

H10852

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. RA-10-12-98
Registry No. H-10852

LOCALITY

State Alaska
General Locality Southwest Prince William Sound
Sublocality Drier Bay and Vicinity

1998

CHIEF OF PARTY
CAPT A.D. Anderson, NOAA

LIBRARY & ARCHIVES

DATE MAY 1 2000

HYDROGRAPHIC TITLE SHEET

H-10852

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RA-10-12-98

State Alaska

General locality Southwest Prince William Sound

Locality Drier Bay and Vicinity

Scale 1:10,000 Date of survey 7/25/98 - 9/15/98

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

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, tape~~ DSF-6000N, Knudsen 320M, IDSSS MB, RESON 8101 MB

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: B. Mihailov Automated plot by HP Design Jet 750C
~~Produced by~~

Verification by M. Bigelow, R. Mayor, B. Mihailov, LCDR J. Ferguson, G. Nelson

Soundings in fathoms ~~xxxx~~ at ~~xxxx~~ MLLW 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.

AWOIS / SUKE 4/6/00 mlr

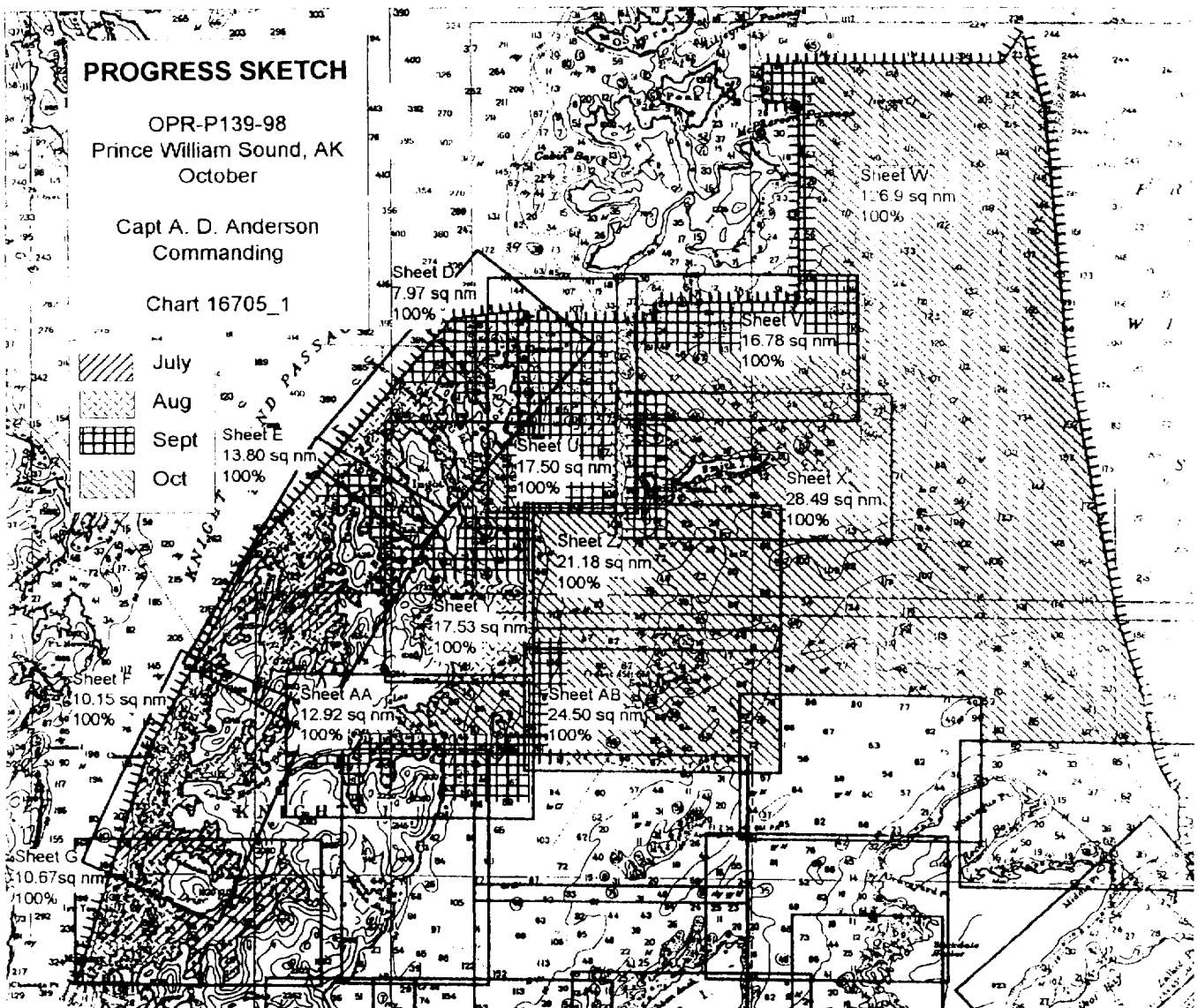
PROGRESS SKETCH

OPR-P139-98
 Prince William Sound, AK
 October

Capt A. D. Anderson
 Commanding

Chart 16705_1

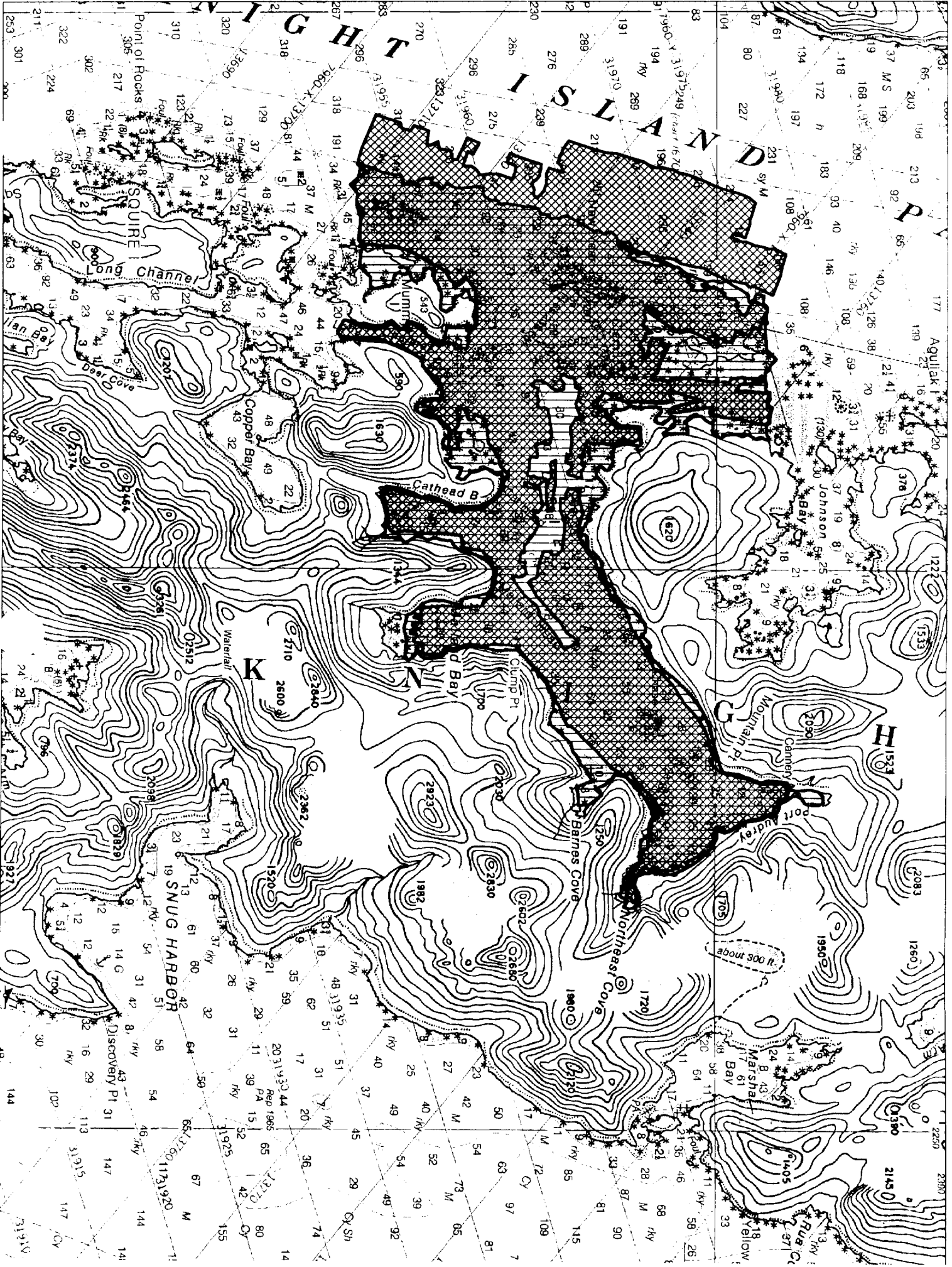
- July
- Aug
- Sept
- Oct



Accomplished	July	Aug	Sept	Oct	Sheet	Reg No	Started	Percent	Completed	Submitted	SQNM
LNM Hydro	618.57*	969.99	2045.14	1676.19	G	H-10827	7/25	100	9/15		10.67
LNM SSS	0	0	0	0	F	H-10829	7/28	100	9/15		10.5
SQ NM	17.16	20.95	63.92	195.69	E	H-10826	7/21	100	10/9		13.80
AWOIS Invest	0	6	2	6	D	H-10838	8/23	100	9/6		7.97
Other Invest.	0	1 dive	3 dives	5 dives	Y	H-10837	8/21	100	10/14		17.53
LNM Multibeam	86.5	310.01**	429.9**	1113.9**	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-10852

Field Number RA-10-12-98

Scale 1:10,000

December 1998

NOAA Ship RAINIER

Chief of Party: Captain Alan D. Anderson, NOAA

A. PROJECT ✓

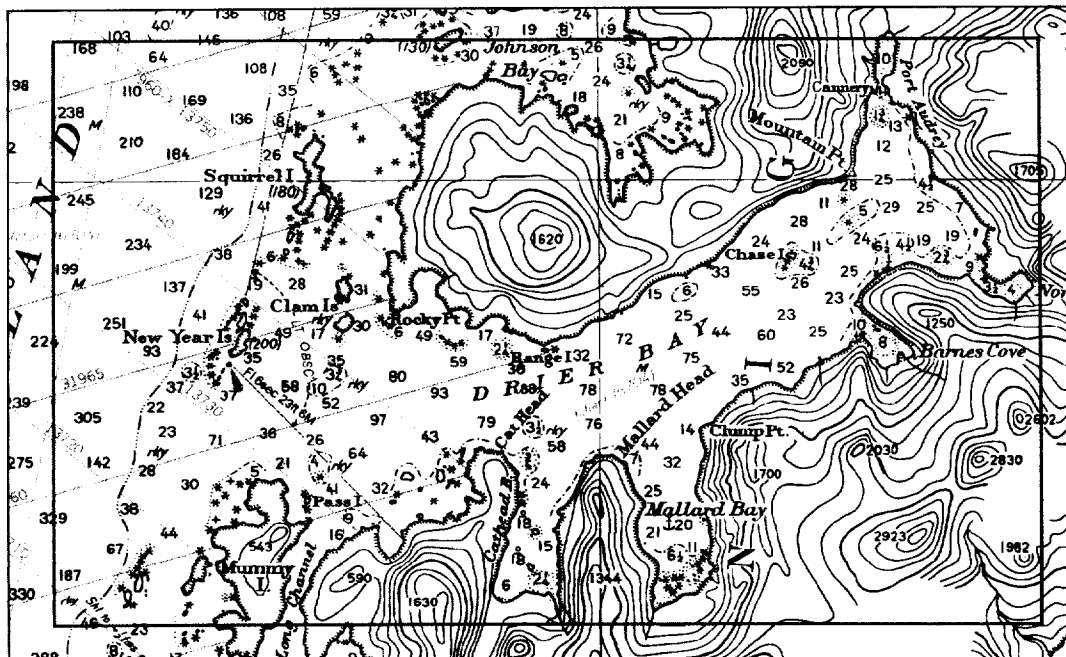
This basic hydrographic survey was completed in the southwest portion of Prince William Sound, Alaska as specified by Project Instructions OPR-P139-RA dated July 10, 1998 and change #1 dated September 8, 1998. Survey H-10852 corresponds to sheet G as defined in the sheet layout. This survey will provide data to supersede prior surveys performed from 1903 through 1927 and will affect Charts 16700, 16701, and 16704. 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 Report, Section B)

The survey area is Drier Bay (H10852). Survey limits are shown below on a detail of chart 16701 (Northern limit $60^{\circ} 21' 10''$ N, Southern limit $60^{\circ} 16' 31''$ N, Western limit $147^{\circ} 58' 40''$ W, Eastern limit $147^{\circ} 43' 40''$ W). Data acquisition was conducted from July 25 to September 15, 1998 (DN 206 to 258). ✓



Commercial and recreational marine traffic was observed traversing in Knight Island Passage. The nearest proximate of any traffic to the survey area was to New Year Island. The only floatplanes were those bringing supplies and passengers to the NOAA Ship Rainier.

C. SURVEY VESSELS ✓

Data were acquired by RAINIER and The 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 3.24 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. 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 ✓

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.

Explanatory Notes about Survey Depth Discrepancies in Steep and Deep Areas:

Note 1: 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.

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 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.

See MapInfo digital file "Sound_Velocity_Casts.WOR" for sound velocity data (Appendix VII. MapInfo Tables). *

* Filled 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 during Caris processing. For RAINIER IDSSS data, offsets were applied on-line during data collection. - 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 entered into HPS and applied to the soundings without adjusting for zoning.

Zone Station	Time Corrector (mins)	Range Ratio	HPS Tide Table No.
PWS 35	0	x0.94	Table No. 1
PWS 35A	0	x0.95	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.

* Filed with the Hydrographic data.

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
Port Audrey	945-4673	Yes	3-day	7-22-98	9-15-98
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 at MATE and QUAKE were 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 (See EVAL. Rpt., Sec. J)

N/NGS3 supplied photogrammetric shoreline in MapInfo format for DM-10296, DM-10297, and DM-10300 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 16700, 16701, and 16704 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 MLLW. Features seen 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 an enlargement of a chart 16700, ed. 25th, 16701, ed. 16th, and 16704, ed. 12th. There was general agreement between the charted and manuscript shoreline and what the hydrographer found on this survey. There are, however, numerous differences (approximately 200) 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 in-shore of the NALL while slowly transiting along the shore, and are intended to aid chart compilation. *Shoreline was analyzed during office processing and shown on the smoothsheet as warranted.*

Charted features (Charts 16700, 16701, 16704) matched the shoreline as observed during the current survey, except for the following discrepancies. It is recommended that the shoreline be revised using the surveyed positions as recorded in the MapInfo digital file named "Detached_Positions".

Fix #	Charted Feature	Geographic Position	Observed Feature	SS
24399	None	60° 19' 54.664" N, 147° 53' 25.253" W	Islet (DM) high pt ledge	(1)
42054	None	60° 17' 8.117" N, 147° 56' 40.223" W	Rock Islet (DM) *	(12)
55997	None	60° 20' 4.735" N, 147° 52' 33.903" W	Rock Islet *	(6)
24401	None	60° 20' 9.233" N, 147° 53' 45.066" W	Ledge	✓
42053	None	60° 16' 59.374" N, 147° 56' 39.834" W	Ledge	✓
54952	None	60° 17' 30.215" N, 147° 52' 46.728" W	Ledge	✓
20183	None	60° 17' 54.575" N, 147° 53' 50.957" W	Reef	rejected
20203	None	60° 17' 28.736" N, 147° 54' 4.540" W	DTON: Reef *	(2)
20268	None	60° 17' 29.953" N, 147° 53' 39.013" W	high pt. of Reef	(3)
21282	None	60° 19' 42.657" N, 147° 46' 32.087" W	of Reef	(8)
21283	None	60° 19' 41.510" N, 147° 46' 35.453" W	extent of Reef	↑
21293	None	60° 19' 24.699" N, 147° 47' 26.516" W	high pt. of Reef	(3)

With the exception of features noted to be charted, the data list has not been verified. Refer to the smooth sheet for a depiction of survey observations.

Fix #	Charted Feature	Geographic Position	Observed Feature SS
23302	None	60° 19' 25.471" N, 147° 45' 1.988" W	DTON: Reef, NW ext. (refers to same feature as 23303) (4)
23303	None	60° 19' 23.978" N, 147° 45' 2.218" W	Reef, SE ext.
23344	None	60° 19' 24.491" N, 147° 44' 41.926" W	Reef, N ext. (refers to same Feature as 23345-23346) (10)
23345	None	60° 19' 23.243" N, 147° 44' 43.911" W	Reef, W ext.
23346	None	60° 19' 22.921" N, 147° 44' 43.426" W	Reef, S ext.
23506	None	60° 19' 18.103" N, 147° 48' 46.457" W	Reef, S ext. (refers to same feature as 23507, 26313-26314) (8)
23507	None	60° 19' 20.373" N, 147° 48' 47.430" W	Reef
24400	None	60° 20' 0.629" N, 147° 53' 25.135" W	high pt. of Reef (4)
24408	None	60° 20' 24.622" N, 147° 54' 11.061" W	Reef ✓
24411	None	60° 20' 18.787" N, 147° 54' 13.075" W	Reef ✓
25220	None	60° 19' 35.441" N, 147° 53' 31.019" W	Reef, N ext. (refers to same feature as 25221) islets
25221	None	60° 19' 33.800" N, 147° 53' 31.918" W	Reef, S ext. (6)
26331	None	60° 17' 48.121" N, 147° 55' 10.004" W	Reef, N ext. ✓
41231	None	60° 18' 52.896" N, 147° 51' 14.996" W	Rock Reef *(3)
42081	None	60° 17' 17.445" N, 147° 56' 23.762" W	high pt. of Reef (8)
42119	None	60° 18' 54.317" N, 147° 55' 2.528" W	Reef, E ext. (refers to same Feature as 421120-421122)
42120	None	60° 18' 54.851" N, 147° 55' 5.322" W	Reef, W ext. ✓
42121	None	60° 18' 53.096" N, 147° 55' 5.346" W	Reef, S ext.
42122	None	60° 18' 55.152" N, 147° 55' 4.056" W	Reef, N ext.
50017	None	60° 17' 48.179" N, 147° 49' 19.424" W	Reef, S ext. (refers to same feature as 50018) high pt.
50018	None	60° 17' 50.306" N, 147° 49' 20.311" W	Reef, N ext. (5)
51755	None	60° 17' 13.313" N, 147° 50' 59.412" W	Reef Reef
51756	None	60° 17' 10.674" N, 147° 50' 56.859" W	high pt of Reef (5)
55054	None	60° 17' 45.368" N, 147° 52' 18.559" W	high pt of Reef (11)
55056	None	60° 17' 44.419" N, 147° 52' 12.670" W	Reef (refers to same feature as 55057) high pt.
55057	None	60° 17' 45.544" N, 147° 52' 7.689" W	Reef (3)
55877	None	60° 19' 23.495" N, 147° 53' 27.787" W	Reef, N ext. ✓
55962	None	60° 20' 19.457" N, 147° 52' 36.953" W	Reef islet
55984	None	60° 20' 15.652" N, 147° 52' 39.797" W	high pt. of Reef
55992	None	60° 20' 14.187" N, 147° 53' 16.419" W	" " Reef (5)
55994	None	60° 20' 23.106" N, 147° 53' 17.992" W	" " Reef (7)
55995	None	60° 20' 3.360" N, 147° 53' 2.799" W	" " Reef (11)
56003	None	60° 19' 38.219" N, 147° 53' 9.144" W	Reef (refers to same feature as 56004) high pt.
56004	None	60° 19' 36.697" N, 147° 53' 9.152" W	Reef (3)
20024	None	60° 17' 21.597" N, 147° 55' 38.075" W	Rock *(4)
20047	None	60° 17' 27.680" N, 147° 55' 32.654" W	Rock (DM) *(6)
20188	None	60° 17' 45.500" N, 147° 53' 57.936" W	Rock *(4)
20223	None	60° 17' 9.226" N, 147° 54' 16.406" W	DTON: Rock *(1)
21256	None	60° 19' 27.691" N, 147° 45' 55.349" W	Rock *(4)
21281	None	60° 19' 43.252" N, 147° 46' 25.777" W	Rock cov 1 ft
21284	None	60° 19' 49.633" N, 147° 46' 41.484" W	Rock (DM) (2)

Fix #	Charted Feature	Geographic Position	Observed Feature	SS
21287	None	60° 19' 27.542" N, 147° 47' 7.105" W	DTON: Rock	* (3)
21288	None	60° 19' 26.534" N, 147° 47' 10.035" W	Rock	* (2)
21289	None	60° 19' 23.249" N, 147° 47' 22.978" W	Rock	* (3)
21290	None	60° 19' 23.459" N, 147° 47' 20.341" W	Rock	* (3)
21292	None	60° 19' 25.522" N, 147° 47' 23.878" W	Rock (DM)	* (3)
23331	None	60° 19' 14.118" N, 147° 44' 17.157" W	DTON: Rock	* (1)
23347	None	60° 19' 21.590" N, 147° 44' 41.422" W	Rock (DM)	* (9)
23356	None	60° 19' 35.491" N, 147° 44' 39.207" W	Rock	* (3)
23426	None	60° 20' 36.943" N, 147° 46' 8.866" W	Rock	* (1)
23539	None	60° 18' 58.910" N, 147° 49' 59.876" W	Rock (DM)	* (1)
24402	None	60° 20' 26.833" N, 147° 53' 36.296" W	Rock (DM)	* (5)
24403	None	60° 20' 24.995" N, 147° 53' 38.490" W	Rock	* (1)
24404	None	60° 20' 24.548" N, 147° 53' 35.545" W	Rock	OR Rk
24405	None	60° 20' 22.989" N, 147° 53' 36.915" W	Rock	* (3)
24406	None	60° 20' 24.352" N, 147° 53' 40.614" W	Rock	* (1)
24481	None	60° 19' 28.940" N, 147° 53' 43.875" W	Rock	* (1)
24482	None	60° 19' 29.840" N, 147° 53' 54.031" W	Rock	* (1)
25209	None	60° 19' 39.498" N, 147° 53' 51.014" W	Rock (DM)	* (12)
25210	None	60° 19' 39.307" N, 147° 53' 54.250" W	Rock (DM)	* (12)
25222	None	60° 19' 23.805" N, 147° 54' 38.627" W	Rock (DM)	* (9)
25223	None	60° 19' 24.412" N, 147° 54' 39.697" W	Rock (DM)	* (9)
26307	None	60° 19' 17.858" N, 147° 44' 34.606" W	Rock (DM)	* (6)
26312	None	60° 19' 23.163" N, 147° 48' 36.830" W	Rock (DM)	* (6)
26315	None	60° 18' 53.152" N, 147° 51' 6.199" W	Rock (DM)	* (12)
26323	None	60° 17' 52.293" N, 147° 52' 25.480" W	Rock (DM)	* (9)
26327	None	60° 17' 18.978" N, 147° 54' 17.379" W	Rock (DM)	* (5)
26337	None	60° 17' 22.590" N, 147° 55' 15.567" W	Rock (DM)	* (7)
26345	None	60° 18' 42.335" N, 147° 55' 20.944" W	Rock (DM)	* (10)
26348	None	60° 18' 44.601" N, 147° 55' 18.674" W	Rock (DM)	* (3)
26351	None	60° 18' 50.934" N, 147° 55' 13.818" W	Rock (DM)	* (4)
26352	None	60° 18' 55.614" N, 147° 55' 9.201" W	Rock (DM)	* (7)
26356	None	60° 18' 54.265" N, 147° 53' 41.091" W	Rock (DM)	12 Rk
26364	None	60° 19' 40.369" N, 147° 52' 40.595" W	Rock (DM)	* (12)
26365	None	60° 20' 16.640" N, 147° 52' 33.284" W	Rock (DM)	* (3)
40125	None	60° 20' 38.969" N, 147° 46' 0.687" W	Rock	* (5)
40158	None	60° 19' 59.578" N, 147° 45' 26.325" W	Rock	* (1)
40959	None	60° 18' 57.152" N, 147° 46' 13.731" W	Rock (DM)	* (3)
41235	None	60° 18' 56.337" N, 147° 51' 18.805" W	Rock	12 Rk
41292	None	60° 18' 59.099" N, 147° 52' 14.563" W	Rock	* (2)
41298	None	60° 18' 56.229" N, 147° 52' 8.922" W	Rock (DM)	* (3)
41322	None	60° 18' 59.021" N, 147° 52' 48.970" W	Rock	* cov 2 ft
41365	None	60° 19' 32.637" N, 147° 52' 42.851" W	Rock	* (5)
41366	None	60° 19' 31.845" N, 147° 52' 51.880" W	Rock	* (2)
41387	None	60° 18' 55.218" N, 147° 52' 59.016" W	DTON: Rock (DM)	* (6)
41910	None	60° 18' 58.009" N, 147° 54' 45.378" W	Rock	* (9)
42055	None	60° 17' 9.545" N, 147° 56' 36.367" W	Rock	* cov 1 ft
42083	None	60° 17' 16.344" N, 147° 56' 12.846" W	Rock	* (5)
42098	None	60° 17' 21.606" N, 147° 56' 9.330" W	Rock	* (3)

Fix #	Charted Feature	Geographic Position	Observed Feature	SS
50051	None	60° 17' 20.005" N, 147° 48' 44.625" W	Rock	19 RK
50108	None	60° 18' 2.977" N, 147° 49' 35.333" W	Rock	06RK
50128	None	60° 18' 2.146" N, 147° 48' 36.433" W	Rock	* (0)
50780	None	60° 18' 39.657" N, 147° 47' 8.198" W	Rock (DM)	* (7)
51757	None	60° 17' 10.981" N, 147° 50' 59.056" W	Rock (DM)	* (6)
54936	None	60° 17' 41.066" N, 147° 52' 30.788" W	Rock	* cov 2 ft
54962	None	60° 17' 26.164" N, 147° 52' 58.950" W	Rock	* (3)
55002	None	60° 17' 49.701" N, 147° 52' 45.977" W	Rock	* (4)
55003	None	60° 17' 46.327" N, 147° 52' 41.778" W	Rock (DM)	* (3)
55017	None	60° 17' 38.462" N, 147° 52' 50.853" W	Rock	* (4)
55026	None	60° 17' 54.883" N, 147° 52' 25.939" W	Rock	* cov 1 ft
55027	None	60° 17' 51.391" N, 147° 52' 20.789" W	Rock	* (1)
55055	None	60° 17' 45.648" N, 147° 52' 16.739" W	Rock	ledge
55058	None	60° 17' 43.626" N, 147° 52' 4.920" W	Rock	* (2)
55059	None	60° 17' 52.576" N, 147° 51' 56.974" W	Rock	* (2)
55060	None	60° 17' 55.768" N, 147° 51' 59.445" W	Rock	* (3)
55859	None	60° 18' 53.061" N, 147° 53' 29.872" W	Rock (DM)	* (4)
55860	None	60° 18' 56.854" N, 147° 53' 25.521" W	Rock	* (3)
55910	None	60° 19' 42.287" N, 147° 52' 31.794" W	Rock (DM)	04 RK
55935	None	60° 19' 55.805" N, 147° 52' 42.579" W	Rock	* (5)
55967	None	60° 20' 14.357" N, 147° 52' 32.892" W	Rock	* (11)
55993	None	60° 20' 21.772" N, 147° 53' 13.713" W	Rock	* (12)
55998	None	60° 19' 44.106" N, 147° 53' 2.404" W	Rock (DM)	* (6)
55999	None	60° 19' 44.606" N, 147° 53' 0.442" W	Rock	* (3)
56000	None	60° 19' 42.623" N, 147° 53' 0.301" W	Rock	* (1)
56001	None	60° 19' 36.856" N, 147° 53' 1.074" W	Rock (DM)	* (4)
56002	None	60° 19' 38.896" N, 147° 53' 4.122" W	Rock	* (2)
24410	Rock	60° 20' 21.818" N, 147° 54' 11.939" W ✓		
25194	Rock	60° 19' 26.061" N, 147° 54' 5.530" W ✓		
25195	Rock	60° 19' 25.061" N, 147° 54' 3.869" W ✓		
25196	Rock	60° 19' 25.308" N, 147° 54' 6.537" W ✓		
25197	Rock	60° 19' 26.177" N, 147° 54' 7.727" W ✓		
26301	Rock	60° 18' 56.505" N, 147° 46' 12.531" W ✓		
26302	Rock	60° 19' 23.142" N, 147° 45' 59.697" W ✓		
26303	Rock	60° 19' 21.259" N, 147° 44' 45.459" W ✓		
26304	Rock	60° 19' 20.135" N, 147° 44' 43.887" W ✓		
26305	Rock	60° 19' 20.976" N, 147° 44' 43.086" W ✓		
26306	Rock	60° 19' 21.485" N, 147° 44' 43.937" W ✓		
26308	Rock	60° 19' 26.703" N, 147° 44' 42.451" W ✓		
26309	Rock	60° 20' 24.301" N, 147° 45' 37.445" W ✓		
26310	Rock	60° 20' 25.138" N, 147° 45' 38.814" W ✓		
26311	Rock	60° 19' 51.458" N, 147° 46' 34.090" W ✓		
26319	Rock	60° 18' 2.973" N, 147° 52' 5.288" W ✓		
26320	Rock	60° 18' 3.019" N, 147° 52' 8.511" W ✓		
26321	Rock	60° 18' 4.834" N, 147° 52' 7.724" W ✓		
26322	Rock	60° 18' 4.051" N, 147° 52' 4.740" W ✓		
26324	Rock	60° 17' 41.507" N, 147° 54' 4.222" W ✓		
26328	Rock	60° 17' 54.557" N, 147° 55' 7.235" W ✓		

Each of the different individual charted rocks was not found after a 5-min. visual search at low water [5m visibility, 150m-search radius].

Fix #	Charted Feature	Geographic Position	Observed Feature	SS
26329	Rock	60° 17' 51.645" N, 147° 55' 16.605" W ✓	Each of the different individual charted rocks was not found after a 5-min. visual search at low water [5m visibility, 150m-search radius].	
26334	Rock	60° 17' 38.580" N, 147° 55' 17.934" W ✓		
26335	Rock	60° 17' 25.255" N, 147° 55' 32.961" W ✓		
26336	Rock	60° 17' 24.749" N, 147° 55' 31.542" W ✓		
26340	Rock	60° 17' 21.995" N, 147° 56' 23.713" W ✓		
26341	Rock	60° 17' 23.348" N, 147° 56' 19.103" W ✓		
26342	Rock	60° 17' 24.398" N, 147° 56' 15.153" W ✓	Charted Rock not found: Change charted position of feature to DP 42099 * (2)	
26343	Rock	60° 17' 25.092" N, 147° 56' 12.448" W ✓	Each of the different individual charted rocks was not found after a 5-min. visual search at low water [5m visibility, 150m-search radius].	
26344	Rock	60° 18' 37.840" N, 147° 55' 15.005" W ✓		
26346	Rock	60° 18' 43.778" N, 147° 55' 20.396" W ✓		
26347	Rock	60° 18' 44.463" N, 147° 55' 19.512" W ✓		
26349	Rock	60° 18' 45.366" N, 147° 55' 18.905" W ✓	Each of the different individual charted rocks was not found after a 5-min. visual search at low water [5m visibility, 150m-search radius].	
26353	Rock	60° 18' 58.658" N, 147° 55' 8.107" W ✓		
26355	Rock	60° 19' 7.482" N, 147° 54' 57.797" W ✓		
26357	Rock	60° 19' 22.183" N, 147° 53' 35.531" W ✓		
26358	Rock	60° 19' 23.008" N, 147° 53' 34.114" W ✓		
26359	Rock	60° 19' 24.037" N, 147° 53' 32.498" W ✓		
26360	Rock	60° 19' 23.264" N, 147° 53' 31.563" W ✓		
26361	Rock	60° 19' 19.582" N, 147° 53' 26.522" W ✓		
26362	Rock	60° 19' 34.246" N, 147° 53' 43.906" W ✓		
26363	Rock	60° 19' 50.813" N, 147° 53' 32.728" W ✓		
55961	Rock	60° 20' 21.072" N, 147° 52' 37.239" W ✓		
55996	Rock	60° 20' 7.167" N, 147° 52' 46.589" W ✓		
20134	Rock	60° 17' 41.424" N, 147° 55' 0.388" W ✓		
21291	Rock	60° 19' 27.220" N, 147° 47' 23.228" W ✓	high pt. of Reef (3)	
24407	Rock	60° 20' 29.759" N, 147° 53' 46.716" W ✓	Rock Islet * (11)	
26313	Rock	60° 19' 19.423" N, 147° 48' 45.955" W ✓	Reef, E ext. (refers to same feature as 23506-23507, 26314) (8)	
26314	Rock	60° 19' 18.596" N, 147° 48' 48.462" W ✓	Reef, W ext.	
26330	Rock	60° 17' 49.085" N, 147° 55' 12.972" W ✓	Reef, W ext. (refers to same feature as 26331-26333)	
26332	Rock	60° 17' 48.076" N, 147° 55' 11.208" W ✓	Reef, S ext. ✓	
26333	Rock	60° 17' 49.022" N, 147° 55' 8.192" W ✓	Reef, E ext.	
26338	Rock	60° 17' 2.432" N, 147° 55' 42.413" W ✓	high pt. of Reef, N ext. (10)	

The digital shoreline (DM 10296, 10297, 10300) features matched the shoreline as observed during the current survey, except for the following discrepancies. It is recommended that the shoreline be revised using the surveyed positions as recorded in the MapInfo digital file named "Detached_Positions".

Fix #	Shoreline Manuscript Feature	Geographic Position	Observed Feature
			SS
24401	None	60° 20' 9.233" N, 147° 53' 45.066" W	Ledge
42053	None	60° 16' 59.374" N, 147° 56' 39.834" W	high pt. of Ledge (4)
54952	None	60° 17' 30.215" N, 147° 52' 46.728" W	Ledge ✓
20203	None	60° 17' 28.736" N, 147° 54' 4.540" W	high pt of Reef (2)
21283	None	60° 19' 41.510" N, 147° 46' 35.453" W	" " " Reef (8)
21293	None	60° 19' 24.699" N, 147° 47' 26.516" W	" " " Reef (3)
23302	None	60° 19' 25.471" N, 147° 45' 1.988" W	DTON: Reef, NW ext. (refers to same feature as 23303) (4)
23303	None	60° 19' 23.978" N, 147° 45' 2.218" W	Reef, SE ext.
24408	None	60° 20' 24.622" N, 147° 54' 11.061" W	Reef ✓
24411		60° 20' 18.787" N, 147° 54' 13.075" W	Reef ✓
26313	None	60° 19' 19.423" N, 147° 48' 45.955" W	Reef, E ext. (refers to same feature as 23506-23507, 26314) (8)
26314	None	60° 19' 18.596" N, 147° 48' 48.462" W	Reef, W ext.
26330	None	60° 17' 49.085" N, 147° 55' 12.972" W	Reef, W ext. (refers to same feature as 26331-26333)
26332	None	60° 17' 48.076" N, 147° 55' 11.208" W	Reef, S ext. ✓
26333	None	60° 17' 49.022" N, 147° 55' 8.192" W	Reef, E ext.
26338	None	60° 17' 2.432" N, 147° 55' 42.413" W	high pt. of Reef, N ext. (10)
41231	None	60° 18' 52.896" N, 147° 51' 14.996" W	Reef
42119	None	60° 18' 54.317" N, 147° 55' 2.528" W	Reef (refers to same feature as 42120-42122)
42120	None	60° 18' 54.851" N, 147° 55' 5.322" W	Reef ✓
42121	None	60° 18' 53.096" N, 147° 55' 5.346" W	Reef
42122	None	60° 18' 55.152" N, 147° 55' 4.056" W	Reef
51755	None	60° 17' 13.313" N, 147° 50' 59.412" W	Reef ✓
51756	None	60° 17' 10.674" N, 147° 50' 56.859" W	Reef ✓
55984	None	60° 20' 15.652" N, 147° 52' 39.797" W	Reef ✓
20024	None	60° 17' 21.597" N, 147° 55' 38.075" W	Rock * (4)
20188	None	60° 17' 45.500" N, 147° 53' 57.936" W	Rock * (4)
20223	None	60° 17' 9.226" N, 147° 54' 16.406" W	DTON: Rock * (1)
21256	None	60° 19' 27.691" N, 147° 45' 55.349" W	Rock * (4)
21281	None	60° 19' 43.252" N, 147° 46' 25.777" W	Rock * cov 1 ft
21287	None	60° 19' 27.542" N, 147° 47' 7.105" W	DTON Rock * (3)
21288	None	60° 19' 26.534" N, 147° 47' 10.035" W	Rock * (0)
21289	None	60° 19' 23.249" N, 147° 47' 22.978" W	Rock * (3)
21290	None	60° 19' 23.459" N, 147° 47' 20.341" W	Rock * (3)
23331	None	60° 19' 14.118" N, 147° 44' 17.157" W	DTON: Rock * (1)
23356	None	60° 19' 35.491" N, 147° 44' 39.207" W	Rock * (3)
23426	None	60° 20' 36.943" N, 147° 46' 8.866" W	Rock * (1)
24403	None	60° 20' 24.995" N, 147° 53' 38.490" W	Rock * (1)
24404	None	60° 20' 24.548" N, 147° 53' 35.545" W	Rock OB RK
24405	None	60° 20' 22.989" N, 147° 53' 36.915" W	Rock * (3)
24406	None	60° 20' 24.352" N, 147° 53' 40.614" W	Rock * (1)
24481	None	60° 19' 28.940" N, 147° 53' 43.875" W	Rock * (1)

Fix #	Shoreline Manuscript Feature	Geographic Position	Observed Feature
			SS
24482	None	60° 19' 29.840" N, 147° 53' 54.031" W	Rock * (1)
26316	None	60° 17' 44.946" N, 147° 51' 3.253" W	Rock (Charted) * (10)
26317	None	60° 18' 6.377" N, 147° 51' 52.909" W	Rock (Charted) islet (3)
26318	None	60° 18' 2.973" N, 147° 51' 57.331" W	Rock (Charted) * (10)
26326	None	60° 17' 33.709" N, 147° 54' 2.473" W	Rock (Charted) * (12)
26339	None	60° 17' 9.736" N, 147° 56' 39.116" W	Rock (Charted) * (5)
40125	None	60° 20' 38.969" N, 147° 46' 0.687" W	Rock * (5)
40158	None	60° 19' 59.578" N, 147° 45' 26.325" W	Rock * (1)
41235	None	60° 18' 56.337" N, 147° 51' 18.805" W	Rock 12 RK
41292	None	60° 18' 59.099" N, 147° 52' 14.563" W	Rock * (2)
41322	None	60° 18' 59.021" N, 147° 52' 48.970" W	Rock * cov 2 ft
41365	None	60° 19' 32.637" N, 147° 52' 42.851" W	Rock * (5)
41366	None	60° 19' 31.845" N, 147° 52' 51.880" W	Rock * (2)
41910	None	60° 18' 58.009" N, 147° 54' 45.378" W	Rock * (9)
42055	None	60° 17' 9.545" N, 147° 56' 36.367" W	Rock * cov 1 ft
42083	None	60° 17' 16.344" N, 147° 56' 12.846" W	Rock * (5)
42098	None	60° 17' 21.606" N, 147° 56' 9.330" W	Rock * (3)
42099	None	60° 17' 24.112" N, 147° 56' 13.711" W	Rock (Charted) * (2)
50051	None	60° 17' 20.005" N, 147° 48' 44.625" W	Rock 19 RK
50108	None	60° 18' 2.977" N, 147° 49' 35.333" W	Rock 06 RK
50128	None	60° 18' 2.146" N, 147° 48' 36.433" W	Rock * (2)
50801	None	60° 18' 55.369" N, 147° 46' 21.305" W	Rock (Charted) cov 1 ft
54936	None	60° 17' 41.066" N, 147° 52' 30.788" W	Rock * cov 2 ft
54962	None	60° 17' 26.164" N, 147° 52' 58.950" W	Rock * (3)
55002	None	60° 17' 49.701" N, 147° 52' 45.977" W	Rock * (4)
55017	None	60° 17' 38.462" N, 147° 52' 50.853" W	Rock * (4)
55026	None	60° 17' 54.883" N, 147° 52' 25.939" W	Rock * cov 1 ft
55027	None	60° 17' 51.391" N, 147° 52' 20.789" W	Rock * (1)
55055	None	60° 17' 45.648" N, 147° 52' 16.739" W	Rock ledge
55058	None	60° 17' 43.626" N, 147° 52' 4.920" W	Rock * (2)
55059	None	60° 17' 52.576" N, 147° 51' 56.974" W	Rock * (2)
55060	None	60° 17' 55.768" N, 147° 51' 59.445" W	Rock * (3)
55860	None	60° 18' 56.854" N, 147° 53' 25.521" W	Rock * (3)
55935	None	60° 19' 55.805" N, 147° 52' 42.579" W	Rock * (5)
55963	None	60° 20' 18.452" N, 147° 52' 31.140" W	Rock (Charted) * (4)
55967	None	60° 20' 14.357" N, 147° 52' 32.892" W	Rock * (11)
55993	None	60° 20' 21.772" N, 147° 53' 13.713" W	Rock * (12)
55999	None	60° 19' 44.606" N, 147° 53' 0.442" W	Rock * (3)
56000	None	60° 19' 42.623" N, 147° 53' 0.301" W	Rock * (1)
56002	None	60° 19' 38.896" N, 147° 53' 4.122" W	Rock * (2)
55997	Rock	60° 20' 4.735" N, 147° 52' 33.903" W	high pt. of Islet ledge (6)
20134	Rock	60° 17' 41.424" N, 147° 55' 0.388" W	Rock Reef * (3)
20183	Rock	60° 17' 54.575" N, 147° 53' 50.957" W	high pt. of Reef ledge (6)
20268	Rock	60° 17' 29.953" N, 147° 53' 39.013" W	" " Reef (3)
21282	Rock	60° 19' 42.657" N, 147° 46' 32.087" W	" " Reef (6)
21291	Rock	60° 19' 27.220" N, 147° 47' 23.228" W	Reef ✓

Fix #	Shoreline Manuscript Feature	Geographic Position	Observed Feature
			SS
23344	Rock	60° 19' 24.491" N, 147° 44' 41.926" W	Reef, N ext. (refers to same feature as 23345-23346)
23345	Rock	60° 19' 23.243" N, 147° 44' 43.911" W	Reef, W ext. (10)
23346	Rock	60° 19' 22.921" N, 147° 44' 43.426" W	Reef, S ext.
23506	Rock	60° 19' 18.103" N, 147° 48' 46.457" W	Reef, S ext. (refers to same feature as 23507, 26313-26314)
23507	Rock	60° 19' 20.373" N, 147° 48' 47.430" W	high pt. of Reef (8)
24400	Rock	60° 20' 0.629" N, 147° 53' 25.135" W	" " " Reef (4)
24407	Rock	60° 20' 29.759" N, 147° 53' 46.716" W	Rock Islet * (11)
25220	Rock	60° 19' 35.441" N, 147° 53' 31.019" W	Reef, N ext. (refers to same feature as 25221) islets (6)
25221	Rock	60° 19' 33.800" N, 147° 53' 31.918" W	Reef, S ext.
26331	Rock	60° 17' 48.121" N, 147° 55' 10.004" W	Reef, center ext. ✓
42081	Rock	60° 17' 17.445" N, 147° 56' 23.762" W	high pt. of Reef, NW ext. (8)
50017	Rock	60° 17' 48.179" N, 147° 49' 19.424" W	Reef, S ext. (refers to same feature as 50018) (5)
50018	Rock	60° 17' 50.306" N, 147° 49' 20.311" W	Reef, N ext.
50054	Rock	60° 17' 45.368" N, 147° 52' 18.559" W	Reef ✓
55056	Rock	60° 17' 44.419" N, 147° 52' 12.670" W	Reef (refers to same feature as 55057) ✓
55057	Rock	60° 17' 45.544" N, 147° 52' 7.689" W	Reef
55877	Rock	60° 19' 23.495" N, 147° 53' 27.787" W	Reef, N ext. ✓
55962	Rock	60° 20' 19.457" N, 147° 52' 36.953" W	Reef islet
55992	Rock	60° 20' 14.187" N, 147° 53' 16.419" W	high pt. of Reef (5)
55994	Rock	60° 20' 23.106" N, 147° 53' 17.992" W	" " " Reef (2)
55995	Rock	60° 20' 3.360" N, 147° 53' 2.799" W	" " " Reef (11)
56003	Rock	60° 19' 38.219" N, 147° 53' 9.144" W	Reef (refers to same feature as 56004) (3)
56004	Rock	60° 19' 36.697" N, 147° 53' 9.152" W	Reef

The following is a list of all features seaward of the NALL that were rejected due to HDOP values exceeding the allowable limit. These features were inadvertently not verified again with sufficient positioning values. (Reference numbers refer to the position fix obtained.)

FIX #	Feature Type	Detached Position Surveyed	Comments	Charting Recommendation
R-20135	Rock (DM)	60° 17' 41.060" N 147° 54' 57.095" W	R-20135 and R-20136 refer to two different digital manuscript features. The features were determined to be reefs rather than the charted rocks, with the detached positions taken to verify their charted positions. Although their positioning may be questionable, (HDOP = 4.1, 4.4, respectively), the features were visually determined to be reefs at the charted positions.	Retain their position as charted on the digital manuscript, but depict the features as reefs (see Shoreline Notes plot for positions of R-20135 and R-20136).
R-20136	Rock (DM)	60° 17' 39.160" N 147° 54' 56.082" W		

These features were compiled on the smooth sheet based on DM 10296 information.

FIX #	Feature Type	Detached Position Surveyed	Comments	Charting Recommendation
R-55916	Ledge (new)	60° 19' 41.743" N 147° 52' 41.295" W	R-55916 refers to a new feature sighted while performing shoreline verification. Although the detached position was rejected due to HDOP value (4.1) exceeding the allowable limit, the sighted ledge should be considered. <i>Area on the smooth sheet is within foul limit line.</i>	Although not a danger to navigation, it is recommended that Fix 55914 at 1.4fa (Shoreline NALL), located at 60° 19' 41.081" N 147° 52' 42.532" W, 26m SW of the R-55916, be used as the position for the ledge.
R-55957	Rock (Charted) Disprovals	60° 20' 26.697" N 147° 52' 26.033" W	R-55957 to R-55960 refers to charted rock disprovals outside this survey's boundaries. See Sheet F (H-10810) for details.	Remove the charted rocks from charts (see Shoreline Notes plot for positions of R-55957, R-55958, R-55959, R-55960)
R-55958		60° 20' 22.990" N 147° 52' 29.432" W		
R-55959		60° 20' 21.931" N 147° 52' 29.362" W		
R-55960		60° 20' 22.592" N 147° 52' 38.952" W		

J. CROSSLINES ✓

Crosslines agreed very well with mainscheme hydrography. Depths generally agreed within one fathom. See Section F, Sounding Equipment, for more details. There were a total of 46.75 nautical miles of crosslines, comprising 25.3% of mainscheme hydrography.

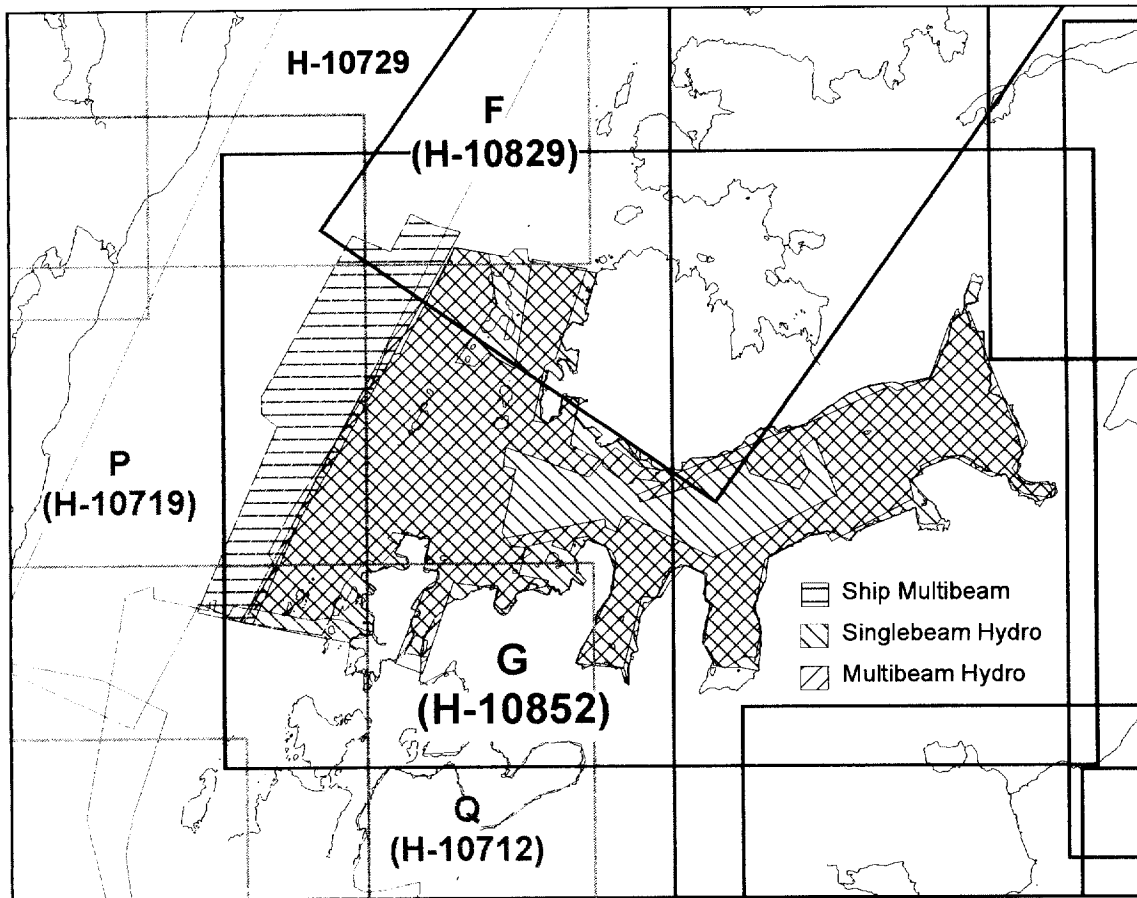
K. JUNCTIONS (See EVAL Rpt., Sec L)

The following contemporary surveys junction with H-10852:

Registry #	Scale	Date	Junction side
H-10829	1:10,000	1998	North ✓
H-10729	1:40,000	1996	West, outside ✓
H-10712	1:10,000	1996	Southwest corner, outside ✓

Soundings on the surveys listed above were found to be in good agreement, matching within 1-5 meters.

See section F., Sounding Equipment, for further details. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after reduction to final vertical datum.



SOUNDINGS

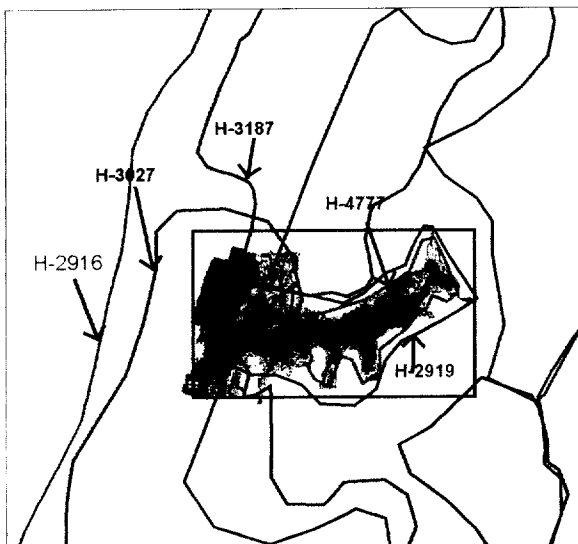
Data collected using the Multibeam Sonar system compared favorably to data collected with singlebeam sonar. However, there were some inconsistencies within the Multibeam data itself, making the depths suspect. The following is a list of data that were either altered or not used to compile the depth plot in MapInfo:

VN	DN	LINE	COMMENT
RA-1	211	All Lines collected for DN211	Due to discrepancies in Logged Times and in Positioning, lines for DN211 were not used. - <i>CONCUR</i>
RA-1	222	All lines collected for DN222	Lines were reconverted using a program ("rewrday") to correct the wrong day number logged by ISIS. This program corrected the day number tag using the raw data, thus requiring the re-cleaning and re-processing of reconverted data. Resulting data appear as ###R####. <i>CONCUR</i>
	225	All lines collected for DN225	
	231	All lines collected for DN231	
RA-1	231	011_1650R 011_1653R 011_1656R 013_1717R	Lines were redundant due to extra coverage, thus lines were not used. - <i>CONCUR</i>
RA-3	224	083_1942 030_1749	The tide correctors were not able to be applied, thus lines were not used. - <i>CONCUR</i>

Multibeam data covered the majority of the survey area between 5-60m. There was no multibeam data collected from the shoreline out to 1 km west of Cathead. This area was covered with singlebeam data, however. On the charts, the area is documented light blue, with no depths. It is recommended that this area be considered foul, (with rocks as noted on DP & BS plot), as it was extremely difficult to bring a shallow-water multibeam launch safely into that vicinity.

L. COMPARISON WITH PRIOR SURVEYS (See Eval Rpt., Sec M)

The following prior surveys share common area with H-10852:



Registry #	Scale	Date	Area covered
H-2919	1:20,000	1907	Entire survey area - VALDEZ DATUM
H-4777	1:10,000	1927	Entire survey area
H-2916	1:40,000	1907	Western outside end
H-3027	1:20,000	1909	Western outside end
H-3187	1:20,000	1910	Upper northwest corner

The prior surveys H-2919 and H-4777 both cover the entire area of present survey H-10852.

The soundings from prior survey H-2919 agreed well, with soundings found to be equal to or 1-20 fathoms deeper than the current survey.

There were a few differences found when comparing the prior and the current survey and are as follows:

Prior Survey Registry Number	Prior Depth Fathoms	H-10852 Depth Fathoms (meters)	Geographic Location	
			21.093	56.532
H-2919	20	5.4 (11.1)	60° 20' 19.104" N, 147° 45' 51.3392" W	
H-2919	5.25	2 (3.7) ✓	60° 19' 15.1104" N, 147° 44' 35.772" W	
H-2919	27	6.8 6.9 (12.6) (12.4)	60° 19' 28.1568" N, 147° 46' 20.3484" W	
H-2919	54	49.1 (89.9) ✓	60° 19' 20.4924" N, 147° 47' 48.1812" W	
H-2919	63	60 (109.8) -	60° 18' 48.33" N, 147° 47' 20.4288" W	
H-2919	74	72.2 (132) ✓	60° 18' 49.2768" N, 147° 48' 44.8776" W	
H-2919	44	36.5 (66.7) ✓	60° 18' 7.6212" N, 147° 49' 14.9808" W	
H-2919	24	22 23 (42.1) (40.2)	60° 17' 52.116" N, 147° 50' 48.246" W	
H-2919	3.5	2.8 2.6 (4.8) (5.1)	60° 18' 14.5692" N, 147° 50' 57.0012" W	
H-2919	59	34.9 (63.9)	60° 18' 46.4364" N, 147° 53' 29.8716" W	
H-2919	65	65 (119)	60° 18' 44.0496" N, 147° 56' 10.6116" W	
H-2919	51	41.9 (76.6)	60° 17' 39.3" N, 147° 56' 0.6324" W	

The shoreline for H-2919 is in good agreement with the current survey except for the eastern most end, where it appears that land has eroded and shifted further east approximately 1-5 m. - CONCUR
10

Comparison with H-4777, a wire drag digital raster version, revealed no unusual depths. - CONCUR

Despite the slight difficulty in matching the shoreline for H-2916 to the current shoreline, the soundings agreed well with the current survey. There were only slight discrepancies when comparing between the prior and the current survey and are as follows:

Prior Survey Registry Number	Prior Depth Fathoms	H-10852 Depth Fathoms (meters)	Geographic Location
H-2916	60	55.2 (101)	60° 18' 26.1864" N, 147° 55' 59.412" W ✓
H-2916	129	97.3 (178)	60° 19' 54.4198" N, 147° 55' 26.148" W ✓

Soundings for H-3027 was in good agreement with the current survey, with the prior soundings equal to or up to 50 feet deeper than the current survey. The soundings on H-3187 that did overlap the present survey area agree well.

The shoreline for H-4777 agreed well with the present survey. Similarly, the shorelines of H-3027 and H-3187 were in general agreement with the current survey. Differences between the present survey and prior surveys can probably be attributed to the improved modern positioning and sounding equipment, and maybe large scale uplifting and sedimentation.

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 26 th Ed. September 21, 1996 Scale: 1:200,000	19 1998	Chart 16701 17 th Ed. June 1, 1996 Scale: 1:81,436	July 25, 1998	Chart 16704 12 th Ed. May 16, 1998 ✓ Scale: 1:20,000
--	---------	---	---------------	---

The survey was compared with the charts listed above. In general, soundings on the contemporary survey agree, or are shoaler between 1 and 15 fathoms. A few exceptions were seen from the middle of Drier Bay eastward where surveyed soundings differed from the chart by 1 to 20 fa (mean 4.6 fa). Areas of significant differences are listed as Dangers to Navigation. It is recommended that on Chart 16701, the island charted in the middle of the bay just north of Port Audrey be removed. The present survey found no indications of an island present at that location. Both Charts 16700 and 16704 correctly show no island. - concur

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

Dangers to Navigation (See EVAL. Rpt., Sec O)

17
23 dangers to navigation were reported to the Seventeenth Coast Guard District on November 1, 1998. Copies of the correspondence can be found in Appendix I of this report. 13 were identified during office processing. are included in this

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

Survey H-10852 is complete and adequate to supersede prior soundings and features in their common areas. 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 ✓

The following fixed navigational aid is within the survey area. It was located and a Spur position was obtained with static GPS. The light is charted adequately on charts 16704, 16701, (a difference of 104m), and chart 16700 (a difference of 66m). Refer to Section Q in ~~the Appendices~~ ^{this report} for more information on the discrepancy between the charted position and the surveyed position.

<u>Name</u>	<u>Light List No.</u>	<u>Survey H10812 Position</u>
New Year Island's Light	25915	60° 18' 46.15998" N 147° 55' 4.59191" W

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*

The anchor symbol at the mouth of Mallard Bay should be removed from all the charts. The eastern half of the bay is very rocky and the bay is subject to very strong williwaw winds from any winds with an easterly component. - *concur*

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	November 1, 1998	N/CS34
Project related data for OPR-P139-RA	Incremental	N/CS34

Respectfully Submitted,

Winli Lin
Winli Lin
Senior Survey Technician

Approved and Forwarded,

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

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

**ADVANCE
INFORMATION**

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.

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Position #</u>	<u>Depth (m)</u>	<u>Survey #</u>
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.

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Position #</u>	<u>Depth (m)</u>	<u>Survey #</u>
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




ADVANCE INFORMATION

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

<u>Feature</u>	<u>Depth (fm)</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>	<u>Position #</u>	<u>Depth (m)</u>	<u>Survey #</u>
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.

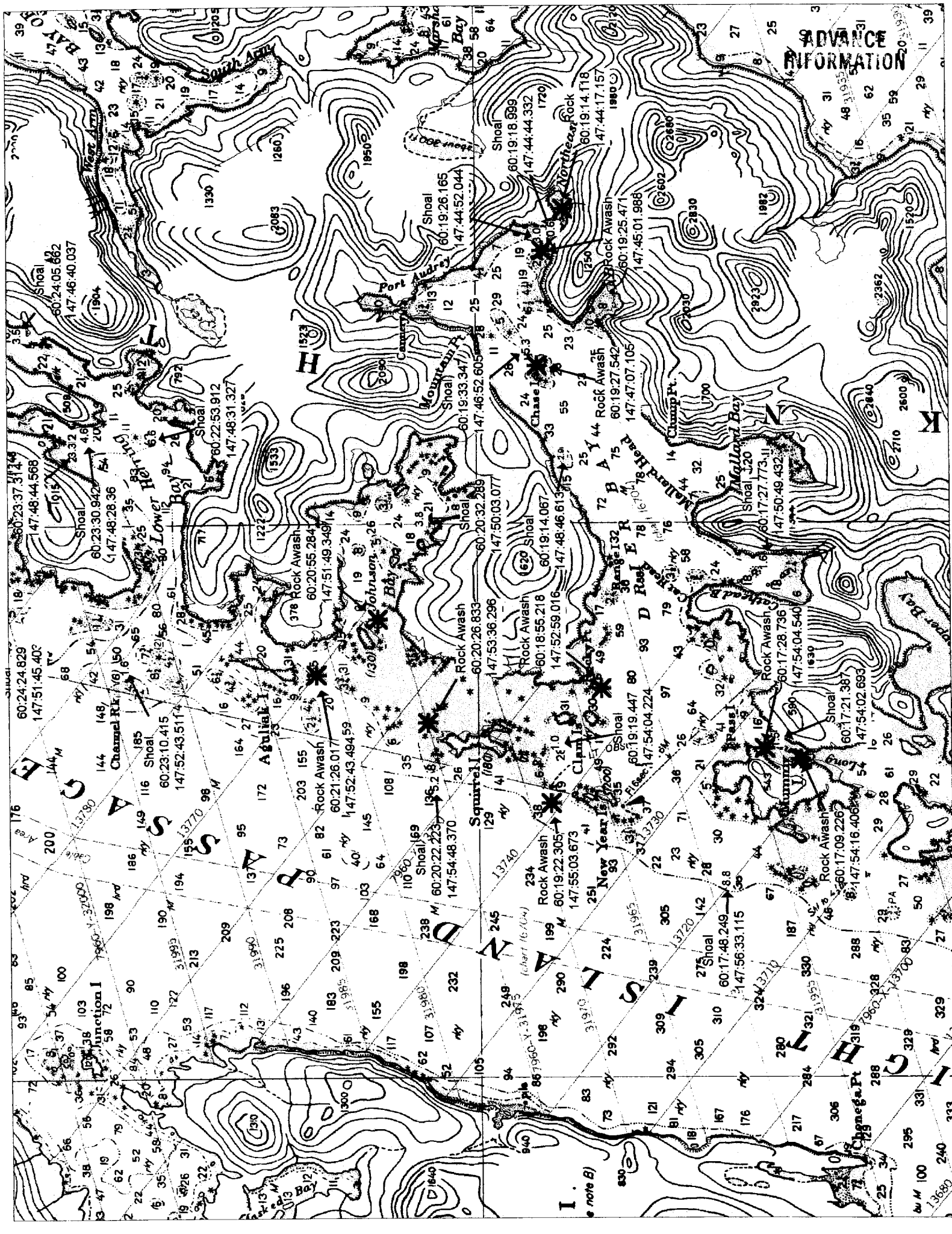
Sincerely,

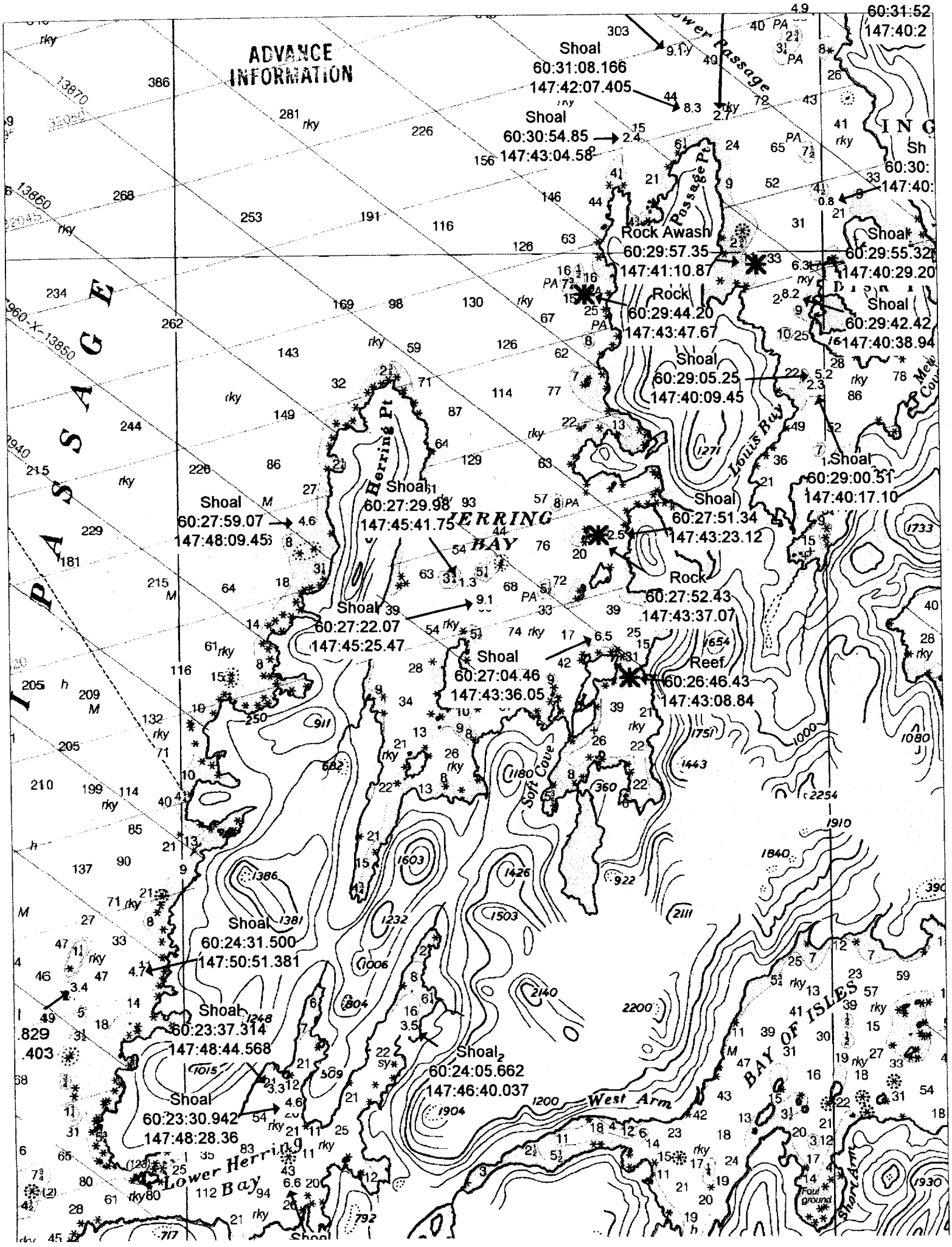

Alan D. Anderson
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34

ADVANCE INFORMATION





ADVANCE INFORMATION

HERRING BAY

BAY OF ISLES

60:31:08.166 147:42:07.405
60:30:54.85 147:43:04.58
60:29:57.35 147:41:10.87
60:29:44.20 147:43:47.67
60:29:05.25 147:40:09.45
60:27:59.07 147:48:09.45
60:27:29.98 147:45:41.75
60:27:22.07 147:45:25.47
60:27:04.46 147:43:36.05
60:27:52.43 147:43:37.07
60:26:46.43 147:43:08.84
60:24:31.500 147:50:51.381
60:23:37.314 147:48:44.568
60:23:30.942 147:48:28.36
60:24:05.662 147:46:40.037

**ADVANCE
INFORMATION**

Date: 11/2/98
Sender: FOO Rainier
To: Inm@cgalaska.uscg.mil
cc: dhill@pachydro.noaa.gov;navinfonet@nima.mil;Lynn [NDS-NCG22] Preston;Chief Survey Technician Rainier;CO Rainier;Jim [PHS-NCG245] Gardner;jgardner@pachydro.noaa.gov
Priority: Normal
Subject: Dangers to Navigation for PWS 1998

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,

Alan D. Anderson
Captain, NOAA
Commanding Officer

Attachment

cc: NIMA
PMC
N/CS261
N/CS34



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

January 18, 2000

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

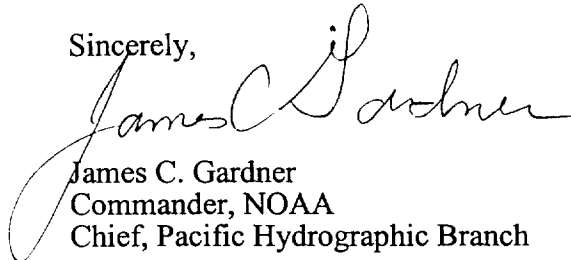
Dear Sir:

During office review of hydrographic survey H-10852, Alaska, Southwest Prince William Sound, Drier Bay and Vicinity, twelve (12) additional shoal features and one rock were found and are considered to be potential dangers to navigation.

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
NOAA Navigation Advisor, Alaska



REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10852

Survey Title: State: ALASKA
 Locality: SOUTHWEST PRINCE WILLIAM SOUND
 Sublocality: DRIER BAY AND VICINITY

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

Survey Date: July 25-September 15, 1998

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

Charts affected: 16700, 26th Edition/September 19, 1998, scale 1:200,000, NAD 83
 16701, 17th Edition/July 25, 1998, scale 1:81,436, NAD 83
 16704, 12th Edition/May 16, 1998, scale 1:20,000, NAD 83

<u>DANGER TO NAVIGATION</u>	<u>LATITUDE(N)</u>	<u>LONGITUDE(W)</u>
Shoal, covers 2.5 fathoms	60/19/32.663	147/45/44.058
Shoal, covers 6 .8 fathoms	60/19/38.849	147/46/22.163
Shoal, covers 6 .8 fathoms	60/19/28.157	147/46/20.347
Shoal, covers 4 .5 fathoms	60/19/49.768	147/46/10.693
Shoal, covers 2.9 fathoms	60/19/49.520	147/46/19.828
Shoal, covers 1.9 fathoms	60/19/37.219	147/46/43.145
Shoal, covers 4 .8 fathoms	60/19/11.660	147/48/59.118
Rock uncovers 2 feet	60/18/59.150	147/52/14.766
Shoal, covers 9.4 fathoms	60/17/54.482	147/53/22.231
Shoal, covers 2.2 fathoms	60/17/37.618	147/53/31.060
Shoal, covers 7.2 fathoms	60/19/12.530	147/53/54.380
Shoal, covers 1.9 fathoms	60/17/24.007	147/50/52.718
Shoal, covers 1.2 fathoms	60/17/18.242	147/50/45.361

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

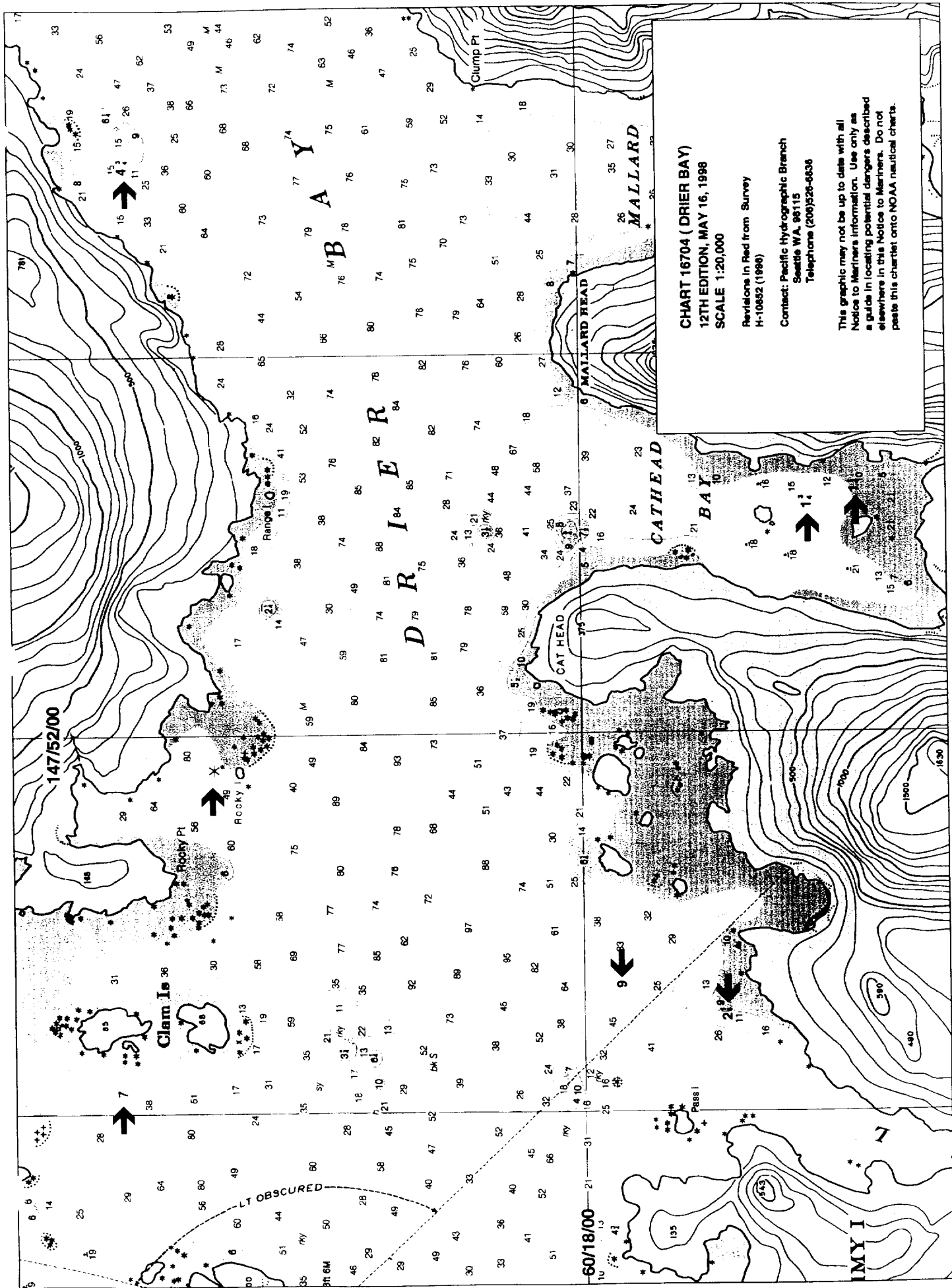


CHART 16704 (DRIER BAY)
 12TH EDITION, MAY 16, 1998
 SCALE 1:20,000

Revisions in Red from Survey
 H-10852 (1998)

Contact: Pacific Hydrographic Branch
 Seattle WA, 98115
 Telephone (206)526-6336

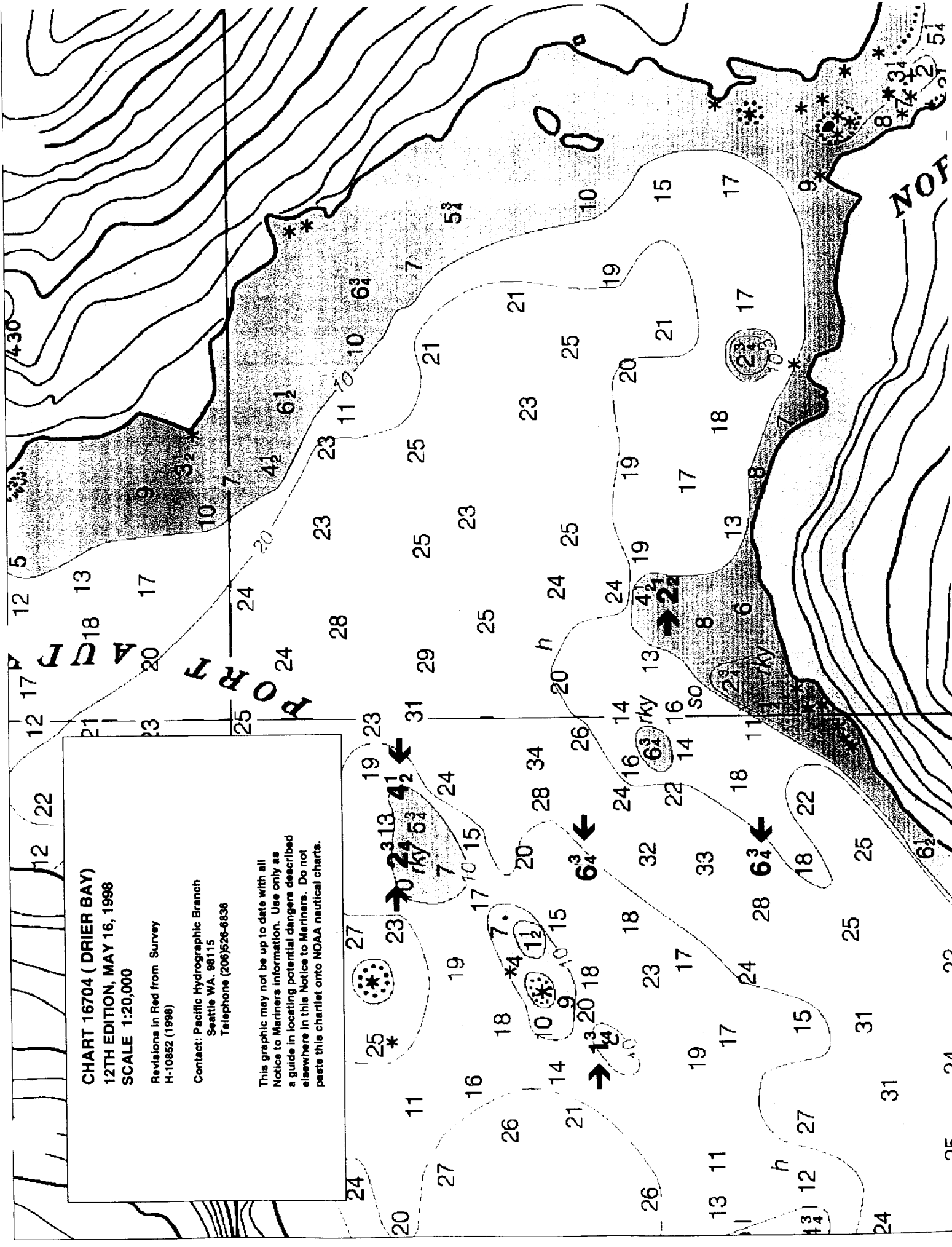
This graphic may not be up to date with all
 Notices to Mariners information. Use only as
 a guide in locating potential dangers described
 elsewhere in this Notice to Mariners. Do not
 paste this chartist onto NOAA nautical charts.

CHART 16704 (DRIER BAY)
12TH EDITION, MAY 16, 1998
SCALE 1:20,000

Revisions in Red from Survey
 H-10852 (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.





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

January 25, 2000

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

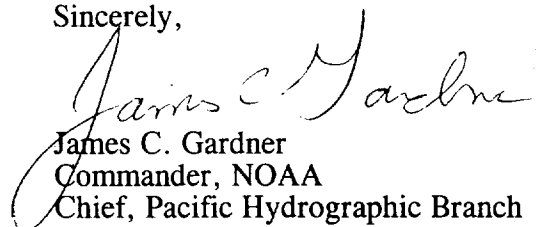
Dear Sir,

During office review of hydrographic survey H-10852, Alaska, Southwest Prince William Sound, Drier Bay and Vicinity, one rock awash and a 5.2 fathom shoal were erroneously reported in a danger letter submitted to the USCG, dated November 1, 1998.

It is recommended that the items reported in error be deleted as dangers to navigation and the corrections to be included in the Local Notice To Mariners.

Questions concerning this report should be directed to the Pacific Hydrographic Branch at (206) 526-6835.

Sincerely,


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

Enclosure

cc: NIMA
N/CS261
NOAA Navigation Advisor, Alaska



REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H-10852

Survey Title: State: ALASKA
 Locality: SOUTHWEST PRINCE WILLIAM SOUND
 Sublocality: DRIER BAY AND VICINITY

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

Survey Date: July 25-September 15, 1998

Charts affected: 16700, 26th Edition/September 19, 1998, scale 1:200,000, NAD 83
 16701, 17th Edition/July 25, 1998, scale 1:81,436, NAD 83
 16704, 12th Edition/May 16, 1998, scale 1:20,000, NAD 83

<u>DANGER TO NAVIGATION</u>	<u>LATITUDE(N)</u>	<u>LONGITUDE(W)</u>
Erroneous rock uncovers 0.7 fathoms	60/19/22.305	147/55/03.673
Erroneous 5.2 fathom sounding	60/20/22.223	147/54/48.370

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



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
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.



APPROVAL SHEET

for

H-10852

RA-10-12-98

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

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	1	1						
2122	9	10		3	11	14		
2123				1				
2124	8	4			2	5		
2125	8	6		3	10	10	1	
2126	1	1						

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
35A	0 hr 0 min	0.95

Tide Gage Information

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

Statistics Summary

Type	Total:
BS	31
DP	205
MBMS	5.6
MS	184.78
S/L	41.66
SL	1.19
SPLIT	188.54
SSS2	22.42
SWMB	50.7
XL	46.75

Percent XL:	25.3%
SQNM:	10.67



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 25, 1999

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P139-RA-98
HYDROGRAPHIC SHEET: H-10852

LOCALITY: Prince William Sound, AK
Drier Bay

TIME PERIOD: Jul 25 - 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: 945-4673 Port Audrey, AK
Lat. 60° 20.6'N Lon. 147° 46.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.301 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 & PWS35A.

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.

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR P139-RA-98,
Sheet H-10852.

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	AVG Time	Range
Order	Correction	Correction
Zone PWS35		
60.30568	9454691 0	0.99 -148.056259
60.349312	9454240 0	0.97 -148.0161
60.372318	9454050 0	0.93 -148.008357
-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 PWS35A		
60.363112	9454673 0	1.00 -147.785618
60.328803	9454240 0	0.97 -147.805714
60.320562	9454050 0	0.93 -147.858271
-147.859073	60.284191	
-147.795727	60.252696	
-147.714171	60.32066	
-147.785618	60.363112	

GEOGRAPHIC NAMES

H-10852

Name on Survey	A ON CHART NO. 16701, 16704 B ON PREVIOUS SURVEY 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										
	A	B	C	D	E	F	G	H	K		
ALASKA (title)	X		X							1	
BARNES COVE	X		X							2	
CAT HEAD	X		X							3	
CATHEAD BAY	X		X							4	
CHASE ISLAND	X		X							5	
CLAM ISLANDS	X		X							6	
CLUMP POINT	X		X							7	
DRIER BAY	X		X							8	
KNIGHT ISLAND	X		X							9	
KNIGHT ISLAND PASSAGE	X		X							10	
LONG CHANNEL	X		X							11	
MALLARD BAY	X		X							12	
MALLARD HEAD	X		X							13	
MOUNTAIN POINT	X		X							14	
MUMMY ISLAND	X		X							15	
NEW YEAR ISLANDS	X		X							16	
NORTHEAST COVE	X		X							17	
PASS ISLAND	X		X							18	
PORT AUDREY	X		X							19	
PRINCE WILLIAM SOUND (title)	X		X							20	
RANGE ISLAND	X		X							21	
ROCKY ISLAND	X		X							22	
ROCKY POINT	X		X							23	
SQUIRREL ISLAND	X		X							24	
										25	

Approved

Dennis J. Remick
 Director, Office of Ocean Resources

MAY 19 1999

HYDROGRAPHIC SURVEY STATISTICS

H-10852

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

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

SHORELINE DATA

SHORELINE MAPS (List):	DM 10296, DM 10297, and DM 10300
PHOTOBATHYMETRIC MAPS (List):	None
NOTES TO THE HYDROGRAPHER (List):	None
SPECIAL REPORTS (List):	None
NAUTICAL CHARTS (List):	16704, 12th Ed., May 16, 1998, 16700, 25th Ed., Sept 19, 1998, 16701, 17th Ed., July 25, 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			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS (Caris)	82		
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	142		
COMPARISON WITH PRIOR SURVEYS AND CHARTS		24	
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		42	
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		76	
USE OTHER SIDE OF FORM FOR REMARKS	TOTALS		

Pre-processing Examination by M. Bigelow	Beginning Date 3/22/99	Ending Date 10/29/99
Verification of Field Data by M. Bigelow, R. Mayor, B. Mihailov, LCDR Ferguson, G. Nelson	Time (Hours) 142.0	Ending Date 1/20/2000
Verification Check by D. Hill, R. Davies	Time (Hours)	Ending Date 1/24/2000
Evaluation and Analysis by B. Mihailov	Time (Hours) 66.0	Ending Date 1/26/00
Inspection by D. Hill, R. Davies	Time (Hours)	Ending Date

EVALUATION REPORT

H-10852

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. A page-size plot of the charted area depicting the specific limits of supersession accompanies this report as Attachment 1.

The bottom consists mainly of mud. Depths range from 0 to 325 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 June 1, 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 Cordova, Alaska, gage 945-4050, Valdez, Alaska, gage 945-4240, Port Audrey, Alaska, gage 945-4673 and Herring Point, Knight Island, 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: -2.034 seconds (-62.946 meters)
Longitude: 7.412 seconds (113.808 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, DM-10297 and DM-10300, 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-10852 junctions with the following surveys.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10829	1998	1:10,000	North
H-10729	1996	1:10,000	West
H-10712	1996	1:10,000	Southwest

The junction with surveys H-10712, H-10729 and H-10829 were not formally completed since these surveys have been previously processed and forwarded for charting. There is good agreement between sounding and depth curves. A few soundings from these surveys have been transferred to better portray the common area. An "Adjoins" note has been shown on the survey.

M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-2916	1907	1:40,000	Valdez
H-2919	1907	1:20,000	Valdez
H-3027	1909	1:20,000	Valdez
H-3187	1910	1:20,000	Valdez
H-4777WD	1927	1:10,000	

The prior survey H-2919 covers the entire area of the present survey. The present survey was compared to a digital copy of prior survey H-2919. The registration and legibility of this prior survey to the present survey was adequate. With the exception of some differences in depths listed in the hydrographer's report, 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. Several features have been transferred to the present survey in color from prior survey H-2919. These features fall near or inshore of the NALL line and were not specifically addressed by the hydrographer.

Prior surveys H-2916 and H-3027 cover the western portion of the present survey. The present survey was compared to digital copies of prior surveys H-2916 and H-3027. The

registration and legibility of these prior surveys to the present survey was adequate. Soundings are sparse on both of these prior surveys. The present survey is consistently shoaler than the prior survey depths. Differences range from 1-20 fathoms.

One sounding from prior survey H-3187 falls within the limits of the present survey. This sounding agrees well with the present survey.

Wire drag survey H-4777 covers the entire area of the present survey. A pier located at latitude 60/18/45.4(N), longitude 147/46/58.1(W) was transferred to the present survey in color from prior survey H-4777. This feature falls near or inshore of the NALL line and was not specifically addressed by the hydrographer. No other unusual differences were noted.

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.

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-10852 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-10852.

O. COMPARISON WITH CHART

Survey H-10852 was compared with the following charts.

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>	<u>Datum</u>
16700	25th	September 19, 1998	1:200,000	NAD 83
16701	17th	July 25, 1998	1:81,436	NAD 83
16704	12th	May 16, 1998	1:20,000	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.

Survey H-10852 is adequate to supersede charted hydrography within the common area.

b. Dangers to navigation

Seventeen (17) dangers to navigation were discovered during survey operations. These dangers were reported to the USCG, NIMA and N/CS261 on November 1, 1998. Thirteen (13) additional dangers were identified during office processing and were reported to the USCG for inclusion to the Local Notice to Mariners on January 18, 2000. Copies of both reports are attached.

P. ADEQUACY OF SURVEY

The hydrography contained on survey H-10852 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" in 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-10852 was completed September 15, 1998 and received for office processing on December 3, 1998.

Q. AIDS TO NAVIGATION

There is one fixed aid to navigation within the survey area. This aid was positioned and adequately serves the intended purpose. See the hydrographer's report, section P and section Q, descriptive report insert (attached) for additional information. There are no floating aids to navigation located 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

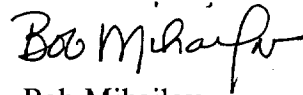
Miscellaneous information is adequately discussed in the hydrographer's report.

T. RECOMMENDATIONS

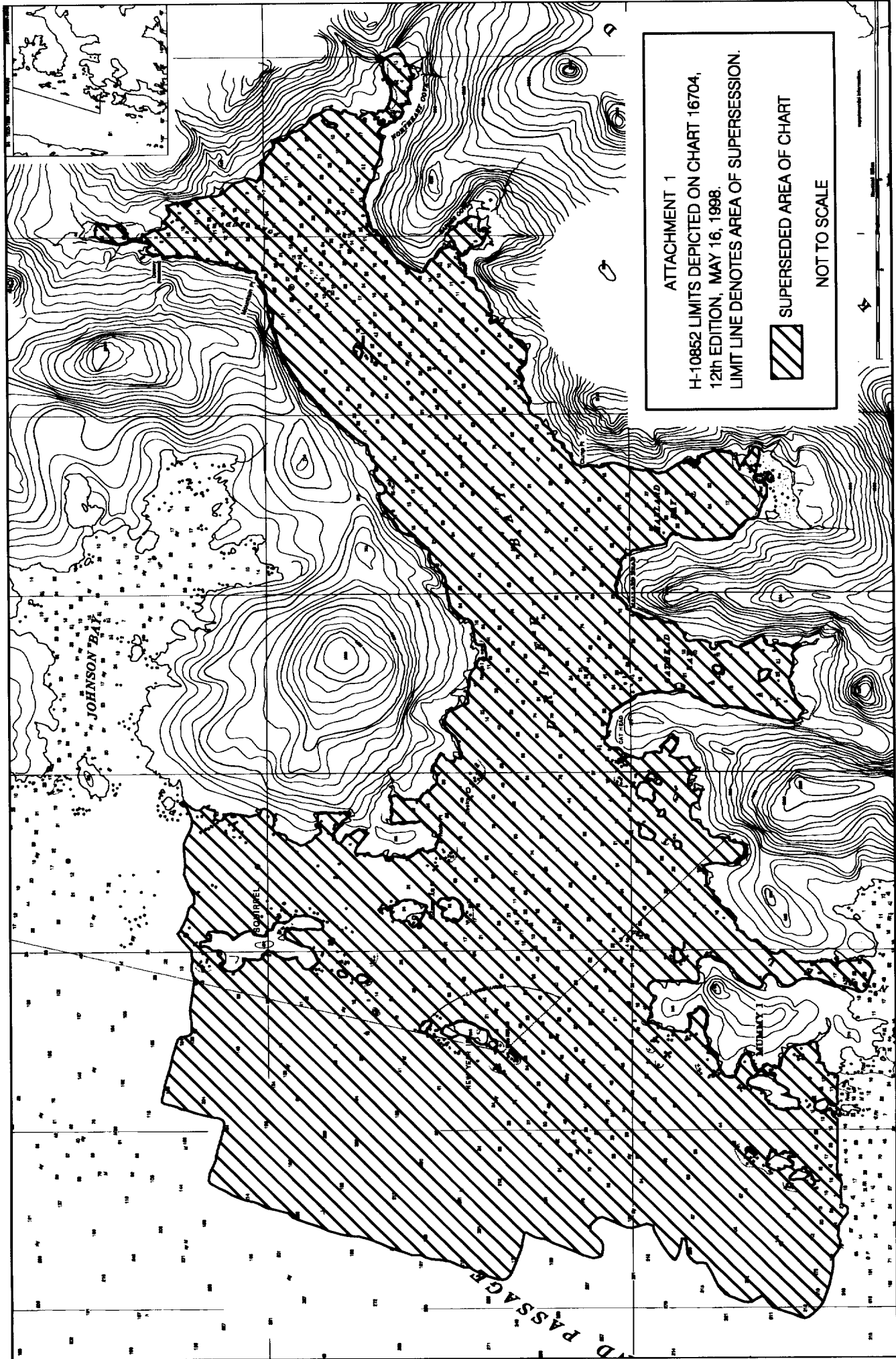
Survey H-10852 is a good hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

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

A handwritten signature in black ink that reads "Bob Mihailov". The signature is written in a cursive style with a large, stylized initial "B".

Bob Mihailov
Cartographer



ATTACHMENT 1
H-10852 LIMITS DEPICTED ON CHART 16704,
12th EDITION, MAY 16, 1998.
LIMIT LINE DENOTES AREA OF SUPERSESSION.



SUPERSEDED AREA OF CHART

NOT TO SCALE



APPROVAL SHEET
H-10852

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.

for Charles R. Davis Date: 1/26/00
Dennis Hill
Supervisory Cartographer
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.

James C. Gardner Date: 1-27-00
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Samuel P. De Bow Date: May 1, 2000
Samuel P. De Bow
Captain, NOAA
Chief, Hydrographic Surveys Division

