9763

Diag. Cht. No. 8556-3

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC

Field No. RA-5-3-78

Office No. H-9763

LOCALITY

State ALASKA

General Locality KODIAK ISLAND

Locality WOMENS BAY TO ST. PAUL HARBOR

1978

CHIEF OF PARTY
CAPT J. P. RANDALL

LIBRARY & ARCHIVES

DATE 12/21/79

★ U.S. GOV. PRINTING OFFICE: 1976—669-441

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NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9763

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-5-3-78

State Alaska

General locality Kodiak Island

Locality Womens Bay to St. Paul Harbor

Scale 1:5,000 Date of survey June 19, 1978 to July 12, 1978

Instructions dated March 28, 1978 Project No. S-P310-RA-78

Vessel RAINIER Launches RA-3 (2123), RA-5 (2125), RA-6 (2126)

Chief of party CAPT James P. Randall

Surveyed by LCDR L.A. Lapine, ENS D.A. Keller, ENS B.J. Hillard, ENS D.L. Stotler, ENS D.D. Smith

Soundings taken by echo sounder, hand lead, pole Ross Fineline Fathometer, Model 4000

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Position Verification by Thelma O. Jones Automated plot by PMC Xynetics Plotter

Sounding Verification by Thelma O. Jones

Soundings in ~~fathoms~~ feet at ~~MHW~~ MLLW

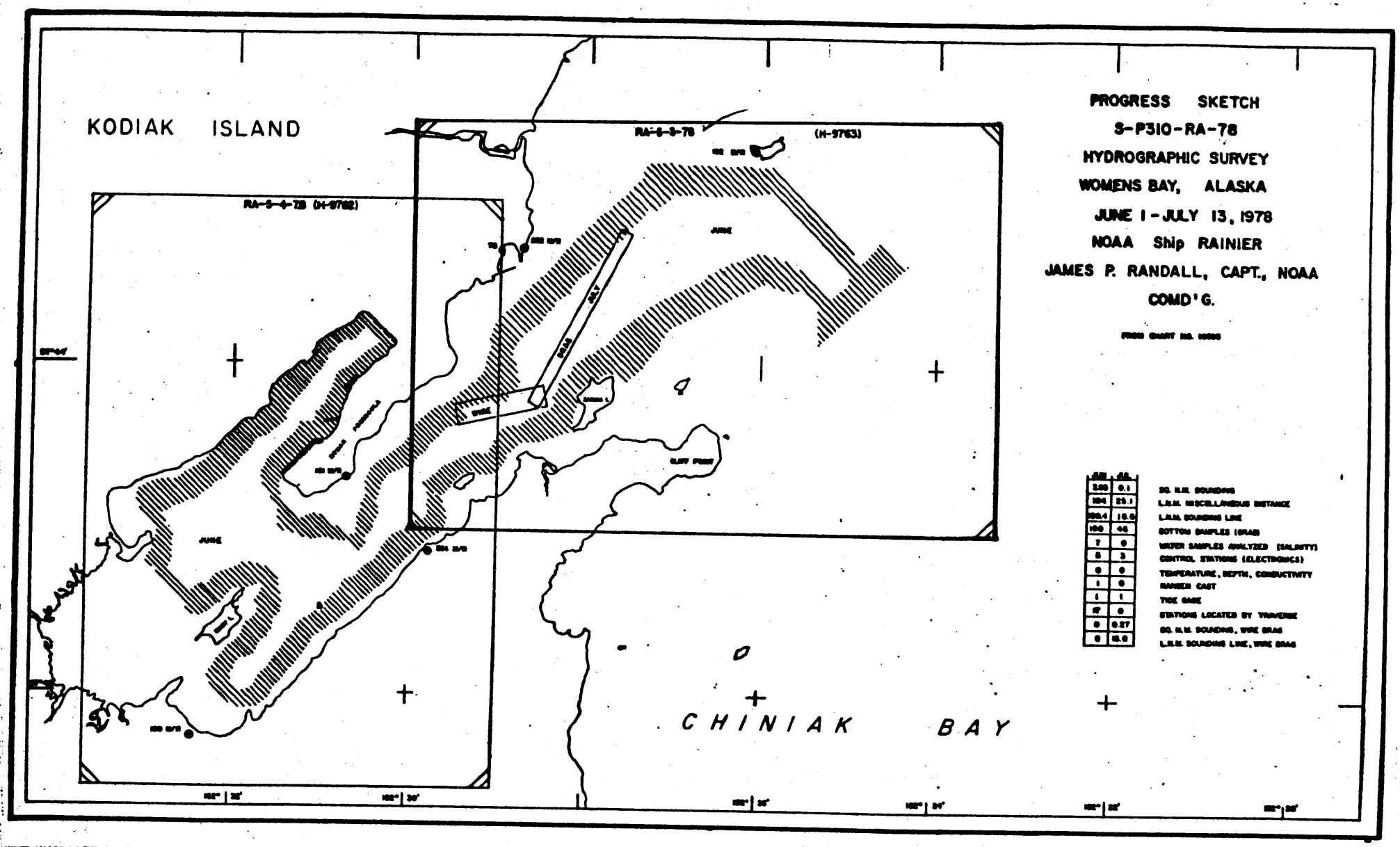
REMARKS: Time meridian for this survey is GMT (000°W).

Miscellaneous pages have been removed from this D.R. and are filed with the field records

Appvd. to Standards
8-20-80 WE

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

★ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6


KODIAK ISLAND
RA-S-4-78 (H-9762)
RA-S-5-78 (H-9763)
JUNE
CHINIAK BAY
PROGRESS SKETCH
S-P310-RA-78
HYDROGRAPHIC SURVEY
WOMENS BAY, ALASKA
JUNE 1 - JULY 13, 1978
NOAA Ship RAINIER
JAMES P. RANDALL, CAPT., NOAA
COMD'G.

DESCRIPTIVE REPORT

To Accompany Hydrographic Survey

H-9763

RA-5-3-78

Scale 1:5,000

1978

NOAA Ship RAINIER

James P. Randall
Captain, Commanding

A. PROJECT INSTRUCTIONS

Project instructions for S-P310-RA-78 (navigable area survey, Womens Bay, Alaska) were received by RAINIER personnel on April 5, 1978. Copies of the project instructions and applicable correspondence are attached as separates to this text. (See Verifier's Report section I) No Copies attached

B. AREA SURVEYED

The portion of Womens Bay which was surveyed during S-P310-RA-78, field No. RA-5-3-78, was bounded by Blodgett Island on the southwest, extended northeast to Puffin Island, and thence outward to approximately 200 meters southeast of St. Paul Harbor Light. The 12 foot curve was the survey limit for the area bounded between Blodget Island and Zaimka Island. From Zaimka Island to Puffin Island the limits were a shoal area on the southeast and a line from Puffin Island to the 12 foot curve on the northwest. The upper and lower limits then extended out through the St. Paul Harbor entrance buoys. (Copy of chart with project limits attached as a separate to text).

The area was surveyed at a scale of 1:5,000. Hydrographic survey operations were commenced on June 19, 1978 (JD 170) and were completed on July 12, 1978 (JD 193). This survey was assigned registry number H-9763.

C. SOUNDING VESSEL

All depth soundings obtained during this survey were taken by RAINIER Launch RA-3 (E.D.P. Number 2123) using a conventional echo sounder system (see below). There were no peculiarities to the system which would have degraded the accuracy of the soundings.

D. SOUNDING EQUIPMENT

For RA-5-3-78, all echo soundings were obtained with Ross Fineline Fathometer Systems, which include the following components: Ross Model 4000 Transceiver, Ross Model 5000 Analog Recorder, Ross Model 6000 Digitizer and 100 kHz transducer.

The following table summarizes the sounding vessels used and their echo sounding equipment with respective serial numbers.

Component	RA-3 (2123)	RA-5 (2125)
Transceiver	1080	1041-7
Analog Recorder	1071	1040
Digitizer	1080	1040

For information detailing the procedures to obtain echo sounding corrections, refer to Echo Sounding Report S-P310-RA-78.

E. HYDROGRAPHIC SHEETS

Hydrographic field sheets were compiled using the Complot System on RAINIER. Listed below are the serial numbers of those components utilized, except for the teletype keyboards.

PDP 8/e Computer	SN 1015	SN 11430
DEC High Speed Reader	SN 6400	SN 15150
Houston Complot Plotter	SN 5848-18	SN 5445-7

A modified Transverse Mercator Projection was used to develop the geographic position grid for the hydrographic plots. The RAINIER does not have the on-line plotting software for range-azimuth hydrography so the plots are non-real time in origin. Therefore, the rough sounding plots were generated aboard the RAINIER. The parameter tape listing is attached as a separate to this text.

Sounding plots by RAINIER were corrected for predicted tides, draft of the survey launch, and non-standard sound velocities. All in between peaks and deeps are on the master tapes.

All hydrographic data will be submitted to Pacific Marine Center for verification and processing.

F. CONTROL STATIONS

Basic position control for this survey was provided by recovery of previously existing triangulation stations and establishment of new stations. Numerous existing stations were recovered including: ABBERT 1939, TRAP 1933, ST PAUL HARBOR ENTRANCE LIGHT 1967, WOMENS BAY FRONT RANGE 1975, and WOMENS BAY REAR RANGE 1975. The geographic positions of the latter three stations, which are fixed aids to navigation located in or adjacent to the survey area, were verified during the survey. Stations NONAME 1978 and NYMAN 1978 were positioned on the 1927 North American Datum using Third Order Class I survey procedures and both were monumented and described. For detailed discussion of geodetic operations performed during this survey, refer to Horizontal Control Report, S-P310-RA-78.

One temporary station, NONAME ECC, was positioned during this survey by Third Order Class I procedures but was not monumented or described. Position computations for this station are attached to this report as separates.

G. HYDROGRAPHIC POSITION CONTROL

Range-azimuth methods were used for sounding line positional control during this hydrographic survey. During wire drag operations, positional control was provided by a pair of Mini-Rangers used in a range-range mode. Three-point sextant fixes, range-visual angle, and range-range Mini-Ranger were the three types of positional control used during bottom sampling operations.

Range measurements during range-azimuth operations were provided by a Motorola Mini-Ranger III system while azimuths were measured with a Wild T2 theodolite. Two theodolites along with three Mini-Ranger shore installations were used during this survey. All shore installations were set up over Third-Order Class I geodetic control stations. The two theodolite stations were NYMAN 1978 and NONAME 1978. The three Mini-Ranger shore stations were as follows:

Station No.	Station Name	Code	Code S/N	Dates on Station
101	NYMAN 1978	3	775	JD 170-174, 182-185, 189
102	NONAME 1978	4	777	JD 174-175, 177-178, 180-183
104	NONAME Ecc. 1978	4	777	JD 178-180

Daily calibration checks were made on all Mini-Ranger positioning equipment, before and after hydrographic operations, by either positioning the vessel on a visual range and taking sextant angles between the range and a separate signal, or by using standard three-point sextant fixes. The range was formed by stations WOMENS BAY FRONT RANGE (signal 250) and WOMENS BAY REAR RANGE (signal 251) while sextant angles were taken between the range and station ABBERT 1939 (signal 252). The calibration range was set up within the survey limits to assure that local conditions had no effect on the Mini-Ranger system operation. Mini-Ranger rates, for various angles, while on the visual range were predetermined aboard RAINIER using computer program RK 561. Mini-Ranger rates for at least three angles were recorded and had to agree within plus or minus three meters of their mean and that mean had to agree within plus or minus five meters of the baseline corrector values in order to have an acceptable calibration check. Three-point sextant fixes to visual signals were also used for daily calibration checks on Mini-Ranger equipment. All visual signals were located on at least Third-Order Class I geodetic control stations.

During the project, two additional Mini-Ranger shore stations were established and used in conjunction with those previously described in a range-range mode for positioning during some bottom sampling operations. The two additional shore stations along with supplemental information on two of the stations previously described, follows:

Station No.	Station Name	Code	Code S/N	Dates on Station
101	NYMAN 1978	1	PMC-001	JD 178-180
102	NONAME 1978	4	777	JD 186-188, 180-181
252	ABBERT 1939	2	776	JD 180-181, 186-188, 190-191
254	TRAP 1933	2	776	JD 178-180

Three-point sextant fixes to visual signals located on at least Third-Order Class I geodetic control stations were used for daily calibration checks on all Mini-Ranger equipment used during bottom sampling operations.

Two Mini-Ranger baseline calibrations were performed in conjunction with this survey. Both calibrations were performed at the U.S. Coast Guard Base, Kodiak, Alaska; the pre-survey calibration being performed on June 1, 1978, the ending calibration being performed on July 7, 1978. The pre-survey calibration resulted in acceptable corrector values. Daily, these corrector values were dialed into the Hydroplot Controller and applied to raw position data throughout the survey area. The ending calibration indicated only minimal change in the baseline corrector values and as such the correctors from the pre-survey calibration can be used in smooth plotting of the survey data. The baseline calibrations also determined low signal strength cut-off points for the Mini-Ranger console, R/T unit, and shore transponder combination. All hydrography was run with signal strengths greater than these signal strength cut-off values. Refer to Electronic Control Report S-P310-RA-78 for more details on baseline calibrations and subsequent corrector values.

H. SHORELINE

As this was a navigable area survey, no shoreline was contained within the survey limits.

I. CROSSLINES

A total of 15.0 nautical miles of crosslines were run during this survey, which represents 11 percent of the total mainscheme and development miles. All crosslines checked agreed to within 2 feet or less. Ninety-four percent of the crosslines agreed exactly, 5.8 percent agreed to 1 foot, and the remainder agreed to within 2 feet. At those crossings in disagreement the bottom was very irregular.

See VR Report Sec. III

J. JUNCTIONS

This survey junctions with RA-5-4-78 at the southwestern limit near Blodget Island. The junction soundings were in excellent agreement with no disagreements greater than 1 foot for those soundings checked.

K. COMPARISON WITH PRIOR SURVEYS

Listed below are the prior surveys used for comparison purposes:

H-5441A	1:10,000	1933
H-6481 = H-6480 WD	1:10,000 1:5,000	1939 1939
H-6479 = H-6758 WD	1:5,000 1:5,000 10,000	1939 1942
H-7874	1:5,000	1950
H-8284	1:5,000	1956
H-8490	1:5,000	1959

Comparison of RA-5-3-78 with prior surveys H-5441A, H-6481, H-6479, and H-7874 yielded very poor agreement. All of the soundings compared from prior surveys were at least 2 feet shoaler than the survey data collected by RAINIER. SEE VR SEC. VI

Comparison of RA-5-3-78 with H-8284 yielded better comparisons than those obtained with older surveys. Of all soundings compared, 7% agreed exactly, 20% agreed within 1 foot, and the remainder agreed to within 8 feet. The areas of major disagreement were inshore depths and along the edges of the navigation channel. SEE VR Sec. VI

A comparison between RA-5-3-78 and H-8490 yielded the following results: 9% of the soundings checked agreed exactly, 24% of the soundings checked agreed within 1 foot, and the remainder varied in agreement from 2 to 10 feet. SEE VR Sec. VI

The poor comparisons with prior surveys may be attributed to any of the following:

1) Extensive construction and dredging during World War II as seen by the fundamental differences in cultural and shoreline changes. ✓

2) The extra flushing action of the tides due to the dredging. ✓

3) The inshore soundings having been obtained from questionable USGS topographic maps. ✓

4) The earthquake of 1964

Presurvey review item 7, a dolphin, was investigated by splitting the mainscheme lines to 20 meters, by conducting an off-line search, and by a dive investigation. No evidence of the dolphin was found in any of the investigations. A copy of the dive investigation report is being forwarded separately. SEE VR SEC. VI

Verified as a submerged pile on adjoining survey H-9762 (1978)

Presurvey review item 8 was a 10 foot peak in ~~30~~ 20 feet of water. After splitting the mainscheme lines to 20 meters and searching for SEE VR SEC. VI

the shoalest point, a detached position (fix number 6029) was taken at Lat 57° 43' 25.395" N, Long 152° 29' 14.036" W with a least depth of 18.0 feet, unadjusted for tides.

Presurvey review item 9 was a 29 foot shoal in approximately 35 feet of water. The mainscheme lines were split to 20 meters and an off-line search was conducted. A detached position (fix number 6028) was taken over the shoalest point at Lat 57° 43' 29.616" N, Long 152° 29' 10.255" W with a least depth obtained of 40.0 feet, unadjusted for tides. SEE VR Sec VI

Presurvey review item 10, Lat 57° 43' 42" N, Long 152° 28' 24" W, was investigated by splitting the mainscheme lines to 20 meters, an on-line search at 5 meter intervals, a dive investigation, and wire drag operations. No depths inconsistent with the bottom configuration were found. A detached position (fix number 6275) was taken at the shoalest point yielding a depth of 38.0 feet, unadjusted for tides. Wire drag operations are discussed in Section P of this report. SEE VR Sec. VI

L. COMPARISON WITH THE CHART

The Survey RA-5-3-78 was compared with chart number 16596, 7th ed., May 3, 1975. The chart adequately shows water in the vicinity of Womens Bay but otherwise is woefully inaccurate. In the area south of the Womens Bay channel buoys number 2 and 3 less than 1% of all soundings checked agreed exactly. For the remaining soundings checked in this area 4% agreed to 2 feet or less, and 95% disagreed by more than 3 feet. None of the charted soundings in the navigation channel agreed with the survey soundings; the survey depth was consistently 3 feet deeper than the chart. In the survey limits north and east of the Womens Bay navigation channel buoys 2 and 3, 40% of all soundings checked agreed exactly, 31% agreed to 1 foot, 20% agreed to 2 feet, and the remaining checked soundings agreed to 3 feet. SEE VR Sec. VII.

The chart reflects a shoal area with kelp that extends from northwest of Womens Bay bouy 8, through the charted dumping ground, to north of Womens Bay buoy 2 in a line paralleling the navigation channel, on the northwest. While the bottom is very irregular, the shoalest survey depths are at least 10 feet deeper than the charted depths.

For the charted shoal area extending from northwest of Womens Bay buoy 8 to northwest of Womens Bay buoy 6, the shoalest depth recorded was 10 feet with an average depth of 17 feet. For the charted shoal area extending from northwest of Womens Bay buoy 6 to northwest of Womens Bay buoy 2, the shoalest depth recorded was 14 feet with an

average depth of ~~19~~ 21 feet. The above three shoals were wire dragged to depths of between 8 and 10 feet to disprove the older shoal soundings (see Section P).

The 10 foot shoal area charted 0.175 nm southwest of charted Womens Bay buoy 1 was not found during survey operations. The area of charted depths of 27 feet and 28 feet south by southwest of Womens Bay buoy 1 were shown to have depths of 35 feet and was consistent with the adjacent bottom topography. SEE VR Sec. III

The charted shoal area near Lat 57° 44' 50" N, Long 152° 27' 46" W, was investigated with the following least depths obtained: (uncorrected for tides).

JD 182	fix number 4931 Lat 57° 44' 50.889" N	~~16~~ 13.0 feet Long 152° 27' 48.451" W
JD 182	fix number 4932 Lat 57° 44' 51.494" N	~~16~~ 11.0 feet Long 152° 27' 46.655" W

A detached position (fix number 4910) was taken at Lat 57°45'12.758"N Long 152°26'29.512"W with a least depth of ~~8~~ 3.0 feet, uncorrected for tides.

A detached position (fix number 4911) was taken at Lat 57°45' 08.585"N Long 152°26'00.885"W with a least depth of ~~18~~ 13.0 feet, uncorrected for tides. SEE VR Sec. III

A shoal area was found and investigated at Lat 57°44'21.291"N, Long 152°25'26.258"W with a detached position (fix number 4869) yielding a least depth of ~~18.9~~ 17 feet, uncorrected for tides.

A shoal area near Lat 57°44'50" N, Long 152°25'15" W was investigated with a detached position (fix number 4878) being taken at Lat 57°-44'39.881" N, Long 152°25'11.474" W, which yielded a least depth of ~~22~~ 20.0 feet, uncorrected for tides.

M. ADEQUACY OF THE SURVEY

This survey is complete and adequate and should immediately supersede prior surveys within the navigable water boundaries of RA-5-3-78.

N. AIDS TO NAVIGATION

The fixed and floating aids to navigation within the survey limits are listed as follows:

Aid	Charted G.P.	Surveyed G.P.
St. Paul Entrance Light	57°44'22.0" N 152°25'40.0" W	57°44'22.116"N 152°25'40.486"W
Womens Bay Front Range	57°43'25.5" N 152°28'43.0" W	57°43'26.728" N 152°28'42.765" W
Womens Bay Rear Range	57°43'11.0" N 152°29'00.1" W	57°43'10.009" N 152°29'01.625" W
R"2" (Bell)	57°44'30.9" N 152°25'01.0" W	57°44'29.952" N 152°25'06.712" W
B"3" (Whistle)	57°44'26.0" N 152°25'24.0" W	57°44'26.477" N 152°25'26.134" W
C"5" (RA. Ref.)	57°44'31.1" N 152°25'57.6" W	57°44'30.552" N 152°25'57.186" W
B"7"	57°45'18.1" N 152°26'50.6" W	57°45'18.077" N 152°26'53.045" W
R"6" (Bell)	57°45'10.5" N 152°26'46.0" W	57°45'10.199" N 152°26'43.820" W
B"1" (Bell)	57°44'31.7" N 152°27'06.9" W	57°44'32.439" N 152°27'06.775" W
N"2"	57°44'23.1" N 152°27'45.8" W	57°44'23.544" N 152°27'46.737" W
C"3" (Bell)	57°44'20.0" N 152°27'36.0" W	57°44'20.085" N 152°27'36.869" W
C"5"	57°44'00.0" N 152°28'00.0" W	57°43'59.535" N 152°27'58.549" W
R"6"	57°43'51.0" N 152°28'19.9" W	57°43'50.639" N 152°28'19.729" W
C"7" (Bell)	57°43'47.8" N 152°28'13.7" W	57°43'46.617" N 152°28'12.510" W
R"8"	57°43'47.8" N 152°28'13.7" W 57°43'42.5"N 152°28'35.5"W 37.0	~~57°43'46.617" N~~ ~~152°28'12.510" W~~ 57°43'42.89"N 152°28'33.13"W (per smooth ~~raw~~ printout)

C"9"	57°43'35.6" N 152°28'33.1" W	57°43'35.843" N 152°28'32.030" W
C"11"	57°43'27.5" N 152°29'17.5" W	57°43'28.031" N 152°29'19.380" W

O. STATISTICS

The statistics for this survey are listed below:

Mainscheme	117.25 nm
Development	14.75 nm
Crosslines	15.00 nm
Miscellaneous	58.00 nm
Wire Drag	48.00 nm

P. MISCELLANEOUS

Upon comparing boatsheet RA-5-3-78 with chart 16596, 7th ed., May 3, 1975, a long narrow shoal oriented 030°T 0.2 miles NW of the main ship channel no longer appeared as charted. Because of the necessity to disprove a large number of shoal soundings, it was decided instead to wire drag the charted shoal area disproving en mass all the old shoal soundings*. The boatsheet indicated a minimum depth in the area of the charted shoal as 9 feet, therefore it was decided to drag the area to a tide corrected depth of between 8 to 10 feet.

*The referenced shoal soundings are not disproved "en mass" by the wire drag development as implied above.

As towing vessels, two RAINIER 28 foot aluminum launches, RA-3 (2123) and RA-6 (2126) were used. RA-6 was the guide launch while RA-3 was the end launch. Wire rope 3/8 inches in diameter obtained from the RAINIER's after survey winch was made up into 4 thirty meter long wire sweep sections and 2 sixty meter long towing cables (total sweep 120 m). The wire was suspended by five buoys (see Figure 1). The end near and far buoys were 24 inch diameter spherical fishing floats. The number 1 and 3 buoys were 3 foot long, 10 inch diameter cylindrical boat fenders approximating the shape of topple buoys. The number 2 buoy or center buoy was a 12-14 inch spherical fishing buoy. The wire was suspended from the buoys by 3/16 inch stainless steel wire rope. These uprights were adjustable by the use of wire rope clamps. In addition, a length of light line connected the buoy to the drag wire being slack at all times but used to assist bringing the heavy weights aboard. The wire drag was kept from lifting by attaching weights at the ends and connection points between 30 meter sections. The end weights were 50 pound steel balls. The number 1 and 3 weights were 15-20 pound cement weights casted in #10 size cans. The number 2 or center weight was a section of galvanized steel chain tied into a ball weighing 10-15 pounds. The lift of the wire was tested using a 6 foot length of

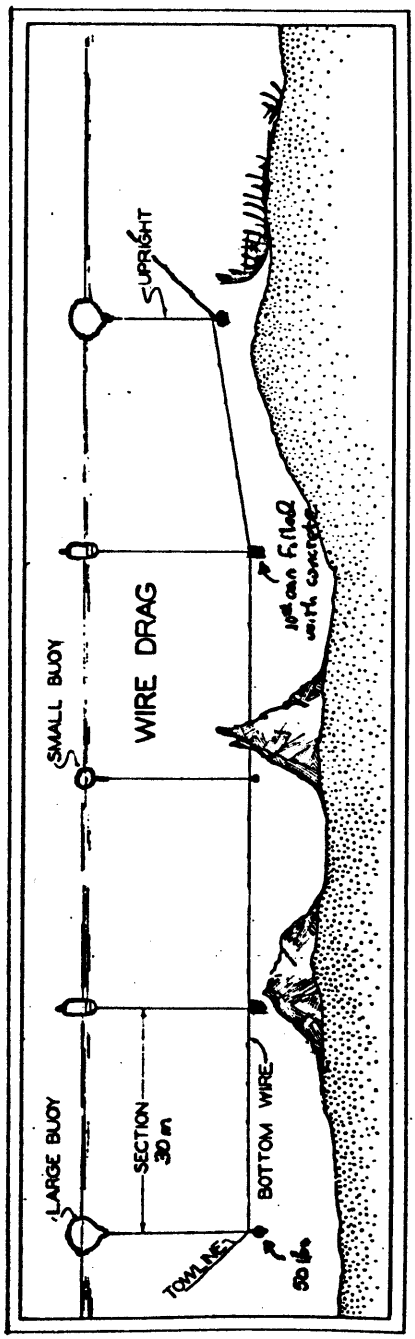


FIGURE 1.—*Wire drag and sweep construction diagram.*

1/2 inch galvanized steel pipe coated with white wash and suspended from a calibrated leadline. The dragmaster and two scuba divers were transported in RAINIER boston whaler RA-9.

The sweep operation was controlled by the two launches, each equipped with on-line hydroplot systems obtaining range-range navigation information from a pair of Mini-Ranger shore stations. In effect, the launches ran parallel lines of hydrography separated by 120 meters and collected information about their position and depth on-line in real time as they pulled the wire sweep astern.

The Mini-Ranger shore stations were set over Third-Order Class I triangulation stations NYMAN 1978 and ABBERT 1939. Each end buoy's position information was obtained from the nearest launch and simultaneously with the aquisition of range-range information by the hydroplot system. To determine the end buoy's position a sextant angle was measured between the end buoy and a triangulation station ashore of at least Third-Order Class I accuracy. Knowing the length of the tow cable and the vessels position enabled the launch crew to obtain an azimuth and distance to the end buoy. At the start of each section both launches synchronized data aquisition via voice communications over their NOAA VHF radio.

The wire depth was set according to predicted tides so as to maintain between an 8 to 10 foot depth related to the MLLWL. Whenever, due to the tide state the wire exceeded the above limits, the uprights were readjusted. To measure the lift of the wire the dragmaster lowered the testing pipe and allowed the particular section of the wire to strike the pipe. Upon striking the pipe the wire left a scratch in the soft white wash coating on the pipe. The distance from the top of the scratch to where the leadline met the water surface determined the depth of the wire. After each test the pipe was recoated with white wash. During the period of tow along each section of drag all wire sections would be tested. The information regarding the lift was recorded in a standard sounding volume and on the raw data printout of the lead launch. All data relating to drag depth, sextant angles to the end buoys, and hang positions were annotated on the computer printouts.

It was determined through trial and error that if the launches each maintained a course so as to stay 20-30 meters outside but parallel to the line entered into the hydroplot system, the end buoys could be maintained on the entered line with all intermediate buoys lying in a straight line with the end buoys. The launch speed was maintained at 800 RPM ahead against the current and at idle speed with the current (approximately 600 RPM). The current speed was approximately 1 knot maximum.

At the beginning of the working day both launches performed a daily system check for the Mini-Ranger system by running a range between WOMENS BAY FRONT RANGE and WOMENS BAY REAR RANGE with a preset sextant angle between WOMENS BAY FRONT RANGE and ABBERT. Upon successful completion of the system check, the lead boat assembled and payed out the wire to the end boat, adjusting the uprights at the time of assembly. The wire would then be towed to the beginning of a section and the drag begun. At anytime a hang occured, the dragmaster went to the hang, took a fix, and a leadline depth. Two divers were then sent down to see what caused the hang. All sections were swept in both directions and all sections were overlapped by half their width. The depth of wire was continually adjusted throughout the day for tidal effects.

The wire sweep hung twice during the course of wire drag operations. The first hang after fix number 9009 on Julian Day 191 and was caused by a misset end upright; set to 18 feet instead of 13 feet. Divers proved the hang and took a leadline sounding and sextant fix while the launches maintained a slight strain on the sweep. The second hang was caused by the wire sweep being very close to the channel bottom and accumulating a large amount of kelp. The launches maintained the strain while the divers investigated. No shoaling was found but a sextant fix and leadline were taken on the spot of heaviest accumulation of kelp. The hang occurred after fix number 9028 on Julian Day 192.

Sweeping the charted shoal area at a depth greater than most of its charted soundings should be proof enough that the shoal no longer exists. The RAINIER feels that all previous shoal soundings should be superseded with the soundings obtained by RA-3 during hydrographic operations for RA-5-3-78. The kelp symbols however, should remain in the vicinity of the second hang mentioned above. It may also be useful to color overlay that area swept to indicate the sweep. Disregard. The wire drag development is not smooth plotted and no A & D sheet is available.

The use of two automated launches proved to be a very successful method of wire drag operations. It precluded the need for complicated otter board set-ups and visual fix information as is usually necessary when wire dragging from smaller boats. In addition, the use of automated launches yielded a computerized plot of the drag in real time avoiding the possibility of gaps in the sweep area. All equipment used was systematically broken down and stored for future use. A demonstration of the technique could be set up in Lake Union during the winter inport for interested parties.

Q. RECOMMENDATIONS

RAINIER personnel recommend that this survey supersede prior surveys for charting purposes. It is also recommended that, since wire drag operations disproved the existence of various shoals, hydrographic information for this survey replace the shoaler charted depths, in lieu of using wire drag depths.

Due to the extensive sounding disagreement with the chart and with prior surveys, a complete resurvey of Womens Bay and St. Pauls Harbor is strongly recommended. ... of the areas... not covered by H-9762 (1978) and the present survey

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished per instructions in the HYDROGRAPHIC MANUAL FOURTH EDITION, MANUAL AUTOMATED HYDROGRAPHIC SURVEYS, and the PMC OPORDER.

Soundings and positions were taken by a Hydroplot system, using program FA 181. There were daily master tapes and corresponding corrector tapes which included the launches TRA and all depth corrections. Velocity correction tapes were generated from Nansen Cast data. The following is a list of all computer programs used for data acquisition or processing:

PDP 8/e		Version Data
FA 181	RANGE AZIMUTH LOGGER	2/23/78
RK 201	GRID, SIGNAL, AND LATTICE PLOT	4/18/75
RK 211	RANGE-RANGE NON-REAL TIME PLOT	1/15/76
RK 212	VISUAL STATION TABLE LOAD	4/01/74
RK 216	RANGE-AZIMUTH NON-REAL TIME PLOT	2/05/76
RK 300	UTILITY COMPUTATIONS	2/05/76
RK 330	REFORMAT AND DATA CHECK	5/04/76
RK 407	GEODETIC INVERSE/DIRECT COMPUTATION	10/23/75
RK 409	GEODETIC UTILITY PACKAGE	9/15/73
AM 500	PREDICTED TIDE GENERATOR	11/10/72
RK 530	LAYER CORRECTIONS FOR VELOCITY	5/10/76
RK 561	H/R GEODETIC CALIBRATION	2/19/75
AM 602	ELINORE-LINE ORIENTED EDITOR	5/20/75
AM 603	TAPE CONSOLIDATOR	10/10/72
RK 606	TAPE DUPLICATOR	8/22/74

S. REFERRAL TO REPORTS

The following reports are referenced in the text and attached as separates:

Field Tide Note, Womens Bay, Alaska
Horizontal Control Report, Womens Bay, Alaska

The Dive Investigation Report, Womens Bay, Alaska, has been forwarded separately.

Respectfully Submitted,

Dean A. Keller

Dean A. Keller
ENS, NOAA

INDEX TO SEPARATES FOLLOWING THE TEXT

FIELD TIDE NOTE

S-P310-RA-78
H-9762, H-9763

Womens Bay, Kodiak, AK.

Primary tide gage #945-7283, St. Paul Harbor, Kodiak, Ak., was utilized as the control gage for all hydrography in Womens Bay. GMT tide correctors for field reduction of soundings were based on the predicted tides for Womens Bay and were generated using PROGRAM AM 500, PREDICTED TIDE GENERATOR, version November 10, 1977.

According to project instructions one tide station was established and maintained throughout the period of hydrography. The gage was operated on GMT.

T1, 945-7292, Womens Bay

A Fisher Porter ADR tide gage, S/N 7304A1380M1B, was installed on June 3, 1978 and was subsequently removed on July 12, 1978. The gage operated continuously except for the 11th and 12th of June when the float wire became entangled and it was necessary to install new wire and restart the gage.

Metric installation levels connected the staff to 5 benchmarks on June 4, 1978. Metric removal levels connected the staff to 8 benchmarks on July 7, 1978. On each occasion a loop connecting the the benchmarks for this tide station and the benchmarks and tide staff for tide station 945-7283 was run. Second order, class 1 levels were run in compliance with special project instructions SP-908-RA-78.

DIFFERENCES OF ELEVATIONS

BM	June 6, 1978	July 9, 1978
(a)-BM24	+0.7363m	+0.7361m
BM24 - BM10	-2.5000m	-2.5018m
BM24 - BM23	-0.2596m	-0.2579m
BM23 - BM12	-2.6854m	-2.6840m
BM12 - BM6	+0.5019m	+0.5026m
BM10 - BM16	+2.0988m	+2.0984m
BM10 - BM13	n/a	+2.5298m
BM16 - BM37	n/a	-0.5289m
BM10 - BM36	n/a	+4.1237m
BM10 - BM27	n/a	+0.9235m

One tide staff, 0.0 to 23.0 feet in length, was installed with the rod stop steel tape measured to a bolt on the pier at a height of 29.850 feet. Level records indicate that the staff did not move.

It was necessary to perform the staff/gage comparison observation twice because of problems with the float takeup wire which changed the original staff/gage relationship. The first staff/gage comparison was conducted on June 7, 1978 and yielded a correlation of 0.0 feet on the gage equaled -16.33 feet on the staff. The second staff/gage comparison, conducted on June 15, 1978, yielded a staff/gage correlation of 0.0 feet on the gage being equal to -19.95 feet on the staff. The comparisons were conducted from well before low tide to well after high tide.

A table comparing predicted tides at Womens Bay and St. Paul Harbor with the observed tides at T1 is given below. The second table compares all the above with the observed tides at the St. Paul Harbor gage. (The tables list High tide, Low tide, and then the Tide Range in that order).

TIDAL COMPARISONS I

Date	St. Paul Harbor (P)	Womens Bay (P)	T1
June 5, 1978	0955 Z	1006 Z	1000 Z
	1646 Z	1650 Z	1642 Z
	10.4 feet	10.5 feet	10.07 feet
June 9, 1978	1214 Z	1225 Z	1218 Z
	1905 Z	1909 Z	1909 Z
	9.4 feet	9.5 feet	8.86 feet
June 13, 1978	0340 Z	0351 Z	0330 Z
	2141 Z	2145 Z	2130 Z
	5.9 feet	6.0 feet	5.47 feet
June 17, 1978	0700 Z	0711 Z	0706 Z
	1354 Z	1358 Z	1354 Z
	8.3 feet	8.4 feet	7.8 feet
June 21, 1978	1016 Z	1027 Z	1018 Z
	1709 Z	1713 Z	1718 Z
	13.3 feet	13.4 feet	10.9 feet
June 25, 1978	1339 Z	1350 Z	1400 Z
	2016 Z	2020 Z	2036 Z
	11.0 feet	11.1 feet	9.6 feet
June 29, 1978	0537 Z	0548 Z	0609 Z
	1223 Z	1227 Z	1221 Z
	6.3 feet	6.4 feet	6.53 feet

Date	St. Paul Harbor (P)	Womens Bay (P)	T1
July 7, 1978	1120 Z	1131 Z	1130 Z
	1807 Z	1811 Z	1845 Z
	10.0 feet	10.1 feet	9.47 feet
July 11, 1978	0212 Z	0223 Z	0224 Z
	2018 Z	2022 Z	2012 Z
	7.0 feet	7.1 feet	6.25 feet

TIDAL COMPARISONS II

Date	St. Paul Harbor (P)	Womens Bay (P)	T1	945-7283
July 2, 1978	0813 Z	0824 Z	0806 Z	0745 Z
	1510 Z	1514 Z	1530 Z	1527 Z
	9.0 ft.	9.1 ft.	8.1 ft.	8.51 ft.
July 3, 1978	0854 Z	0905 Z	0900 Z	0824 Z
	1551 Z	1555 Z	1612 Z	1557 Z
	10.5 ft.	10.6 ft.	11.1 ft.	9.21 ft.

Zoning is recommended using the discrete tidal zoning method due to the differences between the predicted tides and the observed tides and the differences between the two tide stations (Womens Bay & St. Paul Harbor). The St. Paul Harbor tide station marigram was forwarded to the Pacific Tides Party by the contract tide observer.

VELOCITY CORRECTION TAPE
RA-5-3-78 (H-9763)

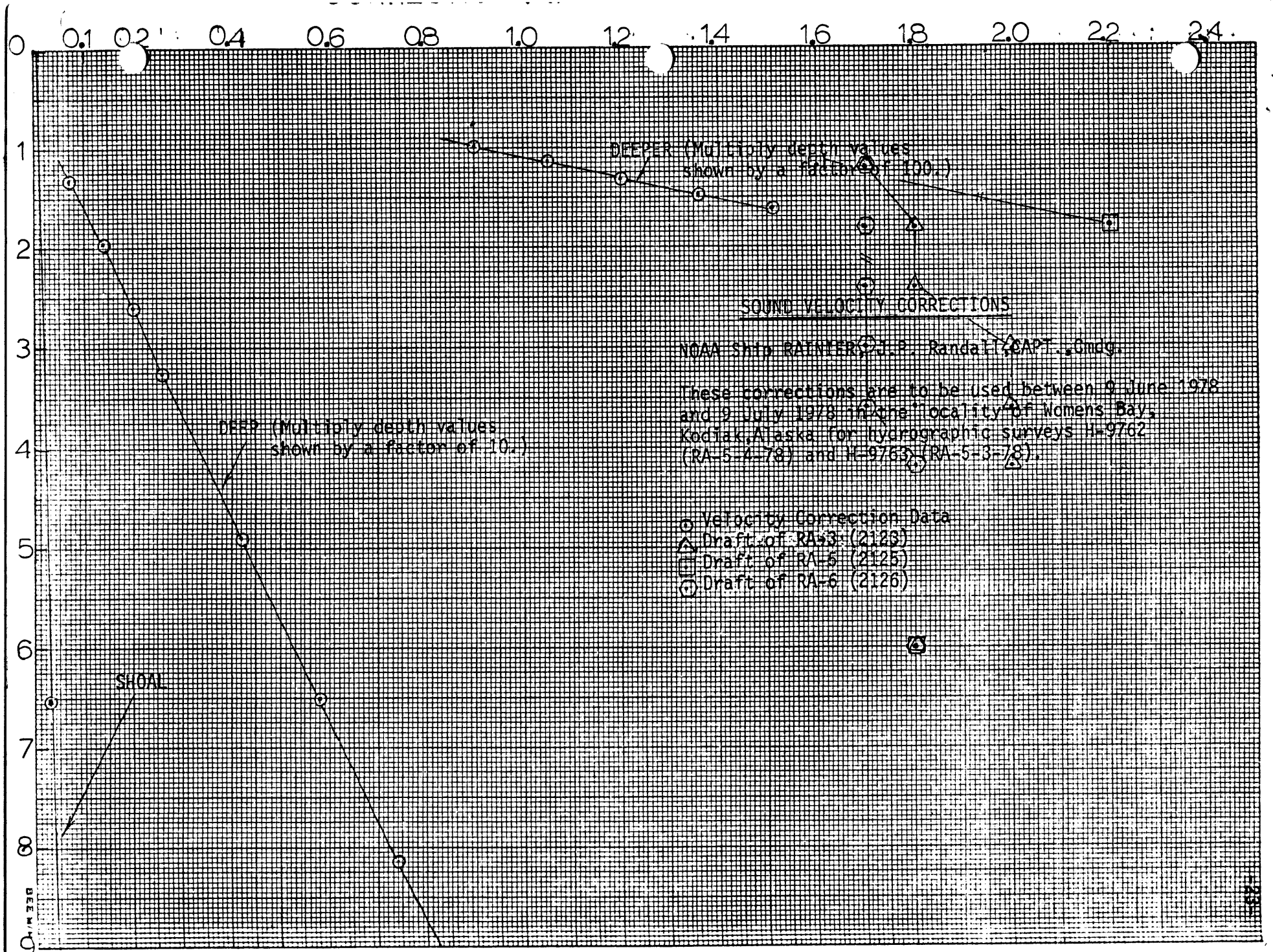
TABLE NO.1
LAUNCHES 2123,2125
SCALE-FEET

```
000100 0 0000 0001 000 212600 009763
000206 0 0001
000313 0 0002
000417 0 0003
000520 0 0004
000622 0 0005
000725 0 0006
000825 0 0007
000920 0 0008
001040 0 0009
001138 0 0010
001250 0 0011
001370 0 0012
001480 0 0013
001570 0 0014
001700 0 0015
999999 0 0016
```

VELOCITY CORRECTOR TAPE LISTING
RA-5-4-78(H-9762)
RA-5-3-78(H-9763)

TABLE - NO.2
LEADLINE SOUNDINGS,BOTTOM SAMPLE,DIVE INVESTIGATION ETC.
SCALE - FEET

000500 0 0000 0002 000 212300 009762
999999 0 0000



VELOCITY CORRECTION CURVE
S-P310-RA-78

MASTER STATION LIST
S-P 310-RA-78,WOMENS BAY,ALASKA

FINAL VERSION

```
100 3  57 41 44682 152 32 26002  250 0000 000000
/WOMEN 1978                                571524

101 3  57 43 18686 152 30 41958  250 0001 000000
/NYMAN 1978                                571524

102 3  57 45 19170 152 26 07193  250 0024 000000
/NONAME 1978                               571521

104 6  57 45 19169 152 26 07248  254 0024 000000
/NONAME ECC

200 3  57 43 33678 152 30 40064  139 0018 000000
/WHITE TANK 1978                           571524

201 4  57 42 22984 152 32 12243  139 0015 000000
/NOME 1933                                 571524

202 3  57 42 53676 152 32 58420  139 0015 000000
/CRAB 1933                                 571524

203 3  57 44 34042 152 30 12827  139 0027 000000
/CHINIAK SW BASE 1907-1967                 571524

204 3  57 43 44730 152 31 37111  139 0000 000000
/SHANNON POINT 1978                        571524

205 3  57 44 38190 152 30 11375  139 0000 000000
/WATERTANK 1978                            571524

206 3  57 43 32475 152 30 42747  139 0000 000000
/GREEN TANK 1978                           571524

210 3  57 42 23337 152 34 11456  243 0000 000000
/SIGNAL ON TELEPHONE POLE(TEMP)

211 3  57 43 08460 152 33 27991  243 0000 000000
/SIGNAL ON TELEPHONE POLE (TEMP)

212 3  57 43 14934 152 33 12506  243 0000 000000
/SIGNAL ON TELEPHONE POLE (TEMP)

213 3  57 43 21010 152 32 40620  243 0000 000000
/SIGNAL ON TELEPHONE POLE (TEMP)
```

214 3 57 43 26908 152 32 19028 243 0000 000000
/SIGNAL ON TELEPHONE POLE (TEMP)

215 3 57 43 36341 152 31 58594 243 0000 000000
/SIGNAL ON TELEPHONE POLE (TEM)

216 3 57 43 49484 152 31 36779 243 0000 000000
/SIGNAL ON POLE (TEMP)

217 3 57 43 59853 152 31 20919 243 0000 000000
/SIGNAL ON POLE (TEMP)

218 3 57 44 08534 152 31 00814 243 0000 000000
/SIGNAL ON POLE (TEMP)

219 3 57 44 14822 152 30 44589 243 0000 000000
/SIGNAL ON POLE (TEMP)

221 4 57 44 13760 152 30 20708 243 0000 000000
/SIGNAL ON POLE (TEMP)

222 6 57 44 02000 152 30 10092 243 0000 000000
/SIGNAL ON POLE (TEMP)

223 6 57 43 55282 152 30 37451 243 0000 000000
/SIGNAL ON POLE (TEMP)

224 4 57 43 39202 152 30 48129 243 0000 000000
/SIGNAL ON POLE (TEMP)

225 6 57 43 28804 152 31 03445 243 0000 000000
/SIGNAL ON POLE (TEMP)

226 4 57 43 20839 152 31 20756 243 0000 000000
/SIGNAL ON POLE (TEMP)

250 6 57 43 26728 152 28 42765 139 0010 000000
/WOMENS BAY FRONT RANGE 1975 571521

251 3 57 43 10009 152 29 01625 139 0024 000000
/WOMENS BAY REAR RANGE 1975 571521

252 0 57 44 42207 152 28 43850 139 0005 000000
/ABBERT 1939 571521

253 3 57 44 22116 152 25 40486 139 0009 000000
/ST. PAUL ENTRANCE LIGHT 1967 571521

254 6 57 42 52606 152 29 47189 139 0020 000000
/TRAP 1933 571521

255 3 57 43 27981 152 27 36938 139 0000 000000
/RADAR BASE 1978 571521

ASCII SIGNAL TAPE LISTING
RA-5-3-78(H-9763)
RA-5-4-78(H-9762)

100	3	57	41	44682	152	32	26002	250	0000	000000
101	3	57	43	18686	152	30	41958	250	0001	000000
102	3	57	45	19170	152	26	07193	250	0024	000000
104	6	57	45	19169	152	26	07248	139	0024	000000
200	3	57	43	33678	152	30	40064	139	0018	000000
201	4	57	42	22984	152	32	12243	139	0015	000000
202	3	57	42	53676	152	32	58420	139	0015	000000
203	3	57	44	34042	152	30	12827	139	0027	000000
204	3	57	43	44730	152	31	37111	139	0000	000000
205	3	57	44	38190	152	30	11375	139	0000	000000
206	3	57	43	32475	152	30	42747	139	0018	000000
210	3	57	42	23337	152	34	11456	243	0000	000000
211	3	57	43	08460	152	33	27991	243	0000	000000
212	3	57	43	14934	152	33	12506	243	0000	000000
213	3	57	43	21010	152	32	40620	243	0000	000000
214	3	57	43	26908	152	32	19028	243	0000	000000
215	3	57	43	36341	152	31	58594	243	0000	000000
216	3	57	43	49484	152	31	36779	254	0000	000000
217	3	57	43	59853	152	31	20919	243	0000	000000
218	3	57	44	08534	152	31	00814	243	0000	000000
219	3	57	44	14822	152	30	44589	243	0000	000000
221	4	57	44	13760	152	30	20708	243	0000	000000
222	6	57	44	02000	152	30	10092	243	0000	000000
223	6	57	43	55282	152	30	37451	243	0000	000000
224	4	57	43	39202	152	30	48129	243	0000	000000
225	6	57	43	28804	152	31	03445	243	0000	000000
226	4	57	43	20839	152	31	20756	243	0000	000000
250	6	57	43	26728	152	28	42765	139	0010	000000
251	3	57	43	10009	152	29	01625	139	0024	000000
252	0	57	44	42207	152	28	43850	250	0005	000000
253	3	57	44	22116	152	25	40486	139	0009	000000
254	6	57	42	52606	152	29	47189	250	0020	000000
255	3	57	43	27981	152	27	36938	139	0000	000000

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
RAINIER	AK.	KODIAK IS.	10/10/78

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
S-P 310-RA-78		RA-5-3-78 H-9763	N. AMERICAN 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
WOMENS BAY FRONT RANGE	FRONT RANGE MARKER, QK FLASHING WHITE, 43 FT. (WOMENS BAY FRONT RANGE 1975)	57°43′	21.728	152°28′	42.765		F-3-6-V 7/78	16596
WOMENS BAY REAR RANGE	REAR RANGE MARKER, OCC. 4SEC. 49FT. (WOMENS BAY REAR RANGE 1975)	57°43′	10.009	152°29′	61.625		F-3-6-U 7/78	16596
ST. PAUL ENTRANCE LIGHT	ST. PAUL ENTRANCE LT., FL. 6SEC, 38FT. (ST. PAUL ENTRANCE LIGHT 1967)	57°44′	22.116	152°25′	40.486		F-3-6-L 7/78	16596
RADAR BASE	WHITE RADAR INSTALLATION ON PROMINENT BLUFF (RADAR BASE 1978)	57°43′	27.981	152°27′	36.938		F-4-6-L 7/78	16596

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	LT. (JG) STEVEN MILLER	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	LT. (JG) STEVEN MILLER	FIELD ACTIVITY REPRESENTATIVE
	LCDR LEWIS LAPINE	OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field Identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY

H-9763

RA-5-3-78

S-P910-RA-78

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheet and the accompanying records have been examined by me and are considered complete and adequate for charting purposes and are approved.

James P. Randall

James P. Randall
Captain NOAA
Commanding Officer

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-9763

Name on Survey	A ON CHART NO. 16596	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BLODGETT ISLAND	X									1
CLIFF ISLAND	X									2
FINNEY BEACH	X									3
KODIAK ISLAND	X									4
NYMAN PENINSULA	X									5
PUFFIN ISLAND	X									6
~~SAINT~~ ST PAUL HARBOR	X									7
WOMENS BAY	X									8
ZAIMKA ISLAND	X									9
CHINIAK BAY										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
					Chas. C. Harrington					19
					Chief Geographer - C3x5					20
										21
					15 Feb. 1980					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

April 6, 1979

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 945-7292 Womens Bay, AK

Period: June 9 - July ~~9~~ 12, 1978

HYDROGRAPHIC SHEET: H-9763

OPR: P310

Locality: Womens Bay, Kodiak Island, AK

Plane of reference (mean lower low water): 11.05 ft.

Height of Mean High Water above Plane of Reference is 7.8 ft.

Remarks: Zone Direct

James E Hubbard

Chief, Datums and Information Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-9763

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	7 & 5
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	4

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						1-misc.data
CAHIERS	2-with printouts					
VOLUMES	1					
BOXES			1-Smooth			

T-SHEET PRINTS (List) N/A

SPECIAL REPORTS (List) 1-tide plot, 1-contour overlay & 1 ea. Cht. mark-up & blow-up

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			2437
POSITIONS CHECKED		2437	
POSITIONS REVISED		11	
SOUNDINGS REVISED		238	
SOUNDINGS ERRONEOUSLY SPACED		Ø	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		Ø	
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	4		
VERIFICATION OF CONTROL		8	
VERIFICATION OF POSITIONS		38	
VERIFICATION OF SOUNDINGS		81	
COMPILATION OF SMOOTH SHEET		48	
APPLICATION OF TOPOGRAPHY		1	
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		4	
COMPARISON WITH PRIOR SURVEYS & CHARTS		38	
VERIFIER'S REPORT		26	
OTHER		20	
TOTALS	4	264	

Pre-Verification by James S. Green	*Beginning Date* 12/14/78	*Ending Date* 12/14/78
Verification by Thelma O. Jones	*Beginning Date* 1/16/79	*Ending Date* 9/12/79
Verification Check by A.E. Eichelberger - James S. Green	*Time (Hours)* 36	*Date* 9/14/79
Marine Center Inspection by HIT	*Time (Hours)* 25	*Date* 10/24/79
Quality Control Inspection by K. W. Wellman	*Time (Hours)* 74	*Date* 2-13-80
Requirements Evaluation by O.J. Hill	*Time (Hours)* 2	*Date* 6/23/80

S. Myers 21 hours 3/28/80

REGISTRY NO. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey, the following shall be completed:

CARDS CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

REGISTRY NO. H-9763

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE_____ TIME REQUIRED_____ INITIALS_____

REMARKS:

PACIFIC MARINE CENTER
VERIFER'S REPORT
I

REGISTRY NO: H-9763 FIELD NO: RA-5-3-78

Alaska, Kodiak Island, Womens Bay to St. Paul Harbor

SURVEYED: June 19, 1978 - July 12, 1978

SCALE: 1:5,000 PROJECT NO: S-P310-RA-78

SOUNDINGS: Ross Fineline
Fathometer 4000

CONTROL: Range-Range, Range
Azimuth, Mini-Ranger

Chief of Party.....CAPT J.P. Randall
Surveyed by.....LCDR L.A. Lapine, ENS D.A. Keller
ENS B.J. Hillard, ENS. D.L.
Stotler, ENS D.D. Smith
Automated plot by.....Xynetics Plotter (PMC)
Verified by.....Thelma O. Jones
September 11, 1979

I. INTRODUCTION

H-9763 is a hydrographic survey conducted in accordance with Project Instructions dated March 28, 1978, Change No. 1 dated April 5, 1978, and the Basic Guidelines, Navigable Area Surveys dated June 24, 1977.

The area was surveyed by RAINIER launch RA-3(2123) between June 19, 1978 and July 12, 1978. The survey area is very irregular, and is adequately described in Section B of the Descriptive Report.

A wire drag was done during this survey to disprove numerous charted shoal soundings. A smooth field sheet is included in the data to show the drag depths of the sweep. A separate smooth position plot at the scale of the survey is submitted from PMC to outline the drag area. The wire drag techniques and findings are discussed in Section P of the Descriptive Report.(See Q.C. Report-item 1)

Projection parameters used to prepare the field sheet have been revised to center the hydrography on the smooth sheet. Parameters used by the Pacific Marine Center are listed in the smooth printout.

Predicted tides from St. Paul Harbor were used to reduce soundings on the field sheet. Approved tides from Womens Bay are used for final reduction of soundings.

II. CONTROL AND SHORELINE

Horizontal control is adequately described in Sections F and G of the Descriptive Report.

There are two signal lists included in the Descriptive Report. One signal list shows the unadjusted positions of signals used to plot the field sheet* and one submitted as the final signal list for survey verification. These lists include signals used on the adjoining survey as well. Signals not used for control in this survey, have been deleted from the signal list in the smooth position printout.* *Removed and filed with the field records.*

Shoreline was transferred in brown ink from the unpublished 8th Edition Chart number 16596, and is for orientation purposes only. Although there are charted rocks in ~~the~~ proximity to ~~of~~ several soundings, none were transferred, since they fall outside the limits of this survey.

Shoreline for the field sheet was transferred from the 7th Edition of Chart 16596. The differences in the shoreline of the 7th and 8th Edition may be attributable to the earthquake of 1964.

The 8th Edition shoreline has been updated from aerial photos flown in support of airport surveys. The most notable difference is the shoreline of Blodgett Island and Puffin Island.

III. HYDROGRAPHY

Crosslines are in excellent agreement with the main scheme soundings. Agreement was within a foot.

Except for the 12-foot curve along the west side of the survey, standard depth curves could be adequately drawn, as specified in the Project Instructions (paragraph 1.3). *(See Q.C. Report-item 2)*

The bottom configuration and least depths are adequately delineated by main scheme sounding, concentrated developments, and wire sweep.

There are 74 bottom samples within the survey limits.

IV. CONDITION OF SURVEY

All hydrographic records, overlays and smooth sheet are adequate and conform to the requirements of the Hydrographic manual except for the following:

A 1. Sounding lines were not run far enough inshore to delineate the 12 foot curve as specified in Project Instructions.

B 2. Bottom sample (position 5194) was erroneously numbered and described on the smooth field sheet.

C 3. Bottom sample (position 5120) was not plotted on smooth field sheet.

D 4. There is no original data for dive investigations.

E 5. There are no floating aids to navigation plotted on smooth field sheet.

F and G *(See Q.C. Report-item 3)*

V. JUNCTIONS

H-9763 joins H-9762 1:5,000 (1978) at the southwest corner. The sounding

agreement is considered very good, within a foot. Soundings were transferred from H-9762 to substantiate the depth curves needed to effect a satisfactory junction. A buoy "N12" at Latitude 57°43'26.62"N, Longitude 152°29.53.04"W, and a ~~dolphin~~ subm pile at Latitude 57°43'17"N, Longitude 152°29'42"W were also transferred from H-9762.

VI. COMPARISON WITH PRIOR SURVEYS

H-5441A	1:10,000	1933 < H-5441 b (1933) W.D. 1:10,000
H-6481	1:10,000	1939
H-6479	1:5,000	1939
H-6480WD	1:5,000	1939
H-6758WD	1:10,000	1942
H-7874	1:5,000	1950
H-8284	1:5,000	1956
H-8490	1:5,000	1959

H-5441A

Most of the soundings on this survey are superseded by H-6481. The difference in the remaining soundings range from 1-6 feet shoaler than present survey depths.

H-6481

Present survey soundings are 1-6 feet deeper than prior soundings. The 11 foot shoal near Latitude 57°44'50"N, Longitude 152°27'46"W, labeled as a rock, is still in evidence. Although there was no dive investigation, the main scheme lines and detached positions (Pos. 4932) substantiates the shoaling. Recommend charting from present survey data. (See Q.C. Report-item 6).

H-6479

Prior survey soundings from H-6479 are generally shoaler with differences ranging from 3-8 feet southwest of channel buoy C "5". The difference is as great as 10 feet in some inshore areas. At the time of the prior survey, Zaimka Island was known as High Island.

H-7874

Soundings in the channel are from 4-9 feet shoaler than the present survey. All other soundings are generally 4-5 feet shoaler. Womens Bay Entrance Channel Light 25 no longer exists.

H-8284

Soundings in the channel are 1-5 feet shoaler than the present survey. All other soundings are from 3-13 feet shoaler.

H-8490

Soundings are generally from 1-11 feet shoaler than the present survey. Maximum difference in the channel is 5 feet.

The sounding differences between the prior surveys and H-9763 can probably be attributed to extensive dredging and the results of the reported subsidence of 5.5 feet in the area due to the 1964 earthquake.
5.0 to

H-6480WD (1939)

H-6480WD shows clearance in excess of that presently needed in this survey; i.e., there are no conflicts between present survey depths and cleared wire drag depths.

H-6758WD (1942)

The major portion of H-6758WD is outside the limits of hydrography of this survey. The portion within the limits shows clearance in excess of that presently needed; i.e. there are no conflicts between present survey depths and cleared wire drag depths.

With the exception of H-6480WD and H-6758WD, H-9763 is adequate to supersede all prior surveys within the areas of common hydrography.

PSR Item #7 was disposed of during the verification of H-9762, pos. 2051. uncharted
The item as described in the Descriptive Report is erroneous. The spoil dump site referred to in Presurvey Review of March 24, 1978 under Item 7 is ~~actually northwest of Zaimka Island.~~ adequately developed.

PSR Item #8. The 10 foot peak, Latitude 57°43'25.5"N, Longitude 152°29' 13.6"W, originated with prior survey H-7874 (1950). The shoalest depth found was 16 feet (pos. 6029). The area was developed with 20 meter splits. Recommend the charted 10 foot depth be deleted and the 16 foot be charted from this survey.

PSR Item #9. The 29 foot shoal originated with H-8284 (1956). The shoalest depth found on this survey is 36 feet, second sounding out of position 6018, Latitude 57°43'30.02"N, Longitude 152°29'11.61"W. Recommend the 36 foot be charted from this survey. Disregard referenced 29 ft. sounding.

PSR Item #10. The 28 foot shoal originated with H-8284 (1956). The shoalest depth found was 35 feet, ~~second~~ third sounding out of position ~~6009~~, 6256
Latitude 57°43'42"N, Longitude 152°28'24"W. Recommend the 35 foot be charted from this survey. Disregard referenced 28 ft. sounding.

Although Presurvey Review items 9 and 10 are shown on the Presurvey Review Chart markup, they are not charted on the 7th or 8th Edition of Chart 16596.

VII. COMPARISON WITH CHART 16596, 7th Edition, 3 May 1975

a. Hydrography

The source of most of the charted hydrography originated with the prior surveys mentioned in the preceding section, as indicated on the chart markup. The shoreline and the unidentified soundings appear to be from other sources not available to the verifier.

The 10 foot shoal mentioned in the Descriptive Report, Section L, paragraph 4 is not on the 7th Edition of Chart 16596. It is portrayed on the 8th Edition blow-up as a mutilated 30. A copy of the published 8th Edition confirms the 30 foot depth. The shoalest depth found in the area during hydrography was 36 feet, which was consistent with adjacent depths.

The detached position 4911 is not the least depth of the shoal described in Section L, paragraph 7, of the Descriptive Report. The least depth is 7 feet (sixth sounding out of position 4647).

Rocks inked in black on the field sheet are unverified and were transferred from the chart.

The numerous shoal soundings northwest of the charted dumping ground can be considered disproven. The area was developed during hydrography and was also included in the wire sweep (see section P of the Descriptive Report). The source of the shoal soundings could not be identified during verification, It is recommended that these soundings be superseded by the present survey soundings. Judging from the uneven bottom of this area, it appears that the dumping ground has extended northwesterly to include this area.

With the main scheme hydrography, dive investigations and the wire sweep, H-9763 is adequate to supersede charted hydrography within the common areas, except as noted in item 6 of the Q.C. Report.

b. Controlling Depths

The charted controlling depth was 29 feet for a width of 400 feet and a length of 3,750 feet. The present least depth on H-9763 is 30 feet.

c. Aids to Navigation

There are three fixed aids to navigation, fourteen buoys and one landmark within the limits of this survey. The aids adequately serve the purpose for which they were intended. The aids were located during this survey and are portrayed in a slightly different position than previously charted.

Recommend the smooth sheet positions be used for charting fixed aids.

VIII. COMPLIANCE WITH INSTRUCTIONS

With the exception of the 12 foot curve mentioned in Section III, paragraph 2, this survey adequately complies with Project Instructions dated March 28, 1978, Change No. 1 dated April 5, 1978.

IX. ADDITIONAL FIELD WORK

This is a very good navigable area survey, no additional field work is recommended.

However, due to the reported subsidence caused by the 1964 earthquake, a basic survey, complete with field edit is recommended.

Respectfully submitted,

A. E. Eichelberger

for Thelma O. Jones
Cartographic Technician
September 11, 1979

Examined and approved,

James S. Green
Chief, Verification Branch

APPROVAL SHEET

FOR

SURVEY H- 9763

A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position print-out has been made. A new final sounding print-out has been made.

B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the verifier's report.

Date: 25 Sep 79

Signed: [signature]

Title: Chief, Verification Branch

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue E
Seattle, WA 98102

DATE : November 7, 1979 OA/CPM3/JWC

TO : OA/CPM - Eugene A. Taylor

FROM : OA/CPM3 - John W. Carpenter

SUBJECT: PMC Hydrographic Inspection Team Report for Survey H-9763

This survey is a Navigable Area Survey of Womens Bay to St. Paul Harbor, Kodiak Island, Alaska. This survey was conducted by NOAA Ship RAINIER in 1978 in accordance with Project Instructions S-P310-RA-78 dated April 5, 1978 and Change No. 1 dated April 5, 1978.

The following items were noted:

1. The 12 foot curve was not completely developed as specified by the Project Instructions. However, the area depicted within the accompanying project sketch limits seems to be covered.

2. The question arose at the HIT meeting of why the smooth tides for the project were taken from the Womens Bay gage instead on the St. Paul gage. It was learned later that the St. Paul gage is a bubbler and that the Womens Bay was an ADR gage and thus for ease of processing the Womens Bay gage was used as there was no significant difference between the results of these gages.

3. The Descriptive Report was very well written.

4. Original records supporting dive investigations were not submitted with the records received from the ship.

5. The RAINIER is to be commended for their use of wire drag operations to disprove numerous shoal soundings.

The inspection team finds H-9763 to be a very good navigable area survey adequate to supersede common areas of prior surveys and charted hydrography. Administrative approval is recommended.

John W. Carpenter

David B. MacFarland, Jr.

James W. Steensland

James L. Stringham

ADMINISTRATIVE APPROVAL
H-9763

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.

E A. Taylor

Eugene A. Taylor, RADM
Director
Pacific Marine Center

Nov. 9, 1979
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

OA/C352:KWW

February 13, 1980

TO: Glen R. Schaefer
Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman
Quality Evaluator

SUBJECT: Quality Control Report for H-9763 (1978), Alaska, Kodiak Island, Womens Bay to St. Paul Harbor

A quality control inspection of H-9763 was accomplished to monitor the survey for obvious deficiencies with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, junction, shoreline transfer from chart, decisions and actions by the verifier, and cartographic presentation of data.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as discussed in the Verifier's Report, the HIT Report, and as follows:

1. Reference section I of the Verifier's Report:

The wire-drag development was accomplished for the purpose of discrediting selected charted shoal depths. The intended purpose was adequately accomplished and no further consideration is necessary.

2. Reference section III of the Verifier's Report:

The 24-foot and 90-foot charted depth curves were not added to the smooth sheet during verification. It is an established practice to delineate additional depth curves as necessary to conform to charting practice. Since the referenced depth curves are charted, they should have been added to the smooth sheet during verification.

Section III of the Verifier's Report is supplemented by the following:

In order to conform to charting practice, supplemental and brown depth curves were added to respectively delineate 24-foot and 90-foot depths.

3. Section IV of the Verifier's Report is supplemented by the following:

F. Section A of the Descriptive Report is deficient in that the dates of the project instructions and applicable changes are not included. It is a formal requirement that the Descriptive Report ". . . include . . . the date of the original instructions and the dates of all changes . . . ." (See section 5.3.4(A) of the Hydrographic Manual.)

G. The hydrographer neglected to recommend the disposition of Presurvey Review items for charting purposes. (See section 5.3.4(K) of the Hydrographic Manual.)

4. The following processing deficiencies were noted in the overlap area between the present survey and H-9762 (1978) on the southwest:

a. A shoreline displacement of approximately 10 meters was noted in the overlap area. In this case the shoreline in the overlap area should be in coincidence on both smooth sheets despite the fact that it is shown for orientation purposes only.

b. A submerged pile originating with the adjoining survey was transferred to supplement the present survey. The verifier's annotation on the present smooth sheet, however, erroneously identified this feature as a submerged dolphin.

During quality control inspection appropriate revisions were effected in both cases cited above.

5. The Alaskan Earthquake of March 27, 1964, caused a subsidence of about 5 feet in the area of Womens Bay according to the report, Volume III, Prince William Sound, Alaska, Earthquake of 1964 and Aftershocks. Although a 1-foot rise of the bottom is evident from tidal observations in some areas alongshore, a comparison between post- and pre-earthquake depths reveals no substantial occurrence of rebound in the area of the present survey. Therefore, in some inadequately sounded areas, a few soundings, rocks, and a pile from 1939 surveys were revised to reflect the 1964 earthquake subsidence value and carried forward appropriately to supplement the present survey during quality control.

A rock awash transferred from H-6481 (1939) during verification at latitude 57°45.22'N, longitude 152°26.49'W was changed to RK to supplement a 3-foot least depth on the present survey.

6. Section VII-a of the Verifier's Report is supplemented by the following:

Attention is directed to the 30-foot sounding charted in the vicinity of latitude 57°45.09'N, longitude 152°26.06'W which originates with a miscellaneous

source. It is not verified or disproved by the present survey and is referred to the compiler for evaluation and appropriate action.

cc:
OA/C35
OA/C351

National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

OA/C351:DJH

JUL 17 1980

TO: OA/CPM - Eugene A. Taylor

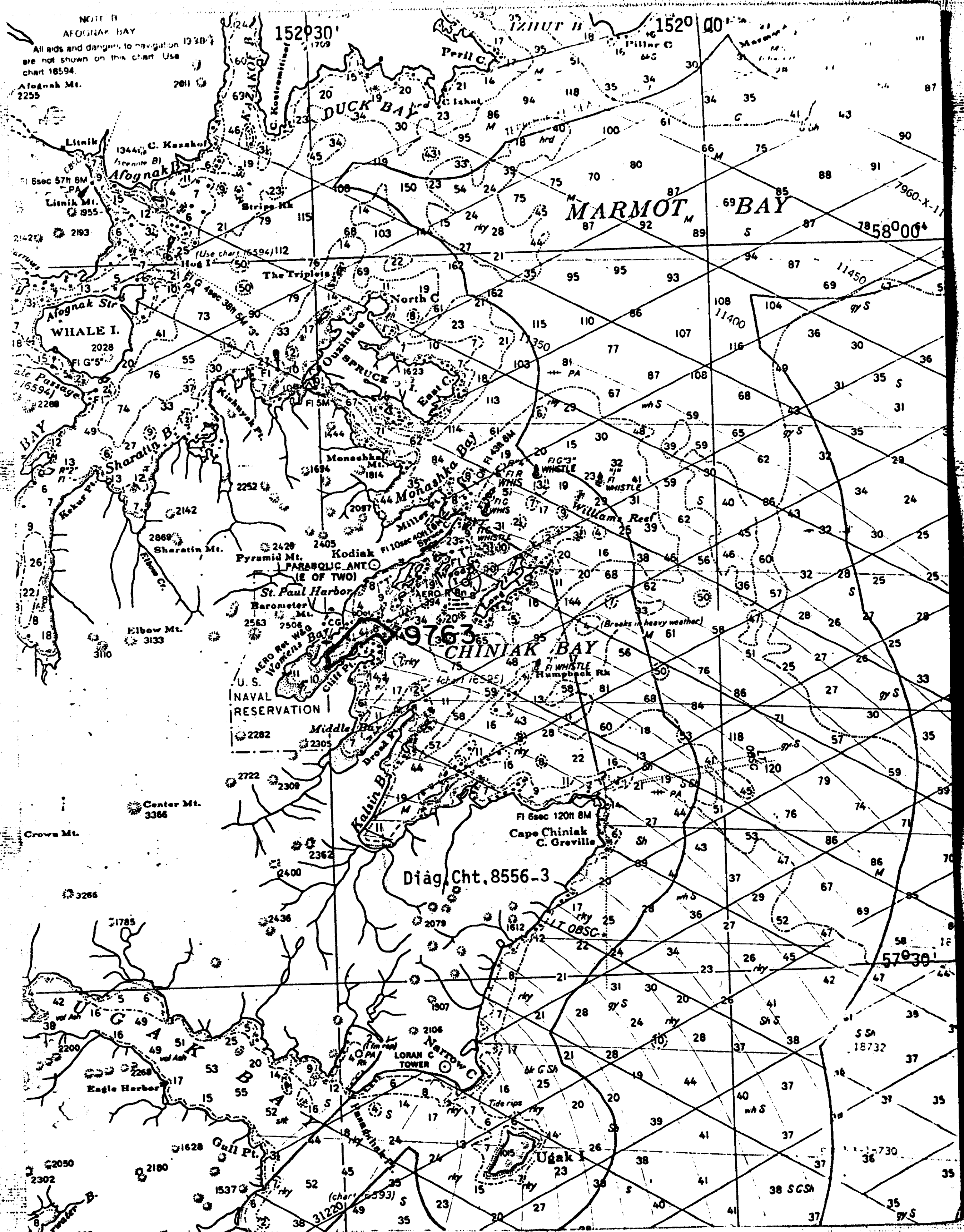
FROM: OA/C3 - Roger F. Lanier

SUBJECT: H-9763 (1978), S-P310, Alaska, Kodiak Island, Womens Bay to St. Paul Harbor, Report of Compliance with Project Instructions

The smooth sheet and Descriptive Report for the subject survey have been examined. This survey, except as noted in the Quality Control Report, dated February 13, 1980 (copy attached), and the Hydrographic Survey Inspection Team Report, dated November 7, 1979, is complete and adequate for the purposes intended and is in compliance with Project Instructions S-P310-RA-78, dated March 28, 1978.

Attachment

cc:
OA/C352 w/o att.


NOTE B
AFOGNAK BAY
All aids and dangers to navigation (1938) are not shown on this chart. Use chart 16594.
152°30'
152° 00'
58°00'
57°30'
IZHUT B
DUCK BAY
MARMOT BAY
Afognak Mt.
Afognak B.
C. Kazakof
Litnik Mt.
Strips Rk
Hog I
The Triplets
North C
WHALE I.
Afognak Str
Ouzinkie
SPRUCE I.
East C
Sharatin B.
Kekur Pt.
Kizhuyak Pt.
Monashka Mt.
Monashka Bay
Miller Pt.
Williams Reef
Sharatin Mt.
Elbow Cr.
Pyramid Mt.
Kodiak
PARABOLIC ANT (E OF TWO)
St. Paul Harbor
Barometer Mt.
Elbow Mt.
Womens Bay
Cliff Pt.
9763
CHINIAK BAY
Humpback Rk
U.S. NAVAL RESERVATION
Middle Bay
Broad Pt.
Kalsin B.
Center Mt.
Crown Mt.
Fl 6sec 120ft 8M
Cape Chiniak
C. Greville
Diag. Cht. 8556-3
LT OBSC
UGAK BAY
Eagle Harbor
LORAN C TOWER
Narrow C
Gull Pt.
Ugak I
Tide rips
(chart 16593)
31220
18732

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9763

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
16596	9/18/80	J. Baily	Full Part Before After Verification Review Inspection Signed Via
			Drawing No. Exam for Notice to MARINERS
			QC inspection
16596	11-14-80	H.J. Borawski	Full ~~Part Before~~ After ~~Verification~~ Review Inspection Signed Via
			Drawing No. 16 Fully app'd hydro
			QC inspection
16595	11-21-80	H.J. Borawski	Full ~~Part Before~~ After ~~Verification~~ Review Inspection Signed Via
			Drawing No. 15 Fully app'd hydro thru cht 16596
			QC
16594	11/25/80	Naitok	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 15 Full thru ^ chart 16595
			QC
16580	8/11/81	Tamara A. O'Rear	Full ~~Part Before~~ After Verification Review ^ Inspection Signed Via
			Drawing No. 19 Fully app'd thru 16594
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63