

H10812

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-10-8-98
Registry No.	H-10812
LOCALITY	
State	Alaska
General Locality	Lynn Canal
Sublocality	Eldred Rock to Anyaka Island
and Vicinity	
1998	
CHIEF OF PARTY	
CAPT Alan D. Anderson, NOAA	
LIBRARY & ARCHIVES	
DATE	AUG 26 1999

HYDROGRAPHIC TITLE SHEET

H-10812

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-10-8-98

State Alaska

General locality Lynn Canal

Locality Eldred Rock to Anyaka Island and Vicinity

Scale 1:10,000

Date of survey 5/12/98 - 6/20/98

Instructions dated March 5, 1998 *

Project No. OPR-0340-RA

Vessel RAINIER(2120), 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 CAPT A. Anderson, LT R. Fletcher, LCDR T. Nichel, LT Rick Sipos, RH M. Lathrop, LT J. Lazar, ST A. Lim, ST D. Pattison, ST W. Lim, ST M. Stecher

Soundings taken by echo sounder, ~~hand lead, photx~~ ^{Multibeam} DSF-6000N, Knudsen 320M, HYDRO CHART II. (IDSSS), RESON 8101 Multibeam (used as test data)

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Evaluation by: ~~XXXXXX~~ B. Mihailov Automated plot by HP Design Jet 650

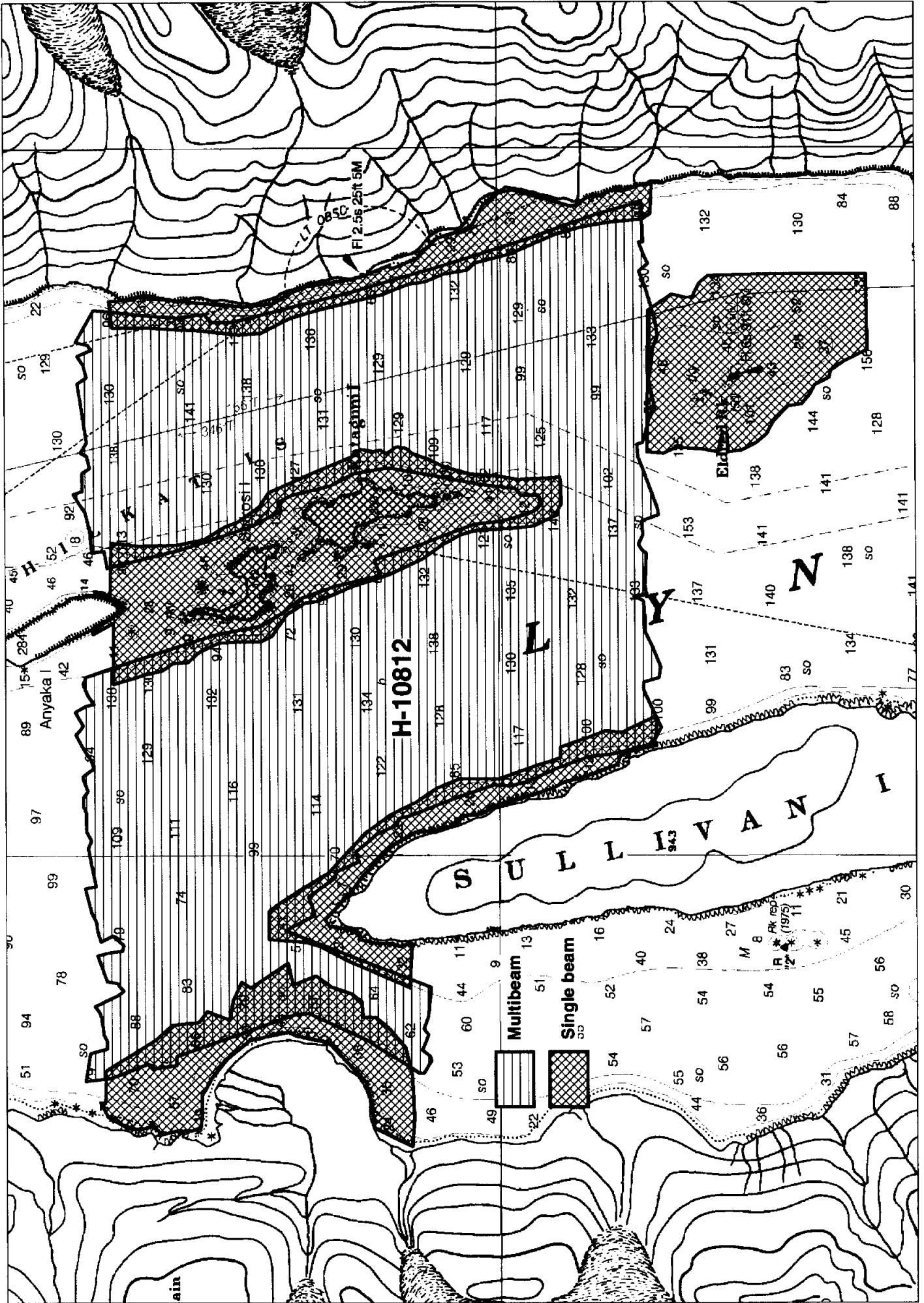
Verification by E. Domingo, G. Nelson, M. Bigelow, R. Mayor, D. Doles, B. Mihailov

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

REMARKS: All times are UTC, revisions and marginal notes in black were generated during office processing. All separates are filed with the hydrographic data, as a result page numbering may be interrupted or non-sequential.
All depths listed in this report are referenced to mean lower low water unless otherwise noted.

* Change dated March 30, 1998

AWOIS / SWIF
7/29/98 MUR



Descriptive Report to Accompany Hydrographic Survey H-10812

Field Number RA-10-08-98

Scale 1:10,000

July 1998

NOAA Ship RAINIER

Chief of Party: Captain Alan D. Anderson, NOAA

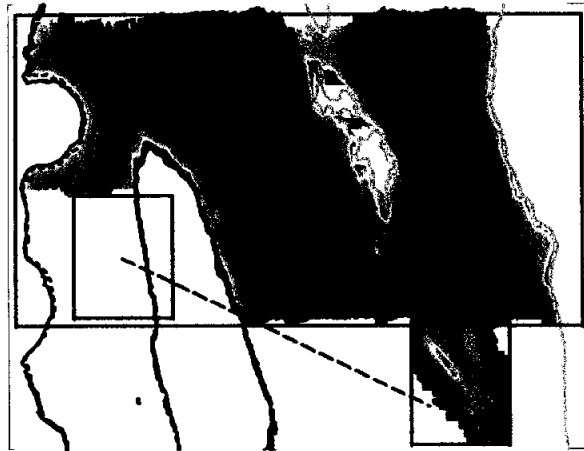
A. PROJECT ✓

This basic hydrographic survey was completed in Lynn Canal as specified by Project Instructions OPR-O340-RA dated March 5, 1998 and change #1 dated March 30, 1998. Survey H-10812 corresponds to sheet G as defined in the sheet layout. This survey will provide data to supersede surveys performed in 1890 and 1923 and will affect Charts 17317 and 17300. Requests for hydrographic surveys and updated charts in this area have been received from the U.S. Coast Guard, the Southeast Alaska Pilot's Association, cruise ship lines, and local fishermen.

Alaska State Ferry Vessels and large cruise ships routinely travel through the survey area. The deepest draft vessel observed in the survey area was a luxury cruise ship with a length of over 800 ft, an approximate draft of 35-40 ft, and a complement of over 2000 passengers.

B. AREA SURVEYED ✓ See Eval Rpt., section B.

The survey area is Eldred Rock to Anyaka Island. The survey's northern limit is latitude 59-02-58.32 N. The survey's southern limit is 58-58-52.24 N, with Eldred Island extending to the South to 58-57-19.21 N. The western limit is 135-24-12.23 W and the eastern limit is 135-10-30.88 W. Data acquisition was conducted from May 12 to June 27, 1998 (DN 132 to 172).



MAPINFO VERTICAL MAPPER GRAPHIC

C. SURVEY VESSELS ✓

Data were acquired by RAINIER and The Rainier survey launches (vessel numbers 2122, 2123, 2124, 2125 and 2126) as noted in the Survey Information Summary print out appended to this report. Bottom samples were collected in Hypack on survey launch 2125.

VN	DN	TYPE of HYDROGRAPHY
2120	141, 143-144, 146-147	Ship IDSSS
2120	148	Ship IDSSS XL ✓
2120	171	Ship IDSSS Splits

2122	148	S/L, DP
2123	172	SWMB XL Test (Not part of Final data set)
2124	132	S/L, DP, MS
2124	140	MS, SPLITS ✓
2124	146	S/L, DP, MS, SPLITS
2124	168	MS, XL
2125	140	MS, SPLITS
2125	142	MS, SPLITS
2125	145	BS, MS, SPLITS ✓
2125	146	SPLITS
2125	168	SPLITS
2125	171	DIVE, BS, SPLITS
2126	140	MS, SPLITS
2126	141	SPLITS ✓
2126	142	MS
2126	168	XL, SPLITS

This project included the use of a new vessel configuration. Launch 2123 was configured during the 1997-1998 winter inport period with a Reson SeaBat 8101 Shallow Water Multibeam (SWMB) system. 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. The maximum attainable depths were approximately 80-150 meters, depending on sea conditions and bottom topography. The center of launch 2123's keel was cut and modified to house the transducer. The originally installed DSF-6000N single beam transducer remained installed as before. ✓

D. AUTOMATED DATA ACQUISITION AND PROCESSING See Eval Rpt. Section D.

Single beam echosounder data were acquired using Hypack version 7.9 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 3.21 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

* Filed with the hydrographic records.

F. SOUNDING EQUIPMENT

^{two single beam}
The primary sounding instrument^s for this survey ^{was} the Raytheon DSF-6000N, which is dual frequency (100 kHz, 24 kHz), digital recording fathometers with analog paper traces. DSF-6000N 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. The Knudsen 320M is a dual frequency, digital depth sounder using the same transducer frequencies. Serial numbers are included in the Separates. *

Note about Discrepancies between the Knudsen and DSF-6000N in Steep and Deep Areas:

Discrepancies between the Knudsen and DSF-6000N echosounders were noted in deep areas with extremely steep slopes, especially along the east side of the survey, where DSF-6000N soundings were as much as 13 fathoms shoaler than Knudsen soundings. Inherent differences between the two measurement systems such as beam width, frequency, power output, receiver sensitivity, bottom tracking functions, and timing latency are greatly exaggerated in such areas, and consequently, differing depths between the two systems can be expected. Due to the extremely steep slopes and deepness of the area, such differences are not significant to navigation and it is recommended that the shoaler of the soundings be charted. In addition, the automated bottom tracking function of either echosounder can begin following a relatively strong side lobe return and lose track of the weaker main beam return. Therefore, in steep areas, even when using a single echosounder system, lines run in the off-shore direction can be shoaler than lines run in the in-shore direction. This is not significant to navigation as the difference is in the conservative direction and occurs in deep water and it is again recommended that the shoaler of the soundings be charted. It should be noted Rainier's Intermediate Depth Swath System (IDSSS) tended to compare well with the Knudsen in areas of overlapping coverage on the east side of the survey. As an additional investigative measure, a Reson Seabat 8101 SWMB test line was run across Knudsen and DSF-6000N data on the eastern side of the survey where it was observed that the SWMB data tended to compare well with the Knudsen data. See previous page for comments.

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, and was used in all the areas deeper than 150 meters, throughout survey H-10812. 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 VAX Station 4000-90 (DAS)
Sperry MK 227 Gyrocompass
ZETA 24" Plotter

DEC Server DSRVW-7C
TTi 8212 Tape Drive
DATAWELL Hippy
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.

Supplemental soundings along the Eastern Shore were acquired with the Reson SeaBat 8101 Shallow Water Multibeam (SWMB) system employed on Launch 2123. See previous page for comments.

* Filed with the hydrographic data.

G. CORRECTIONS TO ECHO SOUNDINGS ✓

Seven sound velocity casts were acquired within the survey limits as shown in the appended Survey Information Summary report. The 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 3.3 (1997), in accordance with Field Procedures Manual (FPM) section 2.4.3. Printouts of the sound velocity profile, data, and correctors used in field processing are included in the "Separates to be Included with Survey Data, IV. Sounding Equipment Calibrations and Corrections" *The following velocity casts supplied correctors for singlebeam and IDSSS soundings for this survey:

DN	Time (UTC)	Position	HPS	
			Table No.	Table Depth (m)
132	1637	59-02'30" N 135-17'48" W	13	277.5
139	1707	59-00'15" N 135-16'43" W	5	311.3
144	1642	59-00'17" N 135-16'46" W	14	286.3
147	1810	59-18'06" N 135-22'42" W	NA	541.9
148	1851	58-56'24" N 135-14'39" W	6	363.7
166	1841	58-48'24" N 135-09'36" W	8	374.1
170	1743	58-52'55" N 135-12'12" W	15	330.4

} casts plot outside of the survey area

The following velocity cast supplied correctors for shallow water multibeam (SWMB) soundings for this survey:

DN	Time (UTC)	Position	Table No.	Table Depth (m)
172	1832	59-02'30" N 135 17'03" W ✓	NA	129.8

RAINIER'S static transducer depth was determined during dry-dock in April 1998 using the form in the Field Procedures manual (FPM) Fig. 2.2.

Offsets for GPS antennas, static draft, and settlement and squat correctors were tabulated in the HPS Offset Tables. Printouts of these tables are included with project data for OPR-O340-RA-98. Static draft and transducer offsets for launches 2122, 2123, 2124, 2125 and 2126 were measured on March 26, 1998. Offset table #9 was used for the RAINIER.

Settlement and squat values for launch 2122 were last measured on June 11, 1998 at Shakan Strait, AK. Settlement and squat values for launch 2123 were last measured on March 24, 1998 at Port Angeles, WA. Settlement and squat values for launch 2124 were last measured on June 11, 1998 at Shakan Strait, AK. Settlement and squat values for launch 2125 were last measured on June 21, 1998 at Chilkat Inlet, AK. Settlement and squat values for launch 2126 were last measured on June 10, 1998 at Shakan Strait, AK. Settlement and squat values for the RAINIER were last measured on September 21, 1997 at Kings Bay, AK.

** Applied to final data

Settlement and squat correctors were computed in accordance with Hydrographic Manual Section 4.9.4.2, using FPM Fig. 2.3, and are included with project data for OPR-O340-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. The offset tables are included with project data for OPR-O340-RA-98.

The Coastal and Estuarine Oceanography Branch (N/OES334) through N/CS31 provided predicted tides for the project on diskette for the Juneau, Alaska reference station (945-2210). HPS listings of the data used in

* Filed with the hydrographic data.

generating tidal correctors are included in Appendix V of this report. Tidal correctors as provided in the project instructions for H-10812 are shown on the appended Survey Information Summary report.

Juneau, Alaska (945-2210) and Skagway, Alaska (945-2400) are the primary control stations for datum determination at all subordinate stations. RAINIER personnel installed Sutron 8200 tide gages at Taiyasanka (945-2434) on April 22, 1998, and Berners Bay (945-2346) on April 20, 1998. The Taiyasanka gauge was removed on June 20, 1998 and the Berners Bay gauge was removed on June 22, 1998.

Refer to the Field Tide Notes and supporting data in Appendix V for individual gauge performance and level closure information. This information was forwarded to N/OES212 on July 20, 1998 in accordance with HSG 50 and FPM 4.3. A request for approved tides was forwarded to N/OES23 on July 18, 1998 in accordance with FPM 4.2.3. *Approved tide note, dated February 16, 1999 is attached.*

H. CONTROL STATIONS *See Eval Rpt., section H.*

The horizontal datum for this project is NAD 83. Station ACE was used to verify and establish local geodetic control for this survey. See the OPR-O340-RA-98 Horizontal Control Report for more information.

I. HYDROGRAPHIC POSITION CONTROL *See Eval Rpt., section I.*

All soundings were positioned using differential GPS (DGPS). VHF differential reference station at ACE was used as primary hydrographic control. The USCG beacon located at Gustavus, AK was 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-O340-RA-98.

J. SHORELINE *See Eval. Rpt., section I.*

MapInfo tracings of raster images for TP-01524^{*} and TP-01525 were made by the Pacific Hydrographic Branch provided for use as the source shoreline and imported into Hypack for field verification. In areas not covered by ~~TP-01524 and~~ TP-01525, a raster image of CRS-00198 was available but was of such poor quality that it was not used. In these areas, NOAA Ship RAINIER personnel made a MapInfo tracing of the charted shoreline from chart 17317 for orientation purposes and for importing into Hypack for field verification. (Note that a prior edition was inadvertently used instead of the current 18th edition. The correct 18th edition was used for comparison of field features to the chart.) ** TP-01524 does not apply to this survey.*

Limited shoreline verification was conducted in accordance with the Project Instructions. For this survey the general limit of safe navigation of a survey launch is 5-50 meters offshore at apparent low tide, which is generally 3-10 meters of depth at Mean Lower Low Water. Features shown inshore of the NALL are the hydrographer's representation of the shoreline while slowly transiting along the shore and are intended to aid chart compilation and are depicted on MapInfo Workspace "shoreline.wor". Several significant features on the shoreline notes layer are represented with no detached positions taken, however, the shoreline track plot outlines these features and should be taken into consideration. Observed field features found offshore or directly along the NALL were positioned with the launch's DGPS and are depicted on the survey and on MapInfo Workspace "DP_BS_layout.wor". There was general agreement between the charted/TP shoreline and what the hydrographer found on this survey. All charted and TP features offshore of the NALL were verified in the field. All new positions were verified by detached positions and are shown in red on the detached position/bottom sample and shoreline plot. *Shoreline verification data was analyzed and shown on the smooth sheet as warranted.* *Concur*

New features , disprovals, and new modifications to descriptions of charted features, are described below:

Smooth Sheet

Fix number	Feature	Geographic Position	Corrected Depth (meters)	
21029 see note J1	Reef, N ext chd rng 4m brg 160M (1.5)m 21029	59-02-41.97 N ✓ 135-16-53.48 W	-0.4	} Reef (1)
21030 see note J1	Reef, S ext chd rng 4m brg 335M (1.5)m 21030	59-02-39.78 N ✓ 135-16-52.10 W	-0.4	
21036	Reef, S ext, new rng 4m brg 130M (2.0)m 21036	59-02-19.11 N ✓ 135-16-51.63 W	-0.9	} Reef (2)
21041	Reef, N ext, new rng 4m brg 165M (2.0)m 21041	59-02-16.13 N ✓ 135-16-47.21 W	-0.9	
21065 see note J2	Reef, S ext chd rng 10m brg 340M (3)m 21065	59-02-06.39 N ✓ 135-16-10.93 W	-1.9	} Reef (6)
21070 see note J2	Reef, NW ext chd rng 5m brg 120M (3)m 21070	59-02-11.06 N ✓ 135-16-13.97W	-1.9	
21071 see note J2	Reef, NE ext chd rng 4m brg 190M (3)m 21071	59-02-10.70 N ✓ 135-16-10.01 W	-1.9	
21199	Rock, new rng 4m brg 125M AWASH 21199	59-00-48.99 N ✓ 135-15-33.47 W	0.9	05 RK extension of ledge
21215	Rock, new rng 2m brg 090M 0.8m 21215	59-01-11.90 N ✓ 135-15-46.64 W	1.7	
40079	Ledge, new rng 3.5m brg 000M (4)m 40079	59-00-42.94 N ✓ 135-11-42.3 W	-3.5	ledge } (12)
40080	Ledge, new rng 3.5m brg 050M (4)m 40080	59-00-43.96 N ✓ 135-11-43.52 W	-3.5	
40081	Ledge, new rng 3.5m brg 045M (4)m 40081	59-00-45.25 N ✓ 135-11-43.56 W	-3.5	ledge } (4)
40144	Ledge, new rng 3.5m brg 084M (1.5)m 40144	58-59-26.24 N ✓ 135-10-54.51 W	-1.1	
40145	Ledge, new rng 3.5m brg 357M (1.5)m 40145	58-59-25.56 N ✓ 135-10-53.92 W	-1.1	* (0)
40169	Rock, new rng 3.5m brg 045M AWASH 40169	58-58-54.84 N ✓ 135-10-33.86 W	0.3	
40179	Rock, new rng 3.5m brg 200M (0.5)m 40179	59-00-26.17 N ✓ 135-14-47.33 W	-0.4	* cov 2 ft
41727 see note J3	Ledge, chd rock rng 3.5 m brg 240M (7)m 41727	59-02-31.28 N ✓ 135-23-48.28 W	-5.6	
41728 see note J4	Rock, chd rng 0.3m brg 243M (0.5)m 41728	59-02-46.19 N ✓ 135-23-44.85 W	0.9	05 RK
41751	Rock, new rng 2m brg 225M (0.3)m 41751	59-02-58.2 N ✓ 135-23-29.19 W	1.1	
41839	Rock, new rng 0.5m brg 228M (0.6)m 41839	59-00-44.03 N ✓ 135-19-48.76 W	0.6	extension of ledge
41846	Rock, new rng 0.4m brg 230M (0.2)m 41846	59-00-39.79 N ✓ 135-19-44.31 W	1.0	
41888 see note J5	Rock, chd disproval	58-59-41.81 N ✓ 135-19-05.41 W	4.9	ledge 30 meters inshore
41925	Reef, W ext new rng 2m brg 060M (1)m 41925	58-58-30.15 N ✓ 135-13-37.55 W	-0.2	
41926	Reef, S ext new rng 2m brg 020M (1)m 41926	58-58-29.5 N ✓ 135-13-37.15 W	-0.2	} Reef (2)
41927	Reef, E ext new rng 2m brg 290M (1)m 41927	58-58-29.66 N ✓ 135-13-36.05 W	-0.3	
41928	Reef, N ext new rng 2m brg 220M (1)m 41928	58-58-30.38 N ✓ 135-13-35.84 W	-0.3	

Note J1: The reef is depicted as a rock on CH 17317, 18th edition. Concur

Note J2: The reef is depicted as a rock on CH 17317, 18th edition. Concur

Note J3: H10812 found that the ledge extends slightly further than is shown on the TP-sheet. Concur
The feature is depicted as a rock on CH 17317, 18th edition.

Note J4: The rock is charted but is not shown on the TP-sheet. *Concur*

Note J5: The rock is shown on the prior edition of CH 17317, but not on the TP-sheet or on the current 18th edition of CH17317. The DP remains shown for information purposes. *Reference DP added on previous page.*

K. CROSSLINES *See Eval Rpt., section K.*

Crosslines agreed very well with mainscheme hydrography. Depths generally agreed within one meter. An exception is on the east side of the survey and in other areas of extremely steep bathymetry, where larger differences were seen as expected due to the inherent differences in the various measurement systems used. See Section F, Sounding Equipment, for more details. There were a total of 20.82 nautical miles of crosslines, comprising 21.8% of mainscheme hydrography.

L. JUNCTIONS *See Eval Rpt., section L.*

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H-10810	1:10,000	1998	North
H-10815	1:10,000	1998	Southwest
H-10816	1:20,000	1998	Southeast

Soundings on these 1998 surveys were found to be in good agreement, matching within 1 fathom, except at the extreme southeast corner of this survey where the deepness and extreme steep slope of the area produced larger differences between DSF-6000N and Knudsen soundings. 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. *See eval Rpt., section P for additional discussion of these differences.*

M. COMPARISON WITH PRIOR SURVEYS ✓ *See Eval Rpt., section M.*

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Area covered</u>
H-02057	1:40,000	1890-1905	Entire Survey
H-04226 <i>WD</i>	1:40,000	1923	Northern Half
H-4202 <i>WD (ADD WK)</i>	1:40,000	1922	Southern Half
H-4202 <i>WD</i>	1:40,000	1921	Southern Half

Prior survey H-02057 covers the entire area of present survey H-10812. The prior soundings agreed well with the present survey, except below the 100 fathom curve where soundings from this survey average 3 fathoms deeper than soundings from prior survey H-02057. H-04226 shoreline is in good agreement, and only covers the northern portion of H-10812, with shoreline being the only comparison. Final comparisons will be done at PHB after reduction to final sounding datum using tidal information collected concurrently with this survey.

N. ITEM INVESTIGATIONS ✓

AWOIS #: 52403

Locality: Approximately 100ft from the extremity of the ledge extending from the northern end of Eldred Rock.

Reported AWOIS Position: 58-58-30.00 N 135-13-50.00 W

Charted Position (CH 17317, 18th edition): 58-58-27.97 N, 135-13-28.56 W

Survey H10812 Position: 58-58-29.23 N 135-13-35.48 W ✓

Survey H10812 Depth: 3.6^{*} fathoms (determined by MOD-III diver least depth gauge)

Type of Feature: Wreck (Steamer Clara Nevada)

** shown as 2.5 wk on smooth sheet after application of approved tides.*

AWOIS item number 52403 was a wreck spread out over a 150 foot area, with some distinct parts revealing it was once a ship. The detached position was taken by positioning a launch next to a float which a dive team had attached to the shoalest point on the wreck, position #53193. The wreck was located in a slightly different position, approximately 114.4 meters from the charted position and 232.6 meters from the AWOIS position, and was located by the dive team doing a 100 foot search radius around the shoalest sounding north of Eldred Rock, and then proceeding south.

Charting Recommendation: Remove the presently charted non-dangerous wreck symbol. It should be noted this survey found a new reef just 18 meters to northwest of the wreck. (See Section O. Comparison with the Chart, Danger to Navigation, for details.) The new reef is of greater danger to navigation than the wreck. Because it is very unlikely that both the wreck and the reef can be shown at the scale of the chart, it is recommended that only the reef be charted. If it is determined that the wreck must also be charted, chart a wreck with least depth known (3.6 fathoms) at latitude 58-58-29.23N longitude 135-13-35.48W, using a leader arrow, if necessary, as not to obscure the more dangerous reef. *Concur with clarification. Chart a submerged wreck symbol and the reef as a rock based on chart scale.*

O. COMPARISON WITH THE CHART ✓ *See Eval Rpt., section O.*

Chart 17300
27th Ed. August 1993
Scale: 1:209,978

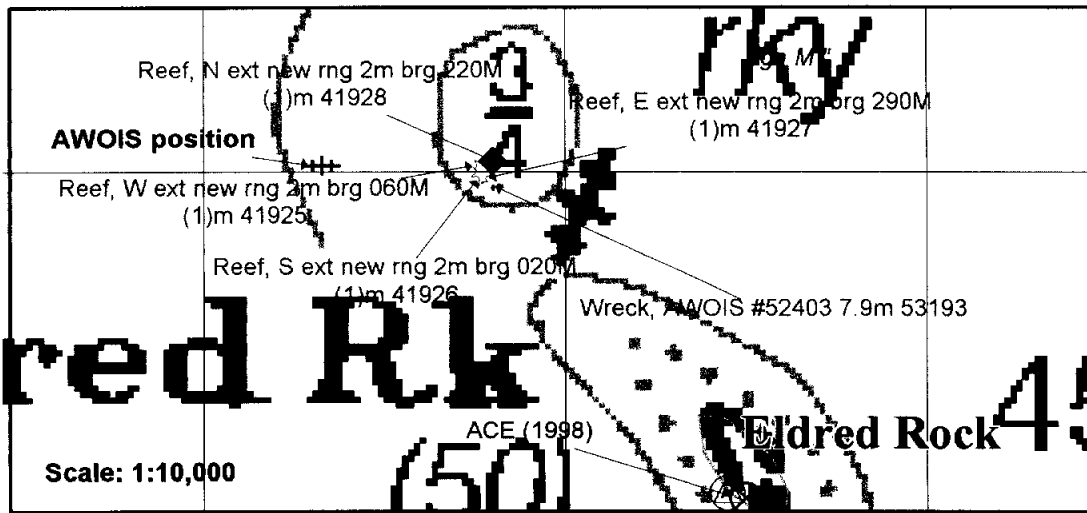
Chart 17317
18th Ed. June 14, 1997
Scale: 1:77,812

The survey was compared with Chart 17317 and was in good agreement, generally within one fathom. A few exceptions in deeper waters, one at the north end of Sullivan Island, in which the contours and soundings are off and also along the southeast side. It should be noted that survey H10812 developed the area around Eldred Rock far more extensively than is shown on CH 17317. Consequently, shoaler soundings exist around Eldred Rock than are currently shown on CH 17317. Most significantly, a 17.7 fathom sounding was found northeast of Eldred Rock in between an area where 45 and 46 fathom soundings are presently charted. *Concur*
Non-sounding features are discussed in Section J. Final sounding comparisons will be made at PHB after reduction to final vertical datum. *Chart 18 fm sounding as shown on smooth sheet at latitude 58/58/39N, longitude 135/12/49W.*

Dangers to Navigation

One danger to navigation was reported to the Seventeenth Coast Guard District on July ²⁷ 1998. Copies of the correspondence can be found in ~~Appendix I~~ ^{attached to} this report. The danger to navigation is a reef that is disconnected from the main island, Eldred Rock, and is found at a charted 3/4 fathom. *Concur Chart a rock*

Fix number	Feature	Geographic Position	Corrected Depth (meters)
41928	Northern extent of reef	58-58-30.39 N ✓ 135-13-35.84 W	-0.3
41927	Eastern extent of reef	58-58-29.66 N ✓ 135-13-36.05 W	-0.3
41925	Western extent of reef	58-58-30.14 N ✓ 135-13-37.55 W	-0.2
41926	Southern extent of reef	58-58-29.5 N ✓ 135-13-37.15 W	-0.2



P. ADEQUACY OF SURVEY ✓ See Eval Rpt., section M.

Survey H-10812 is complete and adequate to supersede prior soundings and features in their common areas. *Concur with clarification.*

Q. AIDS TO NAVIGATION ✓

The following two fixed navigational aids are within the survey area. They were located and a Spur position was obtained with static GPS. Reference Horcon Report.

<u>Name</u>	<u>Light List No.</u>	<u>Survey H10812 Position</u>
Eldred Rock Light	23880	58-58-15.20690 N 135-13-14.78751 W ✓
Chilkoot Inlet East Light	23885	59-01-00.62256 N 135-11-50.39947 W ✓

R. STATISTICS ✓

Refer to the Survey Information Summary attached to this report.

S. 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.

T. RECOMMENDATIONS ✓

Hydrographer believes the survey area has been adequately ensonified with IDSSS multibeam and dual frequency echosounding to warrant removing the ^{green}wire drag tint from the chart. *Concur*

There is a small vessel anchorage symbol charted on the north side of Shikoski Island at Lat 59-01-58.4 N, Long 135-16-16-.81 W. This survey found the anchorage area to be inshore of the NALL (Navigable Area Limit Line). It is recommended that the small vessel anchorage symbol be removed from the chart. *Concur*

It was observed that large cruise ships often transit off the east side of Eldred Rock. It is recommended that the charted sounding density in this area be increased in order to better define the newly found 17.7 fathom shoal area to the northeast of Eldred Rock. It was also observed that moderate-sized vessels such as ferries, tour boats, and tugboats with tows would often transit in the area between Kataguni Island and Eldred Rock, and that smaller vessels such as sailboats and motor yachts would often transit in the area between Anayaka and Shikosi Islands. It is recommended that the charted sounding density in these areas be increased in order to better define the bottom. *Area has been compiled on H-drawing to best portray present survey data at chart scale.*

List of Horizontal Control Stations ✓

NAME	STATE	TYPE	LATITUDE	LONGITUDE	SITEID	DEC_LAT	DEC_LON
ACE	AK	DGPS Flyaway	58 58.2659N	135 13.2729W	n/a	58.97109833	135.22121500
ANNETTE ISLAND	AK	USCG Beacon	55 04.1000N	131 36.0000W	889	55.06833333	131.60000000
GUSTAVUS	AK	USCG Beacon	58 25.1000N	135 41.8000W	892	58.41833333	135.69666667
LETNIKOF	AK	DGPS Flyaway	59 10.4206N	135 24.0383W	n/a	59.17367667	135.40063833
TAI	AK	DGPS Flyaway	59 17.2739N	135 24.1058W	n/a	59.28789833	135.40176333

Section Q: Descriptive Report Insert ✓

Name of Aid: Eldred Rock Light
Light List #: 23880

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	58-58-18	135-13-12
Survey Pos.	58-58-15.20690	135-13-14.78751

	<u>Easting</u>	<u>Northing</u>
Charted Pos.	51725.6	136071.8
Survey Pos.	51681.1	135985.3

Difference between Charted and Surveyed Position: Distance: 97 meters
(Bearing from Surveyed to Charted Position) Bearing: 27 deg T

Characteristics Flash White 6 seconds
Do characteristics match Light List? Yes No NA.
If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No
If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____
Maintained By: Coast Guard Private? Yes No
Is aid seasonally maintained? Yes No
Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information: Published position: 58-58.3N 135-13.2W

Section Q: Descriptive Report Insert ✓

Name of Aid: Chilkoot Inlet East Light
Light List #: 23885

Method of Positioning GPS: DGPS: Other: _____

Positioning Information

	<u>Latitude (N)</u>	<u>Longitude (W)</u>
Charted Pos.	59-01-00	135-11-48
Survey Pos.	59-01-00.62256	135-11-50.39947

	<u>Easting</u>	<u>Northing</u>
Charted Pos.	53063.8	141085.3
Survey Pos.	53025.5	141104.5

Difference between Charted and Surveyed Position: Distance: 43 meters
(Bearing from Surveyed to Charted Position) Bearing: 117 deg T

Characteristics Flashing White 2.5 seconds
Do characteristics match Light List? Yes No NA.
If no, what are the characteristics? _____

Does the aid adequately serve its apparent purpose? Yes No
If no, why not? _____

New/Uncharted Aids (if information is known or easily obtained)

Date Est: _____
Maintained By: Coast Guard Private? Yes No
Is aid seasonally maintained? Yes No
Frequency of Maintenance: _____

Apparent Purpose: _____

Other Information: Published position: 59-01.0N 135-11.8W

**ADVANCE
INFORMATION**



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
July 27, 1998

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

Dear Sir:

The following dangers to navigation should be included in the Local Notice to Mariners. These features were positioned by the NOAA Ship RAINIER while conducting hydrographic surveys in Lynn Canal, Alaska. The dangers are shown graphically on the attached chartlet and affect chart 17300, 27th edition, August 14, 1993 & chart 17317, 18th edition, June 14, 1997. Positions were acquired using differential GPS and are given in the NAD 83 datum. Depths have been corrected to Mean Lower Low Water using predicted tides.

Feature Type	Depth (fm)	Latitude (N)	Longitude (W)	Position Number	Depth Meters	Survey Number
Rock		59:17:11.610	135:24:01.720	50666		H-10736
Submerged Rock	0.25	59:08:15.073	135:23:07.129	20039	0.5	H-10811
Shoal depth	0.5	59:08:15.847	135:23:18.339	45242	1.1	H-10811
Shoal depth	1.25	59:08:04.230	135:23:07.564	29176	2.3	H-10811
Shoal depth	4.5	59:06:18.880	135:21:37.266	64927	8.3	H-10811
Rock		59:04:52.838	135:16:39.527	53886		H-10810
Shoal depth	7	59:03:02.094	135:15:35.837	54393	12.9	H-10810
Shoal depth	4.5	59:03:48.945	135:17:31.152	54334	8.3	H-10810
Shoal depth	0.5	59:05:50.624	135:19:58.098	54214	0.9	H-10810
Shoal depth	4.25	59:06:04.023	135:20:41.069	53935	7.7	H-10810
Rock		58:58:30.384	135:13:35.839	41928		H-10812

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-O340-RA and Danger to Navigation message RA-5-98.

Sincerely,

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

Attachment

Cc: NIMA
PMC
N/CS261
N/CS34



APPROVAL SHEET

for

H-10812

RA-10-8-98

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

MS	107.54
S/L	20.11
SPLIT	115.71
SSS2	0
XL	23.43



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 16, 1999

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-O340-RA

HYDROGRAPHIC SHEET: H-10812

LOCALITY: Eldred Rock to Anyaka Island, Alaska

TIME PERIOD: May 12 - June 20, 1998

TIDE STATION USED: 945-2400 Skagway, AK

Lat. $59^{\circ} 27.0'N$ Lon. $135^{\circ} 19.5'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.799 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SEA2.

Refer to attachments for zoning information.

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

Thomas V. Mero 2/17/99

CHIEF, REQUIREMENTS AND ENGINEERING BRANCH

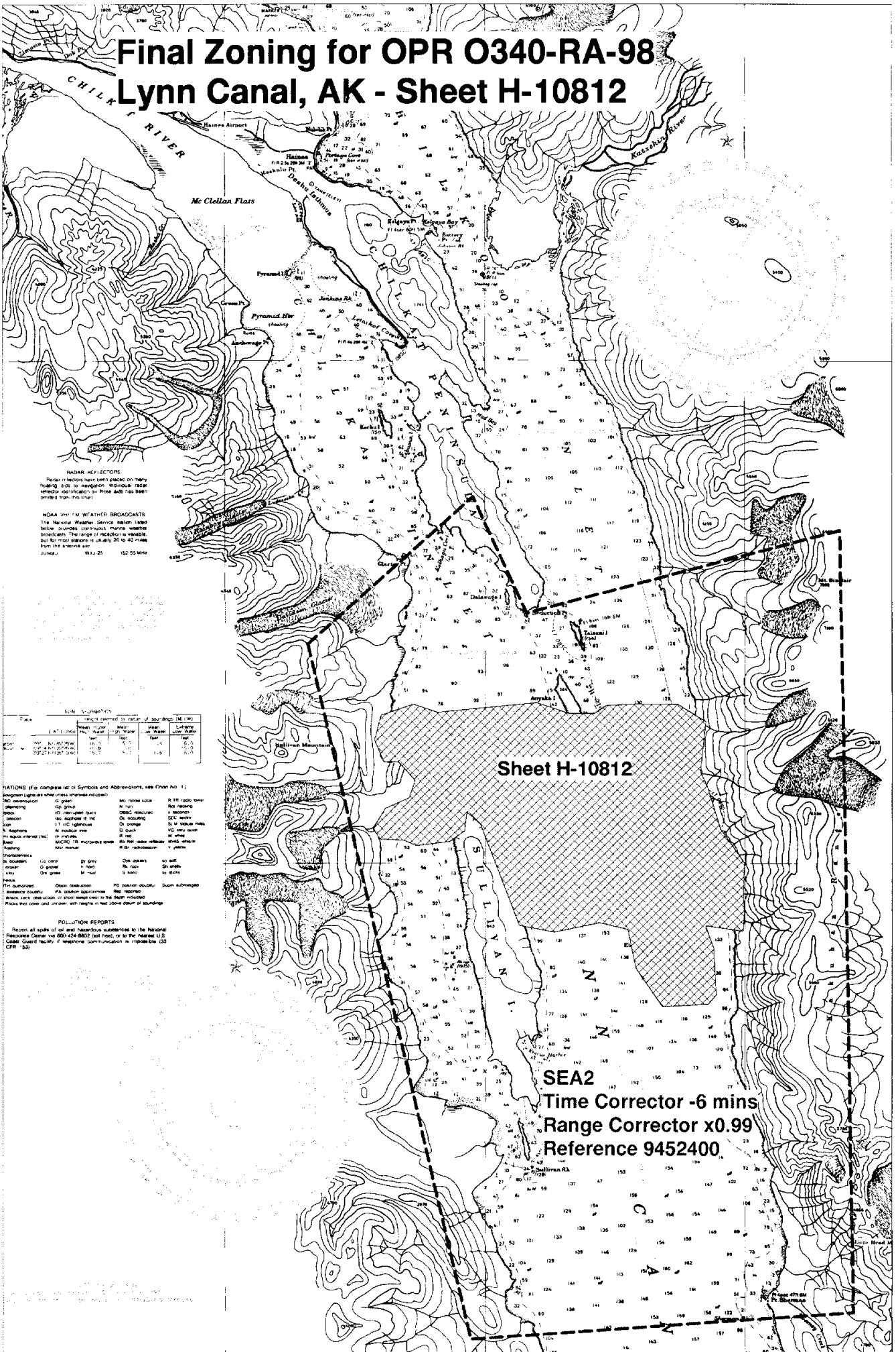


Final tide zone node point locations for OPR 0340-RA-98,
Sheet H-10812.

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

	Tide Station Order	AVG Time Correction	Range Correction
Zone SEA2			
-135.44689 59.072625	945-2400	-6	0.99
-135.342726 58.841529			
-135.097316 58.8506			
-135.105993 59.11054			
-135.306731 59.082928			
-135.341223 59.121611			
-135.44689 59.072625			

Final Zoning for OPR O340-RA-98 Lynn Canal, AK - Sheet H-10812



RADAR REFLECTORS
Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart.

NOAA VHF FM WEATHER BROADCASTS
The National Weather Service station transmits hourly, continuous, routine weather broadcasts. The range of reception is variable, but for most stations is usually 50 to 60 miles from the antenna site.
JUNEAU: WJZ 25 152.55 MHz

SCALE

Scale	Graphic	Vertical	Horizontal
1:50,000	1 inch = 1.25 miles	1 inch = 1.25 miles	1 inch = 1.25 miles
1:100,000	1 inch = 2.5 miles	1 inch = 2.5 miles	1 inch = 2.5 miles
1:200,000	1 inch = 5 miles	1 inch = 5 miles	1 inch = 5 miles

- NOTATIONS** (For complete list of Symbols and Abbreviations, see Chart No. 1.)
- Lighted buoys when unless otherwise indicated:
 - NO (nonbuoyant) G green M (magenta) R (red) W (white)
 - Lighting: Q (quartz) W (white) R (red) W (white)
 - Shape: (C) cylindrical (S) spherical (O) octagonal (R) rectangular (T) triangular (L) lantern (M) mushroom (N) navigational (P) pyramid (S) square (T) tower (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Color: (C) cylindrical (S) spherical (O) octagonal (R) rectangular (T) triangular (L) lantern (M) mushroom (N) navigational (P) pyramid (S) square (T) tower (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Height: (H) height (M) maximum (N) normal (P) peak (S) surface (T) top (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Material: (C) cylindrical (S) spherical (O) octagonal (R) rectangular (T) triangular (L) lantern (M) mushroom (N) navigational (P) pyramid (S) square (T) tower (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Color: (C) cylindrical (S) spherical (O) octagonal (R) rectangular (T) triangular (L) lantern (M) mushroom (N) navigational (P) pyramid (S) square (T) tower (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Height: (H) height (M) maximum (N) normal (P) peak (S) surface (T) top (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag
 - Material: (C) cylindrical (S) spherical (O) octagonal (R) rectangular (T) triangular (L) lantern (M) mushroom (N) navigational (P) pyramid (S) square (T) tower (U) unlighted (V) vertical (W) wheel (X) cross (Y) yoke (Z) zigzag

POLLUTION REPORTS
Report all spills of oil and hazardous substances to the National Response Center via 800-424-8802 (ext. 100) or to the nearest U.S. Coast Guard facility if telephone communication is impossible. USCG Form 157.

Sheet H-10812

SEA2
Time Corrector -6 mins
Range Corrector x0.99
Reference 9452400

GEOGRAPHIC NAMES

H-10812

Name on Survey	A	B	C	D	E	F	G	H	K
	ON CHART NO. 17517	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST	
ALASKA (title)	X		X						1
ANYAKA ISLAND	X		X						2
CHILKAT ISLANDS	X		X						3
ELDRED ROCK	X		X						4
KATAGUNI ISLAND	X		X						5
LYNN CANAL	X		X						6
SHIKOSI ISLAND	X		X						7
SULLIVAN ISLAND	X		X						8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

Dennis J. Roush
Chief Geographer
OCT 29 1998

HYDROGRAPHIC SURVEY STATISTICS

H-10812

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

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

SHORELINE DATA

SHORELINE MAPS (List): **TP-01525, DM-10422, CRS 00198**
 PHOTOBATHYMETRIC MAPS (List): **NA**
 NOTES TO THE HYDROGRAPHER (List): **NA**
 SPECIAL REPORTS (List): **NA**
 NAUTICAL CHARTS (List): **Chart 17317 18th Edition, June 14, 1997**

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			
CHANGES REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	137.5		137.5
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		40	40
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)		53	53
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	137.5	93
			230.5

Pre-processing Examination by M. Bigelow	Beginning Date 9/1/98	Ending Date 10/21/98
Verification of Field Data by Domingo	Time (Hours) 137.5	Ending Date 6/3/99
Compilation Check by Olmstead	Time (Hours) 9	Ending Date 6/23/99
Evaluation and Analysis by B. Mihailov	Time (Hours) 40	Ending Date 6/29/99
Inspection by B. Olmstead	Time (Hours) 8	Ending Date 7/2/99

EVALUATION REPORT

H-10812

A. PROJECT

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

B. AREA SURVEYED

The survey area is adequately described 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 area. Charted features and soundings inshore of this limit line have not been specifically addressed during survey operations and should be retained as charted. A page-size plot of the charted area depicting the specific limits of supersession accompanies this report as an Attachment 1.

The bottom consists mainly of mud. Generally, depths range from the Mean Lower Low Water (MLLW) line to 154 fathoms.

C. SURVEY VESSELS

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

D. AUTOMATED DATA ACQUISITION AND PROCESSING

Field acquisition and processing of survey data has been adequately discussed in the hydrographer's report, section D. Office processing was accomplished using Hydrographic Processing System (HPS), CARIS/HIPS, and Multibeam Support Vax System, and MicroStation 95.

Processed 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 that is not part of the HPS data set such as geographic names text, line-type data, and minor symbolization. In addition, those soundings deleted from the 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 projection and are depicted on a single sheet.

E. SONAR EQUIPMENT

No Side Scan Sonar equipment was used on this survey.

F. SOUNDING EQUIPMENT

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

G. CORRECTIONS TO SOUNDINGS

Soundings and elevations below Mean High Water (MHW) have been reduced to Mean Lower Low Water (MLLW). The reducers include corrections for an actual tide, dynamic draft, and sound velocity. These reducers have been reviewed and are consistent with NOS specifications.

Predicted tides were used for reduction of soundings during field processing. During office processing, tide reductions were derived from the following tide gage; Skagway, AK, 945-2400.

H. CONTROL STATIONS

Section 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 and field values based on NAD 83. The geographic positions of all survey data are based on NAD 83. The smooth sheet is annotated with an NAD 27 adjustment tick based on values determined with the NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections:

Latitude:	-1.171 seconds	(-36.243 meters)
Longitude:	6.588 seconds	(105.135 meters)

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used to control this survey. A horizontal dilution of precision (HDOP) not to exceed 3.75 was computed for survey operations.

The quality of several positions exceeded limits in terms of HDOP during single beam data collection. These positions are isolated and occur randomly throughout the survey area. A review of the data, however, suggests that none of these fixes are used to position dangers to navigation. The features or soundings located by these fixes are consistent with the surrounding information. These fixes are considered acceptable.

During multibeam data gathering, satellite configuration as indicated by HDOP and the number of satellites, is monitored visually on the IDSSS and Trimble displays, and data are not collected when HDOP exceeds 3.75. In the event that the differential GPS corrector signal is lost, a switch to P-Code is made automatically by the receiver. Although P-Code accuracy is less accurate than DGPS (a maximum of 15 meters), it is an acceptable limit of accuracy for a survey of 1:10,000 scale. This data was analyzed during office processing and found to contain no significant errors.

During Shallow Water MultiBeam (SWMB) data gathering, satellite configuration as indicated by HDOP and the number of satellites, is monitored visually on HYPACK. The final positions are provided by the POS-MV which combines the DGPS position with inertial navigation information. In the event that the differential GPS corrector signal is lost, the POS-MV will continue to provide positions based on inertial navigation. Data was analyzed during processing to ensure it contains no significant errors. However, SWMB was collected for test purposes only and was not incorporated as a part of the final plotted data set.

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 corrections to position data.

J. SHORELINE

Shoreline shown on the smooth sheet in black originates from DM-10422 and TP-01525 and was digitized at the Pacific Hydrographic Branch and merged in MicroStation. Shoreline shown on the smooth sheet in brown originates from CSR 00198 (1993) and Chart 17317, 18th Edition, dated June 14, 1997 and are for orientation purposes only. The shoreline data and the hydrographic data were merged in MicroStation during the compilation of the smooth sheet. The shoreline map and the results of the fieldwork as portrayed on the smooth sheet should supersede charted shoreline.

Most of the rocks depicted on the shoreline manuscript were identified in the field and many were found to be high points or extensions of newly located reefs and ledges.

Further discussions concerning shoreline noted during this survey is included in the hydrographer's report, section J.

There were no MHW revisions on this survey

K. CROSSLINES

Crosslines are discussed in the hydrographer's report.

L. JUNCTIONS

Survey H-10812 junctions with the following surveys:

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10810	1998	1:10,000	North
H-10815	1998	1:10,000	Southwest
H-10816	1998	1:20,000	Southeast

The junctions with surveys H-10810, H-10815 and H-10816 are complete. The examination reveals good agreement between soundings and standard depth curves. The junctional differences noted in the hydrographer's report with these surveys are directly attributed to data collection over steep slopes. This data was further analyzed during office processing and found to contain no significant problems. An adequate junction has been effected between these contemporary surveys. A few soundings have been transferred from these junctional surveys to better portray the common area. A joins note has been added to the smooth sheet were applicable. In addition the following is noted;

The 46 fathom sounding transferred to H-10810 from H-10812 at latitude 59/02/43N, longitude 135/12/25W originates from an erroneous sounding subsequently identified after transmittal of H-10810 to the Hydro Surveys Division. The erroneous depth was corrected to 69 fathoms and agrees well with the surrounding survey data.

M. COMPARISON WITH PRIOR SURVEYS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-2057	1890-1905	1:40,000

The above prior survey covers the entire area of the present survey. The registration and legibility of this prior survey to the present survey was good.

Differences in depths generally range from 1 to 5 fathoms with the present survey. A few prior survey depths plotting along the steep slopes and in depths exceeding 90 fathoms differ from 10-20 fathoms shoaler than the present survey. Hydrography conducted on the present survey revealed no indication of a 10-20 fathom rise off the bottom. The evaluator feels these prior depths are likely the result of erroneous leadline depths and or positional errors. Justification for smaller changes can probably be attributed to better bottom coverage, improved positioning and sounding techniques, and relative accuracy of the data acquisition methods. A comparison of standard depth curves with the prior surveys reveal little change in configuration except where present hydrography defined new and or existing shoal areas. There appears to be no consistent pattern of shoaling or an increase in depths except as noted above.

Several features have been transferred to the present survey in color from prior survey H-2057. These features fall near or inshore of the NALL line and were not specifically addressed by the hydrographer. These items are listed as follows.

<u>Feature</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
Ledge	59/00/20	135/14/55
Ledge	59/01/10	135/15/45
Ledge	59/01/25	135/15/45

Except as noted above, the present survey is adequate to supersede the prior survey in the common area.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>
H-4202WD	(1921)	1:40,000
H-4202WD (Add'l work)	(1922)	1:40,000
H-4226WD	(1922)	1:40,000

The wire-drag surveys listed above cover the entire area of the present survey. The comparison was made using digital copies of H-4202 and H-4226. The registration of these prior surveys to the present survey was good. The legibility of the digital copies was good.

A few charted soundings originate from these prior surveys. Similar differences in depths are readily seen with this prior work as discussed with H-2057. Remaining areas of the prior work reflects wire drag sweeps set to specific depths with no associated sounding information. Charted soundings originating from this prior drag survey has been satisfactorily addressed and should be superseded by the present survey.

N. ITEM INVESTIGATIONS

AWOIS item #52403 was investigated during this survey. This submerged wreck originates from Chart Letter 535/1908 and is adequately addressed in section N of the descriptive report.

O. COMPARISON WITH CHART

Survey H-10812 was compared with the following chart:

<u>Chart</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
17317	18th	June 14, 1997	1:77,812

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.

The present survey work combining single beam and multibeam coverage are considered adequate to remove the charted green tint.

Survey H-10812 is adequate to supersede charted hydrography within the common area.

b. Dangers To Navigation

One danger to navigation was discovered during survey operations and reported to the USCG on July 27, 1998. No additional dangers to navigation were found during office processing. A copy of the report is attached.

P. ADEQUACY OF SURVEY

Hydrography contained on survey H-10812 is adequate to:

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

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, April 1994 Edition except as follows:

In the event that the field units submission of survey data will exceed four weeks from completion of field work, the Chief of Party will submit a written explanation for the delay indicating the anticipated transmittal date to the Chief of the appropriate processing section. Marine Center ships forward their explanation through the Marine Center Director. Field work for survey H-10812 was completed on June 19, 1998 but not received for office processing until September 1, 1998.

Some anomalous soundings were acquired during this survey. They originate from the poor performance of the echo sounder on steep slopes. The hydrographer attempted to correct the problem by editing the raw sounding data, however, the quality of the echo sounder trace is so poor in some areas that the edits are likely based on judgement rather than quantifiable data. Office review of the problem has determined that, with the exception of obviously erroneous

depths, which have been revised and or rejected, further editing is not reasonable since no corrective action can be taken to improve the quality of the trace. The judgement of the hydrographer has been accepted and generally the data was not altered during office processing.

Q. AIDS TO NAVIGATION

There are two fixed aids to navigation within the survey area. These aids were positioned and adequately serve the intended purposes. See the hydrographer's report, section Q, and the descriptive report inserts (attached) for additional information.

There were no features of landmark value located and or recommended for charting.

R. STATISTICS

Statistics are adequately itemized in the hydrographer's report.

S. MISCELLANEOUS

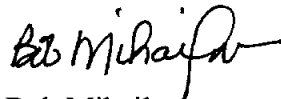
Miscellaneous information is adequately discussed in the hydrographer's report. No additional miscellaneous items were noted during office processing.

T. RECOMMENDATIONS

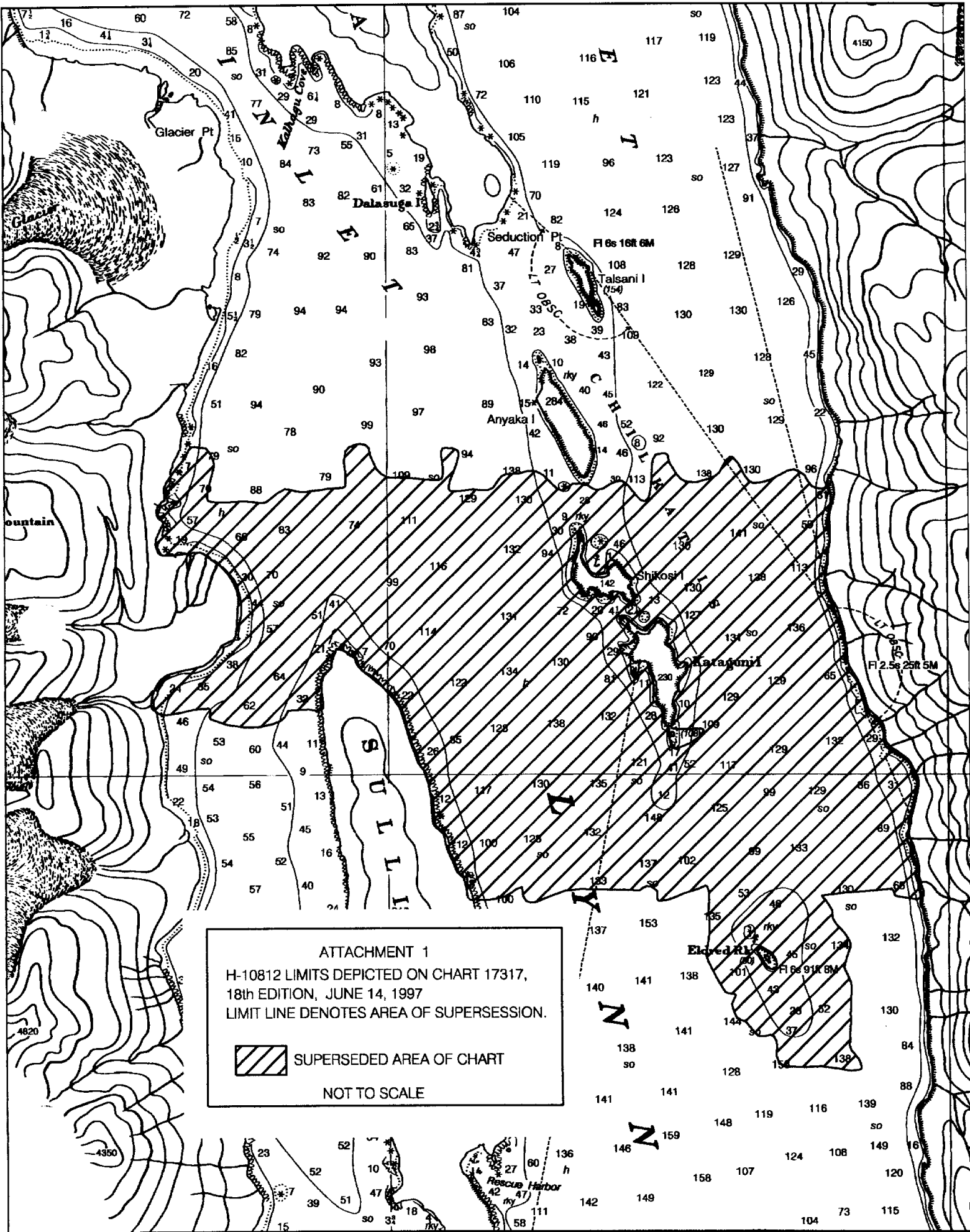
This is a good hydrographic survey. No additional work is recommended.

U. REFERRAL TO REPORTS

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



Bob Mihailov
Cartographer



APPROVAL SHEET
H-10812

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 7/2/99
Bruce A. Olmstead
Senior Cartographer, Cartographic Section
Pacific Hydrographic Branch

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

James C. Gardner Date: 7-14-99
James C. Gardner
Commander, NOAA
Chief, Pacific Hydrographic Branch

Final Approval

Approved:

Samuel P. De Bow Date: August 25, 1999
Samuel P. De Bow
Commander, NOAA
Chief, Hydrographic Surveys Division

