

7973



Diag. Cht. Nos. 8961-2, 8862, 8863-3, 8864-2,

9000-1, 9302

Form 504

CF-343

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PI-502-52 Office No. H-7973

LOCALITY

State ALASKA

General locality BERING SEA

Locality SOUTH CENTRAL BERING SEA

19 52

CHIEF OF PARTY

THOS. B. REED C. Pierce

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DATE JAN 23 1953

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-7973

Field No. PI-502-52 and PF-502-52

State Alaska

General locality Bering Sea

Locality South Central Bering Sea

Scale 1:500,000 Date of survey May - September 1952

Instructions dated Project GS-343 dtd. 6 March 1951, 28 May 1951, 21 March 1952

Vessel Ships PIONEER & PATHFINDER

Chief of party Thos. B. Reed C. Pierce

Surveyed by Ships' Officers of PIONEER & PATHFINDER

Soundings taken by fathometer, ~~graphic recorder, hand lead, wire~~

Fathograms scaled by Fathometer Operators

Fathograms checked by Ships' Officers

Protracted by A.R.B. Benton, Jr., P.O. Reimer, Jr., and G.E. Cook

Soundings penciled by H.C. Applequist, A.R.B. Benton, Jr., and G.E. Cook

Soundings in fathoms ~~feet~~ MLLW

REMARKS: Note: 1 or 2 Bot. characteristics can be added to this sheet from Spec. Report of Bainbridge (1953) No. 162
JAB

JAB

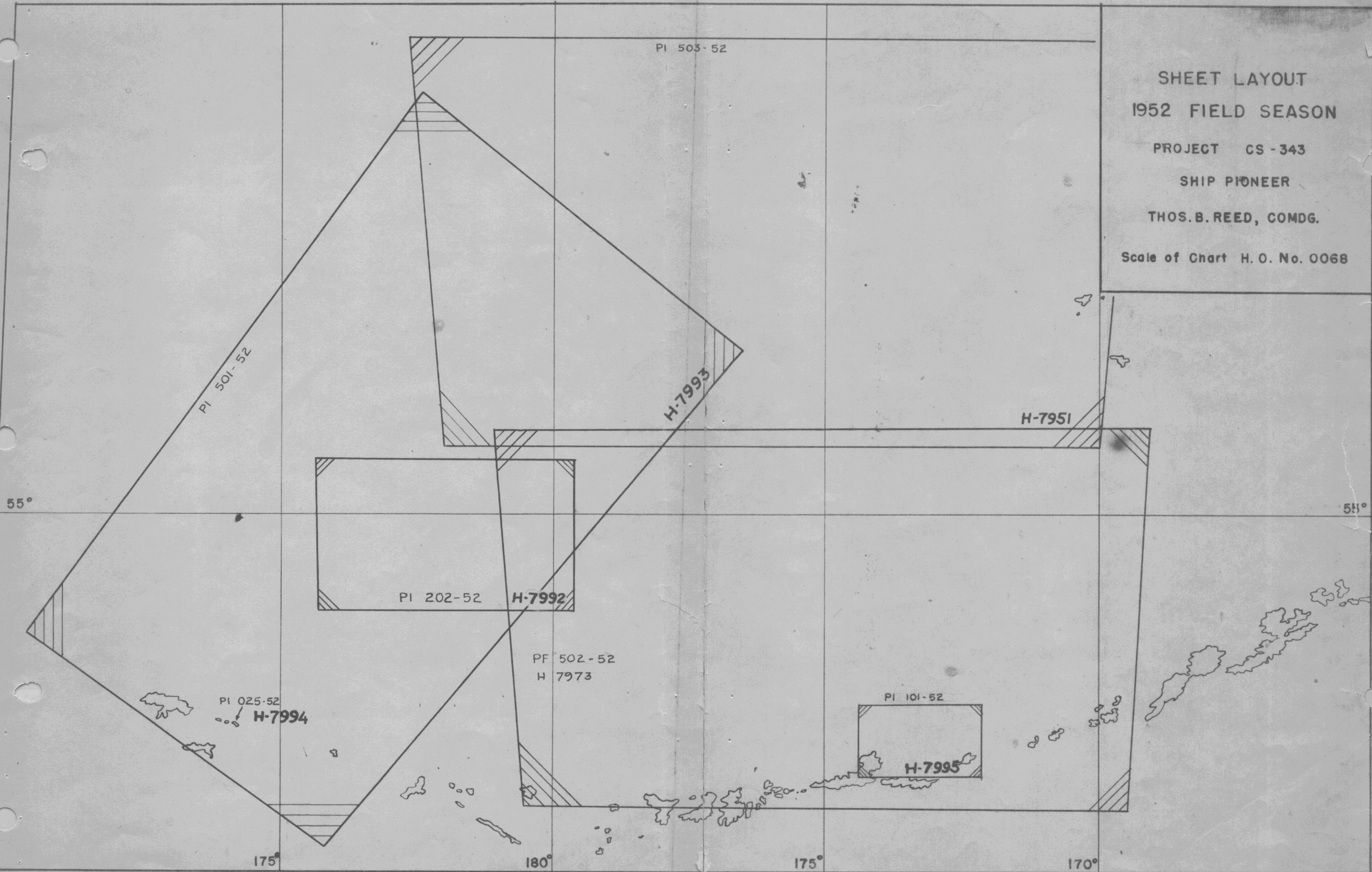
SHEET LAYOUT
1952 FIELD SEASON

PROJECT CS-343

SHIP PIONEER

THOS. B. REED, COMDG.

Scale of Chart H. O. No. 0068



DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY

REGISTER NO. H-7973

FIELD NO. PI & PF-502-52

SOUTH CENTRAL BERING SEA, ALASKA
1952

Project No. CS-343
Ships PIONEER & PATHFINDER
Scale 1:500,000

THOS. B. REED, CHIEF OF PARTY
CHARLES PIERCE, CHIEF OF PARTY
Surveyed by: Ships' Officers

A. PROJECT:

This survey was executed in accordance with the Director's Instructions, Project CS-343, dated 6 March 1951, 28 May 1951, 21 June 1951, and 21 March 1952.

B. SURVEY LIMITS AND DATES:

This survey covers the offshore area north of the Aleutian Islands to Latitude 56° North from approximately 170° W. Longitude to approximately 179° W. Longitude. The entire area was not completed and there is an unsurveyed area in the northeast part of the sheet.

This sheet joins prior surveys H-6573, H-6700 and H-6701 at the southeastern part; contemporary survey H-7995 on a scale of 1:100,000 in the vicinity of Adia Island; prior survey H-6850 in the vicinity of Atka Island; contemporary sheet EX-401-52 of the Ship EXPLORER in the vicinity of Tanaga and Kanaga Islands; prior survey H-7806 north of Gareloi Island; contemporary survey H-7972 by the PATHFINDER on a scale of 1:200,000 to the west; contemporary survey H-7993 to the northwest and contemporary survey H-7951 to the north. The last two surveys are on a scale of 1:500,000.

Field work was begun by the Ship PATHFINDER on 12 May 1952 and ended 23 June 1952. The Ship PIONEER began field work on 1 June 1952 and ended on 14 September 1952.

C. VESSELS AND EQUIPMENT:

The Ships PIONEER and PATHFINDER surveyed the area. The Ship PIONEER used fathometers NMC No. I-766 and NMC-2 No. 117. The PATHFINDER used fathometers 808 J No. 130-S, NJ 3 No. 22 and NMB No. 106.

D. CONTROL STATIONS:

EPI stations Attu, Amchitka, and SEguam were located by the personnel of the Ship PIONEER and their locations are discussed in a separate report. EPI station Tanaga was established and the location furnished by the Ship EXPLORER. The stations in the Aleutian Islands are all on the N.A. 1927 Datum. The St. Paul datum was tied to the N.A. 1927 Datum by EPI in 1951. The EPI station at St. Paul was established and the location furnished by the Ship PATHFINDER.

E. SOUNDINGS:

Most of the PIONEER soundings were taken with the NMC fathometer. The NMC2 was used in depths under 800 fathoms. During rough weather the fathometer would not record soundings and at these times the soundings were taken by audio. All soundings recorded on the fathograms were scanned and verified.

The area in which the PIONEER worked was all in deep water and no tide corrections were applied.

In accordance with the Director's letter, dated 21 June 1951, 21/mek, S-1-PI, no velocity corrections were applied. The calibrated velocity of the fathometers used is 800 fathoms per second.

Verifier: Apply vel. corr. in area of overlap with inshore surveys where necessary

F. CONTROL OF HYDROGRAPHY:

The hydrography was controlled by EPI. On the last day only one EPI station was available during the last four hours of hydrography and Loran Rate 1-L-6 was used in conjunction with EPI Se-guam. This portion of the line crossed four other lines and the agreement was good. In the area between St. Paul Island and Se-guam Island the system of lines crossed the bisectrix. The positions at the ends of these lines were held and the positions in between adjusted in accordance with the log readings.

G. ADEQUACY OF SURVEY:

The survey is believed complete over that part covered. However, the northeast corner of the sheet, from Longitude 175° W eastward and between Latitudes 54° 50' and 55° 50', was not completed. The area directly east of this area is unsurveyed and it can probably be surveyed at the same time with the same control stations.

Junctions with adjacent surveys appear satisfactory.

H. CROSSLINES:

The crossings in general are satisfactory except at depths in the vicinity of 2000 fathoms. During the latter part of the season the NMC fathometer was not operating very satisfactorily being badly in need of a complete overhaul after nearly continuous use during the season. The fathogram was extremely difficult to read during rough weather and much of the sounding was by audio, which is not very satisfactory in the vicinity of 2000 fathoms. On the cross-line on DA Day, the soundings from position 43 to 52 were rejected. Due to rough weather the soundings were not recording and the fathometer operator apparently read the initial. There are a considerable number of crossings with discrepancies of 30 fathoms due to the above conditions. The crossings at lesser depths are good.

J. COMPARISONS WITH PRIOR SURVEYS AND CHARTS:

There are no prior ~~surveys~~ in this area. H. O. Chart No. 0068 covers this area. West of Longitude 175°W. the soundings on the chart are generally deeper than those obtained on this survey.

K. DANGERS AND SHOALS:

There are no dangers to surface navigation within the limits of this survey.

L. DATA INCLUDED WITH THIS REPORT:

1. Summary of EPI corrections.
2. Abstract of Statistics.
3. Computations of Arc Points.
4. Approval Sheet.

M. TABULATION OF APPLICABLE DATA:

1. Report of EPI Calibration.
2. Triangulation Report on Location of EPI Stations.

N. MISCELLANEOUS:

The Ship PATHFINDER's work was plotted by personnel of the Ship PIONEER. The reports of the Ship PATHFINDER covering EPI Calibration, Corrections to Soundings, and Locations of Stations were not furnished this party. The sounding volumes were received completed and ready for plotting.

An overlay was made for the area between Latitudes 52° 00' and 52° 40' and Longitudes 176° 15'E and 176° 40'E, just north of Adak. Too many sounding lines were run in this area to show all the soundings on the smooth sheet.

Respectfully submitted

H. C. Applequist
H. C. Applequist
CMDR. USC&GS

Approved and forwarded:

Thos. B. Reed
Thos. B. Reed
CAPT., USC&GS
Comdg., Ship PIONEER

SUMMARY OF EPI CORRECTIONS

Survey H-7973

Field No. PI-502-52

Shore Equipment Period Correction

EPI ATtu

T-7 C-6	Prior to 16 June	-5.0
T-7 C-6	After 16 June	-3.5
T-4 C-6	Prior to 16 June	-3.6
T-4 C-6	After 16 June	-2.6

EPI AMchitka

T-3 C-2	Entire Period	-5.0
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EPI TAnaga

T-8 C-7	Prior to 16 June	-4.2
T-8 C-7	After 16 June	-4.9
T-8 C-8	Prior to 16 June	-4.8
T-8 C-8	After 16 June	-6.3

EPI SEguam

T-4 C-6	Prior to 1200 29 August	-1.8
T-4 C-6	After 1200 29 August	-4.0
T-4 C-4	Prior to 1200 29 August	-2.7
T-4 C-4	After 1200 29 August	-3.7
T-7 C-6	Prior to 1200 29 August	-4.6
T-7 C-6	After 1200 29 August	-3.6
T-7 C-4	On 14 Sept. only time used	-4.3

EPI PAUL

C-2 T-5	Entire Period	-5.3
C-3 T-5	Entire Period	-6.3

ABSTRACT OF STATISTICS FOR HYDROGRAPHIC SURVEY
 Register No. H-7973 Field No. PI-502-52

Ship PIONEER

DAY BLUE	VOL. NO.	DATE	NO. OF POS.	STATUTE MILES
A	1	1 June	32	147.0
B	1	2 June	14	55.6
C	1	4 June	42	249.8
D	1	17 June	36	215.0
E	1 & 2	18 June	74	446.2
F	2	19 June	13	54.0
G	2	22 June	33	179.4
H	2	23 June	75	425.6
J	2	24 June	25	147.2
K	3	19 August	6	37.7
L	3	20 August	63	381.8
M	3	24 August	31	195.5
N	3	25 August	72	450.8
P	4	26 August	30	172.5
Q	4	28 August	43	257.6
R	4	29 August	56	326.6
S	4 & 5	30 August	72	445.1
T	5	31 August	72	435.2
U	5	1 September	72	441.6
V	5 & 6	2 September	72	457.7
W	6	3 September	72	446.2
X	6 & 7	4 September	71	400.2
Y	7	5 September	67	395.6
Z	7	6 September	72	427.8
AA	7 & 8	7 September	72	291.0
BA	8	8 September	72	392.0
CA	8 & 9	9 September	72	358.9
DA	9	10 September	72	373.8
EA	9	11 September	24	146.0
FA	9	12 September	28	176.6
GA	9 & 10	13 September	72	396.8
HA	10	14 September	40	198.9
TOTAL			1,667	9,525.8

ABSTRACT OF STATISTICS FOR HYDROGRAPHIC SURVEY
Register No. H-7973 Field No. PI-502-52

Ship PATHFINDER

DAY BROWN	VOL. NO.	DATE	NO. OF POS.	STATUTE MILES
A	1	14 May	4	29.0
B	1	15 May	19	141.5
C	1	19 May	33	145.9
D	1	24 May	21	99.4
E	1	25 May	10	40.2
F	1	28 May	2	9.5
G	1	29 May	35	51.1
H	1	8 June	51	141.5
J	1	11 June	5	26.1
K	1	12 June	27	126.5
L	2	20 June	30	145.5
M	2	21 June	21	93.0
N	2	23 June	16	77.0
P	3	12 May	8	41.0
Q	3	29 May	7	31.4
R	3	30 May	13	61.0
S	3	16 June	10	22.9
T	3	20 June	7	29.3
TOTALS			319	1,311.8

COMBINED TOTALS, PIONEER AND PATHFINDER

POSITIONS	1986
STATUTE MILES	10837.6
SQUARE STATUTE MILES	39200

ARC POINTS

Survey H-7973

Field No. PI-502-52

DISTANCE	AZIMUTH °	LATITUDE			LONGITUDE		
		°	'	"	°	'	"
<u>EPI ATtu</u>		52	56	31.30 N	173	15	02.52 E
3200 ms	255	53	51	06.32 N	179	42	00.78 W
4000 ms	255	54	00	46.76 N	177	53	43.75 W
4800 ms	255	54	08	48.98 N	176	04	39.57 W
3200 ms	235	55	15	33.37 N	179	26	04.12 E
3200 ms	275	52	21	24.63 N	179	43	38.05 W
<u>EPI TANaga</u>		51	39	59.64 N	178	05	17.57 W
1000 ms	180	53	00	47.48 N	178	05	17.57 W
2000 ms	180	54	21	34.20 N	178	05	17.57 W
3000 ms	180	55	42	19.83 N	178	05	17.57 W
2000 ms	150	53	58	39.06 N	179	37	41.77 E
2000 ms	240	52	57	04.08 N	174	13	31.43 W
<u>EPI AMchitka</u>		51	25	01.17 N	179	17	33.06 E
	PATHFINDER FINAL			01.19			33.04
	Arcs computed from top position						
1200 ms	225	52	32	42.08 N	178	49	59.73 W
2400 ms	225	53	38	29.83 N	176	51	42.58 W
3600 ms	225	54	42	13.82 N	174	47	13.45 W
2400 ms	187	54	37	21.27 N	179	58	14.39 E
2400 ms	250	52	25	08.09 N	175	44	12.83 W
		(GP with PI-501-52 Reg No. H-7993)					
<u>EPI ST. PAUL</u>		57	07	31.45 N	170	15	54.97 W
1200 ms	30	55	43	06.57 N	171	41	44.80 W
3600 ms	30	52	51	32.30 N	174	16	04.98 W
2400 ms	30	54	17	44.71 N	173	01	35.29 W
2400 ms	60	55	24	36.89 N	175	11	08.35 W
2400 ms	00	53	53	42.87 N	170	15	54.97 W
<u>EPI SEguam</u>		52	23	09.35 N	172	24	19.36 W
1400 ms	150	54	00	28.38 N	174	00	18.31 W
2800 ms	150	55	36	23.03 N	175	44	00.80 W

POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
 (For calculating machine computation)

α	2	to 3			α	3	to 2		
2d L		E	+		3d L		E	-	
α	2 EP1 AT	to 1 Arc Point 4600y		255	α	3 EP1 AT	to 1 Arc Point 3200y		235
Δα					Δα				
α'	1	to 2	180	00	α'	1	to 3	180	00
First Angle of Triangle									

φ	52	56	31.30	2 EP1 AT	λ	173	15	02.52 E	φ	52	56	31.30	3 EP1 AT	λ	173	15	02.52 E
				B = 719.254.56	Δλ	+10	40	17.91					B = 479.503.04	Δλ	+4	11	01.60
φ'	54	08	48.98	1 Arc Point 4600y	λ'	176	04	39.57 W	φ'	55	15	53.37	1 Arc Point 3200y	λ'	179	26	04.12 E
1074.29																	
Δφ	(log s = $b = (\sqrt{10,000})^2$ 346.5435)																
sin α	0.965	92.58	3		x cor.	+	$\frac{1}{2}$ fb	1417.1203		sin α	0.819	152.04		x cor.	+	$\frac{1}{2}$ fb	3093.2451
cos α	0.258	819.05	4		x'	-	694648.104		cos α	0.573	576.44	4		x'	-	392664.395	
x = s sin α	-	694.746.	558		H	-	055090.570		x = s sin α	-	392.785.	692		H	-	056618.808	
y = -a cos α	+ 186	156.	792		Hx' = (approx. Δλ ⁿ)	-38	268.560		y = -s cos α	+ 275	031.	642		Hx' = (approx. Δλ ⁿ)	22	232.190	
a = (x'/10,000) ²	48	25.	3599		Arc-sin = + $\frac{V (V_a)}{15}$	39027.8942	(149 353)		a = (x'/10,000) ²	1541.	8533		Arc-sin cor	+ $\frac{V (V_a)}{15}$	13228.2796	(29 409)	
y cor. = +fa	39	464.	6885	(734.62)	Δλ ⁿ	-	38	417.913	y cor. = +fa	12610.	2014	(346.520)	Δλ ⁿ	-	22	261.599	
y ₀	5	867	951.	377	sin φ				y ₀	5	867	951.	377	sin φ			
y'	+	186	891.	444	sin φ'				y'	+	275	378.	467	sin φ'			
y ₁	6	054	842.	821	1 + cos Δφ				y ₁	6	143	329.	844	1 + cos Δφ			
V _a	-	53	149.	361	$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta \phi}$				V _a	-	17	491.	169	$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta \phi}$			
y ₂	6	00	693.	440	-Δα ⁿ (approx.)				y ₂	6	125	838.	675	-Δα ⁿ (approx.)			
V	11.	014	59		+ F (Δλ ⁿ) ³				V	11.	344	25		+ F (Δλ ⁿ) ³			
K (V _a /1,000) ²	(361.299)																
-Δα ⁿ	- 48																

POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
(For calculating machine computation)

α	2	to 3			α	3	to 2		
ΔL		k	+		ΔL		-		
α	2	EP1 AT	to 1 Arc Point 3200y	255	α	3	EP1 AT	to 1 Arc Point 4000y	255
$\Delta \alpha$					$\Delta \alpha$				
α'	1	to 2		180	00			00.00	

First Angle of Triangle

ϕ	52	31.30	2 EP1 AT	λ	173	15	02.52 E
ϕ			$B = 479.503.04$	$\Delta \lambda$	407	02	56.70
ϕ'	53	06.32	1 Arc Point 3200y	λ'	179	42	00.78 W

$\Delta \phi$ 195.3)
(log $s =$
 $b = (\sqrt{10,000})^2$ 154.0193)

$\sin \alpha$ 0.965 925 83 y
 $x \text{ cor.} = -\frac{1}{2}fb$ 629.5311 (29.172)

$\cos \alpha$ 0.258 819 05 y
 x' - 463 135.200

$x = s \sin \alpha$ - 463 164.372
H 054 702 222

$y = -s \cos \alpha + 124$ 104.521
 $Hx' = (\text{approx. } \Delta \lambda')$ 25 334.525

$a = (x'/10,000)^2$ 2.144.9421
Arc-sin = $+\frac{V(Va)}{15}$ 16645.5122

$y \text{ cor.} = +fa$ 17542.6235 (217.711)
 $\Delta \lambda''$ - 25 376.696

Y_0 5 867 951.377
 $\sin \phi$

Y' + 124 322.233
 $\sin \phi'$

Y_1 5 992 273.610
 $1 + \cos \Delta \phi$

Va - 23 142.059
 $\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta \phi}$

Y_2 5 969 187.551
 $-\Delta \alpha'$ (approx.)

V 10.76913
 $+F(\Delta \lambda'')^3$

$K (Va/1,000)^2 + .126(x.535.555$
 $-\Delta \alpha''$

F 8.1746

POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
(For calculating machine computation)

α	2	to 3									
2d L		+									
α	2	E P 1 AT	to 1	PVC Point 32004	275						
Δα											
α'	1	to 2	180	00	00.00						

First Angle of Triangle

φ	52	5C	31.30	2	E P 1 AT	λ	173	15	02.52 E
φ'	52	21	24.63	1	PVC Point 32004	Δλ	+07	01	19.43
						λ'	179	43	38.05 W

Δφ			761.3			(log s = b = (r/10,000) ²)	17.4652		
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sin α	0.996	194	70	4	x cor. = - $\frac{1}{2}$ f b	71.4204	(3.4/1)
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cos α	0.087	155	74	+	x'	477	674.975
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x = s sin α	-	477	678.387		H	.052	837	884
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y = -s cos α	-41	791.	442		Hx' = (approx. Δλ ⁿ)	-25	239.335
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a = (x'/10,000) ²	22	81.	7338		Arco-sin = + $\frac{V(Va)}{15}$	15	884.1565
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y cor. = +fa	18	661.3	881	(72.969)	Δλ ⁿ	25	279.426
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y ₀	5	867	951.377		sin φ		
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y'	-	41	869	431	sin φ'		
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y ₁	5	826	861.946		1 + cos Δφ		
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V _a	-	23	316.330		$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta \phi}$		
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y ₂	5	802	765.675		-Δα ⁿ (approx.)		
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V	10.	215	69		+ F (Δλ ⁿ) ³		
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P 8.1756

POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
(For calculating machine computation)

				0 1 2				0 1 2			
				First Angle of Triangle							
α	2	to 3		α	3	to 2		α	3	to 2	
$2dL$		ξ	+	$3dL$		ξ	-				
α	2	EPI TA to I Arc Point 20024		α	3	EPI TA to I Arc Point 30024					
$\Delta\alpha$				$\Delta\alpha$				180	00	00.00	
α'	1	to 2		α'	1	to 3					
ϕ	51	39	59.64	2	EPI TA	λ	178	05	17.574		
						$s = 299659.40$	$\Delta\lambda$		0		
ϕ'	54	21	34.20	1	Arc Point 20024	λ'	178	05	17.574		
$\Delta\phi$	10576			(log $s =$	$b = (\gamma/10,000)^2$						
$\sin \alpha$	0			x cor. = $-\frac{1}{2}fb$							
$\cos \alpha$	-1.0			x'	0						
$x = s \sin \alpha$	0			H							
$y = -s \cos \alpha + 299659.40$											
$a = (x'/10,000)^2$	-			$Hx' = (\text{approx. } \Delta\lambda')$							
y cor. = $+fa$	-			$\text{Arco-sin } = +\frac{V(V_a)}{15}$							
$\Delta\lambda'$				$\Delta\lambda'$							
Y_0	5	726	025.971	$\sin \phi$							
Y'	299	659	410	$\sin \phi'$							
Y_1	6	025	715.371	$1 + \cos \Delta\phi$							
V_a	-			$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta\phi}$							
Y_2	6	025	715.371	$- \Delta\alpha'$ (approx.)							
V				$+ F(\Delta\lambda')^3$							
$K(V_a/1,000)^2 +$	-			$- \Delta\alpha'$							

				613.3							
α	2	to 3		α	3	to 2		α	3	to 2	
$2dL$		ξ	+	$3dL$		ξ	-				
α	2	EPI TA to I Arc Point 20024		α	3	EPI TA to I Arc Point 30024					
$\Delta\alpha$				$\Delta\alpha$				180	00	00.00	
α'	1	to 2		α'	1	to 3					
ϕ	51	39	59.64	3	EPI TA	λ	178	05	17.574		
						$s = 499534.10$	$\Delta\lambda$		0		
ϕ'	55	42	19.83	1	Arc Point 30024	λ'	178	05	17.574		
$\Delta\phi$	613.3			(log $s =$	$b = (\gamma/10,000)^2$						
$\sin \alpha$	0			x cor. = $-\frac{1}{2}fb$							
$\cos \alpha$	-1.0			x'							
$x = s \sin \alpha$	0			H							
$y = -s \cos \alpha + 499534.10$											
$a = (x'/10,000)^2$	-			$Hx' = (\text{approx. } \Delta\lambda')$							
y cor. = $+fa$	-			$\text{Arco-sin } = +\frac{V(V_a)}{15}$							
$\Delta\lambda'$				$\Delta\lambda'$							
Y_0	5	726	025.971	$\sin \phi$							
Y'	449	534	100	$\sin \phi'$							
Y_1	6	175	560.071	$1 + \cos \Delta\phi$							
V_a	-			$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta\phi}$							
Y_2	6	175	560.071	$- \Delta\alpha'$ (approx.)							
V				$+ F(\Delta\lambda')^3$							
$K(V_a/1,000)^2 +$	-			$- \Delta\alpha'$							

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POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
(For calculating machine computation)

First Angle of Triangle					
α	β	γ	δ	ε	ζ
2	to 3			3	to 2
2d L	R	+		3d L	R
α	2 EP1 TA to 1 Arc Point 2000y	150		α	3 EP1 TA to 1 Arc Point 2000y
Δα		180	00	Δα	240
α'	1 to 2			α'	1 to 3
1		180	00	1	

1202.4					
φ	λ	μ	ν	ξ	η
φ	51	39	59.64	φ	51
φ'	53	56	39.06	φ'	52
Δφ				Δφ	57

1202.4					
sin α	cos α	x = 8 sin α	y = -8 cos α	a = (x'/10,000) ²	y cor. = +fa
sin α	0.570 000 00 +	x' + 149	y' - 722	224.4106	1835.9031
cos α	0.866 025 40 4	x = 8 sin α + 149	y = -8 cos α + 722	224.4106	1835.9031
x = 8 sin α		x'			
y = -8 cos α					
a = (x'/10,000) ²					
y cor. = +fa					
sin φ					
sin φ'					
1 + cos Δφ					
sin φ + sin φ'					
1 + cos Δφ					
-Δα' (approx.)					
+ F (Δα') ³					
-Δα'					

1202.4					
sin α	cos α	x = 8 sin α	y = -8 cos α	a = (x'/10,000) ²	y cor. = +fa
sin α	0.500 000 00 +	x' + 149	y' - 722	224.4106	1835.9031
cos α	0.866 025 40 4	x = 8 sin α + 149	y = -8 cos α + 722	224.4106	1835.9031
x = 8 sin α		x'			
y = -8 cos α					
a = (x'/10,000) ²					
y cor. = +fa					
sin φ					
sin φ'					
1 + cos Δφ					
sin φ + sin φ'					
1 + cos Δφ					
-Δα' (approx.)					
+ F (Δα') ³					
-Δα'					

F 8.1810

POSITION COMPUTATION, FIRST-ORDER TRIANGULATION
 (For calculating machine computation)

α	to 3													
$2^d L$	$\&$	+												
α	2 <i>EPLTA</i> to <i>I Arc Point 1000g</i>		180											
$\Delta\alpha$			180	00	00.00									
α'	1	to 2												

First Angle of Triangle

ϕ	51	39	59.64	2 <i>EPLTA</i>	λ	178	05	$17.57w$	ϕ						
				$b = 149844.70$	$\Delta\lambda$			0							
ϕ'	53	00	47.48	1 <i>Arc Point 1000g</i>	180°	λ'	178	05	$17.57w$	ϕ'					

$\Delta\phi$		(log s =	$b = (y/10,000)^2$												
$\sin \alpha$	0	x cor. =	$-\frac{1}{2}fb$												
$\cos \alpha$	-1.0	x'													
$x = s \sin \alpha$	0	H													
$y = -s \cos \alpha$	+149 844.70	$Hx' = (\text{approx. } \Delta\lambda^n)$													
$a = (x'/10,000)^2$		Arc-sin =	$+\frac{y(Va)}{15}$												
$y \text{ cor.} = +fa$		$\Delta\lambda'$													
y_0	5 726 025.97	$\sin \phi$													
y'	+ 149 844.70	$\sin \phi'$													
y_1	5 875 870.67	$1 + \cos \Delta\phi$													
Va	-	$\frac{\sin \phi + \sin \phi'}{1 + \cos \Delta\phi}$													
y_2	5 875 870.67	$-\Delta\alpha'$ (approx.)													
V		+ F ($\Delta\lambda^n$) ³													
K ($Va/1,000$) ² +		$-\Delta\alpha'$													

APPROVAL SHEET TO ACCOMPANY


Survey H-7973

Project CS-343

The field work was supervised closely and the boat sheet inspected daily.

The records and smooth sheet have been inspected and are approved.

The survey is considered adequate.



Thos. B. Reed
CAPT., USC&GS
Comdg. Ship PIONEER

RHC

Form 712
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Rev. Apr. 1950

839

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coastal Surveys~~

2 February 1953

Division of Charts: R. H. Carstens

Plane of reference approved in 13
volumes of sounding records for

HYDROGRAPHIC SHEET 7973

Locality South Bering Sea, Alaska

Chief of Party: C. Pierce)
T. B. Reed) in 1952
Plane of reference is mean lower low water, reading
3.0 ft. on tide staff at Sweeper Cove
19.8 ft. below B. M. 16 (1951)

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

Condition of records satisfactory except as noted below:

E. C. McKay
Section of Tides

Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES

Survey No. H-7973

Name on Survey	A On Chart No.	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
<u>Alaska</u>		(for title)							1
<u>Bering Sea</u>									2
									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25
									26
									27

Names underlined in red are approved 1-30-53 L. Heck

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7973..

Records accompanying survey:

Boat sheets ..2..; sounding vols. 13...; wire drag vols.;
bomb vols.; graphic recorder rolls 5 Env;;
special reports, etc. 1. Smooth Sheet; 1. Descriptive Report;.....
.....

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

Number of positions on sheet
Number of positions checked
Number of positions revised
Number of soundings revised (refers to depth only)
Number of soundings erroneously spaced
Number of signals erroneously plotted or transferred
Topographic details	Time
Junctions	Time
Verification of soundings from graphic record	Time

Verification by.....Total time Date

Reviewed by..... Time Date

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H- 7973

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.
2. Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude.
3. All reference to survey sheets mentioned in the descriptive report include the registry number and year.
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical 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.
6. All positions verified instrumentally were check marked in the sounding records.
7. All critical soundings are clear and legible and are a little larger than the adjacent soundings.
8. The metal protractor has been checked within the last three months.
9. The protracting and plotting of all bad crossings were verified.
10. All detached positions locating critical soundings, rocks or buoys were verified.
11. The boat sheet was compared with the smooth sheet.

12. The spacing of soundings as recorded in the records was closely followed.
13. The bottom characteristics were shown on outstanding shoals.
14. The reduction and plotting of doubtful soundings were checked.
15. The transfer of contemporary topographic information was carefully examined.
16. 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.
18. The depth curves have been inspected before inking.
19. All triangulation stations and transfer of topographic and hydrographic signals were checked.
20. Heights of rocks were checked against range of tide.
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
22. Unnecessary 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.
24. The low water line and delineation of shoal areas have been properly shown.
25. Degree and minutes values and symbols have been checked.
26. Questionable soundings have been checked on the fathograms.

27. Source of shoreline and signals (when not given in report).
28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual.
29. All aids located, with those on contemporary topographic sheets, have been shown on survey.
30. Depth curves were satisfactory except as follows:
31. Sounding line crossings were satisfactory except as follows:
32. Junctions with contemporary surveys were satisfactory except as follows:
33. Condition of sounding records was satisfactory except as follows:
34. The protracting was satisfactory except as follows:
35. The field plotting of soundings was satisfactory except as follows:
36. Notes to reviewer:

Verified by

Date

NAUTICAL CHARTS BRANCH

SURVEY NO. H-7973

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
1/17/55	8862	D.H. Benson	Fully applied Before After Verification and Review ¹
4/10/55	9102	D.H. Benson	Before After Verification and Review ^{Fully applied subject to corrections after V.R.}
4/17/55	9302	D.H. Benson	Before After Verification and Review ^{Fully applied subject to corrections after V.R.}
4/28/55	9000	D.H. Benson	Before After Verification and Review ^{Fully applied subject to corrections after V.R.}
3/30/55	8802	JAE	Partially applied Before After Verification and Review ^{2nd}
Jan 28/56	8865	H.D. Steyman	Before After Verification and Review ^{in part thru 8802 cat}
12-8-58	8861	J. Heaton	Partially applied Before After Verification and Review ^{Fully applied subject to V.R. & rev. corr's. Partially}
12/23/58	8863 Recount	J.F. Walker	Before After Verification and Review ^{Completely}
Dec. '61	8864	L.V.E.	Before ^{Before} After Verification and Review
12/25/77	8863	KANIS	Before After Verification and Review
2/15/80	(16500) 8861	Sager	consider as a Fully Applied CAT I survey Before Verification -
2/19/80	(16011) 8802	Sager	consider as final application of CAT I Survey Before Verification consider as final application of CAT I Survey
1/10/96 4-10-96	16001	D.M. FALLON	CONSIDER ^{FULLY} APPROPRIATE APPLIED CAT I

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.