H10829

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-10-13-98

Registry No.: H-10829

LOCALITY

State: Alaska

General Locality: Southwest Prince William Sound

Sublocality: Knight Island Passage

Squirrel Island to Lower Herring Bay

1998

CHIEF OF PARTY
CAPT Alan B, Anderson, NOAA

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-10829

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-10-13-98

State: Alaska

General locality: Southwest Prince William Sound

Locality: Knight Island Passage, Squirrel Island to Lower Herring Bay

Scale: 1:10,000 Date of survey: 7/28/98 - 9/15/98

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

Vessel: RAINIER(2120),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, ~~hand lead, pole~~ DSF-6000N,Knudsen 320M,IDSSS MB.,Reson 8101 MB

Graphic record scaled by: RAINIER Personnel

Graphic record checked by: RAINIER Personnel

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

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

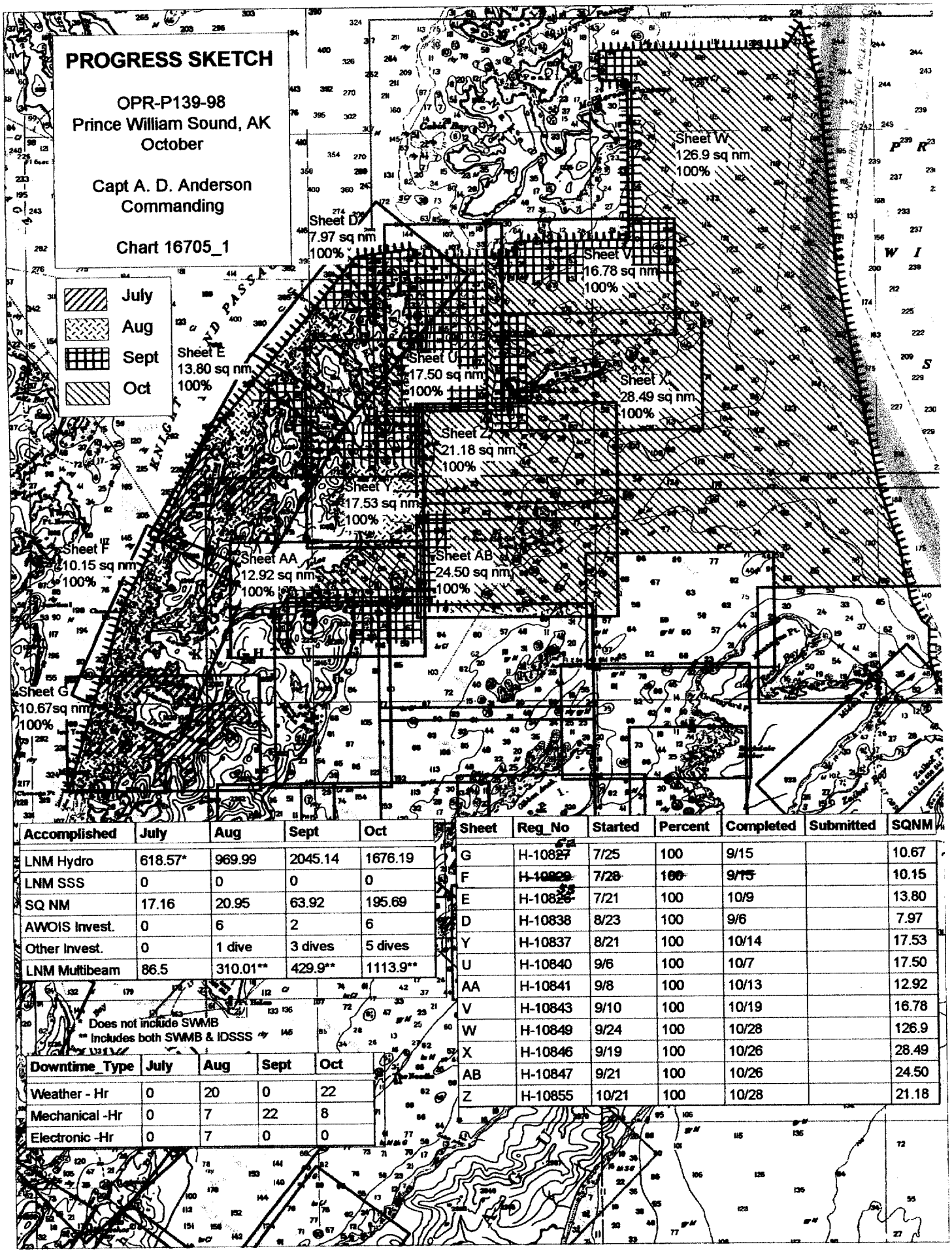
Soundings in fathoms at MLLW and tenths (data collected in Meters)

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.

AWCIS / SURF 1/23/99 MCR

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215

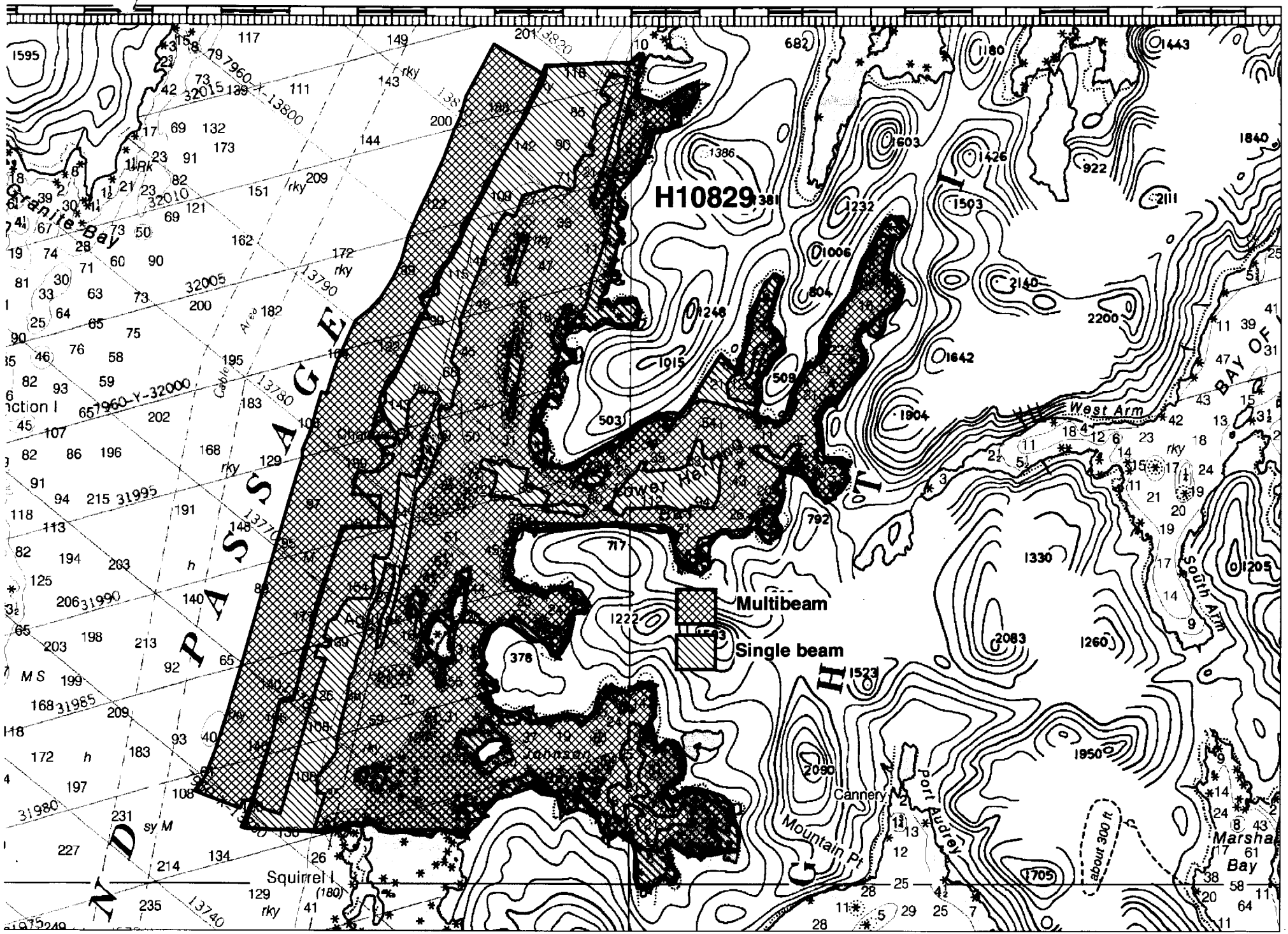


Accomplished	July	Aug	Sept	Oct
LNM Hydro	618.57*	969.99	2045.14	1676.19
LNM SSS	0	0	0	0
SQ NM	17.16	20.95	63.92	195.69
AWOIS Invest.	0	6	2	6
Other Invest.	0	1 dive	3 dives	5 dives
LNM Multibeam	86.5	310.01**	429.9**	1113.9**

* 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

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


H10829
Multibeam
Single beam
Granite Bay
West Arm
South Arm
Cannery
Port Audrey
Mountain Pt
Squirrel I
Marshal Bay
about 300 ft
Johnson
Lower Hot
Cable Area
1595
1443
1840
682
1180
1603
1426
922
2111
1386
1232
1503
1006
804
2140
2200
1248
1015
509
503
1642
1904
792
717
1330
1205
1222
1543
2083
1260
378
1523
2090
1950
1705

Descriptive Report to Accompany Hydrographic Survey H-10829

Field Number RA-10-13-98
Scale 1:10,000
July - September 1998
NOAA Ship RAINIER
Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

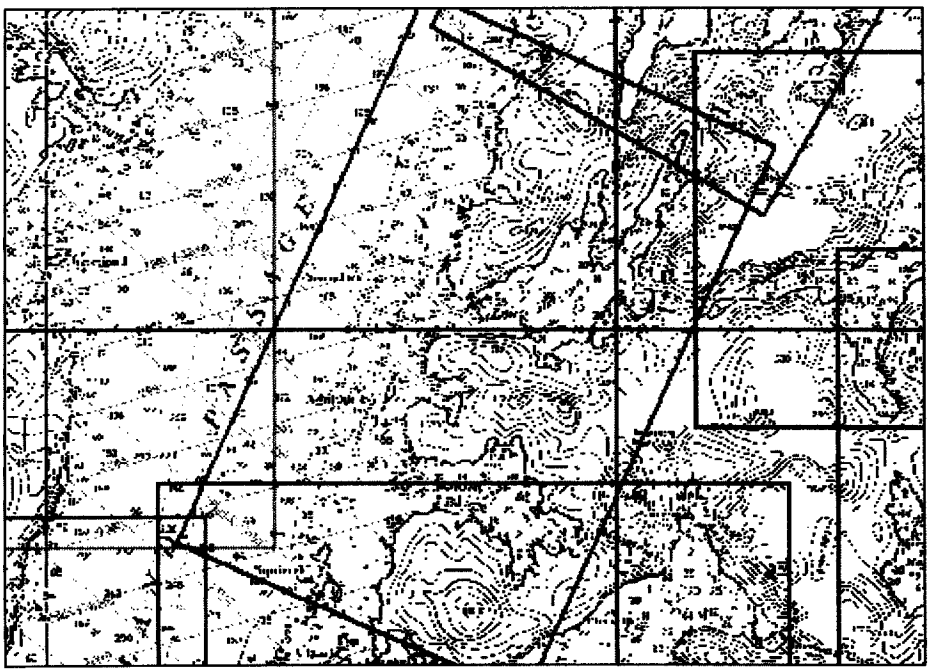
This basic hydrographic survey was completed in the southwest portion of Prince William Sound, Alaska as specified by Project Instructions OPR-P139-RA dated July 10, 1998 and change #1 dated September 8, 1998. Survey H-10829 corresponds to Sheet F as defined in the sheet layout. This survey will provide data to supersede prior surveys performed from 1907 through1910 and will affect Charts 16704, 16705, 16701 and 16700. 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.

Within the 1998 project area is the western side of Knight Island, which is transited by 850-foot cruise line vessels drawing 30 feet of water, and carrying more than 2000 tourists. The Seventeenth U.S. Coast Guard District reported that large cruise ships presently sail through Knight Island Passage an average of three times a week from May to September. Cruise ship traffic is projected to increase 34-percent in the next five years. Due to this type of traffic, the Southwest Alaska Pilots Association has expressed concern over the age and lack of charted soundings in Knight Island Passage

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

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

The survey area is Squirrel Island to Lower Herring Bay. The survey's northern limit is latitude 60° 25' 54" N, the southern limit is 60° 19' ~~48~~ 58" N, the western limit is ~~147° 55' 24"~~ W and the eastern limit is 147° 46' 00" W. Survey limits are shown below on a detail of Chart 16701. ← {147/52/00 W / 147/56/20 W



Occasional light marine traffic was seen within H-10829's survey limits, consisting of mid-sized cruise ships, barges, tugs, and small recreational and fishing vessels. Data acquisition was conducted from July 28 to September 15, 1998 (DN 209 to 258).

C. SURVEY VESSELS ✓

Data were acquired by RAINIER and RAINIER survey launches (vessel numbers 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 3.24 and processed using CARIS 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

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.

* FILED WITH THE HYDROGRAPHIC DATA.

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 used 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. multibeam sonar system, 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.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Sound Velocity Correctors: ✓

Eighteen sound velocity casts were used for this survey. Information on the casts used for single beam and IDSSS hydrography is included in the Survey Information Summary report. All casts are listed in Separate IV, Sounding Equipment Calibrations and Corrections.*

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 singlebeam 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 RAINIER IDSSS data, sound velocity correctors were applied on line during acquisition. Concur. (a) SV casts for singlebeam launches were taken outside of survey limits.
(b) SV cast for SWMB launches & IDSSS (ship) were taken at interval that varies from 3 to 4 hours between casts.

* FILED WITH THE HYDROGRAPHIC DATA.

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 #9 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 in Caris during post-acquisition processing. For RAINIER IDSSS data, offsets were applied on line during acquisition. Concur

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 adjusted with the following time and height correctors for use on this survey in accordance with Project Instructions, Section 5.9, Zoning,and entered into HPS.

Zone Station	Time Corrector (mins)	Range Ratio	HPS Tide Table No.
PWS 35	0	x0.94	Table No. 1
PWS 38	0	x0.94	Table No. 1

For Launch Singlebeam soundings, HPS tide tables were applied to raw sounding data during shipboard processing in HPS. 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.

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

* FILED WITH THE HYDROGRAPHIC DATA.

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
Port Audrey	945-4673	Yes	3-day	7-22-98	09-15-98
Herring Point	945-4691	Yes	30-day	7-20-98	10-16-98

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 on this survey is included in this report.
All soundings were positioned using differential GPS (DGPS). The VHF differential reference stations QUAKE and MATE were the primary sources 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 stations were 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. *

I. SHORELINE (See EVAL RPT., Sec. J)

N/NGS3 supplied photogrammetric shoreline in MapInfo format for DM-10296 and DM-10297 for use as source shoreline. The DM shoreline was imported into Hypack for field verification. In addition, features shown on the current editions of Charts 16701, 16704, and 16705 that are not depicted on the provided DM shoreline were traced in MapInfo by RAINIER personnel and were also imported into Hypack for field verification.

Limited shoreline verification was conducted in accordance with the Project Instructions and FPM 6.2. For this survey, the NALL (Navigable Area Limit Line) was defined by the limit of safe navigation of a survey launch during a period of extreme low (negative) tide. The NALL runs at a distance of 5-50 meters offshore of the apparent low water line. Depths along the NALL are generally 2-15 m below MLLW. Features seen

* FILED WITH THE HYDROGRAPHIC DATA.

offshore of the NALL were positioned with the launch's DGPS by taking Detached Positions. Features seen inshore of the NALL were not positioned. Concur.

Shoreline manuscript and field features were compared to enlargements of charts 16701, 16704, and 16705. There was general agreement between the charted and manuscript shoreline and what the hydrographer found on this survey. There are, however, numerous differences (approximately 115) when analyzing the present features such as rocks, islets, ledges, and reefs. The differences fall into three categories: mis-charted rocks, uncharted features, and mis-named digital manuscript features. The launches disproved mis-charted rocks by taking fixes at the charted locations at negative tide levels and observing the surrounding water for indications of rocks near the surface. It is likely that these rocks were either mis-positioned initially or moved by the cartographer for representation* purposes. The reason for the discovery of numerous uncharted features is uncertain. It is possible that portions of the initial survey were performed during positive tides when the rocks were submerged; the digital shoreline photography was flown at positive tides when the rocks were submerged; or this area has risen since the initial survey, due to the effects of the 1964 earthquake, exposing new rocks. The mis-named digital manuscript features were likely the result of the different perspectives of the hydrographer and the digitizer. Discrepancies between charted and field shoreline should thus be resolved in favor of the manuscript shoreline and field work as shown on the final field Detached Position and Bottom Sample plot provided to PHB. Handwritten notes and features shown on the accompanying SHORELINE NOTES plot are the hydrographer's representation of the features seen inshore of the NALL while slowly transiting along the shore, and are intended to aid chart compilation. Shoreline verification was analyzed during office processing and shown on the smooth sheet as warranted. Concur

The following is a list of all Detached Positions that show discrepancies with charted features. ✓

Fix Number	Charted Feature	Geographic Position	Observed Feature	Notes
22811	rock	60-23-03 N 147-48-26 W ✓	none	del – rock not found
23738	rock	60-20-33 N 147-48-57 W ✓	none	" " " "
23739	rock	60-20-31 N 147-48-52 W ✓	none	" " " "
23741	rock	60-20-24 N 147-49-57 W ✓	none	" " " "
23742	rock	60-20-25 N 147-50-01 W ✓	none	" " " "
23743	rock	60-20-26 N 147-50-08 W ✓	none	" " " "
23744	rock	60-20-40 N 147-50-44 W ✓	none	" " " "
23745	rock	60-20-40 N 147-50-47 W ✓	none	
23746	rock	60-20-49 N 147-51-27 W ✓	ledge	23746-23748 refer to the same ledge
23747	rock	60-20-47 N 147-51-28 W ✓	ledge	
23748	rock	60-20-46 N 147-51-30 W ✓	ledge	
23749	rock	60-20-36 N 147-52-28 W ✓	none	del – rock not found
23750	rock	60-20-27 N 147-52-27 W ✓	none	" " " "
23751	rock	60-20-23 N 147-52-29 W ✓	none	" " " "
23752	rock	60-20-22 N 147-52-29 W ✓	none	" " " "
41602	rock	60-24-31 N 147-51-39 W ✓	reef ✓	high pt. of subm. reef * (?)
42574	rock	60-21-30 N 147-52-44 W ✓	none	del – rock not found
42601	rock	60-22-18 N 147-52-30 W ✓	none	" " " "
43855	rock	60-21-04 N 147-52-28 W ✓	none	" " " "
43857	rock	60-21-04 N 147-52-15 W ✓	none	" " " "
43858	rock	60-21-12 N 147-52-18 W ✓	none	" " " "
43859	rock	60-21-11 N 147-52-12 W ✓	none	" " " "
43884	rock	60-21-14 N 147-52-04 W ✓	none	" " " "
43891	rock	60-21-26 N 147-52-11 W ✓	none	" " " "
46514	rock	60-22-41 N 147-48-06 W ✓	none	" " " "
46526	rock	60-22-45 N 147-48-09 W ✓	none	" " " "
53952	rock	60-20-37 N 147-49-36 W ✓	none	" " " "

* Most of the charted features noted above can be related to corresponding smooth sheet rocks and islets within 50-100 meters.

The following is a list of all Detached Positions that show discrepancies with DM features. ✓

Shall this be on the chart

Fix Number	DM Feature	Geographic Position	Observed Feature	Notes
42678	rock	60-21-06 N 147-53-00 W ✓	reef	chart rk awash as high point of reef.
43906	rock	60-20-50 N 147-51-02 W ✓	islet	chart rock awash at scale.
43907	rock	60-20-48 N 147-51-02 W ✓	islet	Chart rock awash at scale.
50044	rock	60-23-32 N 147-51-43 W ✓	islet	Chart rock awash at scale.
50134	rock	60-23-09 N 147-49-41 W ✓	ledge	Chart rock awash at scale.
50866	2 rocks, islet	60-23-12 N 147-53-01 W	islet / reef	Chart islet & reef as rk @ scale.
51896	rock	60-20-21 N 147-48-31 W	islet	51896-51897 refer islet - chart islet to same islet
51897	rock	60-20-23 N 147-48-35 W	islet	
51928	rock	60-20-35 N 147-49-39 W	islet	chart islet
51935	rock	60-20-21 N 147-49-16 W	reef	51935-51936 refer reef to same reef
51936	rock	60-20-19 N 147-49-15 W	reef	

The following is a list of all Detached Positions taken on new features. It is recommended that they be added to the chart: Concur. ✓

Fix Number	New Feature	Geographic Position	Notes
20438	rock ✓	60-20-51 N 147-53-18 W	* cov 3'
20508	rock ✓	60-20-48 N 147-53-36 W	* (1)
20509	rock ✓	60-20-49 N 147-53-36 W	* (1)
21062	rock ✓	60-20-47 N 147-51-16 W	* cov 2'
21063	ledge ✓	60-20-46 N 147-51-18 W	off of ledge
21064	subm rock ✓	60-20-48 N 147-51-32 W	1½ Rk
22704	rock ✓	60-23-15 N 147-49-37 W	* (0)
22735	rock ✓	60-23-40 N 147-48-33 W	* (1)
22736	ledge ✓	60-23-38 N 147-48-31 W	ledge
22810	islet ~~rock~~	60-23-00 N 147-48-26 W	islet new position for 22811 disproval
23754	rock ✓	60-22-38 N 147-48-06 W	* cov 1'
23755	rock ✓	60-22-38 N 147-48-07 W	* (10)
41600	rock ✓	60-25-29 N 147-49-52 W	* (0)
42571	rock ✓	60-21-27 N 147-52-50 W	* (4)
42597	ledge ✓	60-22-12 N 147-52-22 W	ledge
42598	subm rock	60-22-13 N 147-52-30 W	½ Rk
42650	rock ✓	60-21-34 N 147-52-35 W	* (2)
42675	subm rock ✓	60-21-59 N 147-53-19 W	1¼ Rk
42677	rock ✓	60-22-09 N 147-52-50 W	* (2)
42763	subm rock	60-24-09 N 147-51-35 W	½ Rk
43861	rock ✓	60-20-48 N 147-52-04 W	* (2)
43862	rock	60-20-54 N 147-51-53 W	1½ Rk
43863	rock ✓	60-20-55 N 147-51-50 W	* cov 1' Reported as DTON
43903	rock ✓	60-21-12 N 147-51-33 W	* cov 1'
43904	ledge	60-21-11 N 147-51-41 W	43904-43905 refer ledge - chart ledge as rks @ scale to same ledge
43905	ledge	60-21-11 N 147-51-48 W	
46480	rock ✓	60-22-22 N 147-49-05 W	* cov 3'
46482	rock ✓	60-22-34 N 147-49-40 W	* cov 2'
46508	subm ledge	60-22-32 N 147-48-22 W	subm ledge.

46509	rock ✓	60-22-34 N	147-48-17 W	* cov 3' - Chart as ⁜
50007	rock ✓	60-24-07 N	147-50-42 W	* cov 3' - Chart as ⁜
50033	reef	60-23-53 N	147-51-10 W	50033-50036 refer to same reef; Chart reef as rk @ scale.
50034	reef ✓	60-23-56 N	147-51-10 W	
50035	reef	60-23-59 N	147-51-07 W	
50036	reef	60-24-01 N	147-51-06 W	
50037	rock ✓	60-23-49 N	147-51-02 W	* (2)
50038	rock ✓	60-23-49 N	147-51-01 W	* (4)
50041	rock ✓	60-23-40 N	147-51-39 W	* (5)
50043	rock ✓	60-23-38 N	147-51-50 W	* (2)
50045	rock ✓	60-23-25 N	147-51-44 W	* (4)
50046	rock ✓	60-23-21 N	147-51-46 W	½ Rk
50133	ledge	60-23-16 N	147-49-33 W	ledge
50178	rock	60-22-58 N	147-51-17 W	½ Rk
50893	rock	60-22-31 N	147-51-47 W	½ Rk
50899	rock	60-22-23 N	147-51-47 W	½ Rk
50973	rock	60-21-46 N	147-51-21 W	* Cov 3' - Chart as ⁜
50974	rock	60-21-54 N	147-51-10 W	* (1) - Chart as ⁜
50987	rock	60-21-52 N	147-51-33 W	* (2)
50996	rock	60-21-55 N	147-51-55 W	½ Rk
51026	rock	60-21-47 N	147-52-36 W	* Cov 1' - chart as ⁜
51032	rock	60-21-50 N	147-52-31 W	* (4)
51416	rock	60-25-17 N	147-50-02 W	* (4)
51929	rock	60-20-35 N	147-49-14 W	* Cov 2' - chart as ⁜
51930	rock	60-20-35 N	147-49-09 W	¾ Rk
53245	rock	60-23-47 N	147-51-39 W	* Cov 1' - chart as ⁜
53964	rock	60-20-47 N	147-49-24 W	* (4)
53965	rock	60-20-45 N	147-49-26 W	* (2)
53966	reef	60-20-47 N	147-49-38 W	53966-53967 refer to same reef Chart reef as rk @ scale.
53967	reef	60-20-48 N	147-49-40 W	
53996	rock	60-20-59 N	147-49-47 W	* (4)
54004	ledge	60-21-11 N	147-49-44 W	ledge - chart ledge as rk @ scale.
54005	rock	60-21-08 N	147-49-46 W	* (2)
54053	rock	60-21-16 N	147-50-10 W	1 Rk
54201	rock	60-22-49 N	147-47-51 W	* (7)
54227	ledge	60-23-00 N	147-47-27 W	ledge - chart ledge as rk @ scale.
54255	rock	60-22-59 N	147-47-06 W	* (1)
54307	ledge	60-23-48 N	147-46-41 W	ledge - chart ledge as rk @ scale.
54366	rock	60-24-33 N	147-46-26 W	* (3)
54367	rock	60-24-30 N	147-46-26 W	* (1) - chart as ⁜
54432	rock	60-24-17 N	147-46-21 W	* (1) - chart as ⁜
54433	rock	60-24-19 N	147-46-20 W	* (3)
54434	rock	60-24-18 N	147-46-17 W	* (4)

It should be noted that Detached Position 23739 (a charted rock disproval) has a HDOP of 4.1, which is above the allowable limit. Since the area was surveyed with both singlebeam and 100% SWMB and no rock was detected, the DP was retained for disproval purposes. The hydrographer recommends removal of the charted rock. Concur.

There was also a DP taken on a new rock in Lower Herring Bay, which had to be rejected due to bad DGPS positioning. Concur This rock is not on the MapInfo DP&BS plot, but is shown on the accompanying handwritten SHORELINE NOTES plot as R23720.

It should also be noted that in the area of 60-25-00 N / 147-50-20 W there are 2 islets and 3 rocks brought through to the MapInfo DP&BS plot from DM 10297 which are not addressed. DPs were not taken on these features, as they fell inside the NALL, but they were observed in the field and their positions can be verified by examination of the soundings in the area. These features were compiled on the smooth sheet based on DM-10297 information.

J. CROSSLINES

Crosslines agreed very well with mainscheme hydrography. Depths generally agreed within one meter. There were a total of 25.94 nautical miles of crosslines, comprising 14.8% of mainscheme hydrography. Concur

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

The following contemporary surveys junction with H-10829:

Registry #	Scale	Date	Junction side
H-10826 53	1:10,000	1998	North
H-10827 52	1:10,000	1998	South

Soundings on these 1998 surveys were found to be in good agreement, matching within 1-2 meters. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum. Concur

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

The following prior surveys share common area with H-10829:

Registry #	Scale	Date	Area covered
H-3187	1:20,000	1910	Entire Survey
H-3027	1:20,000	1909	Southwest Corner
H-2916	1:40,000	1907	West Edge

} VALDEZ DATUM

Prior surveys H-3027 and H-2916 each cover small portions of the present survey H-10829. The soundings from these priors agree very well with the present survey. Prior survey H-3187 covers the entire area of the present survey, and with the exception of the features described in Section I, is also in generally good agreement. The newly acquired soundings either match prior H-3187 depths such as in the area south of Channel Rock (NE: 60-22-17 N/147-53-09 W, SE: 60-21-35 N/147-53-31 W, SW: 60-21-30 N/147-54-15 W, NW: 60-21-59 N/147-54-26 W), or reveal shoaler areas as shown in the SE area of Johnson Bay (N: 60-20-42 N/147-50-13 W, E: 60-20-32 N/147-49-31 W, S: 60-20-25 N/147-49-54 W). There are numerous isolated areas where shoaler soundings were discovered because of the increased sounding densities from this survey. Several of these shoals were reported as Dangers to Navigation. (See Section N)

The following are examples of H-10829 soundings in the area south of Channel Rock that are considered good matches with prior H-3187:

Fix	H-10829 Sounding	H-3187 Sounding	Geographic Position
44,904	119.1 feet (19.8 FM)	119 feet (19.8 FM)	60-22-17 N / 147-53-12 W
44,683	174.2 feet (29 FM)	174 feet (29 FM)	60-21-44 N / 147-53-36 W
21,571	448 feet (74 FM)	450 feet (75 FM)	60-21-46 N / 147-54-03 W

The following are examples of H-10829 soundings in SE Johnson Bay that are considered significantly shoaler than soundings from prior H-3187:

Fix	H-10829 Sounding	H-3187 Sounding	Geographic Position
92,422	122 feet (18.7 FM)	141 feet (23.5 FM)	60-20-25 N / 147-49-53 W
40,945	111 feet (18.5 FM)	135 feet (22.5 FM)	60-20-31 N / 147-49-37 W
41,157	126 feet (21 FM)	159 feet (26.5 FM)	60-20-42 N / 147-50-10 W

There are two exceptions to the above, where the prior shows shoaler soundings than were found on the present survey. The first is a prior sounding of 66 feet at 60-23-03 N / 147-48-08 W (shown as 11 fathoms on the chart), where H-10829 has 80-120 foot soundings. The second is a 164 foot prior sounding at 60-24-54 N / 147-51-26 W (shown as 27 fathoms on the chart), surrounded by 215-300 foot soundings from H-10829. Both soundings are within 100-200m of similar soundings from the present survey, so it is believed that they are good soundings that were positioned incorrectly. It is recommended that all soundings acquired on the present survey supersede those from the prior surveys. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

M. ITEM INVESTIGATIONS ✓

No AWOIS items were assigned on this survey. CONCUR.

N. COMPARISON WITH THE CHART See Eval Rpt., Section O.

Chart 16700
24th Ed. Jan. 11, 1992 ✓
Scale: 1:200,000

Chart 16701
16th Ed. June 1, 1996 ✓
Scale: 1:81,436

Chart 16704
11th Ed. Apr. 21, 1990 ✓
Scale: 1:20,000

Chart 16705
17th Ed. Sept. 27, 1997 ✓
Scale: 1:80,000

The survey was compared with Charts 16701, 16704, and 16705. The coincident depths are in good agreement, generally within one fathom. Any discrepancies in depths have been discussed in Section L, Comparison with Prior Surveys. There were numerous differences concerning non-sounding features. These differences are discussed in Section I. Final sounding comparisons will be made at PHB after reduction to final vertical datum.

Dangers to Navigation ✓ (See EVAL RPT., Sec. O)

Ten dangers to navigation were reported to the Seventeenth Coast Guard District for H-10829. Copies of the correspondence ~~can be found in Appendix I of~~ are included in this report.

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

Survey H-10829 is complete and adequate to supersede prior soundings and features in their common areas. Concur. As a general rule, areas shoaler than 70 meters were ensonified with SWMB producing 100% bottom coverage. Care was taken to conduct all shoreline investigations during times of negative tides.

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

There are no navigational aids 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 ✓

It is apparent, based on the number of rocks that did not appear on the digital shoreline maps, that the related photogrammetry was not tide coordinated. It is recommended that shoreline manuscripts be compiled from photographs taken at MLLW. It allows for quicker progression of shoreline verification and drastically reduces the complexity of the survey field records. CONCUR.

T. REFERRAL TO REPORTS ✓

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

Title	Date Sent	Office
OPR-P139-RA-1998 Horizontal Control Report	Nov. 1, 1998	N/CS34
Project related data for OPR-P139-RA	Incremental	N/CS34

Respectfully Submitted,

Danielle Pattison

Danielle B. Pattison
Senior Survey Technician

Approved and Forwarded,

Alan D. Anderson

Alan D. Anderson
Captain, NOAA
Commanding Officer

Survey Information Summary

Project: OPR-P139-RA **Project Name:** PRINCE WILLIAM SOUND

Instructions Dated: 7/10/98 **Project Change Info:**

Change #	Dated
1	9/8/98

Sheet Letter: F **Registry Number:** H-10829

Sheet Number: RA-10-13-98

Survey Title: Squirrel Island to Lower Herring Bay

Data Acquisition Dates: **From:** 28-Jul-98 209 **To:** 15-Sep-98 258

Vessel Usage Summary

VESNO	MS	SPLITS	DEV	XL	S/L	DP	BS	DIVE
2120								
2121								
2122	7	1		1	4	7		
2123								
2124	6	6		1	4	3		
2125	2	3		2	7	7	1	
2126								

Sound Velocity Cast Information

Launch Table #	Ship Table #	Cast DN	Max Depth	Position	Applicable DN
2		208	647.8	60/18/06	fdh-221
				147/57/30	
4		222	722.3	60/18/12	222-ldh
				147/57/18	

Tide Zone Information

Zone #	Time Corr.	Height Corr.
PWS35	0 hr 0 min	0.94
PWS38	0 hr 0 min	0.94

Tide Gage Information

Tide Gage #	Gage Name	Installed	Removed
945-4691	HERRING POINT	7/20/98	10/16/98
945-4673	PORT AUDREY	7/22/98	9/15/98

Statistics Summary

Type	Total:
BS	32
DP	168
MBMS	9.2
MBSP	1.5
MS	174.99
S/L	38.25
SPLIT	164.62
SWMB	155.83
XL	25.94

Percent XL:	14.8%
SQNM:	10.15

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
November 1, 1998

Commander (mon)
Seventeenth Coast Guard District
Post Office Box 25517
Juneau, Alaska 99802-5517

Dear CDR Hamblett:

It is requested that the following dangers to navigation be included in the Local Notice to Mariners. The NOAA Ship RAINIER positioned these features while conducting hydrographic surveys in southwestern Prince William Sound, Alaska. The dangers are shown graphically on the attached chartlets and are listed below by chart without duplication. The following dangers to navigation affect chart 16701, 17th edition, 1998, 1:81,436, chart 16704, 12th edition, 1998, 1:20,000, and chart 16700, 25th edition, 1996, 1:200,000. All positions are on the NAD 83 datum and depths have been corrected to Mean Lower Low Water using predicted tides.

Feature	Depth (fm)	Latitude (N)	Longitude (W)	Position #	Depth (m)	Survey #
Shoal	5.3	60:19:33.347	147:46:52.605	21904	9.8	H-10852
Shoal	3.0	60:19:26.165	147:44:52.044	22350	5.6	H-10852
Shoal	1.6	60:17:27.773	147:50:49.432	22951	3.0	H-10852
Shoal	0.6	60:19:18.990	147:44:44.332	23307	1.2	H-10852
Shoal	8.8	60:17:48.249	147:56:33.115	42254	16.2	H-10852
Shoal	1.5	60:17:21.387	147:54:02.693	55080	2.8	H-10852
Shoal	5.2	60:20:22.223	147:54:48.370	56007	9.5	H-10852
Shoal	2.9	60:19:14.067	147:48:46.613	60308	5.3	H-10852
Rock Awash	-0.7	60:19:22.305	147:55:03.673	41740	-1.1	H-10852
Shoal	1.0	60:19:19.447	147:54:04.224	41704	1.9	H-10852
Rock Awash	-0.9	60:19:25.471	147:45:01.988	23302	-1.6	H-10852
Rock Awash	-0.2	60:19:14.118	147:44:17.157	23331	-0.4	H-10852
Rock Awash	-0.3	60:17:28.736	147:54:04.540	20203	-0.5	H-10852
Rock Awash	-0.1	60:17:09.226	147:54:16.406	20223	-0.2	H-10852
Rock Awash	-0.6	60:19:27.542	147:47:07.105	21287	-1.1	H-10852
Rock Awash	-1.1	60:20:26.833	147:53:36.296	24402	-2.0	H-10852
Rock Awash	-2.5	60:18:55.218	147:52:59.016	41387	-4.5	H-10852
Rock Awash	-0.1	60:20:55.284	147:51:49.349	43863	-0.2	H-10829
Shoal	3.8	60:20:32.289	147:50:03.077	41140	7.0	H-10829
Shoal	6.6	60:22:53.912	147:48:31.327	46856	12.2	H-10829
Shoal	4.6	60:23:30.942	147:48:28.360	22821	8.4	H-10829
Shoal	3.5	60:24:05.662	147:46:40.037	22240	6.5	H-10829
Rock Awash	-1.2	60:21:26.017	147:52:43.494	42575	-2.2	H-10829

The following dangers to navigation affect chart 16701, 17th edition, 1998, 1:81,436, chart 16705, 17th edition, 1997, 1:80,000, and chart 16700, 25th edition, 1996, 1:200,000.

Feature	Depth (fm)	Latitude (N)	Longitude (W)	Position #	Depth (m)	Survey #
Shoal	4.7	60:24:31.500	147:50:51.381	50534	8.7	H-10829
Shoal	1.6	60:23:10.415	147:52:43.511	42543	2.9	H-10829
Shoal	3.4	60:24:24.829	147:51:45.403	50432	6.3	H-10829
Shoal	3.3	60:23:37.314	147:48:44.568	46918	6.1	H-10829

The following dangers to navigation affect chart 16705, 17th edition, 1997, 1:80,000, and chart 16700, 25th edition, 1996, 1:200,000.

Feature	Depth (fm)	Latitude (N)	Longitude (W)	Position #	Depth (m)	Survey #
Shoal	2.7	60:31:04.582	147:41:40.031	20721	4.9	H-10838
Shoal	8.3	60:31:08.166	147:42:07.405	20766	15.2	H-10838
Shoal	4.9	60:31:52.922	147:40:27.188	88872	9.0	H-10838
Shoal	2.5	60:32:48.488	147:40:15.980	85877	4.6	H-10838
Shoal	2.3	60:32:57.334	147:39:48.222	87115	4.2	H-10838
Shoal	4.6	60:34:08.738	147:36:52.297	82638	8.4	H-10838
Shoal	1.3	60:34:57.193	147:34:15.162	85280	2.4	H-10838
Shoal	3.0	60:35:05.658	147:34:08.751	85172	5.5	H-10838
Shoal	4.0	60:35:03.773	147:33:40.229	85470	7.3	H-10838
Shoal	4.6	60:27:59.07	147:48:09.45	41530	8.5	H-10853
Shoal	1.3	60:27:29.98	147:45:41.75	20730	2.4	H-10853
Shoal	9.1	60:27:22.07	147:45:25.47	50663	16.7	H-10853
Shoal	6.5	60:27:04.46	147:43:36.05	22059	11.9	H-10853
Shoal	2.5	60:27:51.34	147:43:23.12	53069	4.7	H-10853
Rock	0.2	60:29:44.20	147:43:47.67	21263	0.3	H-10853
Shoal	2.4	60:30:54.85	147:43:04.58	26488	4.5	H-10853
Shoal	9.1	60:31:34.11	147:42:22.66	26021	16.7	H-10853
Shoal	0.8	60:30:24.49	147:40:04.21	SWMB	1.4	H-10853
Shoal	6.3	60:29:55.32	147:40:29.20	54546	11.5	H-10853
Shoal	5.2	60:29:05.25	147:40:09.45	57324	9.5	H-10853
Shoal	2.3	60:29:00.51	147:40:17.10	54231	4.2	H-10853
Shoal	8.2	60:29.42.42	147:40:38.94	54446	15.1	H-10853
Rock Awash	-0.8	60:29:57.35	147:41:10.87	53903	-1.4	H-10853
Rock	0.9	60:27:52.43	147:43:37.07	24745	1.7	H-10853
Reef	1.4	60:26:46.43	147:43:08.84	42546	2.6	H-10853

This is advance information subject to office review. Questions concerning this letter should be directed to the Chief, Pacific Hydrographic Branch, (206) 526-6835. Refer to survey project OPR-P139-RA-98 and Danger to Navigation message RA-10-98. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

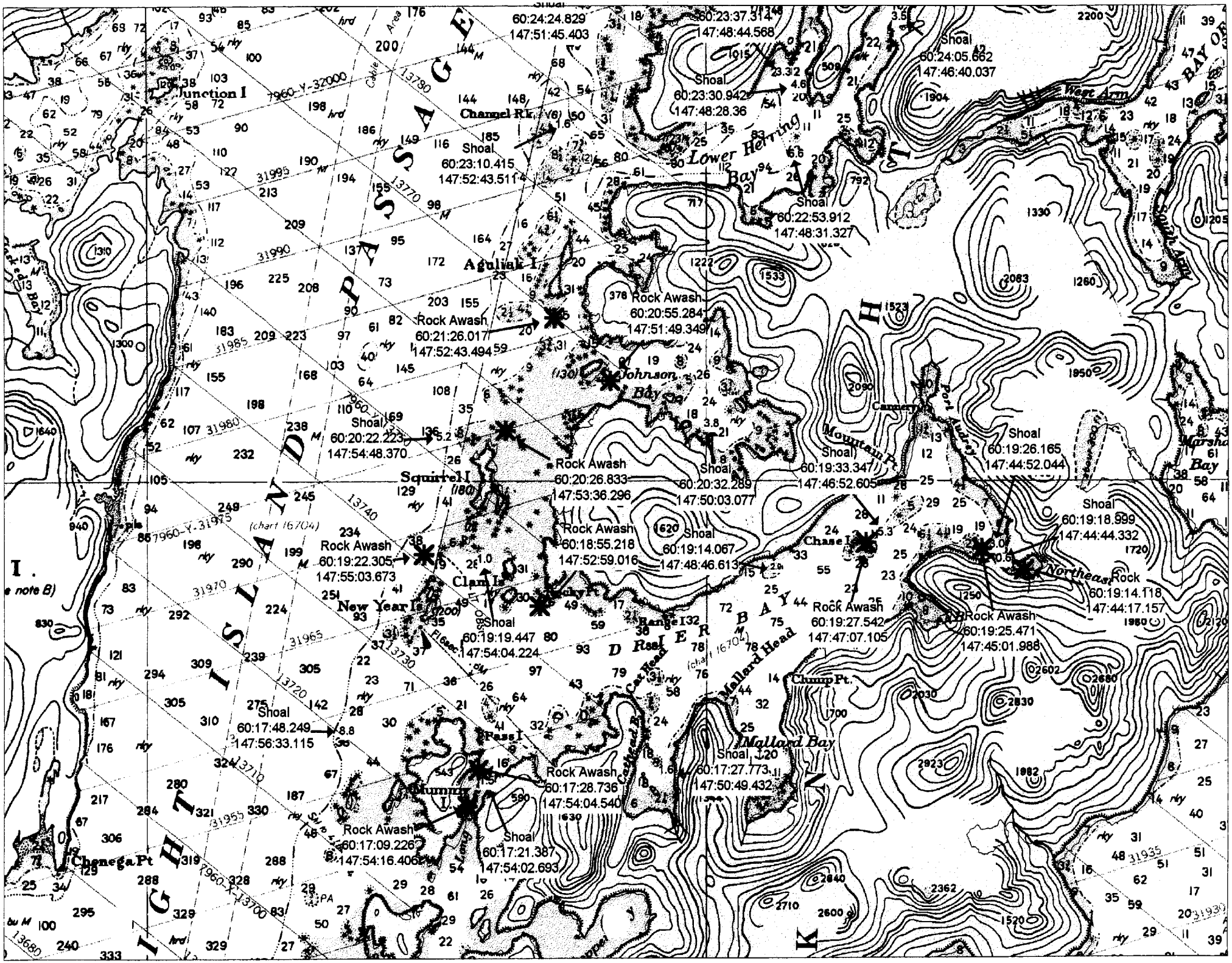
Sincerely,

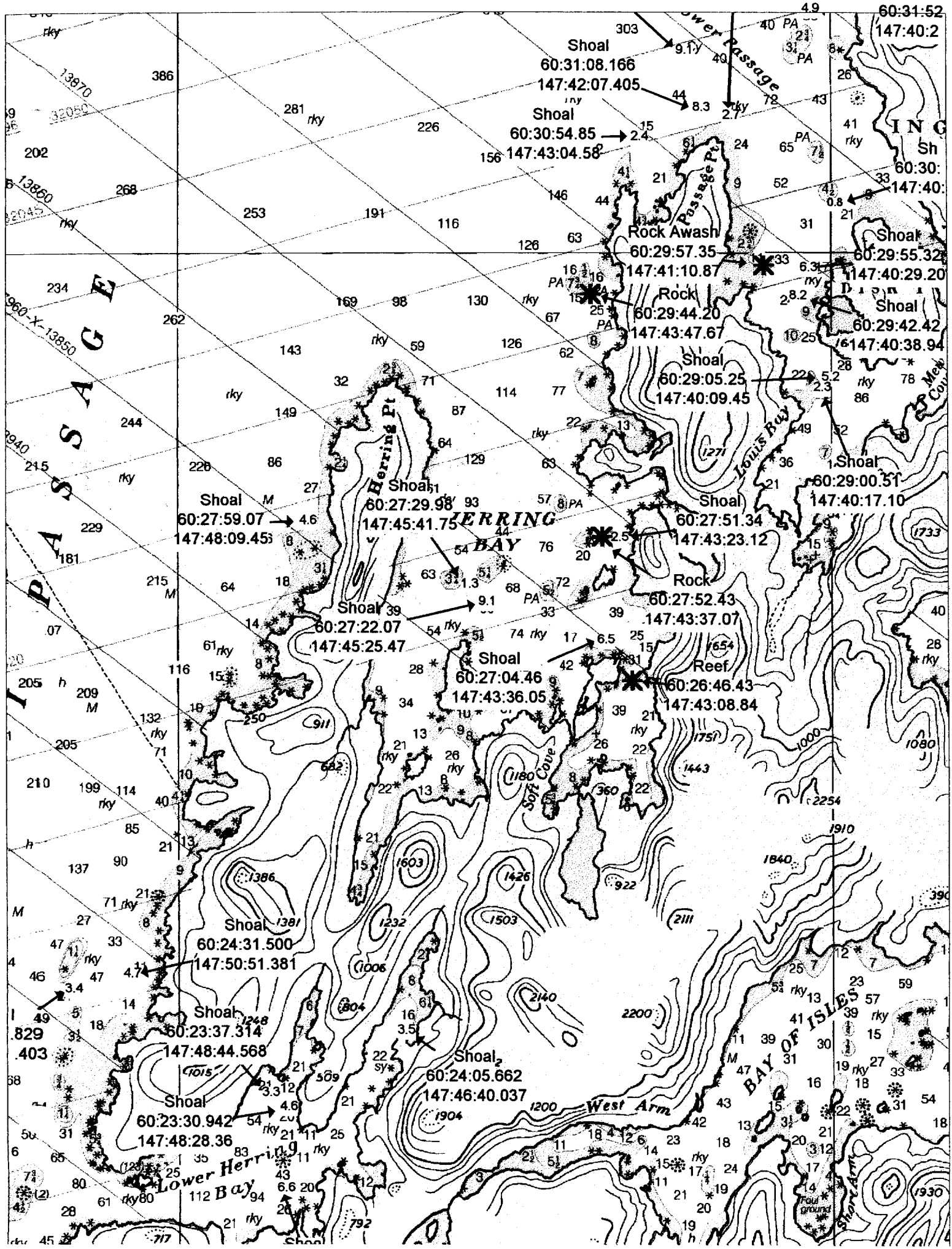
Allan D. Anderson

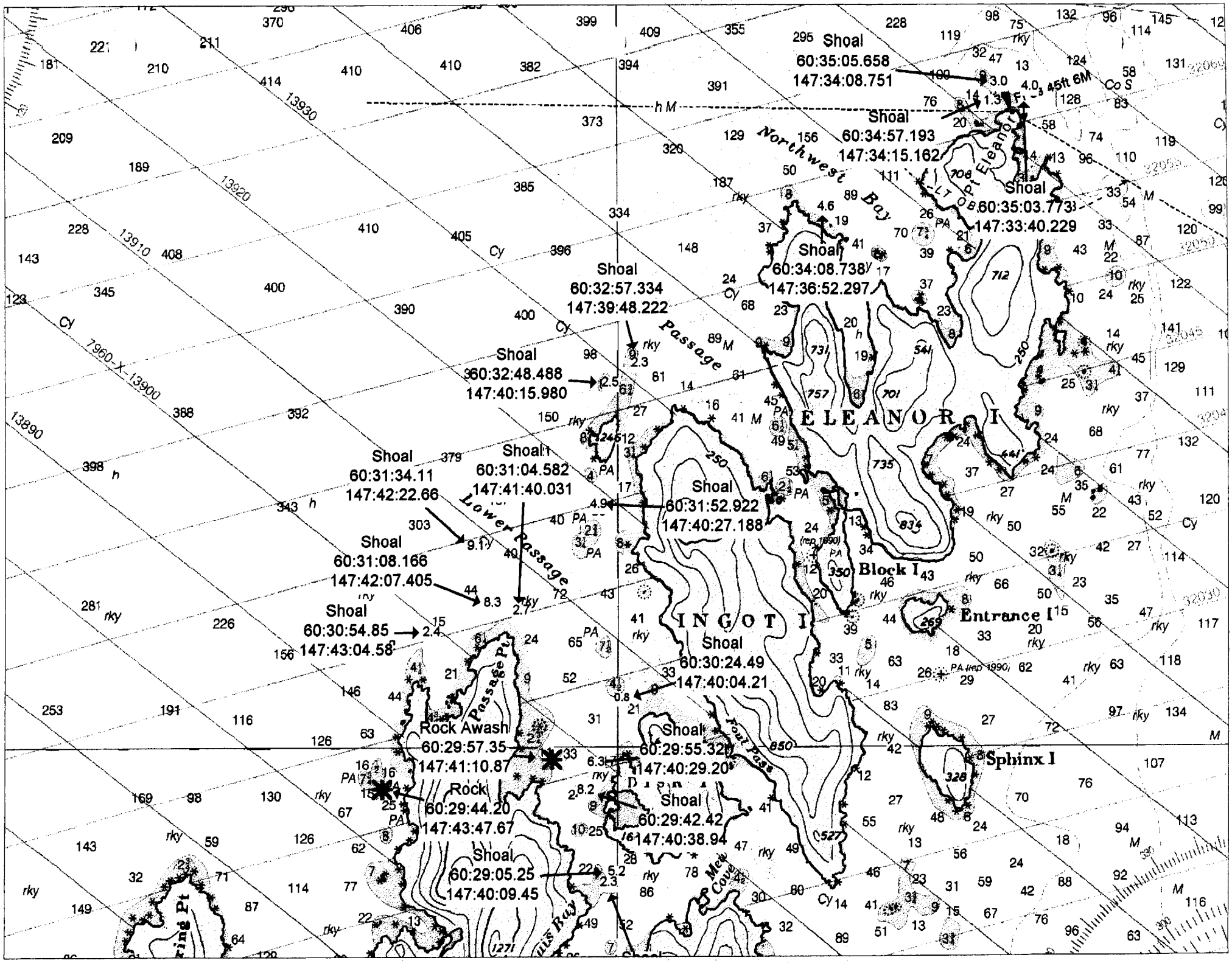
Alan D. Anderson
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34


PASSAGE
ISLAND
Junction I
Channel Rk
Shoal
60:23:10.415
147:52:43.511
Aguliak I
Rock Awash
60:21:26.017
147:52:43.494
Shoal
60:20:22.223
147:54:48.370
Squirrel I
Rock Awash
60:20:26.833
147:53:36.296
Rock Awash
60:19:22.305
147:55:03.673
New Year I
Clam I
Shoal
60:19:19.447
147:54:04.224
Shoal
60:17:48.249
147:56:33.115
Pass I
Mummy I
Rock Awash
60:17:09.226
147:54:16.406
Shoal
60:17:21.387
147:54:02.693
Rock Awash
60:17:28.736
147:54:04.540
Chenega Pt
Rock Awash
60:18:55.218
147:52:59.016
Shoal
60:19:14.067
147:48:46.613
Shoal
60:20:32.289
147:50:03.077
Rock Awash
60:20:55.284
147:51:49.349
Shoal
60:22:53.912
147:48:31.327
Shoal
60:23:30.942
147:48:28.36
Shoal
60:23:37.314
147:48:44.568
Shoal
60:24:24.829
147:51:45.403
Shoal
60:24:05.662
147:46:40.037
Lower Herring Bay
West Arm
South Arm
Johnson Bay
Mountain Pt
Cannery
Port Audrey
Shoal
60:19:33.347
147:46:52.605
Shoal
60:19:26.165
147:44:52.044
Shoal
60:19:18.999
147:44:44.332
Northeast Rock
60:19:14.118
147:44:17.157
Chase I
Rock Awash
60:19:27.542
147:47:07.105
Rock Awash
60:19:25.471
147:45:01.988
Range I
Mallard Head
Chump Pt
Mallard Bay
Shoal
60:17:27.773
147:50:49.432
Marsha Bay
BAY OF
(chart 16704)


Shoal
60:31:08.166
147:42:07.405
Shoal
60:30:54.85
147:43:04.58
Rock Awash
60:29:57.35
147:41:10.87
Rock
60:29:44.20
147:43:47.67
Shoal
60:29:55.32
147:40:29.20
Shoal
60:29:42.42
147:40:38.94
Shoal
60:29:05.25
147:40:09.45
Shoal
60:29:00.51
147:40:17.10
Shoal
60:27:59.07
147:48:09.45
Shoal
60:27:29.98
147:45:41.75
Shoal
60:27:51.34
147:43:23.12
Rock
60:27:52.43
147:43:37.07
Shoal
60:27:22.07
147:45:25.47
Shoal
60:27:04.46
147:43:36.05
Reef
60:26:46.43
147:43:08.84
Shoal
60:24:31.500
147:50:51.381
Shoal
60:23:37.314
147:48:44.568
Shoal
60:24:05.662
147:46:40.037
Shoal
60:23:30.942
147:48:28.36
Herring Pt
HERRING BAY
Passage Pt
Lower Passage
Louis Bay
Soft Cove
West Arm
BAY OF ISLES
Lower Herring Bay
Short Arm
Foul ground


Shoal
60:35:05.658
147:34:08.751
Shoal
60:34:57.193
147:34:15.162
Shoal
60:35:03.773
147:33:40.229
Shoal
60:34:08.738
147:36:52.297
Shoal
60:32:57.334
147:39:48.222
Shoal
60:32:48.488
147:40:15.980
Shoal
60:31:34.11
147:42:22.66
Shoal
60:31:04.582
147:41:40.031
Shoal
60:31:52.922
147:40:27.188
Shoal
60:31:08.166
147:42:07.405
Shoal
60:30:54.85
147:43:04.58
Shoal
60:30:24.49
147:40:04.21
Rock Awash
60:29:57.35
147:41:10.87
Shoal
60:29:55.32
147:40:29.20
Rock
60:29:44.20
147:43:47.67
Shoal
60:29:42.42
147:40:38.94
Shoal
60:29:05.25
147:40:09.45
Northwest Bay
Lower Passage
Passage Pt
Foul Pass
Mew Cove
ELEANOR I
INGOT I
Block I
Entrance I
Sphinx I
Pt Eleanor
LT OB
45ft 6M
Co S
h M
13930
13920
13910
7960-X-13900
13890

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF COAST SURVEY
Pacific Hydrographic Branch
Seattle, Washington 98115-0070

October 22, 1999

Commander (OAN)
Seventeenth Coast Guard District
P.O. Box 25517
Juneau, AK 99802

Dear Sir:

During office review of hydrographic survey H-10829, Alaska, Southwest Prince William Sound, Knight Island Passage, Squirrel Island to Lower Herring Bay, twenty-three (23) additional dangers to navigation have been identified and affects the following charts.

Chart	Edition/Date	Scale	Datum
16704	12th/May 16, 1998	1:20,000	NAD 83
16705	18th/March 27, 1999	1:80,000	NAD 83

The attached information is provided for publication in the Local Notice to Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Branch at (206) 526-6836.

Sincerely,

James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Enclosures

cc: NIMA
N/CS261
Navigation Advisor, Alaska

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10829

Survey Title:	State:	ALASKA
	Locality:	SOUTHWEST PRINCE WILLIAM SOUND
	Sublocality:	KNIGHT ISLAND PASSAGE, SQUIRREL I. TO LOWER HERRING BAY

Project Number: OPR-P139-RA, NOAA Ship RAINIER

Survey Date: July 28-September 15, 1998

Soundings and features are reduced to Mean Lower Low Water using approved tides and are positioned on NAD 83.

Chart affected: 16704, 12th Edition/May 16, 1998

DANGER TO NAVIGATIION	LATITUDE(N)	LONGITUDE(W)
Shoal, covers 8 fathoms	60/21/41.637	147/53/13.557
Shoal, covers 3 fathoms	60/21/27.268	147/53/14.359
Shoal, covers 5 fathoms	60/21/12.767	147/53/16.652
Shoal, covers 4 fathoms	60/21/04.983	147/50/21.938
Shoal, covers 9 fathoms	60/21/00.237	147/50/52.778
Rock uncovers	60/20/59.432	147/49/46.916
Shoal, covers 7 fathoms	60/20/54.844	147/51/02.697
Shoal, covers 7 ½ fathoms	60/20/54.405	147/51/24.307
Shoal, covers 4 fathoms	60/20/53.587	147/53/54.784
Shoal, covers 2 ¾ fathoms	60/20/48.755	147/49/50.277
Shoal, covers 3 ¼ fathoms	60/20/34.415	147/49/33.051
Shoal, covers 1 ¼ fathoms	60/20/26.565	147/54/19.194

Chart affected: 16705, 18th Edition/March 27, 1999, scale 1:80,000, NAD 83

DANGER TO NAVIGATION	LATITUDE(N)	LONGITUDE(W)
Rock awash	60/25/28.822	147/49/52.439
Rock uncovers	60/25/16.626	147/50/02.144
Shoal, covers 2 ¼ fathoms	60/24/54.017	147/50/47.819
Shoal, covers 3 ¼ fathoms	60/24/44.909	147/50/32.506
Submerged rock	60/24/08.594	147/51/35.347

Rock awash	60/23/58.331	147/51/11.619
Submerged rock	60/23/17.364	147/51/48.420
Shoal, covers 8 fathoms	60/23/21.937	147/48/25.096
Shoal, covers 9 fathoms	60/23/11.052	147/48/26.188
Shoal, covers 5 ¼ fathoms	60/23/11.042	147/48/00.970
Shoal, covers 6 fathoms	60/23/00.547	147/52/57.320

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6836.

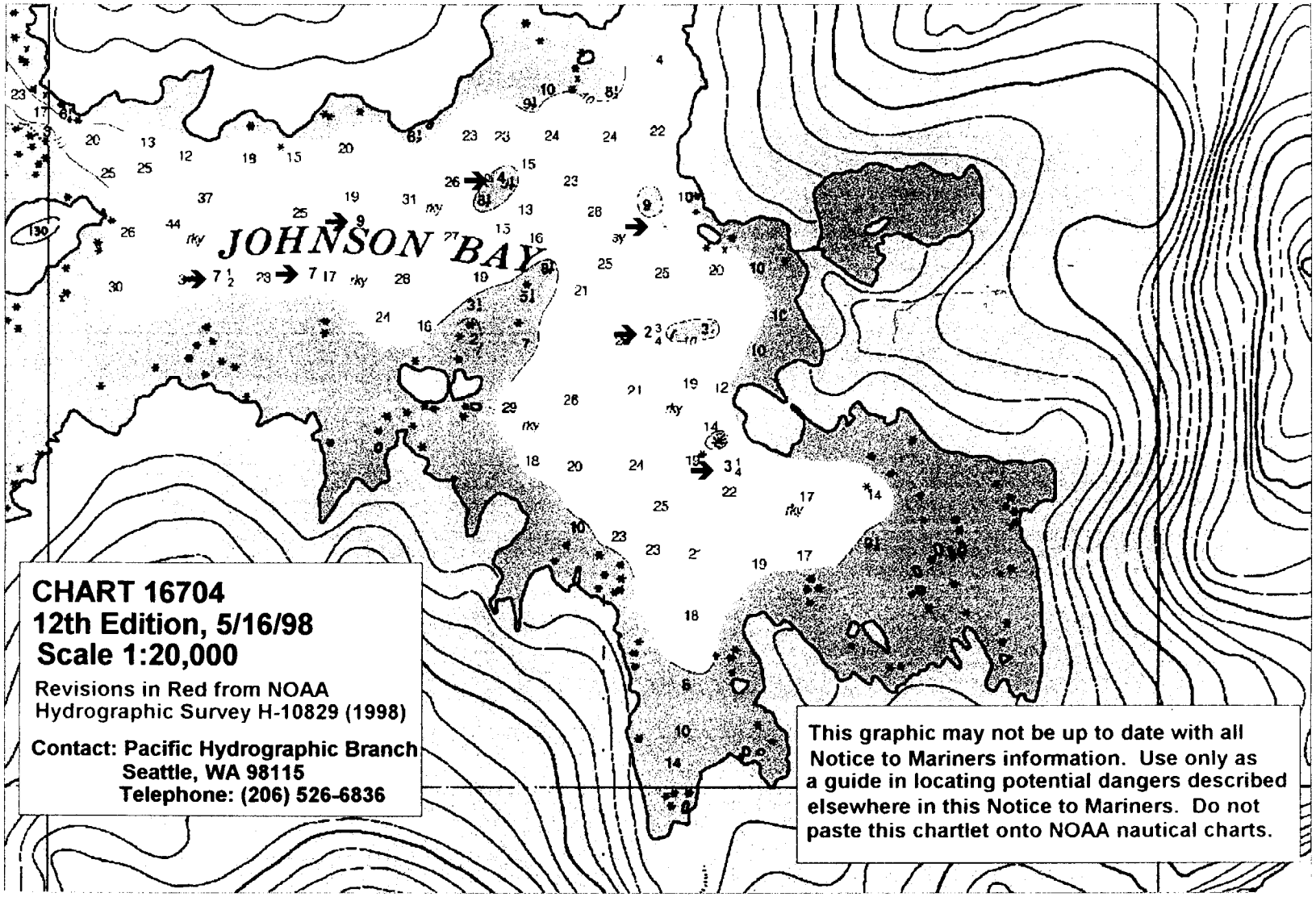


CHART 16704
12th Edition, 5/16/98
Scale 1:20,000

Revisions in Red from NOAA Hydrographic Survey H-10829 (1998)

Contact: Pacific Hydrographic Branch
Seattle, WA 98115
Telephone: (206) 526-6836

This graphic may not be up to date with all Notice to Mariners information. Use only as a guide in locating potential dangers described elsewhere in this Notice to Mariners. Do not paste this chartlet onto NOAA nautical charts.

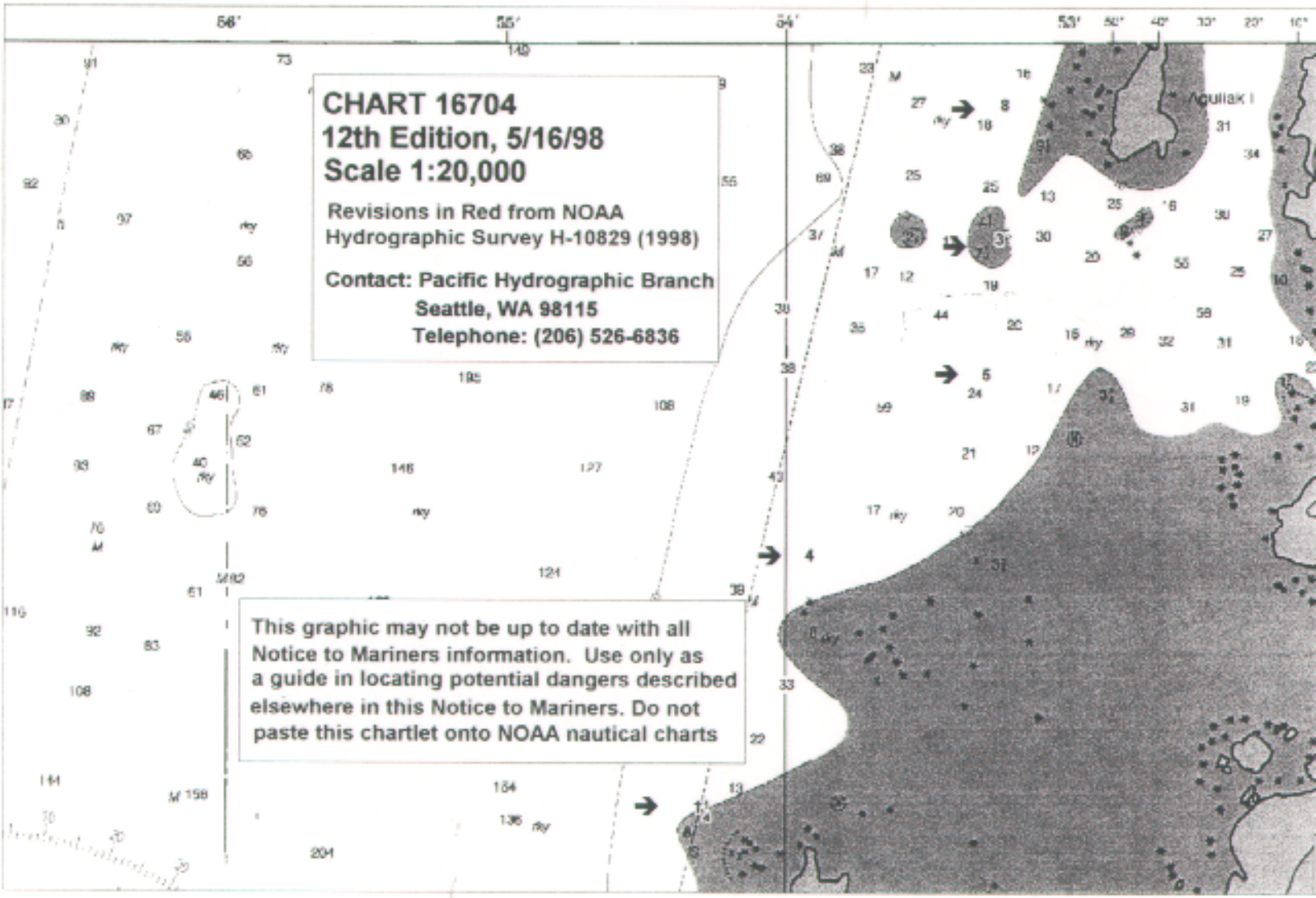


CHART 16704
12th Edition, 5/16/98
Scale 1:20,000
Revisions in Red from NOAA
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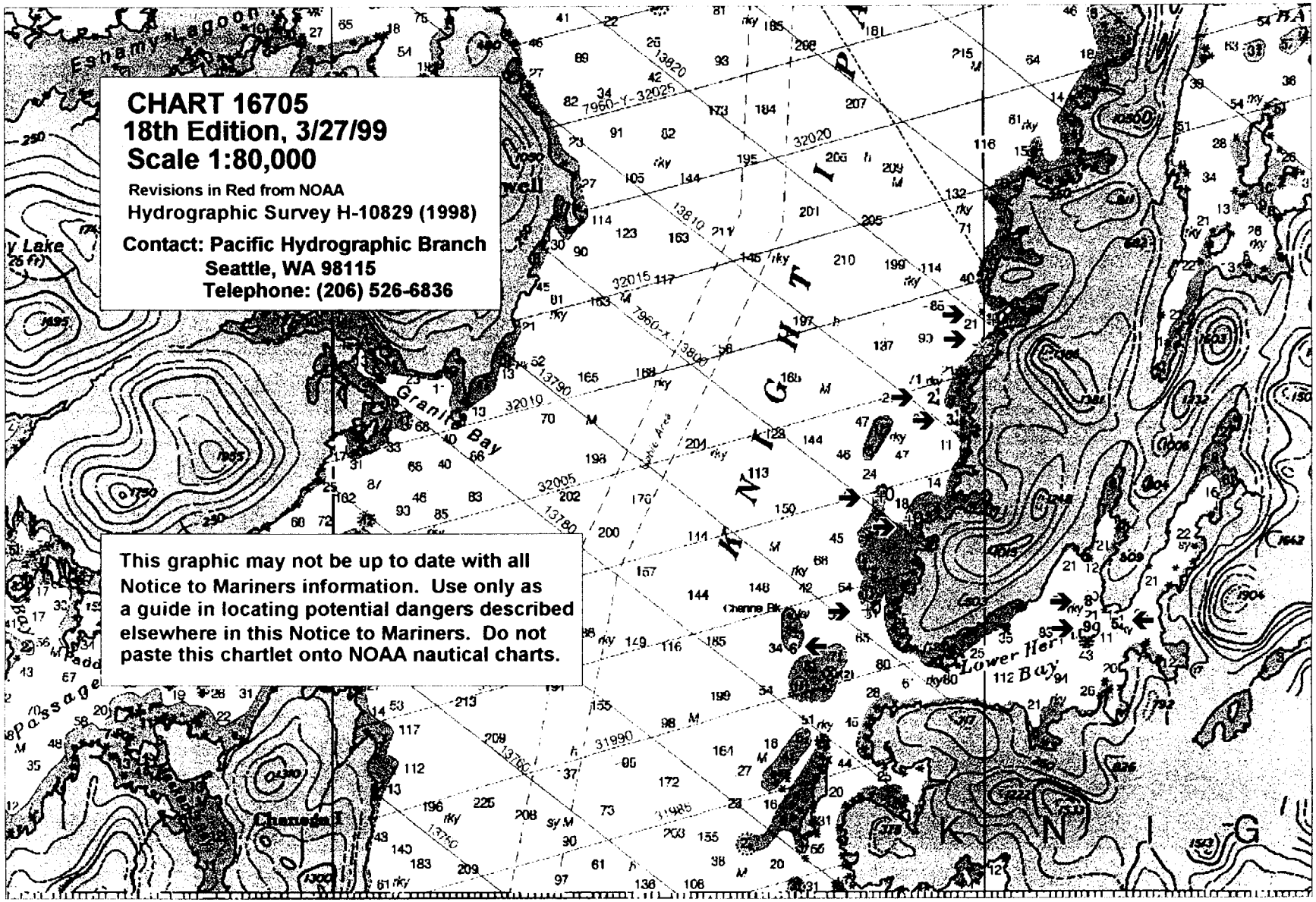
CHART 16705
18th Edition, 3/27/99
Scale 1:80,000
Revisions in Red from NOAA
Hydrographic Survey H-10829 (1998)
Contact: Pacific Hydrographic Branch
Seattle, WA 98115
Telephone: (206) 526-6836
This graphic may not be up to date with all Notice to Mariners information. Use only as a guide in locating potential dangers described elsewhere in this Notice to Mariners. Do not paste this chartlet onto NOAA nautical charts.
Eshamy Lagoon
Granite Bay
Lower Herring Bay
Channel Bk
Chenega I
KNIGHT I

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 12, 1998

MEMORANDUM FOR: CDR James Gardner
Chief, Pacific Hydrographic Branch

THROUGH: RADM John Albright JWA 11/12/98
Director, Pacific Marine Center

FROM: 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 field work.

The surveys affected are H-10853 (RA-10-11-98), H-10852 (RA-10-12-98), H-10829 (RA-10-13-98), H-10837 (RA-10-14-98), H-10838 (RA-10-15-98), H-10840 (RA-10-16-98), and H-10841 (RA-10-17-98). 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 field work completion.

The anticipated transmittal date for the above mentioned surveys is the middle of December 1998.

Ouch! Any technology solutions or improvements in the works?

JWA

APPROVAL SHEET

for

H-10829

RA-10-13-98

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

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

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10829

Name on Survey	A ON CHART NO. 16701, 16705	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ALASKA (title)	X		X							1
AGULIAK ISLAND	X		X							2
CHANNEL ROCK	X		X							3
JOHNSON BAY	X		X							4
KNIGHT ISLAND	X		X							5
KNIGHT ISLAND PASSAGE	X		X							6
LOWER HERRING BAY	X		X							7
PRINCE WILLIAM SOUND	X		X							8
SQUIRREL ISLAND	X		X							9
										10
										11
										12
										13
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										25

Approved:

Dennis J. Romalewski

Chief Cartographer JAN 28 1999

NOAA FORM 76-155 SUPERSEDES C&GS 197

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-10829

LOCALITY: Prince William Sound, AK
Squirrel Island to Lower Herring Bay
TIME PERIOD: Jul 28 - Sep 15, 1998

TIDE STATION USED: 945-4050 Cordova, AK
Lat. 60° 33.5'N Lon. 145° 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° 07.5'N Lon. 146° 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: 945-4691 Herring Point, Knight Island, AK
Lat. 60° 28.4'N Lon. 147° 47.6'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.326 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: PWS35 & PWS38.

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 N. Meso 3/25/99

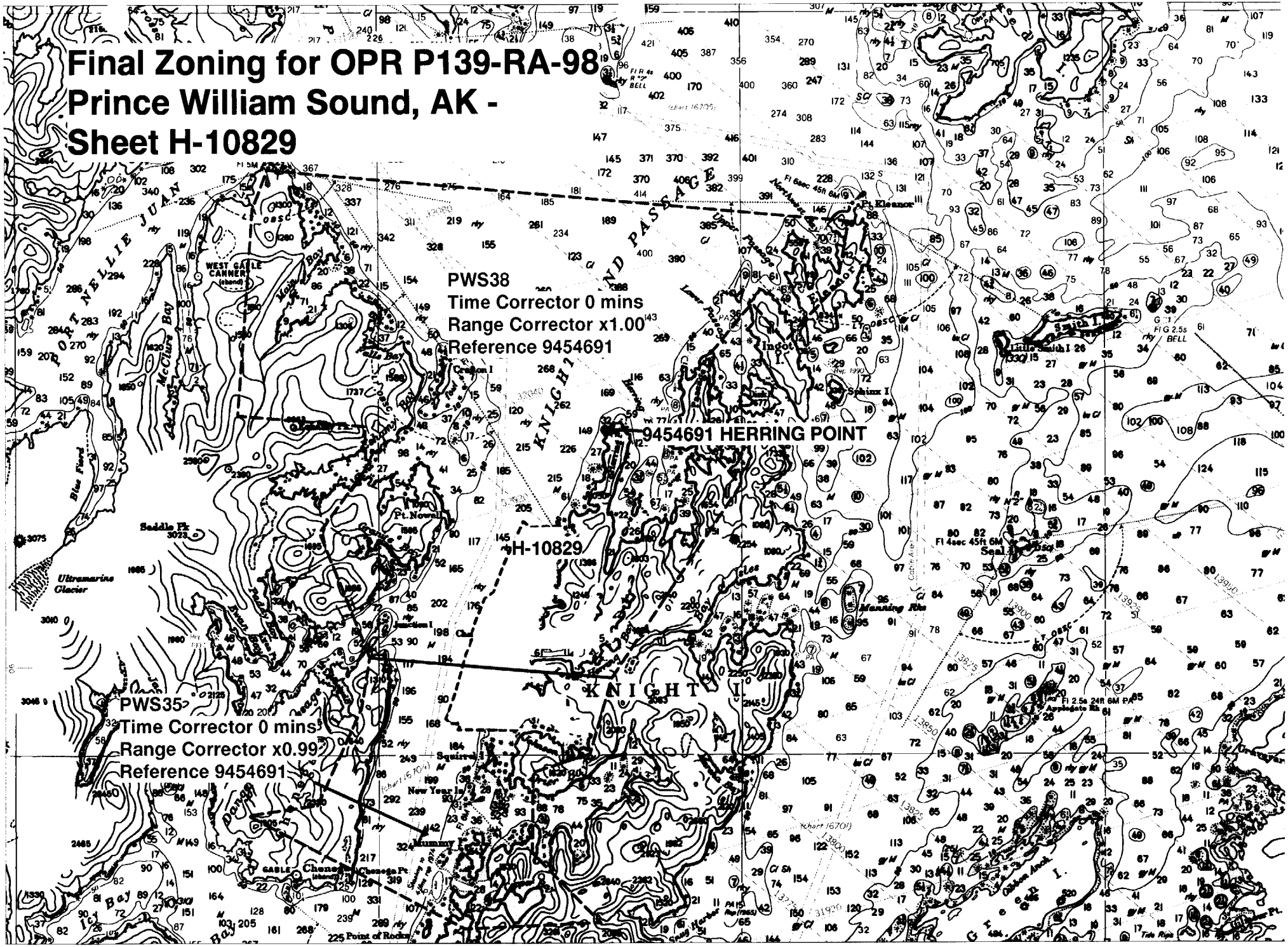
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR P139-RA-98,
Sheet H-10829.

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 PWS35			
-148.056259 60.30568	9454691	0	0.99
-148.0161 60.349312	9454240	0	0.97
-148.008357 60.372318	9454050	0	0.93
-147.785618 60.363112			
-147.805714 60.328803			
-147.858271 60.320562			
-147.859073 60.284191			
-147.795727 60.252696			
-147.921026 60.250008			
-148.119888 60.301206			
-148.056259 60.30568			
Zone PWS38			
-147.785618 60.363112	9454691	0	1.00
-147.667831 60.449911	9454240	0	0.98
-147.696614 60.466536	9454050	0	0.94
-147.695431 60.508907			
-147.656563 60.531857			
-147.626594 60.514644			
-147.578232 60.539507			
-147.567302 60.56881			
-148.101183 60.592465			
-148.114598 60.574838			
-148.128786 60.481602			
-148.012385 60.476742			
-148.011446 60.457767			
-148.054039 60.428791			
-148.008357 60.372318			
-147.785618 60.363112			

Final Zoning for OPR P139-RA-98 Prince William Sound, AK - Sheet H-10829



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

U.S. DEPARTMENT OF COMMERCE

REGISTRY NUMBER
H-10829

HYDROGRAPHIC SURVEY STATISTICS

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

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

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):	DM-10296, DM-10297
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16704, 12th Ed., May 16, 1998, 16705, 18th Ed., March 27, 1999

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)			79,533
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	326.5		326.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS		36.0	36.0
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		51.5	51.5
GEOGRAPHIC NAMES			
OTHER* (Chart Compilation)		76.5	76.5
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	326.5	164.0	490.5

Pre-processing Examination by M. Bigelow	*Beginning Date* 5/12/99	*Ending Date* 6/8/99
Verification of Field Data by M.Bigelow,R.Mayor,E.Domingo,LCDR Ferguson, I.Almacen G.Nelson	*Time (Hours)* 326.5	*Ending Date* 10/6/99
Verification Check by B. Olmstead	*Time (Hours)* 3.0	*Ending Date* 10/22/99
Evaluation and Analysis by I.Almacen	*Time (Hours)* 87.5	*Ending Date* 10/8/99
Inspection by B. Olmstead D.Hill	*Time (Hours)* 2	*Ending Date* 10-26-99

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

EVALUATION REPORT

H-10829

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

The hydrographer has determined the inshore limits of safe navigation by defining a Navigable Area Limit Line (NALL) throughout the survey. Charted features and soundings inshore of this limit line which have not been specifically addressed during survey operations should be retained as charted. Page-size plots of the charted area depicting the specific limits of supersession accompanies this report as Attachment 1 and 2.

The bottom consists mainly of mud. Depths range from 0 to 211 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.

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 and 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 drawing files necessarily contain information which is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the drawing for clarity purposes remain unrevised in the HPS digital files to preserve the integrity of the original hydrographic data set. Cartographic codes used to describe the digital data are those authorized by Hydrographic Survey Guideline No. 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 and elevations have been reduced to Mean Lower Low Water (MLLW) or Mean High Water (MHW) as appropriate, with approved tide correctors obtained from the Center For Operational Oceanographic Products and Services. The approved tide correctors are zoned from Herring Point, Knight Passage, Alaska, gage 945-4691.

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 specification.

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:	-1.973 seconds	(-61.075 meters)
Longitude:	7.462 seconds	(114.322 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 analyze 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

Shoreline maps DM-10296 and DM-10297, scale 1:20,000 were compiled on NAD83 and apply to this survey. Shoreline drawn on the smooth sheet in black originates from this digital data as provided by the Coastal Mapping Program. The shoreline data and the hydrographic data were merged in MicroStation during the compilation of the smooth sheet. There were no revisions to the Mean High Water Line (MHWL).

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10829 junctions with the following surveys.

Survey	Year	Scale	Area
H-10852	1998	1:10,000	Southern Limit
H-10853	1998	1:10,000	Northern Limit

The junction with surveys H-10852 and H-10853 were not formally completed since these surveys are still in preliminary office processing. The junction with these surveys will be addressed in their respective evaluation reports.

M. COMPARISON WITH PRIOR SURVEYS

Survey	Year	Scale	Datum
H-2916	1907	1:40,000	Valdez
H-3027	1909	1:20,000	Valdez
H-3187	1910	1:20,000	Valdez

The prior surveys H-2916, H-3027 and H-3187 cover the area of the present survey. The registration and legibility of these prior surveys to the present survey were good. Comparison of depths reveals that the present survey is generally shoaler by about 0.5-5.0 fathoms than the prior surveys. 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. Comparisons with the prior survey seems to indicate the usual uplifting trend common around this area of Prince William Sound.

A more thorough coverage of the area utilizing the Shallow Water Multibeam system as compared to the sparsely sounded prior surveys has resulted in the discovery of more features and significantly shallower depths not detected during the earlier surveys.

The following prior survey depths are found significantly deeper than the present survey. No indications of deeper depths were noted in their respective locations, however, deeper depths were found further offshore of its charted positions. These differences could be attributed to positional displacement and/or error in depth determination during the past and should be superseded. It is recommended that these areas be charted based on the latest survey information.

Charted depth	Latitude(N)	Longitude(W)	Prior Survey
80 FM	60/22/46.5	147/50/32.0	H-3187(1910)
94 FM	60/22/47.0	147/48/50.0	H-3187(1910)
80 FM	60/22/52.5	147/51/34.0	H-3187(1910)
43 FM	60/22/57.0	147/48/28.0	H-3187(1910)
83 FM	60/23/07.5	147/49/05.0	H-3187(1910)
54 FM	60/23/22.0	147/48/54.0	H-3187(1910)
21 FM	60/23/37.5	147/48/43.0	H-3187(1910)

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 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-10829 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-10829.

O. COMPARISON WITH CHART

Survey H-10829 was compared with the following charts.

Chart	Edition	Date	Scale	Datum
16704	12th	May 16, 1998	1:20,000	NAD 83
16705	18th	March 27, 1999	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.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as ledges and reefs. The recommended charting disposition of specific ledges or reefs is their depiction as isolated rocks. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features. Features from survey H-10829 have been generalized on chart 16705 along the shoreline where applicable.

Survey H-10829 is adequate to supersede charted hydrography within the common area.

b. Dangers to navigation

Ten (10) dangers to navigation were discovered during survey operations. These dangers were reported to the USCG, NIMA and N/CS261 on November 1, 1998. Twenty-three (23) additional dangers were identified during office processing and were reported to the USCG for inclusion to the Local Notice to Mariners. A copy of both reports are attached.

P. ADEQUACY OF SURVEY

The hydrography contained on survey H-10829 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.

Charted items should be addressed under "Comparison with Chart" on the hydrographer's report rather than in section I, Shoreline.

The field unit submission of survey data exceeded the four weeks 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 12, 1998 is attached. Fieldwork for survey H-10829 was completed September 15, 1998 and received for office processing on December 3, 1998.

Q. AIDS TO NAVIGATION

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

There were no features of landmark value found during this survey.

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-10829 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. Almacen
Cartographer

APPROVAL SHEET
H-10829

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.

Date: 10-26-99

Bruce A. Olmstead
Senior Cartographer, Cartographic Team
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.

Date: 10-28-99

James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

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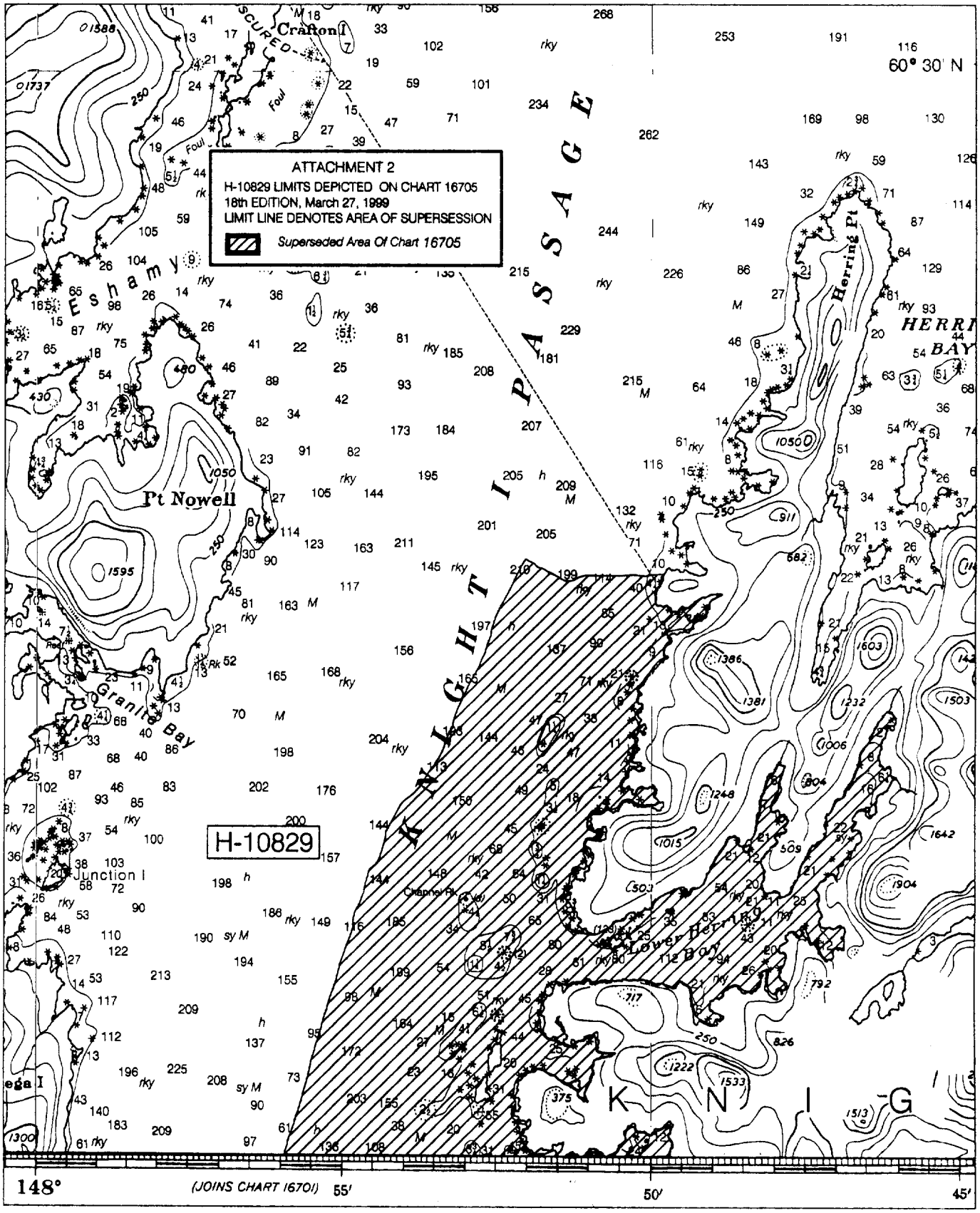
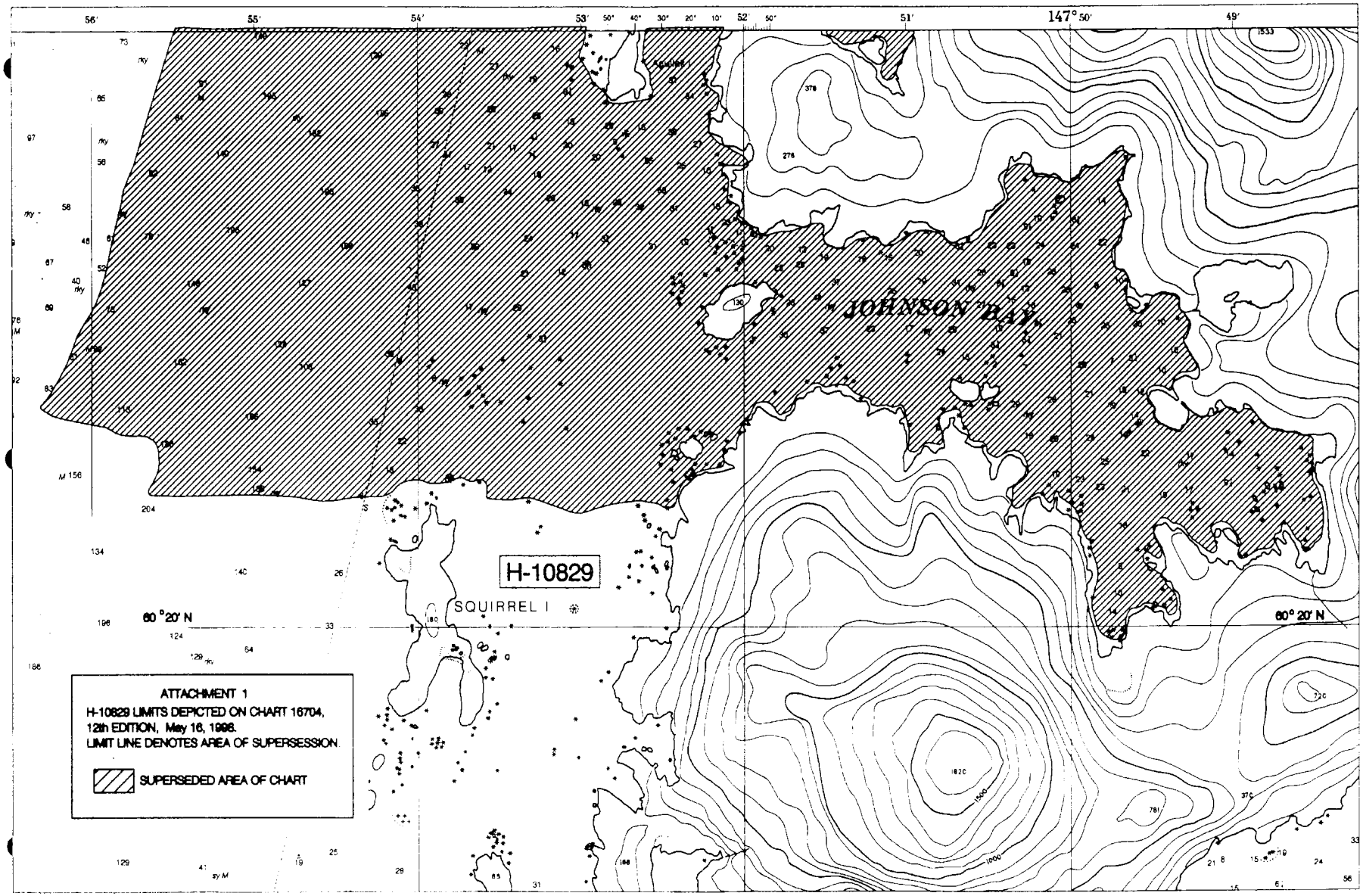
Final Approval

Approved:

Date: January 9, 2000

Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division


ATTACHMENT 2
H-10829 LIMITS DEPICTED ON CHART 16705
18th EDITION, March 27, 1999
LIMIT LINE DENOTES AREA OF SUPERSESSION
Superseded Area Of Chart 16705
60° 30' N
Crafton I
Eshamy
Pt Nowell
Granite Bay
Junction I
KNIGHT PASSAGE
Herring Pt
HERRING BAY
Lower Herring Bay
H-10829
148°
(JOINS CHART 16701)
55'
50'
45'


56'
55'
54'
53'
52'
51'
147° 50'
49'
60° 20' N
60° 20' N
JOHNSON BAY
H-10829
SQUIRREL I
ATTACHMENT 1
H-10829 LIMITS DEPICTED ON CHART 16704,
12th EDITION, May 16, 1998.
LIMIT LINE DENOTES AREA OF SUPERSESSION.
SUPERSEDED AREA OF CHART

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10829

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16704	9/17/99	[illegible]	Full ~~Part~~ Before After Marine Center Approval Signed Via Full application of
			Drawing No. soundings & features from smooth sheet
16705	9/27/99	[illegible]	Full ~~Part~~ Before After Marine Center Approval Signed Via Full application of
			Drawing No. sndgs. & features from SS thru chart 16704.
16705	3/10/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application of
			Drawing No. soundings, curves and features
			BP 170426
16701	3/10/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application of
			Drawing No. soundings, curves, and features through
			16705
16700	3/10/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application of
			Drawing No. soundings, curves, and features through
			16701
16704	3/11/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application
			Drawing No. of soundings, curves, and features
16705	3/12/00	J. Dixon	BP 170427
			Full ~~Part~~ Before After Marine Center Approval Signed Via full application
			Drawing No. of soundings, curves, and features
			through 16704
16701	3/12/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application of
			Drawing No. soundings, curves and features through
			16705
16700	3/15/00	J. Dixon	Full ~~Part~~ Before After Marine Center Approval Signed Via full application of
			Drawing No. soundings, curves, and features
			through 16701
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED