

# 9201

216

856-2

Diag. Cht. No. 856-2.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION  
COAST AND GEODETIC SURVEY

## DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. RA-40-1-71 Office No. H-9201

### LOCALITY

State ALASKA

General locality SHELIKOF STRAIT

Locality Cape Paramanof + Cape Nukshak

19 71-72

CHIEF OF PARTY  
CAPT R.F. Lanier,  
CAPT G.E. Haraden

LIBRARY & ARCHIVES

DATE 6-24-75

9201

HYDROGRAPHIC TITLE SHEET

H-9201

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-40-1-71

State ALASKA

General locality Shelikof Strait

Locality Cape Paramonof ~~to~~ Cape Nukshak

Scale 1:40,000

Date of survey 13 June - 25 July 1971

Instructions dated 28 January 1971

Project No: OPR-478

Vessel NOAA Ship RAINIER

Chief of party CAPT R.F. Lanier & G.E. Haraden

Surveyed by LCDR E.M. Gelb, LTJG D.L. Suloff, LTJG T. Ballentine, ENS W.F. Turnacliff,

ENS N.M. Franklin, LTJG R.K. Muller, LTJG M.L. Adams, ENS R.J. Faris,

ENS S.J. Hollinshead

Soundings taken by echo sounder, ~~and lead line~~ Raytheon DE-723, Ser. Nos. 818 and 819

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Verified ~~XXXXXX~~ by R.D. Lynn

Automated plot by PMC - Gerber  
Digital Plotter

Soundings ~~XXXXXX~~ verified by R.D. Lynn

Soundings in fathoms ~~XXXX~~ at ~~XXXX~~ MLLW

REMARKS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*see also title sheet  
for 1972 soundings*

*17 July - 3 Aug 1972*

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY H-9201

FIELD NO. RA-40-1-71

SCALE 1:40,000

1971

SHELIKOF STRAIT, ALASKA

NOAA Ship RAINIER

ROGER F. LANIER

COMMANDING

A. PROJECT

This survey was accomplished under PROJECT INSTRUCTIONS OPR-478-RA-71, dated 28 January 1971.

B. AREA SURVEYED

The southeast quadrant of the sheet was surveyed during the 1971 field season. The area surveyed is between latitudes 58° 18'N and 58° 26'N and between longitudes 153° 00'W and 153° 20'W, and bounded on the southeast by a line approximately one mile off Cape Paramanof. This area was surveyed by the RAINIER on several days between 13 June and 25 July 1971.

This survey covers the same area covered by H-2980 1:200,000, 1908-1909. It does not junction with any prior surveys, but does junction on the north with H-9209 (RA-40-2-71, 1:40,000) also done by the RAINIER in 1971.

C. SOUNDING VESSEL

The ship RAINIER was used to obtain all soundings on this survey.

D. SOUNDING EQUIPMENT

The RAINIER used two model DE-723 Raytheon Survey Fathometers for all soundings. Serial number 819 was used for positions 1 - 209 and serial number 818 was used for positions 210 - 540. These fathometers operated satisfactorily during the entire time they were in use on this sheet.

Velocity, draft, initial, fine arc, and phase corrections were considered for application to the original soundings on this sheet. Fine arc corrections were determined by inspection to be zero. An abstract of the correctors applied is contained in the separates following the text. More extensive information concerning sounding corrections can be obtained from the report entitled Corrections to Echo Soundings, OPR-478, NOAA Ship RAINIER, 1971.

*Inst. error determination not indicated*

E. BOAT SHEET

The boat sheet projection, EDAT No. 21021, was plotted by Pacific Marine Center's Electronic Data Processing Division. The smooth sheet will be plotted by the same office.

The boat sheet positions were plotted according to the lane counts at the time of the sounding, corrected for whole lane or multiple lane jumps. The positions have not been readjusted for the partial lane corrections that resulted from the calibrations carried out before and after periods of hydrography. However the largest of these corrections, 0.18 lane, will only result in a movement of approximately 0.80 mm on the final smooth sheet.

F. CONTROL

The horizontal control for this survey was provided by three Hi-Fix stations operating in the hyperbolic mode on frequency 1799.6 KHZ. Pattern 1, shown on the boat sheet in blue, corresponds to the Nukshak Island (Master) and Dark Island (Slave 1) rate. Pattern 2, shown on the boat sheet in red, corresponds to the Nukshak Island (Master) and GAN or Broken Point (Slave 2) rate.

The Hi-Fix antennae were positioned over C&GS survey marks that were established using second order triangulation procedures. See the special report entitled Geodetic Surveying Operations, OPR-478, NOAA Ship RAINIER, 1971 for details on this work. Listed below is a summary of geodetic data for the Hi-Fix antennae locations.

Location & Approx. Elev.	Stamping on Disk	Latitude & Longitude
Nukshak Island (Master) 125 feet	NUKSHAK <sup>RM</sup> No. 6, 1908-67	58° 23' 29.514"N 153° 57' 40.528"W
Dark Island (Slave 1) 115 feet	DARK 2, 1971.	58° 38' 34.324"N 152° 32' 32.049"W
Broken Point, Uganik Bay (Slave 2) 75 feet	GAN, 1971	57° 52' 56.193"N 153° 39' 46.739"W

All of the Hi-Fix equipment operated exceptionally well during the work on this sheet.

Calibration of the Hi-Fix was accomplished by visual three-point sextant fixes with a check angle on a calibration range at Cape Douglas before and after each period of hydrography. The ship was calibrated once on signals in the Kiukpalik Island - Swikshak Lagoon area. The differences between the Hi-Fix dial readings and the scaled Hi-Fix values from the sextant fixes were determined. The mean daily values will be applied as lane correctors to all the fixes on the final smooth sheet. The largest partial lane corrector for any period of hydrography was 0.18 lane. For more extensive information on calibrations see the special report entitled Hi-Fix Report, OPR-478, NOAA Ship RAINIER, 1971. An abstract of the lane correctors to be applied is in the separates following the text.

#### G. SHORELINE

The shoreline in the Cape Chiniak and Cape Nukshak areas was transferred from the 1:20,000 incomplete manuscripts T-13157 and T-13160 respectively. The manuscripts were reduced to 1:40,000 and traced onto the boat sheet. The shoreline around Cape Paramanof was transferred from C&GS Chart 8533 (1:80,000).

Since this was basically an offshore survey and there will be other sheets covering the inshore areas, no attempt was made to verify the shoreline.

#### H. CROSSLINES

The crossline coverage for this survey is approximately 15% of the regular lines. All crossings except for two agree within 1 fathom. The 1 fathom discrepancies may be attributed to predicted tides and occasional rounding off differences.

The cross line at position 368 (Lat. 58° 20.3'N, Long. 153° 00.2'W) has a discrepancy of three fathoms. The crossline shows 25 fathoms and the N-S line shows 22 fathoms. An analysis of the fathograms shows that there is a minor deep of 23 fathoms on the N-S line. The sounding at position 368 probably reflects the start of the descent into the deep area. This difference will probably be resolved when launch hydrography is run in

the area.

The crossing at one sounding before position 373 (Lat.  $58^{\circ} 21.1'N$ , Long.  $153^{\circ} 05.4'W$ ) shows a discrepancy of 5 fathoms. Analysis of the fathogram indicates that the N-S lines on either side of the crossing ran parallel to the ridge that contained the 98 fathom sounding on the crossline. No additional development is considered necessary.

#### I. JUNCTIONS

This sheet junctions on the north with sheet H-9209 (RA-40-2-71). There are no other junctions. In the northwest corner of the junction the depths on this sheet are generally one fathom greater than on sheet H-9209. These depths are approximately 95 fathoms. The one fathom discrepancy is probably due to predicted tides. Sheet H-9201 used tides from Kukak Bay. Sheet H-9209 used tides from Redfox Bay. This problem should resolve itself on the smooth sheet. Elsewhere the junction agrees either exactly or within one fathom.

#### J. COMPARISON WITH PRIOR SURVEYS

There are no items in the Pre-Survey Review that apply to the area covered during 1971.

The depths on this sheet check very closely with the survey done in 1908-1909, Reg. No. H-2980, scale 1:200,000. In depths greater than 80 fathoms most of the soundings agree exactly with only a few disagreeing by one or two fathoms. In water less than 80 fathoms all the soundings agree. There have been no other surveys of this area.

#### K. COMPARISON WITH THE CHART

All existing charts of the area including C&GS Chart 8533, the largest scale chart of the area, were published using the data from sheet H-2980 discussed in paragraph J. The comparison is the same.

#### L. ADEQUACY OF THE SURVEY

This sheet is approximately 25% complete. All the area east of longitude  $153^{\circ} 20'W$  has been surveyed. All of the area west of the above longitude remains to be surveyed. In addition, bottom samples need to be taken over the entire sheet.

The area surveyed in 1971 is complete and adequate to supersede prior surveys for charting purposes.

M. AIDS TO NAVIGATION

There are no aids to navigation in the area surveyed.

N. STATISTICS

No. of Positions ..... 540  
Miles of Hydrography ..... 330.1  
Square Nautical Miles of Hydrography .. 80

O. DATA PROCESSING

All data was processed in accordance with the Instruction Manual, Automated Hydrographic Surveys.

Raw data was hand logged on time using the dual indicator format with the logger connected to a Flexowriter. Equipment failures on three occasions (JD 178, Pos. 79-92; JD 204, Pos. 210-228; and JD 206, Pos. 526-540) necessitated the on time use of sounding volumes. Data from these volumes was later hand logged onto paper tape. Raw data tapes were then edited for all sounding changes, peaks and deeps, errors in time, and errors in the recorded Hi-Fix rates.

One dual indicator electronic control format corrector tape was produced for the entire sheet and was used to apply calibration corrections to the basic survey data.

Standard formats were used for the TC/TI and velocity correction tapes. Hourly heights tidal data is being furnished Pacific Marine Center's Electronic Data Processing Division. In accordance with the PMC OPORDER, the tide reducer tape will be made by EDAT.

P. RECOMMENDATIONS

To complete this survey hydrography must be run west of longitude 153° 20'W and bottom samples must be taken over the entire sheet.

Q. REFERENCES TO REPORTS

Corrections to Echo Soundings, OPR-478, NOAA Ship RAINIER, 1971.

Hi-Fix Report, OPR-478, NOAA Ship RAINIER, 1971.

Tide Report, OPR-478, NOAA Ship RAINIER, 1971.

Geodetic Surveying Operations, OPR-478, NOAA Ship RAINIER, 1971.



Respectfully Submitted,

*Thomas Ballentine*

Thomas Ballentine  
LTJG, NOAA

SEPARATES FOLLOWING THE TEXT

TIDE NOTE

The predicted tides at Redfox Bay were used for the reduction of boatsheet soundings. Redfox Bay is located on the north side of Afognak Island adjacent to Shuyak Strait, across from Port William.

It is recommended that the tidal data gathered at Port William be used for the reduction of soundings. The tide gage at Port William was located at Lat.  $58^{\circ} 29.5'N$ , Long.  $153^{\circ} 34.8'W$ . This is on the south side of Shuyak Island on Shuyak Strait. This gage was operated on the  $135^{\circ}W$  Time Meridian. For more information on tides see the report entitled Tide Report, OPR-478, NOAA Ship RAINIER, 1971.

*Nukshak tides used*

**ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS**

*some phase correction appear excessive*

Sheet RA-40-1-71

Time	Phase	Initial	Draft	Total	Tab	Day
145400	0	0	2.2	2.2	0001	164
150215	-.4			1.8		
153645	-.7			1.5		
102200	-.7		2.2	1.5	0001	175
110230	-.4			1.8		
110745	-.7			1.5		
111300	-.4			1.8		
114045	-.7			1.5		
115415	-.4			1.8		
133900	0		2.2	2.2	0001	176
134115	-.4			1.8		
134545	-.7			1.5		
145500	-.7		2.2	1.5	0001	178
153230	-.4			1.8		
060200	-.7		2.2	1.5	0001	190
070400	-.7	-.1		1.4		
071500	-.7	0		1.5		
072400	-.7	.1		1.6		
173400	0	0		2.2		
173530	-.4			1.8		
174000	-.7			1.5		
191030	-.4			1.8		
191200	-.7			1.5		
191500	-.4			1.8		
192015	0			2.2		
192500	0	-.1		2.1		
192845	-.4			1.7		
193400	-.7			1.4		
193615	-.4			1.7		
193915	-.7			1.4		
194400	0	0		1.5		
203545	-.4			1.8		
203930	0			2.2		
205845	-.4			1.8		
210100	-.7			1.5		
123800	.1		2.2	2.3	0001	204
124700	0			2.2		
125815	0	-.1		2.1		
130200	0	0		2.2		
130730	0	-.1		2.1		
131230	0	0		2.2		

V. B.

Sheet RA-40-1-71

Time	Phase	Initial	Draft	Total	Tab	Day
131900	0	-.1	2.2	2.1		
132015	.1			2.2		
135315	0			2.1		
141850	.1			2.2		
145555	0			2.1		
151505	.1			2.2		
154530	.1	0		2.3		
160315	0			2.2		
162225	.1			2.3		
174330	0			2.2		
174505	.1			2.3		
194300	.1			2.3		
101015	.1		2.2	2.3	0001	206
105845	0			2.2		
113115	.1			2.3		
160430	.1	-.1		2.2		
175400	.1	.1		2.4		
175700	.1	-.1		2.2		
195245	.1	0		2.3		

ABSTRACT OF CORRECTIONS TO  
DISTANCE MEASUREMENTS

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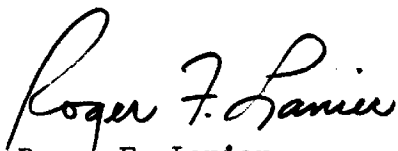
APPROVAL SHEET

H-9201 (Field No. RA-40-1-71)

OPR-478 Shelikof Strait, Alaska, 1971

Hydrographic procedures were observed and the data was examined daily during the execution of this survey.

The boat sheet and the accompanying records have been examined by me. Although this survey is incomplete, the work accomplished in 1971 should be considered adequate for charting, and is approved.

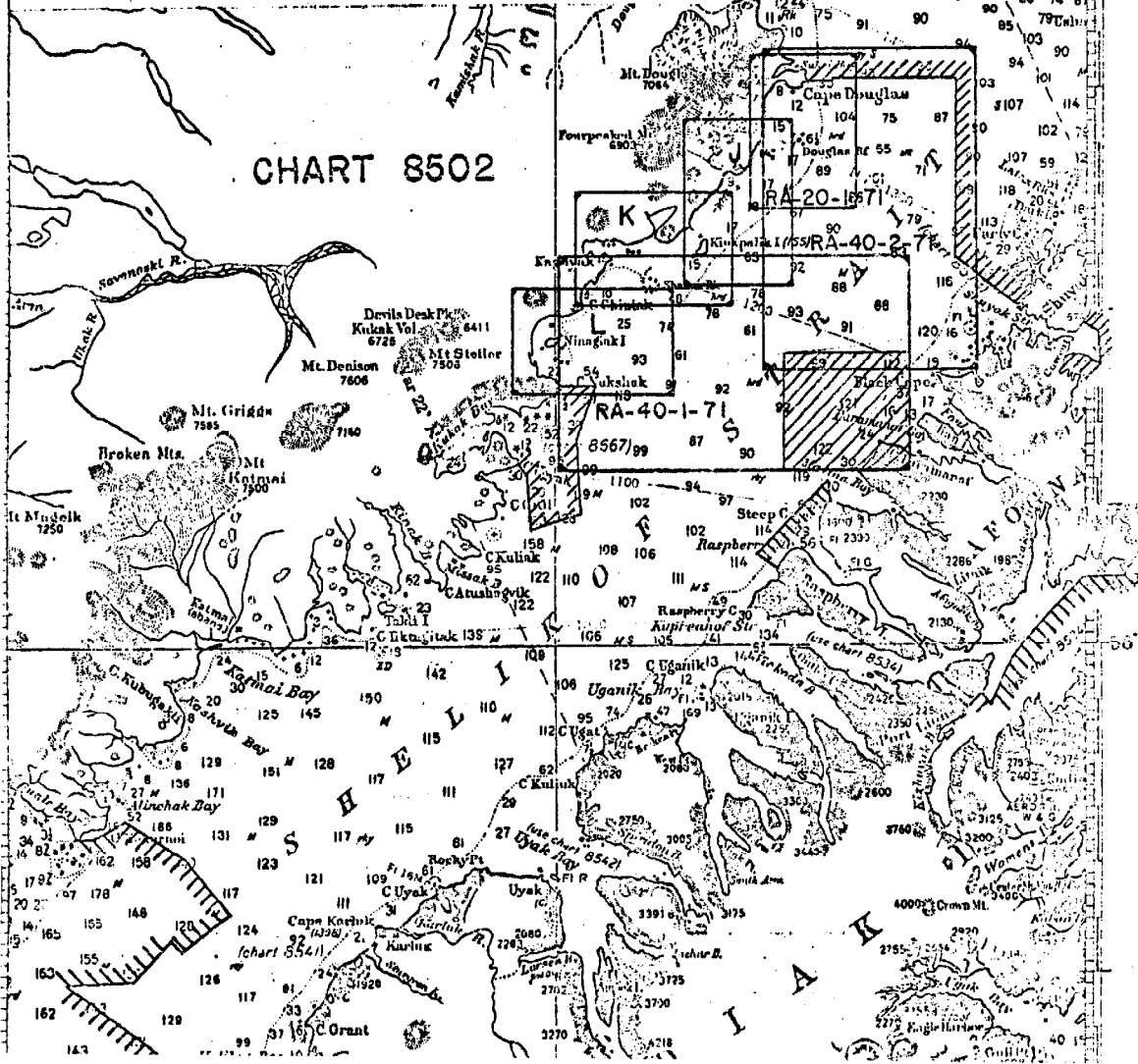


Roger F. Lanier  
CAPT, NOAA

APPENDIX

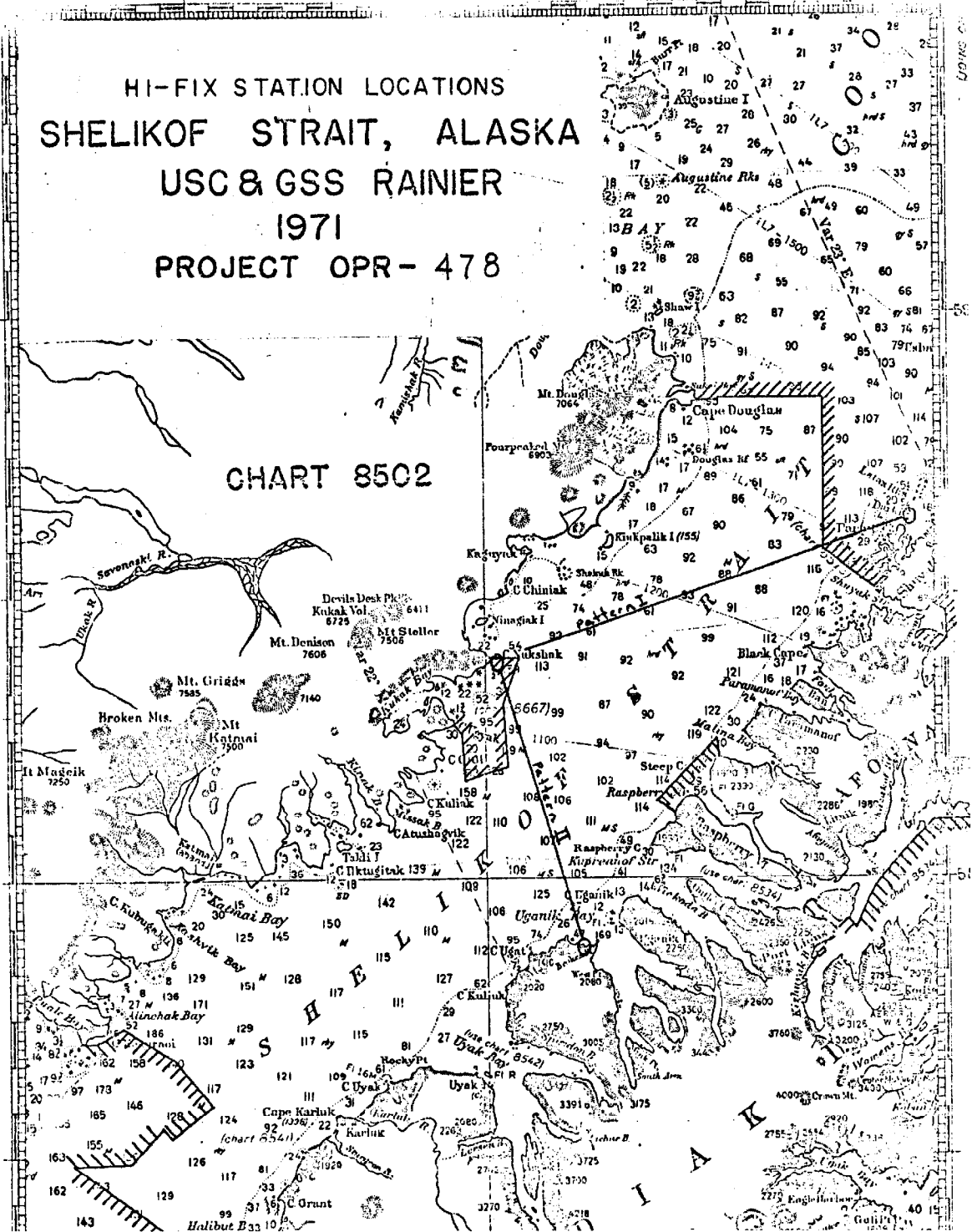
1. Sheet Index Including Area Surveyed on H-9201 during 1971.
  2. Diagram Showing Hi-Fix Station Locations.
  3. Diagrams Showing Signals Used for Hi-Fix Calibration.
  4. Abstract of Position Numbers.
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SHEET INDEX  
 SHELIKOF STRAIT, ALASKA  
 USC & GSS RAINIER  
 1971  
 PROJECT OPR-478

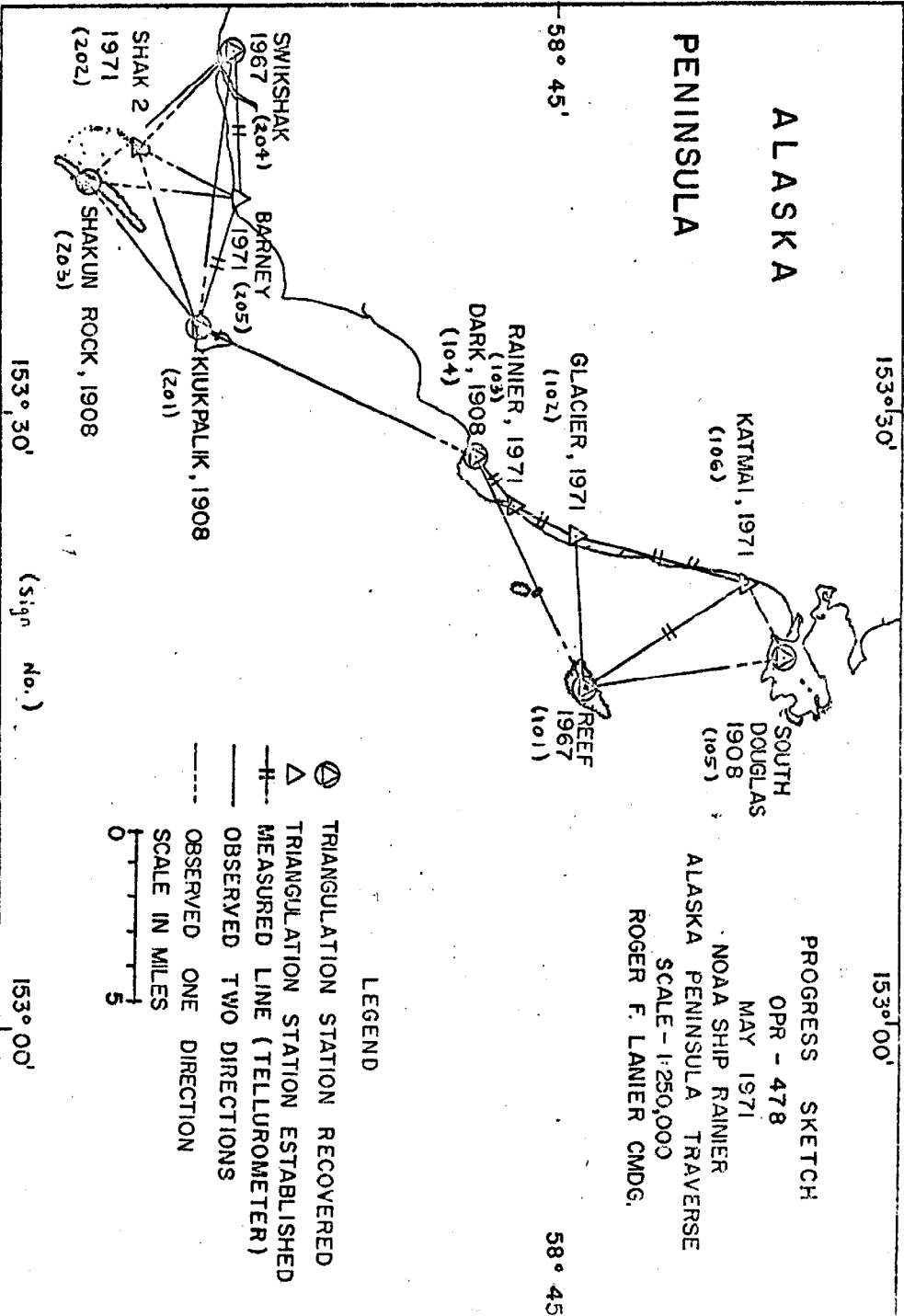


HI-FIX STATION LOCATIONS  
SHELIKOF STRAIT, ALASKA  
USC & GSS RAINIER  
1971  
PROJECT OPR-478

CHART 8502



# HI-FIX CALIBRATION SIGNALS



ABSTRACT OF POSITION NUMBERS

<u>DATE</u>	<u>JULIAN DAY</u>	<u>POSITION NUMBERS</u>
13 June	164	1-28
24-25 June	175-176	29-92
9 July	190	93-209
23 July	204	210-344
25 July	206	345-540

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FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION  
COAST AND GEODETIC SURVEY

## DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. RA-40-1-71 Office No. H-9201

### LOCALITY

State ALASKA

General locality SHELIKOF STRAIT

Locality CAPE PARAMANOF -

CAPE NUKSHAK

1972

CHIEF OF PARTY

CAPT. G.E. HARADEN

LIBRARY & ARCHIVES

DATE .....

HYDROGRAPHIC TITLE SHEET

H-9201

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-40-1-71

State ALASKA

General locality SHELIKOF STRAIT

Locality Cape Paramanof to Cape Nukshak

Scale 1:40,000 Date of survey 17 July - 3 Aug 1972

Instructions dated 3 March 1972 Project No. OPR-478-RA-72

Vessel NOAA Ship RAINIER

Chief of party CAPT G.E. Haraden

LCDR E.M. Gelb, LTJG S.E. Anderly, LTJG S.J. Hollinshead, LTJG J.R. Faris,

Surveyed by LTJG R.L. Johnson, LTJG R.A. Schiro, LTJG W.F. Turnacliiff

Soundings taken by echo sounder, ~~and tide gauge~~ ROSS MODEL 5000 (SN:1042)

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Verified

~~checked~~ by R.D. Lynn Automated plot by FMC - Gerber

Soundings ~~checked~~ <sup>verified</sup> by R.D. Lynn Digital Plotter

Soundings in fathoms ~~3000~~ at ~~3000~~ MLLW

REMARKS: The Modified Transverse Mercator Projection, soundings and  
position numbers on the boatsheet were plotted by the RAINIER's  
PDP 8/e computer and COMPLOT plotter.



DESCRIPTIVE REPORT  
TO ACCOMPANY HYDROGRAPHIC SURVEY

H-9201 (Field No. RA-40-1-71)

Scale 1:40,000

1972

NOAA Ship RAINIER

CAPT. G.E. HARADEN

Commanding

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### A. PROJECT

This survey was conducted in accordance with PROJECT INSTRUCTIONS: OPR-478-RA-72, dated 3 March 1972. Subsequent changes to these instructions are not applicable to this survey.

### B. AREA SURVEYED

The general area of this survey is Shelikof Strait between Cape Paramanof, Kodiak Island, and Cape Nukshak, Alaska Peninsula.

Sheet H-9201 was divided into three parts due to size limitations imposed by the on board Hydroplot/Complot system. The southeast quadrant of the sheet RA-40-1A-71, between latitudes  $58^{\circ} 18' N$  and  $58^{\circ} 26' N$  and longitudes  $153^{\circ} 00' W$  and  $153^{\circ} 20' W$ , (See Descriptive Report To Accompany H-9201, RA-40-1-71, NOAA Ship RAINIER, 1971) was surveyed during the 1971 field season.

The remaining two parts of the sheet (RA-40-1B-71 and RA-40-1C-71) were surveyed during the 1972 field season from 17 July to 3 August. The northern, southern and eastern boundaries of the area surveyed in 1972 are latitudes  $58^{\circ} 33.5'$  and  $58^{\circ} 17' N$  and longitude  $153^{\circ} 20' W$ . The western boundary is formed roughly by three line segments connecting the following four points:

from  $58^{\circ} 23.5' N, 153^{\circ} 58' W$   
to  $58^{\circ} 23.5' N, 153^{\circ} 51.9' W$   
thence to  $58^{\circ} 24.5' N, 153^{\circ} 54.0' W$   
thence to  $58^{\circ} 33.5' N, 153^{\circ} 32.4' W$

The survey junctions with the following surveys:

H-7812		1:40,000	1949	Special Red
H-9209	RA-40-2-71	1:40,000	1971	Brown
H-9201	RA-40-1-71	1:40,000	1971	Carmine
H-9306	RA-40-2-72	1:40,000	1972	Blue

The only prior survey of the area was H-2980, 1:200,000, dated 1908 and soundings from this survey are indicated on the boat sheet in violet ink.

### C. SOUNDING VESSEL

All soundings on sheet H-9201 (RA-40-1-71) were obtained by the NOAA Ship RAINIER. The soundings along regular lines are shown in black ink. The crosslines are shown in red ink. All bottom samples are denoted on the boat sheet by green circles. The soundings on the boat sheet were plotted by the Complot Plotter in combination with the Digital Equipment Corporation PDP 8/e computer. The 1971 soundings in the area covered by the 1972 survey have been hand lettered in carmine ink.

#### D. SOUNDING EQUIPMENT

The RAINIER used the ROSS Model 5000, Fine Line Recorder, serial number 1042, in depths from 28 to 160 fathoms. There were no sounding equipment problems during the course of the survey which would have an adverse effect on the data. *digital depth recorder*

Initial, fine arc, and phase corrections were unnecessary for the recorder used. The initial value was inspected continuously throughout the survey and adjusted as necessary. No abstract of initial corrections was compiled since any difference in the initial value appeared only on the fathogram and not on the digitized record. In check scanning the fathogram, the initial value was taken into consideration. The Ross recorder used a stylus traveling in a straight line, thus fine arc corrections were unnecessary. Internal phase comparisons and necessary corrections were made so that all phase corrections would be at zero prior to any survey work. A draft correction of 2.5 fathoms was applied to the entire survey. See the special report Corrections To Echo Soundings, OPR-478-RA-72, NOAA Ship RAINIER, 1972.

Velocity corrections were applied to the recorded depths through the Transducer Correction/Table Indicator (TC/TI) tape. However, these TC/TI corrections have not been applied to soundings appearing on the boat sheet. Velocity corrections were computed from a Nansen Cast taken at latitude  $58^{\circ} 23.4' N$ , longitude  $153^{\circ} 51.2' W$  on 4 August 1972, and are shown in the Separates.

#### E. SMOOTH SHEET

The boat sheet's Modified Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the onboard PDP 8/e Complot System. The boat sheet was prepared using a central meridian of  $153^{\circ} 50' 00'' W$  and a control latitude of 6,301,000 meters North. Position numbers and Hi-Fix arcs were also plotted by the computer and plotter. The final smooth sheet will be plotted by PMC's Electronic Data Processing Division.

#### F. CONTROL

Hi-Fix electronic control, utilizing range-range mode, Type-A moderate power, on frequency 1799.6 kHz was used for position control throughout the survey.

Slave station 1 was located on Nukshak Island, on the west shore of Shelikof Strait, Alaska. A 35 foot antenna was erected at approximately 125 feet above sea-level, on

reference mark NUKSHAK RM-6, 1971, latitude  $58^{\circ} 23' 29.514''$  N and longitude  $153^{\circ} 57' 40.528''$  W. The arcs generated by slave station 1 were drawn on the boat sheet with green ink.

Slave station 2 was located on Cape Douglas, also on the western shore of Shelikof Strait. A 35 foot antenna was erected over triangulation station SOUTH DOUGLAS, 1908, latitude  $58^{\circ} 50' 49.119''$  N and longitude  $153^{\circ} 17' 47.572''$  W at an elevation of 178 feet above sea level. The arcs created by slave station 2 were drawn on the boat sheet with red ink.

The Hi-Fix receivers were calibrated at the beginning and end of each segment of work on the survey. The calibration was accomplished by visual three point sextant fixes with check angles on signals located by geodetic surveying methods. All calibration used in the final corrections were obtained in the vicinity of the western entrance of Shuyak Strait. A mathematical solution for three-point fixes was obtained by using program AM-560 in the PDP 8/e computer. Some lane jumps were experienced due to two antenna failures and interference from the ship's communication equipment. The jumps due to the antenna failures were accounted for and appropriate corrections were applied.

The ending calibration for the data from JD 200 to JD 202 indicated a 2 lane discrepancy in pattern two that could not be accounted for. Therefore, it was necessary to make an assumption as to when these lanes were lost. The decision to place the lane jump at the indicated time was based upon consideration of stripchart and printout evidence as well as the best fit of the soundings. It is assumed that pattern 2 skipped two lanes on the Hi-Fix interface on, 19 July (JD 201). At this time, Hi-Fix dial readings rather than the interface values were being annotated on the stripchart. Three factors do seem to isolate the problem to the interface. First, Hi-Fix was very good and no problems were being encountered with reception. Two, no indication of whole lane discrepancies are apparent on the stripchart. Three, frequent problems were encountered with lane jumps on the Navigation Interface. The precise time that the problem occurred is not known; however, examination and comparison of sounding data indicates that correction for the jumps should be applied at 083016/JD 201. Refer to the Separates following the text for a Hi-Fix corrector summary of JD 200-202.

Further details are given in Hi-Fix Report, OPR-478-RA-72, NOAA Ship RAINIER, 1972.

#### G. SHORELINE

The shoreline in the Cape Chiniak and Cape Nukshak areas was transferred from the 1:20,000 incomplete manuscripts T-13157 and T-13160 respectively. The manuscripts were reduced to 1:40,000 and traced onto the boat sheet. The shoreline around Cape Paramanof was transferred from C&GS Chart 8533 (1:80,000).

Since this was basically an offshore survey and there will be other sheets covering the inshore areas, no attempt was made to verify the shoreline.

#### H. CROSSLINES

Crosslines on sheet RA-40-1-71. H-9201, totaled 117 nautical miles including the 58 nautical miles of crosslines which were run in 1971. Crosslines amounted to 13% of the main scheme lines. Crossing comparisons are excellent with approximately 90% of the soundings, agreeing within one fathom and the remaining 10% agreeing within 1-2 fathoms.

#### I. COMPARISON WITH JUNCTION SURVEYS

Survey H-9201 agrees well with H-9306, H-9209, and H-9201 (1971 work). About 90% of the soundings agree within 0-1 fathoms, with the remaining 10% of the soundings agreeing to within 1-2 fathoms. No adjustment of these junctions is necessary. Soundings from H-7812 show fairly good general agreement with the 1972 survey, however, isolated differences of as much as 13 fathoms are noted. These differences occur in areas of fairly steep relief and the discrepancies are not general enough to warrant adjustment.

#### J. COMPARISON WITH PRIOR SURVEYS

Comparison with prior survey H-2980, 1:200,000, 1908 shows that approximately 75% of the soundings agree within 1 fathom, and the remaining soundings agree within 1-3 fathoms, except for about 1% which agree within 3-6 fathoms. This agreement is considered good since the prior survey H-2980 was done in 1908.

The two 61 fathom presurvey review items located in latitude  $58^{\circ} 28.7' N$ , longitude  $153^{\circ} 25.1' W$  and latitude  $58^{\circ} 26.3' N$ , longitude  $153^{\circ} 37.1' W$  should be considered verified by the soundings obtained in 1972. In both cases shoaler soundings (57 fathoms) were obtained reasonably close to the prior survey positions and it is recommended that the 1972 soundings be used for chart compilation.

#### K. COMPARISON WITH THE CHARTS

This survey was compared with charted soundings on Chart 8556, 3rd Edition, 23 October 1967. Approximately 75% of the charted soundings agree within 0-1 fathom, 23% agree within 1-3 fathoms and 2% disagree by more than 3 fathoms with the maximum disagreement being 6 fathoms. Due to superior positioning and sounding techniques, the 1972 soundings should be considered more correct and should supersede older soundings for charting.

There were no newly found dangers to navigation within the survey area.

#### L. ADEQUACY OF SURVEY

This survey is considered complete and adequate to supersede prior surveys for charting.

#### M. AIDS TO NAVIGATION

There are no aids to navigation in the H-9201 survey area.

#### N. STATISTICS (1972 Work)

Number of Positions	1075
Nautical Miles of Sounding Line	681.7
Square Nautical Miles	232
Number of Bottom Samples	11
Number of Nansen Casts	1

#### O. DATA PROCESSING

All data was obtained using the on-line plot program, AM 100, in conjunction with the PDP 8/e Hydroplot system. This program plots soundings and position in real time and provides a punched paper tape in the master format with a teletype listing of all hydrographic data collected.

During the survey, personnel kept track of lost Hi-Fix lanes and updated the position input data on the Hydroplot Controller so that it read the correct whole lane values. All correctors to the Hi-Fix pattern readings were entered on corrector tapes and applied to the boat-sheet.

All soundings were digitized with draft and predicted tide corrections applied on time. The fathograms were later scanned and compared against the printouts. All necessary sounding corrections have been made via corrector tapes which were prepared using the standard Hydroplot/Hydrolog corrector tape format.

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Along with the standard Master and Corrector Tapes, TC/II, and Velocity Tapes, additional tapes combining the master and corrector tapes with G.P.'s ammended are being furnished.

All hydrography was accomplished using the 135° W time meridian.

P. REFERENCES TO REPORTS

1. Corrections to Echo Soundings, OPR-478 NOAA Ship RAINIER, 1972.
2. Hi-Fix Report, OPR-478, NOAA Ship RAINIER, 1972.
3. Descriptive Report to Accompany H-9201 (RA-40-1-71), OPR-478, NOAA Ship RAINIER, 1971.

Respectfully submitted,

*Richard A. Schiro*  
Richard A. Schiro,  
LTJG, NOAA

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SEPARATES FOLLOWING TEXT

1. Tide Note
  2. Abstract of Corrections to Echo Soundings
    - a. TC/TI Tape Listing
    - b. Velocity Tape listing
  3. Abstract of Hi-Fix Correctors
  4. Listing of Calibration Signals
  5. Hi-Fix Corrector Summary JD 200 - 202
-



TIDE NOTE  
H-9201 RA-40-1-71

The predicted tides at Kukak Bay, Alaska Peninsula, were used for the reduction of boatsheet soundings.

It is recommended that the tidal data gathered at Nukshak Island, Alaska Peninsula, be used directly for the reduction of soundings. The tide gage at Nukshak Island was located at latitude  $58^{\circ} 23.5' N$ , longitude  $153^{\circ} 57.6' W$ . This gage was operated on the  $135^{\circ} W$  Time Meridian. A zero reading on the staff corresponds to a zero reading on the gage. Hourly heights have been furnished to the Processing Division at PMC.

Plot on 55

H-9201  
Name on Survey

	On C. No.	On U. No.	On U. No.	FCG No.	On U. No.	P.C.G.	Ranz	U.S.		
	A	B	C	D	E	F	G	H	K	
SHELIKOF STRAIT										1
CAPE NUKSHAK										2
CAPE PARAMANDE										3
PARAMANDE BAY										4
SHAKUN ISLANDS										5
SHAKUN ROCK										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26

Approved  
*Chas. E. Huntington*  
 Staff Geographer  
 8 Aug. 1975

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

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TC/TI TAPE  
RA-40-1-71  
FATH: ROSS 1042  
RAINIER

212301	0	0025	0010	199	000000	000000
000020	0	0025	0010	200	000000	000000
000001	0	0025	0010	201	000000	000000
000015	0	0025	0010	202	000000	000000
014525	0	0025	0010	204	000000	000000
112829	0	0025	0010	216	000000	000000

OPR-478-RA-72

VELOCITY TAPE LISTING

FOR ALL 1972 SHEETS (RA-10-3-72, RA-10-4-72, RA-10-5-72, RA-20-1-72  
RA-40-1-71, & RA-40-2-72)

000340' 0 0000' 0003 000 000000 000000  
000620' 0 1001'  
000845' 0 1002'  
001060' 0 1003'  
000050' 0 1001' 0004 000 000000 000000  
000340' 0 0000'  
000620' 0 1001'  
000840' 0 1002'  
001060' 0 1003'  
000035' 0 0000' 0005 000 000000 000000  
000135' 0 0001'  
000415' 0 0002'  
000925' 0 0003'  
000340' 0 0000' 0006 000 000000 000000  
000620' 0 1001'  
000840' 0 1002'  
001060' 0 1003'  
000130' 0 0001' 0007 000 000000 000000  
000390' 0 0002'  
000935' 0 0003'  
000050' 0 0000' 0008 000 000000 000000  
000135' 0 0001'  
000425' 0 0002'  
000930' 0 0003'  
000025' 0 0000' 0009 000 000000 000000  
000130' 0 0001'  
000425' 0 0002'  
000920' 0 0003'  
001200' 0 0004'  
000085' 0 0000' 0010 000 000000 000000  
000225' 0 0001'  
000400' 0 0002'  
000675' 0 0003'  
001210' 0 0004'  
001510' 0 0003'  
001810' 0 0002'

EMG

ABSTRACT OF HI-FIX CORRECTORS

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2120

SHEET : RA-40-1B-71

TIME	DAY	PATTERN 1	PATTERN 2
011101	201	-00024	+00000
080016		-00024	+00200
110944		-00124	+00300
112400		-00124	+00300
113300	201	-00124	+00300
000015	202	-00124	+00300
005935		-00124	+00300
090501	202	-00124	+00300
090730		-00124	+00300
014525	204	-03920	+03008
033550		-03920	+03008
032709	216	+00045	+00045
230000		+00000	+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2120

SHEET : RA-40-1C-71

TIME	DAY	PATTERN 1	PATTERN 2
212301	199	-00024	-00057
000020	200	-00024	-00057
001050		-00024	-00016
003830		-00024	-00057
013730		-00024	-00857
<del>000000</del>		<del>00000</del>	<del>00000</del>
091201	200	-00024	+00000
191419		-00024	+00000
191731	200	-00024	+00000
000001	201	-00024	+00000
003732		-00024	+00000
094630	202	-00124	+00300
112035		-00124	+00300
034603	204	-03920	+03008
045101		-03920	+03008
052216		-03920	+03008
052820		-03920	+03008
112829	216	-00555	-00855
130000		-00555	-00855



LISTING OF CALIBRATION SIGNALS

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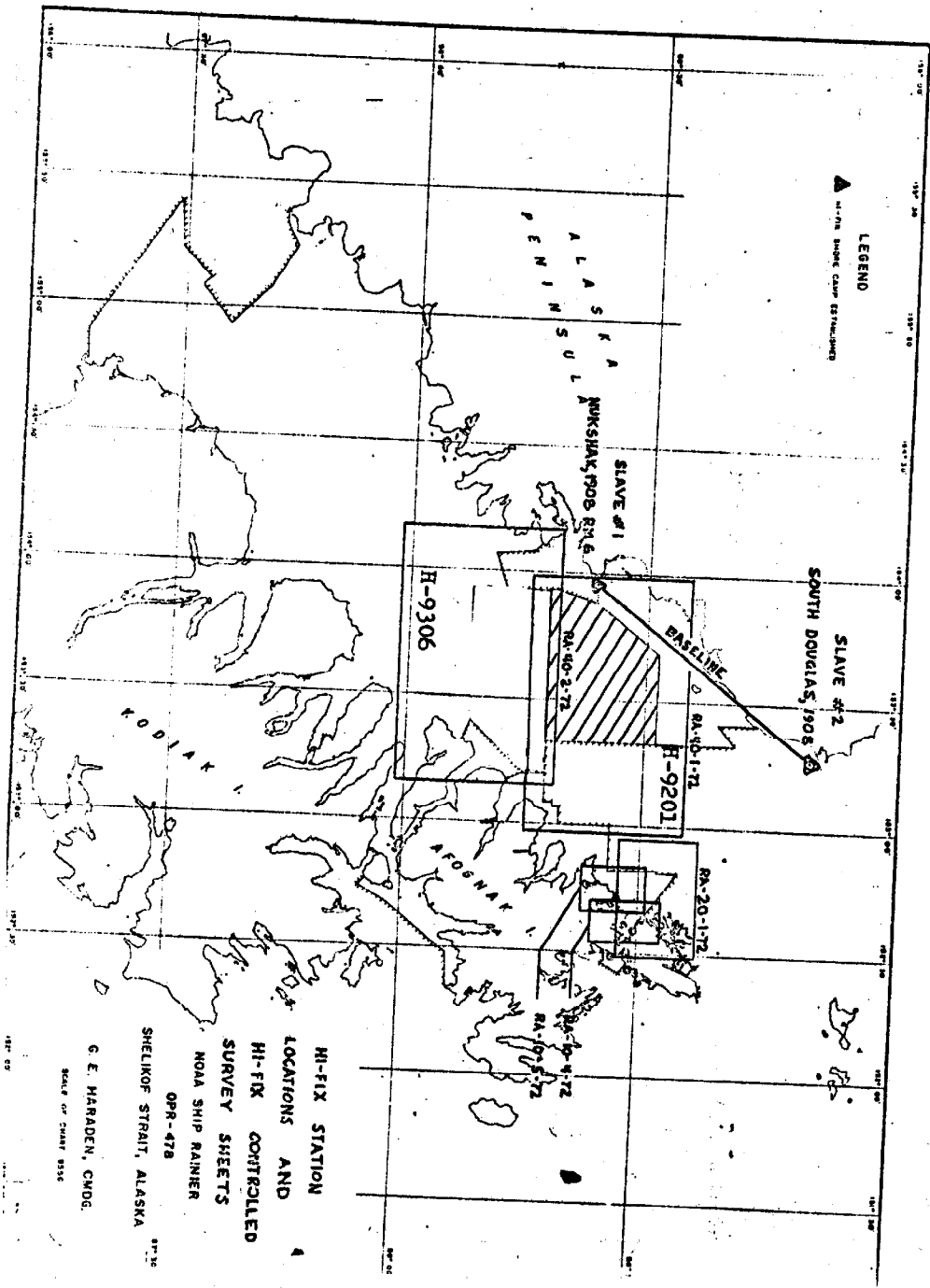
HI-FIX CORRECTOR SUMMARY JD 200 - 202

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APPENDIX

1. Sketch of Hi-Fix Station Locations and Index to  
Survey Sheets
  2. Abstract of Positions
  3. C&GS Form 733-M Bottom Sample Data
  4. Parameter Tape Listings
  5. Approval Sheet
-



ABSTRACT OF POSITION NUMBERS

<u>DATE</u>	<u>JULIAN DAY</u>	<u>POSITION NUMBERS</u>
17 July	199	1-19
18 July	200	20-412
19 July	201	413-874
20 July	202	875-980
22 July	204	981-1006 937A-961A 938A-946A
3 August	216	1007-1041





OCEANOGRAPHIC LOG SHEET - M  
BOTTOM SEDIMENT DATA

VESSEL	SERIAL NO.	DATE	PROJ. NO.		YEAR	DEPTH (Fathoms)	WEIGHT OF SAMPLER	AP. PROX. TO STATION	LENGTH OF CORE	COLOR OF SEDI- MENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, color, transparency, cutler, stat. no., type of bottom, etc.)	CHECKED BY	DATE CHECKED
			LATITUDE	LONGITUDE										
RAINIER			478		1972								RAMM	8-4-72
938		8/3/72	58° 27.6' ✓	153° 32.8' ✓	76.8						fine gn. s.s.M			
947		8/3/72	58° 26.4' ✓	153° 42.3' ✓	88.7						fine gn-gy s.s.M			
1014		8/3/72	58° 21.95' ✓	153° 47.80' ✓	105.5						fine gn-gy s.s.M			
1022		8/3/72	58° 20.40' ✓	153° 40.10' ✓	93.8						fine gn-gy s.s.M & sh			
1035		8/3/72	58° 18.2' ✓	153° 26.2' ✓	91.0						fine gn-gy s.s.M & STAREISH			

PARAMETER TAPE LISTING

SHEET 40-1B-71 SKEW: 0,22,60

FEST=160000  
CLAT=6301000  
CMER=153/50/00  
GRID=120  
PLSCL=40000  
PLAT=58/15/30  
PLON=153/59/00  
SILAT=58/23/29.514  
SILON=153/57/40.528  
S2LAT=58/50/49.119  
S2LON=153/17/47.572  
Q=1799.6  
VESNO=2120  
YR=72

SHEET 40-1C-71 SKEW: 0,22,60

FEST=160000  
CLAT=6301000  
CMER=153/50/00  
GRID=120  
PLSCL=40000  
PLAT=58/23/00  
PLON=153/59/00  
SILAT=58/23/29.514  
SILON=153/57/40.528  
S2LAT=58/50/49.119  
S2LON=153/17/47.572  
Q=1799.6  
VESNO=2120  
YR=72

APPROVAL SHEET

H-9201 (RA-40-1-71)

July 17 - August 3, 1972

Cape Paramanof to Cape Nukshak

In producing this sheet, hydrographic procedures were observed and the data was examined daily during the execution of the survey.

The data on the boat-sheet and the accompanying records have been examined by me and are considered complete and adequate, and are hereby approved.

*G.E. Haraden*

G.E. Haraden  
CAPT, NOAA

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**HYDROGRAPHIC SURVEY STATISTICS**  
**HYDROGRAPHIC SURVEY NO. H-9201**

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & 2-Overlays		1	BOAT SHEETS		3	
DESCRIPTIVE REPORT		2	OVERLAYS		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS	1 & Raw Data P/O.					
VOLUMES	1					
BOXES			1 & Sawtooth Rec.			

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				1075
POSITIONS CHECKED		1075		
POSITIONS REVISED		43		
DEPTH SOUNDINGS REVISED		67		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		-		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
Verification of Control		8		
Verification of Positions		21		
Verification of Soundings		31		
Smooth Sheet Compilation		38		
		22		
<b>TOTALS</b>		120		
PRE-VERIFICATION BY Richard D. Lynn	BEGINNING DATE 1/11/74	ENDING DATE 1/12/74		
VERIFICATION BY Richard D. Lynn <i>Richard D. Lynn</i>	BEGINNING DATE 5/24/74	ENDING DATE 6/11/75		
REVIEW BY	BEGINNING DATE	ENDING DATE		

VERIFIER'S REPORT  
 HYDROGRAPHIC SURVEY, H 9201

**INSTRUCTIONS** - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

**CL - Check List Items:** should be checked as having been completed during the verification processes.

**R - Report Item:** This column refers to those items reported to the reviewer and is used to indicate the items discussed.

Part I - DESCRIPTIVE REPORT	CL	R	Part III - JUNCTIONS (Continued)	CL	R
<p><b>Note:</b> The verifier should first read the Descriptive Report for general information and problems.</p> <p>1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken.                      Remarks Required: -- None</p>	X		<p>10. Junctions with contemporary surveys were satisfactory except as follows:                      Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.</p>	X	
<p>2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification.                      Remarks Required: -- None</p>	X		<p><b>Part IV - VOLUMES</b></p> <p>11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes.                      Remarks Required: -- None</p>	X	
<p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year.                      Remarks Required: -- None</p>	X				
<p><b>Part II - SHORELINE AND SIGNALS</b></p> <p>4. Source of shoreline signals                      Remarks Required: -- List all surveys</p> <p>a. Give earliest and latest dates of photographs</p> <p>b. Field inspection date</p> <p>c. Field Edit date</p> <p>d. Reviewed/Unreviewed</p>		X	<p>12. Condition of sounding records was satisfactory except as follows:                      Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following:</p> <p>(a) rocks</p> <p>(b) line turns</p> <p>(c) position values of beginning and ending of lines</p> <p>(d) bar check or velocity correctors</p> <p>(e) time recording</p> <p>(f) notes or markings on bathograms</p> <p>(g) was reduction of soundings accurately done?</p> <p>(h) was scanning accurate?</p> <p>(i) were peaks at uneven intervals missed?</p> <p>(j) were stamps completed?</p> <p>(k) references to adjacent features</p>	X	
<p>5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography.                      Remarks Required: -- Discuss remaining differences.</p>	N/A				
<p>6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet.                      Remarks Required: -- None</p>	X				
<p>7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet.                      Remarks Required: -- List those signals still unidentified.</p>	X		<p><b>Part V - PROTRACTING</b></p> <p>13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp.                      Remarks Required: -- None</p>	N/A	
<p><b>Part III - JUNCTIONS</b></p> <p><b>Note:</b> Make a cursory comparison preliminary to inking soundings in area of overlap.</p> <p>8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical.                      Remarks Required: -- None</p>	X		<p>14. The protracting and plotting of all unsatisfactory crossings were verified.                      Remarks Required: -- None</p>	N/A	
<p>9. The notation in slanted lettering "JOINS H- (19 )" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil.                      Remarks Required: -- None</p>	X		<p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible.                      Remarks Required: -- None</p>	X	

Part V - PROTRACTING (continued)		CL	R	Part VIII - AIDS TO NAVIGATION	
16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments.	N/A			25. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed.	X
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.	N/A			27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None	X
<b>Part VI - SOUNDINGS</b>			<b>Part IX - BOAT SHEET</b>		
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None	X			28. The boat sheet was constantly compared with the smooth sheet with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None	X
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.	X			29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.	X
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None	X			<b>Part X - GENERAL</b>	
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None	X			30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None	X
22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning.	X			31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None	X
<b>Part VII - CURVES</b>				32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None	X
23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected.			X		
24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None	X			33. The bottom characteristics are adequately shown. Remarks Required: -- None	X
25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient.	X			<b>Part XI - NOTES TO THE REVIEWER</b>	
				34. Unresolved discrepancies and questionable soundings.	X
				35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy.	X
				36. Supplemental information.	X
Verified by <i>Richard D. Lynn</i> Dick D. Lynn, Cartographic Technician				Date June 11, 1975	

VERIFIER'S REPORT

H-9201 - OPR-478

RA-40-1-71

This sheet was constructed and plotted at Pacific Marine Center, Seattle, Washington. Information relating to this will be noted under the heading by the number and letter as on the Verifier's Report, C&GS Form 946A.

PART II - SHORELINE AND SIGNALS

4. This is basically an offshore survey; therefore, no manuscripts are required.

PART VII - CURVES

23. The depth curves were penciled on the smooth sheet by M.G. Sanders, Cartographic Technician and checked and inked by S.H. Otsubo, Cartographic Technician.

PART XI - NOTES TO THE REVIEWER

36. On the preliminary position plot and printout position Nos. 0896 thru 0938 were inadvertently logged and plotted. These positions came from H-9209 and these tapes were put with that survey.

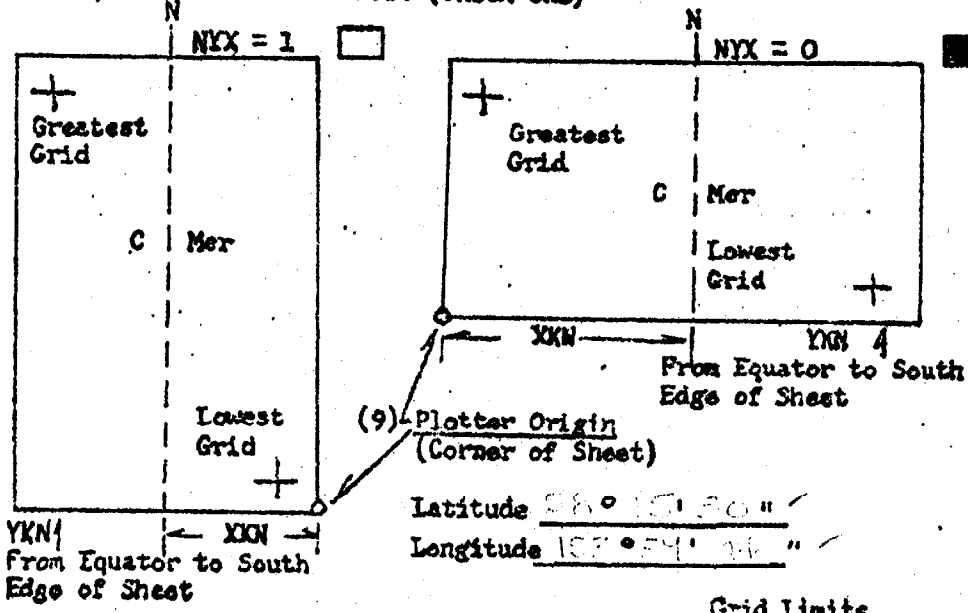
Respectfully submitted,



Richard D. Lynn  
Cartographic Technician  
June 11, 1975

PARAMETERS FOR DIGITAL COMPUTING  
CYCONIC PROJECTION

- (1) Project No. \_\_\_\_\_ (4) Requested by \_\_\_\_\_  
 (2) H No. 9201-21021 (5) Ship or Office RAN 1111  
 (3) Field No. 21021 (6) Date Required 1/20/50  
 (7) Visual  Ft. (0) or Fathoms (1)  (8) Electronic  (fill out form #3)  
 (10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). (Origin) 2012.870 Meters  
 (11) YKN (SP 24) Distance from Equator to South Edge of Sheet. (Origin) 1111.845 Meters  
 (12) Central Meridian 157° 08' 10.00"  
 (13) Survey Scale 1:50,000  
 (14) Size of Sheet (Check one) 36x60  42x60   
 (15) NYX, Orientation of sheet (Check one)



SHOULD BE OK. MAKE

0's ON EACH

Grid Limits	
(16) Greatest Latitude	<u>28° 10' 30"</u> (Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	<u>27° 00' 00"</u>
(18) Difference	<u>1° 10' 30"</u>
(21) Greatest Longitude	<u>157° 54' 14"</u>
(22) Lowest Longitude	<u>157° 00' 00"</u>
(23) Difference	<u>54' 14"</u>
(19)	<u>4</u> YSN
(24)	<u>21</u> "
(25)	<u>20</u> XSN



PROJECTION REQUEST

Form CPM32-1 (12/2/74)

H- 7201 OPR        Field No. PH-40-1-71  
 Requested by        ✓ by        Date Required       

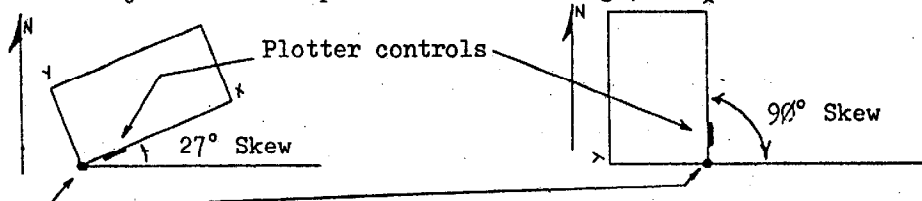
1	H	0	9	2	0	1									Alphanumeric Sheet Label.
14	1	3	9	Projection X Dimension (centimeters: <b>139</b> maximum). <sup>1</sup>											
18	0	9	4	Projection Y Dimension (centimeters: <b>100</b> maximum). <sup>1</sup>											
22	0	2	Projection Type: 01-Merc.; 02-Polyconic; 03-St. Plane; 04-Tr. Mercator.												
25	0	0	4	0	0	0	0	Scale. (e.g., <del>1:100,000</del> for 1:100,000)							
33	0	0	0	Skew. <sup>2</sup>											
37	0	0	0	0	Grid Interval: <del>0000</del> for standard Hydrographic Manual intervals.										
42	0	5	8	Degrees: (- for South)											
46	1	5	Minutes												
49	3	0	0	Seconds											
54	0	1	5	3	Degrees: (- for East)										
59	5	9	Minutes												
62	4	0	0	Seconds											
67	1	5	3	Degrees											
71	3	0	Minutes												
74	0	0	0	Seconds											
79		Number of Insets.													
80		3 Inch Hydro. Limit Border ( 1 if desired: for ship use only).													

Latitude of Projection Origin<sup>3</sup>.

Longitude of Projection Origin<sup>3</sup>.

Longitude of Central Meridian.

<sup>1</sup>Physical size of the projection. Sheet extends 2 cm beyond projection drawn.  
<sup>2</sup>Sheet Skew: The angle of skew is the counterclockwise angle, measured at the projection origin, which the parallel of latitude makes with that edge of the paper which is adjacent to the plotter controls. e.g.,



<sup>3</sup>Projection Origin: Note, this origin is not necessarily a grid intersection.

CONTROL REQUEST attached \_\_\_\_\_ (form CPM32-3).  
 LATTICE REQUEST attached \_\_\_\_\_ (form CPM32-2).  
 INSET REQUEST attached \_\_\_\_\_ (form CPM32-4).

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS

(RANGE - RANGE)

- (1) Project No. 412 (2) N. No. 924-B (3) Field No. PA-40-1-71
- (4) Type of Control: SHORAN, RAYDIST,  HI-FIX, RADAR  
 Frequency (for conversion of RAYDIST or HI-FIX lanes to meters) 1799.6 kHz
- (5) RANGE ONE (R1) Latitude 58° 23' 29.514"  
 Station Name Nuksoo Longitude 153° 57' 40.528"
- (6) RANGE TWO (R2) Latitude 00° 50' 49.117"  
 Station Name South Longitude 153° 17' 47.572"
- (7) Azimuth from R1 to R2 211° 6' ✓
- (8) Baseline Length in Meters 2272.17 M.
- (9) Location of survey with respect to Electronic Baseline: CHECK ONE  
 (To determine: imagine an observer standing at R1 and looking directly at R2 --- if the survey area is to the observer's LEFT then A is negative; if the survey area is to the observer's RIGHT then A is positive.)

         -A (minus)                               +A (plus)

- (10) if SHORAN corrections are applied by the equation,  $K(X) + C = D$ , where X is SHORAN distance and D is true distance, enter the Constant Coefficients of the equations here:

K(R1)         , C(R1)         , K(R2)         , C(R2)         .

- (11) Number of Velocity Tables to be used:

         None,          One,          More than one.

- (12)          This form is submitted only as an aid in preparing a boat sheet projection.

This form applies to all data on this survey.

         This form applies to part of the data on this survey -

Time and Date limitations: From          To         

Position Number Limitations: From          To         

This is Form #3 Sheet #          of          Sheets for this survey.

- (13) Other Remarks:



# -HYDRO B PARAMETER CARD

H-No \_\_\_\_\_  
 Field No \_\_\_\_\_  
 Date \_\_\_\_\_

PARAMETER CARD 1B (1)

MASTER KI	HYDRO NAME	LAT	LONG	DEG		MIN		SECOND		HOURS																												
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20															
SLAVE K1	Nokshok Island			57	52	54	39	19	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
SLAVE K2	Dark Island, 1971			57	52	54	39	19	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
SLAVE K3	Goat, 1971			57	52	54	39	19	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

FREQUENCY 1739.8  
 IDENTIFICATION NUMBER  
 YEAR OF SURVEY

H  
 Field No. 9201 (E) 21021  
 Date 1/18/71

**21021**

PARAMETER CARD II AND III

PARAMETER CARD II

Semi major axis of the earth	6,378,206.4	RDA	1 2 3 4 5 6 7 8 9 10
X Constant - Distance from central meridian to origin of plotter SP 5		YRN	11 12 13 14 15 16 17 18 19 20
Y Constant - Distance from equator to origin of plotter SP 2/1		YRN	21 22 23 24 25 26 27 28 29 30
Central Meridian of Projection		YRN	31 32 33 34 35 36 37 38 39 40
Plotter Scale/Survey Scale	*30498.6876	SCA	41 42 43 44 45 46 47 48 49 50
North/south axis of sheet - to correspond to (Y axis - 0)	0 - feet	NYX	
(X axis - 1) of plotter	1 - fathom	POF	51 52 53 54 55 56 57
Feet/Fathom indicator		JN	2 1 0
H Identification No.		YR	3 2 1 0 9 8 7

FOF - 1

PARAMETER CARD III

Lowest Lat. Intersection	58	16	00	YST	1 2 3 4 5 6 7 8 9 10
Lowest Long. Intersection	52	53	00	XST	11 12 13 14 15 16 17 18 19 20
Difference between Grid		0E		DXE	21 22 23 24 25 26 27 28 29 30
Interval (Long)				XSN	31 32 33 34
Interval (Lat)				YSN	0 9

Computed \_\_\_\_\_  
 Punched \_\_\_\_\_  
 Checked \_\_\_\_\_  
 Date \_\_\_\_\_

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 7(-12): Nukshak Island, Alaska

Period: April 28-July 28, 1971

HYDROGRAPHIC SHEET: 11-9201

OPR: 478

Locality: Shelikof Strait, (S.W.) Alaska

Plane of reference (mean lower low water) 8.0 feet  
~~xxxxxxx tide staff.~~

Height of Mean High Water above Plane of Reference is 12.6 ft.

Remarks: Hourly heights which were computed from the Seldovia observations have been entered for:

<u>Date</u>	<u>Hours</u>
July 23	1200-2000
July 25	1000-2000

*Entered in 1971 report*

*Robert W. Cumming*

Chief, Tides Branch

RAINIER  
RA-40-1-71  
H-2201  
TIME MERIDIAN - 135 WEST  
TIDE STATION - NUKSHAK ISLAND  
YEAR - 1971  
CORRECTIONS IN FATHOMS  
MLLW - 8.0 FEET ✓  
TIME SHIFT - 0000  
RANGE RATIO - ~~0000~~ 01.00

140800 00 1004 0000 164 0 140000 000000  
142000 00 1005  
143200 00 1006  
144400 00 1007  
145600 00 1008  
150800 00 1009  
152000 00 1010  
153200 00 1011  
154500 00 1012  
155800 00 1013  
161200 00 1014  
162700 00 1015  
164400 00 1016  
170000 00 1017  
080600 00 0001 0000 175 0 080000 000000  
081900 00 0002  
083400 00 0003  
085300 00 0004  
092700 00 0005  
095900 00 0006  
103200 00 0005  
105100 00 0004  
110700 00 0003  
112000 00 0002  
113200 00 0001  
114300 00 1000  
115300 00 1001  
120400 00 1002  
121400 00 1003  
122400 00 1004  
123200 00 1005  
124300 00 1006  
125200 00 1007  
130000 00 1008  
131500 00 1007 0000 176 0 130000 000000  
132600 00 1008  
133600 00 1009

*File with printouts*

134700	00	1010			
135800	00	1011			
140900	00	1012			
142100	00	1013			
143200	00	1014			
144500	00	1015			
145800	00	1016			
150000	00	1017			
141900	00	1007	0000	178	0 140000 000000
143200	00	1008			
144500	00	1009			
145800	00	1010			
151100	00	1011			
152400	00	1012			
153700	00	1013			
155200	00	1014			
160000	00	1015			
060400	00	1007	0000	190	0 060000 000000
061400	00	1006			
062400	00	1005			
063400	00	1004			
064400	00	1003			
065400	00	1002			
070500	00	1001			
071500	00	1000			
072600	00	0001			
073800	00	0002			
075100	00	0003			
080700	00	0004			
083000	00	0005			
094100	00	0006			
100600	00	0005			
102300	00	0004			
103800	00	0003			
105100	00	0002			
110300	00	0001			
111300	00	1000			
112300	00	1001			
113200	00	1002			
114100	00	1003			
115000	00	1004			
120000	00	1005			
120900	00	1006			
121900	00	1007			
122900	00	1008			
123900	00	1009			
124900	00	1010			
130000	00	1011			
131000	00	1012			
132000	00	1013			
133000	00	1014			



124100	00	1015	
135300	00	1016	
140600	00	1017	
142100	00	1018	
144000	00	1019	
150700	00	1020	
160300	00	1021	
162900	00	1020	
164800	00	1019	
170400	00	1018	
171800	00	1017	
173200	00	1016	
174500	00	1015	
175700	00	1014	
180900	00	1013	
182100	00	1012	
183400	00	1011	
184600	00	1010	
190000	00	1009	
191400	00	1008	
193000	00	1007	
194900	00	1006	
201200	00	1005	
210000	00	1004	
210300	00	1003	
215700	00	1004	
220000	00	1005	
120700	00	1006	0000 204 0 120000 000000
121800	00	1007	
122800	00	1008	
123900	00	1009	
124900	00	1010	
130000	00	1011	
131000	00	1012	
132100	00	1013	
133200	00	1014	
134300	00	1015	
135600	00	1016	
140900	00	1017	
142500	00	1018	
144400	00	1019	
151600	00	1020	
154400	00	1021	
161000	00	1020	
162400	00	1019	
163500	00	1018	
164600	00	1017	
165600	00	1016	
170500	00	1015	
171500	00	1014	
172400	00	1013	

173400	00	1012			
174200	00	1011			
175100	00	1010			
180000	00	1009			
180800	00	1008			
181600	00	1007			
182400	00	1006			
183200	00	1005			
184000	00	1004			
184800	00	1003			
185600	00	1002			
190500	00	1001			
191300	00	1000			
192200	00	0001			
193100	00	0002			
194000	00	0003			
195000	00	0004			
200000	00	0005			
080300	00	1006	0000	206	0 080000 000000
081500	00	1005			
082700	00	1004			
084100	00	1003			
085600	00	1002			
091600	00	1001			
094500	00	1000			
123100	00	0001			
120000	00	1000			
121900	00	1001			
133700	00	1002			
135200	00	1003			
140500	00	1004			
142000	00	1005			
143300	00	1006			
144600	00	1007			
150000	00	1008			
151300	00	1009			
152800	00	1010			
154300	00	1011			
160000	00	1012			
161900	00	1013			
164300	00	1014			
183000	00	1015			
190200	00	1014			
192800	00	1013			
195100	00	1012			

1/23/75

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 75-12): Nukshak Island

Period: July 17 - August 4, 1972

HYDROGRAPHIC SHEET: H9201

OPR: 478

Locality: Shelikof Strait, (S.W.), Alaska

Plane of reference (mean lower low water): 7.3 ft.

Height of Mean High Water above Plane of Reference is 12.6 ft.

Remarks: Zone direct on Nukshak Island.

*Gene R. Spillband*  
for Chief, Tides Branch

H-9201  
Smooth Tides  
1-30-75

1972 Only

Verifier's Copy

RAINIER  
RA-40-1-71  
H-9201  
H-9201  
TIME MERIDIAN -- 135  
TIDE STATION -- NUKSHAK ISLAND  
YEAR -- 1972  
CORRECTIONS IN FATHOMS  
MLLW CORRECTION -- 07.3 FEET ✓  
TIME SHIFT -- ZERO  
RANGE RATIO -- 01.00

200300 00 1018 0000 199 0 180000 000000  
203700 00 1017  
210200 00 1016  
212200 00 1015  
214100 00 1014  
220000 00 1013  
221700 00 1012  
223500 00 1011  
225200 00 1010  
231100 00 1009  
233000 00 1008  
235100 00 1007  
001500 00 1006 0000 200 0 000000 000000  
004400 00 1005  
013200 00 1004  
022700 00 1003  
031500 00 1004  
034600 00 1005  
041200 00 1006  
043500 00 1007  
045700 00 1008  
052000 00 1009  
054400 00 1010  
061100 00 1011  
064600 00 1012  
091200 00 1013  
094500 00 1012  
101400 00 1011  
104100 00 1010  
110700 00 1009  
113300 00 1008  
120300 00 1007  
124600 00 1006  
135900 00 1005  
150000 00 1006  
152400 00 1007

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154400 00 1008  
160300 00 1009  
162300 00 1010  
164300 00 1011  
170400 00 1012  
172500 00 1013  
174700 00 1014  
181300 00 1015  
184600 00 1016  
203800 00 1017  
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214300 00 1015  
220600 00 1014  
222500 00 1013  
224300 00 1012  
230100 00 1011  
232100 00 1010  
234100 00 1009  
000200 00 1008 0000 201 0 000000 000000  
002300 00 1007  
004800 00 1006  
012700 00 1005  
022600 00 1004  
035300 00 1003  
044100 00 1004  
051700 00 1005  
055000 00 1006  
061900 00 1007  
064600 00 1008  
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074200 00 1010  
084000 00 1011  
100600 00 1012  
105200 00 1011  
113300 00 1010  
120900 00 1009  
124200 00 1008  
132300 00 1007  
144200 00 1006  
153800 00 1007  
161600 00 1008  
164400 00 1009  
170900 00 1010  
173400 00 1011  
175700 00 1012  
182000 00 1013  
184500 00 1014  
192000 00 1015  
213900 00 1016  
221500 00 1015  
224300 00 1014

230600 00 1013  
232800 00 1012  
234900 00 1011  
000900 00 1010 0000 202 0 000000 000000  
002900 00 1009  
004900 00 1008  
011000 00 1007  
013300 00 1006  
020000 00 1005  
023500 00 1004  
040000 00 1003  
042400 00 1002  
052800 00 1003  
060000 00 1004  
062900 00 1005  
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170000 00 1008  
173100 00 1009  
190000 00 1010  
193000 00 1011 0000 203 0 000000 000000  
195300 00 1012  
201500 00 1013  
203600 00 1014  
210000 00 1015  
213100 00 1016  
234500 00 1017  
001600 00 1016 0000 204 0 000000 000000  
004000 00 1015  
010200 00 1014  
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013900 00 1012  
015600 00 1011  
021200 00 1010  
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030000 00 1007  
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035000 00 1004  
041000 00 1003  
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051400 00 1001

063700 00 1000  
071700 00 1001  
074500 00 1002  
080800 00 1003  
082700 00 1004  
084500 00 1005  
090300 00 1006  
092100 00 1007  
094000 00 1008  
100000 00 1009  
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111700 00 1012  
120000 00 1013  
062100 00 1010 0000 216 0 060000 000000  
064400 00 1011  
071000 00 1012  
074000 00 1013  
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165800 00 1012  
171500 00 1013  
173300 00 1014  
175100 00 1015  
180900 00 1016  
183000 00 1017  
185200 00 1018  
191900 00 1019  
200000 00 1020  
211600 00 1021  
214900 00 1020  
221400 00 1019  
223400 00 1018  
225300 00 1017  
230900 00 1016  
232400 00 1015  
233900 00 1014  
235400 00 1013  
000900 00 1012 0000 217 0 000000 000000  
002400 00 1011  
004000 00 1010



005600 00 1009  
011300 00 1008  
013100 00 1007  
014900 00 1006  
021100 00 1005  
023600 00 1004  
031300 00 1003

000000

212 000 1971  
opr 478

~~145400 00 0022 0001 164 0 000000 000000~~  
150215 00 0018  
~~153645 00 0015~~  
102200 00 0015 0001 175 0 000000 000000  
~~110230 00 0018~~  
110745 00 0015  
111300 00 0018  
114045 00 0015  
~~115415 00 0018~~  
133900 00 0022 0001 176 0 000000 000000  
~~134115 00 0018~~  
134545 00 0015  
~~145500 00 0015 0001 178 0 000000 000000~~  
153230 00 0018  
~~060200 00 0015 0001 190 0 000000 000000~~  
070400 00 0014  
071500 00 0015  
072400 00 0016  
173400 00 0022  
173530 00 0018  
~~174000 00 0015~~  
191030 00 0018  
191200 00 0015  
191500 00 0018  
192015 00 0022  
192500 00 0021  
~~192845 00 0017~~  
193400 00 0014  
193615 00 0017  
193915 00 0014  
194400 00 0015  
203545 00 0018  
~~203930 00 0022~~  
205845 00 0018  
210100 00 0015  
123800 00 0023 0001 204 0 000000 000000  
124700 00 0022  
125815 00 0021  
130200 00 0022  
130730 00 0021  
131230 00 0022  
131900 00 0021  
132015 00 0022  
135315 00 0021  
~~141850 00 0022~~  
145555 00 0021  
151505 00 0022  
154530 00 0023  
160315 00 0022  
162225 00 0023  
174330 00 0022  
174505 00 0023  
194300 00 0023

212 000 1971  
OPR-478  
VELOCITY TAPE

004000 0 0000 0001 000 000000 000000  
000060 0 1001 0003 000 000000 000000  
000900 0 0000  
001300 0 0001  
000070 0 0001 0004 000 000000 000000  
000800 0 0000  
001300 0 0001  
000050 0 1002 0005 000 000000 000000  
000300 0 1001  
001300 0 0000

212301 0 0025 0010 199 000000 000000  
000020 0 0025 0010 200 000000 000000  
000001 0 0025 0010 201 000000 000000  
000015 0 0025 0010 202 000000 000000  
014525 0 0025 0010 204 000000 000000  
112829 0 0025 0010 216 000000 000000

TE/TI 1972

Vel 1972

000340 0 0000 0003 000 000000 000000  
000620 0 1001  
000845 0 1002  
001060 0 1003  
000050 0 1001 0004 000 000000 000000  
000340 0 0000  
000620 0 1001  
000840 0 1002  
001060 0 1003  
000035 0 0000 0005 000 000000 000000  
000135 0 0001  
000415 0 0002  
000925 0 0003  
000340 0 0000 0006 000 000000 000000  
000620 0 1001  
000840 0 1002  
001060 0 1003  
000130 0 0001 0007 000 000000 000000  
000390 0 0002  
000935 0 0003  
000050 0 0000 0008 000 000000 000000  
000135 0 0001  
000425 0 0002  
000930 0 0003  
000025 0 0000 0009 000 000000 000000  
000130 0 0001  
000425 0 0002  
000920 0 0003  
001200 0 0004  
000085 0 0000 0010 000 000000 000000  
000225 0 0001  
000400 0 0002  
000675 0 0003  
001210 0 0004  
001510 0 0003  
001810 0 0002

PARAMETERS FOR H09201 (DATE: 06-10-75)

IDEN. NUMBER SHEET SIZE PROJ. SCALE SKEW GRID SHEET ORIGIN (LAT./LON.) CENTRAL MERIDIAN  
H09201 (139 94) 2 40000. 0. 120. 58 15 30.0 153 59 40.0 153 30 0.0  
EOP..

CONTROL FOR: COS201 DATE OF LISTING: 06-10-75

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PI OT CODE	NAME	STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
1	71	1	139	307.00	.60	0	MUKSHAK, RM-6 1971	38.1	1799.60	58 23 29.510	153 57 40.530
2	71	2	139	307.00	.60	0	SOUTH DOUGLAS, 1908	54.3	1799.60	58 50 49.120	153 17 47.570
3	71	1	139	307.00	.60	0		38.1	1799.60	58 23 29.510	153 57 40.530
4	71	3	139	307.00	.60	0	DARK 2, 1971	35.1	1799.60	58 38 34.320	152 32 32.050
5	71	1	139	307.00	.60	0		38.1	1799.60	58 23 29.510	153 57 40.530
6	71	4	139	307.00	.60	0	GAN, 1971	22.9	1799.60	57 52 56.190	153 39 46.740

FILE CERTIFIED CORRECT FOR PLOTTING BY:..... DATE:.....  
 EOF..

LATTICE FOR: L09201      DATE OF LISTING: 06-10-75

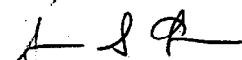
RECORD NUMBER	STATION 1	STATION 2	CENTER ARC SECTOR	ANG. SECTOR	ARC LENGTH	MINIMUM RATE	MAXIMUM RATE	LATTICE COLOR
1	1	0	0	0	0	0.00	320.00	RED
2	2	0	0	0	0	0.00	680.00	BLU
3	1	3	0	0	0	40.00	520.00	GRE
4	1	4	0	0	0	40.00	520.00	GRE

LFILF CERTIFIED CORRECT FOR PLOTTING BY:..... DATE:.....  
EOF..

APPROVAL SHEET

The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,



James S. Green  
Supervisory Cartographic Technician

Approved and forwarded,



Walter F. Forster, Cdr., NOAA  
Chief, Processing Division  
Pacific Marine Center

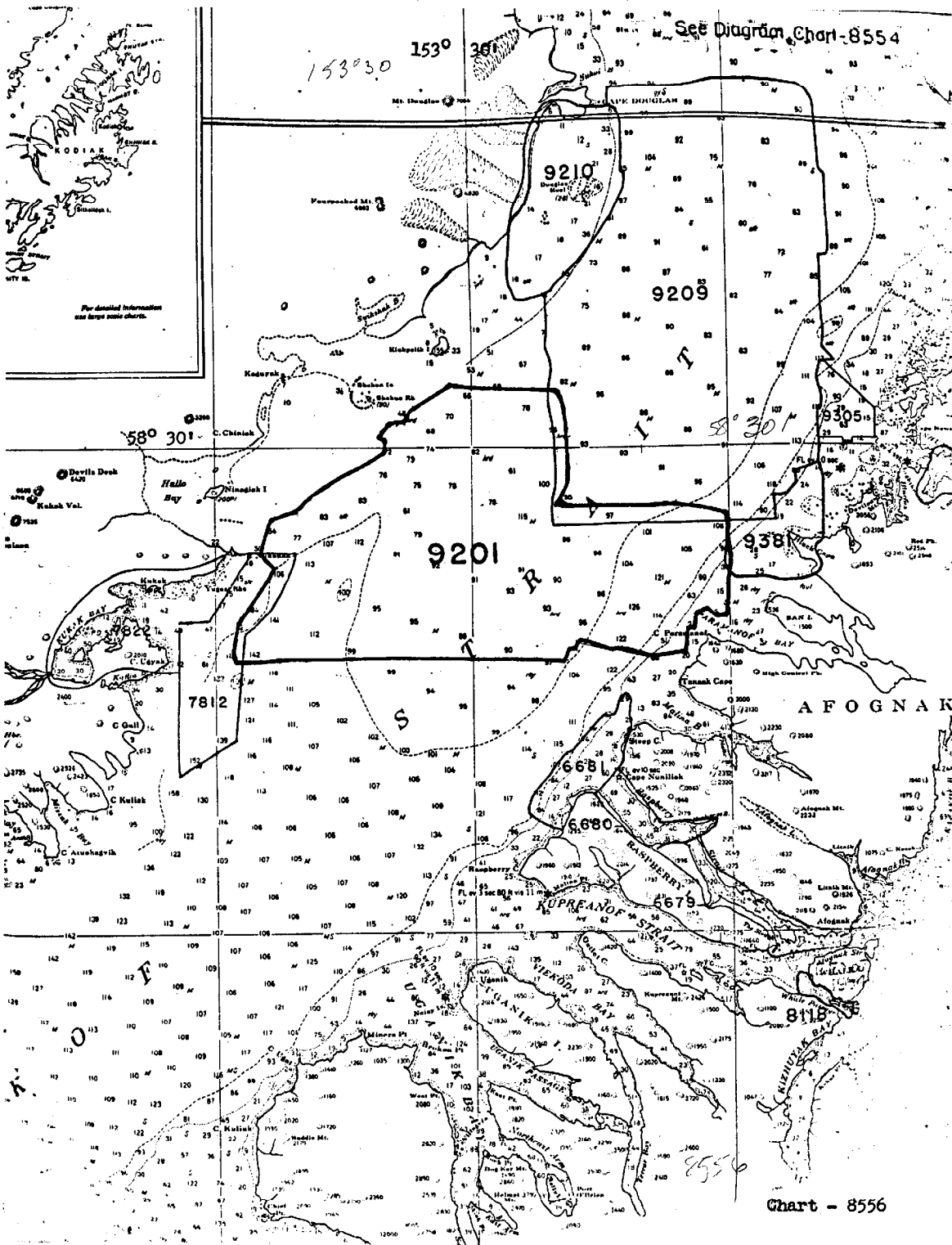


Chart - 8556



## RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9201

## 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
8556	8/6/75	Rennan	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. Exam no corrections
8500	6/15/77	Naitok	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 15 Exam thru 8556, no corr
8556	8/15/77	M. J. F. F. F.	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. App'd only skater seps to supplement presently charted hydro in common areas
16603 (8667)	7/7/78	J. A. Graham	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. Fully app'd Cat. #1 Survey in conjunction with charted soundings
8502	1/27/78	J. Bailey	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 24 (Fully applied as per 8502 history)
531 (8500)	8/6/79	Chen E. Stembel (Cat I)	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 16 Fully applied thru chart 16013/8502
16608	10/26/81	J. A. Graham	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 1 Fully applied hydro to new chart as a Cat. I survey.
16604	1/4/83	Milton G. Sayer	<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No. 14 Fully applied hydro thru chart 16608 and directly
			<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No.
			<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No.
			<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No.
			<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No.
			<del>Full Part Before After Verification Review Inspection</del> Signed Via Drawing No.
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