control Report	11/1/98	N/CS34
Project related data for OPR-P139-RA	Incremental	N/CS34

Respectfully Submitted,



Francis Loziere  
Survey Technician

Approved and Forwarded,



Alan D. Anderson  
Captain, NOAA  
Commanding Officer

# Survey Information Summary

Project:  Project Name:

Instructions Dated:  Project Change Info: 

Change #	Dated
1	9/8/98

Sheet Letter:  Registry Number:

Sheet Number:

Survey Title:

Data Acquisition Dates: From:   To:

## Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2120								
2121								
2122	1	1						
2123		1		1				
2124		1		1				
2125	1	1					1	
2126	1							

## Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
7		251	432.3	60/35/50	249-259
				147/33/55	
9		261	294.2	60/30/20	260-264
				147/31/15	
10		265	286.2	60/30/18	265-278
				147/31/36	
12		281	276.6	60/29/50	279-ldh
				147/14/35	

*SV casts taken outside of survey limits.*

## Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS8	0 hr 0 min	0.96
PWS37	0 hr 0 min	0.94

## Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-4564	SEAL ISLAND	8/5/98	10/30/98
945-4662	SNUG HARBOR	8/5/98	10/30/98

## Statistics Summary

Type	Total:
BS	14
MBMS	117.83
MBXL	14.2
MS	88.18
SPLIT	83.34
SWMB	6.3
XL	8.9

Percent XL:

SQNM:

## List of Horizontal Control Stations

NAME	STATE	TYPE	LATITUDE	LONGITUDE	SITEID	DEC_LAT	DEC_LON
CAPE HINCHINBROOK	AK	USCG Beacon	60 14 18	146 38 48	894	60.23833333	146.64666667
DUKE	AK	DGPS Flyaway	60 15 37.38949	147 18 05.97751	n/a	60.26038597	148.30166042
KENAI	AK	USCG Beacon	60 40 06	151 21 00	896	60.66833333	151.35000000
MATE	AK	DGPS Flyaway	60 17 54.17878	147 54 46.44082	n/a	60.29838299	147.91290023
POTATO POINT	AK	USCG Beacon	61 03 24	146 41 48	895	61.05666667	146.69666667
QUAKE	AK	DGPS Flyaway	60 22 56.96011	147 50 19.81757	n/a	60.38248892	147.83883821
ROCK	AK	DGPS Flyaway	60 39 13.43485	147 55 58.32527	n/a	60.65373190	147.93286813
SEAL	AK	DGPS Flyaway	60 25 47.07484	147 24 56.82688	n/a	60.42974301	147.41578524
TUFT RESET	AK	DGPS Flyaway	60 37 05.94517	147 29 09.09347	n/a	60.61831810	147.48585930





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  
January 28, 1999

MEMORANDUM FOR: CDR James Gardner  
Chief, Pacific Hydrographic Branch

FROM: CAPT Alan D. Anderson  
Commanding Officer

SUBJECT: AWOIS items 52381 and 52382

Attached please find the AWOIS item investigation reports for AWOIS items 52381 and 52382.

After discussion with N/CS32 (Mike Riddle), it was suggested that these AWOIS investigations be included with the Descriptive Report for a nearby survey. H-10843 is the closest 1:10,000 scale survey. Therefore, please include these two AWOIS investigations with the previously submitted DR for survey H-10843.

Attachments



## N. ITEM INVESTIGATIONS

There were two AWOIS items assigned for survey H-10579, in 1998 during project OPR-P139.

### Item Investigation #1

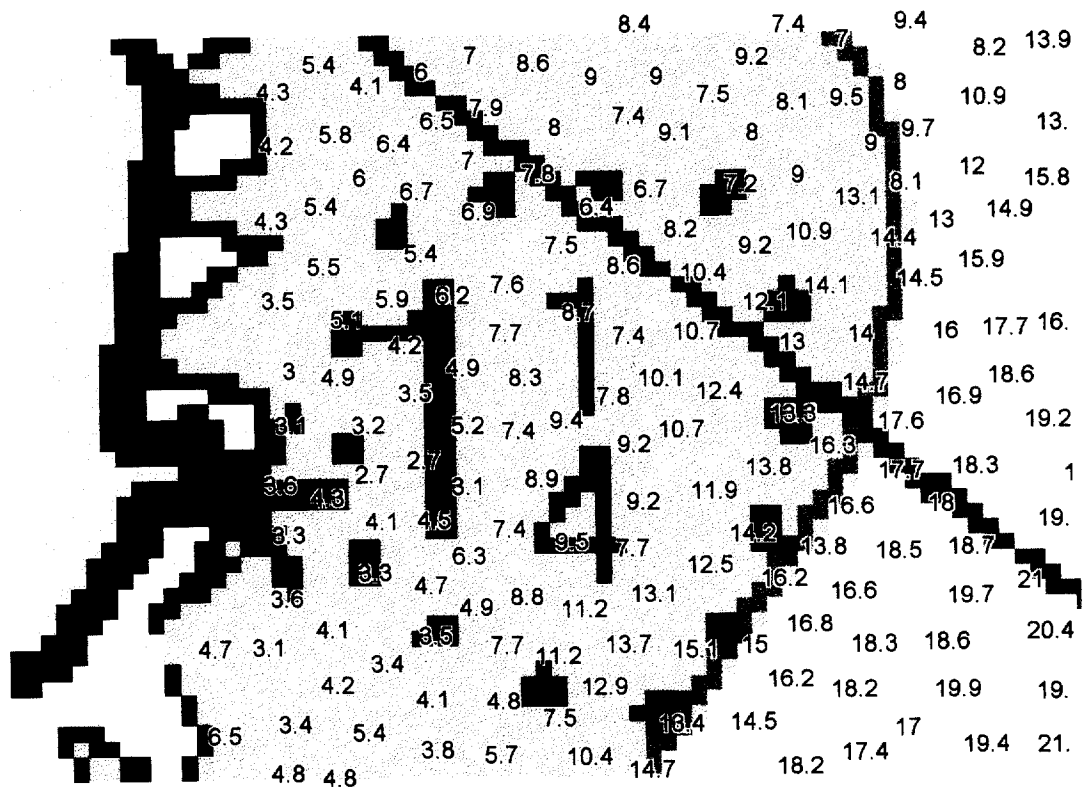
AWOIS # : 52381	DN: 282
CHART #: 16705 (1:80,000, 17 <sup>th</sup> Edition, 9/27/97)	VESNO: 2121
ITEM DESCRIPTION: 1-1/4 fathom sounding	
SOURCE: H-10579, OPR-P125-RA-94	

### Geographic Position

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	60° 41' 57" N	147° 21' 09" W	
OBSERVED:	60° 41' 54.3" N	147° 21' 13.3" W	80,424
POSITIONED BY:	DGPS	DATUM:	MLLW (NAD 83)
METHOD OF INVESTIGATION: 100% bottom coverage with SWMB			
FINDINGS: A 2.7 fathom sounding one hundred meters southwest of the charted 1-1/4 fathom sounding.			

### Charting Recommendations

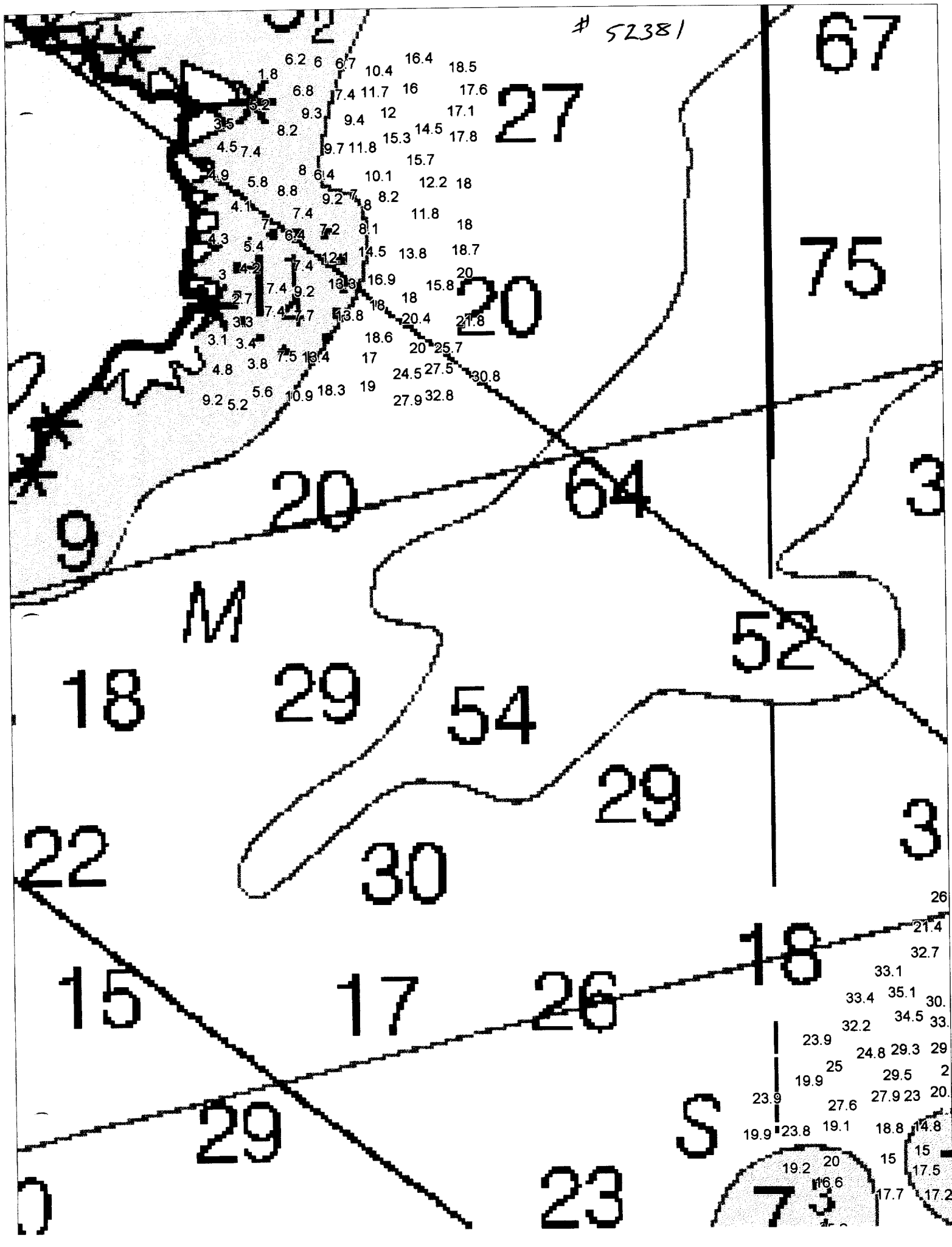
The hydrographer recommends removing the 1-1/4 fathom sounding from the chart and charting the area as found during this survey. *Concur.*



9.4 11.1 16.5 30 32.7 34.8  
 3.3 8.3 15.5 18 24.8 29.3 32.3  
 9.6 14.8 13.6 21.5 22 31.3  
 6.5 12.8 15 17.2 26.5 32.6  
 8.3 14.2 16 17.8 23.5 27.8 31 29.1  
 8.3 10.6 16.7 11.7 18.6 22.4  
 7.5 15.7 13.8 12.9 15 32.1  
 7.8 12.8 11.8 13.2 14.9 29 32.7 33  
 7.9 9.9 9.9 22.2 26.5 25.3 34.2  
 5.6 7.7 13.5 26.9 34.1 35  
 5 5 13.5 19.7 32.5 33 28.9 39.8  
 6.1 6 13.6 14.1 25.2 34.3 37.4 38 39.9  
 5.7 6.3 9.1 25.1 27.4 34.1 36.6 41.8  
 6.3 7 8.8 24.5 31.1 44.9 50.4 56.3  
 13.2 31.7 34.8 51.1 60.1  
 16.9 9.6 10.3 19.9 35.5 60.1

**H-10579 AWOIS**  
**investigation 52381**  
**OPR-P139-RA-98**  
**Soundings in meters**  
**Scale 1:10,000**

# 52381



6.2 6 6.7 10.4 16.4 18.5  
 1.8 6.8 7.4 11.7 16 17.6  
 3.2 9.3 9.4 12 17.1  
 3.5 8.2 8.2 15.3 14.5 17.8  
 4.5 7.4 9.7 11.8 15.7  
 4.9 5.8 8 6.4 10.1 12.2 18  
 4.1 8.8 9.2 7.8 8.2 11.8  
 4.3 7 7.4 7.2 8.1 18  
 5.4 6.4 7.4 12.1 14.5 13.8 18.7  
 3 4.2 7.4 9.2 13.3 16.9 20  
 2.7 7.4 7.7 13.8 18 15.8  
 3.3 7.4 7.7 13.8 20.4 21.8  
 3.1 3.4 7.5 13.4 18.6 20 25.7  
 4.8 3.8 7.5 13.4 17 24.5 27.5 30.8  
 9.2 5.2 5.6 10.9 18.3 19 27.9 32.8

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21.4

32.7

33.1

33.4

35.1

30

32.2

34.5

33

23.9

24.8

29.3

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19.9

27.6

27.9

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20

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**Item Investigation #2**

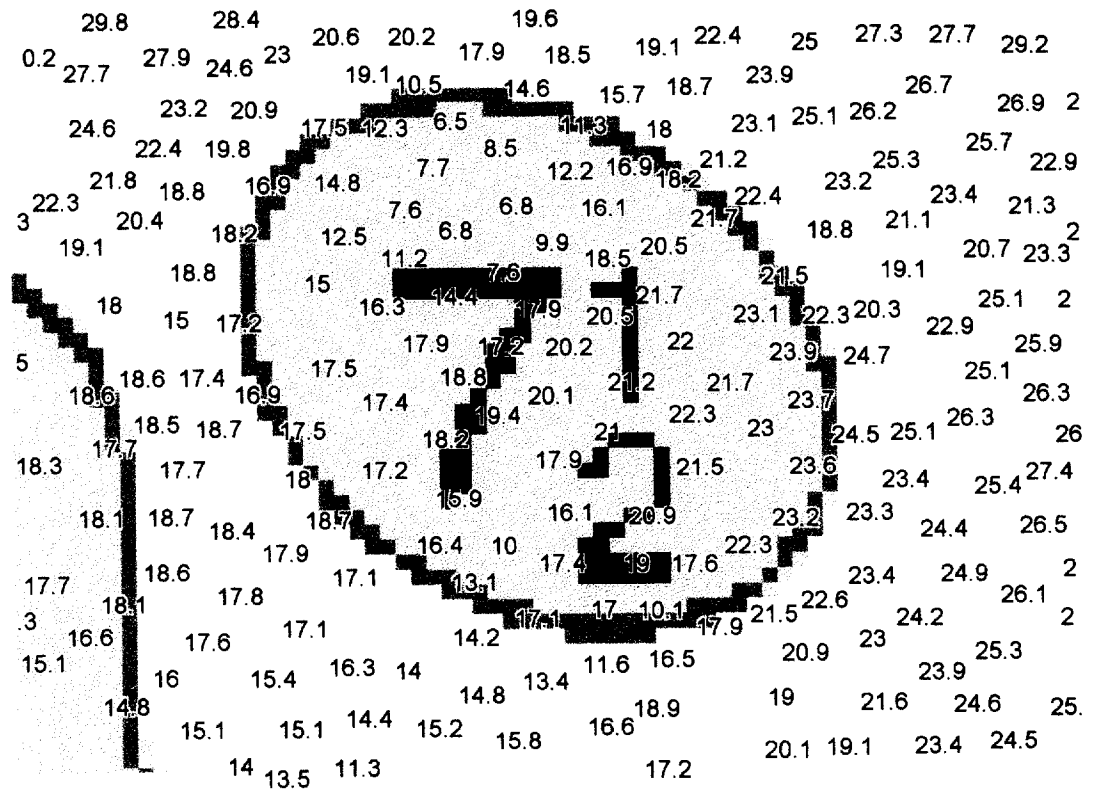
<b>AWOIS # :</b> 52382	<b>DN:</b> 282
<b>CHART #:</b> 16705 (1:80,000, 17 <sup>th</sup> Edition, 9/27/97)	<b>VESNO:</b> 2121
<b>ITEM DESCRIPTION:</b> 7-1/2 fathom sounding	
<b>SOURCE:</b> H-10579, OPR-P125-RA-94	

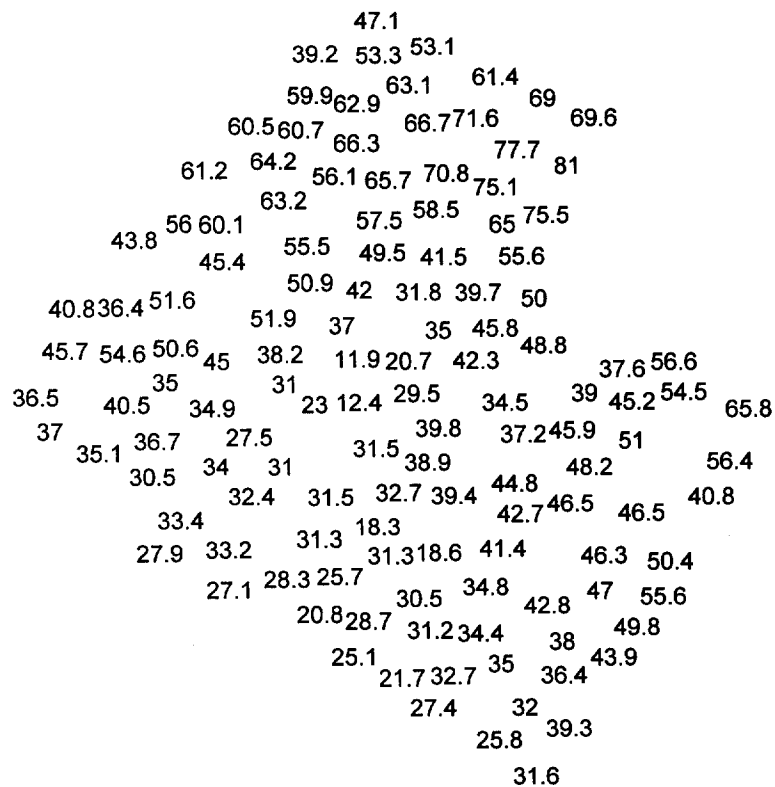
**Geographic Position**

	<b>LATITUDE</b>	<b>LONGITUDE</b>	<b>POSITION #</b>
<b>CHARTED:</b>	60° 40' 53" N	147° 19' 30" W	
<b>OBSERVED:</b>	60° 40' 55.7" N	147° 19' 34.6" W	80,708
<b>POSITIONED BY:</b>	DGPS	<b>DATUM:</b>	MLLW (NAD 83)
<b>METHOD OF INVESTIGATION:</b> 100% bottom coverage with SWMB.			
<b>FINDINGS:</b> 6.5 fathom sounding one hundred meters northwest of the charted 7-1/2 fathom sounding.			

**Charting Recommendations**

The hydrographer recommends removing the 7-1/2 fathom sounding from the chart and charting the soundings found during this survey. *Concur.*





**H-10579 AWOIS  
 investigation 52382  
 OPR-P139-RA-98  
 Soundings in meters  
 Scale 1:10,000**

# 52382

8.6 9.7 11.8 15.3 14.5 17.8  
 8 6.4 10.1 15.7 15.9  
 7.4 9.2 7.8 8.2 11.8 18  
 7.4 12.1 14.5 13.8 18.7  
 7.4 9.2 13.9 16.9 15.8 20  
 7.4 7.7 13.8 18 20.4 21.8  
 8 7.5 13.4 17 20 25.7  
 5.6 10.9 18.3 19 24.5 27.5 30.8  
 27.9 32.8

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25.7  
 21.4 29.1 29  
 32.7 34.4 33.5  
 33.1 37 36.4 40.8  
 33.4 35.1 30.6 43.4  
 32.2 34.5 31.6 34 39.6  
 23.9 24.8 29.3 27 22.7 30.4  
 19.9 25 29.5 22.9 17.4 21.7 27.3  
 23.9 27.6 27.9 23 20.2  
 19.9 23.8 19.1 18.8 14.8 6.5 11.3 23.1 25.7 20.5 30.9  
 15 15 6.8 18.5 18.8 20.7 27.4 33.9  
 15 17.5 17.2 21.7 24.7 25.9 28.9 30  
 17.7 17.2 17.9 21.5 23.3 26.5 25.4 22.3  
 15.2 18.1 17.1 10 10.1 22.6 25.3 27.5  
 14.8 15.4 14 15.8 18.9 19 23.4 25.7 30.4  
 14 11.3 15.5 17 20.8 24  
 15.5 17 18 20.8 24  
 11.8 16.9 18.4  
 14 19

39

11

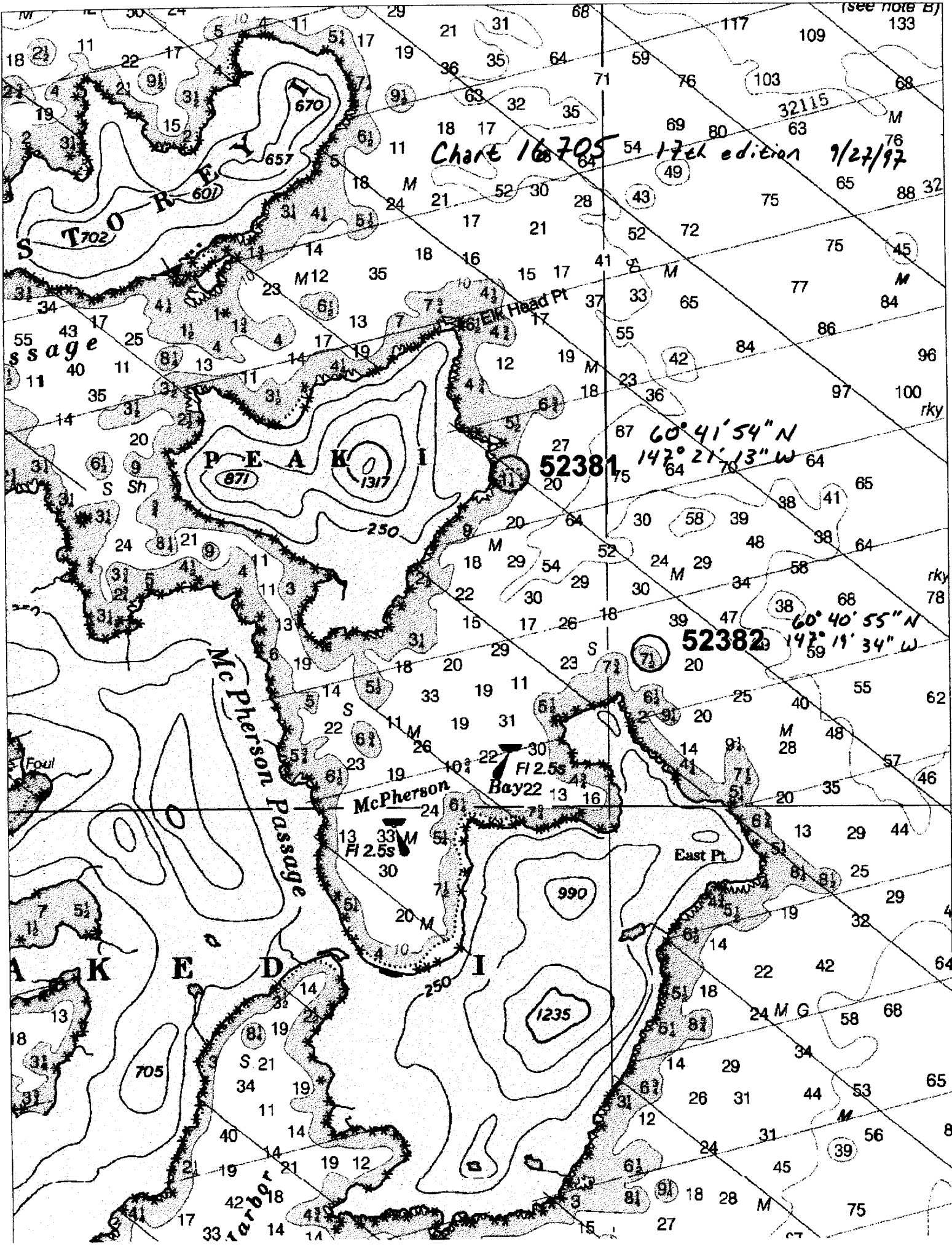
23

7

7

(see note B)

Chart 16705 17th edition 9/27/97







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  
November 23, 1998

MEMORANDUM FOR: CDR James Gardner  
Chief, Pacific Hydrographic Branch

THROUGH: RADM John Albright *SLA* 11/27/98  
Director, Pacific Marine Center

FROM: *Alan D. Anderson*  
CAPT Alan D. Anderson  
Commanding Officer

SUBJECT: Survey Data Transmittal Delay

There will be a delay in the transmission of survey data for project OPR-P139-RA-98. The transmission of data will exceed four weeks from completion of fieldwork. This is the second of two memorandums discussing the delay in submission of survey data and covers the remaining surveys that were conducted by RAINIER during the Prince William Sound project in the summer and fall of 1998.

The surveys affected are H-10843 (RA-10-18-98), H-10849 (RA-40-01-98), H-10846 (RA-10-19-98), H-10847 (RA-10-20-98), and H-10855 (RA-10-21-98). There are numerous reasons for this delay including, but not limited to, use of untested software for the acquisition of data, lack of experienced personnel, and the need to efficiently use the vessels as acquisition platforms while processing data already collected.

The four-week submittal of survey data recommendation noted in the Field Procedures Manual (FPM) does not reflect knowledge of current data acquisition and processing timelines. As you know, the shallow water multibeam (SWMB) systems allow for extremely large data sets to be collected in a very short amount of time. The processing of these data sets takes a much longer amount of time than does the processing of single beam data. In fact, the ratio of time processing SWMB data to time collecting SWMB data is 6:1. In comparison, the ratio of processing single beam data to the collection of single beam data is 1:3. The FPM should be updated to recognize the larger amount of time needed to process SWMB data by the field units. It is recommended that the FPM be changed to allow eight weeks for the submittal of survey data from the date of fieldwork completion.

The anticipated transmittal date for the above-mentioned surveys is late-December 1998 or early January 1999.



APPROVAL SHEET

for

H-10843

RA-10-18-98

Standard field surveying and processing procedures were followed in producing this survey in accordance with the Hydrographic Manual, Fifth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1998.

The field sheet and accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Approved and Forwarded,



Alan D. Anderson  
Captain, NOAA  
Commanding Officer  
NOAA Ship RAINIER

GEOGRAPHIC NAMES

H-10843

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">A ON CHART NO. 16705</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">B ON PREVIOUS SURVEY NO.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">C ON U.S. QUADRANGLE MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D FROM LOCAL INFORMATION</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">E ON LOCAL MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F P.O. GUIDE OR MAP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">G RAND McNALLY ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">H U.S. LIGHT LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">K</div> </div>										
	ALASKA (title)	X		X							
NAKED ISLAND (title)	X		X								2
PRINCE WILLIAM SOUND	X		X								3
											4
											5
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*Dennis R. Ross*  
 Chief Surveyor  
 MAY 6 1999



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** March 25, 1999

**HYDROGRAPHIC BRANCH:** Pacific

**HYDROGRAPHIC PROJECT:** OPR-P139-RA-98  
**HYDROGRAPHIC SHEET:** H-10843

**LOCALITY:** Prince William Sound, AK  
3 NM South of Naked Island  
**TIME PERIOD:** Sep 10 - Oct 19, 1998

**TIDE STATION USED:** 945-4050 Cordova, AK  
Lat.  $60^{\circ} 33.5'N$  Lon.  $145^{\circ} 45.2'W$   
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 3.529 meters

**TIDE STATION USED:** 945-4240 Valdez, AK  
Lat.  $61^{\circ} 07.5'N$  Lon.  $146^{\circ} 21.7'W$   
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 3.389 meters

**TIDE STATION USED:** 945-4564 Seal Island, AK  
Lat.  $60^{\circ} 25.8'N$  Lon.  $147^{\circ} 25.3'W$   
**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 0.000 meters  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 3.310 meters

**REMARKS:** RECOMMENDED ZONING  
Use zone(s) identified as: PWS37A & PWS8.

Refer to attachments for zoning information.

**Note 1:** Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.



**Note 2:** Use tide data from the appropriate station for each zone according to the order in which they are listed in the Tidezone corrector files (note: this may not be the same order as presented on the Tide Note). For example, tide station one (TS1) would be the first choice for an applicable zone followed by TS2, etc. when data are not available. All zones within a survey sheet may not have the same order of applicable tide stations.

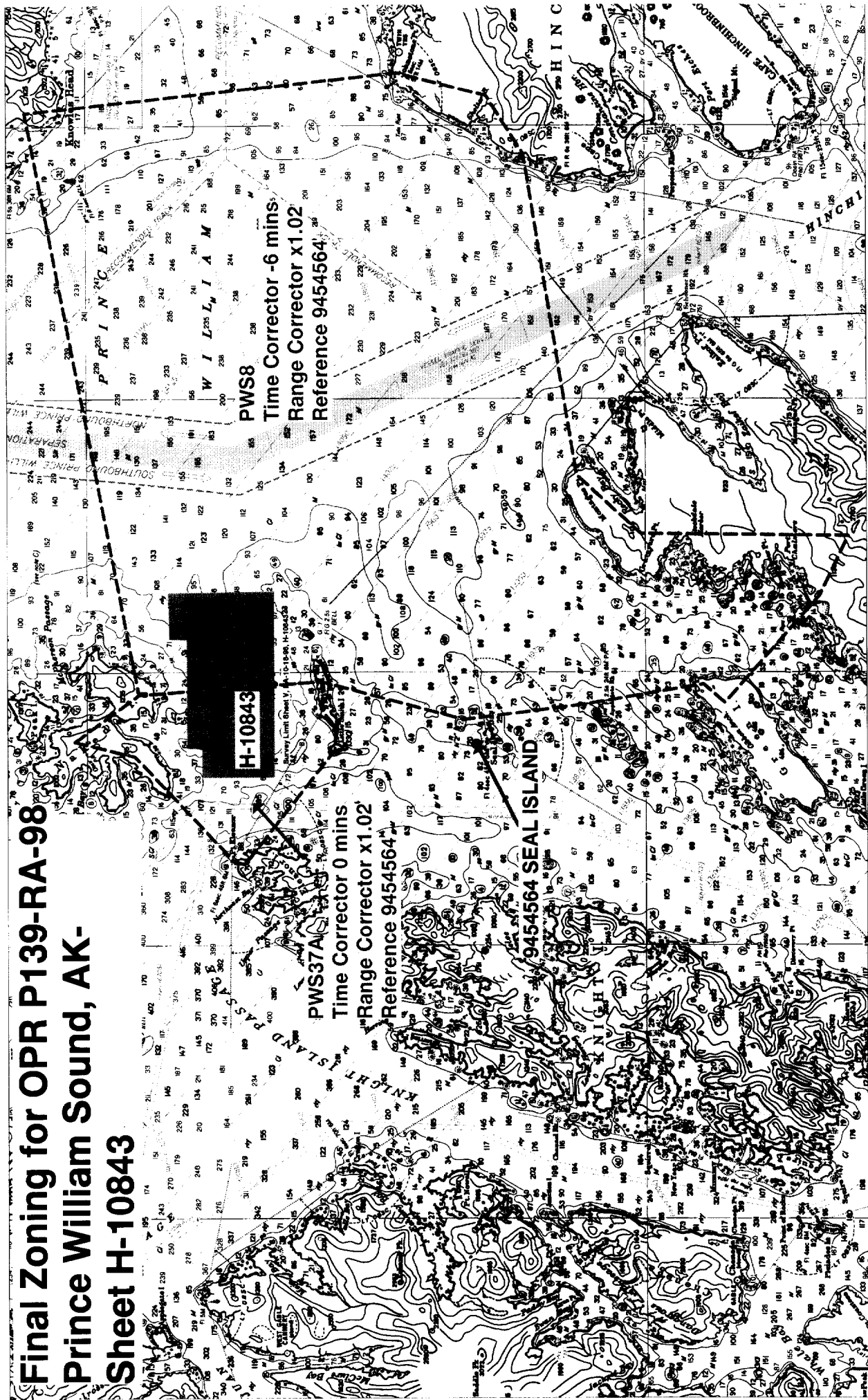
*Thomas V. Mero* 3/25/99  
-----  
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR P139-RA-98,  
Sheet H-10843.

Format: Longitude in decimal degrees (negative value denotes  
Longitude West),  
Latitude in decimal degrees  
Tide Station (in recommended order of use)  
Average Time Correction (in minutes)  
Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone PWS8			
-147.166932 60.206678	9454564	-6	1.02
-147.164575 60.330933	9454240	-6	0.99
-147.093352 60.369491	9454050	-6	0.95
-146.701487 60.401			
-146.630054 60.423082			
-146.602861 60.476793			
-146.64982 60.699661			
-147.360641 60.632173			
-147.344431 60.522683			
-147.391163 60.437636			
-147.373205 60.367377			
-147.348 60.293559			
-147.37047 60.281064			
-147.239884 60.224039			
-147.166932 60.206678			
Zone PWS37A			
-147.4175 60.67054	9454564	0	1.02
-147.435879 60.634506	9454240	0	0.99
-147.564875 60.574827	9454050	0	0.94
-147.567302 60.56881			
-147.428357 60.514658			
-147.401054 60.514056			
-147.381578 60.52174			
-147.344431 60.522683			
-147.360641 60.632173			
-147.4175 60.67054			

**Final Zoning for OPR P139-RA-98  
Prince William Sound, AK  
Sheet H-10843**



**PWS8**  
Time Corrector -6 mins  
Range Corrector x1.02  
Reference 9454564

**PWS37A**  
Time Corrector 0 mins  
Range Corrector x1.02  
Reference 9454564

**9454564 SEAL ISLAND**

**H-10843**

**HYDROGRAPHIC SURVEY STATISTICS**

H-10843

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	1				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

**SHORELINE DATA**

SHORELINE MAPS (List):	None
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16705, 18th Ed., March 27, 1999; 16709, 21st Ed., June 29, 1996

**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 (selected)			70,458
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	114.5		114.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		24.0	24.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		30.5	30.5
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		27.0	27.0
USE OTHER SIDE OF FORM FOR REMARKS	<b>TOTALS</b>	114.5	81.5
			196.0

Pre-processing Examination by <b>M. Bigelow</b>	Beginning Date 4/9/99	Ending Date 4/12/99
Verification of Field Data by <b>M. Bigelow, R. Mayor, E. Domingo, G. Nelson, LCDR Ferguson</b>	Time (Hours) 114.5	Ending Date 11/15/99
Verification Check by	Time (Hours)	Ending Date
Evaluation and Analysis by <b>I. Almacen</b>	Time (Hours) 54.5	Ending Date 11/16/99
Inspection by <b>D. Hill</b>	Time (Hours) 10	Ending Date 11/23/99



# EVALUATION REPORT

H-10843

## A. PROJECT

The hydrographer's report contains a complete discussion of the project information.

## B. AREA SURVEYED

The survey area is adequately discussed in the hydrographer's report. A page-size plot of the charted area depicting the limits of supersession accompanies this report as attachment A.

The bottom consists mainly of mud. Depths range from 8.0 to 125.0 fathoms.

## C. SURVEY VESSELS

The hydrographer's report contains adequate information relating to survey vessels.

## D. AUTOMATED DATA ACQUISITION AND PROCESSING

The acquisition and processing of data in the field has been adequately discussed in the hydrographer's report, section D.

Hydrochart II (Seabeam, Inc) Intermediate Depth Swath Survey System (IDSSS) was used by the field for data acquisition and some processing of swath data. The majority of field processing was accomplished using the Multibeam Support Vax system. Shallow Water Multibeam (SWMB) data were acquired using the Reson SeaBat with ISIS and processed using the Computer Aided Resource Information System (CARIS).

Office processing of survey data was conducted using the same Computer Aided Resource Information System (CARIS), and Hydrographic Processing System (HPS) used by the hydrographer. The smoothsheet was compiled with MicroStation 95.

Shallow water multibeam data sets were processed to reject beams 1,2,3,4,98,99,100 and 101 during office processing. In addition, the beam angle filter was used to reject all data outside of a 65-degree angle from nadir. Refer to the memorandum for the record from the Multibeam Processing Officer dated May 11, 1999 included in the survey records.

Digital data for this survey exists in the standard HPS format, a database format using the .dbf extension. In addition, the smooth sheet drawing is filed in the MicroStation format, i.e., dgn extension. Copies of these files have been forwarded to the Hydrographic Surveys Division and a backup copy retained at PHB. Database records forwarded are in the Internal Data Format (IDF) and are in compliance with specifications in existence at the time of survey processing.

The smoothsheet drawing files necessarily contain information that 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 smoothsheet 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. 35 and No. 75.

The data is plotted using a Modified Transverse Mercator (MTM) projection and are depicted on a single sheet.

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

Side scan sonar was not utilized during this survey.

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

Sounding equipment has been adequately addressed in the hydrographer's report.

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

Soundings have been reduced to Mean Lower Low Water (MLLW), with approved tide correctors obtained from the Center For Operational Oceanographic Products and Services. The approved tide correctors are zoned from Seal Island, Alaska, gage 945-4564.

Other sounding reducers include corrections for static draft, dynamic draft, sound velocity, heave, roll and pitch. These reducers have been reviewed and are consistent with NOS specifications.

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

Sections H and I of the hydrographer's report contain adequate discussions of horizontal control and hydrographic positioning.

The positions of horizontal control stations used during hydrographic operations are published values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude:	-2.206 seconds	(-68.292 meters)
Longitude:	7.091 seconds	(107.976 meters)

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

Hydrographic position control is adequately discussed in the hydrographer's report.

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 4.0 was computed for survey operations. The maximum (HDOP) allowable limit has not been exceeded during this survey and the quality of data obtained is good. During shallow water multibeam (SWMB) data gathering, satellite configuration as indicated by HDOP and the number of satellites, is monitored visually on HYPACK. The final positions are provided by the POS-MV which combines the DGPS position with inertial navigation information. In the event that the differential GPS corrector signal is lost, the POS-MV will continue to provide positions based on inertial navigation. Data was analyzed during processing to ensure it contains no significant errors. The reference site confirmation test and daily DGPS performance checks were conducted in the field and found adequate.

NAD 83 is used as the horizontal datum for plotting and position computations.

Additional information concerning specific control system type, calibrations and system checks can be found in the hydrographer's report and in the separates related to horizontal position control and correction to position data.

#### **J. SHORELINE**

There is no shoreline associated with this survey.

#### **K. CROSSLINES**

Crosslines are discussed in the hydrographer's report.

#### **L. JUNCTIONS**

Survey H-10843 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10579	1994	1:10,000	Northern Limit
H-10580	1994	1:10,000	Northwestern Limit
H-10840	1998	1:10,000	Western Limit
H-10846	1998	1:10,000	Southern Limit
H-10849	1998	1:40,000	Eastern Limit

The junction with surveys H-10579 and H-10580 were not formally completed since these surveys were already processed and forwarded for charting. These surveys were both previously compiled in meters. There is good agreement between soundings from the present survey and the junction surveys, however, the depth curves delineate different depths and therefore, are not in coincidence within the junction areas. "Adjoins" notes have been added on the smooth sheet for each of these junction surveys.

The junctions with surveys H-10840, H-10846 and H-10849 are considered complete. "Joins" notes have been added to the smooth sheet on each of the junctional areas. Comparison with these surveys is considered satisfactory, however, a few soundings were transferred to the present survey to delineate the depth curves within the common area.

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

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-2741	1906	1:40,000	Valdez
H-2807	1905	1:100,000	Valdez
H-3321	1911	1:20,000	Valdez
H-7765	1949	1:20,000	NAD 27
H-7766	1949	1:40,000	NAD 27

The prior surveys H-2741, H-2807 and H-3321 partly cover the central area of the present survey. The legibility of these prior surveys and their geographic registration to the present survey were satisfactory. Comparison of depths reveals the present survey is generally shoaler by about 5-25 fathoms than the prior surveys for depths up to about 120 fathoms. These differences could primarily be attributed to the accuracy of the surveying methods used, increase in bottom coverage and the effects of the 1964 Alaska earthquake. Comparison with the prior surveys seems to indicate the usual uplifting trend common around this area of Prince William Sound.

Surveys H-7765 and H-7766 were the 1949 surveys that cover the area. Depths differ by about 5 to 25 fathoms with the present survey generally shoaler than the priors. It indicates the same trend as noted in the comparison with the other prior surveys listed above. These two surveys are classified as HDEG, Category I surveys. As such, they are unprocessed surveys and not considered to be basic. Information originating from them has not been transferred forward to the present survey.

The application of modern surveying technology has greatly contributed in attaining a more adequate and thorough coverage of the area that have not been accomplished in the past.

In accordance with the Hydrographic Guideline No. 39, the effect of the 1964 Prince William Sound earthquake were considered in the comparison of this survey. Prince William Sound experienced a bottom uplift of 4-32 feet during the 1964 earthquake. However, due to the depths of water and the differences in data acquisition methods used between the surveys, no reasonable adjustment value for prior soundings could be adequately determined.

Additional information regarding prior survey comparison is found in the hydrographer's report, section M.

Survey H-10843 is adequate to supersede the prior surveys within the area of common coverage.

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

There were no AWOIS items assigned for survey H-10843. However, the results of the investigations for AWOIS items 52381 and 52382 were included in this report as suggested by the Commanding Officer, NOAA Ship RAINIER upon discussion with N/CS32. These items originate from contemporary survey H-10579 (1994). The disposition of these features was adequately addressed in the attachment to the hydrographer's report. A copy of the memorandum for the Chief, Pacific Hydrographic Branch dated, January 28, 1999, concerning the inclusion of the two AWOIS items in this report is attached.

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

Survey H-10843 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16705	18th	March 27, 1999	1:80,000	NAD 83
16709	21st	June 29, 1996	1:80,000	NAD 83

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

Charted hydrography originates with the previously discussed prior surveys. The prior surveys have been adequately addressed in section M and require no further discussion.

Survey H-10843 is adequate to supersede charted hydrography within the common area.

##### **b. Dangers to navigation**

No dangers to navigation were discovered during this survey and/or during office processing.

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

The hydrography contained on survey H-10843 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 1998 Edition with the following exceptions.

An apparent holiday was noted along latitude 60/34/30N (between longitude 147/23/00W to longitude 147/26/00W) in the western portion of the survey. However, this offshore area is deep (45 to 80 fathoms) and the density of the presently compiled single and multibeam soundings is considered adequate enough to delineate this particular area. A comparison with prior survey information common to this area reveals no significant disparity in depths between the priors and the present survey.

The field unit submission of survey data exceeded the four week period from the completion of field work as required in the Field Procedures Manual (FPM). However, the Chief of Party submitted a written explanation for the delay indicating the anticipated transmittal date to the Chief, Pacific Hydrographic Branch, through the Director, Pacific Marine Center. A copy of the letter dated, November 23, 1998 is attached. Fieldwork for survey H-10843 was completed October 19, 1998 and received for office processing on January 15, 1999.

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

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

#### **R. STATISTICS**

Statistics are adequately itemized in the hydrographer's report.

#### **S. MISCELLANEOUS**

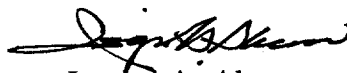
Miscellaneous information is adequately discussed in the hydrographer's report.

#### **T. RECOMMENDATIONS**

Survey H-10843 is a good hydrographic survey. No additional work is recommended.

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

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



Isagani A. Almacén  
Cartographer

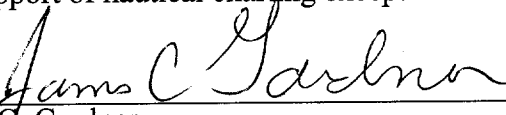
APPROVAL SHEET  
H-10843

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.

  
\_\_\_\_\_  
Dennis Hill  
Supervisory Cartographer  
Pacific Hydrographic Branch  
Date: 11-23-99

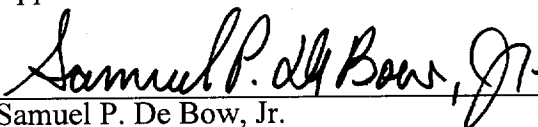
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

  
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James C. Gardner  
Commander, NOAA  
Chief, Pacific Hydrographic Branch  
Date: 11-30-99

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Final Approval

Approved:

  
\_\_\_\_\_  
Samuel P. De Bow, Jr.  
Captain, NOAA  
Chief, Hydrographic Surveys Division  
Date: January 9, 2000



