8962

Diag. Cht. No. 8554-2.

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. PF 20-3-67 Office No. H-8962

LOCALITY

State ALASKA

General locality LOWER COOK INLET

Locality Kamishak Bay

1967, 1968-70

CHIEF OF PARTY Capt. H.R. Lippold, Jr
Capt. J.O. Phillips, Cdr A.C. Holmes,

LIBRARY & ARCHIVES

DATE 6-7-75

8962

FORM C&GS-537 (5-66)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-8962

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.

PF-20-3-67

State ALASKA

General locality LOWER COOK INLET

Locality Kamishak Bay

Scale 1:20,000 Date of survey 23 Aug - 27 Setp 1967

Instructions dated 21 April 1967 Project No. OPR429

Vessel USC&GSS PATHFINDER

Chief of party J.O. Phillips

Surveyed by Ship's personnel

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DE-723

Graphic record scaled by Ship's personnel

Graphic record checked by Ship's personnel

Positions verified
~~Plotted~~ by A.E. Eichelberger Automated plot by Pacific Marine Center
Gerber Digital Plotter

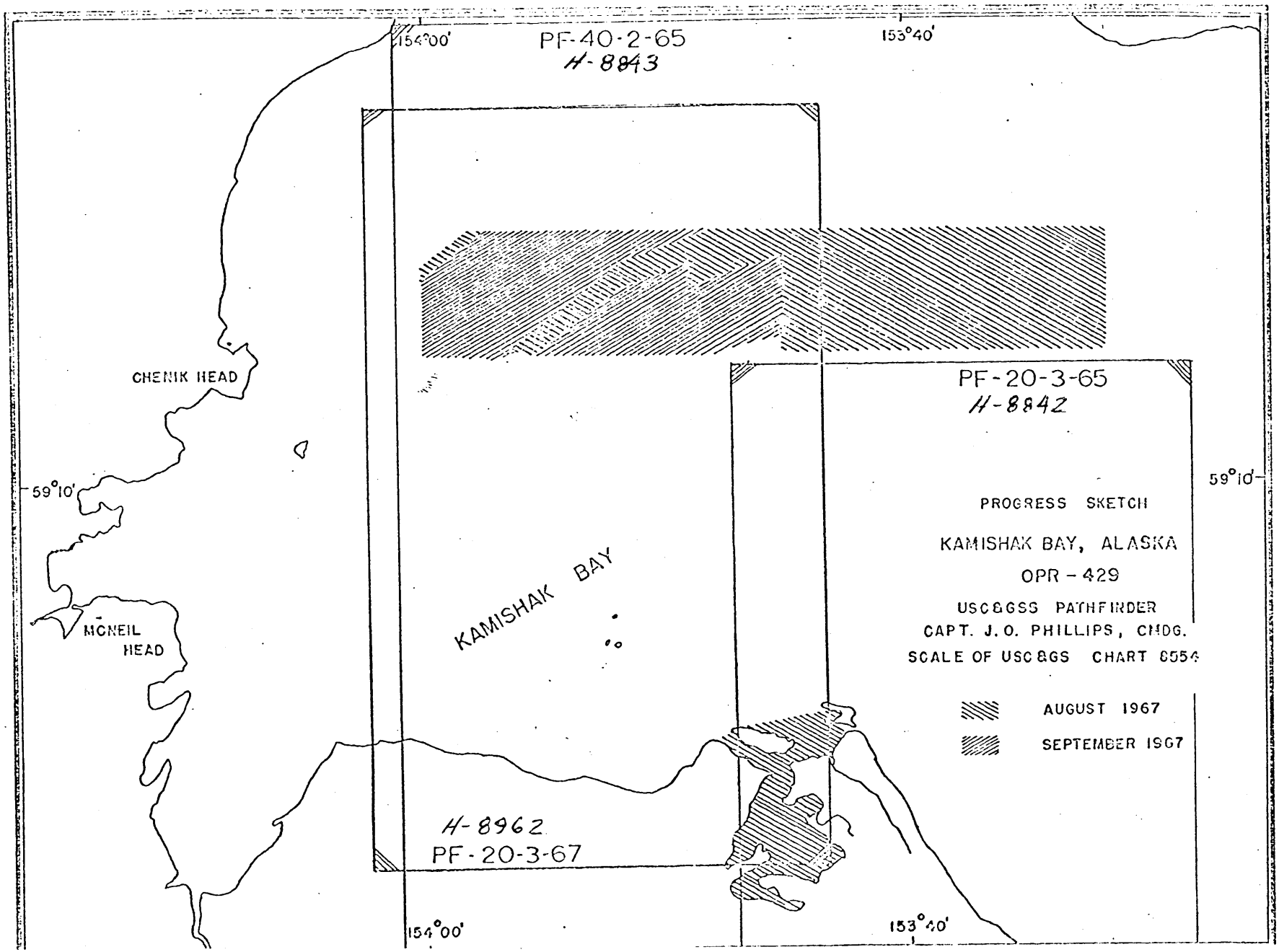
Soundings ~~penciled~~ verified by A.E. Eichelberger

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS: Reviewer — remove all tide corrections, TRA corr. Shoran corr., velocity tables, ~~bottom samples~~ Hydro Parameter cards, Station position cards, etc. which are not essential after review and file them with printouts. Segregate for different seasons

Applied to standards 7-1-75
QW
WST

USCOMM-DC 37009-P66


154°00'
PF-40-2-65
H-8843
153°40'
CHENIK HEAD
59°10'
PF-20-3-65
H-8842
59°10'
PROGRESS SKETCH
KAMISHAK BAY, ALASKA
OPR - 429
USC&GSS PATHFINDER
CAPT. J. O. PHILLIPS, CMDG.
SCALE OF USC&GS CHART 8554
AUGUST 1967
SEPTEMBER 1967
KAMISHAK BAY
MCNEIL HEAD
H-8962
PF-20-3-67
154°00'
153°40'

Descriptive Report to accompany the
Hydrographic survey
H-8962 PF-20-3-67

USC&GSS PATHFINDER
Capt. J.O. Phillips, Cmdg.

A. PROJECT

The hydrography on this survey was completed in accordance with project instructions OPR-429, Lower Cook Inlet Alaska, dated 21 April 1967, and supplemented by the following changes: Change No. 2 Amendment to Instructions dated 12 May 1967, and Change No. 4 Amendment to Instructions dated 6 June 1967.

B. AREA SURVEYED

This survey is a basic hydrographic survey of Kamishak Bay, Alaska. The area on this sheet was a priority area stated in Change No. 4 which consisted of a channel into McNeil Cove, in conjunction with a study by the State of Alaska Highway Department on running a ferry channel and subsequent ferry terminal in McNeil Cove. The hydrography was run from August 23, 1967 to September 27, 1967.

C. SOUNDING VESSEL

The entire survey was done with ML #1, ML #2, and ML #4, using Shoran control for the entire project. The identifying colors of each launch were: ML #1 - blue; ML #2 - violet ; ML #4 - brown.

D. SOUNDING EQUIPMENT.

The following model DE 723 Raytheon Fathometers were used through the survey:

Vessel	Serial Number	Date
ML #1	935	31 August - 9 September
	145	10 September
ML #2	551	28 August - 31 August
	552	7 September - 10 September
ML #4	904	23 August - 28 August
	940	30 August - 27 September

Bar checks were taken at the beginning and end of work each day of hydrography, weather permitting. The depths in which the survey was run ranged from 5.8 to 15 fathoms. The echo sounding corrections were determined from the bar check data, errors with the initial setting on the fathometers, and stylus arm length corrections. The abstracts of these corrections can found following the text of this report.

E. SMOOTH SHEET

Data tapes have been cut by personnel of the ship PATHFINDER and the smooth sheet is in the process of being plotted by the electronic digital plotter of the Pacific Marine Center. The position overlays will be verified by PATHFINDER personnel and the sounding overlays will beverified by Pacific Marine Center personnel.

F. CONTROL

Shoran was used exclusively for the control of the hydrography on this sheet. Two shore stations were used, one on the traverse station Crow 1964 located on Crow Island , and the other on the triangulation station Juma 1967 located on Nordyke Island. Calibration of the shoran was accomplished by comparing a series of visual fixes with corresponding shoran readings from each station, obtaining a correction for the shoran reading. Several calibrations for each launch were used on the boat sheet plot, but seasonal correctors for each launch were used for the smooth sheet plot. An abstract of the seasonal corrections is included in the appendix to this report (For further details, see PATHFINDER Shoran Report 1967).

G. SHORELINE

There was no shoreline area surveyed on this sheet during the 1967 season.

H. CROSSLINES

Crosslines constituted 9½% of the hydrography run, meeting the prescribed requirements. The depth agreement at crossings were generally good.

I. JUNCTIONS (H-8843)

Junction was established with PF 40-2-65 and was in good agreement.

J. COMPARISON WITH PRIOR SURVEY

None.

K. COMPARISON WITH THE CHART

The chart for the area is C&GS Chart 8554, Cook Inlet - Southern Part, 1:200,000 , May 10, 1965. The area covered by the survey for the most part is listed as unsurveyed with ocasional soundings, which agreed with the results obtained.

L. ADEQUACY OF SURVEY

The sheet is not completed, but that portion of the priority area that is completed is adequate and should supersede all prior work.

M. AIDS TO NAVIGATION

There are no aids to navigation in the area.

N. STATISTICS

Launch	Number of Positions	Miles of Sounding lines
ML #1	447	139.4
ML #2	553	169.7
ML #4	413	146.9
Total	1413	456.0

N. STATISTICS (con't)
Total area surveyed in square nautical miles ---- 21.0

Positions numbered 4001 to 4023 of ML #2 were rejected due to an error in the shoran readings which was not resolved at the time of hydrography. The data from these positions was not calculated into the statistics.
Positions numbered 6100 to 6999 were omitted from ML #4 work; a mistake in numbering occurred and position 6099 is followed by position 7000. Positions 7179 and 7180 are field rejects.

Stations observed
Tide - one located on Nordyke Island
Oceanographic - four observed for the University of Alaska's Lower Cook Inlet Study were used
Current - none
Magnetics - none
Bottom samples - none

O. MISCELLANEOUS
Because of the continuing nature of the project, bottom samples were not taken this season. Completion of the hydrography was considered for priority.
No unusual features were found in the surveyed area.

P. RECOMMENDATIONS
None.

Q. REFERENCES

PATHFINDER Shoran Report - 1967
PATHFINDER Fathometer Report - 1967

Respectfully submitted,

Lowell Genzlinger
Lowell J. Genzlinger
Lt. (j.g.) USESSA

William W. Spychalla
William W. Spychalla
Lt. (j.g.) USESSA

Approved and forwarded,

Walter L. Bradly
Lt.Cdr. USESSA
Field Operations Officer, USC&GSS PATHFINDER

PF 20-3-67 (H8962)

TIDE NOTE

On 8 August 1967 a Bubbler tide gage was installed on the south side of Nordyke Island at Latitude 59° 10.7 N and Longitude 154° 05.2 W. A fixed staff with vitrified scale had been installed at this location earlier in the season and was still secure. For the purpose of sounding reduction for boat sheet plotting, predicted tides for Seldovia were extracted from the tide tables and applied without correction.

The Nordyke Island installation functioned well except for the 28 and 30 August and 9 and 10 September when the tide gage box had been blown over, and it appeared as though a drift wood log had fouled in the tubing. Hourly heights were requested from Rockville, Maryland for this period of time. The time meridian used was 150° W.

The tide gage was removed 4 October 1967 in good operation except the staff had been laying down. The tubing was left for use next year.

Memorandum ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATI

: The Commanding Officer
USC&GS Ship PATHFINDER
1801 Fairview Avenue, East
Seattle, Washington 98102

DATE: October 25, 1967

In reply refer to:
C3312-211-CSSG

FROM : Chief, Tides Section
Oceanography Division

SUBJECT: Tidal data for Nordyke Island, OPR-429

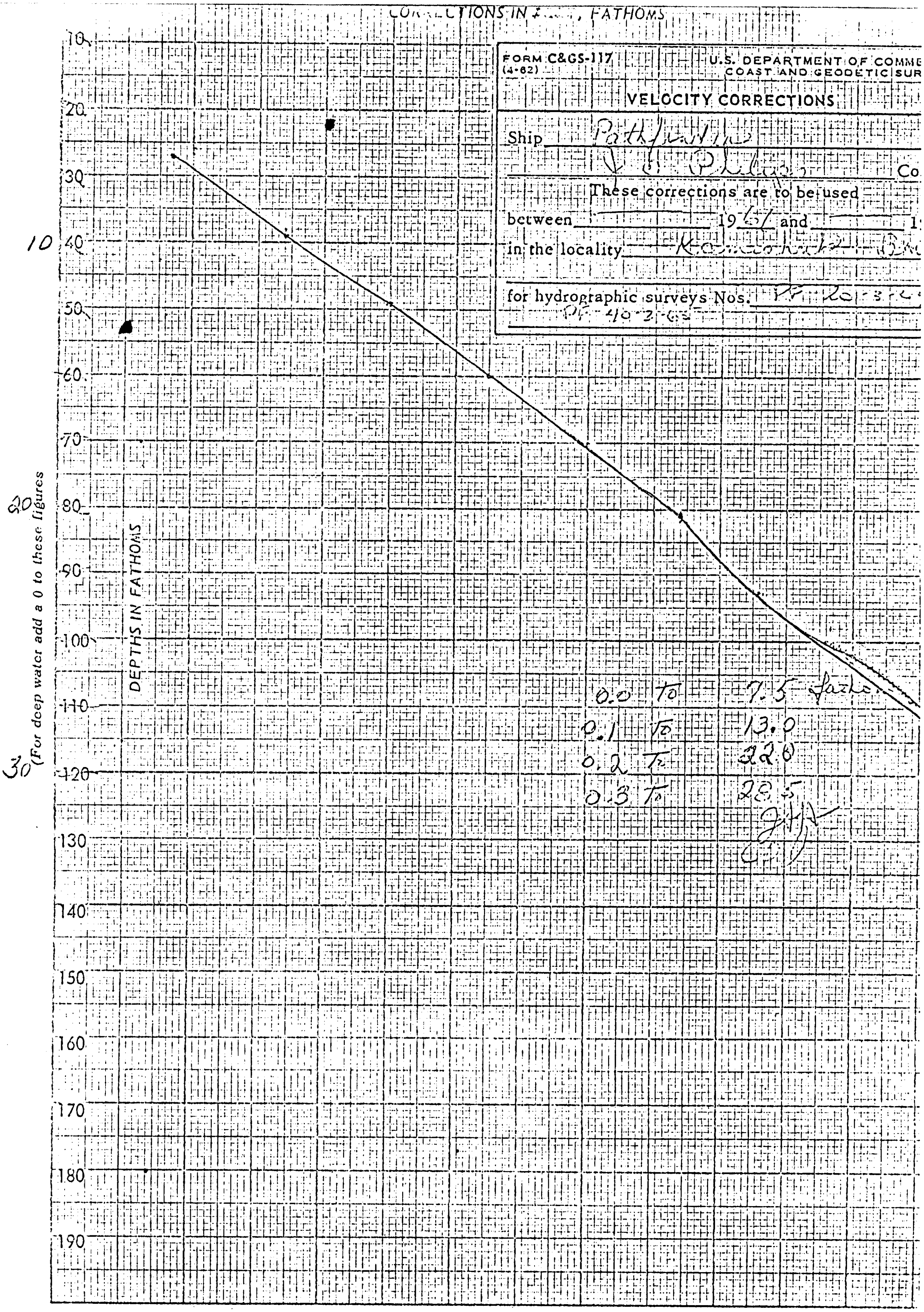
Preliminary determination of MLLW is 7.8 feet above staff zero.

Requested inferred hourly heights and bench mark data are enclosed.

Martha A. Winn

Martha A. Winn

Enclosures



FORM C&GS-117 (4-62)

U.S. DEPARTMENT OF COMME[RCE]
COAST AND GEODETIC SUR[VEY]

VELOCITY CORRECTIONS

Ship Pathfinder

Co.

These corrections are to be used

between ________ 1967 and ________ 1

in the locality ________

for hydrographic surveys Nos. ________

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

PF 20-3-67 1967

Velocity Corrections

These corrections apply to all work done on PF 20-3-67 in 1967.

Depth (fms)	Corrector (fms)
0.0 - 7.5	0.0
7.5 - 13.0	+0.1
13.0 - 22.0	+0.2
22.0 - 28.5	+0.3

TRA Corrections

ML#	Day	Time	Bar Check (fms)	Initial (fms)	Combined TRA (fms)
1	all	all	+0.3	0.0	+0.3
2	235	all	+0.3	0.0	+0.3
	240	all	+0.2	0.0	+0.2
	243	all	+0.3	0.0	+0.3
	250	all	+0.3	0.0	+0.3
	251	0918 to 1314	+0.4	0.0	+0.4
		1314 to 132230	+0.4	-0.1	+0.3
		132230 to D.E.	+0.4	0.0	+0.4
	252	all	+0.3	0.0	+0.3
	253	all	+0.3	0.0	+0.3
4	235	all	+0.4	0.0	+0.4
	240	all	+0.3	0.0	+0.3
	242	all	+0.3	0.0	+0.3

OPR-429

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

PF 20-3-67

TRA Corrections (con't)

ML#	Day	Time	Bar Check (fms)	Initial (fms)	Combined TRA (fms)
4	243	0900 to 1448	+0.3	0.0	+0.3
		1448 to 1458	+0.3	+0.1	+0.4
		1458 to 1524	+0.3	+0.2	+0.5
		1524 to 1541	+0.3	+0.3	+0.6
		1541 to 1549	+0.3	+0.4	+0.7
		1549 to D.E.	+0.3	+0.5	+0.8
	250	1255 to 1719	+0.4	0.0	+0.4
		1719 to 1808	+0.4	-0.2	+0.2
		1808 to D.E.	+0.4	-0.3	+0.1
	251	0855 to 085730	+0.4	0.0	+0.4
		085730 to 0953	+0.4	+0.1	+0.5
		0953 to 1006	+0.4	0.0	+0.4
		1006 to 1017	+0.4	+0.1	+0.5
		1017 to 1023	+0.4	0.0	+0.4
		1023 to 1026	+0.4	+0.1	+0.5
		1026 to 1053	+0.4	0.0	+0.4
		1053 to 110630	+0.4	+0.1	+0.5
		110630 to 1116	+0.4	+0.2	+0.6
		1116 to 1119	+0.4	0.0	+0.4

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

PF 20-3-67

TRA Corrections (con't)

ML/#	Day	Time	Bar Check (fms)	Initial (fms)	Combined TRA (fms)
4	251	1119 to 1139	+0.4	+0.1	+0.5
		1139 to D.E.	+0.4	0.0	+0.4
	252	all	+0.3	0.0	+0.3
	270	all	+0.3	0.0	+0.3

TRA CORRECTIONS

— 1967 —

085000 00 0003 0000 243 0 00000 00000
133000 00 0003 0000 250 0 00000 00000
085000 00 0003 0000 251 0 00000 00000
090000 00 0003 0000 252 0 00000 00000
105000 00 0003 0000 253 0 00000 00000

ML #1

090000 00 0003 0000 235 0 00000 00000
103000 00 0002 0000 240 0 00000 00000
135000 00 0003 0000 242 0 00000 00000
090000 00 0003 0000 243 0 00000 00000

130000 00 0003 0000 250 0 00000 00000
091800 00 0004 0000 251 0 00000 00000
131400 00 0003
132230 00 0004
092000 00 0003 0000 252 0 00000 00000
084800 00 0003 0000 253 0 00000 00000

ML #2

085000 00 0004 0000 235 0 00000 00000
104800 00 0003 0000 240 0 00000 00000
132500 00 0003 0000 242 0 00000 00000
090000 00 0003 0000 243 0 00000 00000
144800 00 0004
145800 00 0005

ML #4

152400 00 0006
154100 00 0007

154900 00 0008
125500 00 0004 0000 250 0 00000 00000
171900 00 0002
180800 00 0001

085500 00 0004 0000 251 0 00000 00000
085730 00 0005
095300 00 0004

100600 00 0005

101700 00 0004

102300 00 0005

102600 00 0004

105300 00 0005
110630 00 0006

111600 00 0004

111900 00 0005

113900 00 0004

151000 00 0003 0000 252 0 00000 00000
105000 00 0003 0000 270 0 00000 00000

SEASONAL SHORAN CORRECTORS - 1967

$$M = K(X) + C$$

M = Actual Distance
K = Slope
X = Shoran Distance
C = Initial Correction

ML #1

JUMA	K = 0.997 C = 0.064
CROW	K = 0.997 C = 0.065

ML #2

JUMA	K = 0.997 C = 0.022
CROW	K = 0.997 C = 0.016

ML #4

JUMA	K = 0.997 C = 0.041
CROW	K = 0.997 C = 0.008

Note; All C values are positive

SHORAN CORRECTORS USED DURING FIELD SEASON

ML #1

PF 40-2-65 POSITION 2221-2318
PF 20-3-67 POSITION 2001-2447

JUMA (K = 0.9970) (C = 0.0617)		CROW (K = 0.9970) (C = 0.0657)	
2.95	+0.050	2.70	+0.055
4.60	+0.045	4.40	+0.050
6.30	+0.040	6.05	+0.045
7.95	+0.035	7.72	+0.040
9.60	+0.030	9.40	+0.035
11.30	+0.025	11.05	+0.030
12.95	+0.020	12.70	+0.025
14.65	+0.015	14.38	+0.020
16.30	+0.010	16.00	+0.015
18.00	+0.005	17.70	+0.010
19.70	0.000	19.35	+0.005
21.40		21.00	

ML #2

PF 20-3-67 POSITION 4001-4015

JUMA (K = 0.9970)′ (C = 0.0220)′		CROW (K = 0.9970)′ (C = 0.0050)′	
3.25	+0.010′	2.60	-0.005′
4.90	+0.005′	4.27	-0.010′
6.57	0.000′	5.93	-0.015′
8.24	-0.005′	7.60	-0.020′
9.90	-0.010′	9.25	-0.025′
11.57	-0.015′	10.90	-0.030′
13.21	-0.020′	12.58	-0.035′
14.88	-0.025′	14.25	-0.040′
16.55	-0.030′	15.91	-0.045′
18.20	-0.035′	17.60	-0.050′
19.88	-0.040′	19.25	-0.055′
21.55		20.91	-0.060′
		22.50	

PF 20-3-67 POSITION 4016-4568

JUMA (K = 0.9970)′ (C = 0.0220)′		CROW (K = 0.9970)′ (C = 0.0273)′	
3.25	+0.010′	2.00′	+0.020′
4.90	+0.005′	3.25	+0.015′
6.57		4.90	

POSITION 4016-4568 (cont.)

JUMA		CROW	
6.57		4.90	
	0.000'		+0.010'
8.24		6.60	
	-0.005'		+0.005'
9.90		8.25	
	-0.010'		0.000'
11.57		9.92	
	-0.015'		-0.005'
13.21		11.62	
	-0.020'		-0.010'
14.88		13.30	
	-0.025'		-0.015'
16.55		14.95	
	-0.030'		-0.020'
18.20		16.60	
	-0.035'		-0.025'
19.88		18.30	
	-0.040'		-0.030'
21.55		19.95	
			-0.035'
		21.60	

ML # 4

PF 40-2-65 POSITION 6117-6158
PF 20-3-67 POSITION 6001-6021

JUMA		CROW	
(K = 0.9970)'		(K = 0.9970)'	
(C = 0.0480)'		(C = 0.0923)'	
3.50		9.00	
	+0.035'		-0.020'
5.10		9.80	
	+0.030'		-0.025'
6.75		11.50	
	+0.025'		-0.030'
8.44		13.15	
	+0.020'		-0.035'
10.11		14.83	
	+0.015'		-0.040'
11.80		16.50	
	+0.010'		
13.46			
	+0.005'		
15.13			
	0.000'		
16.80			
	-0.005'		
18.50			
	-0.010'		
20.16			

ML #4(cont.)

PF 20-3-67 POSITION 6022-7313

JUMA (K = 0.9970)' (C = 0.0087)'		CROW (K = 0.9970)' (C = 0.0153)'	
2.00	0.000'	2.60	+0.005'
3.74	-0.005'	4.30	0.000'
5.40	-0.010'	5.96	-0.005'
7.08	-0.015'	7.63	-0.010'
8.73	-0.020'	9.30	-0.015'
10.40	-0.025'	11.00	-0.020'
12.07	-0.030'	12.65	-0.025'
13.72	-0.035'	14.31	-0.030'
15.40	-0.040'	16.00	-0.035'
17.07	-0.045'	17.65	-0.040'
18.73	-0.050'	19.33	-0.045'
20.40		21.00	

1-967

Corrections to Echo Soundings

STYLUS ARM CORRECTIONS

PF 20-3-67 H-8962

day	pos. to pos.	time to time	% ARM ERROR ~~correction~~	% CORR.	table #
ML #1					
243	2001 - 2083	085400-160600	+0.5	-0.5	23
250	2084 - 2156	133700-174100	+0.5	-0.5	22
251	2157 - 2187	085300-110200	0.0	0.0	131
251	2188 - 2230	110230-135700	+0.5	-0.5	22
252	2231 - 2352	092200-161800	0.0	0.0	131
253	2353 - 2447	105900-170100	0.0	0.0	131
ML #2					
240	4024 - 4080	111830-145200	-0.5	+0.5	73
240	4081 - 4116	145230-164700	0.0	0.0	131
242	4117 - 4130	135400-144600	-0.5	+0.5	73
242	4131 - 4145	144700-155900	0.0	0.0	131
243	4146 - 4214	090700-145900	0.0	0.0	131
250	4215 - 4219	130800-131900	-0.5	+0.5	73
250	4220 - 4251	131930-153030	0.0	0.0	131
250	4252 - 4288	153100-173200	+0.5	-0.5	22
251	4289 - 4380	091800-143000	0.0	0.0	131
252	4381 - 4452	092600-162800	+0.5	-0.5	22
253	4453 - 4568	084900-175000	+0.5	-0.5	22
ML #4					
235	6001 - 6021	085800-104000	-1.0	+1.0	85
240	6022 - 6028	104900-113200	-1.0	+1.0	85
240	6029 - 6040	113300-124700	-0.5	+0.5	73
240	6041 - 6065	124800-145400	-1.0	+1.0	85
240	6066 - 6082	151300-170400	-0.5	+0.5	73
242	6083 - 6099	132800-144800	-0.5	+0.5	73
243	7000 - 7029	090500-115300	0.0	0.0	131
243	7030 - 7058	115400-142600	+0.5	-0.5	22
243	7059 - 7087	144300-171530	0.0	0.0	131
250	7088 - 7172	125600-180400	+0.5	-0.5	22
251	7173 - 7177	085600-090800	+0.5	-0.5	22
251	7178 - 7229	090830-130600	+1.0	-1.0	24
252	7230 - 7236	151200-153000	-0.5	+0.5	73
252	7237 - 7260	153030-164400	-1.0	+1.0	85
270	7261 - 7302	105600-140900	-1.0	+1.0	85
270	7303 - 7313	141000-152200	-0.5	+0.5	73

PRELIMINARY

APPROVAL SHEET

REGISTRY NO. H-8962 PF 20-3-67

This hydrographic sheet has been examined and approved. The work done on this survey is considered adequate, except for a couple of splits in one area. These splits shall be filled at the beginning of hydrography next season. This survey is considered to be complete and adequate for ~~charting~~ the channel for the proposed ferry slip.

J.O. Phillips
Capt. USESSA
Cmdg. SHIP PATHFINDER

30137

PF-20-3-67
11-15-67 1967
KAMISHAK BAY

JUMA 1967 059104036 2 1 3 0 4 0 2 6 0 6
154052172 5 5 4 7 2 1 7 2 0 6
CROW 1964 059050489
153422015
1967 295065527 1 0 6 2 4 1 5 3 0 7

24,301.35 2 4 3 0 1 3 5 0 0 5
0
File with printouts 1 6 0 9 3 5 0 0 0 2
3 0 1 3 7
1 -
0 0 0 0 0 0 0 0 0 0
9 6 7
0 0 0 0 0 0 0 0 0 1

NL# 1
3001-3447 0 9 9 7 0 0 0 6 1 7 0 9 9 7 0 0 0 6 5 7

Checked [illegible] Date

30137

PF-20-3-67

11-15-67

Prime Name		RED	
		FED	
			Not Used
			Not Used
		RAD	
			Not Used
		SNP	
Velocity Code	Table 3	VVL	
Conversion Error	Scale Lapse	CNV	
Identification Number		JN	
		AAA	
Velocity Boundary	Long Lat	VLE	
		VR	

ML #2 4001-4015 30137

Sheran Card Format (when calibration correction is applied by a line) (Flag if negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
C	9	9	7	0	0	0	2	2	0		0	9	9	7	0		0	0	0	5	0		

Computed ____ Punched ____ Checked ____ Date ____

30137

PF-20-3-67

11-15-67

[illegible]		Code	
[illegible] Name	Lat.	RPD	
	Long.	PBD	
[illegible] Name	Lat.		Not Used
	Long.		Not Used
[illegible]		[illegible]	
			Not Used
[illegible]		SNP	
Velocity Code	0 = No Vol. 2 = 2 Vol. [illegible]	CVL	
Conversion Factor for Magnetic [illegible]	Stat. Mi = / Loran =	CNV	
Identification Number		IN	
Location of survey with respect to magnetic baseline	= CA = [illegible]	AAA	
Velocity Boundary	Long. / Lat.	VLE	
		VR	
[illegible]			

ML#2 #4016-4568

Sheran Card Format (when calibration correction is applied by a line K x : C)
(Flag 6, 11, 17, or 23 if reup. constant is negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	9	9	7	0	0	0	2	2	0	0	9	9	7	0	0	0	1	6	0

Prepared ____ Punched ____ Checked ____ Date ____

30137

PF-20-3-67
11-15-67

Compensated ... from Electronic Control Baseline

		RPD	
		RPD	
			Not Used
			Not Used
		RAV	
			Not Used
		SMP	
Quality Used		QVL	
		CNV	
		JN	
		AAA	
		VLE	
		TR	
			70 71 72 73 74 75 76 77 78 79 80

N.L. #4 Pos # 6021-6621 30137

Shows Card Format (when calibration correction is applied by a line ...)

1	2	3	4	5	6	8	9	10	11	12	15	16	17	18	19	20	21	22	23
0	9	9	7	0	0	C	4	8	0	0	9	9	7	0	C	0	9	2	3

R1O R2K R2C

Computed ________ Punched ________ Checked ________ Date ________

301 3 1

PF-20-3-67

11-15-67

RPD	
FSD	
RID	
DTP	
IVL	
CNV	
SR	
AAA	
VLE	
VR	

ML #4 Pos #6022-7513 30137

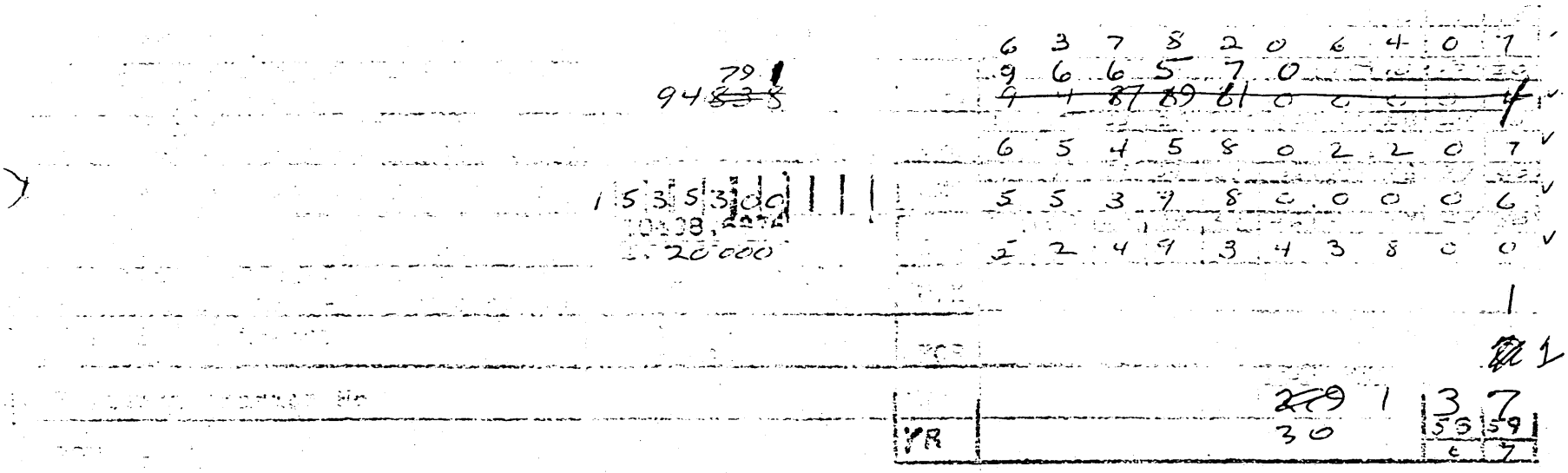
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
0	9	9	7	0	0.	0	0	8	7	0	9	9	7	0	0	0	1	5	3			

RIO AZA RZO

Computed ____ Punched ____ Checked ____ Date ____

E Kamishak Bay
7/15/67

1967



COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS (RANGE-RANGE)

(1) PROJECT NO. OPR-429 (2) H. NO. _____ (3) FIELD NO. PF 20-3-6

(4) TYPE OF CONTROL: [ ] RAYDIST, [X] SHORAN; FREQUENCY _____ kc

(5) MASTER (R1)
STATION NAME JUMA, 1967
LATITUDE 59 ° 10 ' 40.26 "
LONGITUDE 154 ° 05 ' 21.72 "

(6) SLAVE (R2)
STATION NAME CROW, 1964
LATITUDE 59 ° 05 ' 04.89 "
LONGITUDE 153 ° 42 ' 20.15 "

(7) AZIMUTH R1 TO R2 295 ° 06 ' 55.27 "

(8) BASELINE DISTANCE IN METERS 24,301.38 M

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE

(TO DETERMINE: IMAGINE AN OBSERVER STANDING ON R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO OBSERVER'S RIGHT THEN A IS POSITIVE).

[X] -A [ ] +A

(10) WHEN SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION KX+C, WHERE X IS SHORAN DISTANCE; ENTER CONSTANT COEFFICIENTS: See attached sheet

K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____

(12) NUMBER OF VELOCITY TABLES TO BE USED:

[ ] NONE, [ ] ONE, [ ] TWO, [ ] MORE THAN TWO (FOR OLD SURVEY LOGGED AT WSC ONLY -- IF SC SUPPLY VEL IND. TAPES)

IF TWO TABLES ARE TO BE USED, BOUNDARY DEFINED BY ° ' " _____ LATITUDE LONGITUDE

1967

CONTROL FOR: C08962 DATE OF LISTING: 04-19-75

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	..... NAME .....
1	70	200	139	307.00	.60	0	SHALE 1964
2	70	201	139	307.00	.60	0	ECHO 1964
3	70	202	139	307.00	.60	0	WARVIK 1964
4	67	203	250	307.00	.60	0	JUMA 1967
5	67	204	250	180.00	4.00	0	CROW 1964
6	68	205	250	307.00	.60	0	JUMA 1967
7	68	206	250	180.00	4.00	0	CROW 1964
8	70	207	250	307.00	.60	0	JUMA 1967
9	70	208	250	307.00	.60	0	SOUTH AUGUSTINE 2 RM3 1964

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

EOF..

STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
0.0	0.00	59 3 48.060	153 49 27.810
0.0	0.00	59 3 31.650	153 58 20.370
0.0	0.00	59 3 35.020	154 2 39.020
0.0	931.00	59 10 40.260	154 5 21.720
0.0	931.00	59 5 4.890	153 42 20.150
0.0	3300.48	59 10 40.260	154 5 21.720
0.0	3300.48	59 5 4.890	153 42 20.150
0.0	3306.40	59 10 40.260	154 5 21.720
0.0	3306.40	59 19 25.860	153 31 16.090

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center

Hourly heights are approved for tide tape reducer printout

Tide Station Used (NOAA form 77-12): Nordyke Island, Alaska

Period: August 10 - September 28, 1967

HYDROGRAPHIC SHEET: H-8843, H-8962

OPR: 429

Locality: Cook Inlet, Kamishak Bay, Alaska

Plane of reference (mean lower low water): 7.5 ft.

Height of Mean High Water above Plane of Reference is 14.6 ft.

Remarks: Tide reducers revised in read and verified for tape printout (Fathoms)

Hourly heights have been computed for the following Julian dates:

235
240
242
243
250
251
252
253
270

Robert A. Cummings
Chief, Tides Branch

Tide Tape 1967 Kamishak Bay

Time Meridian: 150° W

H-8843
H-8962

Tide gage: Nordyke Island

File with printouts

Had header info

```
080600 00 1009 0000 222 0 000000 000000
081800 00 1007
082800 00 1006
083800 00 1005
084800 00 1004
085800 00 1004
090800 00 1003
091900 00 1002
093000 00 1001
094400 00 0000
102000 00 0002
110000 00 0002
112200 00 0001
113200 00 0001
114200 00 1001
115100 00 1002
120000 00 1003
120900 00 1004
121800 00 1006
122700 00 1006
123400 00 1007
124200 00 1008
125200 00 1010
130000 00 1010
131000 00 1012
131900 00 1013
132800 00 1014
133800 00 1015
134700 00 1015
135500 00 1016
140400 00 1017
141600 00 1018
142700 00 1019
143800 00 1020
144900 00 1021
150000 00 1022
151000 00 1023
152300 00 1024
153800 00 1025
155200 00 1026
161000 00 1027
165000 00 1028
173000 00 1028
180900 00 1026
182200 00 1024
183300 00 1023
184200 00 1022
184900 00 1022
185200 00 1021
185800 00 1020
190000 00 1020
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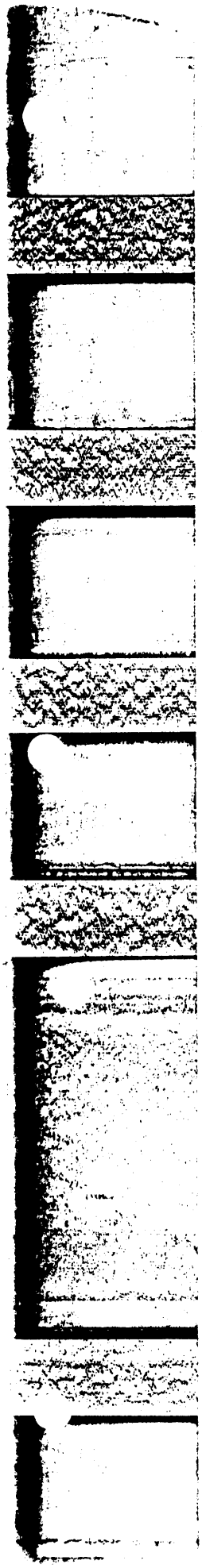

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191500 00 1018
192200 00 1017
193200 00 1016
194200 00 1015
195200 00 1014
200200 00 1013
201100 00 1012
202100 00 1011
203000 00 1010
204000 00 1009
205100 00 1008
210200 00 1007
211200 00 1006
212400 00 1005
213800 00 1004
215100 00 1003
221000 00 1002
223000 00 1001
230000 00 1000
081000 00 1012 0000 223 0 000000 000000
082100 00 1011
083200 00 1010
084200 00 1009
085400 00 1008
090400 00 1007
091400 00 1006
092400 00 1006
093300 00 1005
094200 00 1004
095200 00 1003
100500 00 1002
113800 00 1001
120000 00 1002
121400 00 1003
122800 00 1004
124000 00 1005
125000 00 1006
130000 00 1007
131000 00 1008
132000 00 1009
133000 00 1010
134000 00 1011
135000 00 1012
140000 00 1013
141100 00 1014
142100 00 1015
143200 00 1016
144200 00 1017
145400 00 1018
150800 00 1019
```

```
152000 00 1020
153500 00 1021
154900 00 1022
160200 00 1023
161900 00 1024
163900 00 1025
170900 00 1026
180800 00 1026
183000 00 1026
184700 00 1024
185800 00 1023
190800 00 1022
191900 00 1021
192800 00 1020
194000 00 1019
195000 00 1018
200000 00 1017
201000 00 1016
202100 00 1015
203200 00 1014
204200 00 1013
205500 00 1012
081600 00 1011 0000 228 0 000000 000000
083200 00 1012
084800 00 1013
090000 00 1014
091600 00 1015
093100 00 1016
094800 00 1017
100500 00 1018
102600 00 1019
105400 00 1020
120800 00 1020
124600 00 1019
131300 00 1018
133400 00 1017
135200 00 1016
141000 00 1015
142900 00 1014
144700 00 1013
150300 00 1012
152300 00 1011
154900 00 1010
162000 00 1009
173500 00 1009
080100 00 1000 0000 234 0 000000 000000
081200 00 0000
084100 00 0002
091000 00 0002
094200 00 0001
100000 00 0000
```

101500 00 1001
102700 00 1002
103700 00 1003
104500 00 1004
105200 00 1005
110000 00 1006
110900 00 1007
111800 00 1008
112600 00 1009
113400 00 1000
114200 00 1011
115200 00 1012
120000 00 1013
121000 00 1014
122000 00 1015
123000 00 1016
124200 00 1017
125600 00 1018
130600 00 1019
131900 00 1020
133000 00 1021
134100 00 1022
135500 00 1023
141000 00 1024
142800 00 1025
145000 00 1026
154700 00 1027
160800 00 1025
162100 00 1024
163500 00 1023
164900 00 1022
170000 00 1021
171100 00 1020
172200 00 1019
173200 00 1018
174200 00 1017
175200 00 1016
180200 00 1015
181200 00 1014
182200 00 1013
183200 00 1012
184200 00 1011
185200 00 1010
190200 00 1009
191300 00 1008
192500 00 1007
193700 00 1006
195000 00 1005
200300 00 1004
202000 00 1003
204400 00 1002

```
214000 00 1001
070500 00 1008 0000 235 0 000000 000000
071800 00 1007
073000 00 1006
074100 00 1005
075400 00 1004
080600 00 1003
082000 00 1002
083800 00 1001
091200 00 1000
094500 00 0000
101000 00 1001
102500 00 1002
104000 00 1003
105200 00 1004
110200 00 1005
111200 00 1006
112200 00 1007
113100 00 1008
114000 00 1009
115000 00 1010
120000 00 1011
121000 00 1012
122000 00 1013
123000 00 1014
124200 00 1015
125200 00 1016
130200 00 1017
131500 00 1018
132500 00 1019
085000 00 1014 0000 240 0 000000 000000
094400 00 1013
102500 00 1012
110600 00 1011
135200 00 1012
142900 00 1013
145800 00 1014
152400 00 1015
155000 00 1016
161800 00 1017
164200 00 1018
170800 00 1018
172800 00 1019
175000 00 1019
192000 00 1019
123000 00 1016 0000 242 0 000000 000000
132000 00 1014
140700 00 1014
171100 00 1014
174000 00 1014
181000 00 1016
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184000 00 1017
191000 00 1018
194000 00 1019
201100 00 1019
210000 00 1020
081000 00 1013 0000 243 0 000000 000000
083200 00 1014
085300 00 1015
091800 00 1016
094200 00 1017
100900 00 1018
123600 00 1018
130600 00 1017
133300 00 1016
140000 00 1015
142900 00 1014
145800 00 1013
153000 00 1012
172600 00 1011
180000 00 1012
120800 00 1012 0000 250 0 000000 000000
121600 00 1013
122300 00 1015
123000 00 1017
123800 00 1018
124700 00 1019
125200 00 1020
130000 00 1021
131000 00 1022
131800 00 1023
132700 00 1024
133500 00 1025
134300 00 1026
135100 00 1026
140000 00 1027
140900 00 1028
141700 00 1028
142500 00 1029
143500 00 1029
145000 00 1030
161700 00 1030
163400 00 1029
164500 00 1028
165400 00 1027
170300 00 1026
171100 00 1025
171900 00 1024
172900 00 1023
173700 00 1022
174300 00 1021
175100 00 1020
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175800 00 1019
180800 00 1018
181500 00 1017
182300 00 1016
183100 00 1015
184000 00 1013
184800 00 1012
185600 00 1010
190300 00 1009
080500 00 1005 0000 251 0 000000 000000
081600 00 1004
082700 00 1004
083800 00 1003
084900 00 1002
090000 00 1002
091100 00 1001
093100 00 1000
102900 00 1000
105200 00 1001
110900 00 1002
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113500 00 1004
114300 00 1005
115000 00 1006
115500 00 1007
115900 00 1007
120600 00 1008
121400 00 1009
122400 00 1010
123500 00 1011
124600 00 1012
125200 00 1013
125800 00 1014
130600 00 1015
131300 00 1016
132000 00 1017
132700 00 1018
133400 00 1019
134100 00 1020
135400 00 1021
140700 00 1022
141800 00 1023
142900 00 1024
143900 00 1025
144700 00 1026
145400 00 1027
145800 00 1027
150600 00 1027
151400 00 1028
152500 00 1028
155200 00 1029
```

```
163000 00 1030
173000 00 1027
180300 00 1024
181000 00 1023
181800 00 1022
182400 00 1022
183000 00 1021
183500 00 1020
184000 00 1020
184600 00 1019
185000 00 1018
185600 00 1018
190000 00 1017
190800 00 1016
191800 00 1015
192500 00 1014
193300 00 1012
194200 00 1010
195100 00 1009
200000 00 1008
200900 00 1007
202000 00 1006
202900 00 1005
203900 00 1004
204800 00 1003
205800 00 1003
211000 00 1002
212100 00 1001
213400 00 1000
214700 00 1001
081800 00 1011 0000 252 0 000000 000000
083200 00 1010
085000 00 1008
090400 00 1007
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093800 00 1005
094900 00 1004
100800 00 1003
112500 00 1004
114800 00 1005
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121800 00 1007
122900 00 1008
124000 00 1009
125200 00 1010
130200 00 1011
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132100 00 1013
133100 00 1014
134100 00 1015
```

```
135100 00 1016
140000 00 1017
141100 00 1018
142100 00 1019
143100 00 1020
144100 00 1021
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150100 00 1023
151400 00 1024
152800 00 1024
154400 00 1025
160500 00 1026
173300 00 1027
175200 00 1026
080600 00 1017 0000 253 0 000000 000000
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084600 00 1014
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091800 00 1012
093300 00 1011
095000 00 1010
101000 00 1009
103600 00 1008
121800 00 1007
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140600 00 1014
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144300 00 1017
145900 00 1018
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154800 00 1021
160800 00 1022
164000 00 1023
184800 00 1023
191000 00 1022
192800 00 1021
194000 00 1020
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090000 00 1017 0000 270 0 000000 000000
094800 00 1017
102000 00 1016
110000 00 1015
```

```
140000 00 1014
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155300 00 1016
162500 00 1017
165400 00 1018
170000 00 1019
121800 00 1016 0000 271 0 000000 000000
125400 00 1015
134300 00 1014
155000 00 1013
164100 00 1014
171100 00 1015
```

H-8962 Velocity Tables
1967 Season

000075 00 0000 0001 000 0 000000 000000
000130 00 0001
000220 00 0002
000285 00 0003

000052 00 0000 0002 000 0 000000 000000
000075 00 1001
000130 00 0000
000220 00 0001
000250 00 0002
000285 00 0001

000052 00 0000 0003 000 0 000000 000000
000075 00 0001
000130 00 0002
000220 00 0003
000250 00 0004
000285 00 0005

000025 00 0000 0004 000 0 000000 000000
000075 00 1001
000125 00 0000
000130 00 1001
000220 00 0000
000225 00 0001
000285 00 0000

000075 00 0001

000125 00 0002

000130 00 0003

000220 00 0004

000225 00 0005

000285 00 0006

H-8962 TC/TI 1967

ML #1

085000 00 0003 0002 243 0 000000 000000

133000 00 0003 0002 250 0 000000 000000

085000 00 0003 0001 251 0 000000 000000

110230 00 0003 0002 251 0 000000 000000

090000 00 0003 0001 252 0 000000 000000

105000 00 0003 0001 253 0 000000 000000

ML #2

090000 00 0003 0001 235 0 000000 000000

103000 00 0002 0003 240 0 000000 000000

145230 00 0002 0001 240 0 000000 000000

135000 00 0003 0003 242 0 000000 000000

144700 00 0003 0001 242 0 000000 000000

090000 00 0003 0001 243 0 000000 000000

130000 00 0003 0003 250 0 000000 000000

131930 00 0003 0001 250 0 000000 000000

→ 153100 00 0003 0002 250 0 000000 000000 — Tape Corrected 2-15-74

091500 00 0004 0001 251 0 000000 000000

131400 00 0003

132230 00 0004 0001 251 0 000000 000000

092000 00 0003 0002 252 0 000000 000000

084800 00 0003 0002 253 0 000000 000000

ML #4 1967

085000 00 0004 0005 235 0 000000 000000

104800 00 0003 0005 240 0 000000 000000

113300 00 0003 0003 240 0 000000 000000

124800 00 0003 0005 240 0 000000 000000

151500 00 0003 0003 240 0 000000 000000

132500 00 0003 0003 242 0 000000 000000

000000 00 0003 0001 245 0 000000 000000

115400 00 0003 0002 245 0 000000 000000

144300 00 0003 0001 245 0 000000 000000

144800 00 0004

145300 00 0005

152400 00 0006

154100 00 0007

154900 00 0008

125500 00 0004 0002 250 0 000000 000000

171900 00 0002

180800 00 0001

085500 00 0004 0002 251 0 000000 000000

085730 00 0005

090830 00 0005 0004 251 0 000000 000000

095300 00 0004 0004 251 0 000000 000000

100600 00 0005

101700 00 0004

102300 00 0005

102600 00 0004

105300 00 0003

110630 00 0006

111600 00 0004

111900 00 0005

113900 00 0004

151000 00 0003 0003 252 0 000000 000000

153030 00 0003 0005 252 0 000000 000000

105000 00 0003 0005 270 0 000000 000000

141000 00 0003 0003 270 0 000000 000000

H-8962 [1967 season]

Combined Vel. & Stylus Correction Tables (1967 Season only)

Table 1 0% stylus

Depth (fms.)	Corr./vel.	Corr./stylus	Combined Corr.
7.5	0.0	0.0	0000
13.0	0.1	0.0	0001
22.0	0.2	0.0	0002
28.5	0.3	0.0	0003

Table 2 −0.5 Stylus

Depth (fms)	Corr./vel.	Corr./stylus	Combined Corr.
5.2	0.0	0.0	0000
7.5	0.0	−0.1	1001
13.0	0.1	−0.1	0000
22.0	0.2	−0.1	0001
25.0	0.3	−0.1	0002
28.5	0.3	−0.2	0001

Table 3 +0.5% Stylus

Depth (fms.)	Corr./vel.	Corr./stylus	Combined Corr.
5.2	0.0	0.0	0000
7.5	0.0	+0.1	0001
13.0	0.1	+0.1	0002
22.0	0.2	+0.1	0003
25.0	0.3	+0.1	0004
28.5	0.3	+0.2	0005

(OVER)

Table 4 −1.0% Stylus

Depth (fms)	Corr./vel.	Corr./stylus	Combined Corr.
2.5	0.0	0.0	0000
7.5	0.0	−0.1	1001
12.5	0.1	−0.1	0000
13.0	0.1	−0.2	1001
22.0	0.2	−0.2	0000
22.5	0.3	−0.2	0001
28.5	0.3	−0.3	0000

Table 5 +1.0% Stylus

Depth (fms)	Corr./vel.	Corr./stylus	Combined Corr.
2.5	0.0	0.0	0000
7.5	0.0	+0.1	0001
12.5	0.1	+0.1	0002
13.0	0.1	+0.2	0003
22.0	0.2	+0.2	0004
22.5	0.3	+0.2	0005
28.5	0.3	+0.3	0006

8962

FORM C&GS-504

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

INCOMPLETE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. PF 20-3-67 *Office No.* H-8962

LOCALITY

State ALASKA

General locality LOWER COOK INLET

Locality KAMISHAK BAY

1968

CHIEF OF PARTY

A. C. Holmes CDR. USESSA

LIBRARY & ARCHIVES

DATE

USCOMM-DC 37022-P66

8962

FORM C&GS-537
(5-66)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-8962

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.

PF 2Ø-3-67

State ALASKA

General locality COOK INLET

Locality Kamishak Bay

Scale 1:2Ø,ØØØ Date of survey May 22 - Sept 4, 1968

Instructions dated April 3, 1968 Project No. OPR 429

Vessel PATHFINDER ML #1 & ML #2

Chief of party A.C. Holmes, CDR, USESSA

Surveyed by Ship's Personnel

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon DE 723 Echo Sounder

Graphic record scaled by Ship's Personnel

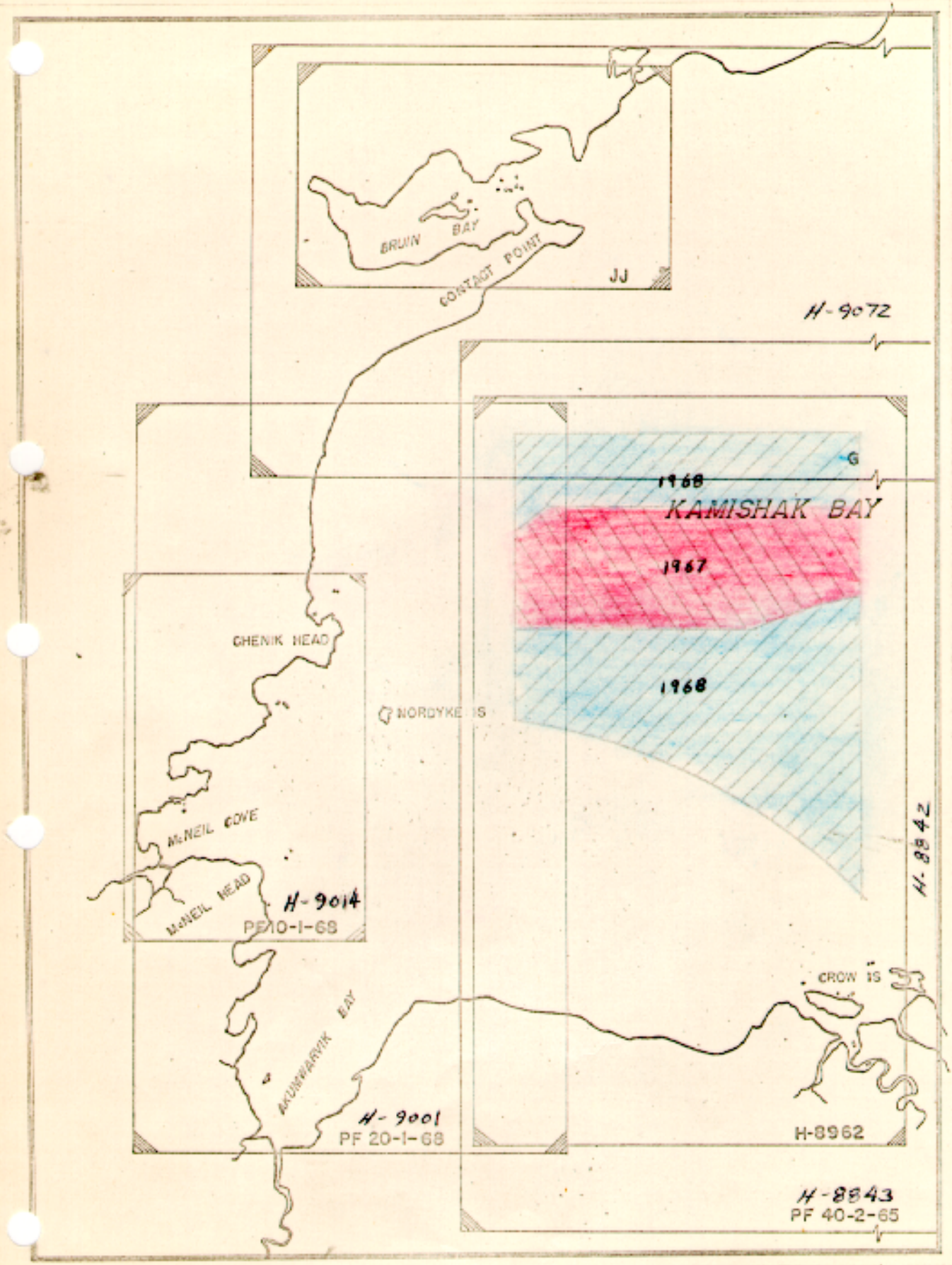
Graphic record checked by Ship's Personnel

Positions Verified
~~Protracted~~ by A.E. Eichelberger Automated plot by PMC

Soundings verified by A.E. Eichelberger

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS: This report describes the work completed on this sheet during the 1968 field season.


BRUIN BAY
CONTACT POINT
JJ
H-9072
G
1968
KAMISHAK BAY
1967
1968
GHENIK HEAD
NORDYKE IS
McNEIL COVE
McNEIL HEAD
H-9014
PF 10-1-68
AKUMWARVIK BAY
H-9001
PF 20-1-68
CROW IS
H-8962
H-8842
H-8843
PF 40-2-65

A. PROJECT

The hydrography for this survey was completed in accordance with project instructions OPR-429, Lower Cook Inlet, Alaska, dated April 21, 1968.

B. AREA SURVEYED

This survey is a basic hydrographic survey of a portion of Kamishak Bay, Alaska.

The sheet limits are as follows:

North:	Latitude 59 18 N.
South:	Latitude 59 02 N.
East:	Longitude 153 43 W.
West:	Longitude 154 02 W.

The hydrography for this survey began May 22, 1968 and ended on September 4, 1968.

C. SOUNDING VESSELS

The survey vessels used for this survey were motor launch no's 1 & 2 from the USC&GS Ship PATHFINDER. The positions for launch no. 1 were inked in blue and violet ink was used for launch no. 2.

D. SOUNDING EQUIPMENT

DE 723 Raytheon fathometers were used throughout the survey. Serial numbers of the fathometers used are as follows:

Motor launch no. 1		
Serial no.	935	May 22 to August 5, 1968
Serial no.	140	August 19 to August 27, 1968
Motor launch no. 2		
Serial no.	551	August 6 to August 12, 1968
Serial no.	935	August 19 to August 22, 1968
Serial no.	557	August 22 to August 27, 1968

Bar checks at depths of 1,2, and 4 fathoms were taken at the beginning and end of each day.

E. SMOOTH SHEET

Data tapes have been completed by personnel of the ship PATHFINDER and the smooth sheet is in the process of being plotted by the electronic plotter at the Pacific Marine Center.

F. CONTROL

Raydist electronic control was used for the entire project.
The 1968 Raydist stations were established on stations "CROW 1964" and "JUMA 1967". Station "CROW" was established in 1964 and is a second order traverse station. Station "JUMA" was established in 1967 and is a second order, class II triangulation station.
Operating frequencies of the base stations and the mobile units are as follows: JUMA -- 1650.425 KHZ.; CROW --1650.015 KHZ.; ML #1 -- 3300.400 KHZ.; and ML #2 -- 3300.480 KHZ. The ship PATHFINDER used the mobile unit out of ML #2 when taking bottom samples on this sheet.

G. SHORELINE

There was no shoreline area surveyed on this sheet during the 1968 season.

H. CROSSLINE

Crosslines consist of 10.3% of the hydrography completed during the 1968 season. The crossline depths were in agreement with the regular surveying lines.

I. JUNCTIONS

Junctions were established with PF 40-2-65 (H-8843) and PF 20-1-68 (H-9001) and were in good agreement.

J. COMPARISON WITH PRIOR SURVEYS

All prior surveys of the Lower Cook Inlet area were considered obselete by the Pacific Marine Center with the exception of two which did not cover the area on this sheet.

K. COMPARISON WITH CHARTS

Comparison was made with chart #8554 (Nov. 27, 1967). The general bottom profile is essentially the same, however there are several shoals which are not shown on the chart. These shoals have a least depth of 8.8 fathoms and are located in the areas of 59° 13.5′ N. Lat., 153° 45.5′ W. Lon., and 59° 16′ N. Lat., 153° 48′ W. Lon.

L. ADEQUACY OF SURVEY

The sheet is not complete. All hydrography north of the null area between the two shore stations is complete except that there are three splits which total about 5 nautical miles.

The bottom samples taken cover about 25% of the completed hydrographic work done during the 1967 and 1968 seasons.

M. AIDS TO NAVIGATION

There are no aids to navigation in this area.

N. STATISTICS

	No. of Pos.	Sounding Lines
Launch #1	1525	453.3 n.m.
Launch #2	1998	611.0 n.m.
	3523	1064.3 n.m. TOTAL

Area surveyed 39.9 sq. n.m.
Bottom samples 325, Launch #1 22 Ship
Current stations 4

O. MISCELLANEOUS

One small section of hydrography on this sheet in the vicinity of 59° 15.2′ N. and 153° 59.6′ W. was completed and recorded on the hydrographic sheet PF 20-1-68. No unusual features were found in this area. (H-9001)

P. RECOMMENDATIONS

Recommended starting position numbers for next season's work are as follows:

Hydrography: Launch #1 0241
Launch #2 6670

Bottom Samples: 9726

Q. REFERENCES

Raydist Report 1968 USC&GSS PATHFINDER
Fathometer Report, 1968 Field Season USC&GSS PATHFINDER
Annual Report, 1968 Field Season USC&GSS PATHFINDER

Respectfully submitted,

Gerben Hoekstra

Gerben Hoekstra Lt(jg) USESSA

TIDE NOTE

A pressure recording (bubbler) tide gage was re-installed on Nordyke Island in May, 1968 for use with OPR-429. The height of MLLW above the tide staff zero was 7.7 feet in 1968. This statement will be verified by the Chief of Tides on C&GS form 712. The time meridian used 135°00' W.

All reduced, inked soundings on boat sheet PF 20-3-67 were based on Nordyke Island predicted tides except position numbers 2448 thru 3101 which were based on Seldovia, Alaska predicted tides.

Tides Branch Note - 7.6' is MLLW on staff

FORM CD-181 (11-63) (FIES. BY A.O. 264-10)

UNITED STATES GOVERNMENT

Memorandum

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

COAST AND GEODETIC SURVEY

RECEIVED
DEC 16 1968
USC&GS PATHFINDER

TO : Commanding Officer
USC&GSS PATHFINDER

DATE: December 11, 1968

In reply refer to:
C3312-284-CSSG

FROM : Chief, Tides Section
Oceanography Division

SUBJECT: Nordyke Island tidal data

MLLW on the 1968 staff is 7.7 ft.

The marigrams are being returned under separate cover for hourly height scaling as needed for your hydrographic work. It is customary procedure for ship personnel to tabulate wanted hourly heights before sending the records in to this Section. Only the times and heights of the high and low waters are tabulated here to determine planes and ranges. We then furnish the MLLW plane and infer requested hourly heights that were missing from the record.

In the future please make requests for tidal data by separate memorandum, not on a transmittal letter. These forms are checked only for incoming data and sent to the Archives Branch where they are stamped and returned to the sender. Requests and incidental information are usually not noted.

Martha A. Winn

Martha A. Winn

PF 20-3-67

VELOCITY CORRECTIONS

May 22, to May 27, 1968: ~~No correction necessary~~. table below applied

July 14 to Sept. 4, 1968:

Correction	To
0.0 fms.	3.0 fms.
+0.1 fms.	8.0 fms.
+0.2 fms.	14.0 fms.
+0.3 fms.	18.0 fms.

NOTE: The memorandum supplied by the Oceanographic Officer concerning velocity corrections for this sheet stated that the serial temperature and salinity observations were taken on 19 August, 1968 but that the velocity corrections were applicable from 30 July thru Sept. 4, 1968. However, corrections were needed from the 14th of July and since no other information was available the correctios for the aforementioned period were used.

1968

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS			VELOCITY	DAY
	DRAFT	INITIAL	TOTAL	TABLE	
100300	+0.3	-0.1	0002	0001	143
101800	+0.3	0.0	0003	0001	143
103600	+0.3	-0.1	0002	0001	143
111330	+0.3	0.0	0003	0001	143
111900	+0.3	-0.1	0002	0001	143
120500	+0.3	0.0	0003	0001	143
132300	+0.3	0.0	0003	0001	144
141030	+0.3	+0.1	0004	0001	144
142900	+0.3	0.0	0003	0001	144
152200	+0.3	-0.1	0002	0001	144
154930	+0.3	0.0	0003	0001	144
160530	+0.3	+0.1	0004	0001	144
211800	+0.3	0.0	0003	0001	144
214200	+0.3	-0.1	0002	0001	144
223900	+0.3	0.0	0003	0001	144
085000	+0.3	0.0	0003	0001	145
085300	+0.3	-0.1	0002	0001	145
091330	+0.3	0.0	0003	0001	145
093430	+0.3	-0.1	0002	0001	145
101800	+0.3	+0.1	0004	0001	145
115030	+0.3	0.0	0003	0001	145
124400	+0.3	-0.1	0002	0001	145
130100	+0.3	0.0	0003	0001	145
130800	+0.3	-0.1	0002	0001	145
132530	+0.3	0.0	0003	0001	145
134830	+0.3	+0.1	0004	0001	145
144500	+0.3	-0.1	0002	0001	145
145000	+0.3	0.0	0003	0001	145
152730	+0.3	+0.1	0004	0001	145
164400	+0.3	0.0	0003	0001	145
164700	+0.3	-0.1	0002	0001	145
164930	+0.3	+0.1	0004	0001	145
165600	+0.3	0.0	0003	0001	145
165900	+0.3	-0.1	0002	0001	145
170100	+0.3	+0.1	0004	0001	145
170800	+0.3	-0.1	0002	0001	148
172630	+0.3	0.0	0003	0001	148
180230	+0.3	-0.1	0002	0001	148
183900	+0.3	0.0	0003	0001	148
185930	+0.3	-0.1	0002	0001	148
195230	+0.3	0.0	0003	0001	148
202300	+0.3	+0.1	0004	0001	148
205000	+0.3	-0.1	0002	0001	148

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS			VELOCITY	DAY
	DRAFT	INITIAL	TOTAL	TABLE	
205430	+0.3	-0.2	0001	0001	148
205930	+0.3	-0.1	0002	0001	148
220600	+0.3	0.0	0003	0001	148
230900	+0.3	-0.1	0002	0001	148
232830	+0.3	0.0	0003	0001	148
For Days 212, 214, 218, 232, and 234 See Following Pages					
105200	+0.3	-0.1	0002	0001	235
125200	+0.3	0.0	0003	0001	235
130300	+0.3	-0.1	0002	0001	235
133300	+0.3	0.0	0003	0001	235
142730	+0.3	-0.1	0002	0001	235
143330	+0.3	0.0	0003	0001	235
172730	+0.3	+0.1	0004	0001	235
174830	+0.3	+0.2	0005	0001	235
175400	+0.3	+0.1	0004	0001	235
183900	+0.3	-0.1	0002	0001	235
204500	+0.3	0.0	0003	0001	235
205400	+0.3	+0.1	0004	0001	235
171300	+0.4	+0.1	0005	0001	236
185930	+0.4	-0.1	0003	0001	236
082600	+0.3	0.0	0003	0001	237
083900	+0.3	-0.1	0002	0001	237
090900	+0.3	0.0	0003	0001	237
093100	+0.3	-0.1	0002	0001	237
093930	+0.3	0.0	0003	0001	237
132700	+0.3	-0.1	0002	0001	237
133230	+0.3	0.0	0003	0001	237
143130	+0.3	-0.1	0002	0001	237
143400	+0.3	0.0	0003	0001	237
172800	+0.3	+0.1	0004	0001	237
174930	+0.3	0.0	0003	0001	237
194040	+0.3	-0.1	0002	0001	237
084130	+0.3	-0.1	0002	0001	238
085400	+0.3	0.0	0003	0001	238
090400	+0.3	-0.1	0002	0001	238
091900	+0.3	0.0	0003	0001	238
101830	+0.3	-0.1	0002	0001	238
103300	+0.3	0.0	0003	0001	238
11830	+0.3	-0.1	0002	0001	238
112230	+0.3	0.0	0003	0001	238
120700	+0.3	-0.1	0002	0001	238

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS DRAFT	INITIAL	TOTAL	VELOCITY TABLE	DAY
132200	+0.3	0.0	0003	0001	238
133530	+0.3	-0.1	0002	0001	238
133700	+0.3	0.0	0003	0001	238
143630	+0.3	-0.1	0002	0001	238
144200	+0.3	0.0	0003	0001	238
144500	+0.3	-0.1	0002	0001	238
173900	+0.3	+0.1	0004	0001	238
174300	+0.3	-0.1	0002	0001	238
191630	+0.3	+0.1	0004	0001	238
192030	+0.3	-0.1	0002	0001	238
200830	+0.3	0.0	0003	0001	238
201430	+0.3	+0.1	0004	0001	238
201600	+0.3	0.0	0003	0001	238
201630	+0.3	-0.1	0002	0001	238
201830	+0.3	-0.3	0000	0001	238
202000	+0.3	-0.1	0002	0001	238
202200	+0.3	0.0	0003	0001	238
204000	+0.3	-0.1	0002	0001	238
205600	+0.3	0.0	0003	0001	238
210200	+0.3	+0.1	0004	0001	238
120430	+0.4	0.0	0004	0001	239
124730	+0.4	-0.1	0003	0001	239
125530	+0.4	0.0	0004	0001	239
132730	+0.4	-0.1	0003	0001	239
132800	+0.4	+0.1	0005	0001	239
133100	+0.4	-0.1	0003	0001	239
141700	+0.4	0.0	0004	0001	239
142000	+0.4	+0.1	0005	0001	239
142100	+0.4	-0.1	0003	0001	239
142300	+0.4	0.0	0004	0001	239
142400	+0.4	-0.1	0003	0001	239
142430	+0.4	-0.3	0001	0001	239
142500	+0.4	0.0	0004	0001	239
144100	+0.4	-0.1	0003	0001	239
151200	+0.4	+0.1	0005	0001	239
151330	+0.4	-0.1	0003	0001	239
151730	+0.4	0.0	0004	0001	239
164030	+0.4	-0.1	0003	0001	239
165400	+0.4	+0.1	0005	0001	239
165730	+0.4	-0.1	0003	0001	239
170630	+0.4	0.0	0004	0001	239
171930	+0.4	+0.1	0005	0001	239

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS DRAFT	INITIAL	TOTAL	VELOCITY TABLE	DAY
175600	+0.4	0.0	0004	0001	239
175830	+0.4	+0.1	0005	0001	239
180400	+0.4	0.0	0004	0001	239
191400	+0.4	+0.1	0005	0001	239
191800	+0.4	0.0	0004	0001	239
200000	+0.4	+0.1	0005	0001	239
200400	+0.4	0.0	0004	0001	239
220530	+0.4	+0.1	0005	0001	239
222730	+0.4	0.0	0004	0001	239
224530	+0.4	+0.1	0005	0001	239
082700	+0.4	-0.1	0003	0001	240
083300	+0.4	0.0	0004	0001	240
100930	+0.4	-0.1	0003	0001	240
103700	+0.4	0.0	0004	0001	240
122000	+0.4	-0.1	0003	0001	240
122700	+0.4	0.0	0004	0001	240
130000	+0.4	-0.1	0003	0001	240
150200	+0.4	0.0	0004	0001	240
150500	+0.4	-0.1	0003	0001	240
151230	+0.4	0.0	0004	0001	240
152000	+0.4	-0.1	0003	0001	240
152330	+0.4	0.0	0004	0001	240
160100	+0.4	+0.1	0005	0001	240
160500	+0.4	0.0	0004	0001	240
171000	+0.4	-0.1	0003	0001	240
171530	+0.4	0.0	0004	0001	240
182400	+0.4	-0.1	0003	0001	240
182730	+0.4	0.0	0004	0001	240
183400	+0.4	-0.1	0003	0001	240
184130	+0.4	0.0	0004	0001	240
184600	+0.4	-0.1	0003	0001	240
192700	+0.4	0.0	0004	0001	240
193700	+0.4	-0.1	0003	0001	240
195430	+0.4	0.0	0004	0001	240
203830	+0.4	-0.1	0003	0001	240
095530	+0.3	-0.1	0002	0001	212
103420	+0.3	0.0	0003	0001	212
105640	+0.3	+0.1	0004	0001	212
110400	+0.3	0.0	0003	0001	212
113340	+0.3	+0.1	0004	0001	212
113940	+0.3	0.0	0003	0001	212
123520	+0.3	+0.1	0004	0001	212

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS DRAFT	INITIAL	TOTAL	VELOCITY TABLE	DAY
124220	+0.3	0.0	0003	0001	212
141420	+0.3	-0.1	0002	0001	212
144100	+0.3	+0.1	0004	0001	212
144700	+0.3	0.0	0003	0001	212
092030	+0.3	0.0	0003	0001	214
101600	+0.3	+0.1	0004	0001	214
104900	+0.3	0.0	0003	0001	214
114220	+0.3	+0.1	0004	0001	214
125120	+0.3	0.0	0003	0001	214
125520	+0.3	+0.1	0004	0001	214
131500	+0.3	0.0	0003	0001	214
141400	+0.3	0.0	0003	0001	218
150200	+0.3	-0.1	0002	0001	218
150730	+0.3	0.0	0003	0001	218
150900	+0.3	+0.1	0004	0001	218
151500	+0.3	0.0	0003	0001	218
152030	+0.3	+0.1	0004	0001	218
190700	+0.3	0.0	0003	0001	232
191630	+0.3	-0.1	0002	0001	232
194600	+0.3	0.0	0003	0001	232
195100	+0.3	-0.1	0002	0001	232
195730	+0.3	0.0	0003	0001	232
201300	+0.3	-0.1	0002	0001	232
105800	+0.3	0.0	0003	0001	234
110030	+0.3	-0.1	0002	0001	234
110930	+0.3	0.0	0003	0001	234
111630	+0.3	-0.1	0002	0001	234
112030	+0.3	0.0	0003	0001	234
112830	+0.3	-0.1	0002	0001	234
113300	+0.3	0.0	0003	0001	234
114400	+0.3	-0.1	0002	0001	234
114800	+0.3	0.0	0003	0001	234
131830	+0.3	-0.1	0002	0001	234
132600	+0.3	0.0	0003	0001	234
134600	+0.3	-0.1	0002	0001	234
135030	+0.3	0.0	0003	0001	234
140230	+0.3	+0.1	0004	0001	234
140630	+0.3	0.0	0003	0001	234
181300	+0.3	-0.1	0002	0001	234

ML#1 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS			VELOCITY TABLE	DAY
	DRAFT	INITIAL	TOTAL		
181900	+0.3	0.0	0003	0001	234
182700	+0.3	-0.1	0002	0001	234
183100	+0.3	0.0	0003	0001	234
184630	+0.3	+0.1	0004	0001	234
184730	+0.3	0.0	0003	0001	234
190330	+0.3	-0.1	0002	0001	234
192000	+0.3	0.0	0003	0001	234
193200	+0.3	+0.1	0004	0001	234
193730	+0.3	0.0	0003	0001	234
195030	+0.3	-0.1	0002	0001	234
195430	+0.3	0.0	0003	0001	234
200130	+0.3	-0.1	0002	0001	234
200600	+0.3	0.0	0003	0001	234
214100	+0.3	+0.1	0004	0001	234
221500	+0.3	0.0	0003	0001	234

ML#2 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS DRAFT	INITIAL	TOTAL	VELOCITY TABLE	DAY
090800	+0.3	-0.1	0002	0001	196
093300	+0.3	0.0	0003	0001	196
100540	+0.3	-0.1	0002	0001	196
104900	+0.3	0.0	0003	0001	196
133520	+0.3	+0.1	0004	0001	196
134140	+0.3	-0.1	0002	0001	196
135900	+0.3	0.0	0003	0001	196
143300	+0.3	-0.1	0002	0001	196
144940	+0.3	0.0	0003	0001	196
152020	+0.3	-0.1	0002	0001	196
091200	+0.3	0.0	0003	0001	197
112130	+0.3	-0.1	0002	0001	197
135400	+0.3	0.0	0003	0001	197
141200	+0.3	-0.1	0002	0001	197
144500	+0.3	0.0	0003	0001	197
151300	+0.3	-0.1	0002	0001	197
154300	+0.3	0.0	0003	0001	197
155500	+0.3	+0.1	0004	0001	197
093600	+0.3	0.0	0003	0001	198
093800	+0.3	-0.1	0002	0001	198
095100	+0.3	-0.2	0001	0001	198
101830	+0.3	-0.1	0002	0001	198
103000	+0.3	0.0	0003	0001	198
111500	+0.3	-0.1	0002	0001	198
112500	+0.3	-0.2	0001	0001	198
114230	+0.3	-0.1	0002	0001	198
115430	+0.3	0.0	0003	0001	198
132630	+0.3	-0.1	0002	0001	198
140400	+0.3	0.0	0003	0001	198
143830	+0.3	-0.1	0002	0001	198
092800	+0.3	0.0	0003	0001	199
100200	+0.3	-0.1	0002	0001	199
105830	+0.3	+0.1	0004	0001	199
113030	+0.3	0.0	0003	0001	199
121300	+0.3	+0.1	0004	0001	199
141430	+0.3	0.0	0003	0001	199
143030	+0.3	+0.1	0004	0001	199
143330	+0.3	-0.1	0002	0001	199
093000	+0.4	0.0	0004	0001	200
093530	+0.4	+0.1	0005	0001	200

ML#2 TRA CORRECTORS

PF 20-367

TIME	CORRECTIONS DRAFT	INITIAL	TOTAL	VELOCITY TABLE	DAY
094430	+0.4	0.0	0004	0001	200
112430	+0.4	-0.1	0003	0001	200
114130	+0.4	0.0	0004	0001	200
115700	+0.4	+0.1	0005	0001	200
120300	+0.4	+0.2	0006	0001	200
120830	+0.4	+0.3	0007	0001	200
121130	+0.4	+0.1	0005	0001	200
131000	+0.4	0.0	0004	0001	200
141430	+0.3	+0.1	0004	0001	218
142430	+0.3	0.0	0003	0001	218
150130	+0.3	+0.1	0004	0001	218
152200	+0.3	0.0	0003	0001	218
153730	+0.3	-0.1	0002	0001	218
090000	+0.3	0.0	0003	0001	220
090730	+0.3	+0.1	0004	0001	220
094600	+0.3	0.0	0003	0001	220
100300	+0.3	+0.1	0004	0001	220
101104	+0.3	0.0	0003	0001	220
111700	+0.3	-0.1	0002	0001	220
113900	+0.3	0.0	0003	0001	220
115830	+0.3	-0.1	0002	0001	220
121100	+0.3	0.0	0003	0001	220
122730	+0.3	+0.1	0004	0001	220
091200	+0.3	+0.1	0004	0001	221
101430	+0.3	0.0	0003	0001	221
090000	+0.3	0.0	0003	0001	225
090900	+0.3	-0.1	0002	0001	225
091530	+0.3	0.0	0003	0001	225
093730	+0.3	+0.1	0004	0001	225
095730	+0.3	0.0	0003	0001	225
104100	+0.3	+0.1	0004	0001	225
111700	+0.3	0.0	0003	0001	225
113300	+0.3	-0.1	0002	0001	225
114200	+0.3	0.0	0003	0001	225
134700	+0.3	+0.1	0004	0001	225
135030	+0.3	0.0	0003	0001	225
141230	+0.3	+0.1	0004	0001	225
142900	+0.3	0.0	0003	0001	225
144530	+0.3	-0.1	0002	0001	225
150700	+0.3	0.0	0003	0001	225

ML#2 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS			VELOCITY TABLE	DAY
	DRAFT	INITIAL	TOTAL		
152400	+0.3	-0.2	0001	0001	225
152700	+0.3	0.0	0003	0001	225
163430	+0.3	0.0	0003	0001	232
185700	+0.3	-0.1	0002	0001	232
191230	+0.3	0.0	0003	0001	232
193530	+0.3	-0.1	0002	0001	232
193830	+0.3	0.0	0003	0001	232
110400	+0.3	0.0	0003	0001	234
110720	+0.3	+0.1	0004	0001	234
115200	+0.3	0.0	0003	0001	234
180800	+0.3	-0.1	0002	0001	234
194500	+0.3	0.0	0003	0001	234
124800	+0.3	0.0	0003	0001	235
130000	+0.3	+0.1	0004	0001	235
131130	+0.3	0.0	0003	0001	235
170400	+0.3	+0.1	0004	0001	235
172330	+0.3	0.0	0003	0001	235
173100	+0.3	-0.1	0002	0001	235
202600	+0.3	0.0	0003	0001	235
210200	+0.3	+0.1	0004	0001	235
212100	+0.3	0.0	0003	0001	235
164500	+0.3	0.0	0003	0001	236
181700	+0.3	+0.1	0004	0001	236
182500	+0.3	0.0	0003	0001	236
191700	+0.3	+0.1	0004	0001	236
193700	+0.3	0.0	0003	0001	236
200000	+0.3	+0.1	0004	0001	236
202900	+0.3	-0.2	0001	0001	236
203200	+0.3	0.0	0003	0001	236
082700	+0.3	-0.1	0002	0001	237
090000	+0.3	0.0	0003	0001	237
090600	+0.3	+0.1	0004	0001	237
091100	+0.3	-0.1	0002	0001	237
101800	+0.3	+0.1	0004	0001	237
104100	+0.3	0.0	0003	0001	237
131900	+0.3	+0.1	0004	0001	237
142300	+0.3	0.0	0003	0001	237
145140	+0.3	-0.1	0002	0001	237
145220	+0.3	+0.1	0004	0001	237
145420	+0.3	0.0	0003	0001	237
174200	+0.3	-0.1	0002	0001	237

ML#2 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS			VELOCITY TABLE	DAY
	DRAFT	INITIAL	TOTAL		
174900	+0.3	0.0	0003	0001	237
185930	+0.3	-0.1	0002	0001	237
190900	+0.3	0.0	0003	0001	237
193300	+0.3	+0.1	0004	0001	237
100100	+0.3	0.0	0003	0001	238
100220	+0.3	-0.1	0002	0001	238
112900	+0.3	0.0	0003	0001	238
122800	+0.3	-0.1	0002	0001	238
142840	+0.3	0.0	0003	0001	238
174500	+0.3	+0.1	0004	0001	238
184030	+0.3	0.0	0003	0001	238
191130	+0.3	-0.1	0002	0001	238
204430	+0.3	0.0	0003	0001	238
215200	+0.3	-0.1	0002	0001	238
114600	+0.3	0.0	0003	0001	239
115300	+0.3	-0.1	0002	0001	239
124000	+0.3	0.0	0003	0001	239
134430	+0.3	+0.1	0004	0001	239
135530	+0.3	0.0	0003	0001	239
141700	+0.3	-0.1	0002	0001	239
142900	+0.3	0.0	0003	0001	239
200400	+0.3	-0.1	0002	0001	239
210700	+0.3	0.0	0003	0001	239
211630	+0.3	-0.1	0002	0001	239
090130	+0.3	-0.1	0002	0001	240
092600	+0.3	0.0	0003	0001	240
102600	+0.3	-0.1	0002	0001	240
102900	+0.3	0.0	0003	0001	240
104130	+0.3	+0.1	0004	0001	240
104530	+0.3	0.0	0003	0001	240
111430	+0.3	-0.1	0002	0001	240
111800	+0.3	0.0	0003	0001	240
115630	+0.3	+0.1	0004	0001	240
120300	+0.3	-0.1	0002	0001	240
120700	+0.3	0.0	0003	0001	240
131800	+0.3	+0.1	0004	0001	240
132230	+0.3	0.0	0003	0001	240
133100	+0.3	-0.1	0002	0001	240
140400	+0.3	0.0	0003	0001	240
141230	+0.3	-0.1	0002	0001	240
142600	+0.3	0.0	0003	0001	240
143830	+0.3	+0.1	0004	0001	240
150530	+0.3	0.0	0003	0001	240

ML#2 TRA CORRECTORS

PF 20-3-67

TIME	CORRECTIONS DRAFT	CORRECTIONS INITIAL	CORRECTIONS TOTAL	VELOCITY TABLE	DAY
151300	+0.3	-0.1	0002	0001	240
152730	+0.3	0.0	0003	0001	240
163300	+0.3	-0.1	0002	0001	240
164330	+0.3	0.0	0003	0001	240
165500	+0.3	+0.1	0004	0001	240
165900	+0.3	0.0	0003	0001	240
171100	+0.3	-0.1	0002	0001	240
185830	+0.3	0.0	0003	0001	240
190530	+0.3	-0.1	0002	0001	240
231130	+0.3	0.0	0003	0001	240
085300	+0.3	0.0	0003	0001	241
090330	+0.3	-0.1	0002	0001	241
101600	+0.3	0.0	0003	0001	241
103740	+0.3	-0.1	0002	0001	241
123600	+0.3	0.0	0003	0001	241
124930	+0.3	-0.1	0002	0001	241
192100	+0.3	0.0	0003	0001	241
195100	+0.3	-0.1	0002	0001	241
104900	+0.3	0.0	0003	0001	248
105400	+0.3	-0.1	0002	0001	248
110530	+0.3	0.0	0003	0001	248
122600	+0.3	-0.2	0001	0001	248
124400	+0.3	-0.1	0002	0001	248
140230	+0.3	0.0	0003	0001	248
143230	+0.3	-0.1	0002	0001	248

ATTACHMENT

RAYDIST EQUIPMENT

Each launch carried the DR-S Raydist System made by Hastings-Raydist Co. The installation included a ZA-67A Navigator, a TA96 transmitter, a strip chart recorder, a Raydist VC-14 line follower, and a 24.5 foot whip antenna system. The antenna system was composed of a 14 foot length of RG-8U coaxial cable with the shield "floating" and a 10.5 foot fiberglass whip mounted outside the launch. The Raydist set was powered by two 90 ampere-hour 12 volt batteries in series connection to provide 24 volts of direct current. The strip chart recorder operated on 115 V.A.C., so a converter was used with a separate 12 volt battery for its own power source. The ground for the launch installation consisted of a 2' x 8' copper plate attached to the bottom of the boat hull.

Both the JUMA and CROW shore stations were one piece, self-contained units which were sealed to withstand foul weather. The installations consisted of 100 foot antennas constructed from 10 foot tower sections with a 15 foot whip antenna on top. The whole tower acted as the antenna and rested on an insulated base plate. The guys for the tower were nylon line. Four sets of guys were spaced at 90° intervals around the tower. A ground plane was constructed outward from the insulated base plate. It consisted of 16 wires, each 100 feet long, not buried, and equally spread from the antenna base. They were composed of #18 copper wire.

The shore stations each operated on 24 V.D.C. Eight 12 volt heavy duty 90 ampere-hour batteries operated the stations at low power for 8-10 days. These batteries were either replaced or charged at the station site. Except during the replacement of the batteries, the stations were left unattended.

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS (RANGE-RANGE)

(1) PROJECT NO. OPR-429 (2) H. NO. _____ (3) FIELD NO. PF 20-3-67

(4) TYPE OF CONTROL: [X] RAYDIST, [ ] SHORAN; FREQUENCY _____ kc

(5) MASTER (R1)
STATION NAME JUMA, 1967
LATITUDE 59 ° 10 ' 40.26 "
LONGITUDE 154 ° 05 ' 21.72 "

(6) SLAVE (R2)
STATION NAME CROW, 1964
LATITUDE 59 ° 05 ' 04.89 "
LONGITUDE 153 ° 42 ' 20.15 "

(7) AZIMUTH R1 TO R2 295 ° 06 ' 55.27 "

(8) BASELINE DISTANCE IN METERS 24,301.38 M

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE

(TO DETERMINE: IMAGINE AN OBSERVER STANDING ON R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO OBSERVER'S RIGHT THEN A IS POSITIVE).

[X] -A [ ] +A

(10) WHEN SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION KX+C, WHERE X IS SHORAN DISTANCE; ENTER CONSTANT COEFFICIENTS: See attached sheet

K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____

(12) NUMBER OF VELOCITY TABLES TO BE USED:

[ ] NONE, [ ] ONE, [ ] TWO, [ ] MORE THAN TWO (FOR OLD SURVEYS LOGGED AT WSC ONLY -- IF SO, SUPPLY VEL IND. TAPES)

IF TWO TABLES ARE TO BE USED, BOUNDARY DEFINED BY ° ' " LATITUDE [ ] LONGITUDE [ ]

CURRENT POLE AND LOG LINE OBSERVATIONS

Kamishak Bay, Alaska
OPR 429
1968

While at anchor in Kamishak Bay, the PATHFINDER conducted current pole and log line observations at eight locations for a total of 495 hours. Station locations are plotted on the attached chartlet of C&GS Chart 8554. The pole observations were not part of the OPR 429 Project Instructions but were conducted in the absence of Geodyne current meters.

Equipment consisted of an end weighted 15 foot pole 1 3/4 inches in diameter with an attached log line as set forth in Special Publication No. 215, Manual of Current Observations. Observations were taken from the stern and current direction was determined from ship's heading and the direction in degrees of the pole measured from the stern lubber line toward the pole, i.e., if the pole was carried away to port at an angle of 35 degrees as observed from the lubbers line on the stern, the true direction of the current would be 015 degrees if the ship's head was 230 degrees true. Night observations were aided by afixing a small pen light to the top of the pole.

Ship's head was recorded to the nearest whole degree from true north and the angle of current pole direction recorded to the nearest 5 degrees. In most observations, the pole was timed for one minute as it was carried away. Data was recorded in Form C&GS-270, Record of Current Observations and plotted on a manuvering board for a polar representation. Although no attempt to reduce the field data was made, the polar plot indicated rotary tidal currents rarely in excess of one knot.

All field data including the polar plots have been transmitted to Chief, Tides and Currents Branch, Rockville, Maryland.

It is requested that the requirement for current observations in Kamishak Bay be re-evaluated in view of this report prior to writing OPR 429 instructions for the 1969 season.

David C. Harrison
David C. Harrison
LTJG, USESSA

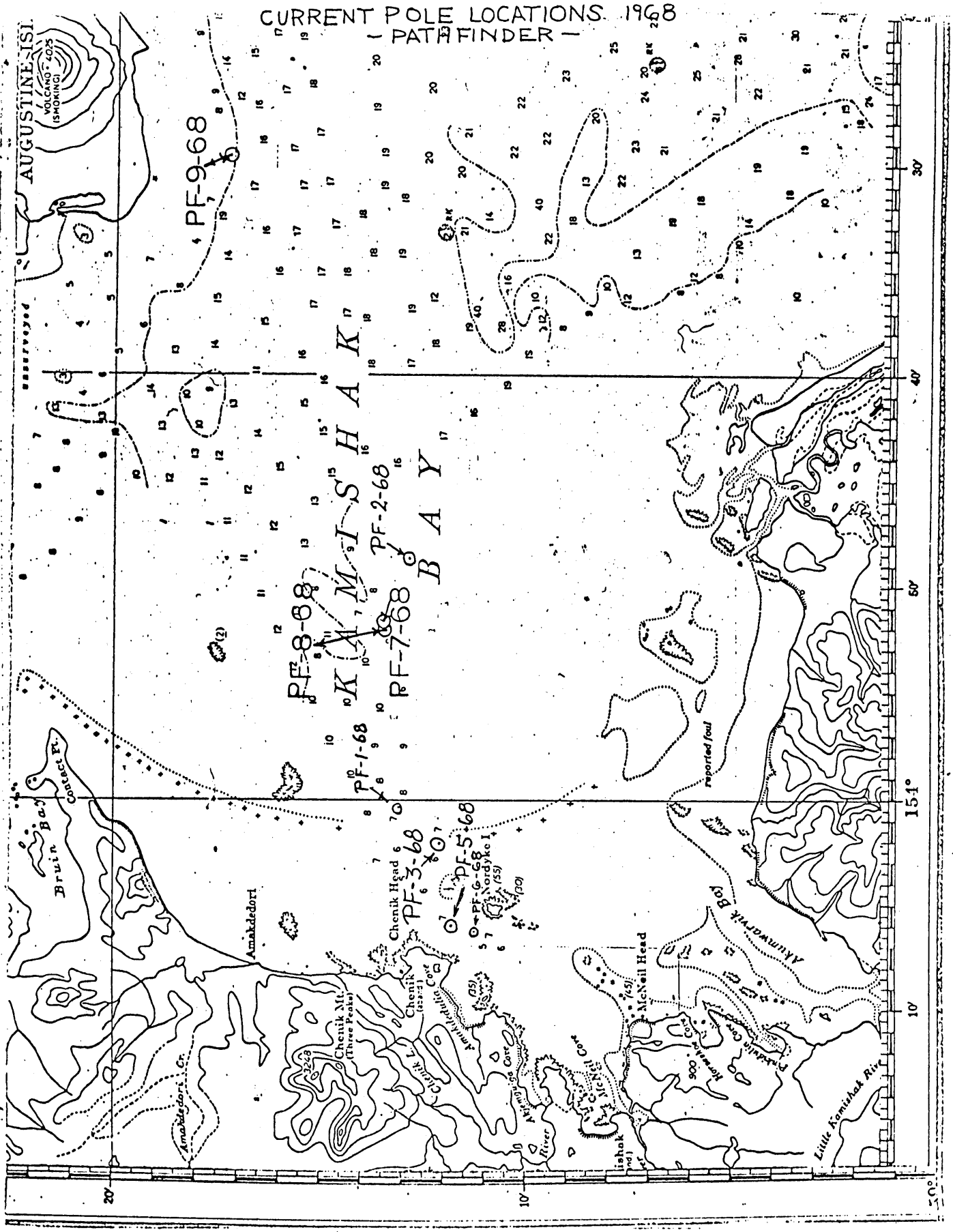
Approved and forwarded:

Alfred C. Holmes
CDR, USESSA
Comdg., Ship PATHFINDER

-C HARTLET- CGS #8554

CURRENT POLE LOCATIONS 1968

- PATHFINDER -



2-3

APPROVAL SHEET

The work completed on this survey has been examined and approved.

John W. Bricker
for A. C. Holmes
CDR. USESSA
Cmdg. Officer
USC&GSS PATHFINDER

H # 8962
Field No.
Date 1968

HYDRO I PARAMETER CARDS

Computes G.P.'s from Electronic Controlled Baseline

Parameter Card I

		Deg. Min. Seconds	Prog. Code
Master R1 Hydro Name JUMA	Lat.	57 10 47.026	RPD
	Long.	154 55 21.72	RBD
Slave R2 Hydro Name CROSS	Lat.	57 05 04.899	Not Used
	Long.	153 42 01.45	Not Used
Azimuth R1 to R2		295 06 55.27	RAD
			Not Used
Baseline Distance in Meters		24301.38	SMP
Velocity Code 0 - No Vel. 1 - 1 Vel. Table 2 - 2 Vel.-(E - W) 3 - 2 Vel.-(N - S)			IVL
Conversion factor for electronic distance to meters. 3300.484		Stat. MI = Lanes = or	CNV
H-Identification Number			JN
Location of survey with respect to electronic baseline		- <A = 1 + <A = 0	AAA
Velocity Boundary IVL = 2 IVL = 3		Long = ° " " Lat =	VLE
			YR
If Shoran calibration correction is applied by equation (use Shoran card) punch 1 in column 80			

1	2	3	4	5	6	7	8	9	10
2	1	3	0	4	0	2	6	0	6

11	12	13	14	15	16	17	18	19	20
5	5	4	7	2	1	7	2	0	6

21	22	23	24	25	26	27	28	29	30
1	0	6	2	4	1	5	3	0	7

31	32	33	34	35	36	37	38	39	40
2	4	3	0	1	3	8	0	0	5

41
0

42	43	44	45	46	47	48	49	50	51
4	14	3	9	7	9	4	0		

52	53	54	55	56
0	8	4	6	2

(5)

57
1

58	59	60	61	62	63	64	65	66

67	68	69
0	6	8

70	71	72	73	74	75	76	77	78	79	80

Shoran Card Format (when calibration correction is applied by a line K x + C)
(flag 5, 11, 17, or 23 if resp. constant is negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

R1K R1C R2K R2C

Computed _____ Punched _____ Checked _____ Date _____

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEYS (RANGE-RANGE)

(1) PROJECT NO. OPR-429 (2) H. NO. 8962 (3) FIELD NO. PF 20-3-67

(4) TYPE OF CONTROL: [X] RAYDIST, [ ] SHORAN; FREQUENCY 3300.48 kc (1968)

(5) MASTER (R1)
STATION NAME JUMA, 1967
LATITUDE 59 ° 10 ' 40.26 "
LONGITUDE 154 ° 05 ' 21.72 "

(6) SLAVE (R2)
STATION NAME CROW, 1964
LATITUDE 59 ° 05 ' 04.89
LONGITUDE 153 ° 42 ' 20.15

(7) AZIMUTH R1 TO R2 295 ° 06 ' 55.27 "

(8) BASELINE DISTANCE IN METERS 24,301.38 M

(9) LOCATION OF SURVEY WITH RESPECT TO ELECTRONIC BASELINE: CHECK ONE

(TO DETERMINE: IMAGINE AN OBSERVER STANDING ON R1 AND LOOKING DIRECTLY AT R2 --- IF THE SURVEY AREA IS TO OBSERVER'S LEFT THEN A IS NEGATIVE; IF THE SURVEY AREA IS TO OBSERVER'S RIGHT THEN A IS POSITIVE).

[X] -A [ ] +A

(10) WHEN SHORAN CORRECTIONS ARE APPLIED BY THE EQUATION KX+C, WHERE X IS SHORAN DISTANCE; ENTER CONSTANT COEFFICIENTS: See attached sheet

K(R1) _____, C(R1) _____, K(R2) _____, C(R2) _____

(12) NUMBER OF VELOCITY TABLES TO BE USED:

[ ] NONE, [ ] ONE, [ ] TWO, [ ] MORE THAN TWO (FOR OLD SURVEYS LOGGED AT WSC ONLY -- IF SO, SUPPLY VEL IND. TAPES)

IF TWO TABLES ARE TO BE USED, BOUNDARY DEFINED BY ° ' " LATITUDE [ ] LONGITUDE [ ]

CONTROL FOR: C08962 DATE OF LISTING: 04-19-75

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	..... NAME .....
1	70	200	139	307.00	.60	0	SHALE 1964
2	70	201	139	307.00	.60	0	ECHO 1964
3	70	202	139	307.00	.60	0	WARVIK 1964
4	67	203	250	307.00	.60	0	JUMA 1967
5	67	204	250	180.00	4.00	0	CROW 1964
6	68	205	250	307.00	.60	0	JUMA 1967
7	68	206	250	180.00	4.00	0	CROW 1964
8	70	207	250	307.00	.60	0	JUMA 1967
9	70	208	250	307.00	.60	0	SOUTH AUGUSTINE 2 RM3 1964

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

EOF..

STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
0.0	0.00	59 3 48.060	153 49 27.810
0.0	0.00	59 3 31.650	153 58 20.370
0.0	0.00	59 3 35.020	154 2 39.020
0.0	931.00	59 10 40.260	154 5 21.720
0.0	931.00	59 5 4.890	153 42 20.150
0.0	3300.48	59 10 40.260	154 5 21.720
0.0	3300.48	59 5 4.890	153 42 20.150
0.0	3306.40	59 10 40.260	154 5 21.720
0.0	3306.40	59 19 25.860	153 31 16.090

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 tape reducer printout.

Tide Station Used (NOAA form 77-12): Nordyke Island, Alaska

Period: May 17 - September 9, 1968

HYDROGRAPHIC SHEET: H-8843, H-8962, H-9001, H-9014

OPR: 429

Locality: Cook Inlet, Kamishak Bay, Alaska

Plane of reference (mean lower low water): 7.6 ft.

Height of Mean High Water above Plane of Reference is 14.3 ft.

Remarks: Tide reducers revised in red and verified for tape printout (Fathoms)

Field Tide Note - 7.7' is MLLW on staff.

Robert A. Cummings

Chief, Tides Branch

Time Meridian : 135° W

```
220500 00 1022
230000 00 1023
090000 00 1015 0000 143 0 000000 000000
092000 00 1016
094500 00 1017
101500 00 1018
115700 00 1018
123000 00 1017
125200 00 1016
131000 00 1015
132800 00 1014
134500 00 1013
140500 00 1012
142500 00 1011
145000 00 1010
151500 00 1009
154500 00 1008
160000 00 1008
120000 00 1019 0000 144 0 000000 000000
130500 00 1019
133700 00 1018
140000 00 1017
142000 00 1016
143700 00 1015
145500 00 1014
151500 00 1013
153000 00 1012
154500 00 1011
155500 00 1010
161400 00 1009
163500 00 1008
165500 00 1007
173000 00 1006
173700 00 1006
190500 00 1007
192500 00 1008
194500 00 1009
200000 00 1010
201500 00 1011
203000 00 1012
204400 00 1013
205500 00 1014
211400 00 1015
212500 00 1016
214500 00 1017
220000 00 1018
221500 00 1019
223500 00 1020
225500 00 1021
230000 00 1022
070000 00 1001 0000 145 0 000000 000000
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Add header info

File with printouts

Day 145

070400 00 1001
074000 00 1002
080000 00 1003
081700 00 1004
082900 00 1005
084000 00 1006
085100 00 1007
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091400 00 1009
092500 00 1010
093800 00 1011
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103900 00 1016
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155000 00 1015
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161900 00 1013
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172900 00 1008
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204000 00 1009
205500 00 1010
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212100 00 1012
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094000 00 0001
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105900 00 1005
111000 00 1006
112000 00 1007
113200 00 1008
114200 00 1009
115500 00 1010
120800 00 1011
122000 00 1012
123200 00 1013
124800 00 1014
130000 00 1015
131200 00 1016
132600 00 1017
133900 00 1018
135200 00 1019
140600 00 1020
142200 00 1021
144700 00 1022
155200 00 1022
161200 00 1021
163000 00 1020
164900 00 1019
170400 00 1018
172000 00 1017
173400 00 1016
174700 00 1015
180000 00 1014
181300 00 1013
182900 00 1012
184400 00 1011
190100 00 1010
191900 00 1009
193800 00 1008
200200 00 1007
212500 00 1007
215000 00 1008
220700 00 1009
222000 00 1010

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223300 00 1011
224800 00 1012
230000 00 1013
231200 00 1014
232500 00 1015
233700 00 1016
235000 00 1017
240000 00 1018
070000 00 1006 0000 149 0 000000 000000
071200 00 1005
072600 00 1004
074000 00 1003
075400 00 1002
081000 00 1001
082500 00 0000
084200 00 0001
090200 00 0002
100000 00 0002
101800 00 0001
103300 00 0000
110500 00 1002
111900 00 1003
113000 00 1004
114000 00 1005
115000 00 1006
120000 00 1007
121200 00 1008
122600 00 1009
123900 00 1010
125000 00 1011
130300 00 1012
131600 00 1013
132900 00 1014
134000 00 1015
135300 00 1016
140600 00 1017
142000 00 1018
143600 00 1019
145000 00 1020
150300 00 1021
152800 00 1022
160200 00 1022
163000 00 1021
170000 00 1020
130000 00 1009 0000 157 0 000000 000000
130800 00 1008
132800 00 1008
134800 00 1007
141000 00 1006
143800 00 1005
160900 00 1005
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151000 00 1017
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153000 00 1019
154200 00 1020
155300 00 1021
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162500 00 1023
164000 00 1024
165700 00 1025
181000 00 1025
183000 00 1024
184600 00 1023
190000 00 1022
191100 00 1021
192200 00 1020
193500 00 1019
194500 00 1018
195500 00 1017
200000 00 1017
080000 00 1015 0000 196 0 000000 000000
081000 00 1014
082000 00 1013
083000 00 1012
084000 00 1011
085000 00 1010
085800 00 1009
091000 00 1008
092200 00 1007
093200 00 1006
094400 00 1005
095700 00 1004
100800 00 1003
102200 00 1002
103700 00 1001
105200 00 0000
111000 00 0001
113500 00 00002 0002
120000 00 0002 Tape corrected 2-14-74
122600 00 0001
124600 00 0000
130200 00 1001
131800 00 1002
132700 00 1003
133700 00 1004
134600 00 1005
135400 00 1006
140300 00 1007
141200 00 1008
142600 00 1009
143700 00 1010
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144700 00 1011
145700 00 1012
150500 00 1013
151800 00 1014
153000 00 1015
154000 00 1016
155200 00 1017
160400 00 1018
161800 00 1019
163000 00 1020
164100 00 1021
165300 00 1022
171000 00 1023
172900 00 1024
175200 00 1025
183400 00 1025
185700 00 1024
191200 00 1023
192600 00 1022
194100 00 1021
195600 00 1020
200000 00 1019
202000 00 1018
203200 00 1017
204200 00 1016
205400 00 1015
210000 00 1015
080000 00 1018 0000 197 0 000000 000000
080800 00 1017
081800 00 1016
082800 00 1015
084000 00 1014
085000 00 1013
090200 00 1012
091400 00 1011
092600 00 1010
093800 00 1009
095000 00 1008
100200 00 1007
101900 00 1006
103500 00 1005
105200 00 1004
111200 00 1003
113200 00 1002
120000 00 1001
130000 00 1001
132000 00 1002
133600 00 1003
135000 00 1004
140500 00 1005
141700 00 1006
```

```
142800 00 1007
143800 00 1008
144800 00 1009
145800 00 1010
150600 00 1011
151800 00 1012
153000 00 1013
154500 00 1014
160000 00 1015
161500 00 1016
163000 00 1017
164500 00 1018
170000 00 1019
171800 00 1020
173500 00 1021
175500 00 1022
182000 00 1023
192600 00 1023
195700 00 1022
201800 00 1021
203200 00 1020
204300 00 1019
205200 00 1018
210000 00 1017
080000 00 1018 0000 198 0 000000 000000
081200 00 1018
082800 00 1017
084300 00 1016
090000 00 1015
091300 00 1014
092800 00 1013
094200 00 1012
095800 00 1011
101200 00 1010
103000 00 1009
104400 00 1008
110000 00 1007
112200 00 1006
115200 00 1005
123200 00 1004
134400 00 1004
140800 00 1005
142200 00 1006
144000 00 1007
145200 00 1008
150800 00 1009
152100 00 1010
153400 00 1011
154800 00 1012
160000 00 1013
161300 00 1014
```

```
163100 00 1015
165000 00 1016
171000 00 1017
172900 00 1018
175000 00 1019
181200 00 1020
184300 00 1021
192000 00 1022
195500 00 1022
202700 00 1021
204900 00 1020
210500 00 1019
212000 00 1018
213500 00 1017
215000 00 1016
220000 00 1015
050000 00 1012 0000 199 0 000000 000000
052400 00 1013
055000 00 1014
061900 00 1015
065000 00 1016
072000 00 1015
083800 00 1015
090300 00 1014
092700 00 1013
094900 00 1012
103200 00 1011
105800 00 1010
112000 00 1009
114000 00 1008
120000 00 1007
123000 00 1006
143900 00 1007
150300 00 1008
152200 00 1009
154200 00 1010
160000 00 1011
162000 00 1012
163900 00 1013
165500 00 1014
170000 00 1014
070000 00 1012 0000 200 0 000000 000000
070800 00 1013
073600 00 1014
082000 00 1015
100500 00 1015
104300 00 1014
111200 00 1013
114000 00 1012
121000 00 1011
122200 00 1010
```

124700 00 1009 Day 200
152100 00 1009
160800 00 1010
090000 00 1003 0000 205 0 000000 000000
091700 00 1004
093000 00 1005
094600 00 1006
100000 00 1007
101600 00 1008
103000 00 1009
104500 00 1010
110000 00 1011
111500 00 1012
113000 00 1013
114600 00 1014
120200 00 1015
122000 00 1016
124000 00 1017
130000 00 1018
132600 00 1019
140000 00 1020
143400 00 1020
151000 00 1019
153200 00 1018
155200 00 1017
161100 00 1016
163000 00 1015
165000 00 1014
170000 00 1013
080000 00 0002 0000 206 0 000000 000000
085200 00 0001
091000 00 0000
092800 00 1001
094300 00 1002
100000 00 1003
101000 00 1004
102000 00 1005
103200 00 1006
104300 00 1007
105800 00 1008
111000 00 1009
112300 00 1010
113600 00 1011
114800 00 1012
120000 00 1013
121600 00 1014
123000 00 1015
124800 00 1016
130000 00 1017
131500 00 1018
133000 00 1019

```
122400 00 1004
123200 00 1005
124200 00 1006
125100 00 1007
130000 00 1008
080000 00 1015 0000 212 0 000000 000000
080800 00 1014
081700 00 1013
082700 00 1012
083800 00 1011
085000 00 1010
090000 00 1009
091200 00 1008
092500 00 1007
093900 00 1006
095000 00 1005
100500 00 1004
102000 00 1003
103800 00 1002
105600 00 1001
112000 00 0000
120400 00 0000
122900 00 1001
124600 00 1002
130000 00 1003
131400 00 1004
132600 00 1005
133800 00 1006
134800 00 1007
135600 00 1008
140400 00 1009
141600 00 1010
142600 00 1011
143600 00 1012
144500 00 1013
145500 00 1014
150600 00 1015
151800 00 1016
153000 00 1017
154100 00 1018
155300 00 1019
160900 00 1020
162100 00 1021
163900 00 1022
165500 00 1023
110000 00 1004 0000 213 0 000000 000000
111000 00 1004
112800 00 1003
115300 00 1002
125200 00 1001
131300 00 1002
```

```
133100 00 1003
134500 00 1004
140000 00 1005
141100 00 1006
142300 00 1007
143300 00 1008
144200 00 1009
145300 00 1010
150200 00 1011
151200 00 1012
152500 00 1013
153900 00 1014
155200 00 1015
160800 00 1016
162000 00 1017
163500 00 1018
165000 00 1019
171000 00 1020
172800 00 1021
174600 00 1022
180500 00 1023
192000 00 1024
194300 00 1023
200200 00 1022
202000 00 1021
203100 00 1020
204500 00 1019
205500 00 1018
210000 00 1017
070000 00 1019 0000 214 0 000000 000000
081300 00 1019
083200 00 1018
08V000 00 1017
090500 00 1016
092100 00 1015
093700 00 1014
095000 00 1013
100200 00 1012
101900 00 1011
103200 00 1010
105000 00 1009
110900 00 1008
112900 00 1007
115300 00 1006
123000 00 1005
134800 00 1004
140800 00 1005
142400 00 1006
144000 00 1007
145500 00 1008
151000 00 1009
```

152200 00 1010 Day 214
153800 00 1011
154800 00 1012
160000 00 1013
161200 00 1014
162800 00 1015
164100 00 1016
165900 00 1017
120000 00 1020 0000 218 0 000000 000000
122000 00 1020
'25300 12V300 00 1019 Tape O.K.
133000 00 1019
135200 00 1018
141100 00 1017
143000 00 1016
145000 00 1015
150900 00 1014
152800 00 1013
154400 00 1012
160200 00 1011
162000 00 1010
164200 00 1009
171300 00 1008
180000 00 1007
080000 00 0002 0000 219 0 000000 000000
080900 00 0001
082400 00 0000
083900 00 1001
085000 00 1002
090000 00 1003
091200 00 1004
092600 00 1005
093800 00 1006
094000 00 1007
100200 00 1008
101400 00 1009
102600 00 1010
103800 00 1011
104900 00 1012
110000 00 1013
111000 00 1014
112000 00 1015
113000 00 1016
114100 00 1017
115600 00 1018
121000 00 1019
122400 00 1020
124200 00 1021
131000 00 1022
140000 00 1022
143100 00 1021

```
                145000 00 1020
150400          1V0400 00 1019
                151900 00 1018
                153000 00 1017
                154500 00 1016
                155900 00 1015
                161100 00 1014
                162400 00 1013
                163800 00 1012
                165000 00 1011
                170000 00 1010
                080000 00 0006 0000 220 0 000000 000000
                081000 00 0005
                084000 00 0004
                085900 00 0003
                091000 00 0002
                092000 00 0001
                093100 00 0000
                094100 00 1001
                095100 00 1002
                100200 00 1003
                101000 00 1004
                102000 00 1005
                103000 00 1006
                104000 00 1007
                105000 00 1008
                105800 00 1009
                110800 00 1010
                112000 00 1011
                113000 00 1012
                114000 00 1013
                115000 00 1014
                120000 00 1015
                121000 00 1016
                122000 00 1017
                123000 00 1018
                124000 00 1019
                125000 00 1020
                130000 00 1021
                131000 00 1022
                132500 00 1023
                135000 00 1024
                145000 00 1024
                151000 00 1023
                152500 00 1022
                154000 00 1021
                155200 00 1020
                160600 00 1019
                161900 00 1018
                163000 00 1017
                164000 00 1016
```

```
165200 00 1015
170000 00 1014
080000 00 0005 0000 221 0 000000 000000
080800 00 0006
091500 00 0006
093000 00 0005
094200 00 0004
095500 00 0003
100300 00 0002
101200 00 0001
102100 00 0000
103000 00 1001
103800 00 1002
104800 00 1003
105600 00 1004
110400 00 1005
111200 00 1006
112100 00 1007
113000 00 1008
114000 00 1009
115000 00 1010
115900 00 1011
120800 00 1012
121800 00 1013
122600 00 1014
123500 00 1015
124200 00 1016
125200 00 1017
130200 00 1018
131100 00 1019
132200 00 1020
133200 00 1021
134200 00 1022
135200 00 1023
140200 00 1024
141900 00 1025
153900 00 1026
155600 00 1026
161000 00 1025
162200 00 1024
163400 00 1023
164400 00 1022
165400 00 1021
170000 00 1020
070000 00 1014 0000 224 0 000000 000000
120000 00 1001
120200 00 1002
121000 00 1003
122000 00 1004
123000 00 1005
123800 00 1006
```

Day 224

134200 00 1013
135100 00 1014
140200 00 1015
141900 00 1016
143200 00 1017
144800 00 1018
150000 00 1019
151800 00 1020
153000 00 1021
154500 00 1022
160000 00 1023
161100 00 1024
162600 00 1025
164700 00 1026
180500 00 1025
182000 00 1024
183600 00 1023
185000 00 1022
190000 00 1021
150000 00 1014 0000 232 0 000000 000000
153200 00 1013
161400 00 1012
184000 00 1013
192100 00 1014
194900 00 1015
201000 00 1016
203000 00 1017
205200 00 1018
211300 00 1019
213800 00 1020
220000 00 1021
224000 00 1022
223800 00 1021
090000 00 1006 0000 234 0 000000 000000
090800 00 1007
092000 00 1008
093200 00 1009
094800 00 1010
100200 00 1011
102000 00 1012
103500 00 1013
105200 00 1014
110900 00 1015
112400 00 1016
114000 00 1017
115500 00 1018
121000 00 1019
123400 00 1020
130000 00 1021
143200 00 1020
150000 00 1019

```
152000 00 1018
153800 00 1017
155500 00 1016
161100 00 1015
162800 00 1014
164400 00 1013
170000 00 1012
172000 00 1011
174000 00 1010
180500 00 1009
184100 00 1008
195400 00 1009
201900 00 1010
204000 00 1011
205900 00 1012
211100 00 1013
212600 00 1014
214000 00 1015
215100 00 1016
220500 00 1017
222000 00 1018
223100 00 1019
224500 00 1020
225600 00 1021
230000 00 1021
090000 00 1002 0000 235 0 000000 000000
091200 00 1003
092500 00 1004
093800 00 1005
094900 00 1006
100000 00 1007
101100 00 1008
102200 00 1009
103600 00 1010
104800 00 1011
110000 00 1012
111400 00 1013
113000 00 1014
114100 00 1015
115600 00 1016
121000 00 1017
122200 00 1018
123600 00 1019
125000 00 1020
130000 00 1021
132000 00 1022
134600 00 1023
145000 00 1022
151100 00 1021
153000 00 1020
154900 00 1019
```

160700 00 1018
162000 00 1017
163400 00 1016
164800 00 1015
170000 00 1014
171200 00 1013
172500 00 1012
173800 00 1011
175000 00 1010
180400 00 1009
~~18200 0 008~~ 1008
184000 00 1007 Tape Corrected 2-14-74
190600 00 1006
194700 00 1005
201900 00 1006
205000 00 1007
210500 00 1008
211800 00 1009
213000 00 1010
214100 00 1011
215500 00 1012
220000 00 1013
221800 00 1014
222900 00 1015
224000 00 1016
225000 00 1017
230000 00 1018
150000 00 1024 0000 236 0 000000 000000
155500 00 1023
160800 00 1022
162000 00 1021
163000 00 1020
164200 00 1019
165500 00 1018
170800 00 1017
171800 00 1016
172800 00 1015
173900 00 1014
175000 00 1013
180000 00 1012
181000 00 1011
182200 00 1010
183500 00 1009
184200 00 1008
190000 00 1007
191700 00 1006
193600 00 1005
200200 00 1004
210000 00 1003
070000 00 1003 0000 237 0 000000 000000
071000 00 1002

Day 237

072200 00 1001
073500 00 1000
074700 00 0001
080200 00 0002
081800 00 0003
083700 00 0004
092600 00 0003
095000 00 0002
100600 00 0001
101600 00 0000
102700 00 1001
103700 00 1002
104500 00 1003
105500 00 1004
110500 00 1005
111300 00 1006
112200 00 1007
113000 00 1008
114000 00 1009
115000 00 1010
115800 00 1011
120700 00 1012
121700 00 1013
122500 00 1014
123200 00 1015
124000 00 1016
125000 00 1017
130000 00 1018
131000 00 1019
132000 00 1020
133000 00 1021
134000 00 1022
135000 00 1023
140000 00 1024
142000 00 1025
144000 00 1026
145000 00 1026
161500 00 1025
163000 00 1024
164200 00 1023
165100 00 1022
170000 00 1021
171800 00 1020
172800 00 1019
173700 00 1018
174500 00 1017
175500 00 1016
180200 00 1015
181000 00 1014
182000 00 1013
183000 00 1012

```
184000 00 1011
185000 00 1010
190500 00 1009
191800 00 1008
193000 00 1007
194000 00 1006
195200 00 1005
201000 00 1004
202500 00 1003
205500 00 1002
213000 00 1001
215000 00 1000
220000 00 1003
070000 00 1008 0000 238 0 000000 000000
070800 00 1007
071900 00 1006
073000 00 1005
074000 00 1004
075000 00 1003
080000 00 1002
081400 00 1001
083000 00 0001
084200 00 0002
085800 00 0003
101000 00 0002
102200 00 0001
103500 00 0000
104500 00 1001
105800 00 1002
110900 00 1003
111800 00 1004
112800 00 1005
113500 00 1006
114400 00 1007
115500 00 1008
120500 00 1009
121400 00 1010
122400 00 1011
123100 00 1012
124000 00 1013
125000 00 1014
125600 00 1015
130300 00 1016
131300 00 1017
132100 00 1018
133000 00 1019
134000 00 1020
135000 00 1021
140100 00 1022
141200 00 1023
142300 00 1024
```

```
143800 00 1025
145000 00 1026
150900 00 1027
162000 00 1026
164000 00 1025
165500 00 1024
171000 00 1023
172000 00 1022
173000 00 1021
174000 00 1020
174600 00 1019
175600 00 1018
180500 00 1017
181500 00 1016
182500 00 1015
183500 00 1014
184500 00 1013
185500 00 1012
190000 00 1011
191200 00 1010
192000 00 1009
192700 00 1008
193700 00 1007
194500 00 1006
195500 00 1005
201000 00 1004
202000 00 1003
203200 00 1002
204500 00 1001
210000 00 1000
211700 00 0001
220000 00 0000
222500 00 1001
224000 00 1002
225500 00 1003
230000 00 1003
100000 00 0004 0000 239 0 000000 000000
103200 00 0003
105000 00 0002
110000 00 0001
111000 00 0000
112000 00 1001
112800 00 1002
113700 00 1003
114500 00 1004
115300 00 1005
120000 00 1006
120900 00 1007
121900 00 1008
122800 00 1009
123800 00 1010
```

Day 239

```
124700 00 1011
125700 00 1012
130300 00 1013
131300 00 1014
132300 00 1015
133200 00 1016
134000 00 1017
135000 00 1018
140000 00 1019
141200 00 1020
142200 00 1021
143500 00 1022
144300 00 1023
145500 00 1024
150800 00 1025
152300 00 1026
154000 00 1027
160000 00 1028
164000 00 1029
170000 00 1027
171400 00 1026
172800 00 1025
174000 00 1024
175200 00 1023
180300 00 1022
181400 00 1021
182400 00 1020
183300 00 1019
184200 00 1018
185000 00 1017
185800 00 1016
190500 00 1015
191300 00 1014
192200 00 1013
193000 00 1012
194000 00 1011
194800 00 1010
195800 00 1009
200500 00 1008
201600 00 1007
202800 00 1006
203800 00 1005
205000 00 1004
210200 00 1003
211500 00 1002
212900 00 1001
214200 00 0000
230000 00 0001
070000 00 1016 0000 240 0 000000 000000
070200 00 1015
070800 00 1014
```

Day 240

071600 00 1013
072300 00 1012
073200 00 1011
074200 00 1010
075000 00 1009
080000 00 1008
081000 00 1007
082000 00 1006
083000 00 1005
084000 00 1004
085200 00 1003
090400 00 1002
091400 00 1001
093000 00 0000
094500 00 0001
100200 00 0002
103100 00 0003
105000 00 0002
111100 00 0001
112400 00 0000
113600 00 1001
114600 00 1002
115700 00 1003
120700 00 1004
121700 00 1005
122600 00 1006
123300 00 1007
124200 00 1008
125000 00 1009
130000 00 1010
130900 00 1011
131900 00 1012
132800 00 1013
133800 00 1014
134700 00 1015
135500 00 1016
140300 00 1017
141300 00 1018
142500 00 1019
143600 00 1020
144800 00 1021
145800 00 1022
151000 00 1023
152200 00 1024
153600 00 1025
154900 00 1026
160300 00 1027
162300 00 1028
171100 00 1027
173000 00 1026
174800 00 1025

```
180000 00 1024
181100 00 1023
182300 00 1022
183500 00 1021
184700 00 1020
185800 00 1019
190800 00 1018
191900 00 1017
192800 00 1016
193600 00 1015
194300 00 1014
195200 00 1013
200000 00 1012
200500 00 1011
201300 00 1010 Tape corrected 2-14-74
202200 00 1009                    JR
203200 00 1008
204100 00 1007
205000 00 1006
210100 00 1005
211100 00 1004
212200 00 1003
213500 00 1002
214800 00 1001
220300 00 0000
222300 00 0001
224800 00 0002
233500 00 0001
240000 00 0000
070000 00 1019 0000 241 0 000000 000000
070400 00 1018
071900 00 1017
072800 00 1016
073800 00 1015
074900 00 1014
075900 00 1013
080400 00 1012
081900 00 1011
082900 00 1010
083900 00 1009
085000 00 1008
090000 00 1007
090700 00 1006
092200 00 1005
093300 00 1004
094600 00 1003
100000 00 1002
102000 00 1001
104900 00 0000
114200 00 1001
120000 00 1002
```

Day 241

120500 00 1003
122100 00 1004
123200 00 1005
124300 00 1006
125400 00 1007
130200 00 1008
131100 00 1009
132000 00 1010
133000 00 1011
133900 00 1012
134800 00 1013
135800 00 1014
140700 00 1015
141900 00 1016
142900 00 1017
144000 00 1018
145100 00 1019
150000 00 1020
150700 00 1021
152800 00 1022
154100 00 1023
155800 00 1024
160600 10 5
160600 00 1025
Tape corrected 2-14-74
163100 00 1026
170000 00 1027
175000 00 1026
181500 00 1025
183100 00 1024
184800 00 1023
190000 00 1022
190600 00 1021
192200 00 1020
193200 00 1019
194100 00 1018
195000 00 1017
195800 00 1016
200800 00 1015
201800 00 1014
202800 00 1013
203500 00 1012
204400 00 1012
205100 00 1011
210100 00 1010
211100 00 1009
212200 00 1008
213200 00 1007
214300 00 1006
215800 00 1005
221000 00 1004
222200 00 1003
223700 00 1002

```
225000 00 0000
230700 00 0000
233000 00 0001
240500 00 0002
090000 00 1006 0000 248 0 000000 000000
090300 00 1007
091400 00 1008
092600 00 1009
093800 00 1010
094900 00 1011
100000 00 1012
101200 00 1013
102500 00 1014
103800 00 1015
105000 00 1016
110100 00 1017
111400 00 1018
112800 00 1019
114200 00 1020
115600 00 1021
121300 00 1022
123200 00 1023
125800 00 1024
140000 00 1024
142100 00 1023
144000 00 1022
145500 00 1021
150800 00 1020
152100 00 1019
153200 00 1018
154400 00 1017
155500 00 1016
160800 00 1015
161900 00 1014
163000 00 1013
164200 00 1012
165800 00 1011
171000 00 1010
172800 00 1009
174300 00 1008
180100 00 1007
183000 00 1006
185500 00 1005
201000 00 1007
202100 00 1008
203500 00 1009
204800 00 1010
205600 00 1011
210900 00 1012
212000 00 1013
213000 00 1014
```

VELOCITY TAPE

1968 Season

000030 00 0000 0001 000 0 000000 000000
000080 00 0001
000140 00 0002
000180 00 0003
009990 00 0004

OPR 429 PF-20-3-67 H-8962

Kamishak Bay, Alaska

20-3-67 OPR 429 DAYS 143-240 TYPE OF TAPE TC/TI CORRECTOR

VESSEL ML-1

100300 00 0002 0001 143 0 000000 000000

101800 00 0003

103600 00 0002

111330 00 0003

111900 00 0002

120500 00 0003

132300 00 0003 0001 144 0 000000 000000

141030 00 0004

142900 00 0003

152200 00 0002

154930 00 0003

160530 00 0004

211800 00 0003

214200 00 0002

223900 00 0003

085000 00 0003 0001 145 0 000000 000000

085300 00 0002

091330 00 0003

093430 00 0002

101800 00 0004

115030 00 0003

124400 00 0002

130100 00 0003

130800 00 0002

132530 00 0003

134830 00 0004

144500 00 0002

145000 00 0003

152730 00 0004

164400 00 0003

164700 00 0002

164930 00 0004

165600 00 0003

165900 00 0002

170100 00 0004

170800 00 0002 0001 148 0 000000 000000

172630 00 0003

180230 00 0002

183900 00 0003

185930 00 0002

195230 00 0003

202300 00 0004

205000 00 0002

205430 00 0001

205930 00 0002

220600 00 0003

230900 00 0002

232830 00 0003

095530 00 0002 0001 212 0 000000 000000

103420 00 0003

105640 00 0004

110400 00 0003

113340 00 0004

113940 00 0003

123520 00 0004

124220 00 0003

141420 00 0002

144100 00 0004

144700 00 0003

092030 00 0003 0001 214 0 000000 000000

101600 00 0004

104900 00 0003

114220 00 0004

125120 00 0003

125520 00 0004

131500 00 0003

141400 00 0003 0001 218 0 000000 000000

150200 00 0002

150730 00 0003

150900 00 0004

151500 00 0003

152030 00 0004

190700 00 0003 0001 232 0 000000 000000

191630 00 0002

194600 00 0003

195100 00 0002

195730 00 0003

201300 00 0002

105800 00 0003 0001 234 0 000000 000000

110030 00 0002

110930 00 0003

111630 00 0002

112030 00 0003

112830 00 0002

113300 00 0003

114400 00 0002

114800 00 0003

131830 00 0002

132600 00 0003

134600 00 0002

135030 00 0003

140230 00 0004

140630 00 0003

181300 00 0002

181900 00 0003

182700 00 0002

183100 00 0003

184630 00 0004

~~184750 00 0003~~

~~190330 00 0002~~

~~190800 00 0003~~

184730 00 0003

190330 00 0002

192000 00 0003

193200 00 0004

193730 00 0003

195030 00 0002

195430 00 0003

200130 00 0002

200600 00 0003

214100 00 0004

221500 00 0003

105200 00 0002 0001 235 0 000000 000000

125200 00 0003

130300 00 0002

133300 00 0003

142730 00 0002

143330 00 0003

172730 00 0004

174830 00 0005

175400 00 0004

183900 00 0002

204500 00 0003

205400 00 0004

171300 00 0005 0001 236 0 000000 000000

185930 00 0003

082600 00 0003 0001 237 0 000000 000000

083900 00 0002

090900 00 0003

093100 00 0002

093930 00 0003

132700 00 0002

133230 00 0003

143130 00 0002

143400 00 0003

172800 00 0004

174930 00 0003

194040 00 0002

084130 00 0002 0001 238 0 000000 000000

085400 00 0003

090400 00 0002

091900 00 0003

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103300 00 0003

111830 00 0002

112230 00 0003

120700 00 0002

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133530 00 0002

133700 00 0003

```
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144500 00 0002
173900 00 0004
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191630 00 0004
192030 00 0002
200830 00 0003
201430 00 0004
201600 00 0003
201630 00 0002
201830 00 0000
202000 00 0002
202200 00 0003
204000 00 0002
205600 00 0003
210200 00 0004
120430 00 0004 0001 239 0 000000 000000
124730 00 0003
125530 00 0004
132730 00 0003
132800 00 0005
133100 00 0003
141700 00 0004
142000 00 0005
142100 00 0003
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142300 00 0004

142400 00 0003

142430 00 0001

142500 00 0004

144100 00 0003

151200 00 0005

151330 00 0003

151730 00 0004

164030 00 0003

165400 00 0005

165730 00 0003

170630 00 0004

171930 00 0005

175600 00 0004

175830 00 0005

180400 00 0004

191400 00 0005

191800 00 0004

200000 00 0005

200400 00 0004

220530 00 0005

222730 00 0004

224530 00 0005

082700 00 0003 0001 240 0 000000 000000

6 083300 00 0004

4

3

100930 00 0003

103700 00 0004

122000 00 0003

122700 00 0004

130000 00 0003

150200 00 0004

150500 00 0003

151230 00 0004

152000 00 0003

152330 00 0004

160100 00 0005

160500 00 0004

171000 00 0003

171530 00 0004

182400 00 0003

182730 00 0004

183400 00 0003

184130 00 0004

184600 00 0003

192700 00 0004

193700 00 0003

195430 00 0004

203830 00 0003

PF-20-3-67 OPR-429 vessel ML-2

days 196-248

090800 00 0002 0001 196 0 000000 000000

093300 00 0003

100540 00 0002

104900 00 0003

133520 00 0004

134140 00 0002

135900 00 0003

143300 00 0002

144940 00 0003

152020 00 0002

091200 00 0003 0001 197 0 000000 000000

112130 00 0002

135400 00 0003

141200 00 0002

144500 00 0003

151300 00 0002

154300 00 0003

155500 00 0004

093600 00 0003 0001 198 0 000000 000000

093800 00 0002

095100 00 0001

101830 00 0002

103000 00 0003

111500 00 0002

112500 00 0001

114230 00 0002

115430 00 0003

132630 00 0002

140400 00 0003

143830 00 0002

092800 00 0003 0001 199 0 000000 000000

100200 00 0002

105830 00 0004

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121300 00 0004

141430 00 0003

143030 00 0004

143330 00 0002

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093530 00 0005

094430 00 0004

112430 00 0003

114130 00 0004

115700 00 0005

120300 00 0006

120830 00 0007

121130 00 0005

131000 00 0004

```
141430 00 0004 0001 218 0 000000 000000
142430 00 0003
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152200 00 0003
153730 00 0002
090000 00 0003 0001 220 0 000000 000000
090730 00 0004
094600 00 0003
100300 00 0004
101100 00 0003
111700 00 0002
113900 00 0003
115830 00 0002
121100 00 0003
122730 00 0004
091200 00 0004 0001 221 0 000000 000000
101430 00 0003
090000 00 0003 0001 225 0 000000 000000
090900 00 0002
091530 00 0003
093730 00 0004
095730 00 0003
104100 00 0004
```

111700 00 0003

113300 00 0002

114200 00 0003

134700 00 0004

135030 00 0003

141230 00 0004

142900 00 0003

144530 00 0002

150700 00 0003

152400 00 0001

152700 00 0003

163430 00 0003 0001 232 0 000000 000000

185700 00 0002

191230 00 0003

193530 00 0002

193830 00 0003

110400 00 0003 0001 234 0 000000 000000

110720 00 0004

115200 00 0003

180800 00 0002

194500 00 0003

124800 00 0003 0001 235 0 000000 000000

130000 00 0004

131130 00 0003

7 170400 00 0004

6

4

3

172330 00 0003

173100 00 0002

202600 00 0003

210200 00 0004

212100 00 0003

164500 00 0003 0001 236 0 000000 000000

181700 00 0004

182500 00 0003

191700 00 0004

193700 00 0003

200000 00 0004

202900 00 0001

203200 00 0003

082700 00 0002 0001 237 0 000000 000000

090000 00 0003

090600 00 0004

091100 00 0002

101800 00 0004

104100 00 0003

131900 00 0004

142300 00 0003

145140 00 0002

145220 00 0004

145420 00 0003

174200 00 0002

174900 00 0003

185930 00 0002

190900 00 0003

193300 00 0004

100100 00 0003 0001 238 0 000000 000000

100220 00 0002

112900 00 0003

122800 00 0002

142840 00 0003

174500 00 0004

184030 00 0003

191130 00 0002

204430 00 0003

215200 00 0002

114600 00 0003 0001 239 0 000000 000000

115300 00 0002

124000 00 0003

134430 00 0004

135530 00 0003

141700 00 0002

142900 00 0003

200400 00 0002

210700 00 0003

211630 00 0002

090130 00 0002 0001 240 0 000000 000000

092600 00 0003

102600 00 0002

102900 00 0003

104130 00 0004

104530 00 0003

111430 00 0002

111800 00 0003

115630 00 0004

120300 00 0002

120700 00 0003

131800 00 0004

132230 00 0003

133100 00 0002

140400 00 0003

141230 00 0002

142600 00 0003

143830 00 0004

150530 00 0003

151300 00 0002

152730 00 0003

163300 00 0002

164330 00 0003

165500 00 0004

165900 00 0003

171100 00 0002

185830 00 0003

190530 00 0002

231130 00 0003

085300 00 0003 0001 241 0 000000 000000

090330 00 0002

101600 00 0003

103740 00 0002

123600 00 0003

124930 00 0002

192100 00 0003

195100 00 0002

104900 00 0003 0001 248 0 000000 000000

105400 00 0002

110530 00 0003

122600 00 0001

124400 00 0002

140230 00 0003

143230 00 0002

7

6

5

4

3

8962

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. PF 20-3-67 *Office No.* H-8962

LOCALITY

State ALASKA

General locality COOK INLET

Locality KAMISHAK BAY

1970

CHIEF OF PARTY

H.R. LIPPOLD JR. CAPT.

LIBRARY & ARCHIVES

DATE

8962

FORM C&GS-537
(5-66)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-8962

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.
PF 2Ø-3-67

State ALASKA

General locality LOWER COOK INLET

Locality Kamishak Bay

Scale 1:2Ø,ØØØ Date of survey July 29 - Sept. 9, 197Ø

Instructions dated 19 March 197Ø Project No. OPR-429

Vessel USC&GSS PATHFINDER, ML#1, ML#2, ML#4, SB#5, and Boat #6

Chief of party H.R. Lippold, Jr., Captain

Surveyed by Ship's Personnel

Soundings taken by echo sounder, hand lead, pole Raytheon 723 Echo Sounder

Graphic record scaled by Ship's Personnel

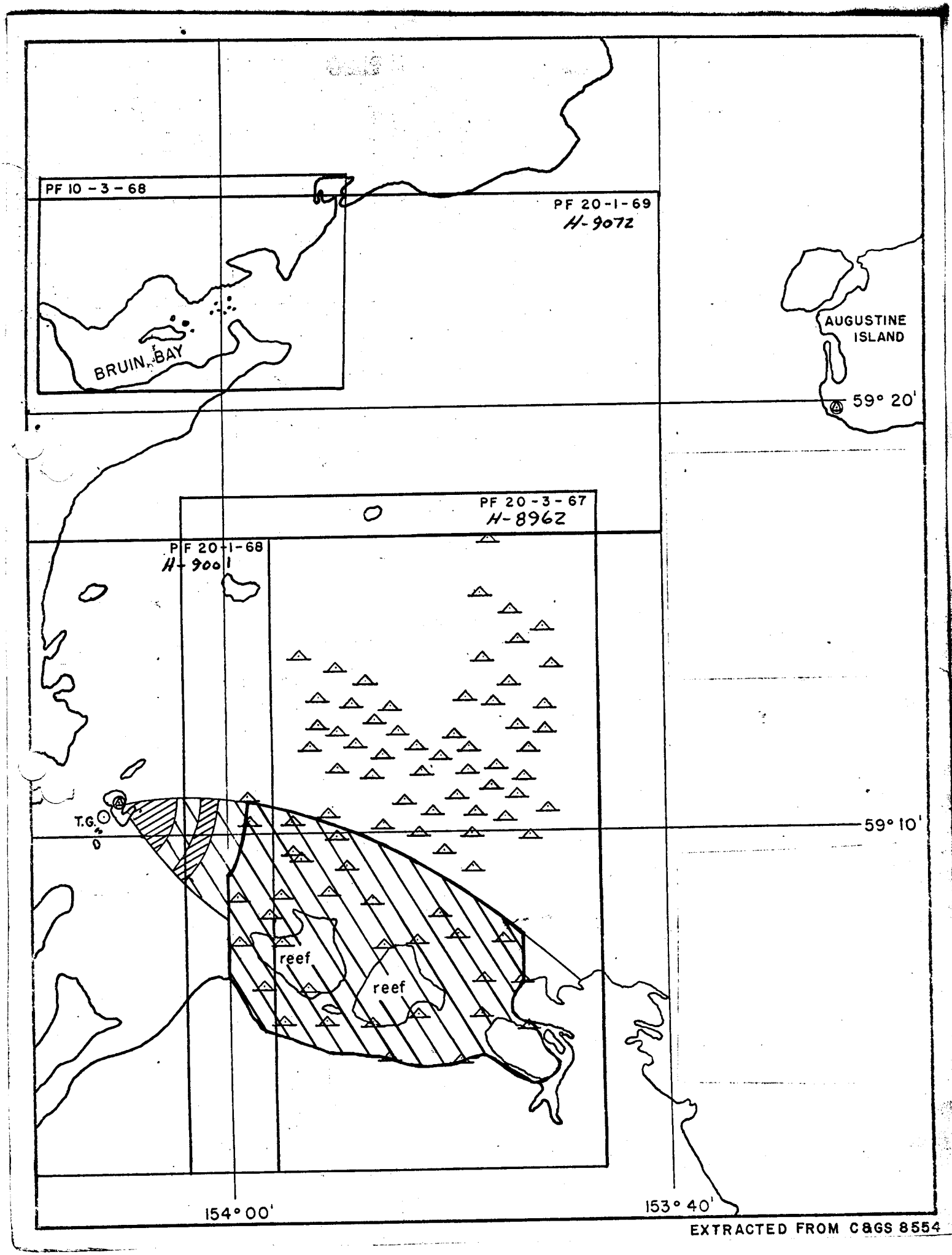
Graphic record checked by Ship's Personnel

Positions verified by A.E. Eichelberger Automated plot by PMC

Soundings verified by A.E. Eichelberger

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS: Change No. 1, dated 5 May 197Ø, was completed and fowarded under a separate report.



EXTRACTED FROM C&GS 8554

Descriptive Report to Accompany
Hydrographic Survey H-8962
Field No. PF 20-3-67
Scale 1:20,000

USC&GSS PATHFINDER
Capt. H.R. Lippold Jr., Comdg.

A. PROJECT

The hydrography for this survey was completed in accordance with project instructions OPR 429, Lower Cook Inlet, Alaska, dated 6 April 1970.

B. AREA SURVEYED

This survey is a basic hydrographic survey of a portion of Kamishak Bay, Alaska. The sheet limits are:

North: Latitude 59° 18' N
South: Latitude 59° 02' N
East: Longitude 153° 43' W
West: Longitude 154° 02' W

The hydrography began 29 July and ended 17 September 1970. This survey makes a junction in the north with H-8962 (1:20,000 sheet partly done in 1968), in the ~~east~~ west with H-9001 (1:20,000), and in the ~~west~~ east with H-8842 (1:20,000). H-8843 (1:40,000)

C. SOUNDING VESSEL

The hydrography in this area was done using the following PATHFINDER launches (position number color in parentheses):

ML #1 (carmine)
ML #2 (blue)
ML #4 (brown)

D. SOUNDING EQUIPMENT

DE 723 Raytheon Fathometers were used throughout the survey. Serial numbers of the fathometers used are: 552, 557, 935, 140, 151, and 145.

Depths measured ranged from 0 to 10 fathoms. Echo sounder corrections were determined by daily bar checks.

E. SMOOTH SHEET

Data tapes have been completed by personnel of the Ship PATHFINDER in anticipation of the smooth sheet being plotted by the electronic plotter at the Pacific Marine Center.

F. CONTROL

Raydist electronic control was used for the entire project, with several visual lines run as a check.

The 1970 Raydist stations were established on stations "JUMA 1967" and "TINE 2, RM3". Station "JUMA" was established in 1967 and is a second order, class II triangulation station. Station "TINE" was established on South Augustine 2, RM3. South Augustine 2 is a second order traverse established in 1964.

Operation frequencies of the base stations and the mobile units are as follows: JUMA (red)--1653.015 KHZ; TINE (green) --1653425 KHZ; Set #1--3306.465; Set #2--3306.500; Set #3 3306.400. The Ship PATHFINDER used Set #3, when taking bottom samples. For more detail, see the accompanying Raydist note.

G. SHORELINE

The shoreline was drawn using T-sheets T-12340 and T-12341. Hydro signals used for control were transferred via the T sheets. See the accompanying photogrammetry report for information on field edit and shore delineation. All field editing was completed.

H. CROSSLINES

Crosslines consisted of 8.4 per cent of the hydrography completed during the 1970 season on this sheet. Crossline comparison varied from fair to good. Several discrepancies of 0.3 to 0.5 fathoms were noted. This could be attributed to weather conditions causing unusual tides and swells.

I. JUNCTIONS

Junctions with prior surveys varied from good to fair.

J. COMPARISON WITH PRIOR SURVEYS

All other surveys in the work area are dated 1913 and are considered inadequate.

K. COMPARISON WITH CHARTS

The largest scale chart of the area surveyed is C&GS Chart No. 8554, 27 Nov. 1967, which contains no soundings in the area surveyed.

L. ADEQUACY OF SURVEY

The survey is adequate for charting, and all that is needed is selection of the proper tide informations.

M. AIDS TO NAVIGATION

There are no aids to navigation in the area surveyed.

N. STATISTICS

Launch #1 No. of pos.-1138 Soundings lines-281.7n.m.

Launch #2 No. of pos.-1334 Soundings lines-305.8n.m.

Launch #4 No. of pos.-848 Soundings lines-199.0n.m.

3320

Area surveyed 15.6 square miles
Bottom samples 95

O. MISCELLANEOUS

Line spacings were increased to 4 lanes (180 meters) over the reef areas. It was felt that this adequately delineated the reef.

P. RECOMMENDATIONS

None.

Q. REFERENCES TO REPORTS

Past descriptive reports for earlier work on this sheet.

Respectfully Submitted,

Roy K. Matsushige

Roy K. Matsushige
Lt. NOAA

Approved & Forwarded,

J. D. Stachelhaus

John D. Stachelhaus
Lt. NOAA

TIDE NOTE

Due to a malfunction of the Bubbler Tide Gage set up on Nordyke Island, the marigrams were of poor quality. During certain periods it was necessary to interpolate through long periods of time without the benefit of corresponding high and low tidal references.

Junctions with prior and concurrent surveys were compared using both the Nordyke data and the predicted tides projected from Seldovia. Results of this comparison seemed to show a more reasonable matching when using the Seldovia data. This was attributed in part to the aforementioned lack of data on which to base interpolation of the sparse information received from the Nordyke gage. It should also be noted that the prior work on this sheet was reduced using projected tides from Seldovia.

The malfunction of the tide gage at Nordyke Island resulted in a heavy saw-tooth trace which can be observed on all marigrams. At various times a chopping off of both highs and lows can also be seen on the marigrams. Adjustment of all standard tide gage control devices did not seem to effect this constant malfunction of the gage. The tide gage itself was replaced with a different gage once during the field season. The oriface was reset to ensure a vertical positon at three different times with a purging of the lines accompanying each oriface placement. The line leading from the gage to the oriface was checked for leaks on numerous occasions. At no time was a failure in the system found, but the saw-tooth trace and intermittant elimination of the high/low pattern persisted. The tide gage used on Nordyke Island was further tested in Seattle by ship's personnel after the completion of the field season. Various combinations of oriface placement and gage control valve adjustment were tried during this Seattle test period. The gage operated normally and produced good marigram records during this Seattle period and we were not able to reproduce the previously mentioned saw-toothed pattern.

All tidal records and marigrams were forwarded to Chief, Tides and Currents, NOS for a final decision on the records to be used for this survey.

H-8962

Name on Survey	A On Chart No	B On [illegible] No	C On U.S. [illegible]	D From [illegible] Inform[illegible]	E On [illegible]	F P.O. Guide	G Rand McN[illegible]	H U.S. Li[illegible]	K	
KAMISHAK BAY										1
										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

Approved
C. E. Harrington
Staff Geographer
11 July 1975

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, Md. 20852

RECEIVED
JAN 4 1971
SHIP PATHFINDER

Date: December 30, 1970

Reply to Attn of: C331W-291-NOAAS

Subject: Tidal Data, Cook Inlet

Ref: Memorandum Dated October 27, 1970 and Phone Call December 28, 1970

To: Commanding Officer
NOAA Ship PATHFINDER

Planes of reference for the two requested locations in Cook Inlet are as follows:

Location	MLLW on Staff (FT.)
Snug Harbor	5.4
Nordyke Island	7.6

The Nordyke Island gage should be used for all hydrography south of Latitude 59°40' and Snug Harbor for all hydrography north of Latitude 59°40'.

Listed below are the time relationship and tidal ranges for the two locations:

Location	Time of Tide H	Time of Tide M	Mean Range (FT.)
Snug Harbor	0	0	13.3
Nordy ke Island	-0	50	12.9

L C Wharton

L. C. Wharton
Tides & Currents Branch
Oceanography Division
National Ocean Survey

1920

PF 20-1-68
ML#4
Velocity Corr. TABLE 1

DEPTH from	DEPTH to	CORRECTION	
0.0fm.	5.0fm.	+0.0fm.	(see note)
5.1fm.	7.0fm.	+0.1fm.	

PF 20-3-67
ML#4
Velocity Corr. TABLE 2

DEPTH from	DEPTH to	CORRECTION	
0.0fm.	7.0fm.	+0.0fm.	(see note)
7.1 fm	10.0 fm.	+0.1 fm.	

PF 20-3-67
ML#1
Velocity Corr. TABLE 3

DEPTH from	DEPTH to	CORRECTION	
0.0fm.	5.9fm.	+0.0fm.	(see note)
6.0fm.	7.0fm.	+0.1fm.	
7.1 fm	10.0 fm	+0.2 fm.	

PF 20-3-67
ML#2
Velocity Corr. TABLE 4

DEPTH from	DEPTH to	CORRECTION	
0.0fm.	5.0fm.	+0.0fm.	(see note)
5.1	7.0 fm	+0.1 fm	
7.1	10.0 fm.	+0.2 fm.	

NOTE: Lead Line comparisons were not used for Velocity corr. tables; they did not hold a steady value for a corrector as did the numerous depths recorded in bar checks.

PF 20-3-67

OPR 429 AREA KAMISHAK BAY

VESSEL ML # 1, 2, 4

DAY

POSITION — TO —

1970

TYPE OF TAPE VELOCITY CORR. (TABLES 2,3,4)

000070 01 0000 0002 000 1 000000 000000 –
000059 01 0000 0003 000 1 000000 000000 –
000070 01 0001 ~~0003 000 1 000000 000000~~ –
000050 01 0000 0004 000 1 000000 000000 –

Void 1/25/74

AEF

1970

PF 20-3-67
ML#1

DAY	TIME	INITIAL	DRAFT	TRA
210	093800	0.0	+0.3	+0.3
	153000	+0.1	+0.3	+0.4
	153800	+0.1	+0.3	+0.4
211	124400	0.0	+0.3	+0.3
	132700	-0.1	+0.3	+0.2
	134600	0.0	+0.3	+0.3
	143900	0.0	+0.3	+0.3
220	091200	0.0	+0.3	+0.3
	110300	+0.1	+0.3	+0.4
	152100	+0.1	+0.3	+0.4
221	100600	+0.1	+0.3	+0.4
	104400	0.0	+0.3	+0.3
	105600	-0.1	+0.3	+0.2
	111100	0.0	+0.3	+0.3
	114230	+0.1	+0.3	+0.4
	115400	-0.1	+0.3	+0.2
	120600	0.0	+0.3	+0.3
	134100	0.0	+0.3	+0.3
222	111630	0.0	+0.3	+0.3
	162800	0.0	+0.3	+0.3
223	095230	0.0	+0.3	+0.3
	101300	+0.1	+0.3	+0.4
	102800	0.0	+0.3	+0.3
	154000	-0.1	+0.3	+0.2
	155030	-0.1	+0.3	+0.2
224	084800	0.0	+0.3	+0.3
	114100	+0.1	+0.3	+0.4
	115730	0.0	+0.3	+0.3
	124600	+0.1	+0.3	+0.4
	131400	0.0	+0.3	+0.3
	140600	+0.1	+0.3	+0.4
	141500	0.0	+0.3	+0.3
	154100	0.0	+0.3	+0.3
232	092800	0.0	+0.3	+0.3
	130100	+0.1	+0.3	+0.4
	140000	0.0	+0.3	+0.3
	153700	0.0	+0.3	+0.3
233	102730	0.0	+0.3	+0.3
	155300	0.0	+0.3	+0.3
234	105700	0.0	+0.3	+0.3
	153700	0.0	+0.3	+0.3
235	085700	0.0	+0.3	+0.3
	144200	+0.1	+0.3	+0.4
	144900	0.0	+0.3	+0.3

PF 20-3-67
ML#1

DAY	TIME	INITIAL	DRAFT	TRA
235	154030	0.0	+0.3	+0.3
237	090630	0.0	+0.3	+0.3
	130700	+0.1	+0.3	+0.4
	131430	0.0	+0.3	+0.3
	154930	0.0	+0.3	+0.3
238	101530	0.0	+0.3	+0.3
	120500	0.0	+0.3	+0.3
246	092700	0.0	+0.3	+0.3
	152100	0.0	+0.3	+0.3
252	093000	0.0	+0.3	+0.3
	141530	0.0	+0.3	+0.3

PF 20-3-67
ML#2

221	113430	0.0	+0.3	+0.3
	122400	-0.1	+0.3	+0.2
	153700	-0.1	+0.3	+0.2
222	101100	+0.1	+0.3	+0.4
	123500	0.0	+0.3	+0.3
	162100	0.0	+0.3	+0.3
223	085830	0.0	+0.3	+0.3
	091000	-0.1	+0.3	+0.2
	094100	0.0	+0.3	+0.3
	100030	-0.1	+0.3	+0.2
	101800	0.0	+0.3	+0.3
	111800	+0.1	+0.3	+0.4
	125900	0.0	+0.3	+0.3
	142330	+0.1	+0.3	+0.4
	144200	0.0	+0.3	+0.3
	154400	0.0	+0.3	+0.3
224	084400	0.0	+0.3	+0.3
	145500	0.0	+0.3	+0.3
232	084500	0.0	+0.3	+0.3
	092600	-0.1	+0.3	+0.2
	112400	0.0	+0.3	+0.3
	133300	-0.1	+0.3	+0.2
	134700	0.0	+0.3	+0.3
	160600	0.0	+0.3	+0.3
233	090000	0.0	+0.3	+0.3

PF 20-3-67
ML#2

DAY	TIME	INITIAL	DRAFT	TRA
233	110300	+0.1	+0.3	+0.4
	115730	0.0	+0.3	+0.3
	151600	+0.1	+0.3	+0.4
	160400	+0.1	+0.3	+0.4
234	094400	0.0	+0.3	+0.3
	102030	+0.1	+0.3	+0.4
	113400	0.0	+0.3	+0.3
	114900	+0.1	+0.3	+0.4
	120500	0.0	+0.3	+0.3
	161630	0.0	+0.3	+0.3
235	084330	0.0	+0.3	+0.3
	160700	0.0	+0.3	+0.3
237	084930	0.0	+0.3	+0.3
	095800	-0.1	+0.3	+0.2
	102800	0.0	+0.3	+0.3
	105530	-0.1	+0.3	+0.2
	160300	-0.1	+0.3	+0.2
238	085430	0.0	+0.3	+0.3
	092600	+0.1	+0.3	+0.4
	093200	0.0	+0.3	+0.3
	105230	+0.1	+0.3	+0.4
	112300	0.0	+0.3	+0.3
	120300	+0.1	+0.3	+0.4
	122300	0.0	+0.3	+0.3
	141700	+0.1	+0.3	+0.4
	143400	0.0	+0.3	+0.3
	150130	0.0	+0.3	+0.3
246	112630	0.0	+0.3	+0.3
	145230	-0.1	+0.3	+0.2
	150700	-0.1	+0.3	+0.2
247	092900	-0.1	+0.3	+0.2
	094700	0.0	+0.3	+0.3
	104630	-0.1	+0.3	+0.2
	135730	0.0	+0.3	+0.3
	140230	-0.1	+0.3	+0.2
	145030	-0.1	+0.3	+0.2
252	093500	0.0	+0.3	+0.3
	102830	+0.1	+0.3	+0.4
	103600	0.0	+0.3	+0.3
	105330	+0.1	+0.3	+0.4
	111200	0.0	+0.3	+0.3
	112500	-0.1	+0.3	+0.2
	115700	0.0	+0.3	+0.3
	120200	-0.1	+0.3	+0.2
	130200	0.0	+0.3	+0.3
	133500	-0.1	+0.3	+0.2
	134300	-0.1	+0.3	+0.2

PF 20-3-67
ML#4

DAY	TIME	INITIAL	DRAFT	TRA
222	102000	+0.1	+0.3	+0.4
	123600	0.0	+0.3	+0.3
	131500	+0.1	+0.3	+0.4
	140530	0.0	+0.3	+0.3
	152230	+0.1	+0.3	+0.4
	154900	0.0	+0.3	+0.3
223	092430	0.0	+0.3	+0.3
	154600	0.0	+0.3	+0.3
224	085800	0.0	+0.3	+0.3
	154330	0.0	+0.3	+0.3
232	111000	0.0	+0.3	+0.3
	151800	0.0	+0.3	+0.3
233	090000	0.0	+0.3	+0.3
	151800	0.0	+0.3	+0.3
234	122800	0.0	+0.3	+0.3
	153630	0.0	+0.3	+0.3
235	093300	-0.1	+0.3	+0.2
	101630	0.0	+0.3	+0.3
	112400	+0.1	+0.3	+0.4
	113300	0.0	+0.3	+0.3
	113900	-0.1	+0.3	+0.2
	114500	0.0	+0.3	+0.3
	123440	-0.1	+0.3	+0.2
	124245	0.0	+0.3	+0.3
	125145	+0.1	+0.3	+0.4
	125730	0.0	+0.3	+0.3
	132900	-0.1	+0.3	+0.2
	135730	+0.1	+0.3	+0.4
	140115	0.0	+0.3	+0.3
	142830	-0.1	+0.3	+0.2
	144400	-0.2	+0.3	+0.1
	145030	+0.1	+0.3	+0.4
	145320	+0.1	+0.3	+0.4
237	091000	0.0	+0.3	+0.3
	145545	0.0	+0.3	+0.3
238	093030	0.0	+0.3	+0.3
	105230	+0.1	+0.3	+0.4
	111630	0.0	+0.3	+0.3
	125300	+0.1	+0.3	+0.4
	130800	0.0	+0.3	+0.3
	132500	+0.1	+0.3	+0.4
	135430	0.0	+0.3	+0.3
	140930	0.0	+0.3	+0.3

RAYDIST NOTE

PURPOSE

The purpose of this report is to explain the use of the Raydist DRS system used on Opr. 429, Lower Cook Inlet, Alaska during the year of 1970.

EQUIPMENT

The launches carried the DRS Raydist system made by Hastings Raydist Co. The launch installation consisted of a ZA-67A navigator, a TA 96 transmitter, a strip chart recorder and a 10-15 foot fiberglass whip antenna mounted on the house. The raydist equipment was powered by the launch battery banks which were charged by the launch alternator. Ground consisted of a copper plate on the launch hull.

All shore stations were one piece self-contained units which were sealed to withstand foul weather. The installations consisted of 100 foot antennas constructed from 10 foot aluminum Tabet tower sections with a 20 foot whip antenna on top. The whole tower acted as an antenna and rested on an insulated base plate. Four sections of guys made of 3/8" polypropylene line were spaced at 90° intervals around the tower. A ground plane consisting of sixteen #18 insulated copper wire radials spread at equal intervals was constructed outward from the antenna base. Both stations were driven by Raydist Base Stations model AA60. The green base station was serial #15 and the red base station was serial #14.

The shore stations each operated on 24 V.D.C. Eight 12 volt heavy duty 90 ampere-hour batteries operated the stations at low power for 8-10 days. These batteries were replaced by freshly charged batteries from the ship when they were expended or charged at the station site with a portable gasoline powered generator. Except for replacing batteries the stations were left unattended. Motorola FM receivers operating on 34-98 MHZ (the same frequency as the ship's base station) were set up at each station site. These receivers were equipped with a filter which passed only a single tone and operated a relay to turn the stations on and off remotely at the end of each day of hydrography. The single tone was generated by an oscillator fed into the base station of the ship and was of the order of 2KHZ. These units extended the time between shore station replenishments. Wind chargers were also used at the stations, but due to faulty equipment they did not operate for most of the season. With some redesign the wind chargers can be made to operate and should reduce station maintenance to a minimum. The addition of a voltage regulator and a different type of contact brushes and slip ring would improve the adequacy of this unit. A better speed governor is also recommended.

FREQUENCIES

Each unit operated as a set consisting of a launch transmitter and navigator. These units were shifted between launches as the need arose.

TA96 #20 ZA67A #26 3306.465KHZ	Set #1	TA96 #22 ZA67A #47 3306.500 KHZ	Set #2	TA96 #34 ZA67A #54 3306.400KHZ	Set #3
AA60 #15 1653.425KHZ	Green Base Station		AA60 #14 1653.015KHZ	Red Base Station	

SHORE STATIONS

Raydist towers were located as follows:

(1) JUMA, 1967 (Nordyke Island)
Lat. 59° 10' 40.26", Long. 154° 05' 21.72"

(2) South Augustine 2 RM3, 1964 (Ausgustine Island)
Lat. 59° 19' 25.997", Long. 153° 31' 16.669"

CALIBRATION

Calibration was done in two ways, by calibration tower and by visual fix. The calibration tower at JUMA reef was used as in years before. Another tower was located in the middle of the work area on survey H-8962 south of Nordyke Island and was calibrated by all three launches carrying calibration from JUMA reef calibration tower. The calibration of this tower checked very well between all three launches and it was used for calibration thereafter. Calibration was also done visually using three point sextant fixes to signals constructed over triangulation, resection and photo-identified points. The exact position of each calibration was determined with the Wang Electronic Calculator, the programming of which is the subject of a special report entitled "Special Report (Wang Electronic Calculator Programming) USC&GSS PATHFINDER 1970".

REFERENCES

(1) Descriptive Report PF-20-3-67, USC&GSS PATHFINDER, 1970

(2) Descriptive Report PF-20-1-68, USC&GSS PATHFINDER, 1970

(3) Special Report (Wang Electronic Calculator Programming) USC&GSS PATHFINDER, 1970

HORIZONTAL CONTROL

SIGNAL NAME	LATITUDE o ' meters	LONGITUDE o ' meters	ORIGIN OF POSITION
#44	59 04 0952	154 00 0604	T-12340
#45	59 04 0407	153 58 0433	T-12340
#46	59 03 1384	153 55 0610	T-12340
#47	59 03 1149	153 52 0734	T-12340
#48	59 03 1658	153 49 0463	T-12340
#49	59 04 1373	153 47 0270	T-12341
ROCK	59 06 1146	153 51 0561	T-12340
#51	59 05 0152	153 42 0322	T-12341
JUMA	59 10 1246	154 05 0345	JUMA 1967
TINE	59 19 0804	153 31 0265	TINE 2 RM 3 1964
MOUSE	59 10 0460	154 04 0667	TOPO. MOUSE 1970
NORD	59 10 1698	154 04 0787	TOPO. NORD 1970
CAL TOWER	59 11 1065	154 04 0470	TOPO. CAL TOWER 1968
CAL TOWER (70-1)	59 07 1734	153 55 0072	TOPO. CAL TOWER 1970

LOCATION OF SIGNALS

ROCK
JUMA
TINE
MOUSE
NORD
CAL TOWER
CAL TOWER-70-1

ROCK was located by plotting the following angles as a three point fix.

	SOUTH END		NORTH END
49	75°02' 30''	49	74°52' 40''
47	48°46' 00''	47	57°50' 20''
45		44	

JUMA was RED Raydist station located over triangulation station JUMA 1967 (Nordyke Is.)

TINE was GREEN Raydist station located over triangulation station TINE 2 RM 3 1964 (Augustine Is.)

MOUSE was located by resection. (See MOUSE RESECTION)

NORD was located by resection. (See NORD RESECTION)

CAL TOWER was based on topographic position used in 1968 field season.

CAL TOWER 1970-1 was established by Raydist control from CAL TOWER. Raydist lanes agreed to within .1 by hydro-launch 1 and hydro-launch 4. Location was determined by meter bar from Raydist position on boat sheet.

MOUSE RESECTION

Angles measured with T-2

Left Angle 15° 04' 50."02

Right Angle 43° 19' 31."71

Position of MOUSE by resection.

Lat. 59° 10' 14."86

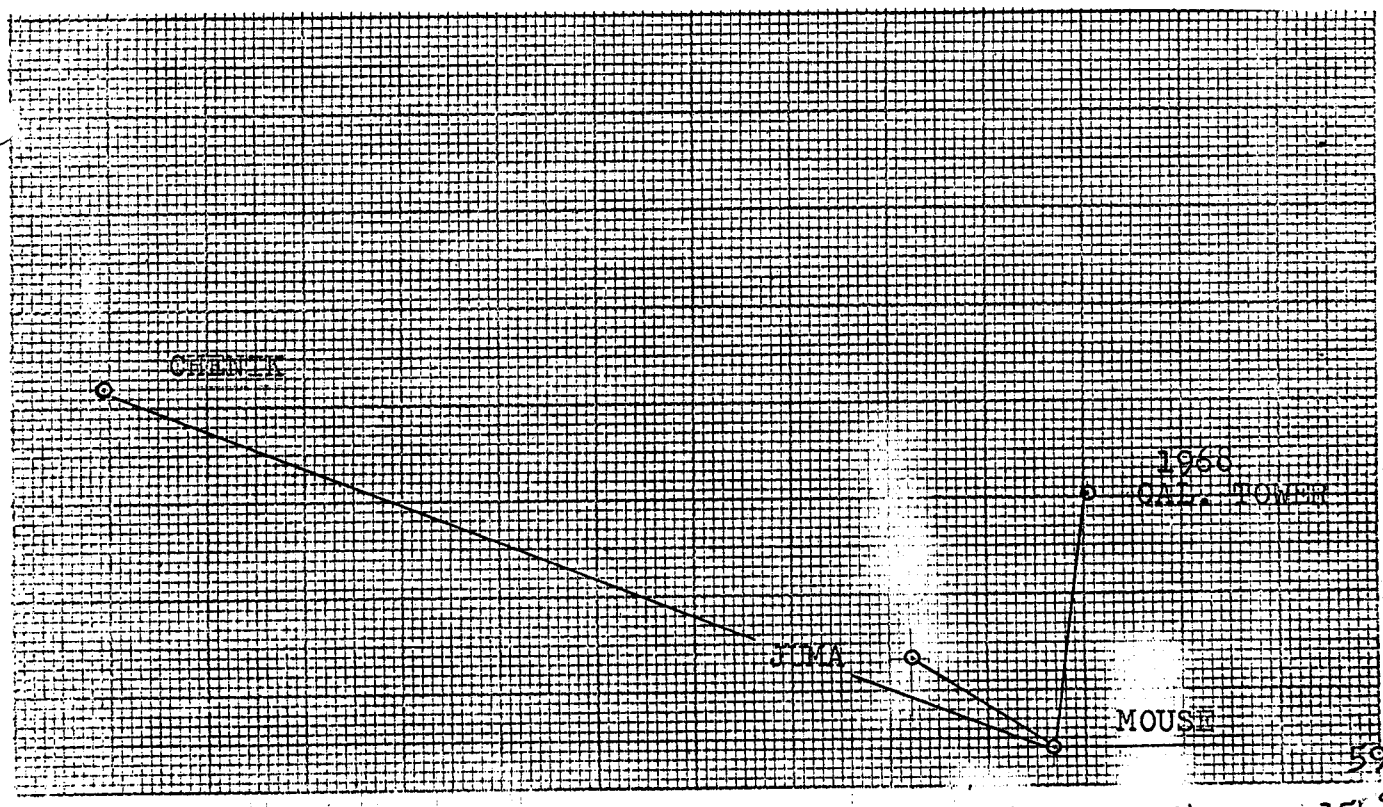
Long. 154° 04' 41."99

Known Stations

CHENIK
Lat. 59° 12' 04."25
Long. 154° 09' 34."00

JUMA
Lat. 59° 10' 40."26
Long. 154° 05' 21."72

CAL TOWER
Lat. 59° 11' 34."416
Long. 154° 04' 29."595



STATION	FORM C&GS-470 (3-66)	U.S. DEPARTMENT OF COMMERCE ESSA COAST AND GEODETIC SURVEY
MOUSE	ABSTRACT OF DIRECTIONS	

STATE	COMPUTED BY	DATE	VOLUME NO.
ALASKA	RDO	JULY 28, 1970	1
OBSERVER	**CHECKED BY**	**INSTRUMENT NO.**	**SHEET 1 OF 1**
RDO	LJO	26307	

POSITION NO.	STATIONS OBSERVED							
	CHENIK	JUMA	1968 CALIBRATION TOWER					
	(INITIAL) 0° 00′	° ′ 15 04	° ′ 58 24	° ′	° ′	° ′	° ′	° ′
	″	″	″	″	″	″	″	″
1	0.00	52.7	23.5					
2	0.00	48.5	22.3					
3	0.00	52.1	19.4					
4	0.00	46.8	28.6 --- Rejected					
5	0.00							
6	0.00							
7	0.00							
8	0.00							
9	0.00							
10	0.00							
11	0.00							
12	0.00							
13	0.00							
14	0.00							
15	0.00							
16	0.00							
SUM,		50 00.1	20 5.2					
MEAN,		50.02	21.73					
COR. FOR ECC.,								
DIRECTION,								

USCOMM-DC 36434-P66

NORD RESECTION

Angles measured with T-2

Left Angle 54° 00' 17.15''

Right Angle 146° 02' 42.05''

Position of NORD by resection.

Lat. 59° 10' 16.98''

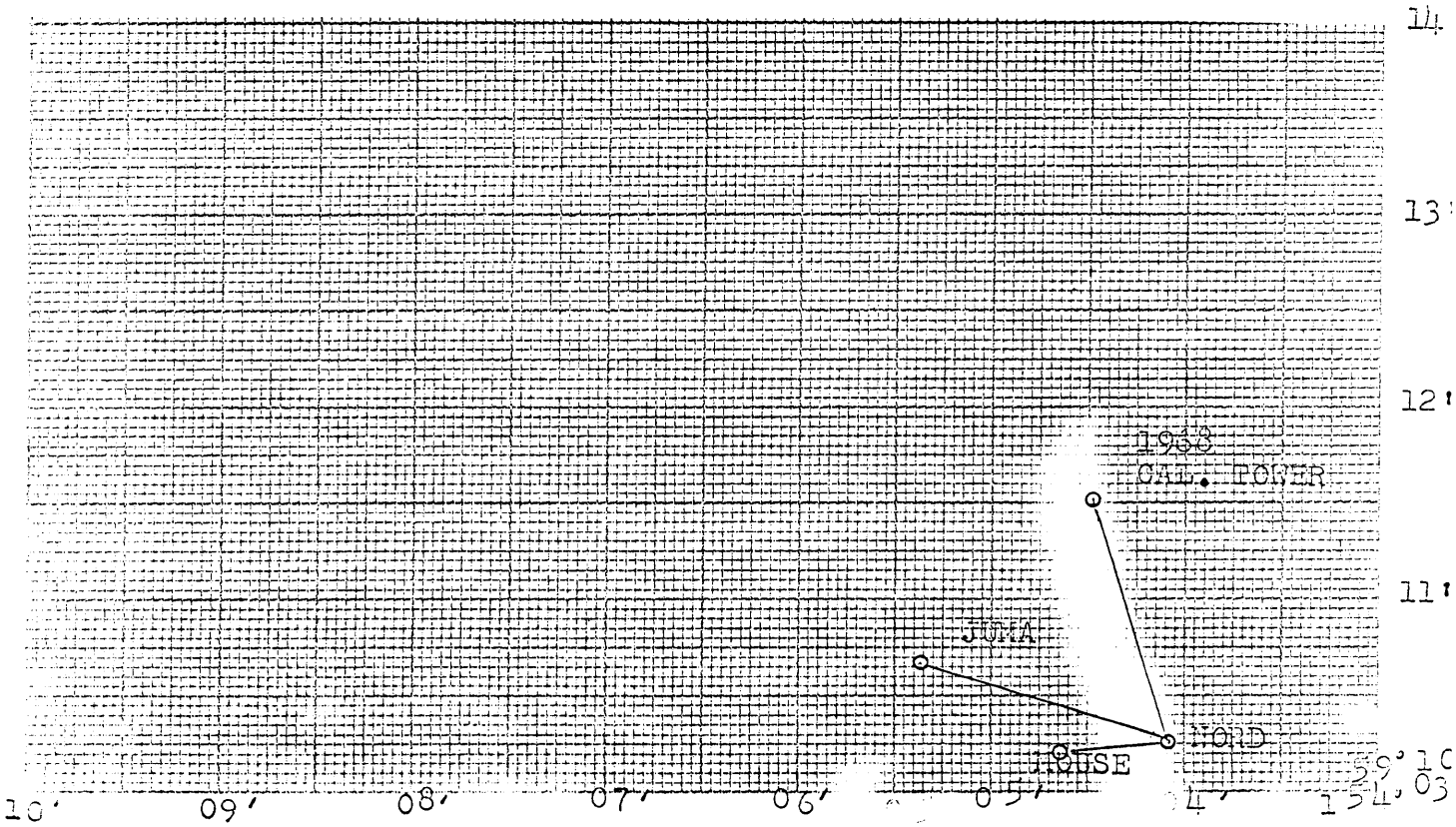
Long. 154° 04' 07.87''

Known Stations

MOUSE
Lat. 59° 10' 14."86
Long. 154° 04' 41."99

JUMA
Lat. 59° 10' 40."26
Long. 154° 05' 21."72

CAL TOWER (1968)
Lat. 59° 11' 34."42
Long. 154° 04' 29." 595



STATION	FORM C&GS-470 (3-66)	U.S. DEPARTMENT OF COMMERCE ESSA COAST AND GEODETIC SURVEY
NORD	**ABSTRACT OF DIRECTIONS**	

STATE	COMPUTED BY	DATE	VOLUME NO.
ALASKA	J.D.S.	AUGUST 1970	1
OBSERVER	**CHECKED BY**	**INSTRUMENT NO.**	**SHEET 1 OF 1**
J.D.S.	L.J.O.	T-2 26243	

POSITION NO.	STATIONS OBSERVED							
	MOUSE	JUMA	1968 CALIBRATION TOWER					
	(INITIAL) 0° 00′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	″	54 00 17.4 14.8 12.1	200 02 00.6 52.3	56.4″	″	″	″	″
1	0.00							
2	0.00	21.3	59.9					
3	0.00	15.3	00.3					
4	0.00	17.2	00.2					
5	0.00							
6	0.00							
7	0.00							
8	0.00							
9	0.00							
10	0.00							
11	0.00							
12	0.00							
13	0.00							
14	0.00							
15	0.00							
16	0.00							
SUM,		14 12.6	56 12.8					
MEAN,		17.15	59.20					
COR. FOR ECC.,								
DIRECTION,								

USCOMM-DC 36434-P66

Bottom Sample Note to Accompany Boatsheet PF20-3-67

Surface sediment characteristics for the Kamishak Bay, Alaska, project area covered by boatsheet PF20-3-67 (H8962) are tabulated on the oceanographic log sheets accompanying this report. The bottom characteristics were determined by a representative sampling of the project area as outlined in section 1-42 of the Hydrographic Manual. Sample spacing averages approximately 1.75 nautical miles.

Samples were obtained both by the USC & GSS PATHFINDER and motor launches. A 35 pound Van Veen type bottom sampler was used for shipboard operations while a small - 1 pound (hand lowered) clam grab sampler was used on the launch. Samples were preserved in zippered plastic bags as outlined in the OPORDER of the Pacific Marine Center, Seattle, Washington.

Surface sediment textures range from mud (clay plus silt) to cobbles. In addition hard bottom was encountered where no sample was retrieved after several attempts. Hard bottom most likely represents an area of submarine rock outcrop with or without a very thin overlying layer of sediments. The sediments in the project area grade in size from coarse to fine with increasing water depth. The sediments are poorly sorted, often consisting of a mixture of sand, shell, gravel, and mud. Samples consisting predominantly of mud generally are confined to water depths greater than 9 fathoms. Gravels generally are found in water depths of 6 to 10 fathoms. Rounded pebbles are common in all sediments, but are found more frequently in water depths ranging from 5 to 7 fathoms. Mixed sediments of sand, gravel, and pebbles are found in 3 to 5 fathoms of water.

The surface sediments reflect a glacial and fluvial source. The poor sorting of the sediments and the abundance of rounded, polished pebbles at all water depths sampled are indicative of a glacial origin for these sediments. The mud most likely is transported into the bay by the silt laden glacial meltwater streams of the adjacent land area. Also the cliffs around Kamishak Bay show evidence of rapid erosion which may provide a third significant source of sediments to Kamishak Bay.

Respectfully submitted,

Robert C. Roush

Robert C. Roush Ens.

PF 20-3-67

OPR 429 AREA KAMISHAK BAY

VESSEL PATH FINDER, ML#1, ML#2, ML#4

DAY 237 TO 252

POSITION — TO —

TYPE OF TAPE BOTTOM SAMPLES

Proc 2-29-72

(1970)

142700 01 0000 2844 238 1 039700 059750-
144500 01 0000 2845 238 1 036110 061290-
145300 01 0000 2846 238 1 033200 062800-
150200 01 0000 2847 238 1 030900 064050-
151000 01 0000 2848 238 1 029200 067090-

BOTTOM SAMPLES
ML#4
PF 20-3-67
VOL IV

093500 01 0037 4303 252 1 035220 066000-
130200 01 0064 4335 252 1 038960 056880-
131200 01 0059 4336 252 1 040530 054660-
132000 01 0107 4337 252 1 042440 052250-
133500 01 0065 4338 252 1 037400 052950-
134300 01 0100 4339 252 1 038080 054740-

BOTTOM SAMPLES
ML#2
PF 20-3-67
VOL. III

100500 01 0011 4101 238 1 037650 075860-
110800 01 0003 4119 238 1 035350 070090-
114000 01 0020 4130 238 1 041750 071720-
103600 01 0021 4187 246 1 040900 067950-
110300 01 0025 4188 246 1 039240 064000-
112000 01 0025 4189 246 1 042920 061740-

BOTTOM SAMPLES
ML#2
PF 20-3-67
VOL. IV

100000 01 0005 4501 238 1 025710 075070-
113400 01 0042 4521 238 1 022420 077880-
115000 01 0012 4522 238 1 021040 073390-
120500 01 0053 4523 238 1 017700 076760-
092700 01 0065 4524 246 1 021430 061910-
094200 01 0065 4525 246 1 016980 064680-
095800 01 0052 4526 246 1 013630 069070-
101700 01 0056 4527 246 1 017860 065940-
103000 01 0051 4528 246 1 022490 063000-
104000 01 0038 4529 246 1 023850 064480-
105000 01 0050 4530 246 1 026530 064850-
110200 01 0030 4531 246 1 022220 067300-
111100 01 0051 4532 246 1 019310 067230-
112100 01 0050 4533 246 1 018360 070520-
113300 01 0050 4534 246 1 015310 070460-
114500 01 0050 4535 246 1 014850 074600-
115500 01 0047 4536 246 1 018180 073300-
145800 01 0035 4564 246 1 026290 078930-
151000 01 0031 4565 245 1 029360 076080-
152100 01 0038 4566 245 1 032400 073380-
093000 01 0065 4567 252 1 035180 057870-

BOTTOM SAMPLES
ML#1
PF 20-3-67
VOL IV

123700 01 0079 4591 252 1 030860 059000
124500 01 0058 4592 252 1 029540 062120
~~084600 01~~

084600 01 0083 2849 239 1 028380 055850
092900 01 0058 2850 239 1 026770 058680
100100 01 0082 2851 239 1 029930 056930
102100 01 0071 2852 239 1 032500 056400
103900 01 0105 2853 239 1 035010 055910
105200 01 0087 2854 239 1 034780 053530
110600 01 0120 2855 239 1 031590 054310
112000 01 0121 2856 239 1 025570 056730
113100 01 0112 2857 239 1 022340 059030
114100 01 0000 2858 239 1 020360 060170
115200 01 0000 2859 239 1 021570 058440 ← won't compute
120800 01 0000 2860 239 1 022600 057700
122900 01 0110 2861 239 1 024110 056830
124500 01 0125 2862 239 1 027500 054420
130000 01 0115 2863 239 1 029910 053370
131400 01 0100 2864 239 1 033000 052020
132800 01 0093 2865 239 1 035310 051690
133900 01 0105 2866 239 1 038120 050220
135200 01 0080 2867 239 1 040760 049910
140800 01 0120 2868 239 1 042090 046580
142000 01 0085 2869 239 1 039060 048070
142900 01 0105 2870 239 1 036710 048730
143800 01 0090 2871 239 1 034800 049190
144900 01 0100 2872 239 1 032600 050320
145800 01 0120 2873 239 1 030440 051550
150700 01 0120 2874 239 1 028330 052850
151600 01 0085 2875 239 1 026280 054330
152500 01 0100 2876 239 1 025000 055200
153800 01 0085 2877 239 1 022650 057350 ←
155200 01 0110 2878 239 1 024020 056680 won't compute
160900 01 0115 2879 239 1 025700 054400
163000 01 0116 2880 239 1 027900 052080 ←
164500 01 0000 2881 239 1 028720 051700
171000 01 0090 2882 239 1 034000 048100
172600 01 0095 2883 239 1 035200 047770
174500 01 0083 2884 239 1 037400 046830
180700 01 0105 2885 239 1 039950 045990
183500 01 0097 2886 239 1 040480 043630
185700 01 0128 2887 239 1 042520 041190
192200 01 0101 2888 239 1 040330 042490
194200 01 0175 2889 239 1 042930 039720
201000 01 0000 2890 239 1 044200 037190
202200 01 0000 2891 239 1 040400 040800
203100 01 0000 2892 239 1 038060 043510
204100 01 0000 2893 239 1 035660 045440
210000 01 0000 2894 239 1 038600 041860
211500 01 0000 2895 239 1 042300 038190
213000 01 0000 2896 239 1 045100 035260
215000 01 0000 2897 239 1 042790 037220 ←
220700 01 0000 2898 239 1 044450 036420
222400 01 0000 2899 239 1 041480 038650
224100 01 0000 2900 239 1 039170 040940
100700 01 0095 2901 245 1 024710 059290
102000 01 0100 2902 245 1 022530 059770
103300 01 0105 2903 245 1 019810 061760

BOTTOM SAMPLES
PATH FINDER
PF20-3-67
VOL I

FORM 733M
(8-23-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VESSEL USC+GSS PATHFINDER (OSS-30) | CRUISE OPR 429 | PF 20-3-67 H8962 | CHECKED BY RCR | DATE CHECKED 30 Aug 197

SERIAL NO. Pos. No	DATE	SAMPLE POSITION LATITUDE N	SAMPLE POSITION LONGITUDE W	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF TUBE	LENGTH OF CORE	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, free fall, stat. no., trigger core no., date extruded, disposition, etc.)
2849	27 August 1970	59° 10.8'	153° 51.9'	9.7	35	3"	NA	NA	gy-gn M	Van Veen grab
50		10.2	52.7	7.0	16	1"			p hrd cobbles, Rk	sampler
51		10.0	51.2	6.9		1"			P hrd bottom	
52		09.6	50.1	5.7		1"			Sh, P, Rk hrd bottom	
53		09.2	48.9	9.0		2"			G (S, Sh, P)	
54		10.0	48.9	7.1		2"			S, Sh hrd bottom	
55		10.5	50.4	10.4		3"			gy-gn M	
56		11.4	53.3	10.4		2"			gy-gn M some fine S	
57		11.6	54.9	9.4		3"			G (S, Sh, P)	
58		12.1	56.1	6		1"			P hrd bottom	
59		12.7	55.8	6.5		2"			G (S, P, Sh)	
2860		12.4	55.1	6.5		1"			G (S, P, Sh)	
61		12.1	54.2	9.1		1"			G (S, P, Sh)	
62		11.8	52.5	10.6		3"			gy-gn M some fine sand	
63		11.4	51.2	9.6		1"			G (M, Sh, P, S)	
64		10.9	49.7	8.1		2"			G (M, Sh, P, S)	
65		10.5	48.6	7.4		1"			G (S, Sh, P)	

Commissioned officers on watch.

Use more than one line per sample if necessary.

USCOMM-DC 25072-

FORM 733M
(8-23-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VESSEL USC + GSS PATHFINDER | CRUISE OPR 429 | PF 20-3-67 H8962 | CHECKED BY RCR | DATE CHECKED 30 Aug 197

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF TUBE	LENGTH OF CORE	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, free fall, stat. no., trigger core no., date extruded, disposition, etc.)
2866	27 August 1970	59° 10.3′	153° 47.3′	8.6	35 lb.	2"	NA	NA	G (S, Sh)	Van Veen grab
67		09.9	46.1	6.1		1"			G (S, Sh, P)	Sampler
68		10.6	45.4	10.2		2"			G (M, Sh, P)	some are 4" long
69		10.8	46.9	6.7		1"			M G (M, S, Sh, P)	
2870		11.1	47.9	8.7		2"			G (Sh, P, S)	
71		11.5	48.9	7.3		0			No Sample, Hrd	
72		11.8	50.0	8.3		2"			G (Sh, P, S)	
73		12.0	51.1	10.3		3"			gn M some f sand	
74		12.3	52.3	10.3		3"			gn M some f sand	
75		12.5	53.4	6.9		0			Sh, Rk hard bottom	
76		12.9	54.3	8.4		0			P, Sh	
77		13.2	55.7	7.0		1"			P, Sh	
78		14.3	56.4	9.5		3"			gn M, S	
79		13.9	54.8	10.1		3"			gy-gn M some f. sand	
2880		13.7	53.4	10.2		3"			gy-gn M	
81		12.9	52.4	8.5		2"			gn M, S, Sh, Rk	
82		12.3	49.5	7.7		1"			P	

commissioned officers on watch

USCOMM-DC 25072-P

Use more than one line per sample if necessary.

FORM 733M
(8-23-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VESSEL USC+GS PATHFINDER | CRUISE OPR-429 | PF-20-3-67 H8962 | CHECKED BY RCR | DATE CHECKED 30 Aug 19

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF TUBE	LENGTH OF CORE	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, free fall, stat. no., trigger core no., date extruded, disposition, etc.)	OBS IN
2883	27 August 1970	59° 12.0′	153° 48.8′	8.3	35	1"	NA	NA	Sh, Rk, bryozoans	Van Veen	
84		11.7	47.7	7.1	lb	0			No Sample hrd	sampler	
85		11.3	46.4	9.3		1"			P hrd bottom		
86		12.1	46.3	8.5		1"			Sh, Rk hrd bottom		
87		12.5	45.5	11.6		2"			gn M, Sh		
88		12.6	46.6	8.9		3"			gn M, Sh		
89		13.0	45.5	16.2		3"			gn M, Sh		
2890		13.9	45.3	11		1"			Sh, gn M		
91		13.6	47.0	13		2"			gn M, Rky		
92		13.1	47.9	11		2"			gn M (silty), Sh, P		
93		13.2	49.1	9.5		3"			gn M, Sh		
94		14.1	48.2	12		3"			gy-gn M (silty)		
95		14.5	46.7	13		3"			gy-gn M, S		
96		14.8	45.5	13		3"			gy-gn M, S		
97		15.2	47.0	13		3"			gy-gn M, S, Sh, P		
98		16.8	47.9	12		2"			gy-gn S		
99		15.7	48.3	12		3"			gy-gn M S		

commissioned officers on watch

Use more than one line per sample if necessary.

USCOMM-DC 25072-P

FORM 733M
(1-23-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VESSEL	CRUISE		CHECKED BY	DATE CHECKED
USC+GSS PATHFINDER	OPR 429	PF 20-3-67 H 8962 Kamishak Bay, Alaska	RCR	9/15/70

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENE-TRATION	LENGTH OF TUBE	LENGTH OF CORE	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, free fall, stat. no., trigger core no., date extruded, disposition, etc.)	OBS. INIT.
2900	27 Aug 1970	59° 15.0′	153° 48.7	12	35 lb	3″			gy-gn M ✓	Van Veen grab sampler	
2901	2 Sept 1970	59° 10.6′	153° 53.6′	9.6					gy-gn M ✓		
02		11.1′	54.7′	10.0					G (M,S,G,Sh) ✓		
03		11.2′	56.0′	10.4					G (M,S,Sh,Rk) ✓		
2844	26 Aug 1970	59° 07.5′	153° 47.6′	4.5	2 lb	1/2″			S, G, P ✓	small clam-	various
45		07.7′	49.2′	4.4					S, G, P ✓	grab sampler	
46		07.8′	50.6′	4.0					S, G, P ✓		
47		07.8′	51.7′	4.7					Sh, G, P ✓		
48		07.4′	53.0′	3.4					S, Sh ✓		

USCOMM-DC 25072-P69

Use more than one line per sample if necessary.

FORM C&GS-733M
(8-23-60)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
USC&GSS PATHFINDER	OPR-429	1970	Kamishak Bay, Cook Inlet, Alaska	RJR	9/15/70

SERIAL NO. ML#1	DATE	SAMPLE POSITION LATITUDE N	SAMPLE POSITION LONGITUDE W	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e. slope, plain, disposition, etc.)
4501	26 Aug 1970	59° 06.4′	153° 56.4′	−0 7	2 16	0−	NA		hrd - no sample ✓	small clam grab
4521	"	06.5	58.5	2.8		1/2"			P ✓	sampler
4522	"	07.5	57.5	−0.2					hrd, ✓ plants	
4523	"	07.6	59.7	3.9					hrd, P ✓	
4524	3 Sept 1970	10.6	55.2	6.5					hrd, Sh ✓	
4525		11.0	57.3	6.5					S, G, P ✓	
4526		10.3	58.9	5.2					hrd, bryozoans ✓	
4527		10.2	57.0	5.6				gn	M S, G ✓	
4528		09.9	54.8	5.1					hrd, no sample ✓	
4529		09.1	54.5	3.7					hrd, no sample ✓	
4530		08.5	53.5	4.9					hrd, P ✓	
4531		08.7	55.5	2.8					hrd, No Sample ✓	
4532		09.3	56.6	4.9					hrd, No Sample ✓	
4533		08.7	57.6	4.6					hrd, P ✓	
4534		09.4	58.6	4.6					hrd, Rk, P ✓	
4535		08.5	59.7	4.5					P, Sh ✓	
4536		08.1	58.2	4.1					P, Rk ✓	

launch officer in charge

Use more than one line per sample if necessary.

USCOMM-DC 8220-F

FORM C&GS-733M
(8-23-60)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
USC+GSS PATHFINDER	OPR 429	1970	Kamishak Bay, Cook Inlet, Alaska	RCR	9/15/70

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i... slope, plain, disposition, etc.)
ML#1										
.4564	3 Sept 1970	59° 05.7′	153° 57.6′	3.5	21b			gn	S	small clam grab
.4565	"	05.7′	55.5′	3.1					Sh, hrd	sampler
.4566	"	05.7′	53.5′	3.8					Rk, hrd	
.4567	9 Sept 1970	08.7′	49.1′	5.0		0			Rk	
.4591	"	09.1′	51.0′	6.5					MS, Sh	
.4592	"	08.6′	51.9′	4.4					Rk, P	
ML#2										
.4101	26 Aug 1970	59° 04.4′	153° 52.3′	−0.4				gn	S	
.4119		05.8′	51.5′	−1.4					Sh, hrd; plants	
.4130		04.6′	49.4′	0.3				gn	S	
.4149		05.4′	46.2′	0.1					S, G	
.4187	3 Sept 1970	05.5′	48.8′	2.1					Rk, hrd	
.4188		06.6′	48.5′	2.3					S	
.4189		06.6′	46.6′	2.3					S	

launch officer in charge

Use more than one line per sample if necessary.

USCOMM-DC 8220-F

FORM C&GS-733M
(8-23-60)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
USC+GSS PATHFINDER	OPR-429	1970	Kamishak Bay, Cook Inlet, Alaska	RCR	9/15/70

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dent cutter, stat. no., type of bottom relief slope, plain, disposition, etc.)
		LATITUDE	LONGITUDE	(Fathoms)						
4303	9 Sept 1970	59° 06.7′	153° 50.5′	2.2	2lb	1/2"			Rk ✓	small clam grab
4335	"	08.3′	47.4′	5.0					P ✓	sampler
4336	"	08.6′	46.5′	4.5					Sh ✓	
4337	"	09.0′	45.5′	9.3					G, S ✓	
4338	"	09.6′	47.7′	5.1					No Sample, hrd ✓	
4339	"	09.0′	47.6′	8.6					Sh, P ✓	

launch officer in charge

Use more than one line per sample if necessary.

USCOMM-DC 82

FORM C&GS-733M
(6-23-60)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVE

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
USC&GS PATHFINDER	429	1970	PF 20-1-68 F H 9001 Kamishak Bay Alaska	RCR	9/15/70

SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dente cutter, stat. no., type of bottom relief i slope, plain, disposition, etc.)
		LATITUDE	LONGITUDE							
519	2 Sept 1970	59° 10.2′	154° 00.6′	8.1	3516	2"			M, S, Sh	Van Veen grab
520		09.4	00.7′	7.6					S, P	
521		09.6	02.7	7.2					M S	
522		10.0	01.4	7.9					gy M, S	
523		10.4	02.0	7.1					gy M, S	

Use more than one line per sample if necessary.

USCOMM-DC 8220-

watch
commissioned officers on

APPROVAL SHEET

The field work on this survey has been inspected and approved. The boat sheet and field records have been inspected and approved.

H. R. Lippold, Jr.
CAPT, NOAA
Commanding Officer
NOAA Ship PATHFINDER

HYDROGRAPHIC MANUAL 20-2 9-90, 7-13

HYDROGRAPHIC SURVEY STATISTICS

HYDROGRAPHIC SURVEY NO. H-8962

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET & 2-Mylar Overlays	1	BOAT SHEETS	(1 copy) 9
DESCRIPTIVE REPORT	1	OVERLAYS	6

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	~~5~~ 3					
VOLUMES	47		1-Box of P/O.			
BOXES			1-Box of Raw Data P/O & Absracts 1-Box of Sawtooth Records			

T-SHEET PRINTS (List) ~~T-12340 & T-12341~~ T-12340 & T-12341

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				
POSITIONS CHECKED		8,176		
POSITIONS REVISED		167		
DEPTH SOUNDINGS REVISED		2,734		
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
Verification of Control		2		
Verification of Positions		347		
Verification of Soundings		633		
Smooth Sheet Compilation		133		
ALL OTHER WORK		156		
TOTALS		1,271		

	BEGINNING DATE	ENDING DATE
PRE-VERIFICATION BY		
VERIFICATION BY A.E. Eichelberger (signature) A.E. Eichelberger	3/29/72	5/23/75
REVIEW BY		

FORM C&GS-946A
(REV. 11-65)
(PRES. BY HYDROGRAPHIC MANUAL, 6-94)

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

VERIFIER'S REPORT

HYDROGRAPHIC SURVEY, H 8962

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
Note: The verifier should first read the Descriptive Report for general information and problems.		
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		X
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	X	
3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None	X	
Part II - SHORELINE AND SIGNALS		
4. Source of shoreline signals Remarks Required: -- List all surveys		X
a. Give earliest and latest dates of photographs		
b. Field inspection date		
c. Field Edit date		
d. Reviewed-Unreviewed		
5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.		X
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	X	
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.	X	
Part III - JUNCTIONS		
Note: Make a cursory comparison preliminary to taking soundings in area of overlap.		
8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None		X
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	X	

Part III - JUNCTIONS (Continued)	CL	R
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.		X
Part IV - VOLUMES		
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	X	
12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following:		
(a) rocks	X	
(b) line turns	X	
(c) position values of beginning and ending of lines	X	
(d) bar check or velocity correctors		X
(e) time recording	X	
(f) notes or markings on fathograms	X	
(g) was reduction of soundings accurately done?	X	
(h) was scanning accurate?	X	
(i) were peaks at uneven intervals missed?		X
(j) were stamps completed?		X
(k) references to adjacent features	X	
Part V - PROTRACTING		
13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None	N/A	
14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None	N/A	
15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None	x	

	CL	R
(continued)		
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	
17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number.	N/A	
Part VI - SOUNDINGS		
18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None	N/A	
19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments.	X	
20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None	X	
21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. 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	
Part VII - CURVES		
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
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	

Part VIII - AIDS TO NAVIGATION		
26. 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	
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	
Part IX - BOAT SHEET		
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	
29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information.	X	
Part X - GENERAL		
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	
31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None	X	
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	
33. The bottom characteristics are adequately shown. Remarks Required: -- None	X	
Part XI - NOTES TO THE REVIEWER		
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 A. E. Eichelberger

A.E. Eichelberger, Cartographic Tech.

Date 5/23/75

VERIFIER'S REPORT

H-8962 PF-2Ø-3-67

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

PART I DESCRIPTIVE REPORT

1. The original descriptive report for the 1967 season was not received from the Ship PATHFINDER. A search of the records removed from the vessel, after decommissioning in 197Ø, was conducted without recovering the original report.

PART II SHORELINE AND SIGNALS

4. The shoreline was transferred from Class I (Advance) manuscripts T-12340 and T-12341. Field edit was applied in October 1971 and November 1972.

5. Additional rocks shown on smooth sheet and not indicated on manuscripts:

Pos. No.	Lattitude	Longitude	Height (above MLLW)
1746	(197Ø)59°Ø5'35"	153°48'54"	SE end reef 7 ft.
1747	(197Ø)59°Ø5'41"	153°49'Ø5"	NW end reef 7 ft.
1448	(197Ø)59°Ø6'42"	153°54'Ø6"	1 ft.

PART III JUNCTIONS

1Ø. Junctions with contemporary surveys:

To the north with H-9Ø72 (1969-71) with good agreement except for slight changes in the configuration of the 3 and 5 fm. depth curves on or near Lat. 59°17'. A copy of the verified survey H-9Ø72 was not available to this office and comparisons were made with a machine copied junction strip. The curves were left in pencil along the junction area.

To the west with H-9ØØ1 (1968-7Ø) with good agreement. The curves were inked accordingly.

To the east with H-8842 (1965-1967) and H-8843 (1965-68) with satisfactory agreement. H-8843 is a 1:4Ø,ØØØ scale survey so absolute comparison could not be made. The photo copy of H-8842 available contained excessive distortion when overlayed on this survey. Depth curves along the eastern limits were left in pencil to facilitate adjustment of the curves between adjoining surveys.

PART IV VOLUMES

11. 1967 Season: Velocity and stylus arm corrections from the ship's descriptive report were combined and new corrector tables compiled. Replacement velocity tables and TC/TI tapes were made before applying correctors.

Many hours were consumed by both Verification and Edat checking and compiling correctors and making new corrector tapes for the entire survey.

1968 Season: Several stamps were not completed in the volumes, primarily the statistics at the end of each day. Mileage of hydrography was scaled and stamps completed by the verifier.

197Ø Season: Velocity tables Nos. 2, 3 and 4 were extended to 1Ø fms. to include maximum depths obtained.

Following are visual positions converted to electronic distances and logged by ship personnel. All positions were check plotted manually by the verifier and raydist values corrected where necessary. Visual signals used were not plotted on the smooth sheet. The positions involved are:

Lnch	Day	Position
1	246	4537-4559
1	252	4567-(B.S.)
2	234	17Ø7-1721
2	247	4248-43Ø2

1967 Season: Shoran calibration correctors were applied directly by linear interpolation by the parameter card.

1968 and 197Ø Season: Calibration checks for the raydist equipment were accomplished at the beginning and end of each day at calibration towers set up on outlying reefs, plus calibration buoys. A zero check was made and lane count set at these locations. No calibration correctors appear in the smooth position printouts for the three seasons of hydrography.

Numerous least depths and additional soundings were added or adjusted during verification to aid in the delineation of depth curves.

PART VII CURVES

23. The depth curves were inspected prior to inking by C.R. Lehman, Cartographic Technician.

24. The zero curve was inked around offshore reefs and along shoreline ledges where adequately defined by hydrography. Weather conditions in Alaska precludes the advantages of tide controlled aerial photography. It is assumed that the reef and ledge limits on the shoreline manuscripts consists of rock outcropping visible on the photos. Evidently there exists sand and mud foreshores around these features that bare at MLLW. Reference was made in the sounding volumes to visible rocks in the large areas of minus soundings and no hydrography in the south-central position of the survey.

PART XI NOTES TO THE REVIEWER

36. 1968 Season: Records for current station observations were not included in the hydrographic records, and locations do not appear on the smooth sheet. All

field data was submitted to Chief, Tides and Currents Branch, at the close of the season (See Descriptive Report).

Preliminary position and sounding overlays were plotted on the Gerber digital plotter. The sounding excess program was computed on the IBM 162Ø computer. Verification was achieved with the products of these two systems. The smooth sheet and smooth position overlays were plotted by the Harris/Xynetics plotter, resulting in overprinting and crowding of the soundings, due to altering of the program affecting the offset of the numerals. Excessive overprinting was corrected manually during final compilation.

Upon completing the report for the 197Ø season, it was discovered that the coordinates for the Rz control station South Agustine Z, 1964 was used to compute the positions instead of South Augustine Z Rm 3, 1964. At the beginning of verification of this survey in March 1972, control form 3 and field records were transferred from the vessel to the Electronic Data Processing Branch without passing through the Verification Branch as is now the procedure. This error of 1Ø.1 meters was detected subsequent to verification of the positions, soundings and final plotting of the smooth sheet. Selected positions at near maximum distances from the control station in question were recomputed with the correct GP to determine the amount of displacement of the positions. The error ranged from 7.3 meters to Ø.Ø meters or a maximum of Ø.4 mm at the sheet scale of 1:2Ø,ØØØ. It was considered impracticable to replot the entire survey for the amount of error involved. See attached computations in the Descriptive Report.

This survey is considered adequate for charting purposes.

Respectfully submitted,

A. E. Eichelberger

A.E. Eichelberger
Cartographic Technician
May 23, 1975

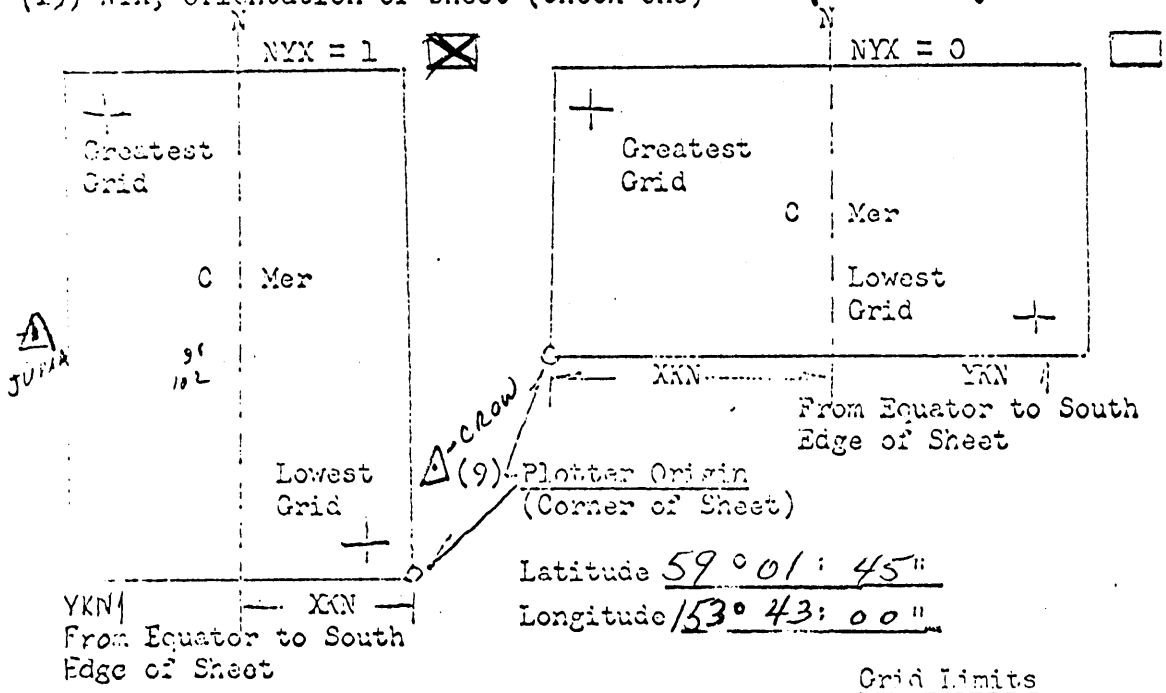
PARAMETERS FOR DIGITAL PLOTTING
PERSPECTO PROJECTION

Revised 10/1/67

(1) Project No. OPR-429
(2) H No. H-8962
(3) Field No. "E" PF20-3-67
(4) Requested by CDR. E.A. TAYLOR
(5) Ship or Office PATHFINDER
(6) Date Required May 2, 1969
(7) Visual ☐ Ft.(0) or Fathoms (1) [1] (8) Electronic ☒ (fill out form #3)
(10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). 8,617.5 Meters
(11) YKN (SP 241) Distance from Equator to South Edge of Sheet. 6,545,709.4 Meters
(12) Central Meridian 153° 52' 00"
( ) Survey Scale 1:20,000
(14) Size of Sheet (Check one) 36x60 ☒ 42x60 ☒
(15) NYX, Orientation of sheet (Check one)

42"

PLOT ON 42"



Latitude 59° 01' 45"
Longitude 153° 43' 00"

	Grid Limits		
(16) Greatest Latitude	59° 18' 00"	(Projection Line Interval Page 4 Hydro Manual)	
(17) Lowest Latitude	59° 02' 00"		
(18) Difference	016' 00"	(19)	1' 00"
		(20)	16 YSN
(21) Greatest Longitude	154-02 00"		
(22) Lowest Longitude	153° 43' 00"	(24)	1' 00"
(23) Difference	019' 00"	(25)	19 XSN

Computation to Range Frequency

H # 8962
Field No. PF 26-3-67
Date 1970

HYDRO I PARAMETER CARDS

Computes G.P.'s from Electronic Controlled Baseline

Parameter Card I		Deg. Min. Seconds	Prog. Codes
Master R1 Hydro Name JUMA	Lat.	59 16 42.26 /	RPD
	Long.	154 05 21.72 /	RSD
Slave R2 Hydro Name SO AUGUSTINE 2 1964	Lat.		Not Used
	Long.		Not Used
Azimuth R1 to R2		243 06 56.27 ✓	RAD
			Not Used
Baseline Distance in Meters			SMP
Velocity Code 0 - No Vel. 1 - 1 Vel. Table 3 - 2 Vel.-(E - W) 2 - 2 Vel.-(N - S)			IVL
Conversion factor for electronic distance to meters.		Stat. MI = / Lasas = 3386.4 / or	CNV
H-Identification Number			JN
Location of survey with respect to electronic baseline		- <A = 1 + <A = 0	AAA
Velocity Boundary IVL = 2 IVL = 3		Long = 0 " " Lat =	VLE
			YR
If Shoran calibration correction is applied by equation (use Shoran card) punch 1 in column 80			

	1	2	3	4	5	6	7	8	9	10
RPD	2	1	3	0	4	0	2	6	C	6
RSD	5	5	4	7	2	1	7	2	C	6
RAD	8	7	5	2	1	6	2	7	C	6
SMP	3	6	2	7	3	2	9	C	C	5
IVL										1
CNV	4	5	3	1	6	6	5	7	C	2
JN						C	8	4	6	2
AAA										0
VLE										
YR									6	9

Shoran Card Format (when calibration correction is applied by a line K x + C)
(flag 5, 11, 17, or 23 if reap. constant is negative)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
		R1K					R1C					R2K					R2C					

Computed RK Punched _____ Checked PHT 4/16/70 Date _____

MAKE ONE MYLAR SHEET WITH INTERSECTION POINTS FORM #3

COMPUTER PARAMETERS FOR ELECTRONICALLY CONTROLLED SURVEY

(RANGE-RANGE)

1970

(1) Project No. OPR 429 (2) H. No. H-8962 (3) Field No. PF 20-3-67

(4) Type of Control: ___SHORAN, X RAYDIST, ___HI-FIX, ___RADAR
Frequency (for conversion of RAYDIST or HI-FIX lanes to Meters) 3306.40

(5) RANGE ONE (R1)
Station Name JUMA, 1967
Latitude 59° 10' 40.26"
Longitude 154° 05' 21.72"

(6) RANGE TWO (R2)
Station Name S. AUGUSTINE 2, 1964 RM3
Latitude 59° 19' 26.00 ~~25.86~~
Longitude 153° 31' 16.67 ~~16.04~~

(7) Azimuth from R1 to R2 243° 06' 11.01" ~~96.27~~

(8) Baseline Length in meters 36,273.67 ~~.29~~ M.

,) 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 X +A

(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 equation here:

K(R1) _____ , C(R1) _____, K(R2) _____, C(R2) _____,

(11) Number of Velocity Tables to be used:

___ None, ___One, ___Two, ___ More than Two (For old Surveys logged at WSC only -- if this is the case, supply VEL, IND TAPES)

If two tables are to be used, Boundary defined by:

° ' "
_____ Latitude ___
Longitude ___

(12) 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 # 1 of 1 Sheet for this survey.

COMP: RW

WSC.

CONTROL FOR: C08962 DATE OF LISTING: 04-19-75

RECORD NUMBER	YR	STA NUM	CARTO CODE	LABEL ANGLE	VECTOR DISP.	PLOT CODE	..... NAME .....
1	70	200	139	307.00	.60	0	SHALE 1964
2	70	201	139	307.00	.60	0	ECHO 1964
3	70	202	139	307.00	.60	0	WARVIK 1964
4	67	203	250	307.00	.60	0	JUMA 1967
5	67	204	250	180.00	4.00	0	CROW 1964
6	68	205	250	307.00	.60	0	JUMA 1967
7	68	206	250	180.00	4.00	0	CROW 1964
8	70	207	250	307.00	.60	0	JUMA 1967
9	70	208	250	307.00	.60	0	SOUTH AUGUSTINE 2 RM3 1964

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

EOF..

STATION HEIGHT	FREQUENCY (KHZ)	LATITUDE -(S)	LONGITUDE -(E)
0.0	0.00	59 3 48.060	153 49 27.810
0.0	0.00	59 3 31.650	153 58 20.370
0.0	0.00	59 3 35.020	154 2 39.020
0.0	931.00	59 10 40.260	154 5 21.720
0.0	931.00	59 5 4.890	153 42 20.150
0.0	3300.48	59 10 40.260	154 5 21.720
0.0	3300.48	59 5 4.890	153 42 20.150
0.0	3306.40	59 10 40.260	154 5 21.720
0.0	3306.40	59 19 25.~~860~~ 997	153 31 16.~~090~~ 669

CRT PAGE FROM TERMINAL # 22 05-05-75 17:47:30

```
 1  [
 2  [ENTER LATITUDE
 3  [  59  19 25.860800
 4  [ENTER LONGITUDE
 5  [ 153  31 16.090000
 6  [ENTER AZIMUTH
 7  [ !ERROR -- TRY AGAIN
 8  [ 114  53 11.000000
 9  [ENTER DISTANCE
10  [       10.10000
11  [LATITUDE =   59 19 25.998112
12  [LONGITUDE = 153 31 16.669298
13  [CONTINUE?  (Y OR N)
14  [
15  [
16  [
17  [
18  [
19  [
20  [
21  [
22  [
23  [
24  [
          10        20        30        40        50        60        70        80
```

POSITION CARDS

	REG NO.	S H	V E	POSN NO.	TIME	DAY	YR	LATITUDE	LONGITUDE / VISUAL # / ELECT. #	LT ANG R1	RT ANG R2	LO CO R1 C	RO R2 C	Y	X	POSN		
North edge	8962	J	1	0122	095700	220	70	59095039	153590791	013540	070460			07839	08143	122	2	→ DISTANCE 7.3 METERS F. AZ. 12°35'
	8962	0	0	0122	095700	220	70	59095016	153590801	013540	070460	000000	000000	07835	08144	122	2	
West edge	8962	J	1	4625	140200	252	70	59080284	153524390	028670	064860			06089	04940	4625	2	
	8962	0	0	4625	140200	252	70	59080272	153524399	028670	064860	000000	000000	06087	04941	4625	2	DIST. 3.9 METERS F. AZ. 21 04
South edge	8962	J	2	1721	102745	234	70	59040861	153520292	038750	076360	000000	000000	02284	04597	1721	2	
	8962	0	0	1721	102745	234	70	59040857	153520300	038750	076360	000000	000000	02284	04598	1721	2	
South edge	8962	J	2	4093	094300	238	70	59040877	153530278	037250	077570	000000	000000	02287	05098	4093	2	
	8962	0	0	4093	094300	238	70	59040873	153530288	037250	077570	000000	000000	02286	05098	4093	2	
South	8962	J	4	2577	093300	235	70	59061387	153504161	035840	067750			04320	03918	2577	2	
	8962	0	0	2577	093300	235	70	59061381	153504167	035840	067750	000000	000000	04319	03918	2577	2	

VIS 00000 ELECT 00010

2nd cards (vessel code Ø) were recomputed using St. Augustine 2 Rm 3 1964

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

9/5/73

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center

Hourly heights are approved for Form 362

Tide Station Used (NOAA form 77-12): Nordyke Island, Alaska

Period: July 29 - September 9, 1970

HYDROGRAPHIC SHEET: H-8962 H-9001

OPR: 429

Locality: Cook Inlet, Kamishak Bay, Alaska

Plane of reference (mean lower low water): 7.6 ft.

Height of Mean High Water above Plane of Reference is 14.4 ft.

Remarks: Hourly heights for Julian dates 210-224 are verified from marigram. The tide gage at Nordyke Island and the control station at Seldovia were not operating between Julian Days 232-252. Therefore, hourly heights cannot be verified for this period.

Robert A. Cummings

Chief, Tides Branch

Smooth Tides OPR-429 1970
H-8962, H-9001 Kamishak Bay
2-25-74 Time Meridian: 135° W

Verification

File with printouts

```
091000 00 1011 0000 209 0 090000 000000
092600 00 1012
094200 00 1013
100000 00 1014
102400 00 1015
110000 00 1016
124800 00 1017
134100 00 1016
141300 00 1015
143800 00 1014
150200 00 1013
152800 00 1012
160000 00 1011
081200 00 1004 0000 210 0 080000 000000
082500 00 1005
083700 00 1006
085000 00 1007
090300 00 1008
091900 00 1009
093600 00 1010
095400 00 1011
101000 00 1012
102600 00 1013
104200 00 1014
105800 00 1015
111500 00 1016
113500 00 1017
115700 00 1018
122700 00 1019
133700 00 1020
140700 00 1019
143000 00 1018
145000 00 1017
151000 00 1016
153000 00 1015
155000 00 1014
082400 00 1001 0000 211 0 080000 000000
084500 00 1002
090300 00 1003
091800 00 1004
093300 00 1005
094600 00 1006
100000 00 1007
101200 00 1008
102400 00 1009
103600 00 1010
104800 00 1011
110000 00 1012
111100 00 1013
112300 00 1014
113600 00 1015
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114900 00 1016
120200 00 1017
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123600 00 1019
130000 00 1020
143200 00 1021
145500 00 1020
151300 00 1019
152900 00 1018
154500 00 1017
160000 00 1016
122600 00 1003 0000 219 0 120000 000000
124000 00 1004
125300 00 1005
130500 00 1006
131600 00 1007
132700 00 1008
133700 00 1009
134700 00 1010
135700 00 1011
140600 00 1012
141600 00 1013
142600 00 1014
143700 00 1015
144700 00 1016
145800 00 1017
151100 00 1018
152400 00 1019
153800 00 1020
155400 00 1021
160000 00 1022
080600 00 1015 0000 220 0 080000 000000
081800 00 1014
083000 00 1013
084200 00 1012
085400 00 1011
090900 00 1010
092600 00 1009
094500 00 1008
100500 00 1007
102700 00 1006
105300 00 1005
123200 00 1004
125700 00 1005
131500 00 1006
133000 00 1007
134300 00 1008
135600 00 1009
140800 00 1010
142000 00 1011
143100 00 1012
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144300 00 1013
145400 00 1014
150500 00 1015
151600 00 1016
152700 00 1017
153900 00 1018
155200 00 1019
160000 00 1020
080100 00 1017 0000 221 0 080000 000000
081900 00 1016
083600 00 1015
085200 00 1014
090800 00 1013
092600 00 1012
094500 00 1011
100600 00 1010
102800 00 1009
105400 00 1008
112900 00 1007
130600 00 1006
133300 00 1007
135400 00 1008
141200 00 1009
142800 00 1010
144300 00 1011
145800 00 1012
151500 00 1013
153000 00 1014
154300 00 1015
100500 00 1013 0000 222 0 100000 000000
103000 00 1012
110000 00 1011
113700 00 1010
122200 00 1009
135500 00 1008
142500 00 1009
144700 00 1010
150800 00 1011
152700 00 1012
154600 00 1013
160300 00 1014
162000 00 1015
163600 00 1016
085800 00 1017 0000 223 0 000000 000000
092100 00 1016
101900 00 1015
110300 00 1014
113600 00 1013
121100 00 1012
130000 00 1011
150300 00 1010
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155500 00 1011
082300 00 1011 0000 224 0 080000 000000
084700 00 1012
091100 00 1013
093600 00 1014
100700 00 1015
122300 00 1016
130000 00 1015
133000 00 1014
140800 00 1013
151300 00 1012
155600 00 1011
083500 00 1005 0000 232 0 080000 000000
084300 00 1004
085200 00 1003
090200 00 1002
091300 00 1001
092500 00 1000
093800 00 0001
095400 00 0002
101900 00 0003
110200 00 0004
112400 00 0003
113900 00 0002
115100 00 0001
120100 00 1000
121100 00 1001
122000 00 1002
122800 00 1003
123600 00 1004
124400 00 1005
125200 00 1006
130000 00 1007
130700 00 1008
131400 00 1009
132200 00 1010
132900 00 1011
133700 00 1012
134400 00 1013
135100 00 1014
135900 00 1015
140600 00 1016
141400 00 1017
142200 00 1018
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145500 00 1022
150400 00 1023
151400 00 1024
152500 00 1025
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085100 00 1009 0000 233 0 000000 000000
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091300 00 1007
092300 00 1006
093400 00 1005
094600 00 1004
100000 00 1003
101400 00 1002
103200 00 1001
110000 00 1000
113300 00 0001
120300 00 1000
122000 00 1001
123400 00 1002
124600 00 1003
125600 00 1004
130600 00 1005
131600 00 1006
132500 00 1007
133300 00 1008
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135000 00 1010
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142400 00 1014
143300 00 1015
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145000 00 1017
150000 00 1018
150900 00 1019
151900 00 1020
152900 00 1021
154000 00 1022
155200 00 1023
160700 00 1024
093900 00 1010 0000 234 0 000000 000000
095300 00 1009
100700 00 1008
102200 00 1007
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123400 00 1003
130000 00 1004
131600 00 1005
133000 00 1006
134200 00 1007
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154200 00 1018
155300 00 1019
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162000 00 1021
083100 00 1018 0000 235 0 000000 000000
084500 00 1017
090100 00 1016
091800 00 1015
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095200 00 1013
101100 00 1012
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123900 00 1007
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134400 00 1007
140700 00 1008
142500 00 1009
144100 00 1010
145500 00 1011
150900 00 1012
152300 00 1013
153700 00 1014
155100 00 1015
160300 00 1016
161900 00 1017
084800 00 1012 0000 237 0 000000 000000
090500 00 1013
092600 00 1014
094700 00 1015
102100 00 1016
115900 00 1015
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134200 00 1013
142900 00 1012
160000 00 1011
164000 00 1012
085400 00 1011 0000 238 0 000000 000000
091300 00 1012
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095700 00 1014
102600 00 1015
111900 00 1016
134400 00 1016
141800 00 1015
144600 00 1014
152000 00 1013
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091800 00 1009
093300 00 1010
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100200 00 1012
101700 00 1013
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105000 00 1015
111100 00 1016
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213200 00 1016
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222300 00 1020
223400 00 1021
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110200 00 1002
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113300 00 1005
114200 00 1006
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133900 00 1019
135000 00 1020
140200 00 1021
141500 00 1022
143000 00 1023
144700 00 1024
151200 00 1025
160000 00 1026
092000 00 1003 0000 247 0 000000 000000
094200 00 1002
100000 00 1001
101900 00 1000
105700 00 1001
111400 00 1002
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124500 00 1011
125400 00 1012
130300 00 1013
131200 00 1014
132100 00 1015
133000 00 1016
133900 00 1017
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          134900 00 1018
          135800 00 1019
          140900 00 1020
          142100 00 1021
          143500 00 1022
          145100 00 1023
          100300 00 1015 0000 252 0 100000 000000
          103700 00 1014
          110900 00 1013
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          125900 00 1011
          140000 00 1010
          150000 00 1011
000000
```

H-8962 Velocity

1970

000070 00 0000 0002 000 0 000000 000000

000100 00 0001

000059 00 0000 0003 000 0 000000 000000

000070 00 0001

000100 00 0002

000050 00 0000 0004 000 0 000000 000000

000070 00 0001

000100 00 0002

PP 20-3-67

C 429 KAMISHAK BAY

VESSEL MLB 1

DAY 210 TO 252

POSITION — TO —

TYPE OF TIME Tc/Tl

(1970)

(OK) AEE 1/25/74

093800 01 0003 0003 210 1 000000 000000 -
153000 01 0004 -
153800 01 0004 0003 210 1 000000 000000 -
124400 01 0003 0003 211 1 000000 000000 -
132700 01 0002 -
134600 01 0003 -
143900 01 0003 0003 211 1 000000 000000 -
091200 01 0003 0003 220 1 000000 000000 -
110300 01 0004 -
152100 01 0004 0003 220 1 000000 000000 -
100600 01 0004 0003 221 1 000000 000000 -
104400 01 0003 -
105600 01 0002 -
111100 01 0003 -
114230 01 0004 -
115400 01 0002 -
120600 01 0003 -
134100 01 0003 0003 221 1 000000 000000 -
111630 01 0003 0003 222 1 000000 000000 -
162800 01 0003 0003 222 1 000000 000000 -
095230 01 0003 0003 223 1 000000 000000 -
101300 01 0004 -
102800 01 0003 -
154000 01 0002 -
155030 01 0002 0003 223 1 000000 000000 -
084800 01 0003 0003 224 1 000000 000000 -
114100 01 0004 -
115730 01 0003 -
124600 01 0004 -
131400 01 0003 -
140600 01 0004 -
141500 01 0003 -
154100 01 0003 0003 224 1 000000 000000 -
092800 01 0003 0003 232 1 000000 000000 -
130100 01 0004 -
140000 01 0003 -
153700 01 0003 0003 232 1 000000 000000 -
102730 01 0003 0003 233 1 000000 000000 -
155300 01 0003 0003 233 1 000000 000000 -
105700 01 0003 0003 234 1 000000 000000 -
153700 01 0003 0003 234 1 000000 000000 -
085700 01 0003 0003 235 1 000000 000000 -
144200 01 0004 -
144900 01 0003 -
154030 01 0003 0003 235 1 000000 000000 -
090630 01 0003 0003 237 1 000000 000000 -
130700 01 0004 -
131430 01 0003 -
154930 01 0003 0003 237 1 000000 000000 -
101530 01 0003 0003 238 1 000000 000000 -

120500 01 0003 0003 238 1 000000 000000-
092700 01 0003 0003 246 1 000000 000000-
152100 01 0003 0003 246 1 000000 000000-
093000 01 0003 0003 252 1 000000 000000-
141530 01 0003 0003 252 1 000000 000000-

PF

OPR 429 AREA KAMISHAK BAY

VESSEL ML#2

PAY 221 - 252 (1970)

POSITION — TO —

TYPE OF TAPE Tc/TI

(OK) AEE 1/25/74

final Tape

113430 01 0003 0004 221 1 000000 000000-
122400 01 0002-
153700 01 0002 0004 221 1 000000 000000-
101100 01 0004 0004 222 1 000000 000000-
123500 01 0003-
162100 01 0003 0004 222 1 000000 000000-
085830 01 0003 0004 223 1 000000 000000-
091000 01 0002-
094100 01 0003-
100030 01 0002-
101800 01 0003-
111800 01 0004-
125900 01 0003-
142330 01 0004-
144200 01 0003-
154400 01 0003 0004 223 1 000000 000000-
084400 01 0003 0004 224 1 000000 000000-
145500 01 0003 0004 224 1 000000 000000-
084500 01 0003 0004 232 1 000000 000000-
092600 01 0002-
112400 01 0003-
133300 01 0002-
134700 01 0003-
160600 01 0003 0004 232 1 000000 000000-
090000 01 0003 0004 233 1 000000 000000-
110300 01 0004-
115730 01 0003-
151600 01 0004-
160400 01 0004 0004 233 1 000000 000000-
094400 01 0003 0004 234 1 000000 000000-
102030 01 0004-
113400 01 0003-
114900 01 0004-
120500 01 0003-
161630 01 0003 0004 234 1 000000 000000-
084330 01 0003 0004 235 1 000000 000000-
160700 01 0003 0004 235 1 000000 000000-
7 084930 01 0003 0004 237 1 000000 000000-
095800 01 0002-
6 102800 01 0003-
105530 01 0002-
5 160300 01 0002 0004 237 1 000000 000000-
085430 01 0003 0004 238 1 000000 000000-
4 092600 01 0004-
093200 01 0003-
3 105230 01 0004-
112300 01 0003-
2 120300 01 0004-
122300 01 0003-
141700 01 0004-

```
143400 01 0003
150130 01 0003 0004 238 1 000000 000000
112630 01 0003 0004 246 1 000000 000000
145230 01 0002
150700 01 0002 0004 246 1 000000 000000
092900 01 0002 0004 247 1 000000 000000
094700 01 0003
104630 01 0002
135730 01 0003
140230 01 0002
145030 01 0002 0004 247 1 000000 000000
093500 01 0003 0004 252 1 000000 000000
102830 01 0004
103600 01 0003
105330 01 0004
111200 01 0003
112500 01 0002
115700 01 0003
120200 01 0002
130200 01 0003
133500 01 0002
134300 01 0002 0004 252 1 000000 000000
```

PE 20-3-67

OPR 429 AREA KAMISHAK BAY

VESSEL ML #4

DAY 222 TO 238

POSITION ___ TO ___

TYPE OF TAPE Tc/Ti

1970

OK AEE 1/25/74

102000 01 0004 0002 222 1 000000 000000
123600 01 0003
131500 01 0004
140530 01 0003
152230 01 0004
154900 01 0003 0002 222 1 000000 000000
092430 01 0003 0002 223 1 000000 000000
154600 01 0003 0002 223 1 000000 000000
085800 01 0003 0002 224 1 000000 000000
154330 01 0003 0002 224 1 000000 000000
111000 01 0003 0002 232 1 000000 000000
151800 01 0003 0002 232 1 000000 000000
090000 01 0003 0002 233 1 000000 000000
151800 01 0003 0002 233 1 000000 000000
122800 01 0003 0002 234 1 000000 000000
153630 01 0003 0002 234 1 000000 000000
093300 01 0002 0002 235 1 000000 000000
101630 01 0003
112400 01 0004
113300 01 0003
113900 01 0002
114500 01 0003
123440 01 0002
124245 01 0003
125145 01 0004
125730 01 0003
132900 01 0002
135730 01 0004
140115 01 0003
142830 01 0002
144400 01 0001
145030 01 0004
145320 01 0004 0002 235 1 000000 000000
091000 01 0003 0002 237 1 000000 000000
145545 01 0003 0002 237 1 000000 000000
093030 01 0003 0002 238 1 000000 000000
105230 01 0004
111630 01 0003
125300 01 0004
130800 01 0003
132500 01 0004
135430 01 0003
140930 01 0003 0002 238 1 000000 000000

APPROVAL SHEET

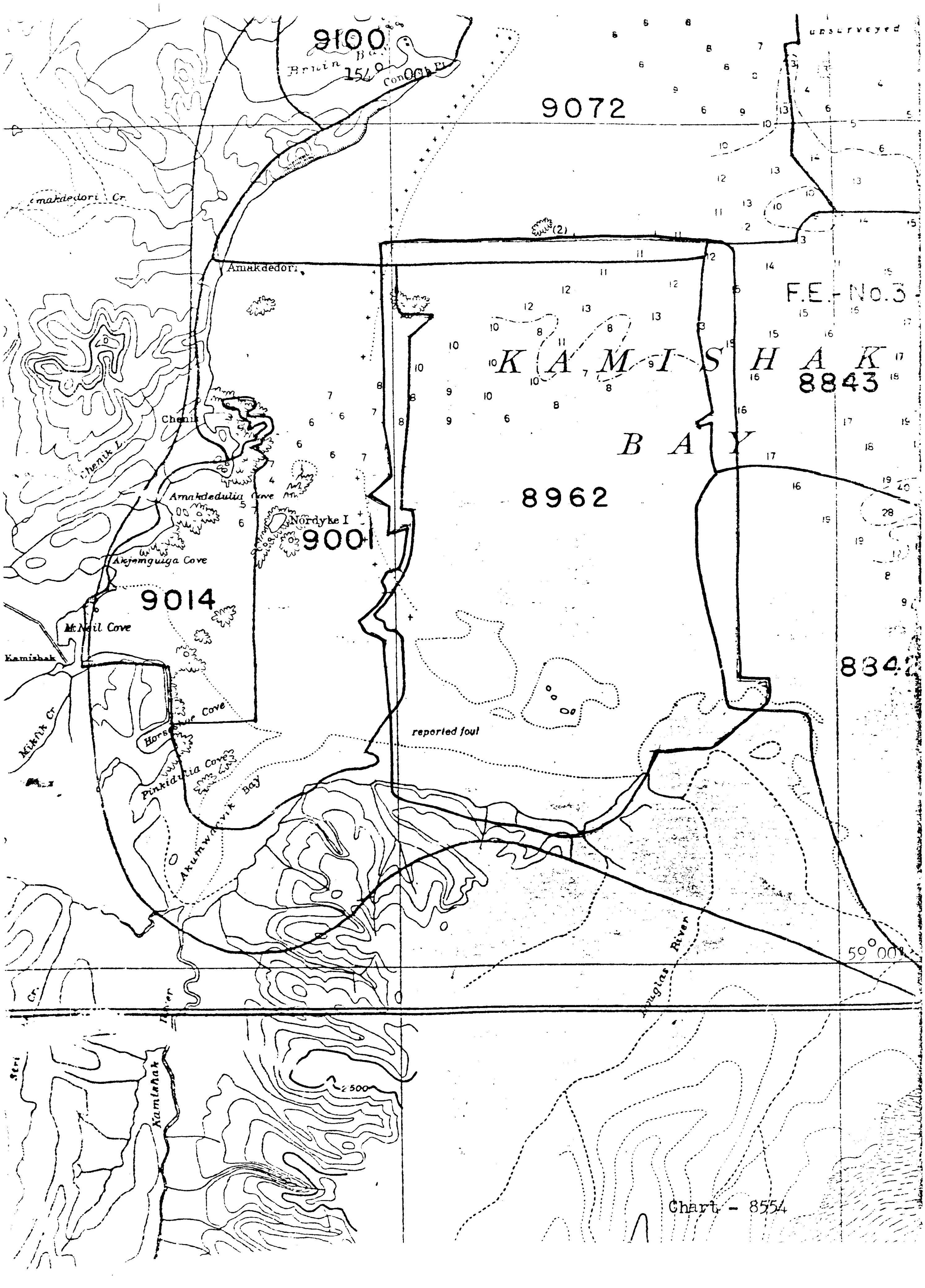
The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,

James S. Green
Supervisory Cartographic Technician

Approved and forwarded,

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



9100
9072
unsurveyed
Amakdedori
F.E. No.3
K A M I S H A K
B A Y
8843
8962
Chenik
Chenik L.
Amakdedulia Cove
Nordyke I
9001
Akjemguiga Cove
9014
McNeil Cove
Kamishak
Pinkidulia Cove
Akumwarvik Bay
reported foul
Douglas River
59°00'
Kamishak
2500

Chart - 8554

(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-8962

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
8554	5-10-75	H.J. Borowski	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection Signed Via~~
			Drawing No. Exam'd For Critical Corr. Only, Added LW Line (2) Places, Added (2) Shoal Soundings!
8502	5-10-75	H.J. Borowski	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection Signed Via~~
			Drawing No. Exam'd For Critical Corr. Thru Chl. 8554. No Corr. Necessary!
			~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection Signed Via~~
8500	5-10-75	H.J. Borowski (Rector)	Drawing No. Exam'd For Critical Corr. Only. Thru 8502, No Corr
~~16640~~	~~4/25/78~~		
16640	4/25/78	KANIS	~~Full~~ Part ~~Before~~ After Verification ~~Review Inspection Signed Via~~
			Drawing ~~No.~~ A.I.D. Proof #18 Re-examined for 5 fm curve only, add couple of shoaler sndgs
16648	3/9/79	DA Comments	~~Full~~ Final ~~Part Before~~ After ~~Verification~~ ~~Review~~ Inspection Signed Via
			Drawing No. 1 (CHT 1)
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-OC 8558-P63