

9521

Diag. Cht. No. 8556-2

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. .... FA-10-5-75  
Office No..... H-9521

LOCALITY

State ..... ALASKA  
General Locality ..... SHELIKOF STRAIT  
Locality ..... KINAK BAY

19 75

CHIEF OF PARTY  
R. E. ALDERMAN

LIBRARY & ARCHIVES

DATE ..... 12-20-76

9521

*Charts*  
*8556*  
*8502*

**HYDROGRAPHIC TITLE SHEET**

H-9521

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.

FA-10-5-75

State Alaska

General locality Shelikof Strait

Locality Kinak Bay

Scale 1:10,000 Date of survey 21 May - 26 June, 1975

Instructions dated 25 April 1975 Project No. OPR-478-FA-75

Vessel FA-3 (Hull #1240, EDP 2023)

Chief of party Cdr. Richard E. Alderman, NOAA

Surveyed by Lt. (jg) S. E. Anderly

Soundings taken by echo sounder, ~~and other~~ Ross Fineline Fathometer (S/N 204065)

Graphic record scaled by Ross 6000 Digitizer

Graphic record checked by FAIRWEATHER Personnel

Positions verified

~~Produced~~ by Nicholas Lestenkof Automated plot by PMC Kynetics Plotter

Sounding Verification

~~Verified~~ by Dennis L. Duffy & Felipe L. Rosario

Soundings in fathoms ~~XXX~~ at ~~MLLW~~ MLLW

REMARKS: All survey records were kept on GMT. The mean longitude

of the survey is 153°45'W. This boatsheet is complete

and adequate for charting.

Misc. items were removed from the D.R. and are filed in the cahier with the field records.

*Applied to stds 5/12/77*  
*[Signature]*

185 00 00

184 00 00

185 00 00

# OPR-478-FA-75

## PROGRESS SKETCH

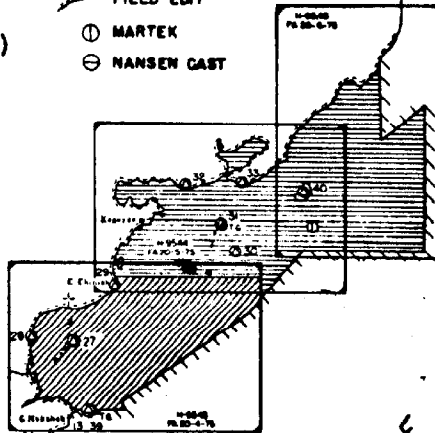
### SHELIKOF STRAIT, ALASKA

CDR RICHARD E. ALDERMAN CMDG  
NOAA SHIP FAIRWEATHER (MSS-20)

SCALE OF C&GS CHART 8556

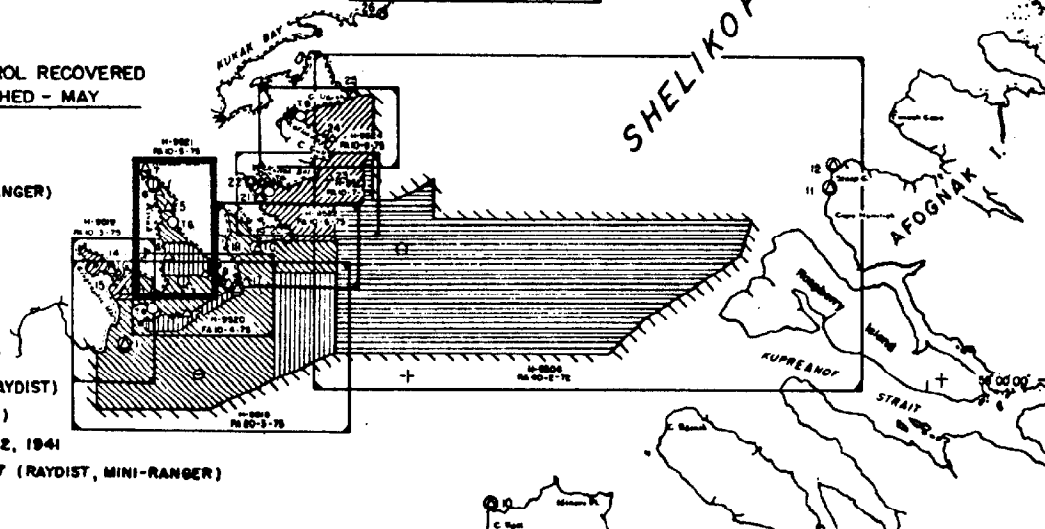
- ⊙ RECOVERED TRI. STA.
- △ ESTABLISHED TRI. STA.
- ⊖ TIDE GAGE
- FIELD EDIT
- ⊙ MARTEK
- ⊖ NANSEN CAST

	MAY	JUNE	JULY	AUG
LNM SOUNDING LINE	223	884	971	1530
SQ NM SOUNDING LINE	26	103	112	270
BOTTOM SAMPLE	0	186	223	129
STD CAST (NANSEN)	0	0	1	1
MARTEK	0	3	0	1



#### HORIZONTAL CONTROL RECOVERED AND ESTABLISHED - MAY

- 1 ILKTUGITAK, 1908
- 2 ACTOR, 1975
- 3 BRAD, 1975 (MINI-RANGER)
- 4 POLK, 1975
- 5 BAY, 1975
- 6 ISLE, 1975
- 7 HIDDEN, 1975
- 8 CAPE I, 1975
- 9 ATUSHAGVIK 2, 1967
- 10 CAPE UGAT, 1908 (RAYDIST)
- 11 NUN, 1941 (RAYDIST)
- 12 PINNACLE ROCK NO. 2, 1941
- 13 NUKSHAK, 1908-1967 (RAYDIST, MINI-RANGER)



#### HORIZONTAL CONTROL RECOVERED AND ESTABLISHED - JUNE

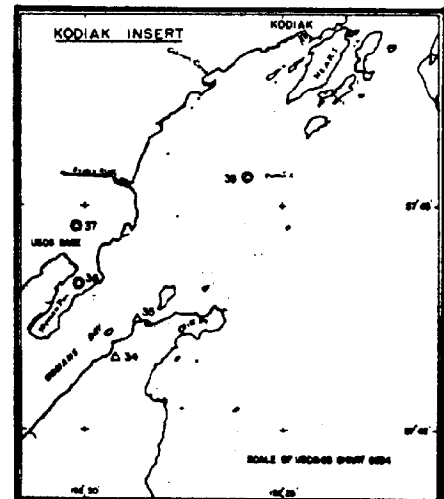
- 14 GEO, 1975 (MINI-RANGER)
- 15 AMALIK, 1975 (MINI-RANGER)
- 16 RUSSIAN, 1975 (MINI-RANGER)
- 17 SHAG, 1975
- 18 MISS, 1975 (MINI-RANGER)
- 19 AK, 1975 (MINI-RANGER)
- 20 KULIAK, 1908-1967
- 21 ROCK, 1967
- 22 HEAD, 1967 (MINI-RANGER)

#### HORIZONTAL CONTROL RECOVERED AND ESTABLISHED - AUGUST

- 39 NUKSHAK, 1908 RM7-1975 (MINI-RANGER)
- 40 KIUKPALIK, 1908-1967 (MINI-RANGER)

#### HORIZONTAL CONTROL RECOVERED AND ESTABLISHED - JULY

- 23 GRASSY, 1975 (MINI-RANGER)
- 24 KOMO, 1975 (MINI-RANGER)
- 25 DIME, 1949
- 26 YUGNAT, 1949
- 27 NINAGIAK, 1967
- 28 HOOK, 1967 (MINI-RANGER)
- 29 CHINIAK, 1967
- 30 SHAKUN ROCK, 1908-1971
- 31 SHAK 2, 1971
- 32 SWIKSHAK, 1967
- 33 BARNEY, 1971
- 34 WOMANS BAY REAR RANGE LT, 1975
- 35 WOMANS BAY FRONT RANGE LT, 1975
- 36 EWE, 1933
- 37 CHINIAK S.W. BASE, 1907-1967
- 38 PUFFIN ISLAND, 1967



DESCRIPTIVE REPORT

NOAA SHIP FAIRWEATHER (MSS-20)

OPR-478-FA-75

SURVEY H-9521 (FA-10-5-75)

A. PROJECT

This survey was accomplished in accordance with project instructions OPR-478-FA-75, Shelikof Strait, Alaska, dated 25 April 1975, with changes 1,2, and 3 dated May 6, 1975, May 28, 1975, and June 6, 1975 respectively, and with the PMC OORDER. ✓

B. AREA SURVEYED

The area encompassed by FA-10-5-75 (H-9521) is Kinak Bay, Alaska and is located on the Alaskan Peninsula. The bay is bounded on the north, east, and west by shoreline of the Katmai National Monument. ✓  
On the south the survey is bounded by latitude 58°05.8'N, and by the peninsula which forms Russian Anchorage. Hydrography was accomplished from 21 May 1975 to 26 June 1975.

C. SOUNDING VESSELS

All hydrography on this sheet was accomplished by launch FA-3 (Hull no. 1240, EDP 2023). Launch FA-4 (Hull no. 1233, EDP 2024) was used for bottom samples. ✓

D. SOUNDING EQUIPMENT

The launch used a Ross Fineline fathometer. A TRA corrector of +0.4 fathom, based on bar checks taken during the project, was used. The sound velocity correctors were determined from three Martek TDC Cast taken in Kinak and Amalik Bays. For details see Report on Corrections to Echo Soundings, OPR-478-FA-75. The depths of the soundings on this survey range from 0 to 83 fathoms. ✓

Sounding Instrument:

<u>Vessel</u>	<u>Instrument</u>	<u>Model</u>	<u>S/N</u>
FA-3	Ross Fineline	200-A	204065
FA-4	Ross Fineline	5000	1054 *

 ✓

\* bottom samples only

E. BOATSHEET

All data was plotted by the shipboard Hydroplot system. The Ship's PDP 8/e computer (S/N M-40-00000-1006) utilized a Complot plotter (Model DP3-5, S/N 5848-17). The projection used was a modified transverse Mercator at a scale of 1:10,000. One plotter sheet was required. The skew is 112°. Sheet FA-10-5-75 has its origin at latitude 58°05'42"N and longitude 154°21'00"W. Copies of the parameter tape printout are appended.

F. STATION CONTROL

Horizontal control was established by third-order traverse especially for this boatsheet. These signals were ACTOR 1975, BRAD 1975, POLK 1975, BAY 1975, ISLE 1975, HIDDEN 1975. These signals start with ACTOR 1975 off the boatsheet to the south and proceed to the north ending at the head of Kinak Bay with HIDDEN 1975. For a sketch showing the location of the signals see the Horizontal Control Report, OPR-478-FA-75. Range-azimuth stations were located at five of the six traverse stations; the sixth station, ACTOR 1975, was used to initial on from BRAD 1975. The 1927 North American datum was used for all computations, which are located in the Horizontal Control Report.

G. POSITION CONTROL

Navigational control was maintained using azimuths from a Wild T-2 theodolite and ranges from a Motorola Miniranger unit. The range console unit serial numbers were 703 on FA-3 and 702 on FA-4. The shore transponder units used were 701 and 703. The abstract of positions lists the days when each shore unit was used. The ASI Data Logger was used to compile all range data in the pattern I field, while in the pattern II field azimuth information was noted on the printout after being radioed by the T-2 observer at the shore station. The azimuth information was then edited into the master tape off-line.

The Miniranger and theodolite were located coincidentally at the same traverse stations and were never eccentric to the stations.

It was found that on this boatsheet no electronic corrections were needed for the range values, but initial corrections were applied to the azimuth values. Calibration of the Miniranger units was done on a Tellurometer-measured base line before and after the survey. Additional calibration checks were made during the course of the survey

using the known distances between traverse stations, since the launch was able to pull up alongside several of the stations. In all cases the measured range fell within  $\pm 6$  meters of the known range, and consequently the baseline correctors (zero) were applied.

The azimuth values received correctors based on the initial value reported by the T-2 operator, both at the beginning of the day and at occasional times during the course of the day.

Slope corrections were automatically applied to the positions plotted on the field sheet.

See also "Range-Azimuth Method of Survey" in the appendix.

H. SHORELINE

The shoreline details were obtained from incomplete manuscripts T-13167, T-13170, and T-13174 and Preliminary manuscript T-13175. All shoreline and topographic details were verified by field edit. The low water line was generally not delineated because of rocks and foul areas.

I. CROSSLINES

The 206.4 n.m. of hydrography run on this sheet includes 19.5 miles of crosslines. The crosslines are 9.5% of the main scheme hydrography. Comparisons at crossings never exceeded 1 fathom.

J. JUNCTIONS

The survey junctions to the south with the 1:10,000 scale contemporary survey FA-10-4-75 (H-9520) which agrees within one fathom or less in depths of between 1 and 80 fathoms.

K. COMPARISON WITH PRIOR SURVEYS

The boatsheet was compared with prior hydrographic survey H-2901 (1:19,170), dated 1908. The datum of H-2901 is uncertain (Valdez vs. American 1927) and therefore this comparison is at best approximate.

In most cases the prior survey soundings agreed closely with the present survey's contour lines in depths of 5 fathoms to 80 fathoms, although in some cases differences of up to 10 fathoms could be found in depths of between 10 and 80 fathoms. Most differences were less than 5 fathoms.

There were no Pre-Survey Review items to investigate or verify in Kinak Bay, Alaska.

L. COMPARISON WITH CHART

The field sheet was compared with chart 16580 (8556), Kodiak Island, 5th Ed., 17 May 1975, scale 1:350,000. The only charted sounding which falls within the survey area appears in Russian Anchorage and is 65 fathoms. When plotted on the field sheet, it appears in an area of 64 to 65 fathom soundings. Given the difference of scales the soundings agree very well.

The scale of the chart is too small to make a really valid comparison, but it does appear that most dangers to navigation in Kinak Bay presently appear there on. Significant findings of this survey, including dangers, will be discussed in Section P.

M. ADEQUACY OF SURVEY

All fathogram field survey records were scanned and checked for deeps and peaks with appropriate changes made to the original records. The survey is complete and adequate for charting.

N. AIDS TO NAVIGATION

There are no aids to navigation on this field sheet.

O. STATISTICS

<u>Vessel</u>	<u>Total Positions</u>	<u>Hydrography, n.m.</u>
FA-3	1172	206.4
FA-4	71	--

Total area 8.0 sq. n.m.  
Total bottom samples 73

P. MISCELLANEOUS

Greenwich Mean Time was used for all survey records.

In addition to the field edit features, Kinak Bay has a number of interesting submarine features worth charting. In the vicinity of latitude 58°07.5', longitude 154°24.5', there is a rock reef that extends out from shore about 350 meters. At an approximate distance of 150 meters offshore latitude 58°07.6', longitude 154°24.7' there is a submerged rock with a MLLW depth of 1.0 fathom corrected for predicted tides. This submerged rock appears on the boatsheet and should be charted. A submerged rock is located at latitude 58°07.5', longitude 154°24.8' at a MLLW depth of 2.0 fathoms corrected for predicted tides. This rock defines the outermost limit of the rock reef. This rock is also on the boatsheet and should be charted.

A pinnacle rock at latitude 58°06.25', longitude 154°25.75' comes within 5.0<sup>5</sup> fathoms of the surface in an area with surrounding depths of 55 fathoms. The least depth as determined by divers was a measured depth of 27'9" uncorrected for tides. The point of least depth is a 5 foot square area on a surrounding plateau area at a depth of about 30'. The plateau area is approximately 40 feet long with precipitous sides. The least depth of the pinnacle is plotted on the boatsheet, and it is recommended that it be charted. ✓

A dive was undertaken at the entrance to Hidden Harbor. The narrow precipitous entrance measures approximately 80 meters across at and above the high water line and the channel itself is about 35 meters wide. The foul line as depicted correctly shows the limits of shoaler depths in the channel. As verified by divers, the channel bottom is a smooth gravel bar, with no natural obstructions, about 2.3 fathoms deep corrected for predicted tides. It is recommended that this ~~2.7~~ <sup>2.5</sup> fathoms, as corrected, be charted as the least depth of the Hidden Harbor entrance channel. ✓

Near the channel entrance to Hidden Harbor at latitude 58°11.37'<sup>44</sup>, longitude 154°28.53'<sup>58</sup> is a ~~rock whose~~ least depth at MLLW is ~~3.8~~ <sup>of 3.8</sup> fathoms, corrected for ~~predicted~~ <sup>actual</sup> tides, in an area of surrounding 9 fathom depths. The least depth was determined by divers and appears on the boatsheet. It is recommended that this feature be charted. ~~4.8 on 800~~ ✓

Two other rocks awash, potentially hazardous to navigation, were located at latitude 58°09.6', longitude 154°26.8' and latitude 58°10.25', longitude 154°26.6'. Both are plotted on the field sheet and should be charted. ✓

Russian Anchorage was used extensively as an anchorage by the FAIRWEATHER for support to this and other surveys in the area. It affords good protection in all weather, has good holding ground with sand and mud bottom, and is clear of dangers. ✓

Q. RECOMMENDATIONS

It is recommended that this survey be accepted and used for charting purposes. ✓

R. REFERENCES TO REPORTS

Report on Corrections to Echo Soundings, OPR-478-FA-75  
Electronic Systems Calibration Report, OPR-478-FA-75 ✓  
Coast Pilot Report, OPR-478-FA-75  
Field Edit Reports, OPR-478-FA-75  
Horizontal Control Report, OPR-478-FA-75



S. DATA PROCESSING PROCEDURES

FA-3 used an ASI Logger in the automatic visual mode to acquire and compile all on-line hydrographic data except for azimuth values. The azimuth values were radioed to the launch from the shore station and were noted on the printout and the fathogram. In some cases where headlands presented an obstruction, azimuth and Miniranger values were derived based on time and course. Such azimuth values do not appear on the fathogram.

See also "Range-Azimuth Method of Survey" in the appendix.

Submitted by:

*John C. Albright*  
for LTJG Stephen E. Anderly, NOAA

FIELD TIDE NOTE

Field tide reduction of soundings was based on predicted tides from Seldovia, Alaska corrected to Kukak Bay, Alaska, which were interpolated by PDP8/e computer utilizing RK 530. All times of both predicted and observed tides are based on GMT.

Eight Bristol Bubbler tide gages were installed at eight locations in the project area. Locations and periods of operation were as follows:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
Nukshak Island	58°23.5'N 153°57.5'W	86 days <del>82</del> May - 20 Aug. 17
Kinak Bay	<del>58°09.0'N</del> 58°09'03"N <del>154°26.4'W</del> 154°26'16"W	41 days 19 May - 28 June
Takli Island	58°03.8'N 154°28.6'W	64 days 19 May - 29 July
Geographic Harbor	58°06.5'N 154°34.4'W	39 days 14 June - 23 July
Missak Bay	58°07.6'N 154°16.5'W	26 days 18 June - 14 July
Kuliak Bay	58°11.0'N 154°16.0'W	16 days 8 July - 24 July
Kafliia Bay	58°15.0'N 154°12.0'W	20 days 9 July - 29 July
Shakun Island	58°33.0'N 154°43.0'W	34 days 17 July - 20 Aug.

NUKSHAK ISLAND

Bubbler gage (S/N 67A10292) and staff were installed 17 May 1975. The gage ran from 22 May until 25 May at which time a storm severed the orifice line. A new orifice was set and the gage restarted 31 May. The gage ran satisfactorily until removal on 20 August 1975. The gage was in operation a total of 86 days. The marigram reads 7.1 feet greater than the staff.

KINAK BAY

Bubbler gage (S/N 62A297) and staff were installed 19 May 1975 and ran satisfactorily for 41 days until removal on 28 June 1975 with the

following exceptions: Twice during the operation of the gage, the chart paper was found off the drive sprockets. Hourly heights were not tabulated for the periods in question, 23 May to 29 May and 20 June to 26 June. Data from these periods may be usable. Determination of this should be done by Tides Branch. During the first of the above periods one day of hydrography (23 May) was run. The tide gage at Takli Island will serve to control this day's hydrography. The marigram reads 3.0 feet greater than the staff.

#### TAKLI ISLAND

Bubbler gage (S/N 73A231) and staff were installed 19 May 1975 and ran satisfactorily until 7 June 1975 when the orifice tubing was severed in a storm. A new orifice was installed and the gage restarted on 11 June 1975. The gage ran until 21 June 1975 at which time the chart paper ran out. The gage was restarted on 25 June and ran well until its removal on 29 July 1975. The gage was in operation for a total of 64 days. The marigram reads 3.2 feet greater than the staff (on the second orifice) and 9.3 feet greater than the staff (on the first orifice).

#### GEOGRAPHIC HARBOR

Bubbler gage (S/N 67A16205) and staff were installed 14 June 1975 and ran satisfactorily until removal on 23 July 1975. The gage was in operation for 39 days. The marigram reads 15.2 feet greater than the staff.

#### MISSAK BAY

Bubbler gage (S/N 64A11030) and staff were installed on 18 June 1975 and ran satisfactorily for 26 days until removal on 14 July 1975. The marigram reads 2.8 feet greater than the staff.

#### KULIAK BAY

Bubbler gage (S/N 73A234) and staff were installed on 8 July 1975 and ran satisfactorily for 16 days until removal on 24 July 1975. The marigram reads 9.0 feet greater than the staff. Hydrography was run on June 29, 30 and July 1 before installation of the gage. The gage at Missak Bay will serve to control the hydrography run on these days.

#### KAFLIA BAY

Bubbler gage (S/N 73A233) and staff were installed on 9 July 1975 and ran satisfactorily for 20 days until removal on 29 July 1975. The marigram reads 7.4 feet greater than the staff.

## SHAKUN ISLAND

Bubbler gage (S/N 73A232) and staff were installed 17 July 1975 and ran for 34 days until removal on 20 August 1975. The marigram from 29 July through 12 August displays intermittent dampening and shifting of the tide curve. Also shown are several shifts attributed to orifice movement occurring on 31 July and 12 August. These shifts were never more than 0.5 feet and the tide curve was interpolated for these periods. The marigram reads about 2.4 feet greater than the staff.

## TIME & HEIGHT DIFFERENCES

Takli Island - Kinak Bay: Times of highs and lows varied from 0 to 20 minutes in either direction. Differences in height ranges varied from 0 to 0.5' with the Kinak Bay gage having the greater range.

Takli Island - Geographic Harbor: Differences in times of highs and lows varied from 0 to 35 minutes with the events arriving later at the Geographic Harbor gage. There were no significant height differences.

Missak Bay - Kuliak Bay: Highs and lows occurred 20 Min. earlier to 5 Min. later at Missak Bay, the average being around 10 min. early. The height range at Kuliak Bay was about 0.2' greater.

Kuliak Bay - Kafliã Bay: Events occurred 0 to 15 minutes earlier at Kuliak Bay, the average being around 5 minutes earlier. The height range at Kafliã Bay was 0.5' to 0.7' greater.

Nukshak Island - Shakun Island: There were no significant differences in the times of highs and lows between these gages. The height range at Shakun Island was 0' to 0.6' greater.

## LEVELS

All levels closed within the required limits of accuracy. Comparison of levels made at the installation and removal of each tide gage showed no apparent tide staff shifts, with the following exceptions: The staff stop at Missak Bay appears to have sunk 0.015' during its period of operation. The staff stop at Takli Island appears to have risen 0.01' and the staff stop at Kinak Bay appears to have risen 0.044'.

## MISCELLANEOUS

Of the eight gages installed this project, only three had Nupro valves. While this was not a serious problem, these valves do perform better than the standard dampening valves and we would like to see them made available on all gages.

Because of the logistical difficulties involved in servicing some gages infrequent staff observations resulted in some cases. Often it was impossible to tend the gages more frequently because of combinations of such factors as weather, distance and an insufficient number of operating skiffs or available launches.

In two cases during the project severe storms literally tore the orifice tubing from the orifices. This illustrates the necessity of giving the orifice and tubing as much lee as possible from the prevailing weather, and of assuring that the tubing is securely attached to the orifice assembly.

As per the project instructions, only the gages at Nukshak and Takli Islands and at Cape Douglas (replaced by Shakun Island) required at least 30 days of observations. The remaining gages had only to be operated during periods of hydrography in the vicinity.

As per changes 3 and 4 to the project instructions, the requirements for Dakavak Bay, Raspberry Island, Cape Douglas and Kaguyak tide gages were deleted. The tide gage at Shakun Island was substituted for the gage at Cape Douglas.

ZONING

It is recommended that data from the tide gages in the project area be used to control hydrography on the field sheets as shown below:

<u>Field Sheet</u>	<u>Tide Gage</u>
FA-10-3-75 (below 58°05'43"N)	. Takli Island
FA-10-3-75 (above 58°05'43"N)	. Geographic Harbor
FA-10-4-75 . . . . .	. Takli Island
<u>FA-10-5-75</u> . . . . .	. <u>Kinak Bay</u>
FA-10-6-75 . . . . .	. Missak Bay
FA-10-7-75 . . . . .	. Kuliak Bay
FA-10-8-75 . . . . .	. Kafliak Bay
FA-20-3-75 . . . . .	. Takli Island
FA-20-4-75 . . . . .	. Nukshak Island
FA-20-5-75 . . . . .	. Shakun Island
FA-20-6-75 . . . . .	. Shakun Island
RA-40-2-72 . . . . .	. Nukshak Island

Hydrography run on FA-10-5-75 on 23 May, when the Kinak Bay gage was inoperative, may be controlled by tide data from the Takli Island gage.

Hydrography run on FA-10-7-75 on 29, 30 June and 1 July, before the Kuliak Bay tide gage was installed, may be controlled by tide data from the Missak Bay tide gage.

GEOGRAPHIC NAMES

Survey No. H-9521

Name on Survey	On Chart No. 16580		On U.S. Charts	From Coast Information	On Coast	P. O. Guide of No.	Rand McNally A. S.	U. S. Light List	
	A	B							
<del>ALASKA PENINSULA</del> <i>CBH for page</i>	X								1
HIDDEN HARBOR	X		Mt. Katmai					T-13167	2
KINAK BAY	X		Mt. Katmai					T-13170	3
RUSSIAN ANCHORAGE	X		Mt. Katmai					T-13174	4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
							APPROVED		17
							<i>Chas. E. Harrington</i>		18
							STAFF GEOGRAPHER - CS1x2		19
							17 Feb. 1977		20
									21
									22
									23
									24
									25
									26

14

VELOCITY TABLE 0002

SOUND VELOCITY CORRECTOR ABSTRACT

The following sound velocity correctors are to be applied to all soundings on sheets:

FA-20-3-75 ✓	(H-9518) ✓
FA-10-3-75 ✓	(H-9519) ✓
FA-10-4-75 ✓	(H-9520) ✓
FA-10-5-75 ✓	(H-9521) ✓
FA-10-6-75 ✓	(H-9522) ✓
FA-10-7-75 ✓	(H-9523) ✓
FA-10-8-75 ✓	(H-9524) ✓

<u>DEPTH (FATHOMS)</u>	<u>CORRECTORS (FATHOMS)</u>
0.0 - 273.4 ✓	+ 0.0 ✓
0.0 - 5.7 ✓	+ 0.0
5.8 - 19.5 ✓	0.1
19.6 - 45.0 ✓	0.2
45.1 - 83.0	0.3
83.1 - 120.5	0.4
120.6 - 146.0	0.5
146.1 - 163.5 ✓	0.6
163.6 - 181.5 ✓	0.7
181.6 - 201.0 ✓	0.8
201.1 - 217.7 ✓	0.9
217.8 - 231.2 ✓	1.0
231.3 - 244.7 ✓	1.1
244.8 - 258.2 ✓	1.2
258.3 - 273.0 ✓	1.3

✓ by S.O.





ELECTRONIC CORRECTOR ABSTRACT

FA 10-5-75

As noted in Section G, all Miniranger correctors were maintained at zero.

OPR 478 SHELKOF STRAIT, ALASKA SUMMER 1975

STATION LIST: H-9521

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STA	O	LATITUDE	LONGITUDE	CRT	ELEV	F	KHZ	SOURCE
---	-	---	---	---	---	---	---	---
		ACTOR 1975						
004	0	58 03 35541	154 24 53307	250	0030	000000		(1)
		BRAD 1975						
005	0	58 04 55029	154 25 06830	250	0024	000000		(1)
		POLK 1975						
008	0	58 06 59960	154 26 49393	250	0015	000000		(1)
		BAY 1975						
009	0	58 09 53382	154 26 36043	250	0016	000000		(1)
		ISLE 1975						
010	0	58 10 41228	154 27 49416	250	0017	000000		(1)
		HIDDEN 1975						
011	0	58 12 06103	154 29 42598	250	0008	000000		(1)
		RUSSIAN 1975						
012	0	58 05 50162	154 22 46570	250	0011	000000		(1)

(1) REFER TO HORIZONTAL CONTROL REPORT, OPR-478-FA-75

RANGE-AZIMUTH METHOD OF SURVEY

I. Rationale for Using:

A large portion of the hydrographic survey of OPR-478-FA-75 in Shelikof Strait, Alaska was accomplished using Range-Azimuth survey methods. The primary factor that made Range-Azimuth the most expedient method of control was the topography of the area surveyed. Several of the bays surveyed were long, narrow, fjord-type inlets with branching inlets behind small peninsulas or with major curves or necks in them. Horizontal control in the survey area was very sparse and poorly situated for hydrographic use. The amount of horizontal control necessary to establish electronic control for Range-Range survey was monumental. To adequately survey Kinak Bay alone would have required ten setups with twenty stations to be established. By using Range-Azimuth control only four stations were necessary. Photogrammetric establishment of control points was not possible, since the majority of the manuscripts available were Preliminary and were not upgraded to Incomplete until midway into the Project.

II. Method of Acquiring Data:

Range-Azimuth surveying was done with the ASI Logger equipped, Bertram launches using Mini-Ranger III for electronic control. Horizontal control for the azimuth control station was established by third-order traverse from existing triangulation stations. Azimuth data was taken with Wild T-2 theodolites read to the nearest minute of arc. The Mini-Ranger III transponder and theodolite were set up coincident over the azimuth control station.

Data was acquired by the ASI Logger running in regular range-range mode with the channel II information superfluous. Arcs were run controlled by the Mini-Ranger III with azimuth data taken every thirty seconds to one minute depending upon sounding interval. Marks were radioed from the launch to the azimuth station. Azimuth data in return was radioed back to the launch and hand entered on the data printout for later editing. Shore stations were generally manned by one person.

III. Data Processing:

While Range-Azimuth surveying was being accomplished, the RK 337 reformatting program was not adequate to handle the data being generated. A change request was initiated to MDSP and the program changed to become sufficient for later use. The method used at the time was to reformat the ASI tape using RK 337 and then to use AM 602, Elinore, to hand enter the azimuth data in correct format and position

APPROVAL SHEET

Field No. FA-10-5-75

Register No. H-9521

The field sheet and all accompanying records are hereby approved. The survey was conducted under my personal supervision and the filed sheet and other records were examined daily. This survey is complete and adequate to supersede prior surveys for charting.



Cdr. Richard E. Alderman, NOAA  
Commanding Officer  
NOAA Ship FAIRWEATHER (MSS-20)

1/6/76

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 Form 362

Tide Station Used (NOAA Form 77-12): Kinak Bay

Period: May 21 - June 14, 1975

HYDROGRAPHIC SHEET: H-9521

OPR: 478

Locality: Shelikof Strait

Plane of reference (mean lower low water): 5.1 ft.

Height of Mean High Water above Plane of Reference: 12.5 ft.

Remarks: Zone direct.

*When Kinak Bay gage malfunctions, use Misnak Bay gage  
direct, lit of mean = 7.7'*

*James R. Hubbard*  
for Chief, Tides Branch

**HYDROGRAPHIC SURVEY STATISTICS**  
**HYDROGRAPHIC SURVEY NO. 9521**

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & excess, PNO overlays		1	BOAT SHEETS & 4 prelim. overlays		1	
DESCRIPTIVE REPORT		1	OVERLAYS (prelim.)		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1-Smooth P/O			1
CAHIERS	1 with Printouts		1			Brush-not sent to Rockv. 12/24/76 mcr
VOLUMES	1					
BOXES			1-smooth P/O, orig. vol.			

T-SHEET PRINTS (List)

T-13167, T-13170

SPECIAL REPORTS (List)

N/A

**OFFICE PROCESSING ACTIVITIES**

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1243
POSITIONS CHECKED		1243		
POSITIONS REVISED		3		
DEPTH SOUNDINGS REVISED		33		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		2		
Verification of Positions		16		
Verification of Soundings		88		
Smooth Sheet Compilation		66		
ALL OTHER WORK				
<b>TOTALS</b>	<b>2</b>	<b>172</b>	<b>HIT 14</b>	
PRE-VERIFICATION BY James S. Green, Chief, Verification Branch	BEGINNING DATE 2/17/76	ENDING DATE 2/17/76		
VERIFICATION BY Dennis L. Duffy & Felipe L. Rosario, Carto Techs	BEGINNING DATE 2/23/76	ENDING DATE 10/19/76		
REVIEW BY QUALITY CONTROL BY K. W. Wellman D. R. Engle	BEGINNING DATE 2-3-77 44 hrs 11 hrs	ENDING DATE 2-10-77 4-18-77		

A. D. Sanoc ki 28 April 1977 5 hrs

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. 9521

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: Revisions made in the printout during quality control inspection

1. Record No. 61720 Revise as indicated)
2. Record No. 41970 Revise as indicated) See smooth plot printout
3. Record Nos. 41980 to 42010 Delete )
4. Between Record No. 57650 and 57660 Add sounding and excess it
5. Between Record No. 57660 and 57670 Add sounding
6. Between Record No. 57780 and 57790 Add sounding
7. Record No. 63920 Revise--delete tra corrector
8. EXCESS POS. NO. 224797 (6.4 sdg.) RWD 7/77

H-9521

Information for Future Presurvey Reviews

None

<u>Position Index</u>		<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle</u>
580	1543	2	0	50 years
581	1543	-	-	50 years

24



## VERIFIER'S REPORT

FA-10-5-75

H-9521

This survey was verified and plotted at the Pacific Marine Center, Seattle, Washington. Information relating to this survey is provided as specified in Chapter 6 of the Provisional Hydrographic Manual.

### I. INTRODUCTION

Field work on H-9521, 1:10,000 (1975) was conducted from 21 May to 26 June 1975 by the NOAA Ship FAIRWEATHER, MSS-20. The area surveyed is Kinak Bay, an arm extending northward from Shelikof Strait into the Alaska Peninsula within the Katmai National Monument.

The range-azimuth method of hydrographic control was used in this survey. Ranges were received from a Miniranger unit.

With the following exceptions, few problems were encountered in the verification of this survey:

- a. Hourly heights of tides are not available for days<sup>all</sup> of field edit; (See Q.C. Report - item 1)
- b. The listed geographic position for the tide station was insufficient for plotting, so the approximate position was obtained from field personnel, the station plotted, and position scaled;
- c. Several major discrepancies exist between bottom sample characteristics as listed in the sounding volume and Descriptive Report, form 733M. The Descriptive Report listing was plotted on this survey.

### II. CONTROL AND SHORELINE

See Ship's Report, sections F and G, for a description of horizontal control.

Shoreline was transferred from Class I unreviewed manuscripts T-13167, T-13170, T-13174 and T-13175 compiled from aerial photos taken in July, 1967. Field Edit was accomplished in May and June of 1975.

Limit lines depicting foul and shallow areas along the shoreline were not transferred from manuscripts due to conflict with hydrography. (See Q.C. Report - item 2)

### III. HYDROGRAPHY

The basic hydrography in this survey is adequate to delineate the bottom configuration and to determine least depths. There were no major difficulties encountered in the verification of the main scheme soundings

and the crosslines were in good agreement. There are 73 bottom samples in the survey.

The zero curve was not delineated by hydrography in all areas due to foul areas near the shoreline. (See Q.C. Report-item 3)

#### IV. CONDITION OF SURVEY

The hydrographic records, overlays, smooth sheets, and reports are adequate and conform to the requirements of the Provisional Hydrographic Manual. (See Q.C. Report-item 1)

#### V. JUNCTIONS

This survey junctions to the south with contemporary survey H-9520, 1:10,000 (1975). Soundings and junction curves are in good agreement and were inked accordingly.

#### VI. COMPARISON WITH PRIOR SURVEY

The southeastern portion of this sheet was compared with H-2901, 1:19,170 (1908). Because H-2901 is on Valdez datum and H-9521 is on North American 1927 datum comparison was difficult and of limited value. Considerable difference in shoreline exists in the vicinity of Russian Anchorage, but this can be attributed to the age and methods employed on the prior survey and the datum conflict. H-2901 depicts a 13.5 fathom (81 ft.) sounding at 58°05.8'N, 154°23.1'W, this survey shows 58 fathoms at the same <sup>relative</sup> location. All other soundings are in very good agreement, indicating no basic changes in the bottom configuration.

In the area of common hydrography, H-9521 is adequate to supersede the prior survey.

There are no prior surveys for the remainder of the survey area.

There are no pre-survey review items for the survey area.

#### VII. COMPARISON WITH CHART

Comparison was made with Chart 16580 (C & GS 8556) 5th Edition, May 17, 1975, Kodiak Island, 1:350,000. The vast difference in scale between the chart and this survey made comparison impractical.

Only two charted soundings, 65 fathoms and 62 fathoms fall within the survey limits and are within 10% of the depths shown on H-9521. There appear to be no significant discrepancies in shoreline and hazards to navigation.

There are no aids to navigation within the limits of Kinak Bay.

H-9521 is adequate to supersede charted information in the area. (See D.R. - section P)

VIII. COMPLIANCE WITH PROJECT INSTRUCTIONS

This survey adequately complies with the project instructions dated 25 April 1975.

IX. ADDITIONAL FIELD WORK

This survey is considered a good basic survey <sup>in the navigable area</sup> and supersedes charted information in the area. No additional field work is recommended.

X. NOTES TO THE COMPILER

This survey was verified by Dennis Duffy, Cartographic Technician, a verifier trainee, under my supervision.

Respectfully submitted,

*Felipe L. Rosario*

Felipe L. Rosario  
Cartographic Technician  
October 19, 1976

Examined and approved,

*J. S. Green*  
James S. Green  
Chief, Verification Branch

APPROVAL SHEET

FOR

SURVEY H- 9521

- 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: 11/17/76

Signed:



Title: Chief, Verification Branch



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SURVEY  
Pacific Marine Center

Date: 29 November 1976

To: Eugene A. Taylor, RADM  
Director, Pacific Marine Center

From: *Donald E. Nortrup*  
Donald E. Nortrup, LCDR  
Chief, Processing Division

Subject: PMC Hydrographic Survey Inspection Team Report, H-9521

This survey is a modified basic hydrographic survey of Kinak Bay, Shelikof Strait, AK. The inshore areas were surveyed under the "Navigable Area Concept". The survey was conducted by NOAA Ship FAIRWEATHER in 1975 under Project Instructions OPR-478-FA-75 dated 25 April 1975. Minor cartographic modifications have been made on the smooth sheet as a result of the inspection process.

The survey area is characterized by very deep water punctuated by pronounced peaks and shoals. Sounding line spacing was reduced significantly relative to project instruction requirements to delineate these features. The resulting delineation of the bottom configuration is very good.

This survey was controlled exclusively by range-azimuth methods. The use of this hybrid method of control caused no unusual problems during the verification process and proved to be an effective field method in the survey area.

The verifier did not transfer foul limits from the shoreline manuscript because of conflicts with hydrographic data (Verifier's Report, Section II.) Foul limits, as depicted on the field sheet, were inadequately supported by positional data. The inspection team concurs in this action but perceives the fact of minor significance in light of the navigable area nature of the inshore portion of the survey.

The inspection team finds H-9521 to be an excellent survey, adequate for charting and to supersede common areas of prior surveys. Administrative approval is recommended.

*Donald E. Nortrup*  
Donald E. Nortrup, LCDR

*John C. Albright*  
John C. Albright, LCDR

*Stanley H. Otsubo*  
Stanley H. Otsubo

*Dean R. Seidel*  
Dean R. Seidel, LCDR

Administrative Approval

H-9521

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



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Eugene A. Taylor, RADM  
Director, Pacific Marine Center

12/9/76

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Date



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

C352

February 10, 1977

TO: *a J Patrick*  
A. J. Patrick  
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*  
Quality Evaluator

SUBJECT: Quality Control Report for H-9521 (1975), Alaska, Shelikof Strait, Kinak Bay

A quality control inspection of H-9521 has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, shoreline transfer, decisions and actions by the verifier, and cartographic presentation of data.

Junctional sheet H-9520 (1975) is not available for a quality control inspection of the junction, the adequacy of which will be considered during the course of its quality control inspection.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as follows:

1. The availability of tide correctors should be assured for the ". . . entire period of the survey" (see provisional manual--section 1.5.4.2). The tide gage used for the present survey was installed subsequent to the date of commencement of field edit on the present survey boat sheet and, therefore, necessitated that some tide correctors be determined by inference from a more remote gage in the vicinity. During quality control inspection, inferred hourly heights for the applicable days of field edit were obtained from the Tides Branch and a random check of the field edit, tide corrected, rock and/or islet elevations revealed general agreement (within  $\pm 1$  foot) between the Class I topographic manuscripts and the field edit information. Inasmuch as the inferred tides are only reliable within approximately  $\pm 1$  foot, the topographic sheets were compared with the smooth sheet without further verification of the field edit rock elevations.



2. The verifier did not transfer the foul limits (dashed line) and appropriate segments of the low water line from the topographic manuscripts to the smooth sheet, alleging that they conflicted with hydrographic data. Although numerous sounding lines extend into foul areas, relatively few actual conflicts are noted. These limits provide additional survey information beyond the scope of the sounding lines and, although not supported by hydrographic positional data, should appear on the survey. They were applied accordingly during quality control inspection, revising or omitting those sections which were discredited by hydrographic information.

3. On steep slopes, only the shoalest and deepest depth curves need be shown; the intermediate depth curves being added where adequate space is available (see provisional manual--section 7.3.9.2). This practice was inconsistently followed during verification processing; i.e., standard inshore depth curves were not always delineated where adequate space was available. Revisions made during the quality control inspection were limited to those necessary to delineate significant bottom features.

Except as noted above, the usual depth curves are adequately delineated.

cc:  
C351





