

9519

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-10-3-75  
Office No. .... H-9519

**LOCALITY**

State ..... ALASKA  
General Locality ..... SHELIKOF STRAIT  
Locality ..... WESTERN AMALIK BAY AND  
GEOGRAPHIC HARBOR

19 75

CHIEF OF PARTY  
Richard E. Alderman 7

**LIBRARY & ARCHIVES**

DATE ..... 7/14/77

9519

HYDROGRAPHIC TITLE SHEET

H-9519

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-10-3-75

State Alaska

General locality Shelikof Strait

Locality Western Amalik Bay and Geographic Harbor

Scale 1:10,000 Date of survey 14 June - 15 July 1975

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

Vessel FAIRWEATHER LAUNCHES  
FA-3 (Hull #1240, EDP 2023) and FA-4 (Hull #1233, EDP 2024)

Chief of party CDR Richard E. Alderman

Surveyed by ENS R.A. Morris, ENS Jeffrey D. Conrad

Soundings taken by echo sounder, ~~SONAR~~ Ross Finline Fathometers (S/N's 204065 & 1017)

Graphic record scaled by Ross 6000 Digitizer

Graphic record checked by FAIRWEATHER Personnel

Positions verified

~~Observed~~ by Matthew G. Sanders Automated plot by PMC Kynetics

Soundings

Verification by Matthew G. Sanders

Soundings in fathoms and tenths at MLLW

REMARKS: All records were kept on GMT. The mean longitude of the  
survey is 154° 32' 45" W. This survey is complete and adequate  
for charting.

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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 GAUGE
- 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

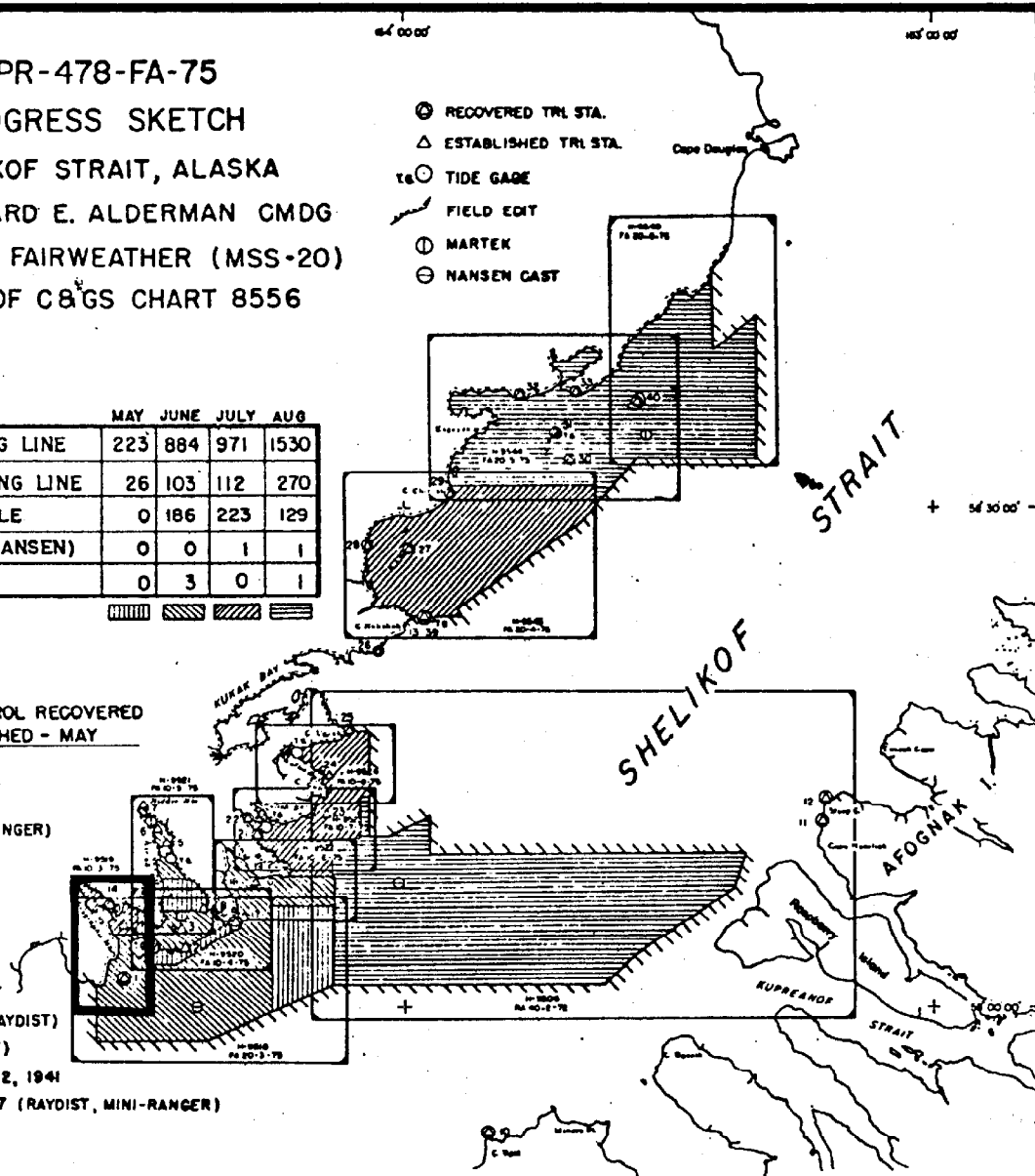
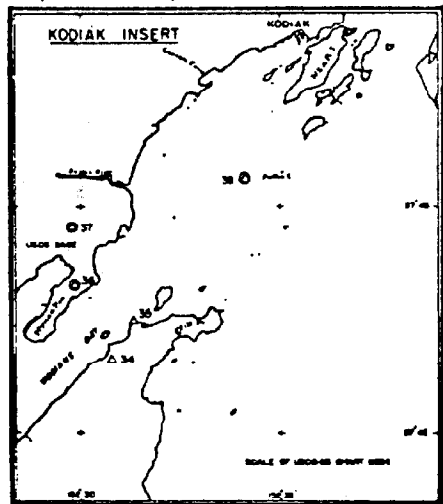
- 14 GEO, 1975 (MINI-RANGER)
- 15 AMALIK, 1975 (MINI-RANGER)
- 16 RUSSIAN, 1975 (MINI-RANGER)
- 17 SHAG, 1975
- 18 MISS, 1975 (MINI-RANGER)
- 19 AK, 1975 (MINI-RANGER)
- 20 KULIAK, 1908-1967
- 21 ROCK, 1967
- 22 HEAD, 1967 (MINI-RANGER)

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
- KODIAK INSERT**
- 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-9519 (FA-10-3-75)

A. PROJECT

This survey was accomplished in accordance with project instructions OPR-478-FA-75, dated 25 April 1975, and with change numbers 1,2,3, and 4, dated 6 May 1975, 28 May 1975, 6 June 1975 and 29 July 1975 respectively, and with the PMC OORDER. ✓

B. AREA SURVEYED

The area encompassed by FA-10-3-75 is all of Geographic Harbor, the western end of Amalik Bay, and the southern approach to Amalik Bay between Cape Ilktugitak and Takli Island. The survey area is bounded on the east by longitude 154°29'27" south to latitude 58°02'40" and then by longitude 154°29'00" to the southern limit of the sheet latitude 58°00'30". The western limit, south of Cape Ilktugitak is 154°34'43". Hydrography was accomplished from 14 June to 15 July 1975. ✓

C. SOUNDING VESSELS

Nearly all hydrography on this sheet was accomplished by launch FA-3 (Hull #1240, EDP #2023). Very limited hydrography and most of the bottom samples were accomplished by FA-4 (Hull #1233, EDP #2024). ✓

D. SOUNDING EQUIPMENT

The launches used Ross Fineline fathometers. A TRA corrector of +0.4 fathom, based on bar checks taken during the project, was used for each launch. The sound velocity correctors were determined from three Martek TDC casts taken within the project area. For details see Report on Corrections to Echo Soundings, OPR-478-FA-75. The depths of soundings on this sheet range from approximately 0 to 90 fathoms. ✓

Sounding Instruments:

<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	1047

E. BOATSHEET

All data were plotted by the shipboard Hydroplot system, utilizing the ship's PDP 8/e computer (S/N M-40-00000-1006) and a Complot plotter (Model DP-3, S/N 3750-1). The projection used was a modified transverse Mercator. The scale is 1:10,000. Two plotter sheets were required. The skew of both is 090°. The origin of the eastern sheet, FA-10-3A-75, is 57°59'42"N, 154°28'24"W. The origin of the western sheet, FA-10-3B-75, is 57°59'42"N, 154°31'42"W. Copies of the parameter tape printouts are appended.\*

\* Filled with field records

F. STATION CONTROL

Horizontal control for this survey consisted of one existing triangulation station (ILKTUGITAK 1908) and 11 stations, shown on the appended progress sketch, established by third-order triangulation and traverse during the project. For details see Horizontal Control Report, OPR-478-FA-75.

No photogrammetrically-located signals were used for this survey. The 1927 North American datum was used for all computations, which are located in the Horizontal Control Report, OPR-478-FA-75.

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 transponder 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.

f

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

Shoreline details were obtained from Incomplete Manuscripts T-13173, T-13174, and T-13177. All features were verified by field edit. Due to surf, foul areas, and the navigable area concept of the survey the low water line was generally not delineated.

I. CROSSLINES

The 211.6 n.m. of hydrography run on this sheet includes 21.4 miles of crosslines. The crosslines are 11.2% of the main scheme hydrography. Comparisons at crossings never exceeded 1 fathom.

J. JUNCTIONS

The survey junctions to the south with the 1:20,000 scale contemporary survey FA-20-3-75. All soundings agree to within 1 fathom. The survey junctions to the east with the 1:10,000 scale contemporary survey FA-10-4-75. Junctions agree within 1 fathom.

K. COMPARISON WITH PRIOR SURVEYS

No prior surveys of Geographic Harbor exist. Prior survey T-2901 (1:19,170, 1908) covers portions of Amalik Bay but contains no soundings within the survey area. No Pre-Survey Review items exist in the survey area.

L. COMPARISON WITH CHART

Only one chart, 16580 (8556), 5th Edition, May 17, 1975, Alaska - South Coast, Kodiak Island, scale 1:350,000, covers the survey area. No soundings are shown on the chart within the area surveyed. Due to the small scale of the chart, comparison of shoreline details is not feasible.

The rocks awash depicted on chart 16580 at latitude  $58^{\circ}02'00''^S$  N, longitude  $154^{\circ}33'00''^W$  were confirmed by the present survey.

A 7.0' fathom shoal in general depths of 18 fathoms was found during the survey at latitude  $58^{\circ}00'30''^N$ , longitude  $154^{\circ}31'40''^W$ . The area was developed at 25 meter spacing and was searched by divers who, because of rough seas, were unable to locate a lesser least depth.

An extensive shoal area was found within latitudes  $58^{\circ}01'15''^N$  to  $58^{\circ}00'45''^N$  and longitudes  $154^{\circ}30'30''^W$  to  $154^{\circ}31'30''^W$ . Several rocky pinnacles, least depths in this area, are listed below:

<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
<del>1.8</del> 2.1	$58^{\circ}00'54''^N$	$154^{\circ}30'52''^W$
<del>2.0</del> 2	$58^{\circ}01'04''^N$	$154^{\circ}30'34''^W$
<del>2.5</del> 1.6	$58^{\circ}01'12''^N$	$154^{\circ}31'15''^W$
<del>4.5</del> 8	$58^{\circ}01'18''^N$	$154^{\circ}31'13''^W$
<del>3.0</del> 2	$58^{\circ}01'00''^N$	$154^{\circ}30'30''^W$
<del>1.7</del> 0.8	$58^{\circ}01'10''^N$	$154^{\circ}30'45''^W$

The shoalest sounding in this region,  $1.7$  fathoms, was determined by the fathometer. ~~by a detached position.~~ This area was developed thoroughly at 50 meter spacing and the least depth verified by divers. It is recommended that the soundings <sup>on rocks</sup> mentioned be charted. <sup>was 1.7 fathoms</sup>

Another shoal area was located between  $58^{\circ}00'50''^N$  to  $58^{\circ}01'15''^N$  latitude and  $154^{\circ}29'15''^W$  to  $154^{\circ}30'00''^W$  longitude. This shallow ridge is charted by 5 to 10 fathom depths among 15 to 20 fathom depths. This area was developed at 25 meter spacing. It is recommended that this shoal area be charted.

A shoal sounding,  $3.0$  fathom, among 6 to 10 fathom soundings, is plotted at  $58^{\circ}02'02''^N$ ,  $154^{\circ}30'54''^W$ . It is recommended that this sounding be plotted.

A least depth of 7.9 fathoms, in 50 fathom depths, was diver verified at latitude 58°02'28<sup>8</sup>"N and longitude 154°29'29<sup>43</sup>"W. It is recommended that this feature be charted.

A shoal sounding of 1.8<sup>6</sup> fathoms among depths of 4 to 10 fathoms was located at latitude 58°02'53"N, longitude 154°29'09<sup>13</sup>"W. This depth was diver verified and should be charted.

A least depth of 3.7<sup>7</sup> fathoms at latitude 58°04'28<sup>8</sup>"N, longitude 154°31'31<sup>1</sup>"W was diver verified. It exists among soundings between 5 and 10 fathoms. It is recommended that this sounding be charted.

A <sup>rock</sup>sounding of 1.2<sup>4</sup> fathoms was found at latitude 58°04'30<sup>34</sup>"N, longitude 154°31'37"W. It is recommended that this depth be charted.

Rocks: <sup>363</sup>3, <sup>3613</sup>3, <sup>3614</sup>6, <sup>3617</sup>9, <sup>3622</sup>5, <sup>3625</sup>4  
Depths (0.8, 0.2, 0.4, 0.7, -0.8, 1.8 fathoms) were recorded as detached positions in general depths of 4 to 20 fathoms in an area between latitudes 58°04'45"N to 58°05'00"N, longitudes 154°29'50"W to 154°30'15"W. The shoal soundings are due to the existence of reefs in this area. It is recommended that this shoal region be charted.

A least depth of 2.8<sup>5</sup> fathoms in general depths of 7 fathoms was located and diver verified at latitude 58°02'12", longitude 154°31'40<sup>1</sup>".

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 to supersede prior surveys for charting.

N. AIDS TO NAVIGATION

No aids to navigation exist within the limits of the survey.

O. STATISTICS

<u>Vessel</u>	<u>Total Positions</u>	<u>Hydrography, n.m.</u>
FA-3	1763	202.8
FA-4	173	8.8
		211.6

Total area: 19.3 sq. n.m.

Total bottom samples 82



P. MISCELLANEOUS

Greenwich Mean Time was used for all survey records. No unusual submarine features exist on H-9519 except those shoal areas already discussed. ✓

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

All data was acquired by ASI loggers. The program used to plot the field sheet was RK-216, Range-Azimuth Position and Sounding Plot, version 02/14/75. See also the appended "Range-Azimuth Method of Survey". ✓

Submitted by:


*Jeffrey D. Conrad, Ens NOAA*  
Ens. Jeffrey D. Conrad, NOAA

## APPROVAL SHEET

Field No. FA-10-3-75

Register No. H-9519

The field sheet and all accompanying records are hereby approved. The survey was conducted under my personal supervision and the field 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)

OPR 478      SHELIKOF STRAIT, ALASKA      SUMMER 1975

STATION LIST: H-9519

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STA	O	LATITUDE	LONGITUDE	CRT	ELEV	F	KHZ	SOURCE
---	---	-----	-----	---	-----	---	-----	-----
		ILKTUGITAK 1908						
003	0	58 01 40151	154 31 33928	139	0021	000000	Q	58154
		ACTOR 1975						
004	0	58 03 35541	154 24 53307	250	0030	000000		(1)
		TP-4 1975						
013	0	58 01 44934	154 31 36612	250	0032	000000		(1)
		AMALIK 1975						
014	0	58 04 50760	154 31 33590	250	0046	000000		(1)
		TP-1 1975						
015	0	58 04 08738	154 32 08645	139	0016	000000		(1)
		TP-2 1975						
016	0	58 05 12113	154 32 23035	139	0021	000000		(1)
		TP-3 1975						
017	0	58 05 55623	154 31 37060	139	0019	000000		(1)
		GEO 1975						
018	0	58 06 32411	154 34 22866	250	0017	000000		(1)
		TP-5 1975						
019	0	58 05 45080	154 35 20520	139	0010	000000		(1)
		TP-6 1975						
020	0	58 07 13052	154 36 32273	250	0015	000000		(1)
		TP-7 1975						
021	0	58 06 19572	154 33 19976	139	0012	000000		(1)
		TP-8 1975						
022	0	58 06 25185	154 32 55002	139	0015	000000		(1)
		TP-9 1975						
023	0	58 06 26349	154 32 02615	139	0012	000000		(1)

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

VELOCITY TABLE 0002SOUND VELOCITY CORRECTOR ABSTRACT

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

FA-20-3-75 ✓	(H-9518) ✓
<u>FA-10-3-75</u> ✓	<u>(H-9519)</u> ✓
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) ✓

DEPTH (FATHOMS)CORRECTORS (FATHOMS)

0.0 - 273.4 ✓

+ 0.0 ✓

## 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 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.

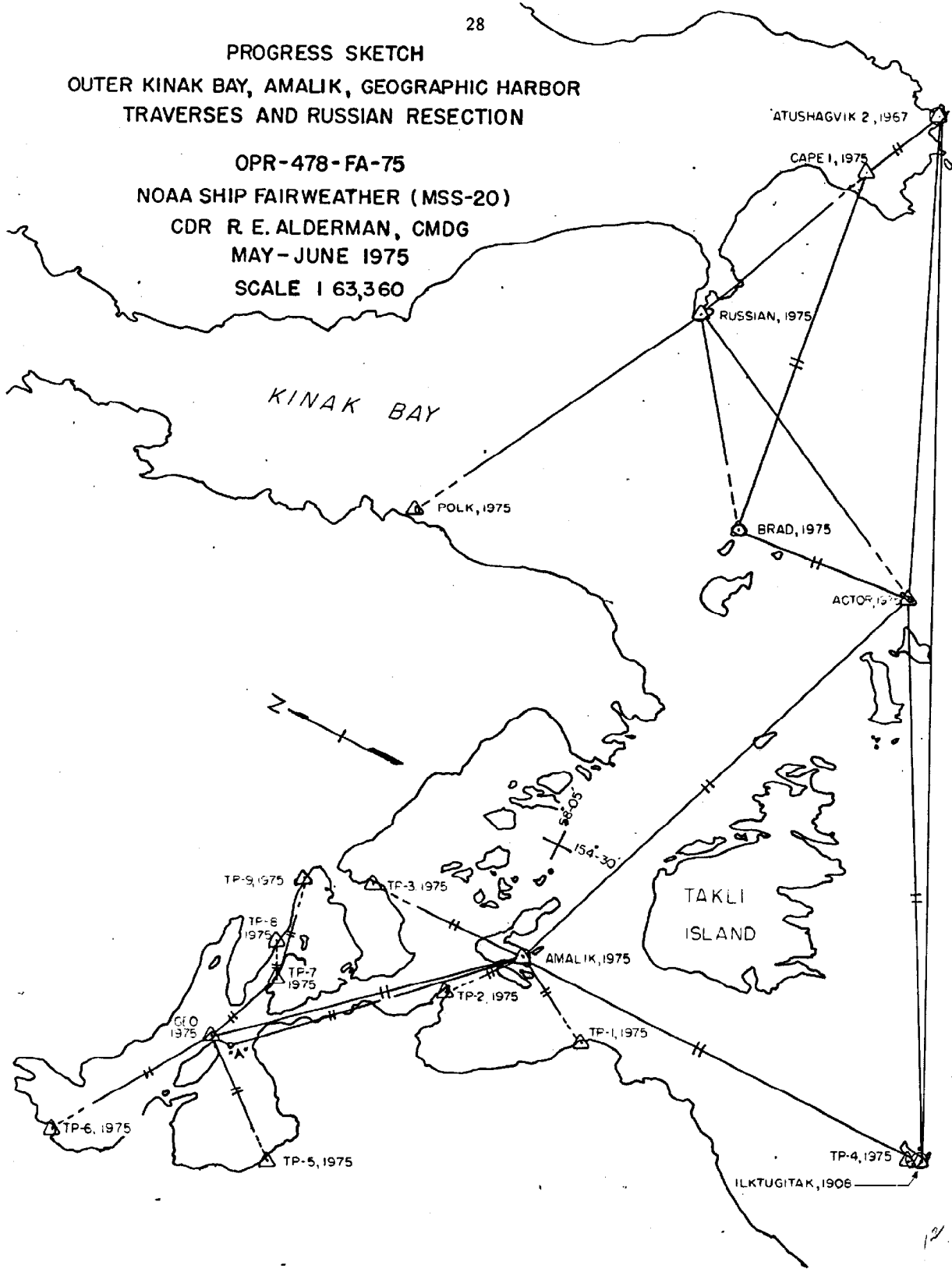
Data was acquired by the ASI Logger running in regular range-range mode with the channel II information superfluous. Arcs were run controlled by the Mini-Ranger III with azimuth data taken every thirty seconds to one minute depending upon sounding interval. Marks were radioed from the launch to the azimuth 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

PROGRESS SKETCH  
OUTER KINAK BAY, AMALIK, GEOGRAPHIC HARBOR  
TRAVERSES AND RUSSIAN RESECTION

OPR-478-FA-75  
NOAA SHIP FAIRWEATHER (MSS-20)  
CDR R. E. ALDERMAN, CMDG  
MAY-JUNE 1975  
SCALE 1 63,360



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 22 May - 20 Aug.
Kinak Bay	58°09.0'N 154°26.4'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
Kaflia 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<sup>172 days</sup> June 1975 at which time the chart paper ran out. The gage was restarted on 25<sup>176 days</sup> 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 - Kafliä Bay: Events occurred 0 to 15 minutes earlier at Kuliak Bay, the average being around 5 minutes earlier. The height range at Kafliä 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>
<u>FA-10-3-75 (below 58°05'43"N)</u>	. <u>Takli Island</u>
<u>FA-10-3-75 (above 58°05'43"N)</u>	. <u>Geographic Harbor</u>
FA-10-4-75 . . . . .	Takli Island
FA-10-5-75 . . . . .	Kinak Bay
FA-10-6-75 . . . . .	Missak Bay
FA-10-7-75 . . . . .	Kuliak Bay
FA-10-8-75 . . . . .	Kafliia 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.

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): Geographic Harbor

Period: June 14 - July 15, 1975

HYDROGRAPHIC SHEET: H-9519

OPR: 478

Locality: Shelikof Strait

Plane of reference (mean lower low water): 13.8 ft.

Height of Mean High Water above Plane of Reference: 12.3 ft.

Remarks: Zone direct.

*James R. Hubbard*  
for Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9519

Name on Survey

11

On Chart No.  
 On previous survey No.  
 On U. S. Quadrangle Maps  
 From local information  
 On local Maps  
 P. O. Guide or Map  
 Rand McNally Atlas  
 U. S. Light List  
 Photogrammetric Manuscript

	A	B	C	D	E	F	G	H	
Shelikof Strait	8556		Mt. Katmai (A-2)						1
Takli Island	8556	H-2901	"						2
Amalik Bay	8556		"						3
Cape Iktugitak	8556		"						4
Geographic Harbor	8556		"						5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
						APPROVED			19
						<i>Chas. E. Harshbarger</i>			20
						STAFF GEOGRAPHER			21
						14 Mar. 1977			22
									23
									24
									25
									26
			7A					18	27

APPROVAL SHEET

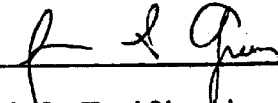
FOR

SURVEY H- 9519

- 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: 16 Jun 1977

Signed:

  
\_\_\_\_\_

Title:

Chief, Verification Branch

**HYDROGRAPHIC SURVEY STATISTICS**  
**HYDROGRAPHIC SURVEY NO. H-9519**

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET <sup>with smooth PNO</sup> <sub>excess &amp; contr. only</sub>		1	BOAT SHEETS (2 parts, paper)		1 <i>2</i>	
DESCRIPTIVE REPORT		1	OVERLAYS (preliminary)		1 <i>6</i>	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1-smooth & tides			
CAHIERS	1-with P/O <i>2</i>					
VOLUMES	1					
BOXES						

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

**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				1934
POSITIONS CHECKED		1934		
POSITIONS REVISED		5		
DEPTH SOUNDINGS REVISED		188		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		43		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS	2	11		
JUNCTIONS		33		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		440		
SPECIAL ADJUSTMENTS		257		
ALL OTHER WORK		18		
<b>TOTALS</b>		759		

PRE-VERIFICATION BY <u>James S. Green</u>	BEGINNING DATE <u>2/20/76</u>	ENDING DATE <u>2/20/76</u>
VERIFICATION BY <u>Matthew G. Sanders</u>	BEGINNING DATE <u>7/12/76</u>	ENDING DATE <u>6/7/77</u>
REVIEW BY <u>Q.C. Insp. R.W. Derkazarian</u> <i>Carstens 14 hr 11/2/77</i>	BEGINNING DATE <u>8/30/77</u> <i>+8 hrs.</i>	ENDING DATE <u>11/25/77</u>

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 REQ'D \_\_\_\_\_ INITIALS \_\_\_\_\_

REMARKS: pos.

2129	2831	2508
2292-93	2867	3694
2382-83	2907	
2547	3412	
2549	3505	
2552	3611	
2566-68	3717	
2645	3718	
2652	3732	
2660	3744	
	3051	

Reg. No. \_\_\_\_\_

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 REQ'D \_\_\_\_\_ INITIALS \_\_\_\_\_

REMARKS:

H-9519

Information for Future Presurvey Reviews

This survey falls in an area of a stable bottom and little change should be expected in future surveys. Future surveys should include least depth determination of the soundings listed in paragraph III of the Verifier's Report.

<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
580	1544	3	0	50 years

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PACIFIC MARINE CENTER  
VERIFIER'S REPORT

REGISTRY NO: H-9519

FIELD NO: FA-10-3-75

Alaska, Shelikof Strait, Western Amalik Bay and Geographic Harbor

SURVEYED: 14 June - 15 July 1975

SCALE: 1:10,000

PROJECT NO: OPR-478

SOUNDING: Ross Fineline Fathometer

CONTROL: Range/Azimuth, Mini-Ranger

Chief of Party.....CDR Richard E. Alderman  
Surveyed by.....ENS R.A. Morris, ENS Jeffrey Conrad  
Automated Plot by.....PMC Xynetics Plotter  
Verified by.....Matthew G. Sanders  
June 7, 1977

I. INTRODUCTION

This survey, H-9519 (FA-10-3-75), is a navigable area survey of Western Amalik Bay and Geographic Harbor; Shelikof Strait, Alaska, conducted by the FAIRWEATHER from 14 June to 15 July 1975. The Project Instructions, dated April 25, 1977, OPR-478-FA-75, states that the navigable area survey concept will be used. Range/azimuth methods, utilizing the Motorola Mini-Ranger and a Wild T-2, was used for positional control.

II. CONTROL AND SHORELINE

*See Q.C. Report, para. 8.*

See Paragraphs F and G, Descriptive Report, for an adequate description of the control used for this survey.

Source of Shoreline detail is unreviewed Class I Photogrammetric Manuscripts T-13173, 1967-1975; T-13174, 1967-1975; T-13177, 1967-1975.

IIIA HYDROGRAPHY

The development of the bottom configuration and the determination of least depths are adequate except that the following areas have not been sufficiently developed:

<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u>
58°00.88'	154°30.9'	21
58°01.08'	154°30.6'	22
58°01.218'	154°31.28'	16
58°05.9'	154°30.2'	46
58°02.4'	154°31.62'	61
58°02.5'	154°31.67'	67
58°04.7'63'	154°31.05'	320
58°05.28'3	154°32.1'	54
58 02.02'	154°30.9'	3°

A conflict exists such that a sounding of 94 fathoms at Latitude 58°06'11.57" Longitude 154°33'45.62" was placed in excess to allow the plotting of a rock awash from Class I Manuscript T-13173.

The crosslines are in good agreement, except at Lat. 58°04.0' and Long. 154°30.9' where differences of 64 fathoms exist. The depth curves are complete, but the circular pattern of the hydrography results in areas where the depth curves parallel the hydrographic lines and, therefore, compromises the accuracy with which the depth curves can be drawn. Consideration of this factor in accomplishing range/azimuth surveys is recommended. *Adjusted set positions to resolve conflict*

All rocks could not be reduced to MLLW due to incomplete actual tides. Takli Island tide gage was used in some instance. See Q.C. Report, p. 6. *Tabulation filed with field records.*

#### IV. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements stated in the Provisional Hydrographic Manual.

#### V. JUNCTIONS

Junctions were made with following contemporary surveys.

To the south and east, a satisfactory junction was made with (H-9518, FA-20-3-75). The agreement is good and depth curves are inked accordingly.

Also to the east, a satisfactory junction was accomplished with (h-9520, FA-10-4-75). The agreement is good and depth curves are inked accordingly. Soundings where necessary have been transferred (in red).

#### VI. COMPARISON WITH PRIOR SURVEY

There are no prior surveys of Geographic Harbor. T-2901 covers portion of Amalik Bay but no soundings fall in this survey area. H-9519 is adequate to supersede that portion of T-2901 that it covers.

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There are no presurvey review items for this survey.

VII. COMPARISON WITH CHART 16580 (8556), 5th Edition, May 17, 1975

There are no soundings shown on the chart for the area covered by H-9519. Because of the small scale of the chart, 1:350,000, a comparison of shoreline detail is not feasible. H-9519 is an adequate source for charting this previously unsurveyed area.

There are no aids to navigation located in this survey area.

VIII. COMPLIANCE WITH INSTRUCTIONS

The Project Instructions, for a navigable area survey, were adequately complied with.

IX. ADDITIONAL FIELD WORK

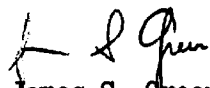
No additional field work is recommended. This is an adequate navigational area survey.

Respectively submitted,



Matthew G. Sanders  
Cartographic Technician  
June 7, 1977

Examined and approved,



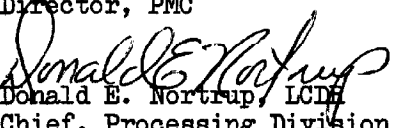
James S. Green  
Chief, Verification Branch



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

Date: 24 June 1977

To: Eugene A. Taylor, RADM  
Director, PMC

From:   
Donald E. Northrup, LCDR  
Chief, Processing Division

Subject: PMC Hydrographic Survey Inspection Team Report, H-9519

This survey is a navigable area survey of a portion of the western side of Shelikof Strait, AK including the western portion of Amalik Bay and Geographic Harbor. The survey was conducted by NOAA Ship FAIRWEATHER in 1975 in accordance with Project Instructions OPR-478-FA-75, dated 25 April 1975.

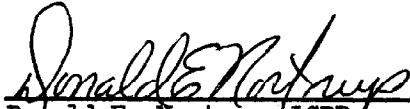
This survey adequately delineates the bottom configuration of the area. Near shore development is appropriate considering the navigable area nature of the survey. The survey area contains numerous peaks and pinnacles the most critical of which were adequately defined by hydrography and/or diver investigation. Several additional shoal soundings are depicted on the smooth sheet which could have benefitted from additional development (see Verifier's Report, Section III).

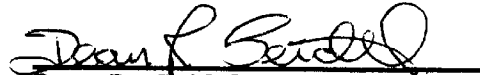
The circular orientation of mainscheme hydrography, in the southern portion of the survey area, results in instances where depth curves parallel sounding lines. Such depth curves are inherently less accurate than those which intersect sounding lines.

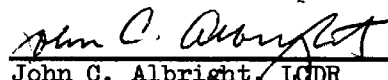
All tide reducers for this survey are based on the Geographic Harbor tide gage. It is the opinion of the inspection team that the Takli Island gage would have provided more representative reducers over the survey area exclusive of Geographic Harbor itself.

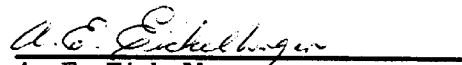


The inspection team finds survey H-9519 to be a good survey and an adequate charting source. There are no prior surveys of the area. Administrative approval is recommended.

  
Donald E. Nortrup, LCDR

  
Dean R. Seidel, LCDR

  
John C. Albright, LCDR

  
A. E. Eichelberger

ADMINISTRATIVE APPROVAL  
H-9519

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting purposes. There are no prior surveys of the area.



---

Eugene A. Taylor, RADM  
Director  
Pacific Marine Center

6/28/77  
Date



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

C352

August 30, 1977

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

THRU: Chief, Quality Control Branch

FROM: R. W. DerKazarian *R.W. DerKazarian*  
Quality Evaluator

SUBJECT: Quality Control Report for H-9519 (1975), Western Amalik  
Bay and Geographic Harbor, Shelikof Strait, Alaska

Survey H-9519 was inspected to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, shoreline transfer, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. In general, it was found to conform to the National Ocean Survey's standards and requirements except as follows:

1. Several control stations as shown on the smooth sheet were not in accordance with appendix B of the Provisional Hydrographic Manual. Undescribed, nonrecoverable stations used as electronic control stations should have their station name designated on the smooth sheet. These names have been added during the quality evaluation.
2. The dashed limit lines as shown on the smooth sheet depicting foul or kelp are too close to the low water line to be of any value in many areas. The dashed limit lines need not have been shown but a description "foul" or a kelp symbol, whichever the case may be, would have been appropriate.
3. Several foreshore characteristics shown as "Rocky" and "Rky" on the photogrammetric manuscripts were described by the more appropriate "Rocks" on the smooth sheet.
4. In reviewing the records and boat sheets several notations, e.g., "RK," and several reefs were added to the smooth sheet.
5. Several curves were dashed on the smooth sheet where soundings did not support a standard curve.



6. An actual tide tabulation for Takli Island tide gage was obtained from the Tides Division; several field edit rocks have been revised during the quality evaluation from the tide tabulation information.

7. Adequate junctions with H-9518 and H-9520 of 1975 were completed at the time of the quality evaluation.

8. In the general area of latitude  $56^{\circ}06.0'$ , longitude  $154^{\circ}33.5'$ , several positions checked during the quality evaluation revealed that the azimuth angle given in the smooth position printout does not plot graphically in the same position as the automated smooth sheet position. The range distances are quite adequate but the azimuth angle would vary  $1/2$  mm to as much as 2 mm even with the initial corrector applied. No ascertainable reason for this error could be made. The azimuth-initial station distance was adequate. In a similar situation in the southern portion of the smooth sheet a very short azimuth-initial station distance was used from control stations TP-4 to Ilktugitak which controlled positions many times farther than the baseline distance. Several of these positions are in error in a similar amount.

9. A shoaler fathometer depth of 0.8 fathom in latitude  $58^{\circ}01.08'$ , longitude  $154^{\circ}30.79'$  was exceeded in the Marine Center because of a diver determined depth of 1.7 fathoms on the shoal. The unquestionable shoaler trace on the fathogram would preclude use of the diver's data. Supplementary notes by the diver addressing this conflict would have been very useful.

10. The Hydrographic Inspection Team did not enter their time on the "Hydrographic Survey Statistics" sheet.

11. The transfer of low water detail was not judiciously done. Considerable revision was required in blending the hydrographic zero curve with the topographic dotted curve and filling omitted sections.

cc:  
C351





