

H10965

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-10-01-00

Registry No. H-10965

LOCALITY

State Alaska

General Locality West Coast of Kodiak Island

Sublocality Larsen Bay and Approaches

2000

CHIEF OF PARTY

Commander Daniel R. Herlihy, NOAA

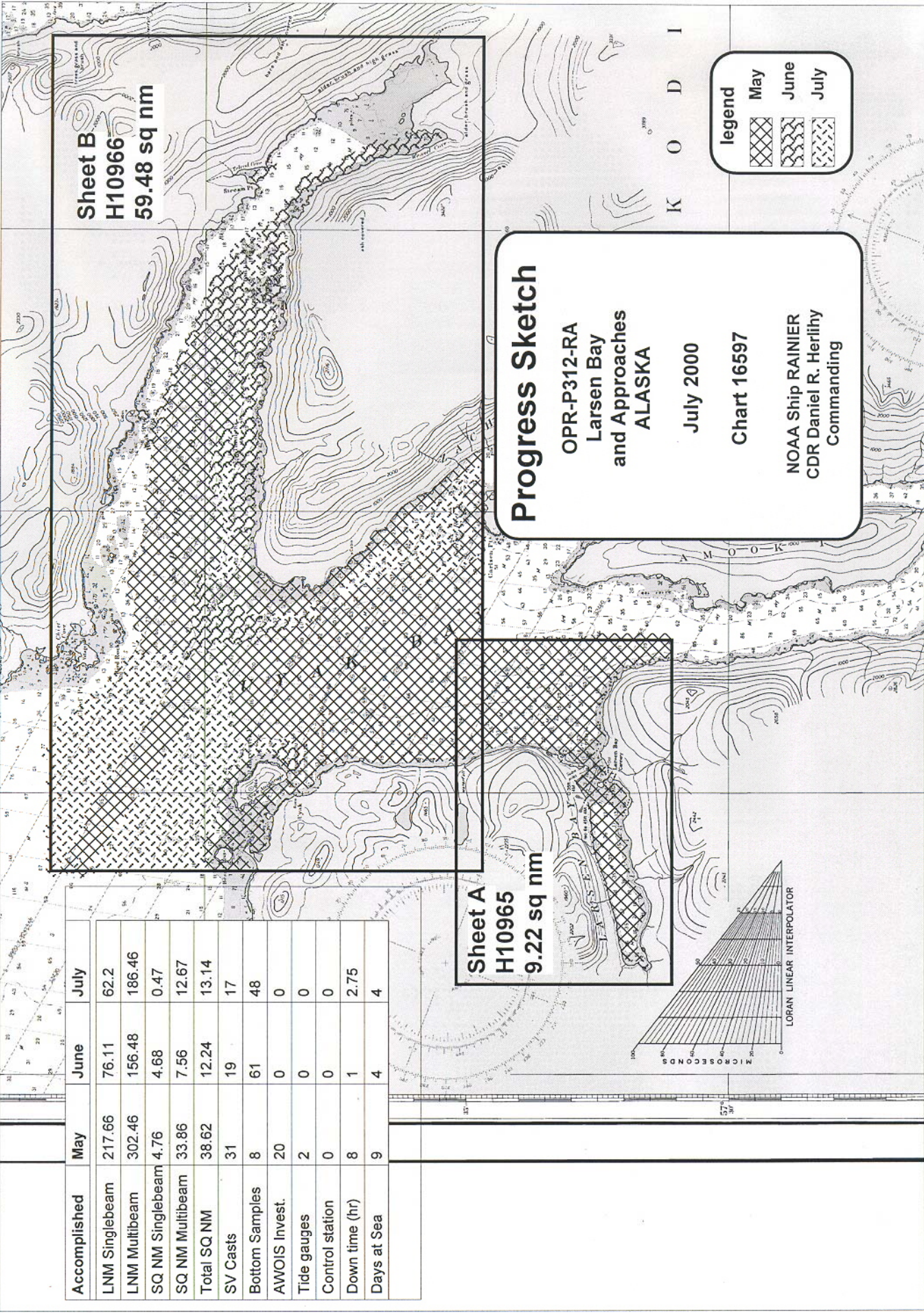
LIBRARY & ARCHIVES

DATE

HYDROGRAPHIC TITLE SHEET**H-10965**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-10-01-00State AlaskaGeneral Locality West Coast of Kodiak IslandSublocality Larsen Bay and ApproachesScale 1:10,000 Date of Survey 5/14/2000-6/12/2000Instructions Dated 4/26/2000 Project No. OPR-P312-RAVessel RAINIER(2120), RA-1(2121), RA-2(2122), RA-3(2123), RA-4(2124),
RA-5(2125), RA-6(2126), and RA-7(2127)Chief of Party Commander D. R. Herlihy, NOAASurveyed by Ship personnel and physical scientists from Pacific Hydrographic BranchSoundings taken by echo sounder, hand lead, pole Knudsen 320, SB 1180, RESON 8101Graphic record scaled by RAINIER PersonnelGraphic record checked by RAINIER PersonnelEvaluation by I. Almacen, L. Deodato Automated plot by HP DesignJet 1050CVerification by E. Domingo, I. Almacen, L. Deodato, R. Davies, R. MayorSoundings in Fathoms and tenths at MLLWREMARKS: Time in UTC.**Revisions and annotations appearing as endnotes were generated****during office processing..****All depths listed in this report are referenced to****mean lower low water unless otherwise noted.**



Sheet B
H10966
59.48 sq nm

Sheet A
H10965
9.22 sq nm

Progress Sketch

OPR-P312-RA
Larsen Bay
and Approaches
ALASKA

July 2000

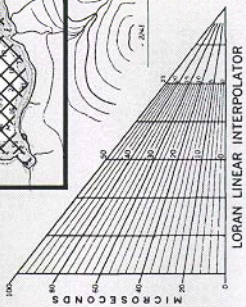
Chart 16597

NOAA Ship RAINIER
CDR Daniel R. Herlithy
Commanding

legend

	May
	June
	July

	May	June	July
Accomplished			
LNM Singlebeam	217.66	76.11	62.2
LNM Multibeam	302.46	156.48	186.46
SQ NM Singlebeam	4.76	4.68	0.47
SQ NM Multibeam	33.86	7.56	12.67
Total SQ NM	38.62	12.24	13.14
SV Casts	31	19	17
Bottom Samples	8	61	48
AWOIS Invest.	20	0	0
Tide gauges	2	0	0
Control station	0	0	0
Down time (hr)	8	1	2.75
Days at Sea	9	4	4



K O D I

Descriptive Report to Accompany Hydrographic Survey H10965

Project OPR-P312-RA-00¹ Larsen Bay and Approaches

Scale 1:10,000

May 14 – June 12, 2000

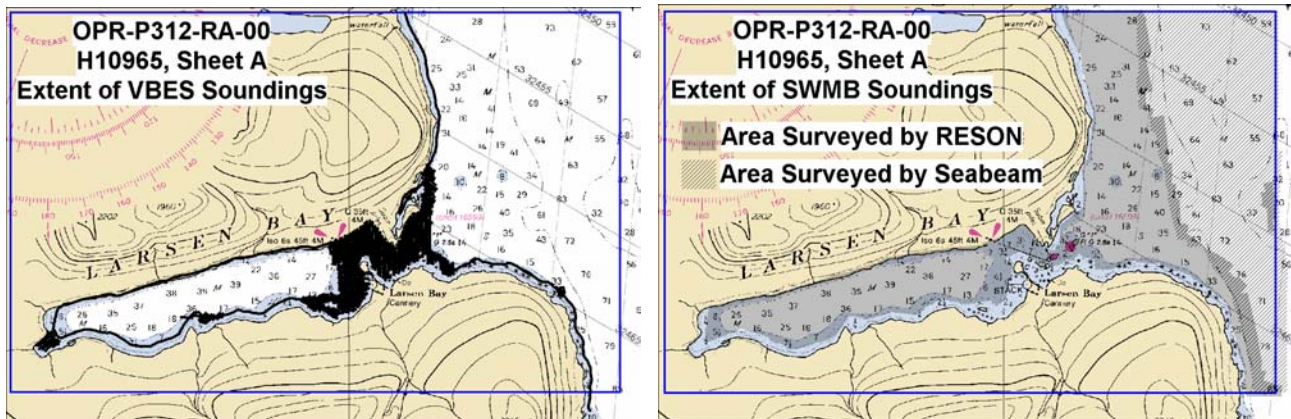
NOAA Ship RAINIER

Chief of Party: CDR Daniel R. Herlihy, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P312-RA-00², dated April 26, 2000, and the Draft Standing Project Instructions dated April 6, 1998. The survey area is located in Larsen Bay and its approaches, on the western side of Kodiak Island, Alaska. The survey's northern limit is latitude $57^{\circ}35'8.462''\text{N}$ ³ and the southern limit is latitude $57^{\circ}31'2.399''\text{N}$ ⁴. The survey's western limit is longitude $154^{\circ}6'48.827''\text{W}$ ⁵ and the eastern limit is the $153^{\circ}54'32.807''\text{W}$.

Data acquisition was conducted from May 14 to June 12, 2000 (DN 135 to 164).



B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures, and data processing methods, can be found in the *OPR-P312-RA-00 Data Acquisition and Processing Report* submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Data were acquired by RAINIER and her survey launches (vessel numbers 2120, 2121, 2122, 2123, 2124, 2125, 2126 and 2127). RAINIER was used to acquire shallow-water multibeam soundings and sound velocity profiles. Vessels 2121, 2123, 2124 and 2126 were used to acquire shallow-water multibeam soundings and sound velocity profiles. Vessels 2122 and 2125 were used to acquire vertical-beam echo soundings. Vessel 2125 was also used to collect bottom samples. Vessels 2121, 2122, 2125 and 2127 were used to obtain detached positions for shoreline verification.

B2. Quality Control

Crosslines

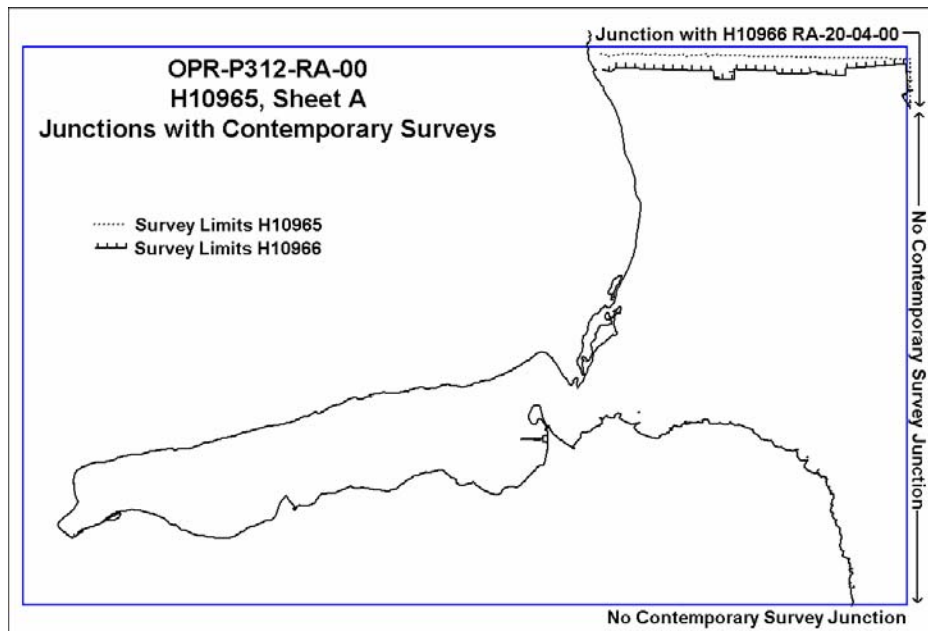
VBES crosslines totaled 3.51 nautical miles, comprising 9.01% of all planned sounding lines. Crosslines generally agreed within 1 meter of mainscheme hydrography; however, all but three crosslines were run very close in time to the collection of the mainscheme data they cross. The three eastern-most crosslines were run at different times from the data they cross, and these crosslines agreed only within 2.5 meters of mainscheme hydrography.⁶ This demonstrates the problem with zoned tide correctors discussed more fully in section B3.

SWMB crosslines totaled 13.08 nautical miles, comprising 6.0% of MB hydrography. Two separate CARIS HIPS Quality Control Reports (QCRs) were run; one for data acquired with the Reson SeaBat 8101, and the other for data acquired with the SeaBeam/Elac 1180. The QCR for the RESON checkline file averaged 95.41%, and the QCR for the Seabeam checkline file averaged 93.34%. See Appendix V⁷ for the detailed reports. Each report had a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order I specifications as detailed in Special Publication S-44, (Edition 4), and NOAA depth accuracy standards as set forth in the NOS Hydrographic Surveys Specification and Deliverables Manual (HSSDM).⁸

Junctions⁹

The following contemporary survey junctions with H10965:

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Junction side</u>
H10966	1:20,000	2000	North and East



There are no gaps in coverage between H10965 and H10966. At the time of this report, data processing for survey H10966 was not complete. A comparison of the junction between H10965 and H10966 will be included in the Descriptive Report for H10966. Final comparisons will be made at the Pacific Hydrographic Branch (PHB) after the application of smooth tides.

Data Quality Factors

No unusual conditions were encountered during the survey which affected the expected accuracy and quality of survey data. However, a magnitude 6.5 earthquake occurred in the region on July 10, 2000 (DN 192), after the survey was completed. It caused minor damage in Kodiak, AK, and was felt as far away as Anchorage. The reported epicenter was near Karluk, which is approximately 20 kilometers west of Larsen Bay. It is unknown to what degree this earthquake might have affected the area covered by the survey. A copy of a news report which was posted on the Internet by CNN is included in Appendix V¹⁰.

B3. Data Reduction

Data reduction procedures for survey H10965 conform to those detailed in the *OPR-P312-RA-00 Data Acquisition and Processing Report*, with the exception of the following:

During data cleaning in HDCS subset mode, errors in the preliminary tidal zoning scheme were apparent, making subset cleaning difficult due to numerous one half- to two-meter vertical shifts in the data.¹¹ These errors were apparent both for predicted tides and observed water level data from the operating primary station at Women's Bay, Kodiak. In order to facilitate more accurate data cleaning, RAINIER utilized water level data from a tertiary gauge installed during this project to correct SWMB soundings to an approximate mean lower-low water datum. For survey H10965, water level correctors from the RAINIER-installed gauge at Larsen Bay (945-7724) were applied to SWMB data in CARIS. RAINIER calculated an approximate mean lower-low water datum by comparing graphs of observed water level data from Larsen Bay to graphs from Womens Bay, Kodiak, and adjusting for the phase differences and shift in datum (-1.92 meters). These water level correctors were only used for aiding in the processing of SWMB data. Observed water level data from the primary station at Womens Bay, fully adjusted for the preliminary tidal zoning scheme, were used for water level correctors for the final field sheet.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H10965 can be found in the *OPR-P312-RA-00 Vertical and Horizontal Control Report* submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. The US Coast Guard beacon at Kodiak, AK was the source of differential correctors. Launch-to-launch DGPS performance checks were performed in accordance with Section 3.2 of the Field Procedures Manual (FPM). Copies of the performance checks are included in the *Horizontal and Vertical Control Report for OPR-P312-RA-00*.

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Kodiak, Alaska (945-7292) will serve as control for datum determination. RAINIER personnel installed Sutron 8200 "bubbler" tide gauges at the following subordinate stations in accordance with Project Instructions:

Station Name	Station Number	Type of Gauge	Date of Installation	Date of Removal
Larsen Bay	945-7724	30-day	13 May 2000	12 June 2000
Uyak	945-7728	30-day	13 May 2000	20 July 2000

Raw water level data from these gauges were forwarded to N/OPS1 throughout the project period, with the final package submitted on September 2, 2000, in accordance with Hydrographic Survey Guideline (HSG) 50 and FPM 4.7. 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 for survey H10965 was forwarded to N/OPS1 on June 24, 2000 in accordance with FPM 4.8. Final field tide notes and a copy of the "Request for Approved Tides/Water Levels" are included in Appendix IV¹² of this report.¹³

D. RESULTS AND RECOMMENDATIONS¹⁴

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

A total of 19 AWOIS items were within the limits of H10965 and investigated during this survey. Investigation methods, results, and charting recommendations have been entered into the Microsoft Access AWOIS database and are submitted with the digital data; digital photographs taken at some AWOIS locations are included¹⁵. Printouts of the AWOIS Database forms and related photographs are included in Appendix VI of this report.¹⁶

D.2 Chart Comparison¹⁷

Survey H10965 was compared with chart 16597 (8th Ed.; October 7, 1989, 1:80,000) and chart 16599 (6th Ed.; May 5, 1990, 1:20,000). All Notices to Mariners affecting the survey area were in reference to a landmark and aids to navigation only. They are discussed in Sections D.3 and D.5.¹⁸

Chart 16597

Due to what appeared to be poor registration of this chart in MapInfo, it was necessary to estimate a shift of approximately 100 meters to the north while comparing. This survey found depths generally 0 to 2 fathoms shoaler than chart 16597 at the positions of charted soundings. However, H10965 frequently found soundings shoaler than those charted in close proximity to charted soundings, likely representing least depths over shoals and pinnacles not located on the prior surveys. This is attributable to full bottom coverage obtained with SWMB. The following comparisons represent soundings not otherwise submitted as dangers to navigation (refer to Appendix I¹⁹ for a copy of the Danger to Navigation Report.).

- The present survey revealed a depth of 15.9²⁰ fathoms at 57°34'29.761"N²¹, 153°58'10.171"W²² (Fix # 360,449, Easting 442,017.8, Northing 6,381,801.9), in the vicinity²³ of a charted 25-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 54 fathoms at 57°32'40.441"N, 153°55'20.037"W (Fix # 274,472, Easting 444,798.2, Northing 6,378,382.1), in the vicinity²⁴ of a charted 72-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 11.7²⁵ fathoms at 57°34'12.696"N, 153°57'45.623"W (Fix # 354,912, Easting 442,418.1, Northing 6,381,268.4), in the vicinity²⁶ of a charted 14-fathom sounding. This area was covered by 100% SWMB.

- The present survey revealed a depth of 38 fathoms at 57°34'17.664"N, 153°55'47.733"W (Fix # 208,447, Easting 444,378.9, Northing 6,381,394.7), in the vicinity²⁷ of a charted 49-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 29 fathoms at 57°33'27.989"N, 153°54'36.432"W (Fix # 229,347, Easting 445,542.9, Northing 6,379,842.6), in the vicinity²⁸ of a charted 32-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 41 fathoms at 57°33'45.749"N, 153°54'32.446"W (Fix # 228,677, Easting 445,616.5, Northing 6,380,390.9), in the vicinity²⁹ of a charted 48-fathom sounding. This area was covered by 100% SWMB.

The following charted sounding feature was not found by the present survey:

- The present survey revealed a depth of 34 fathoms at 57°35'03.484"N, 153°57'26.691"W (Fix # 343,821, Easting 442,754.8, Northing 6,382,834.4), in the vicinity of a charted 28-fathom sounding. This area was covered by 100% SWMB.³⁰

The eastern edge of the survey limit lies along a ridge; least depths on this ridge were not obtained by this survey due to a lack of complete coverage over the feature.³¹

Chart 16599

Inside Larsen Bay, the present survey revealed depths that were consistently 1 to 2 fathoms shoaler than those on chart 16599. The bathymetry in the bay is very even, with gradually-sloping, gravel banks along shore. Outside the bay, the bathymetry is highly irregular, with numerous small and large ridges and pinnacles. In this area of irregular bathymetry, the survey soundings were generally 0 to 2 fathoms shoaler than the depths on chart 16599, when compared at the positions of charted soundings. However, H10965 frequently found soundings shoaler than those charted in close proximity to charted soundings, likely representing least depths over shoals and pinnacles not located on the prior surveys. This is attributable to full bottom coverage obtained with SWMB. The following comparisons represent soundings not otherwise submitted as dangers to navigation (refer to Appendix I³² for a copy of the Danger to Navigation Report.).

- The present survey revealed a depth of 10.2³³ fathoms at 57°33'27.347"N, 153°57'57.778"W (Fix # 405,195, Easting 442,196.2, Northing 6,379,869.0), in the vicinity³⁴ of charted 22-fathom soundings. This area was covered by 100% SWMB.
- The present survey revealed a depth of 13.0 fathoms at 57°33'30.398"N, 153°58'05.603"W (Fix # 397,599, Easting 442,067.5, Northing 6,379,965.2), in the vicinity³⁵ of a charted 20-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 11.5³⁶ fathoms at 57°33'23.990"N, 153°58'18.910"W (Fix # 400,521, Easting 441,843.5, Northing 6,379,770.2), offshore³⁷ of a charted 15-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 12.3³⁸ fathoms at 57°33'34.531"N, 153°57'31.686"W (Fix # 385,216, Easting 442,633.0, Northing 6, 6,380,085.0), in the vicinity³⁹ of a charted 18-fathom sounding. This area was covered by 100% SWMB.

- The present survey revealed a depth of 26 fathoms at 57°33'35.124"N, 153°56'22.697"W (Fix # 264,826, Easting 443,779.8, Northing 6,380,087.3), in the vicinity⁴⁰ of a charted 36-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 17.6⁴¹ fathoms at 57°33'19.940"N, 153°57'23.186"W (Fix # 383,576, Easting 442,767.9, Northing 6,379,631.8), in the vicinity⁴² of a charted 21-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 15.3⁴³ fathoms at 57°33'15.032"N, 153°57'29.778"W (Fix # 384,557, Easting 442,656.2, Northing 6,379,481.6), in the vicinity⁴⁴ of a charted 23-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 16.9⁴⁵ fathoms at 57°33'08.468"N, 153°57'14.698"W (Fix # 382,358, Easting 442,904.0, Northing 6,379,275.1), in the vicinity⁴⁶ of a charted 24-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 16.4⁴⁷ fathoms at 57°32'45.282"N, 153°57'11.999"W (Fix # 395,054, Easting 442,938.8, Northing 6,378,557.5), in the vicinity⁴⁸ of a charted 21-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 19.9⁴⁹ fathoms at 57°32'41.411"N, 153°56'45.722"W (Fix # 164,397, Easting 443,374.0, Northing 6,378,431.7), in the vicinity⁵⁰ of a charted 28-fathom sounding. This area was covered by 100% SWMB.

The present survey revealed two depths significantly shoaler than those charted in the approaches to Larsen Bay, as follows:

- The present survey revealed a depth of 17.2⁵¹ fathoms at 57°32'51.281"N, 153°58'04.655"W (Fix # 170,775, Easting 442,066.0, Northing 6,378,755.4), in the vicinity⁵² of a charted 23-fathom sounding. This area was covered by 100% SWMB.
- The present survey revealed a depth of 15.5⁵³ fathoms at 57°32'44.232"N, 153°58'30.621"W (Fix # 172,343, Easting 441,631.2, Northing 6,378,543.6), in the vicinity of a charted 21-fathom sounding. This area was covered by 100% SWMB.

The natural channel at the entrance to Larsen Bay has maintained its charted position. There are several shoals charted within the channel; this survey either disproved or found deeper least depths over three of these shoals, as follows:

- The present survey revealed a depth of 6.9⁵⁴ fathoms at 57°32'45.680"N, 153°58'41.600"W (Fix # 161,508, Easting 441,449.3, Northing 6,378,591.0), in the vicinity of a charted 4³/₄-fathom shoal. This area was covered by 100% SWMB.⁵⁵
- The present survey revealed a depth of 5.6⁵⁶ fathoms at 57°32'33.953"N⁵⁷, 153°59'18.220"W⁵⁸ (Fix # 20,482, Easting 440,835.2, Northing 6,378,237.2)⁵⁹, in the vicinity of a charted 4³/₄-fathom shoal. This area was covered by 100% SWMB.⁶⁰
- The present survey revealed a depth of 4.6⁶¹ fathoms at 57°32'41.278"N⁶², 153°59'39.223"W⁶³ (Fix # 137,159, Easting 440,489.3, Northing 6,378,468.8), in the vicinity⁶⁴ of a charted 3-fathom shoal. This area was covered by 100% SWMB.⁶⁵

This survey found two soundings shoaler than charted in the natural entrance channel to Larsen Bay, as follows:

- The present survey revealed depths of 5.1⁶⁶ fathoms at 57°32'37.789"N, 153°58'42.886"W (Fix # 162,244, Easting 441,424.4, Northing 6,378,347.3), in the vicinity⁶⁷ of a charted 5³/₄-fathom sounding. This area was covered by 100% SWMB.⁶⁸
- The present survey revealed a depth of 4.3⁶⁹ fathoms at 57°32'36.113"N, 153°58'45.063"W (Fix # 162,327, Easting 441,387.3, Northing 6,378,296.0), in the vicinity⁷⁰ of a charted 5³/₄-fathom sounding. This area was covered by 100% SWMB.⁷¹

This survey agreed with all other charted shoals as follows:

- The present survey revealed a least depth of 1.8⁷² fathoms at 57°32'32.594"N, 153°58'47.547"W (Fix # 162,923, Easting 441,344.6, Northing 6,378,187.8), in the vicinity of the charted 2-fathom shoal. This area was covered by 100% SWMB.⁷³
- The present survey revealed a least depth of 4.8⁷⁴ fathoms at 57°32'34.162"N, 153°58'55.137"W (Fix # 160,477, Easting 441,219.1, Northing 6,378,238.1), in the vicinity of the charted 4³/₄-fathom shoal. This area was covered by 100% SWMB.⁷⁵
- The present survey revealed a least depth of 3.9⁷⁶ fathoms at 57°32'31.017"N⁷⁷, 153°58'55.317"W⁷⁸ (Fix # 160,539, Easting 441,214.7, Northing 6,378,140.9⁷⁹), in the vicinity of the charted 3³/₄-fathom shoal. This area was covered by 100% SWMB.⁸⁰
- The present survey revealed a least depth of 3.9⁸¹ fathoms at 57°32'43.210"N, 153°59'46.409"W (Fix # 136,961, Easting 440,370.7, Northing 6,378,530.3), in the vicinity of the charted 3³/₄-fathom shoal. This area was covered by 100% SWMB.⁸²
- The present survey revealed a least depth of 3.5⁸³ fathoms at 57°32'34.735"N⁸⁴, 153°59'59.722"W⁸⁵ (Fix # 138,820, Easting 440,145.5, Northing 6,378,271.5), in the vicinity⁸⁶ of the charted 3³/₄ fathom shoal. This area was covered by 100% SWMB. The Hydrographer recommends extending the 5-fathom contour continuously from shore around this sounding; this charted shoal was found to be connected to shore.⁸⁷

The Hydrographer recommends revising the 10-fathom contour at the west end of the entrance channel to Larsen Bay according to soundings from H10965.⁸⁸

Soundings along the privately-maintained, 248° range line at the entrance to Larsen Bay (described in the *Coast Pilot*) agree with the chart within 0.5 fathoms. However, although the charted least depth along the range is 4 fathoms, this survey revealed a least depth of 3.2⁸⁹ fathoms at 57°32'29.403"N⁹⁰, 153°58'47.858"W⁹¹ (Fix # 407,589, Easting 441,338.0, Northing 6,378,089.2)⁹². In addition, this survey revealed a 4.5-fathom sounding along this private range line, approximately 350⁹³ meters northeast⁹⁴ of the channel entrance,⁹⁵ at 57°32'37.88"N, 153°58'10.05"W (Fix # 182,288, Easting 441,970.4, Northing 6,378,342.3). This sounding is in the vicinity of a charted 11-fathom sounding. These soundings were both submitted as dangers to navigation; please see the preliminary Danger to Navigation Report⁹⁶ in Appendix I for details.

The present survey found the soundings along the charted range line inside the entrance channel to Larsen Bay to be ½ to 2 fathoms deeper than charted, with the exception of the 6.4-fathom sounding at 57°32'29.045"N, 153°59'01.843"W (Fix # 140,566, Easting 441,105.3, Northing 6,378,081.5). This sounding is in the vicinity of a charted 7-fathom sounding.⁹⁷

The range markers located on the north shore of Larsen Bay are labeled “PA” on chart 16599. Their positions were checked using hand-held GPS units, after the termination of selective availability (S/A). The positions obtained agree with *Light List* positions within one tenth of a second. However, both the survey and *Light List* positions are approximate. It is recommended that the ranges be retained as charted on chart 16599, and that they be repositioned on chart 16597 using their T-sheet positions.⁹⁸

There are no charted or prior survey soundings inside the lagoon⁹⁹ located north of the entrance to Larsen Bay. RAINIER acquired a few lines of reconnaissance hydrography inside this lagoon and corrected depths from these sounding lines indicate that the lagoon dries at low water. It is only possible to enter the lagoon during a very narrow window at the highest stage of tide; when entering the lagoon, vessels risk grounding due to dropping water levels. It is recommended that no depths be charted in the lagoon and that the low water line be clearly defined outside of its entrance to discourage mariners from entering.¹⁰⁰

SWMB data revealed two new obstructions. The first is located on the west side of the spit separating Larsen Bay from Uyak Bay. The second¹⁰¹ is located at the extreme west end of Larsen Bay. These items were submitted as dangers to navigation; see the preliminary Danger to Navigation report included in Appendix I¹⁰² for details.

The Hydrographer recommends revising the 5-fathom contour according to soundings from H10965. The charted contour is noticeably different at the extreme west end of Larsen Bay, and in several other locations.¹⁰³

There were no charted sounding features that were not found by the present survey.¹⁰⁴

D.3 Shoreline

N/NGS3 supplied photogrammetric shoreline data in raster format for TP-00906W, TP-00906E, and TP-00908W for use as source shoreline. The T-sheet raster images were registered and digitized in MapInfo by RAINIER personnel and the resultant vector data were used in Hypack for field verification. In addition, features shown on the current editions of charts 16597 and 16599, which did not correlate with features on the T-sheets, were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification.

Shoreline verification was conducted near predicted low water in accordance with the Project Instructions and FPM 6.1 and 6.2. For this survey, the general limit of safe navigation of a survey launch was 30-100 meters offshore of the apparent low water line. Water depths along this limit of safe navigation are approximately 3-8 meters at Mean Lower Low Water (MLLW). The limit of safe navigation was as great as 200 meters offshore of apparent low water line in the entrance to Larsen Bay, with water depths of 2-3 meters; the shoreline in this area is primarily gently-sloping gravel banks and sandy flats.¹⁰⁵ Features unreachable by survey launches are the Hydrographer's approximate representation of the shoreline.

Detached positions (DPs) taken during shoreline verification were recorded in HYPACK and on DP forms, and processed in HPS. These indicate revisions to features, and features not found on the T-sheet or chart. In addition, hard copies of compiled digitized data (boat sheets) were taken into the field and annotated by hand to reflect verification of source features and updates to both the chart and T-sheet. DP forms are included in Section I of the *Separates to be included with Survey Data*.¹⁰⁶

A detailed Detached Position and Bottom Sample Plot (DP and BS plot)¹⁰⁷, in both paper copy and MapInfo format, is provided showing all detached positions and bottom samples with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot.¹⁰⁸

Several new rocks, ledges, wrecks, piles and a new mast were found, and are depicted on the DP and BS plot.¹⁰⁹

Significant shoreline revisions were found in the vicinity of the small island in Larsen Bay. Three new breakwaters were constructed south of the island to create a new small boat harbor, as depicted on the DP and BS plot (Fix #s 22574, 22589, 70041, 70042, 70044 and 70045). (See photos “70044 70045 boat harbor” and “70047 wrk brkwtr island”.) According to a source at Kodiak Salmon Packers in Larsen Bay, the breakwater construction was done by the U.S. Army Corps of Engineers (USACE) and is not yet complete. There are plans to build a marina in the harbor, and survey stakes located along the shore would appear to support this information. The Hydrographer recommends obtaining the final dimensions and positions of the marina project from the USACE once complete to accurately chart the breakwaters and marina.¹¹⁰

The positions of the new wrecks found in the lagoon north of the entrance to Larsen Bay were estimated by launch personnel; they were not able to obtain detached positions on the wrecks due to the rapidly-dropping water level. (See photos “lagoon wreck1”, “lagoon wreck2”, and “lagoon wreck3”).¹¹¹

Several charted features were found to be incorrectly charted or were disproved, as follows:

- The stack landmark found on both charts and the T-sheet, which was located on the cannery spit, no longer exists. This stack removal was addressed by the *Notice to Mariners*. It is recommended that it be removed from all charts. (See photo “stack disproval”).¹¹²
- The fish trap located on chart 16599 at 57°33'04"N, 153°58'27"W (Easting 441700.2, Northing 6379154.0) was disproved (Fix # 22596). It is recommended that it be removed from all charts.¹¹³
- The ledge located on chart 16597 at 57°34'49"N, 153°58'45"W (Easting 441447.8, Northing 6382405.1) was found to be part of a rocky beach (Fix # 20775, , and Fix # 21316). It is recommended that this ledge be removed from all charts. (See photo “21316 rocky beach”).¹¹⁴
- The charted rock (charts 16597 and 16599) at 57°33'00.180"N, 153°58'32.010"W (Easting 441,615.2, Northing 6,379,037.1) was disproved; it represents the same rock as the T-sheet rock (TP00906E) nearby, which is accurately positioned. A visual search was conducted for the disproval. It is recommended that this rock be removed from all charts.¹¹⁵
- The charted rock (chart 16597) at 57°32'04.210"N, 153°55'45.040"W (Fix #s 50611, Easting 444,367.2, Northing 6,377,267.4) was disproved. An echosounder search and multiple visual searches were conducted for the disproval. It is recommended that this rock be removed from all charts.¹¹⁶

The Hydrographer recommends that the shoreline as depicted on the DP and BS plot and the final field sheet supersede and complement shoreline information compiled on the T-sheets as noted. These revisions are recorded in the MapInfo digital files named “H10965_Shoreline” and “H10965_Shoreline_Update”.¹¹⁷ Field notes made by the Hydrographer, including verification of source features and descriptions of shoreline items, are submitted in the digital MapInfo file “H10965_Shoreline_Notes.” In addition, charted features which did not correlate with T-sheet features and which were not verified or disproved in the field, are submitted in the digital MapInfo file “H10965_Shoreline_Charted”.

The rock located at 57°32'24.550"N, 153°57'33.850"W (Easting 442566.5, Northing 6377921.6) on chart 16599 was not verified due to its location in a shallow, rocky area, very close to shore; however there was

no particularly distinct rock at this location.¹¹⁸ The most significant offshore rocks were positioned by RAINIER.

D.4 Dangers to Navigation

Sixteen dangers to navigation from H10965 were reported to the Pacific Hydrographic Branch for verification and final submission to the Seventeenth Coast Guard District on October 13¹¹⁹, 2000.

A copy of the preliminary Danger to Navigation report is included in Appendix I.¹²⁰

D.5 Aids to Navigation

All aids to navigation within the survey limits were found to be correctly charted and serve their intended purpose, with the exception of the following:

A new aid to navigation was found at the entrance to Larsen Bay. It is a triangular day board bearing horizontal bands of red and green, red band topmost, with a red reflective border; atop the day board is a flashing red light, Fl (2+1) R 6s. It was positioned using static GPS methods to third-order accuracy standards at 57°32'36.39628" N, 153°58'35.74472" W (Easting 441542.52, Northing 6378302.54) (please see the *Horizontal and Vertical Control Report for OPR-P312-RA-00* for more details); this position agrees with the published *Light List* position. The *Light List* number for "Larsen Bay Junction Light" is 26965; it is described as "JR on tower". It is recommended that this aid be added to all charts using the position surveyed by RAINIER. The addition of this aid to navigation has been addressed in the *Notice to Mariners* for both charts 16597 and 16599. (See photo "21313 channel marker").¹²¹

The green buoy charted as *G "1" Fl G 2.5s* (at 57°32'37.11"N, 153°58'38.86"W (Easting 441,491.0, Nothing 6,378,325.4) on chart 16597 and at 57°32'39.49"N, 153°58'37.58"W (Easting 441,513.4, Nothing 6,378,398.6) on chart 16599) has been removed and is no longer included in the *Light List*. It is recommended that this buoy be removed from all charts. The removal of this buoy has been addressed in the *Notice to Mariners* for both charts 16597 and 16599.¹²²

The red nun, *R N "2"*, appears on both charts 16597 and 16599 at 57°32'31.86"N, 153°59'03.58"W. The *Notice to Mariners* had removed this buoy from both charts, and then replaced it on chart 16599. It is recommended that this buoy be added to chart 16597 at its *Light List* position (See photo "70036 70054 pile buoy").¹²³

In addition, there is a pair of privately-maintained range markers guiding the entrance to Larson Bay via the preferred channel south of “Larsen Bay Junction Light” (see photo “private range”). The forward range is a large, east-facing, wooden circle, painted orange and sitting atop a charted and T-sheet pile at 57°32’25.205”N, 153°59’11.188”W (Easting 440948.2, Northing 6377965.0); this position was obtained using DGPS. The rear range is a charted, large, painted, orange disc on the east-facing, outside wall of a building located on the spit; its position (scaled from chart 16599) is 57°32’20.9”N, 153°59’30.0”W (Easting 440633.4, Northing 6377836.4). The ranges line up at 248° true when entering the bay. It is recommended that the rear range be retained as charted on chart 16599, with the added designation “PA”¹²⁴, and that a note be added describing its use with the pile to the east. It is recommended that this set of ranges and the note be added to chart 16597, with the designation “PA”¹²⁵ for the rear range. The Hydrographer recommends charting this set of ranges on both charts as privately maintained.¹²⁶ This set of ranges is described accurately in the *Coast Pilot*.¹²⁷

E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; the Field Procedures Manual, and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2000.

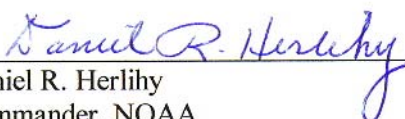
The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch

The Hydrographer recommends conducting reconnaissance hydrography in Uyak and Larsen Bays at the next available opportunity to determine if any major changes occurred as a result of the earthquake of July 10, 2000. Otherwise, there is no additional work required on this survey.¹²⁸

Listed below are supplemental reports submitted separately which contain additional information relevant to this survey:

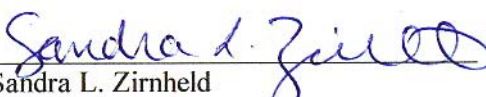
<u>Title</u>	<u>Date Sent</u>	<u>Office</u>
Data Acquisition and Processing Report for OPR-P312-RA-00	October 13, 2000	N/CS34
Horizontal and Vertical Control Report for OPR-P312-RA-00	October 13, 2000	N/CS34
Tides and Water Levels Package for OPR-P312-RA-00	September 2, 2000	N/OPS1
Coast Pilot Report for OPR-P312-RA-00	TBD	N/CS26

Approved and Forwarded:

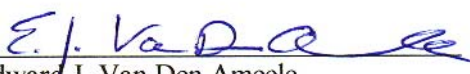

 Daniel R. Herlihy
 Commander, NOAA
 Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager:


 Sandra L. Zirnheld
 Survey Technician, NOAA

Field Operations Officer:


 Edward J. Van Den Ameerle
 Lieutenant, NOAA

Revisions Compiled During Office Processing and Certification

-
- ¹ PHB Revision—Strikethrough ~~00~~
 - ² PHB Revision-- Strikethrough ~~00~~
 - ³ PHB Revision-- Revise GP to 57°35'10"N
 - ⁴ PHB Revision-- Revise GP to 57°31'00"N
 - ⁵ PHB Revision-- Revise GP to 154°06'20"N
 - ⁶ Crossline agreement was resolved after application of approved tides during office processing.
 - ⁷ Filed with the hydrographic data
 - ⁸ Concur
 - ⁹ The junction with survey H10966 is complete and a "Joins" note has been added to the smooth sheet at the junction area.
 - ¹⁰ PHB Revision-- Strikethrough ~~Appendix V~~ and replace with this report
 - ¹¹ See endnote #6.
 - ¹² Filed with the hydrographic data
 - ¹³ Approved Tide Note dated November 2, 2000 is attached to this report.
 - ¹⁴ Survey H-10965 was compared with prior surveys H-2981(1908), H-4949(1929), and H-4952(1929). Soundings on the present survey agree within 1-5 fathoms on survey H-2981 and 0.5-2.0 fathoms on surveys H-4949 and H-4952. The present survey generally reflects a shoal bias. The use of the present state of the art technology in positioning, echo sounding and data gathering has provided a better portrayal of the bottom configuration of the area. A rock not investigated by the hydrographer was transferred to the smooth sheet at latitude 57°32'25"N, longitude 153°57'33"W from H-4952. With the transfer of the prior survey rock to the smooth sheet, survey H-10965 is adequate to supersede the prior surveys within the area of common coverage.
 - ¹⁵ Copies attached
 - ¹⁶ The AWOIS Database was updated and a printout of each of the 19 AWOIS items is attached.
 - ¹⁷ Chart 16597 and 16598 are both on the same scale (1:80,000) and cover the surveyed area. A comparison with both charts reflects agreement of depths and features within the common areas. Office comparison and compilation were made on chart 16598 (9th Ed.; July 29, 2000)
 - ¹⁸ Concur
 - ¹⁹ Filed with the hydrographic data and a copy was attached to this report.
 - ²⁰ PHB Revision-- Revise to 15.3
 - ²¹ PHB Revision-- Revise GP to 57°34'29.0"N,
 - ²² PHB Revision-- Revise GP to 153°58'10.0"W
 - ²³ PHB Revision-- Replace (Fix # 360,449, Easting 442,017.8, Northing 6,381,801.9), in the vicinity with 190 meters SSE
 - ²⁴ PHB Revision-- Replace in the vicinity with 130 meters E
 - ²⁵ PHB Revision-- Revise to 11.4
 - ²⁶ PHB Revision-- Replace in the vicinity with 60 meters SSE
 - ²⁷ PHB Revision-- Replace in the vicinity with 230 meters NNW
 - ²⁸ PHB Revision-- Replace in the vicinity with 200 meters NNW
 - ²⁹ PHB Revision-- Replace in the vicinity with 170 meters SSW
 - ³⁰ Concur. Chart 34 fathom from present survey.

³¹ Concur with clarification. The present survey data is adequate to supersede the prior survey data and charted information along the ridge area (latitude 57°32'45"N to latitude 57°33'35"N along longitude 153°54'30"W.

³² Filed with the hydrographic data and a copy was attached to this report.

³³ PHB Revision-- Revise to 9.9

³⁴ PHB Revision-- Replace in the vicinity with 180 meters SW, 140 meters NW, and 190 meters NE

³⁵ PHB Revision-- Replace in the vicinity with 50 meters SE

³⁶ PHB Revision-- Revise to 11.4

³⁷ PHB Revision-- Replace in the vicinity with 60 meters E

³⁸ PHB Revision-- Revise to 12.2

³⁹ PHB Revision-- Replace in the vicinity with 80 meters SW

⁴⁰ PHB Revision-- Replace in the vicinity with 200 meters ENE

⁴¹ PHB Revision-- Revise to 17.5

⁴² PHB Revision-- Replace in the vicinity with 115 meters NW

⁴³ PHB Revision-- Revise to 15.2

⁴⁴ PHB Revision-- Replace in the vicinity with 70 meters NNW

⁴⁵ PHB Revision-- Revise to 16.8

⁴⁶ PHB Revision-- Replace in the vicinity with 50 meters NNE

⁴⁷ PHB Revision-- Revise to 16.3

⁴⁸ PHB Revision-- Replace in the vicinity with 100 meters SE

⁴⁹ PHB Revision-- Revise to 20.0

⁵⁰ PHB Revision-- Replace in the vicinity with 60 meters S

⁵¹ PHB Revision-- Revise to 17.0

⁵² PHB Revision-- Replace in the vicinity with 115 meters SW

⁵³ This sounding was exceeded due to the presence of soundings shoaler than 15.5.

⁵⁴ PHB Revision-- Revise to 6.1

⁵⁵ Concur. Delete charted 4 ³/₄, chart 6 fathom depth from present survey.

⁵⁶ PHB Revision-- Revise to 6.4

⁵⁷ PHB Revision-- Revise GP to 57°32'33.5"N

⁵⁸ PHB Revision-- Revise GP to 153°59'18.0"W

⁵⁹ PHB Revision-- Strikethrough (Fix # 137,159, Easting 440,489.3, Northing 6,378,468.8)

⁶⁰ Concur. Delete charted 4 ³/₄, chart 6 ¹/₄ fm depth from present survey.

⁶¹ PHB Revision-- Revise to 3.7

⁶² PHB Revision-- Revise GP to 57°32'43.5"N

⁶³ PHB Revision-- Revise GP to 153°59'44.0"W

⁶⁴ PHB Revision-- Strikethrough (Fix # 137,159, Easting 440,489.3, Northing 6,378,468.8), in the vicinity

⁶⁵ Concur. Delete charted 3, chart 4 ¹/₄ fm depth from present survey.

⁶⁶ PHB Revision-- Revise to 5.0

⁶⁷ PHB Revision-- Replace in the vicinity with 30 meters SE

⁶⁸ Concur. Chart area based on the present survey data.

⁶⁹ PHB Revision-- Revise to 4.2

⁷⁰ PHB Revision-- Replace in the vicinity with 65 meters S

⁷¹ Concur. Delete charted 5 ³/₄, chart 4 ¹/₄ from present survey.

⁷² PHB Revision-- Revise to 1.7

⁷³ Concur. Delete charted 2, chart 1 ¹/₂ as found on the present survey.

-
- 74 PHB Revision-- Revise to 4.7
- 75 Concur. Chart area based on the present survey information.
- 76 PHB Revision-- Revise to 3.1
- 77 PHB Revision-- Revise GP to 57°32'31.5"N
- 78 PHB Revision-- Revise GP to 153°58'54.0"W
- 79 PHB Revision-- Strikethrough (~~Fix # 160,539, Easting 441,214.7, Northing 6,378,140.9~~)
- 80 Concur. Delete charted 3 ¾, chart 3 from present survey
- 81 PHB Revision-- Revise to 3.8
- 82 Concur. Delete charted 3 ¾, chart this area based on the present survey information.
- 83 PHB Revision-- Revise to 3.1
- 84 PHB Revision-- Revise GP to 57°32'35.0"N
- 85 PHB Revision-- Revise GP to 153°59'56.0"W
- 86 PHB Revision—Replace (Fix # 138,820, Easting 440,145.5, Northing 6,378,271.5), in the vicinity with 40 meters SE
- 87 Concur with clarification. Delete charted 3 ¾, chart 3 from present survey and compile area based on the present survey information.
- 88 Concur
- 89 PHB Revision-- Revise to 3.7
- 90 PHB Revision-- Revise GP to 57°32'32.7"N
- 91 PHB Revision-- Revise GP to 153°58'38.0"W
- 92 PHB Revision-- Strikethrough (~~Fix # 407,589, Easting 441,338.0, Northing 6,378,089.2~~)
- 93 PHB Revision-- Revise to 430
- 94 PHB Revision-- Replace northeast with ENE
- 95 PHB Revision—Add light
- 96 Copies attached
- 97 Chart this area based on the present survey information.
- 98 Concur
- 99 Lagoon centered at latitude 57°33'09"N, longitude 153°58'47"W.
- 100 Concur with clarification. A wreck and a note "Stranded wrecks" were charted based on present survey information.
- 101 Obstruction is submerged rock (1 ½ Rk)
- 102 Filed with the hydrographic data and copies attached to this report.
- 103 Concur
- 104 Concur
- 105 Concur
- 106 Filed with the hydrographic data
- 107 Filed with the hydrographic data
- 108 Filed with the hydrographic data
- 109 Concur. These features have been shown on the smooth sheet based on the present survey information.
- 110 Concur
- 111 Not shown on smooth sheet. A note "stranded wrecks" is shown on the smooth sheet and on chart 16599.
- 112 Concur
- 113 Concur
- 114 Concur

¹¹⁵ Concur

¹¹⁶ Concur

¹¹⁷ Mean high water line revisions were shown on the smooth sheet in red and compiled on charts 16598 and 16599. Additional features as depicted on the DP and BS plot have been shown on the smooth sheet as warranted.

¹¹⁸ This rock was carried forward from H4952 to the smooth sheet and charted.

¹¹⁹ PHB Revision-- Strikethrough 3 and replace with 0.

¹²⁰ Copies attached

¹²¹ Retain as charted

¹²² Concur, no longer charted

¹²³ Concur

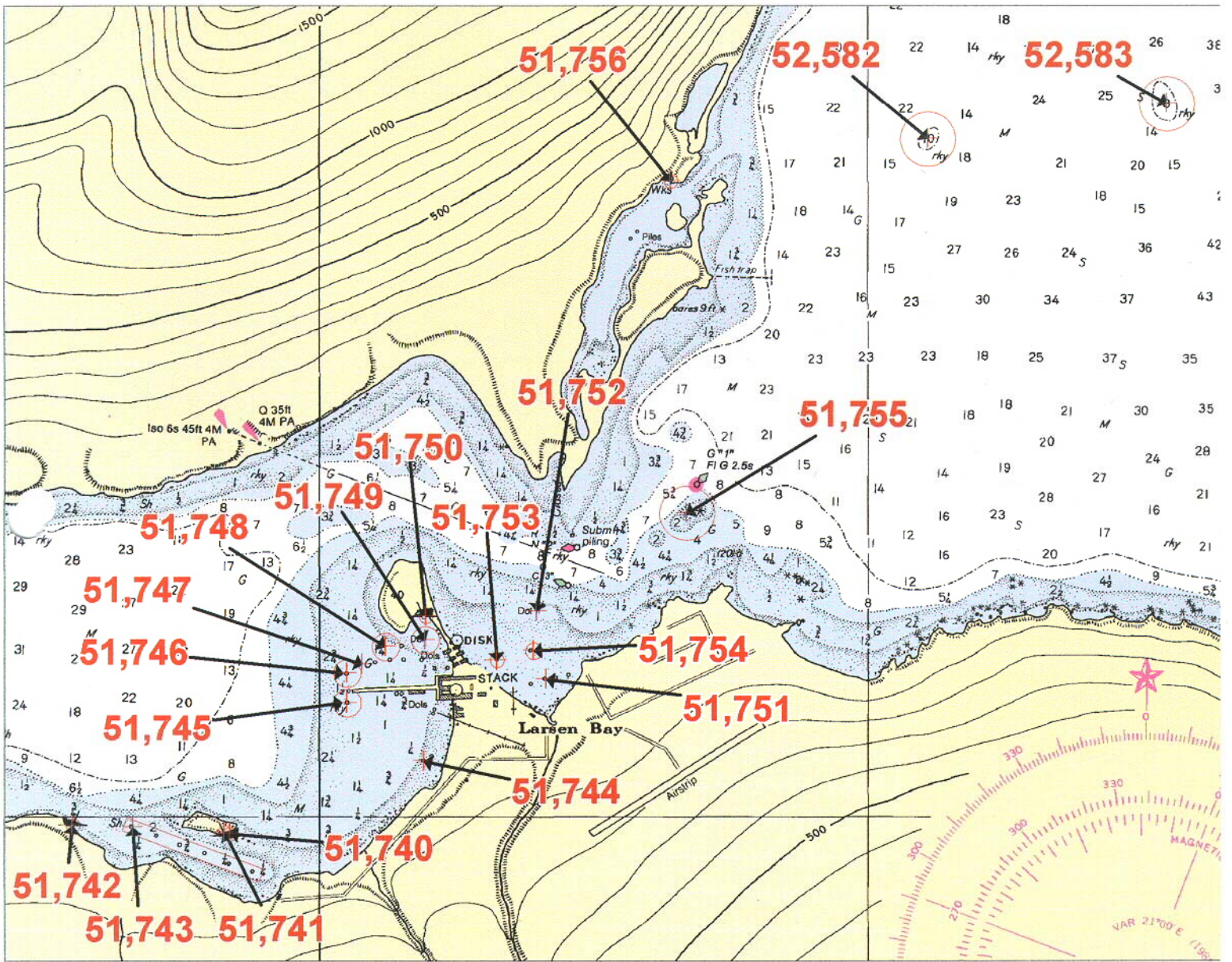
¹²⁴ Do not concur. The Rear Range (Disk) was not positioned during the survey and has not been shown on the smooth sheet. The evaluator recommends that MCD retain the Rear Range (Disk) as shown on the continuous maintenance raster without the "PA" notation.

¹²⁵ The evaluator recommends that MCD chart the ranges based on current chart source information.

¹²⁶ Concur. The evaluator recommends these ranges be updated in the coast pilot as privately maintained.

¹²⁷ Concur

¹²⁸ Concur



RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

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LATDEC: LONDEC: GPQUALITY
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YEARSUNK
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RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

HISTORY
CL1281/60--PART A&B-ALASKA PACKER ASSN; 8 PILE DOLPHIN (UNC 24FT MLLW) 200FT NORTH OF PIER END
(CHARTED APPROX 95FT) POSITION SCALED FROM CHART IN LAT
57-32-19.7N, LONG 153-59-55.8W.
TP00906E/77--REV-CLASS 111; NOT VISIBLE ON PHOTOGRAPHS. (ENTERED 5/89 RWD)

Fieldnote

INVESTIGATION
DATE(S): 05/17/00 (DN:138)
VN: 2127 TIME:16:34:48
INVESTIGATION METHODS USED: DI
OBSERVED POSITION: LAT. LON.
POSITION DETERMINED BY:
INVESTIGATION SUMMARY: Pile found lying on sea floor. Dolphin disproved.
CHARTING RECOMMENDATION (HYDROGRAPHER): Remove from all charts.
EVALUATOR COMMENTS:Concur

Proprietary

YEARSUNK NIMANUM

RECRD 51747 VESSLTERMS OBSTRUCTION CHART 16599 AREA P
CARTOCODE 0067 SNDINGCODE DEPTH 0

LAT83 57/32/18.08 LONG83 153/59/50.80 NATIVDATUM 6
LATDEC: 57.538355555556 LONDEC: 153.99744444444 GPQUALITY Med
GPSOURCE Scaled

PROJECT OPR-P312 ITEMSTATUS Assigned SEARCHTYPE Full
RADIUS INIT RWD ASSIGNED 5/8/1989
TECNIQ MB,DI,VS

Techniqnote INVESTIGATE 20M OUT FROM AN AXIS FROM WEST MOST PILE TO SHORE TO INCLUDE CHARTED POS.

History

HISTORY
CL1281/60--PART A-ALASKA PACKERS ASSN; ROW SINGLE PILE DOLPHINS (5 SHOWN ON
CHART LETTER; 4 CHARTED). WEST MOST PILE SCALED FROM CHART IN LAT
57-32-20.7N, LONG 153-59-42.5W.
TP00906E/77--REV-CLASS 111; NOT VISIBLE ON PHOTOGRAPHS. (ENTERED 5/89 RWD)

Fieldnote

INVESTIGATION
DATE(S): 05/16/00 (DN:137), 05/17/00 (DN:138), 05/18/00 (DN:139)
VN:2122, 2127 TIME:16:03:19 & 16:05:13, 18:12:05 & 18:17:25, 16:44:11
INVESTIGATION METHODS USED: VS at LW. Searched in a grid pattern where there was visibility to the sea floor from the
water surface. Otherwise, DI.
OBSERVED POSITION: LAT. LON.
POSITION DETERMINED BY:
INVESTIGATION SUMMARY: Piles found lying on the sea floor or not found. All piles disproved.
CHARTING RECOMMENDATION (HYDROGRAPHER): Remove all piles from all charts.
EVALUATOR COMMENTS:Concur

Proprietary

YEARSUNK NIMANUM

Print Record

RECRD VESSTERMS CHART AREA
CARTOCODE SENDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History
CL1281/60--PART A-ALASKA PACKERS ASSN; SINGLE PILE DOLPHIN, (NOT CHARTED)
SCALED GRAPHICALLY FROM CHART LETTER IN LAT 57-32-22.8N, LONG 153-59-37.4W.
TPOO906E/77--REV-CLASS 111; NOT VISIBLE ON PHOTOGRAPHS. (ENTERED 5/89 RWD)

Fieldnote
DATE(S): 05/18/00 (DN:139)
VN: 2122 TIME:16:07:11 16:08:43
INVESTIGATION METHODS USED: VS with visibility to the sea floor.
OBSERVED POSITION: LAT. LON.
POSITION DETERMINED BY:
INVESTIGATION SUMMARY: Pile found lying on the sea floor. Pile disproved.
CHARTING RECOMMENDATION (HYDROGRAPHER): Remove from all charts.
EVALUATOR COMMENTS:Concur

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK

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Fieldnote

Proprietary

YEARSUNK NIMANUM

RECRD VESSLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED

TECNIQ

Techniqnote

History TP00906E/77--REV-CLASS 111; ROCK AWASH POSITION SCALED IN LAT 57-32-38.6N, LONG 153-58-31.5W."/>

Fieldnote

Proprietary

YEARSUNK

NIMANUM

RECRD
 VESSLTERMS
 CHART
 AREA

 CARTOCODE
 SNDINGCODE
 DEPTH

LAT83
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GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote
DATE(S): 05/18/00 (DN:139) 05/16/00 (DN:137)
VN: 2126 TIME: 17:29:21 to 17:35:40 23:44:48
INVESTIGATION METHODS USED: 100% bottom coverage MB development.
OBSERVED POSITION: LAT. 57-33-20.6 N LON. 153-57-44.9 W
POSITION DETERMINED BY: DIFFERENTIAL GPS
INVESTIGATION SUMMARY: LD over SHL is 7.5 FM at MLLW.
CHARTING RECOMMENDATION (HYDROGRAPHER): Chart 7.5 FM at observed position.
EVALUATOR COMMENTS: Do not concur. Chart 7 fathoms found on present survey.

Proprietary

YEARSUNK NIMANUM

RECRD VESLTERMS CHART AREA
CARTOCODE SNDINGCODE DEPTH

LAT83 LONG83 NATIVDATUM
LATDEC: LONDEC: GPQUALITY
GPSOURCE

PROJECT ITEMSTATUS SEARCHTYPE
RADIUS INIT ASSIGNED
TECNIQ

Techniqnote

History

Fieldnote

Proprietary

YEARSUNK NIMANUM

AWOIS 51740 and 51741

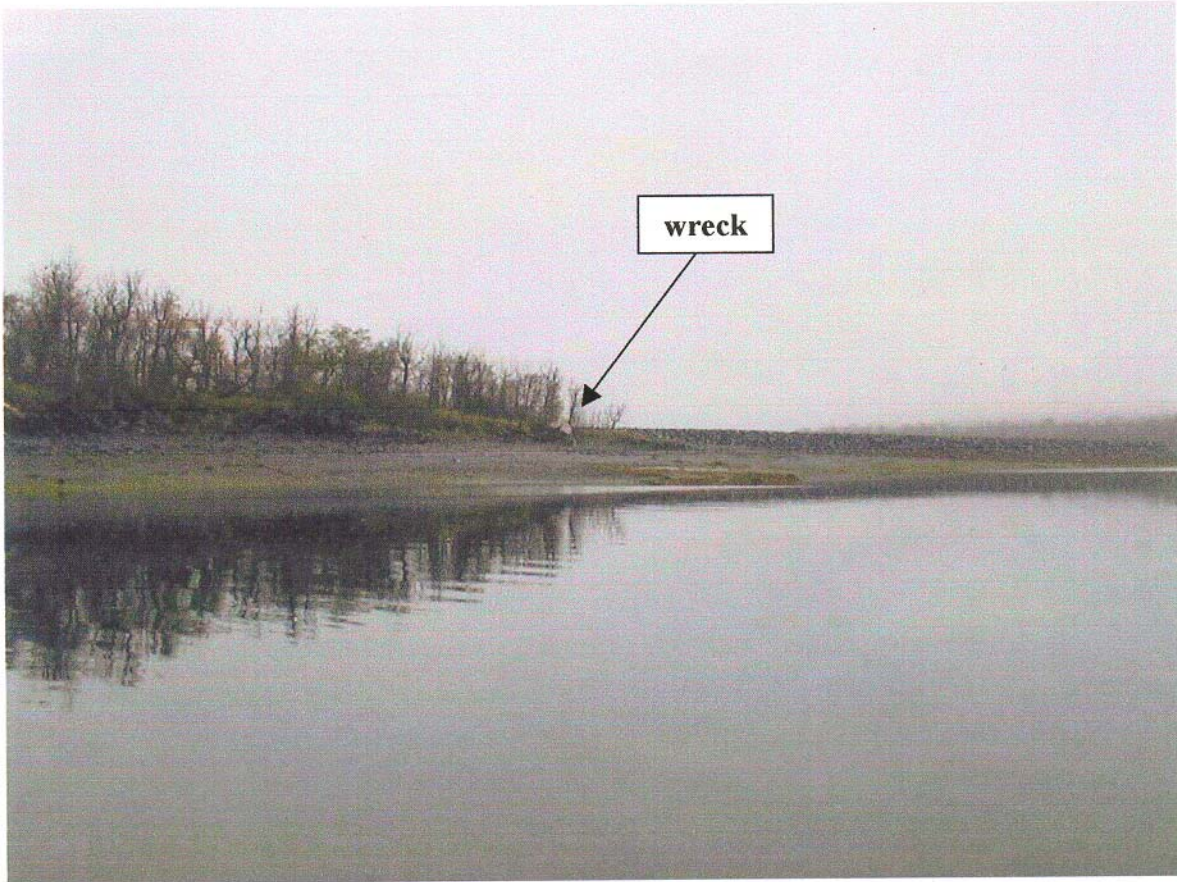


PHOTO: 22575 wrk AW 51740 51741

AWOIS 51742



PHOTO: 21305 wrk dsprvl AW 51742

AWOIS 51743



PHOTO: 20000–20004 piles floating dock AW 51743



PHOTO: 20002–20004 piles floating dock AW 51743



PHOTO: 20003–20006 piles floating dock AW 51743

AWOIS 51749

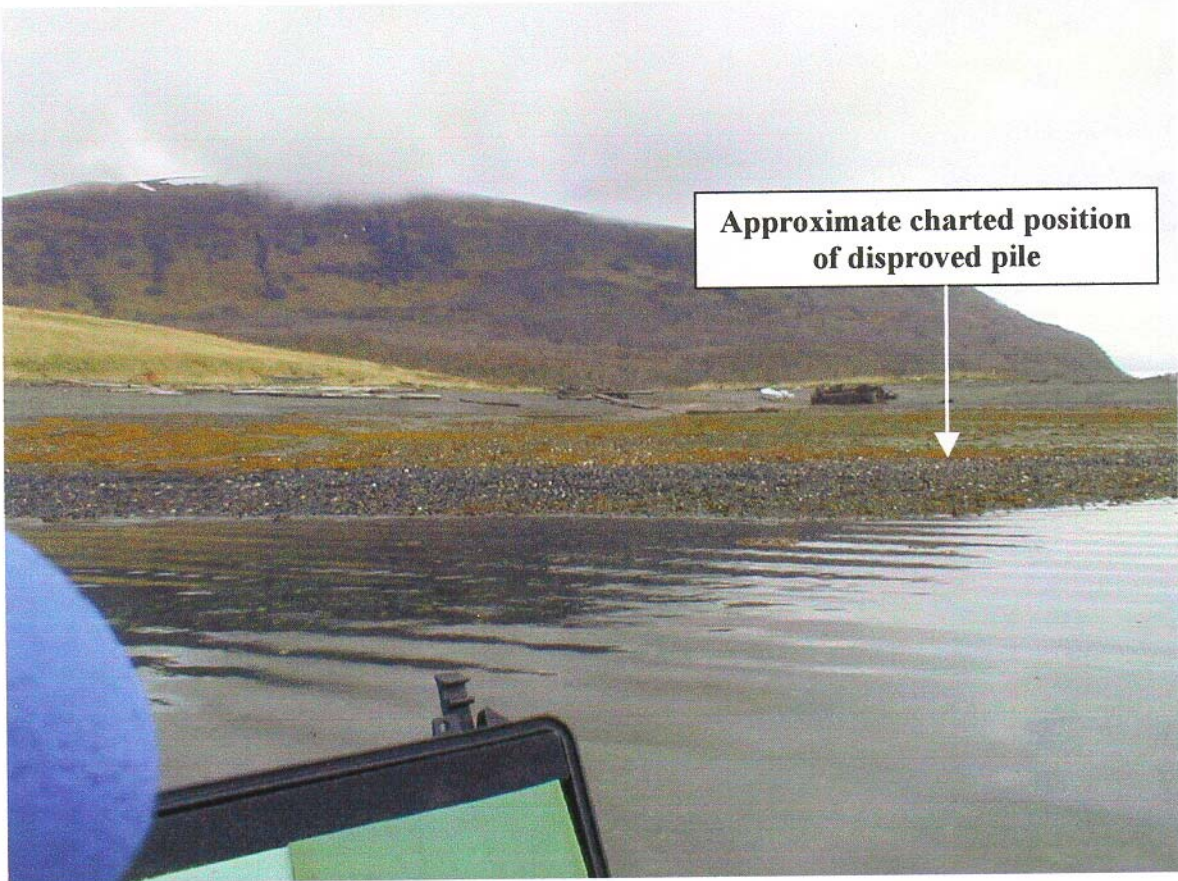


PHOTO: 70038 pile dsprvl and wrk AW 51749 51750

AWOIS 51750



PHOTO: 70038 wrk AW 51750



PHOTO: 70038 pile dsprvl and wrk AW 51749 51750

AWOIS 51751



PHOTO: 70037_1 AW 51751 51753 51754



PHOTO: 70037_2 AW 51751 51753 51754



PHOTO: 70037_3 AW 51751 51753 51754

AWOIS 51753



PHOTO: 70037_1 AW 51751 51753 51754



PHOTO: 70037_2 AW 51751 51753 51754



AWOIS 51754



PHOTO: 70037_1 AW 51751 51753 51754



PHOTO: 70037_2 AW 51751 51753 51754



PHOTO: 70037_3 AW 51751 51753 51754

AWOIS 51756



PHOTO: AW 51756 ruins N end of lagoon

Forward Header

Subject: 6.5 Magnitude Earthquake Hits Kodiak Is.
Author: Mark.Friese@noaa.gov (Mark Friese)
Date: 7/11/00 1:39 PM

From CNN:

=====
=====
Magnitude 6.5 quake rocks Alaska's Kodiak Island

July 11, 2000
Web posted at: 6:16 AM EDT (1016 GMT)

PALMER, Alaska (AP) -- A magnitude 6.5 earthquake rocked Kodiak Island on Monday evening, causing minor damage at a Coast Guard station on the island, the Alaska Tsunami Warning Center said.

The quake at 5:32 p.m. was centered on the island's west coast near the village of Karluk, geophysicist Bruce Turner said. It was felt "mildly" in Anchorage, 290 miles away. There were no reports of injuries. There were reports of "some broken pipes in residences on the Coast Guard base on the east side of Kodiak Island," Turner said.

No tsunami was generated, he said.



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

NOAA Ship RAINIER
 October 10, 2000

**ADVANCE
 INFORMATION**

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

Dear Sir or Madam:

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 survey H10965 on the west coast of Kodiak Island, Alaska, in May – June, 2000. The dangers are shown graphically on the attached chartlets.

The following dangers to navigation affect the following charts:

Chart	Scale	Edition	Date
16597	1:80,000	8 th	7 October 1989
16599	1:20,000	6 th	5 May, 1990

The positions are on the North American Datum of 1983 (NAD83) datum and depths have been corrected to Mean Lower Low Water (MLLW) using preliminary water level data.

Feature	Depth(fm)	Latitude	Longitude	Depth (m)
Obstruction	1.8	57° 32' 25.783" N	153° 59' 58.196" W	3.4
Sounding	1.0	57° 32' 27.461" N	153° 57' 08.310" W	2.0
Sounding	1.3	57° 32' 31.649" N	153° 58' 24.661" W	2.4
Sounding	1.8	57° 32' 30.067" N	153° 57' 21.651" W	3.3
Sounding	1.9	57° 32' 32.565" N	153° 59' 35.113" W	3.6
Rock	1.9	57° 31' 41.019" N	154° 05' 51.533" W	3.6
Sounding	3.2	57° 32' 29.403" N	153° 58' 47.858" W	5.9
Sounding	3.8	57° 32' 40.681" N	154° 00' 01.966" W	7.0
Sounding	4.5	57° 32' 37.880" N	153° 58' 10.050" W	8.3
Sounding	4.8	57° 32' 32.334" N	153° 58' 10.486" W	8.8
Sounding	5.5	57° 33' 03.675" N	153° 58' 22.123" W	10.1
Sounding	7.5	57° 32' 35.483" N	153° 58' 03.900" W	13.7
Sounding	7.5	57° 33' 20.573" N	153° 57' 44.904" W	13.9
Sounding	8.8	57° 31' 40.715" N	154° 04' 19.733" W	16.1
Sounding	8.9	57° 34' 00.550" N	153° 57' 37.828" W	16.3
Sounding	10.2	57° 33' 27.347" N	153° 57' 57.778" W	18.8

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 P312-RA-00 and Danger to Navigation message RA-11-00. More information on current RAINIER survey projects may be obtained by e-mail; contact the Field Operations Officer at FOO.RAINIER@NOAA.GOV.

Sincerely,

Daniel R. Herlihy
 Commander, NOAA
 Commanding Officer

Attachment

cc: NIMA
 N/CS261
 PMC
 N/CS34



Chart 16599

6th edition, May 5, 1990

Scale depicted: 1:15,000

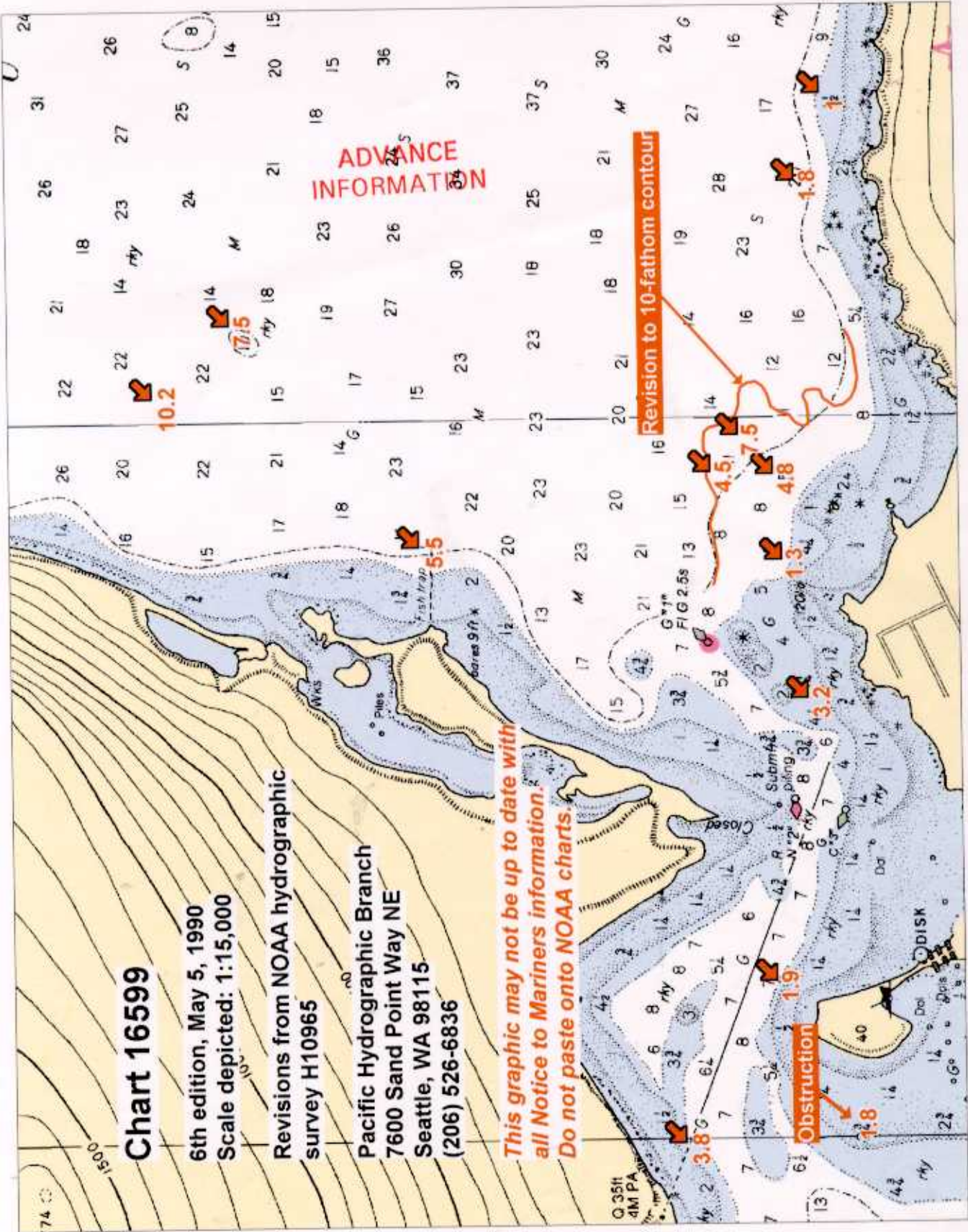
Revisions from NOAA hydrographic survey H10965

Pacific Hydrographic Branch
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-6836

This graphic may not be up to date with all Notice to Mariners information. Do not paste onto NOAA charts.

ADVANCE INFORMATION

Revision to 10-fathom contour



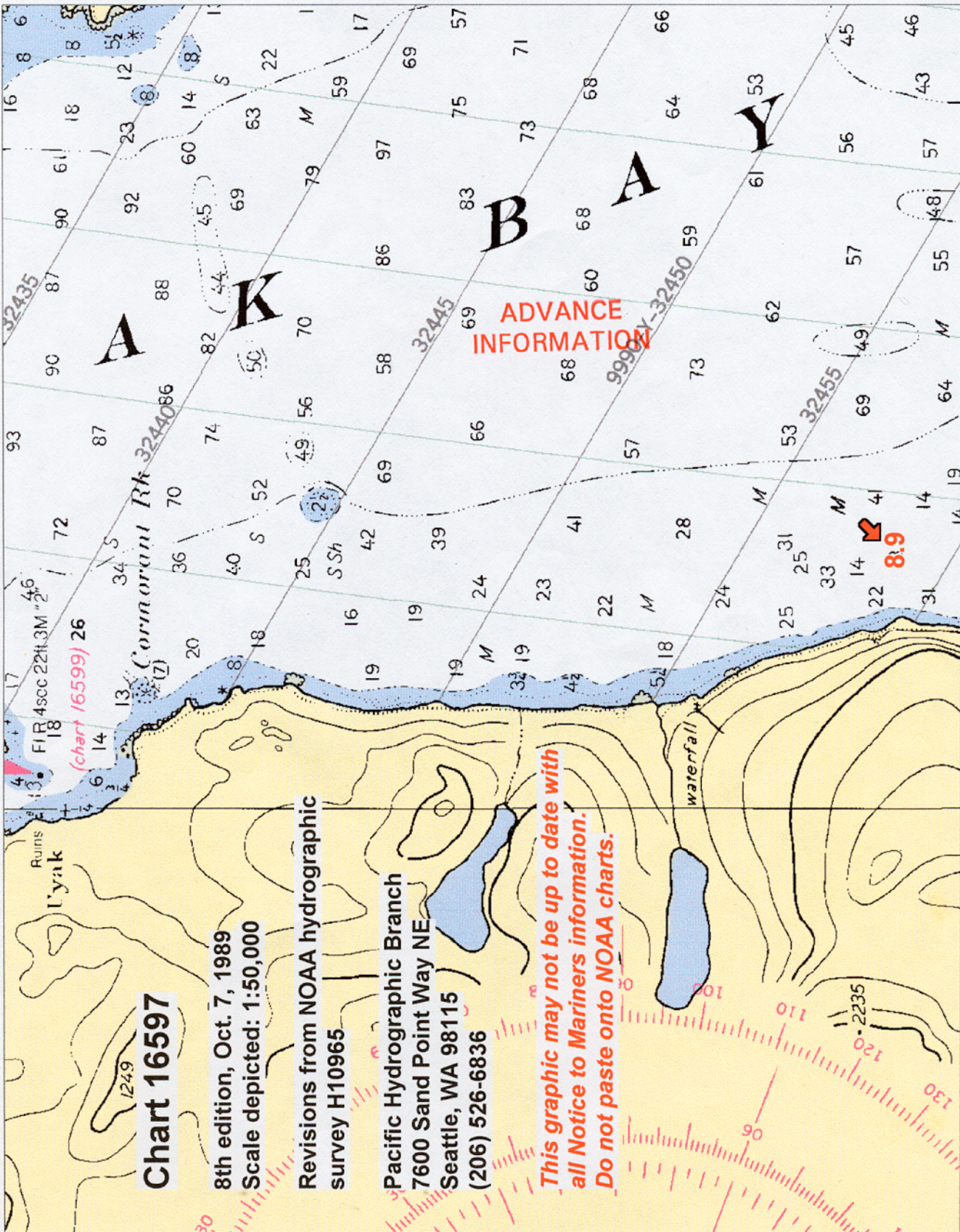


Chart 16597

8th edition, Oct. 7, 1989
 Scale depicted: 1:50,000

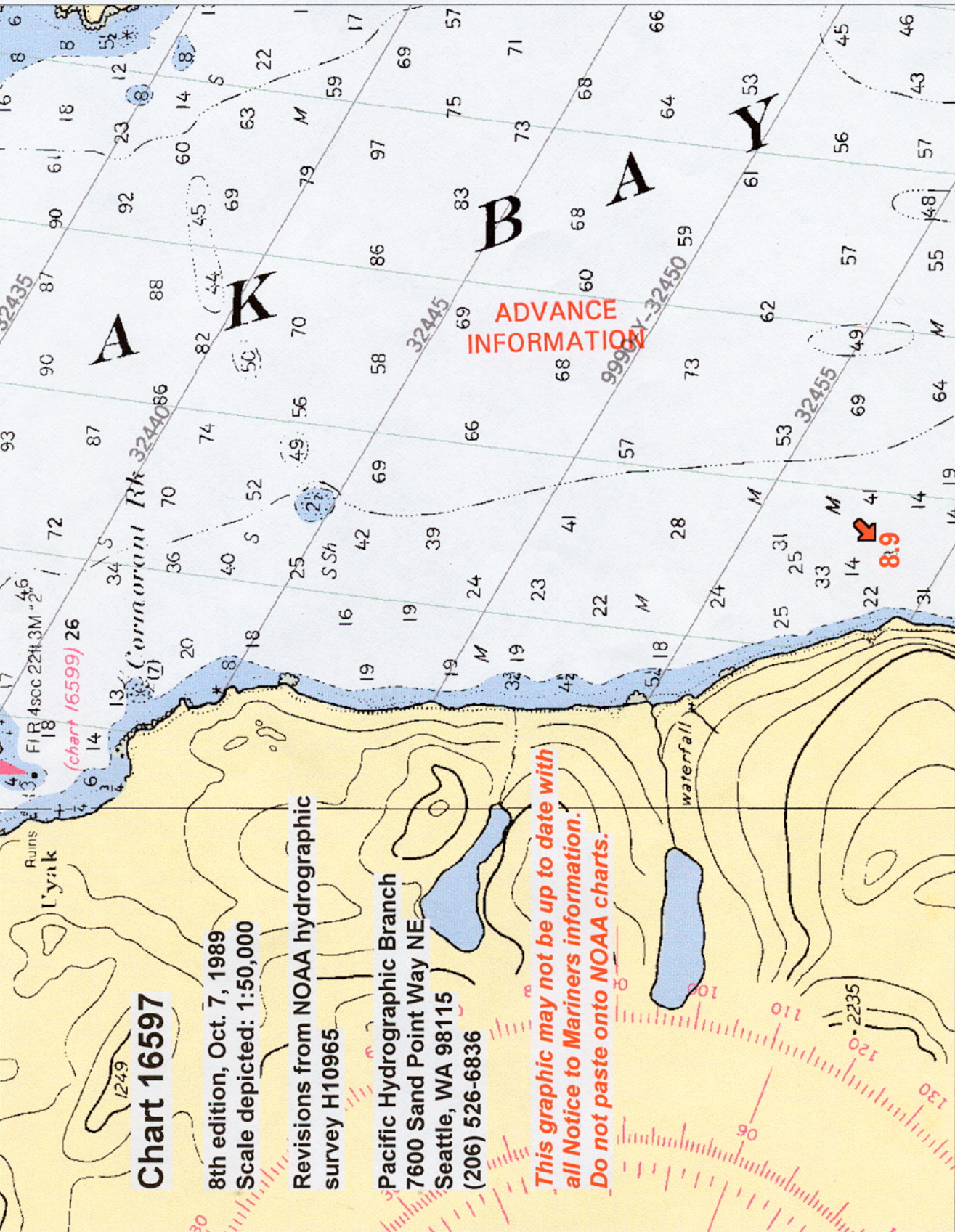
Revisions from NOAA hydrographic survey H10965

Pacific Hydrographic Branch
 7600 Sand Point Way NE
 Seattle, WA 98115
 (206) 526-6836

This graphic may not be up to date with all Notice to Mariners information. Do not paste onto NOAA charts.

ADVANCE INFORMATION

8.9





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 2, 2000

HYDROGRAPHIC BRANCH: Pacific
HYDROGRAPHIC PROJECT: OPR-P312-RA-2000
HYDROGRAPHIC SHEET: H-10965

LOCALITY: Larsen Bay and Approaches, AK
TIME PERIOD: May 14 - June 12, 2000

TIDE STATION USED: 945-7724 Larsen Bay, AK
Lat. 57° 32.3'N Lon. 153° 59.7'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.986 meters

TIDE STATION USED: 945-7728 Uyak (Cannery Dock), AK
Lat. 57° 38.5'N Lon. 154° 0.2'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.934 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: LB5 & LB6

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: Kodiak, AK was used for datum control in this hydrographic survey. Accepted datums for this station have been updated recently due to anomalous sea level trends to land emergence resulting from glacial retreat. Therefore, the accepted datums at 945-7292 Kodiak, AK are based on the 1994-1998 update of Mean Sea Level (MSL) on the 1960-1978 Epoch.

Thomas V. Mero 11/2/00

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Final Tidal Zoning for OPR-P312-RA-2000 Larsen Bay and Approaches, AK - Sheet H-10965

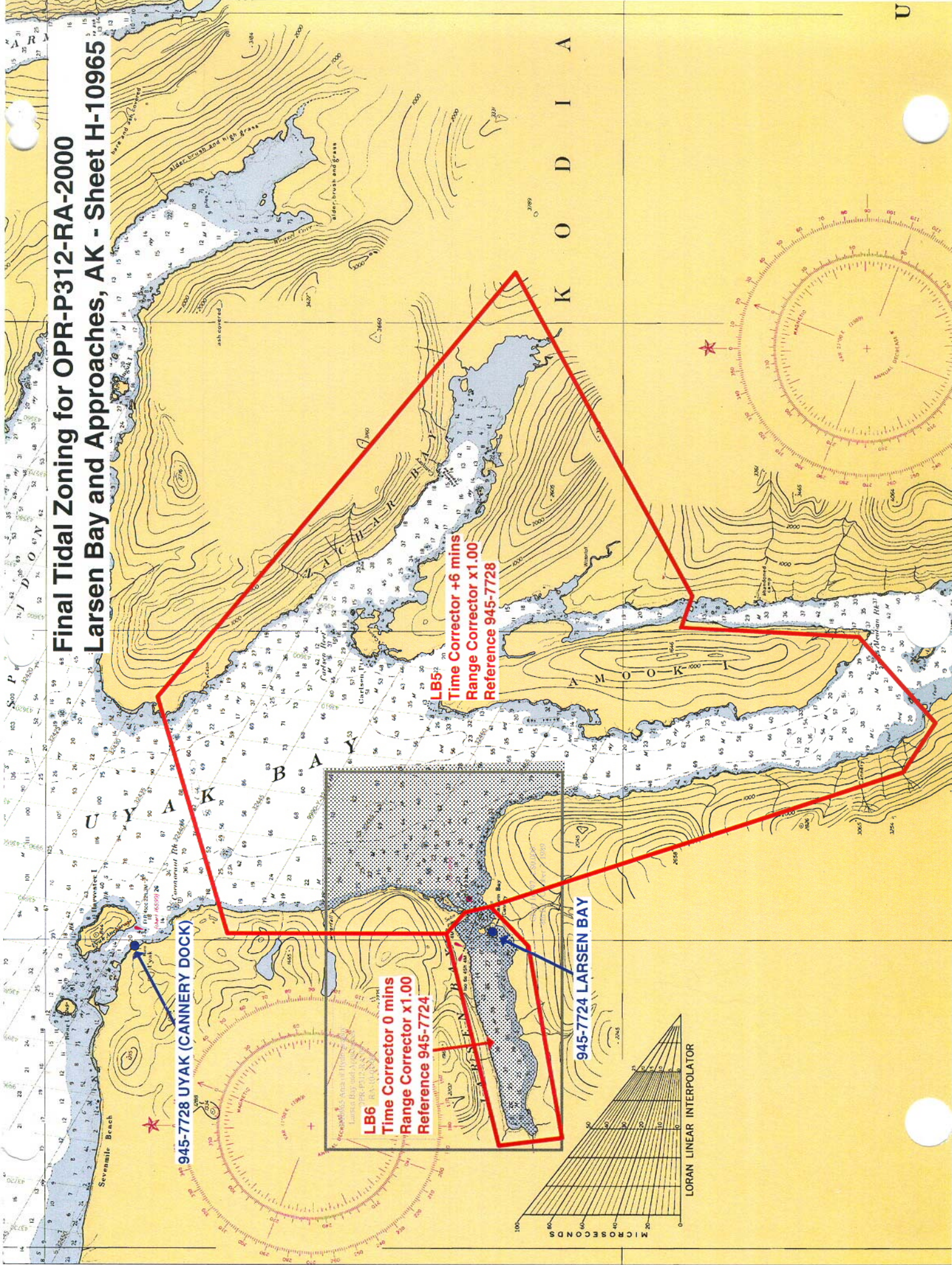
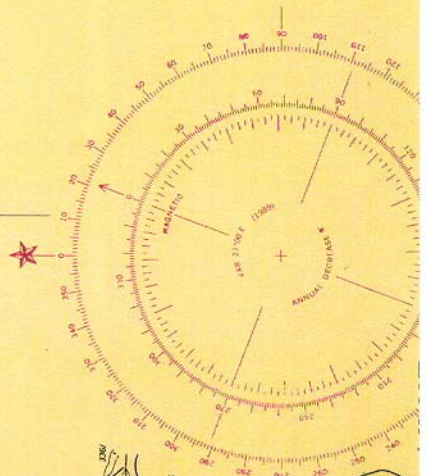
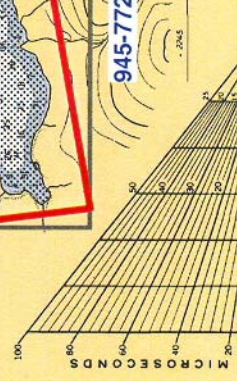
945-7728 UYAK (CANNERY DOCK)

LB6
Time Corrector 0 mins
Range Corrector x1.00
Reference 945-7724

LB5
Time Corrector +6 mins
Range Corrector x1.00
Reference 945-7728

945-7724 LARSEN BAY

LORAN LINEAR INTERPOLATOR



Final tide zone node point locations for OPR-P312-RA-2000,
Sheet H-10965.

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 LB5	945-7728	+6	1.00
-153.868948 57.634339			
-153.639442 57.531109			
-153.813776 57.48008			
-153.830954 57.483346			
-153.836005 57.431877			
-153.882486 57.409523			
-153.909039 57.418907			
-153.981894 57.538204			
-153.985052 57.545539			
-153.996482 57.550868			
-153.996546 57.614137			
-153.868948 57.634339			
Zone LB6	945-7724	0	1.00
-153.985052 57.545539			
-153.996482 57.550868			
-154.111304 57.535612			
-154.107193 57.51732			
-154.003323 57.527172			
-153.981894 57.538204			
-153.985052 57.545539			

HYDROGRAPHIC SURVEY STATISTICS

H10965

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					
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

- SHORELINE MAPS (List):
- PHOTOBATHYMETRIC MAPS (List):
- NOTES TO THE HYDROGRAPHER (List):
- SPECIAL REPORTS (List):
- NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

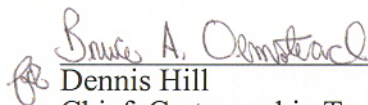
PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			
POSITIONS REVISED			
SOUNDINGS REVISED			
CONTROL STATIONS REVISED			
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS			
VERIFICATION OF SOUNDINGS			
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET			126
COMPARISON WITH PRIOR SURVEYS AND CHARTS			
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT			121
GEOGRAPHIC NAMES			
OTHER (Chart Compilation)			139
USE OTHER SIDE OF FORM FOR REMARKS			
	TOTALS		386

Pre-processing Examination by	Beginning Date	11/07/2000	Ending Date	
Verification of Field Data by R. Mayor, E. Domingo, R. Davies, I. Almacen, L. Deodato	Time (Hours)	126	Ending Date	
Verification Check by	Time (Hours)		Ending Date	
Evaluation and Analysis by I. Almacen, L. Deodato	Time (Hours)	121	Ending Date	05/09/2003
Inspection by B. Olmstead	Time (Hours)	17	Ending Date	05/06/2003

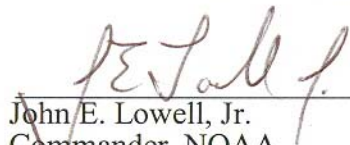
APPROVAL SHEET
H10965

Initial Approvals:

The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.


Dennis Hill _____ Date: 6/13/2003
Chief, Cartographic Team
Pacific Hydrographic Branch

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


John E. Lowell, Jr. _____ Date: 7/17/03
Commander, NOAA
Chief, Pacific Hydrographic Branch

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10965

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
16599	11/19/01	J. A. Almacan L.T. Deodato	Full Part Before After Marine Center Approval Signed Via <i>Full application of</i> Drawing No. <i>features & soundings from smooth sheet.</i>
16598	3/7/02	L.T. Deodato	Full Part Before After Marine Center Approval Signed Via <i>Full application of soundings</i> Drawing No. <i>and features from smooth sheet and thru chart 16599.</i>
16599	10/20/03	J. Sherry Rv. 10/29/03 TA	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>full application of soundings, curves,</i> <i>and features from BP-181753</i>
16598	10/20/03	J. Sherry Rv. 10/29/03 TA	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>full application of soundings, curves,</i> <i>and features from BP-181754</i>
16597	10/20/03	J. Sherry Rv. 10/29/03 TA	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>full application of soundings, curves,</i> <i>and features from BP-181754</i>
16580	10/20/03	J. Sherry Rv. 10/29/03 TA	Full Part Before After Marine Center Approval Signed Via Drawing No. <i>full application of sounds, curves,</i> <i>and features through 16597</i> Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.