

8618

Diag. Cht. No. 8502-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PI-20-3-61 Office No. H-8618

LOCALITY

State ALASKA

General locality ALASKA-SOUTH COAST

Locality NIKISKI AREA, COOK INLET

1961

CHIEF OF PARTY

A. L. WARDWELL, CAPTAIN, USC & GS

LIBRARY & ARCHIVES

AUG 1 5 1963

DATE

USCOMM-DC 5067

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-8618

Field No. PF-20-3-61

State ALASKA

General locality **ALASKA-SOUTH COAST**

NIKISKI AREA, COOK INLET

Scale 1:20,000 Date of survey 17 May - 29 September 1961

Instructions dated 3 November 1960

Vessel USC & GS Ship PATHFINDER

Chief of party A. L. Wardwell, CAPT., C&GS, COMDG.

Surveyed by G.C. Saladin, D.C. McIntosh, L.L. Wilkerson, W.G. Stokes,
R.A. Trauschke

Soundings taken by fathometer, ~~Experiments made~~, ~~and~~ ~~work~~

Fathograms scaled by Ship Personnel

Fathograms checked by _____ Ship Personnel _____

Protracted by C. A. J. Pauw

Soundings penciled by C. A. J. Pauw

Soundings in fathoms at ~~XXXX~~ MILLW

REMARKS:

DESCRIPTIVE REPORT
To Accompany
HYDROGRAPHIC SURVEY
H-8618 (PF-20-3-61)

Scale 1:20,000
USC&GS Ship PATHFINDER

1961
A. L. Wardwell, Chief of Party

A. PROJECT

Special Project 1-61
Instructions dated 3 November 1960

B. AREA SURVEYED

The area surveyed is in Cook Inlet, Alaska, near East Foreland. The limits of hydrography on the south Latitude 60°31'N, the west Longitude 151°33'W, the north Latitude 60°46'N and junction with H-8530, scale 1:40,000 (1960) and on the west from Longitude 151°24'W south-easterly to approximately the five fathom curve to Latitude 60°38' thence south along Longitude 151°23'W to Latitude 60°31'N. This survey makes junctions with the following prior surveys:

H-3196	1910	scale 1:40,000
H-3198	1910	scale 1:20,000
H-3199	1910	scale 1:100,000
H-3210	1910	scale 1:40,000

C. SOUNDING VESSEL

The hydrography on this survey was accomplished by the Ship PATHFINDER, blue ink and capital letters, Launch No. 1, lower case blue, Launch No. 2, lower case violet, and Launch No. 3, lower case green.

D. SOUNDING EQUIPMENT

The Ship PATHFINDER was equipped with 808 type fathometers Nos. 130S, ✓ 52 and 57-29. The ship accomplished most of the hydrography up to about one-half mile off shore.

Launch No. 1 was equipped with 808 type No. 46.
Launch No. 2 was equipped with 808 type No. 74S.
Launch No. 3 was equipped with 808 type No. 57-23.

All launches worked inshore areas north of Latitude 60°38'N to the northern limit of the survey. During A,B,C,D and H days of the wire drag work the towing launches Nos. 1 and 2 operated their fathometers and the launch positions were incorporated into sounding lines.

Soundings obtained in this manner in the proximity of the Nikiski Fuel Pier, position 11e, Launch No. 1, should be disregarded because of the erratic maneuvering of the launches in avoiding the pier. — ✓ 146te

No copy of the fathometer report was furnished the Seattle Processing Office nor a tabulation of fathometer corrections. There is a statement in the rough notes furnished from the ship to the effect that fathometer corrections were obtained by standard methods.

✓ Pos. 11c, Launch 1
does not exist
on H-8618
Nor H-8617-
Assume this
was discredited
in field and
not obtained.
GKM

E. SMOOTH SHEET

The smooth sheet was hand constructed and checked by personnel of the Seattle Hydrographic Processing Unit, using standard methods of construction and checking.

F. CONTROL

The hydrography was controlled by shoran and visual fixes. All launch work was on visual fixes, using a combination of triangulation, photo-topo and hydrographic stations for control. Ship hydrography was run using visual, visual and one shoran arc and shoran for control. Visual ship work was limited to the northeast corner of the sheet, plus three north-south lines in the middle of the sheet. Due to the extreme difficulty in controlling the ship in tide rips and strong currents, it was decided to continue visual control but to run on one shoran arc from station KAL, which was erected on Kalgin Island. This proved impractical because of a discrepancy between the triangulation and the boat sheet location of photo-topo signals. (This problem did not affect the smooth sheet plotting and the shoran arc was only used as a crutch in questionable fixes.) Another shoran station, LAN, was erected on West Foreland and the balance of the hydrography was run on the two shoran stations.

✓ Shoran full stations fall outside the limits of the survey.

Shoran station KAL was located from EAST KALGIN 2, 1953, $04^{\circ}20'48''$ from NORTH KALGIN, 1908-1944 and 26.895 meters. Shoran station LAN was located from COST, 1961, $150^{\circ}31'15''$ from EAST FORELAND LIGHT, 1960 and 12.925 meters.

Shoran KAL Latitude $60^{\circ}29'08".6610$
Longitude $151^{\circ}50'07".2877$

Shoran LAN Latitude $60^{\circ}43'19".1921$
Longitude $151^{\circ}42'14".2507$

Signals located by photogrammetry were transferred from Shoreline Manuscripts T-12040, T-12045, T-12046 and T-12049. One signal, "EGG" was relocated by a review in the Washington Office. With the new location of that signal it was possible, in the Seattle Processing Office, to get a position for signals IVY and PEG, using a

✓ T-Sheet dates
(incorp manu)
(1960-1961)
GKM

combination of hydrographic cuts and photographic radial line. Signals NOG and SNO were relocated from the photographs. All signals now appear to give satisfactory results on the sounding lines.

G. SHORELINE

The shoreline was transferred and verified from the manuscripts listed under item F. No discrepancies were noted between photogrammetry and the hydrography, except the now resolved difference noted under F.

Because of the special nature of the survey, no attempt was made to develop the low-water line.

ROCK AWASH
WAS FOUND AT
Ø60-41.6, A 151-24.
(5dg Vol) GKM.

H. CROSSTLINES

The percentage of crosslines is in excess of 10 percent and, with one exception, are now in satisfactory agreement. All visual hydrography was plotted first, followed by the shoran work. In plotting the visual launch work on the northern part of the sheet, it was finally discovered that, even under the extreme current conditions that prevailed, the sounding lines were not going to give crossings. After the changes in signals, mentioned under item F, the lines do give crossings but the replotting of about 820 positions was necessary. Fortunately, though pricked through the cover sheet, they had not been inked, mostly because of the erratic lines and differences in depths at crossings.

The shoran calibration corrections computed worked out very well for the most part. There were a few lines that appeared to have been read one mile off, as noted below:

F day Position 177 to 201 Vol. 10, pages 32-37 ✓
G day Position 20 to 27 Vol. 10, pages 47-49
G day Position 103 to 119 Vol. 10, pages 64-68
U day Position 1 to 8 Vol. 19, pages 46-47
W day Position 1 to 11 Vol. 20, pages 19-21

The agreement attained with the above corrected sounding lines was satisfactory. Twenty-nine positions on T day, 137-164T, were rejected because of, apparently, deteriorating zero check on shoran. Positions 1 through 136T agree with adjacent lines and crossings with visual work. From position 137 on the discrepancies became more and more noticeable. As the area was already adequately covered, it seemed unwise to add more soundings of questionable location. Soundings on C day (Ship) appear to be consistently 1/2 to 3/4 of a fathom deeper when crossing A and B day (Ship) and a day Launch No. 1. No reasonable explanation for this discrepancy has been discovered. The position plotting on C day was checked; fathograms were inspected and tide reducers checked against tabulated hourly heights.

I. JUNCTIONS

(1960) H-8726/1963
junctioned
w/survey.
The junction with H-8530 to the west and north has been compared and found in good agreement.

J. COMPARISON WITH PRIOR SURVEYS

This survey was compared with prior surveys:

H-3196	1910	scale 1:40,000
H-3198	1910	scale 1:120,000
H-3199	1910	scale 1:100,000
H-3210	1910	scale 1:40,000

Considering the 50 years of time lapse between the prior survey and this modern one, the general agreement is remarkably good. Slight shifting of minor shoals shows only moderate variation in depths amounting to about 2 to 3 fathoms. Channels are virtually unchanged.

K. COMPARISON WITH CHART

This survey has been compared with Chart 8553, 5th Ed., April 30, 1962 and, in general, the agreement is good. At Latitude $60^{\circ}42'5$.5, Longitude $151^{\circ}32'0$ the chart shows a five-fathom shoal. This shoal was not proved on the present survey. The following is a list of shoal soundings noted from the smooth sheet:

<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u>	<u>Position</u>
$60^{\circ}40.38'$	$151^{\circ}27.38'$	2.9 fms.	59-60W (blue) ✓
$60^{\circ}40.66'$	$151^{\circ}27.45'$	2.6 fms.	55-56K (blue) ✓
$60^{\circ}42.28'$	$151^{\circ}30.23'$	4.7 fms.	16K (blue) ✓
$60^{\circ}42.78'$	$151^{\circ}29.63'$	4.4 fms.	247-248D (blue) ✓
$60^{\circ}38.72'$	$151^{\circ}26.41'$	4.9 fms.	16-17G (blue) ✓
$60^{\circ}44.33'$	$151^{\circ}23.08'$	3.9 fms.	15-16H 56-57B (green) ✓
$60^{\circ}42.67'$	$151^{\circ}28.52'$	4.8 fms.	(purple) 135-136D (blue) ✓
$60^{\circ}33.20'$	$151^{\circ}28.78'$	6.5 fms.	92-93R (blue) ✓

See section of Chart 8553 attached to this report for depth curve comparison.

L. ADEQUACY OF SURVEY

This survey appears complete and adequate to supersede prior surveys for charting, in the area surveyed. As stated in the Season's Report of the PATHFINDER, nothing was done about the charted PD rock mentioned in paragraphs 6 and 8 of the Instructions Special Project 1-61, dated 3 November 1960, to the PATHFINDER.

Awois
52188

RWD
2/45

M. AIDS TO NAVIGATION

The buoy N2 Latitude $60^{\circ}42.5'$, Longitude $151^{\circ}30.5'$, was not plotted on the smooth sheet, because only one angle was measured to it and no distance was recorded in the sounding records. This buoy is replaced annually and is only in position from May 1 to November 1 each year. No other floating aids to navigation are in the area of the survey.

✓
Vernier concurs
GKM

N. STATISTICS

Positions	Ship	Launch #1	Launch #2	Launch #3
Visual	1478	445	449	180
Shoran	2637			
Calibration	<u>86</u>	—	—	—
Totals	4301	445	449	180

Total positions on sheet = 5375

Nautical miles at sounding lines: Ship = 1412.8, Launch #1 = 97.0, Launch #2 = 83.6, and Launch #3 = 31.3. Total nautical miles of sounding lines = 1647.7. Square nautical miles covered = 77.7.

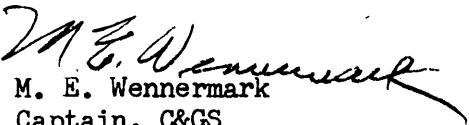
O. MISCELLANEOUS

This report was written in the Seattle Processing Office, using the smooth sheet, the PATHFINDER's Season Report and some meager rough notes by the ship for reference.

Respectfully submitted,


William M. Martin
Supervisory Cartographer

Approved and forwarded


M. E. Wennermark
Captain, C&GS
Seattle District Officer

SHORAN CALIBRATION FOR H-8618

The shoran calibration fixes were plotted upon a mylar overlay sheet which was firmly secured to the smooth sheet. All visual fixes were plotted using the smooth sheet locations of the hydrographic signals. All visual calibration fixes were then scaled from the smooth sheet shoran arcs. The shoran readings corrected for zero check were then compared to the scaled distances. Mean values for each day or set of calibration fixes were computed for the Rate and Drift stations.

A summation of mean plotting values at about 10 statute miles from the shoran station LAN and about 20 miles from station KAL was tabulated. This tabulation was divided into three groups to minimize the correction values. The mean value of each group for both the Rate and Drift stations were next plotted upon graph paper. Through each of these plotted points a line with a slope of 0.0018 mile/per mile was drawn. Only the high frequency (Rate) was used for LAN, and low frequency (Drift) for KAL, in computing corrections for the shoran readings.

Tables of correction values were next compiled from these graphs for both LAN and KAL. The appropriate dates to be used with each of the three sets of values were shown.

Set No. 1 was marked in green, No. 2 in red, and No. 3 in blue. In the sounding records the table number in appropriate color was shown to assist the checker in selecting the applicable tables.

All steps, including the final subtraction or addition of shoran corrections, have been checked.

Shoran station KAL was located by direction and distance from EAST KALGIN, 1953. LAN was located by direction and distance from COST, 1961. The directions and distances for both stations are shown under item F in the hydrographic Descriptive Report.

LAN	Latitude 60°43'19.1921"	Longitude 151°42'14.2507"
KAL	LATITUDE 60°29'08.6610"	Longitude 151°50'07.2877"

11-0010
Shoran Calibration Abstract
Ship set # 1192

LAN (Hi.Fr.) Rate

Zero set: 99.770

1030 1-09
KAL (Low Fr.) Drift

Zero set: 99.790

	Corrected Shoran Rgt.	Scaled (True) distance	δ		Corrected Shoran Rgt.	Scaled (True) distance	δ	
Aug. 3rd	10.412	10.448	+ .036	Aug 3rd	19.522	19.478	- .044	
	10.422	10.461	+ .039		19.526	19.480	- .046	
	10.429	10.471	+ .042		19.533	19.485	- .048	
	10.440	10.480	+ .040		19.534	19.490	- .044	
	10.556	10.598	+ .042		19.584	19.532	- .052	
	10.556	10.599	+ .043		19.584	19.538	- .046	
	10.556	10.602	+ .036		19.589	19.540	- .049	
	10.574	10.614	+ .040		19.592	19.542	- .050	
	Mean correction for LAN		E S 318		Mean correction for KAL		E S 379	
			+ .040				- .047	
Aug 6th	9.799	10.118	+ .119R	Aug 6th	19.886	19.800	- .086R	
	9.770	9.985	+ .015		19.894	19.841	- .053	
	9.730	9.952	+ .022		19.898	19.848	- .050	
	9.884	9.898	+ .014		19.899	19.839	- .060	
	9.845	9.856	+ .011		19.885	19.828	- .057	
	Mean correction for LAN		E S 4.062		Mean correction for KAL		E S - .220	
			+ .016				- .055	
Aug 11th	10.255	10.276	+ .019	Aug 11th	19.475	19.419	- .056	
	10.269	10.289	+ .020		19.453	19.400	- .053	
	10.284	10.300	+ .016		19.435	19.383	- .052	
	10.310	10.322	+ .012		19.414	19.355	- .059	
	10.409	10.420	+ .011		19.282	19.228	- .054	
	10.426	10.435	+ .009		19.257	19.203	- .054	
	10.442	10.452	+ .010		19.236	19.180	- .056	
	10.453	10.466	+ .013		19.217	19.165	- .052	
	Mean correction for LAN		E S + .110		Mean correction for KAL		E S - .436	
			+ .014				- .054	

	Corrected Station Read	Corrected Sodar Read (75m)	δ		Corrected Feetings	Corrected distances	δ	
Aug 17th	10.726 10.658 10.643 10.623	10.728 10.674 10.657 10.637	+ .022 + .016 + .014 + .014		Aug 17th 19.295 19.417 19.458 19.515	19.232 19.348 19.386 19.420	- .069 - .069 - .072 - .075	
			$\Sigma \delta$ +.066					
	Mean correction for LAN				Mean Correction for KAL			279
Aug 29th	09.870 09.837 09.793 09.759	09.882 09.855 09.810 09.777	+ .012 + .018 + .011 + .018	Aug 29th	19.972 20.009 20.055 20.100	19.914 19.956 19.998 20.044	- .058 - .053 - .057 - .056	
			$\Sigma \delta$ +.059					
	Mean correction for LAN				Mean Correction for KAL			- .056
Aug 30th	10.424 10.422 10.422 10.422	10.436 10.438 10.438 10.438	+ .012 + .016 + .016 + .016	Aug 30th	19.498 19.475 19.452 19.435	19.440 19.418 19.398 19.379	- .058 - .057 - .054 - .056	
			$\Sigma \delta$ +.060					
	Mean correction for LAN				Mean Correction for KAL			- .056
Sept 5th	10.405 10.421 10.434 10.445	10.428 10.440 10.457 10.472	+ .023 + .019 + .023 + .027	Sept 5th	19.766 19.790 19.813 19.833	19.720 19.738 19.758 19.780	- .046 - .052 - .055 - .053	
			$\Sigma \delta$ +.092					
	Mean Correction for LAN				Mean Correction for KAL			- .052
Sept 14th	10.007 9.997 9.994 9.993	10.021 10.017 10.008 10.008	+ .0014 + .020 + .014 + .015	Sept 14	19.552 19.543 19.532 19.518	19.499 19.489 19.472 19.460	- .053 - .054 - .060 - .058	
			$\Sigma \delta$ +.063					
	Mean Correction for LAN				Mean Correction for KAL			- .056

Corrected Storm Read	Scaled (True) Distance	δ	Corrected Storm Read	Scaled (True) Distance	δ
Sept 19th 10.032	10.048	+.016	Sept 19th 20.337	20.166	-.071
10.212	10.034	+.022	20.271	20.288	-.063
9.994	10.010	+.016	20.258	20.201	-.057
9.970	9.988	+.018	20.217	20.158	-.059
Mean Correction for LAN		E 5	Mean Correction for KAL		E 5
		+.072			-.250
		+.018			-.062
Sept 26 10.011	10.026	+.015	Sept 26 19.633	19.561	-.072
@ 1030 AM 9.994	10.009	+.015	@ 1030 AM 19.623	19.557	-.066
9.978	9.990	+.012	19.614	19.543	-.071
9.960	9.972	+.012	19.604	19.538	-.066
Mean Correction for LAN		E 5	Mean Correction for KAL		E 5
		+.054			-.275
		+.014			-.069
Sept 26 10.306	10.318	+.013	Sept 26 20.149	20.080	-.069
@ 0330 PM 10.302	10.312	+.010	@ 0330 PM 20.150	20.079	-.071
10.285	10.302	+.014	20.145	20.080	-.065
10.283	10.300	+.017	20.137	20.085	-.066
Mean Correction for LAN		E 5	Mean Correction for KAL		E 5
		+.053			-.271
		+.013			-.068

11/26/18
Shoran Calibration Abstract
Sho. Set F 1192

Scannings to obtain plotting values.

LAN Rate(Hi Fr) KAL Drift(Low Fr)

Vol & pg.	Date	Hi dist.	diff.		Min dist.	diff.	
Curve No. I							
9	59-61 8/6/61	9.907	+0.016		19.894	-0.055	
10	40-42 8/11/61	10.356	+0.014		19.361	-0.054	
14	5-7 8/29/61	9.816	+0.015		20.034	-0.056	
14	39-41 8/30/61	10.438	+0.015		19.465	-0.056	
15	62-64 9/14/61	9.998	+0.016		19.536	-0.056	
19	48-51 9/19/61	10.002	+0.018		20.246	-0.062	
	Sum	60.517	+0.094		118.521	-0.339	
	Mean	10.086	+0.016		19.754	-0.056	
Curve No. II							
13	37-39 8/17/61	10.658	+0.016		19.421	-0.070	
20	39-42 9/26/61	9.983	+0.014		19.618	-0.068	
20	51-58 9/26/61	10.295	+0.013		20.149	-0.068	
	Sum	30.936	+0.043		59.188	-0.207	
	Min	10.312	+0.014		19.729	-0.069	
Curve No. III							
15	41-42 9/5/61	10.426	+0.023		19.800	-0.052	
							✓wmj

H-8610
10-2

Shoran Corrections
from Graph Curves
Station LAN (Rate)

Zero set = 99.770

Graph curve I	Table 1	Table 2	Table 3	Dates used
Distance in miles				
5.10 - 10.65	+0.03	+0.02	+0.01	Aug. 6, 1961 " 11, 1961 " 29, 1961 " 30, 1961 Sept. 14 and 19, 1961
10.66 - 16.20	+0.02	+0.01	0.00	
16.21 - 21.75	+0.01	-0.00	-0.01	
21.76 - 25 +	0.00	-0.01	-0.02	
Graph curve II				
5.00 9.75	+0.03	+0.02	+0.01	Aug. 17, 1961 Sept. 26, 1961
9.76 15.30	+0.02	+0.01	0.00	
15.31 20.85	+0.01	-0.00	-0.01	
20.86 25 +	0.00	-0.01	-0.02	
Graph curve III				
9.35	+0.03	+0.02	+0.01	Sept. 5, 1961
9.36 14.90	+0.02	+0.01	0.00	
14.91 20.45	+0.01	0.00	-0.01	
20.46 25 +	0.00	0.01	-0.02	
Rate Station zero check between				
			99.756 and 99.765 = Table 1	
			99.766 and 99.775 = Table 2	
			99.776 and 99.785 = Table 3	

H-8618
 Shoreline Corrections
 from Graph Cards
 Station KAL (Drift)

2092

Zero set = 99.790

	Graph curve I					Dates used
Distance in miles		Table 1	Table 2	Table 3		
7.91 - 13.45		-0.02	-0.03	-0.04	}	Aug. 6, 11, 29 & 30, 1961 Sept. 14 & 19, 1961
13.46 19.00		-0.03	-0.04	-0.05		
19.01 24.55		-0.04	-0.05	-0.06		
Graph curve II						
6.41 - 11.95		-0.03	-0.04	-0.05	}	Aug. 17, 1961 Sept 26, 1961
11.96 - 17.50		-0.04	-0.05	-0.06		
17.51 - 23.05		-0.05	-0.06	-0.07		
23.05 -		-0.06	-0.07	-0.08		
Graph curve III						
4.96 - 10.50		-0.01	-0.02	-0.03	}	Sept. 5, 1961
10.51 - 16.05		-0.02	-0.03	-0.04		
16.06 - 21.60		-0.03	-0.04	-0.05		
21.61 -		-0.04	-0.05	-0.06		
Drift Station Zero Check between					99.766 and 99.775 = Table 1	
" "	" "	" "	" "	" "	99.776 and 99.785 = Table 2	
" "	" "	" "	" "	" "	99.786 and 99.795 = Table 3	

LIST OF SIGNALS FOR H-8617 AND H-8618

ANN	-	T-12045
BOO	-	BOO 1961
CAL	-	T-12046
DER	-	BOULDER 1909
EGG	-	T-12046
FOR	-	EAST FORELAND LIGHT 1960
GUN	-	T-12045
HAV	-	T-12045
HIT	-	T-12049
IVY	-	Vols. 5 & 6 H-8618
JOE	-	T-12046
JUG	-	T-12045
KAL	-	KAL SHORAN 1961
KEN	-	KENAI CHURCH STEEPLE 1909
LAC	-	T-12046
LAN	-	LAN SHORAN 1961
LIZ	-	T-12046
LOR	-	T-12049
MER	-	T-12046
NAG	-	T-12049
NEW	-	T-12045
NOG	-	T-12046
NOW	-	T-12049
NUT	-	T-12049
PEG	-	Vol. 4, pg. 27 H-8618
POINT	-	POINT 1910
RAT	-	T-12049
RISE	-	RISE 1910
SET	-	T-12049
SIN	-	T-12049
SNO	-	T-12046

TAN	-	KENAI TANK 1959-1961
TAR	-	T-12040
TAY	-	T-12046
TRY	-	T-12045
VEL	-	T-12045
WAT	-	T-12049
WIL	-	T-12045

TIDE NOTE
To Accompany
H-8618

A pressure-type portable tide gage was installed on the Nikiski Fuel Pier at Latitude $60^{\circ}41.03'$, Longitude $151^{\circ}23.65'$.

Two tide zones were used to reduce soundings with the dividing line being Latitude $60^{\circ}35.0'$. North of that line the tides from the gage were uncorrected. South of the line a zero height correction and a minus 30 minutes correction was used. MLLW on the staff was 8.3 (12.3 on the marigram). 150 Meridian time was used.

1961

FINAL TIDES

NIKISKI (COOK INLET ALASKA

OBSERVED & INFERRRED TIDES
for Hydro

Sheet No. PF-20-2-61

HYDROINFERRRED TIDES, NIKISKI (Cook Inlet) ALASKA17 MAY 1961

COL. A is tides for North of LAT. $60^{\circ} 35'$, COL. B is for South of LAT. $60^{\circ} 35'$

/ COL A // COL B /

TIME	TIDE HEIGHT (FMS)	TIME
0755 to 0805	+ 2.0	0725 to 0735
0818	+ 1.8	0748
0829	+ 1.6	0759
0841	+ 1.4	0811
0853	+ 1.2	0823
0903	+ 1.0	0833
0918	+ 0.8	0848
0933	+ 0.6	0903
0952	+ 0.4	0922
1012	+ 0.2	0942
1037	0.0	1007
1112	- 0.2	1042
1223	- 0.4	1152
1253	- 0.2	1223
1311	0.0	1241
1329	+ 0.2	1259
1345	+ 0.4	1315
1358	+ 0.6	1328
1412	+ 0.8	1342
1426	+ 1.0	1356
1439	+ 1.2	1409
1453	+ 1.4	1423
1507	+ 1.6	1437
1521	+ 1.8	1451
1535	+ 2.0	1505
1548	+ 2.2	1518
1601	+ 2.4	1531
1618	+ 2.6	1548
1640	+ 2.8	1610
1710	+ 3.0	1640
1810	+ 3.2	1740

Comp. By ACMCv By PACTYPED By NCPMCv By PAC

HYDROOBSERVED TIDES, NIKISKI (COOK INLET) ALASKA

COL. A is for tides NORTH of LAT. $60^{\circ}35'$, COL.B is for SOUTH of LAT. $60^{\circ}35'$

24 MAY 1961

/ <u>COL. A</u> /	TIDE HEIGHT (FMS)	/ <u>COL. B</u> /
TIME	TIME	TIME
0923 to 1000	+ 2.2	0853 to 0930
1045	+ 2.4	1015
1240	+ 2.6	1210
1324	+ 2.4	1254
1359	+ 2.2	1329
1430	+ 2.0	1400
1459	+ 1.8	1429
Comp. By DCM ^c	1530	1500
✓ By KGG	1600	1530

26 MAY 1961

1003 to 1021	+ 1.8	0933 to 0951
1043	+ 2.0	1013
1102	+ 2.2	1032
1128	+ 2.4	1058
1159	+ 2.6	1129
1235	+ 2.8	1205
1413	+ 3.0	1343
1449	+ 2.8	1419
1512	+ 2.6	1442
1538	+ 2.4	1508
Comp. By KGG	1559	1529
✓ By JPW		

28 MAY 1961

1044 to 1058	+ 1.2	1014 to 1028
1112	+ 1.4	1042
Comp. By KGG	1128	1058
✓ By JPW	1141	1111

6 JUNE 1961

1143 to 1204	+ 2.4	1113 to 1134
Comp. By JPW	1225	1155
	1245	1215

✓ By DCM^c7 JUNE 1961

0712 to 0730	+ 1.6	0642 to 0700
0750	+ 1.8	0720
Comp. By KGG	0810	0740
✓ By JPW	0831	0801
	0858	0828
	0928	0858

Typed By DCM^c
✓ By PAC.

HYDROOBSERVED TIDES. NIKISKI (COOK INLET) ALASKACOL.A is for tides NORTH of LAT. $60^{\circ}35'$, COL.B is for tides SOUTH of LAT. $60^{\circ}35'$

/— COL.A —/	<u>29 MAY 1961</u>	/— COL.B —/
TIME	TIDE HEIGHT (FMS)	TIME
0820 to 0851	+ 0.2	0750 to 0821
0958	- 0.4	0928
1022	- 0.2	0952
1036	0.0	1006
1046	+ 0.2	1016
1056	+ 0.4	1026
1107	+ 0.6	1037
1118	+ 0.8	1048
1131	+ 1.0	1101
1142	+ 1.2	1112
1153	+ 1.4	1123
1206	+ 1.6	1136
1220	+ 1.8	1150
1234	+ 2.0	1204
1248	+ 2.2	1218
1302	+ 2.4	1232
1318	+ 2.6	1248
1335	+ 2.8	1305
1354	+ 3.0	1324
1419	+ 3.2	1349
1447	+ 3.4	1417
1612	+ 3.6	1542
1643	+ 3.4	1613
<u>11 JUNE 1961</u>		
0933 to 0948	+ 0.2	0903 to 0918
1003	+ 0.4	0933
1016	+ 0.6	0946
1028	+ 0.8	0958
1043	+ 1.0	1013
1056	+ 1.2	1026
1110	+ 1.4	1040
1126	+ 1.6	1056
1140	+ 1.8	1110
1155	+ 2.0	1125
1213	+ 2.2	1143
1229	+ 2.4	1159
1247	+ 2.6	1217
1306	+ 2.8	1236
1330	+ 3.0	1300
1357	+ 3.2	1327
1547	+ 3.4	1517

Comp By JPW

✓ By DCM

Typed By DCM

✓ By ~~PAC~~^{PPAC}

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKA

COL.A is for tides NORTH of LAT. $60^{\circ}35'$, COL.B is for tides SOUTH of $60^{\circ}35'$ / COL. A _____ // COL. B _____ /

TIME

TIDE HEIGHT (FMS)

TIME

14 JUNE 1961

0845 to 0900	+ 0.6	0815 to 0830
0920	+ 0.4	0850
0940	+ 0.2	0910
0959	0.0	0929
1023	- 0.2	0953
1104	- 0.4	1034
1132	- 0.2	1102
1153	0.0	1123
1207	+ 0.2	1137

15 JUNE 1961

0916 to 0933	+ 0.6	0846 to 0903
0950	+ 0.4	0920
1007	+ 0.2	0937
1036	- 0.0	1006
1204	- 0.2	1134
1218	0.0	1148
1233	+ 0.2	1203
1248	+ 0.4	1218
1302	+ 0.6	1232
1314	+ 0.8	1244
1327	+ 1.0	1257
1341	+ 1.2	1311
1354	+ 1.4	1324
1408	+ 1.6	1338
1423	+ 1.8	1353
1437	+ 2.0	1407
1452	+ 2.2	1422
1508	+ 2.4	1438
1529	+ 2.6	1459
1548	+ 2.8	1518
1611	+ 3.0	1541
1643	+ 3.2	1613
1817	+ 3.4	1747

Comp B_y JPWv B_y DCM^cTyped B_y DCM^cv B_y PAC

HYDRO

OBSERVED TIDES, NIKISKI (Cook Inlet), ALASKA

COL. A is tides for North of LAT. $60^{\circ} 35'$ Col. B. is for South of LAT. $60^{\circ} 35'$

/ COL. A /16 JUNE 1961/ COL. B. /

TIME

TIDE HEIGHT (fathoms)

TIME

0417 to 0546	+ 3.4
0613	+ 3.2
0635	+ 3.0
0657	+ 2.8
0716	+ 2.6
0734	+ 2.4
0753	+ 2.2
0811	+ 2.0
0827	+ 1.8
0843	+ 1.6
0900	+ 1.4
0918	+ 1.2
0936	+ 1.0
0954	+ 0.8
1011	+ 0.6
1029	+ 0.4
1051	+ 0.2
1119	+ 0.0
1219	- 0.2
1252	0.0
1306	+ 0.2
1320	+ 0.4
1334	+ 0.6
1347	+ 0.8
1403	+ 1.0
1417	+ 1.2
1431	+ 1.4
1444	+ 1.6
1458	+ 1.8
1515	+ 2.0
1533	+ 2.2
1551	+ 2.4
1611	+ 2.6
1635	+ 2.8

0347 to 0516

0543

0605

0627

0646

0704

0723

0741

0757

0813

0830

0848

0906

0924

0941

0959

1021

1049

1149

1222

1236

1250

1304

1317

1333

1347

1401

1414

1428

1445

1503

1521

1541

1605

Comp BY J PW

✓ BY NCM

TYPED BY dCZ

✓ BY PAC

HYDROOBSERVED TIDES, NIKISKI (COOK INLET), ALASKA

COL.A is tides for NORTH of LAT. $60^{\circ}35'$ COL.B is tides for SOUTH of LAT. $60^{\circ}35'$

/—COL. A—/

TIME TIDE HEIGHT (FMS)

/—COL. B—/

21 JUNE 1961

1040 to 1115	+ 2.4	1010 to 1045
1147	+ 2.2	1117
Comp. By J PW	1219	1149
✓ By dCmc	1249	1219
1322	+ 1.8	1252
1354	+ 1.6	1324
1433	+ 1.4	1403

22 JUNE 1961

0944 to 1156	+ 2.6	0914 to 1126
1238	+ 2.4	1208
Comp. By KGG	1308	1238
✓ By J PW	1338	1308

23 JUNE 1961

0714 to 0740	+ 1.2	0642 to 0710
0803	+ 1.4	0733
Comp. By KGG	0829	0759
✓ By J PW	0852	0822

24 JUNE 1961

0737 to 0806	+ 0.8	0707 to 0736
0831	+ 1.0	0801
0853	+ 1.2	0823
Comp. By J PW	0913	0843
✓ By dCmc	0931	0901
0949	+ 1.4	0919
1008	+ 1.6	0938
1032	+ 2.0	1002
1100	+ 2.2	1030
1130	+ 2.4	1100
1224	+ 2.6	1154
1331	+ 2.8	1301

TYPED BY dCmc

✓ BY PAC

HYDROOBSERVED TIDES, NIKISKI (COOK INLET), ALASKA

COL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/ COL. A /
TIME

TIDE HEIGHT (FMS)

/ COL. B /
TIME

27 JUNE 1961

0300 to 0324	+ 3.4	0230 to 0254
0342	+ 3.2	0313
0358	+ 3.0	0328
0414	+ 2.8	0344
0430	+ 2.6	0400
0445	+ 2.4	0415
0500	+ 2.2	0430
0516	+ 2.0	0446
0531	+ 1.8	0501
0547	+ 1.6	0517
0601	+ 1.4	0531
0617	+ 1.2	0547
0632	+ 1.0	0602
0647	+ 0.8	0617
0701	+ 0.6	0631
0716	+ 0.4	0646
0733	+ 0.2	0703
0752	+ 0.0	0722
0815	- 0.2	0745
0944	- 0.4	0914
1001	- 0.2	0931
1013	0.0	0943
1026	+ 0.2	0956
1039	+ 0.4	1009
1051	+ 0.6	1021
✓ By WTS 1103	+ 0.8	1033
1116	+ 1.0	1046
TYPED BY DCM 1128	+ 1.2	1058
1140	+ 1.4	1110
1153	+ 1.6	1123
✓ By PAC 1204	+ 1.8	1134
1218	+ 2.0	1148
1232	+ 2.2	1202
1248	+ 2.4	1218
1304	+ 2.6	1234
1321	+ 2.8	1251
1340	+ 3.0	1310
1406	+ 3.2	1336
1450	+ 3.4	1420
1524	+ 3.6	1454
1611	+ 3.4	1541
1636	+ 3.2	1606
1654	+ 3.0	1624
1710	+ 2.8	1640
1728	+ 2.6	1658
1742	+ 2.4	1712
1757	+ 2.2	1727
1814	+ 2.0	1744

HYDROOBSERVED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /
TIME

TIDE HEIGHT (FMS)

/ COL. B /
TIME27 JUNE 1961, cont.

1815 to 1832

+ 1.8

1745 to 1802

1850

+ 1.6

1820

TYPED BY NCMC

1908

+ 1.4

1838

1925

+ 1.2

1855

v By PAC

1946

+ 1.0

1916

2010

+ 0.8

1940

2141

+ 0.6

2111

28 JUNE 1961

0418 to 1435

+ 3.2

0348 to 0405

0435 to 0450

+ 3.0

0420

0503

+ 2.8

0433

0517

+ 2.6

0447

0531

+ 2.4

0501

0545

+ 2.2

0515

0559

+ 2.0

0529

0613

+ 1.8

0543

0627

+ 1.6

0557

0641

+ 1.4

0611

0655

+ 1.2

0625

0709

+ 1.0

0639

0722

+ 0.8

0652

Comp By NCMC

0737

+ 0.6

0707

v By WTS

0750

+ 0.4

0720

TYPED BY NCMC

0806

+ 0.2

0736

0822

0.0

0752

v By PAC

0842

- 0.2

0812

0903

- 0.4

0833

1029

- 0.6

0959-0859 self

1044

- 0.4

0924

1055

- 0.2

1025

1106

0.0

1036

1118

+ 0.2

1048

1129

+ 0.4

1059

1140

+ 0.6

1110

1151

+ 0.8

1121

1201

+ 1.0

1131

1213

+ 1.2

1143

1224

+ 1.4

1154

1236

+ 1.6

1206

1247

+ 1.8

1217

1258

+ 2.0

1228

1309

+ 2.2

1239

1321

+ 2.4

1251

1338

+ 2.6

1308

1355

+ 2.8

1325

1413

+ 3.0

1343

1433

+ 3.2

1403

1429-1459

+ 3.4

1429

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /
TIME

TIDE HEIGHT (FMS)

/ COL. B /
TIME8 AUGUST 1961

1403 to 1530

+ 3.2

1336 to 1500³

1601 + 3.0

1531

1621 + 2.8

1551

1642 + 2.6

1612

1703 + 2.4

1633

1723 + 2.2

1653

Comp By UCMC

1742 + 2.0

1712

1803 + 1.8

1733

v By WTS

1824 + 1.6

1754

1849 + 1.4

1819

1913 + 1.2

1843

1946 + 1.0

1916

2104 + 0.8

2034

2136 + 0.6

2106

2153 + 1.2

2123

2210 + 1.4

2140

2228 + 1.6

2158

2247 + 1.8

2217

2306 + 2.0

2236

2324 + 2.2

2254

2343 + 2.4

2313

2403 + 2.6

2333

2425 + 2.8

2355

comp ^{ONC}
, ONC

2443 + 3.0 -

2413 ✓

12 AUGUST 1961

0857 to 0916

+ 0.4

0827 to 0846

0937 + 0.2

0907

1001 0.0

0931

1113 - 0.2

1043

1133 0.0

1103

Comp By UCMC

1148 + 0.2

1118

v By d.l.

1201 + 0.4

1131

1214 + 0.6

1144

1228 + 0.8

1158

1240 + 1.0

1210

1253 + 1.2

1223

1307 + 1.4

1237

1319 + 1.6

1249

1332 + 1.8

1302

1344 + 2.0

1314

1359 + 2.2

1329

1414 + 2.4

1344

1430 + 2.6

1400

1448 + 2.8

1418

TYPED BY UCMC

v BY PAC

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKA

COL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ /—COL. A—/

TIME TIDE HEIGHT (FMS)

/—COL. B—/

TIME

11 AUGUST 1961

0907 to 1100	0.0	0837 to 1030
1118	+ 0.2	1048
1132	+ 0.4	1102
1144	+ 0.6	1114
1158	+ 0.8	1128
1211	+ 1.0	1141
1223	+ 1.2	1153
1236	+ 1.4	1206
1249	+ 1.6	1219
✓ By DS	1301	1231
	1317	1247
	1333	1303
TYPED By H.C.Mc	1348	1318
	1403	1333
✓ By PAC	1422	1352
	1443	1413
	1597	1437
	1718	1648
	1742	1712
	1803	1733
	1818	1748
	1834	1804
	1849	1819
	1906	1836
	1923	1853
	1942	1912
	1959	1929
	2018	1948
	2037	2007
	2102	2032
	2129	2059
	2303	2233
	2323	2253
	2338	3308

16 AUGUST 1961

1353 to 1410	+ 0.8
1205 - 1308 + 0.2	1427
1304 - 1334 + 0.4	1442
1335 - 1352 + 0.6	1459
B7 PAC	1516
✓ B4 D.C.MC	1532
	1549
	1604
	1623
	1640
	1702
	1728
	1900

1323 to 1340	
1357	1135 - 1238 + 0.2
1412	1239 - 1304 + 0.4
1429	1305 - 1322 + 0.6
1446	B7 PAC
1502	✓ B4 D.C.MC

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKA

COL. A is for tides NORTH of LAT. $60^{\circ}35'$ COL. B is for tides SOUTH of LAT. $60^{\circ}35'$ /—COL. A—/

TIME

/—COL. B—/

TIME

17 AUGUST 1961

0904 to 0925	+ 2.4	0834 to 0855
0945	+ 2.2	0915
1006	+ 2.0	0936
1026	+ 1.8	0956
1047	+ 1.6	1017
1106	+ 1.4	1036
1126	+ 1.2	1056
Com'd By NCMC		
1148	+ 1.0	1118
1213	+ 0.8	1143
v By WTS		
1300	+ 0.6	1230
1353	+ 0.4	1323
TYPED BY NCMC		
1416	+ 0.6	1346
1435	+ 0.8	1405
v By PAC		
1454	+ 1.0	1424
1517	+ 1.2	1447
1536	+ 1.4	1506
1555	+ 1.6	1525
1613	+ 1.8	1543
1632	+ 2.0	1602
1651	+ 2.2	1620/1
1713	+ 2.4	1643
1735	+ 2.6	1705
1800	+ 2.8	1730
1836	+ 3.0	1806
2031	+ 3.2	2001
2104	+ 3.0	2034
2128	+ 2.8	2058
2151	+ 2.6	2121
2211	+ 2.4	2141
2231	+ 2.2	2201
2251	+ 2.0	2221
2311	+ 1.8	2241
2330	+ 1.6	2300
2349	+ 1.4	2319

19 AUGUST 1961

0907 to 0956	+ 2.8	0837 to 0926
1046	+ 2.6	1016
1115	+ 2.4	1045
1143	+ 2.2	1113
1212	+ 2.0	1143
1240	+ 1.8	1210
1309	+ 1.6	1239
1342	+ 1.4	1312
1440	+ 1.2	1410
1522	+ 1.0	1452
1616	+ 1.2	1546
1648	+ 1.4	1618

HYDROOBSERVED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /

TIME

TIDE HEIGHT (FMS)

/ COL. B /

TIME

29 AUGUST 1961

1356 to 1407	+ 1.2	1326 to 1337
1417	+ 1.4	1347
1427	+ 1.6	1357
1438	+ 1.8	1408
1448	+ 2.0	1418
1459	+ 2.2	1429
1511	+ 2.4	1441
1524	+ 2.6	1454
1539	+ 2.8	1509
1555	+ 3.0	1525
1612	+ 3.2	1542
1630	+ 3.4	1600
1649	+ 3.6	1619
1715	+ 3.8	1645
1852	+ 4.0	1822
1917	+ 3.8	1847
1935	+ 3.6	1905
1951	+ 3.4	1921
2006	+ 3.2	1936
2019	+ 3.0	1949
2032	+ 2.8	2002
2044	+ 2.6	2014
2057	+ 2.4	2027
2110	+ 2.2	2040
2123	+ 2.0	2053
2138	+ 1.8	2108
2152	+ 1.6	2122
2207	+ 1.4	2137
2221	+ 1.2	2151
2236	+ 1.0	2206
2250	+ 0.8	2220
2305	+ 0.6	2235
2322	+ 0.4	2252
2342	+ 0.2	2312

Com'd By dcm

✓ By WJS

TYPED BY MCM

✓ By PAC

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKA

COL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /
TIME

TIDE HEIGHT (FMS)

/ COL. B /
TIME30 AUGUST 1961

0530 to 0730	+ 3.6	0500 to 0700
0752	+ 3.4	0722
0807	+ 3.2	0737
0823	+ 3.0	0753
0838	+ 2.8	0808
0852	+ 2.6	0822 1
0907	+ 2.4	0837
0922	+ 2.2	0852
0937	+ 2.0	0907
0953	+ 1.8	0923
1009	+ 1.6	0939
1025	+ 1.4	0955
1041	+ 1.2	1011
1057	+ 1.0	1027
1116	+ 0.8	1046
1134	+ 0.6	1104
1155	+ 0.4	1125
1221	+ 0.2	1151
1310	0.0	1240
1332	+ 0.2	1302
1347	+ 0.4	1317
1401	+ 0.6	1331
1414	+ 0.8	1344
1426	+ 1.0	1356
1440	+ 1.2	1410
1452	+ 1.4	1422
1505	+ 1.6	1435
1518	+ 1.8	1448
1531	+ 2.0	1501
1543	+ 2.2	1513
1555	+ 2.4	1525

Comp. By MCP
 ✓ By WTS
 TYPED BY MCP
 ✓ BY PAC

HYDRO

OBSERVED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /
TIME

TIDE HEIGHT (FMS)

/ COL. B /
TIME31 AUGUST 1961

1136 to 1157	+ 1.2	1106 to 1127
1222	+ 1.0	1152
1248	+ 0.8	1218
1419	+ 0.6	1349
1438	+ 0.8	1408
1456	+ 1.0	1426
1511	+ 1.2	1441
1528	+ 1.4	1458
1544	+ 1.6	1514
1601	+ 1.8	1531
1619	+ 2.0	1549
1637	+ 2.2	1607
1654	+ 2.4	1624
1713	+ 2.6	1643
1733	+ 2.8	1703
1756	+ 3.0	1726
1821	+ 3.2	1751
1910	+ 3.4	1840
2024	+ 3.6	1954
2105	+ 3.4	2035
2126	+ 3.2	2056
2144	+ 3.0	2114
2200	+ 2.8	2130
2217	+ 2.6	2147
2233	+ 2.4	2203
2251	+ 2.2	2221
2308	+ 2.0	2238
✓ 2335	+ 1.8	2305 ✓ D.W.C.
✓ 2343	+ 1.6	2313 ✓ D.W.C.

5 SEPTEMBER 1961

0750 to 0823	+ 0.6	0720 to 0753
0847	+ 0.8	0817
0907	+ 1.0	0837
0928	+ 1.2	0858
0949	+ 1.4	0919
1010	+ 1.6	0940
1031	+ 1.8	1001
1051	+ 2.0	1021
1112	+ 2.2	1042
1135	+ 2.4	1105
1204	+ 2.6	1134
1222	+ 2.8	1152 ✓ D.W.C.

COMP. BY ALCMC✓ BY WTSTYPED BY ALCMC✓ BY PAC.

HYDROINFERRRED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/ COL. A /	TIDE HEIGHT (FMS)	/ COL. B /
TIME		TIME

14 SEPTEMBER 1961

0600 to 0612	+ 3.4	0530 to 0542
0656	+ 3.2	0626
0724	+ 3.0	0654
0748	+ 2.8	0718
0804	+ 2.6	0734
0819	+ 2.4	0749
0834	+ 2.2	0804
0849	+ 2.0	0819
0905	+ 1.8	0835
0923	+ 1.6	0853
0944	+ 1.4	0914
1008	+ 1.2	0938
1035	+ 1.0	1005
1108	+ 0.8	1038
1250	+ 0.6	1220
1320	+ 0.8	1250
1341	+ 1.0	1311
1400	+ 1.2	1330
1414	+ 1.4	1344
1428	+ 1.6	1358
1442	+ 1.8	1412
1456	+ 2.0	1426
1510	+ 2.2	1440
1523	+ 2.4	1453
1536	+ 2.6	1506
1550	+ 2.8	1520
1604	+ 3.0	1534
1621	+ 3.2	1551
1647	+ 3.4	1617
1849	+ 3.6	1819
1905	+ 3.4	1835

Comp By WCMC✓ By PACTYPED BY WCMC✓ By PAC

HYDROINFERRRED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ / COL. A /

TIME

TIDE HEIGHT (FMS)

/ COL. B /

TIME

15 SEPTEMBER 1961

1140 to 1339	+ 1.0	1110 to 1309
1409	+ 1.2	1339
1432	+ 1.4	1402
1452	+ 1.6	1422
1508	+ 1.8	1438
1523	+ 2.0	1453
1538	+ 2.2	1508
1552	+ 2.4	1522
1605	+ 2.6	1535
1621	+ 2.8	1551
1641	+ 3.0	1611
1704	+ 3.2	1634
1732	+ 3.4	1702
1814	+ 3.6	1744
1908	+ 3.8	1838
1949	+ 3.6	1919
2015	+ 3.4	19 2015
2036	+ 3.2	2006
2054	+ 3.0	2024
2111	+ 2.8	2041
2130	+ 2.6	2100
2147	+ 2.4	2117
2209	+ 2.2	2136 9
2222	+ 2.0	2152
2241	+ 1.8	2211
2259	+ 1.6	2229
2317	+ 1.4	2247
2338	+ 1.2	2308
2400	+ 1.0	2330
	+ 0.8	2400

16 SEPTEMBER 1961

0000 to 0003	+ 1.0
0034	+ 0.8
0236	+ 0.6
0259	+ 0.8
0317	+ 1.0

2330 To 2333
0000 to 0004
0206
0229
0247

Comp By ALCMC✓ By PACTYPED By ALCMC✓ By PAC

HYDRO

INFERRED TIDES, NIKISKI (COOK INLET) ALASKA

sheet 17 of 24

COL. A is tides for NORTH of LAT. $60^{\circ}35'$, COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/---COL. A---/

TIME TIDE HEIGHT (FMS)

/---COL. B---/

TIME

16 SEPTEMBER 1961

1148 to 1226	+1.2	1118 to 1156
1404	+1.0	1334
1441	+1.2	1411
1507	+1.4	1437
1526	+1.6	1456
1542	+1.8	1512
1555	+2.0	1525
1610	+2.2	1540
1627	+2.4	1557
1643	+2.6	1613
1700	+2.8	1630
1720	+3.0	1650
1746	+3.2	1716
1826	+3.4	1756
1930	+3.6	1900

18 SEPTEMBER 1961

0930 to 1135	+2.8	0900 to 1105
1216	+2.6	1146
1249	+2.4	1219
1320	+2.2	1250
1358	+2.0	1328
1510	+1.8	1440
1546	+1.6	1516
1652	+1.8	1622
1722	+2.0	1652
1743	+2.2	1713
1802	+2.4	1732
1822	+2.6	1752
1847	+2.8	1817
1918	+3.0	1848
1957	+3.2	1927
2224	+3.4	2154
2251	+3.2	2221
2312	+3.0	2242
2325	+2.8	2255

Comp By MCMC

✓ By PAC

TYPED By MCMC

✓ By L.R.

HYDRO

INFERRED TIDES, NIKISKI (COOK INLET) ALASKA

sheet 18 of 24

COL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/---COL. A---/

TIME

TIDE HEIGHT (FMS)

/---COL. B---/

TIME

19 SEPTEMBER 1961

0430 to 0541	+ 0.4	0400 to 0511
0621	+ 0.6	0551
0647	+ 0.8	0617
0708	+ 1.0	0638
0729	+ 1.2	0659
0749	+ 1.4	0719
0809	+ 1.6	0739
0829	+ 1.8	0759
0850	+ 2.0	0820
0912	+ 2.2	0842
0945	+ 2.4	0915
1045	+ 2.6	1015
1200	+ 2.8	1130
1257	+ 2.6	1227
1326	+ 2.4	1256

20 SEPTEMBER 1961

1221 to 1325	+ 3.0	1151 to 1255
1414	+ 2.8	1344
1443	+ 2.6	1413
1506	+ 2.4	1436
1528	+ 2.2	1458
1548	+ 2.0	1518
1611	+ 1.8	1541
1640	+ 1.6	1610
1717	+ 1.4	1647
1909	+ 1.2	1839
1946	+ 1.4	1916
2015	+ 1.6	1945
2035	+ 1.8	2005
2051	+ 2.0	2021
2107	+ 2.2	2037
2122	+ 2.4	2052
2141	+ 2.6	2111
2202	+ 2.8	2132
2227	+ 3.0	2157
2258	+ 3.2	2228
2330	+ 3.4	2300

Comp By MCMC

✓ By PHC

TYPED BY MCMC

✓ BY PHC

HYDROINFERRED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$ /—COL. A—/

TIME

TIDE HEIGHT (FMS)

/—COL. B—/22 SEPTEMBER 1961

1106 to 1119	+ 1.8	1036 to 1049
1132	+ 2.0	1102
1145	+ 2.2	1115
1158	+ 2.4	1128
1212	+ 2.6	1242
1230	+ 2.8	1200
1252	+ 3.0	1222
1322	+ 3.2	1252
1523	+ 3.4	1452
1551	+ 3.2	1521
1613	+ 3.0	1543
1632	+ 2.8	1602
1647	+ 2.6	1617
1702	+ 2.4	1632
1715	+ 2.2	1645
1727	+ 2.0	1657
1739	+ 1.8	1709
1751	+ 1.6	1721
1801	+ 1.4	1731
1811	+ 1.2	1741
1823	+ 1.0	1753
1840	+ 0.8	1810
1901	* 0.6	1831
1940	+ 0.4	1910
2050	+ 0.2	2020
2122	+ 0.4	2052
2143	+ 0.6	2113
2200	+ 0.8	2130
2215	+ 1.0	2145
2226	+ 1.2	2156
2237	+ 1.4	2207
2248	+ 1.6	2218
2259	+ 1.8	2229
2310	+ 2.0	2240

Comp By DEJMC

✓ By PHC

TYPEO By DEJMC

✓ By J.C.

HYDRO

INFERRED TIDES, NIKISKI (COOK INLET) ALASKA

sheet 20 of 24

COL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/— COL. A —/	TIDE HEIGHT (FMS)	/— COL. B —/
TIME		

26 SEPTEMBER 1961

1000 to 1031	- 0.2	0930 to 1001
1111	- 0.4	1041
1158	- 0.2	1128
1220	0.0	1150
1239	+ 0.2	1209
1256	+ 0.4	1226
1312	+ 0.6	1242
1325	+ 0.8	1255
1338	+ 1.0	1308
1350	+ 1.2	1320
1401	+ 1.4	1331
1410	+ 1.6	1340
1420	+ 1.8	1350
1429	+ 2.0	1359
1438	+ 2.2	1408
1447	+ 2.4	1417
1455	+ 2.6	1425
1504	+ 2.8	1434
1514	+ 3.0	1444
1525	+ 3.2	1455
1537	+ 3.4	1507
1551	+ 3.6	1521
1610	+ 3.8	1540
1637	+ 4.0	1607
✓ By PAC		
1726	+ 4.2	1656
1755	+ 4.0	1725
TYPED BY DCPM		
1813	+ 3.8	1753
1828	+ 3.6	1758
✓ By LTC		
1840	+ 3.4	1810
1852	+ 3.2	1822
1903	+ 3.0	1833
1913	+ 2.8	1843
1925	+ 2.6	1855
1936	+ 2.4	1906
1947	+ 2.2	1917
1958	+ 2.0	1928
2010	+ 1.8	1940
2021	+ 1.6	1951
2032	+ 1.4	2002
2043	+ 1.2	2013
2055	+ 1.0	2025
2105	+ 0.8	2035
2118	+ 0.6	2048
2130	+ 0.4	2100
2143	+ 0.2	2113
2158	0.0	2128
2218	- 0.2	2148
2243	- 0.4	2213
2300	- 0.6	2230

HYDROINFERRRED TIDES. NIKISKI (COOK INLET) ALASKA

COL. A is tides for NORTH of LAT. 60° 35' COL. B is tides for SOUTH of LAT. 60° 35'

<u>COL. A</u>	<u>27 SEPTEMBER 1961</u>	<u>COL. B</u>
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TIME	TIDE HEIGHT (FMS)	TIME
0300 to 0313	+ 2.6	0230 to 0243
0329	+ 2.8	0259
0347	+ 3.0	0317
0411	+ 3.2	0341
0448	+ 3.4	0418
0557	+ 3.6	0527
0627	+ 3.4	0557
0651	+ 3.2	0621
0712	+ 3.0	0642
0730	+ 2.8	0700
0743	+ 2.6	0713
0757	+ 2.4	0727
0810	+ 2.2	0840
<i>COMP BY NCM</i> 0823	+ 2.0	0753
✓ BY PHC 0836	+ 1.8	0806
<i>TYPEP BY PAC</i> 0847	+ 1.6	0817
✓ BY NCM 0900	+ 1.4	0830
0913	+ 1.2	0843
0928	+ 1.0	0858
0943	+ 0.8	0913
1002	+ 0.6	0932
1027	+ 0.4	0957
1059	* 0.2	1029
1209	+ 0.0	1139
1240	+ 0.2	1210
1303	+ 0.4	1233
1321	+ 0.6	1251
1336	+ 0.8	1306
1348	+ 1.0	1318
1400	+ 1.2	1330
1411	+ 1.4	1341
1422	+ 1.6	1352
1433	+ 1.8	1403
1443	+ 2.0	1413
1455	+ 2.2	1425
1506	+ 2.4	1436
1517	+ 2.6	1447
1528	+ 2.8	1458
1538	+ 3.0	1508
1549	+ 3.2	1519
1601	+ 3.4	1531
1618	+ 3.6	1548
1641	+ 3.8	1630
1718	+ 4.0	1648
1756	+ 4.2	1726
1829	+ 4.0	1759
1853	+ 3.8	1803
1912	+ 3.6	1842
1920	+ 3.4	1858
1941	+ 3.2	1931

HYDRO INFERRED TIDES, NIKISKI (COOK INLET) ALASKACOL. A. is tides for NORTH of LAT. $60^{\circ} 35'$ COL, B is tides for South of LAT. $60^{\circ} 35'$ / COL. A // COL. B /

TIME

TIDE HEIGHT (FMS)

TIME

27 SEPTEMBER 1961 (Cont.)

1942 to 1955	+ 2.0	1912 to 1925
2007	+ 2.0	1937
2018	+ 2.6	1948
2030	+ 2.4	2000
2041	+ 2.2	2011
2053	+ 2.0	2023
2104	+ 1.8	2034
2115	+ 1.6	2045
2126	+ 1.4	2056
2137	+ 1.2	2107
2149	+ 1.0	2119
2200	+ 0.8	2130
2211	+ 0.6	2141
2224	+ 0.4	2154
2240	+ 0.2	2210
2259	+ 0.0	2229
2320	- 0.2	2250

Comp. By NCEMC✓ By PACTYPED BY PAC✓ By NCEMC

HYDROINFERRED TIDES, NIKISKI (COOK INLET) AKASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

<u>COL. A</u>	<u>TIDE HEIGHT (FMS)</u>	<u>COL. B</u>
<u>TIME</u>		<u>TIME</u>
<u>28 SEPTEMBER 1961</u>		
0300 to 0313	+ 1.8	0230 to 0243
0326	+ 2.0	0256
0339	+ 2.2	0309
0351	+ 2.4	0321
0406	+ 2.6	0336
0423	+ 2.8	0353
0451	+ 3.0	0421
0526	+ 3.2	0456
0659	+ 3.4	0629
0729	+ 3.2	0659
0752	+ 3.0	0722
0812	+ 2.8	0742
0827	+ 2.6	0757
0843	+ 2.4	0813
0859	+ 2.2	0829
0911	+ 2.0	0841
0923	+ 1.8	0853
0937	+ 1.6	0907
v By PHC	0951	0921
TYPEO By NCIII	1011	0941
v By	1035	1005
	1108	1038
	1209	1139
	1237	1207
	1321	1251
	1344	1314
	1400	1330
	1412	1342
	1423	1353
	1433	1403
	1444	1414
	1456	1426
	1508	1438
	1522	1452
	1536	1506
	1550	1520
	1603	1533
	1628	1558
	1637	1607
	1703	1633
	1752	1722
	1850	1820
	1917	1847
	1940	1910
	2001	1931
	2019	1949
	2034	2014

HYDROINFERRED TIDES, NIKISKI (COOK INLET) ALASKACOL. A is tides for NORTH of LAT. $60^{\circ}35'$ COL. B is tides for SOUTH of LAT. $60^{\circ}35'$

/ COL. A -- /	TIDE HEIGHT (FMS)	/ COL. B -- /
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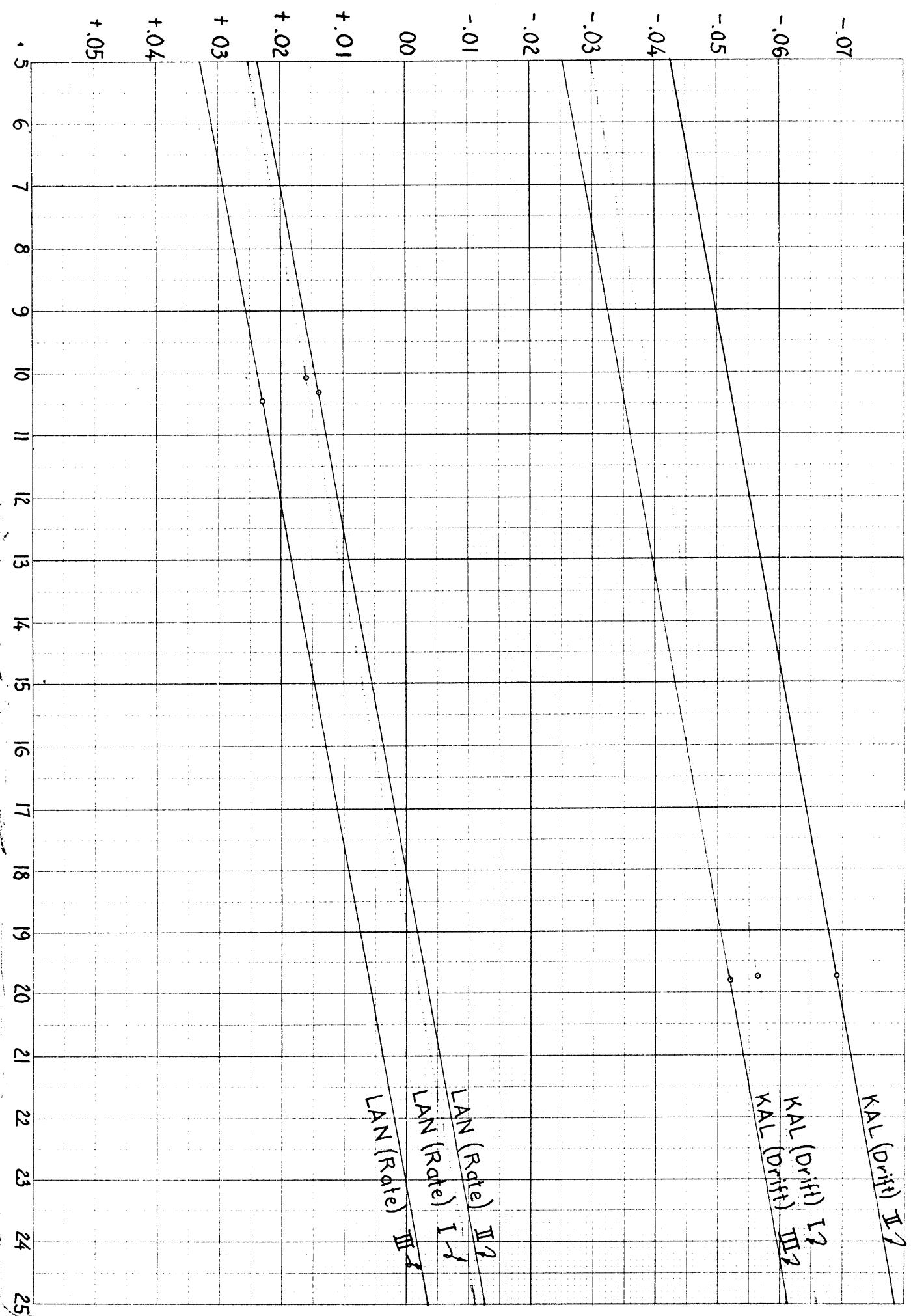
28 SEPTEMBER 1961, contd

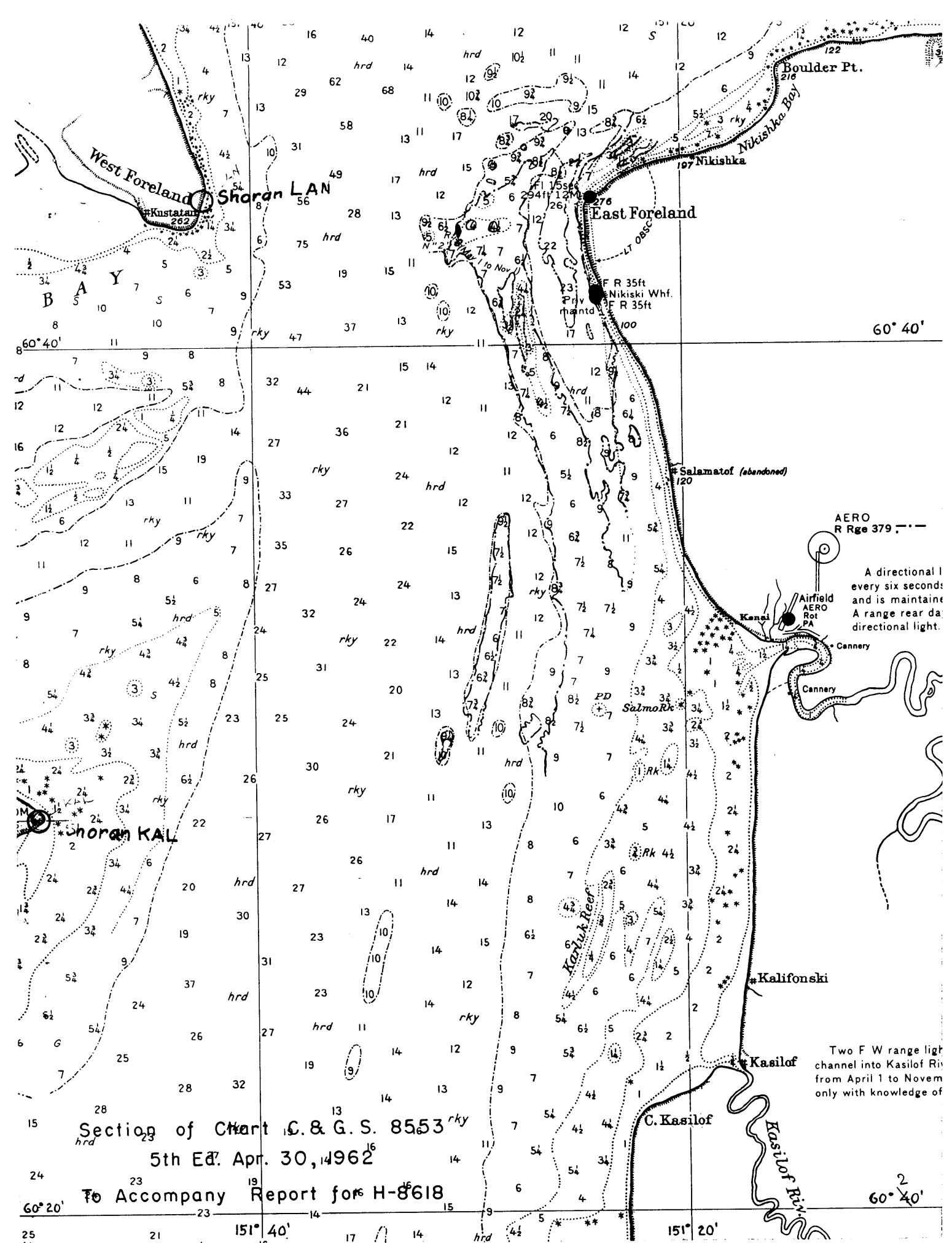
2035 to 2048	+ 2.8	2015 to 2018
2102	+ 2.6	2032
2114	+ 2.4	2044
2126	+ 2.2	2056
2137	+ 2.0	2107
2149	+ 1.8	2119
2200	+ 1.6	2130
2212	+ 1.4	2142
2222	+ 1.2	2152
2234	+ 1.0	2204
2248	+ 0.8	2218
2305	+ 0.6	2235

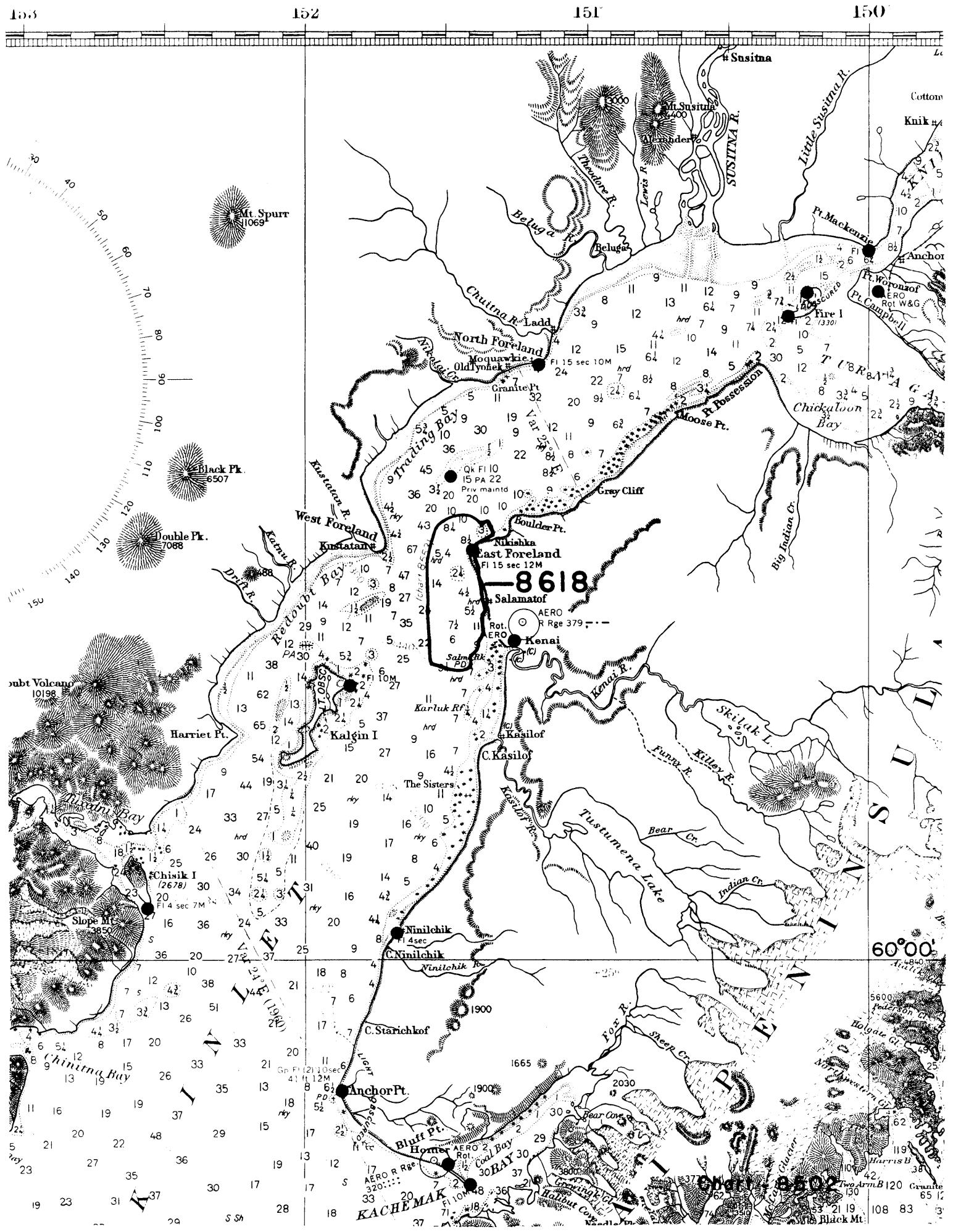
29 SEPTEMBER 1961

0400 to 0411	+ 2.0	0330 to 0341
0423	+ 2.2	0353
0439	+ 2.4	0409
0458	+ 2.6	0428
0501	+ 2.8	0431
0551	+ 3.0	0521
0818	+ 3.2	0748
0848	+ 3.0	0818
0911	+ 2.8	0841
0929	+ 2.6	0859
0946	+ 2.4	0916
1001	+ 2.2	0931

COMP. BY MTM^C
 ✓ BY PHC
 TYPED BY QTM^C
 ✓ BY LTC







GEOGRAPHIC NAMES
Survey No. H-8618

Name on Survey	A On Chart No. 8553	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K
Boulder Pt	✓								1
Cook Inlet	✓								2
East Foreland	✓								3
Kenai	✓								4
Kenai River	✓								5
Nikishka Bay	✓								6
Nikiski	✓								7
Salamtof	✓								8
Salmo Rock	✓								9
									10
									11
									12
									13
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									25
									26
									27

*Geophysical Survey
Geographic Names Section
21 Oct 1963*

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8618

Records accompanying survey: Smooth sheets;
 boat sheets; sounding vols.?....; wire drag vols.?....;
 Descriptive Reports; graphic recorder envelopes?....;
 special reports, etc.^{1 Cahier}.....

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

Number of positions on sheet	5375
Number of positions checked	474
Number of positions revised	2
Number of soundings revised (refers to depth only)	9
Number of soundings erroneously spaced	3
Number of signals erroneously plotted or transferred	0
Topographic details	Time 10..
Junctions	Time 14..
Verification of soundings from graphic record	Time 10..
Special adjustments	Time 8..

Verification by George K. Myers Total time 446. Date Nov. 30, 1967

Reviewed by Time Date

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-8618

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

1. The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken.
The descriptive report has been consulted.
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude. *Soundings referenced in the descriptive report by coordinate plots have been checked against the smooth sheet.*
3. All reference to survey sheets mentioned in the descriptive report include the registry number and year.
Hydrographic sheets mentioned in the descriptive report include the registry number and year. Topographic sheets (incomplete).
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering. *Geographic names and hydrographic features have been checked for character of lettering.*
5. 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. *Appropriate action was taken regarding checked remarks in the sounding volumes.*
6. All positions verified instrumentally were check marked in the sounding records. *All positions checked by the verifier were indicated in the sounding volumes.*
7. All critical soundings are clear and legible and are a little larger than the adjacent soundings.
Critical soundings on this survey have been indicated as prescribed in the hydrographic manual.
8. The metal protractor has been checked within the last three months. *The protractor has been checked.*
9. The protracting and plotting of all bad crossings were verified.
Protracting and plotting of all bad crossings were checked.
10. All detached positions locating critical soundings, rocks or buoys were verified. *Detached positions have been verified.*
11. The boat sheet was compared with the smooth sheet.
The boat sheet was referred in verifying the smooth sheet.

12. The spacing of soundings as recorded in the records was closely followed. *Spacing of depths recorded in the volumes was followed.*
13. The bottom characteristics were shown on outstanding shoals. *Bottom characteristics were shown.*
14. The reduction and plotting of doubtful soundings were checked. *Doubtful soundings were checked. Pos. 21h (vol. 7) was disregarded.*
15. The transfer of contemporary topographic information was carefully examined. *Transfer of topographic information was checked.*
16. All junctions were transferred and overlapping curves made identical. *All junctions were transferred and overlapping curves made identical.*
- ✓17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil. *The notation required for all junctions was made as prescribed.*
- ✓18. The depth curves have been inspected before inking. *The depth curves were checked.*
19. All triangulation stations and transfer of topographic and hydrographic signals were checked. *Triangulation stations and signals were checked.*
20. Heights of rocks were checked against range of tide. *Rock awash #18 was found at lat. 60°41.6'N, long. 151°24'W.
See H-9621(1976) Des. Report.*
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve. *Not applicable.*
22. Unnecessary pencil notes have been removed. *Pencil notes have been removed.*
23. Objects on which signals are located and which fall outside of the low water line have been described on the sheet. *Objects outside the low water line have been described.*
24. The low water line and delineation of shoal areas have been properly shown. *The low water line and shoal areas were properly shown.*
25. Degree and minutes values and symbols have been checked. *Symbols have been checked.*
26. Questionable soundings have been checked on the fathograms. *Fathograms have been checked.*

27. Source of shoreline and signals (when not given in report).
Not applicable.
28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual. *All notes on sheet are in accordance with the hydrographic manual - 1942 edition.*
29. All aids located, with those on contemporary topographic sheets, have been shown on survey.
Not applicable.
30. Depth curves were satisfactory except as follows:
Depth curves were satisfactorily shown. Those soundings from H-8617 WD were included where necessary as prescribed for the delineation of curves.
31. Sounding line crossings were satisfactory except as follows:
Sounding line crossings were satisfactory.
32. Junctions with contemporary surveys were satisfactory except as follows:
Junctions with contemporary survey were satisfactory.
33. Condition of sounding records was satisfactory except as follows:
Change of speed and course indications were frequently omitted. Signs of tide reducer corrections were inaccurately designated and were changed to reflect the true value of the reduced sdgs. Bay "NZ" was wrongly referred.
34. The protracting was satisfactory except as follows:
The protracting was satisfactory.
35. The field plotting of soundings was satisfactory except as follows:
The sounding at Position 21h (DP) was disregarded on the premise it did not exist - the Branch Chief concurred.
36. Notes to reviewer:
Attached is a resume of itemized discrepancies per volume

Verified by George Myers

Date November 30, 1967
 FORM NO. 964A
 US COMM-CINCPAC

26C

TIDE NOTE FOR HYDROGRAPHIC SHEET

November 18, 1963

Nautical Chart Division: R. H. Carstens

Plane of reference approved in
22 volumes of sounding records for

HYDROGRAPHIC SHEET 8618

Locality Cook Inlet, S. W. Alaska

Chief of Party: A. L. Wardwell, 1961

Plane of reference is mean lower low water, reading

8.3 ft. on tide staff at Nikiski, Cook Inlet
(12.3 ft. on mariogram)
33.8 ft. below B. M. 1 (1961)

Height of mean high water above plane of reference is 20.0 feet.

Condition of records satisfactory except as noted below:



J.M. Symone
Chief, Tides and Currents Branch

NAUTICAL CHARTS BRANCH

SURVEY NO. 8618

Record of Application to Charts

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.