

# 10091

Diagram No. 8554-3

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey ..... Hydrographic  
Field No. .... RA-40-1-83  
Office No..... H-10091

### LOCALITY

State ..... Alaska  
General Locality ..... Cook Inlet  
Locality ..... Offshore Bluff Point to  
..... Flat Island  
..... 1983  
CHIEF OF PARTY  
CDR J.P. Vandermeulen

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DATE ..... August 15, 1984

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Area 6

CHTS

16640

16013

16645

531

500

to sign app see  
Record of Application

## HYDROGRAPHIC TITLE SHEET

H-10091

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

FIELD NO.

RA-40-1-83

State AlaskaGeneral locality Cook InletLocality Offshore Bluff Point to Flat IslandScale 1:40,000Date of survey June 14 - August 10, 1983Instructions dated February 18, 1983Project No. (JD) 165-222  
OPR-PY14-RA-83Vessel NOAA Ship RAINIER (2120)Chief of party CDR P. Vandermeulen, NOAASurveyed by LCDR D. Yeager, LT S. Iwamoto, LT S. Ludwig, LTJG R. Koehler, ENS B. Postle,  
ENS J. Judson, ENS J. Logue, ENS K. Barton, SSI R. Hastings, LTJG M. MathwigSoundings taken by echo sounder, hand lead, pole Ross Fineline Fathometer SystemGraphic record scaled by Rainier PersonnelGraphic record checked by Rainier PersonnelVerification  
Produced by I. A. AlmacénAutomated plot by PMC Xynetics PlotterEvaluation by C. R. DaviesSoundings in fathoms ~~feet~~ at MLW ~~MLLW~~REMARKS: All times are in UTC.Annotations in black were made during evaluation.✓ Auloris run 9/17/84SC 48-1-87



A. PROJECT

Survey H-10091, (RA-40-1-83), was conducted in accordance with Project Instructions OPR-P114-RA-83, southern Cook Inlet, Alaska dated February 19, 1983, and Change No. 1, dated March 18, 1983. ✓

B. AREA SURVEYED

Survey H-10091 was performed in southern Cook Inlet bounded on the north by  $59^{\circ} 40.4'N$ , on the south by  $59^{\circ} 15.4'N$  on the east by  $152^{\circ} 02.0'W$  and on the west by  $152^{\circ} 33.0'W$ . The survey was conducted between (JD) 165-222, June 14 - August 10, 1983.

C. SOUNDING VESSEL

All soundings were taken by the ship RAINIER (2120). No unusual sounding vessel configurations or problems occurred. ✓

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Sounding Equipment

All echo soundings obtained during this survey were obtained by NOAA Ship RAINIER (2120). The ship was equipped with a Ross Fineline Fathometer system which included the following components: A model 4000 transceiver (S/N 1080), a model 5000 analog trace recorder (S/N 1071 and 1070), a model 6000 digitizer (S/N 1040) and a 100 KHz transducer. ✓

Multiple analog recorders were used due to intermittent failure of recorder #1071 to advance the paper at a constant rate. No peaks were missed due to this problem. This recorder was replaced by recorder #1070 on June 20, 1983 at 2000 UTC, and was used for the duration of this survey. ✓

Sound Velocity Correctors

Table No. 1 summarizes the STD cast data obtained for this survey using STD S/N 5652, Model No. 9040, calibrated in May 1983. ✓

Table No. 1

STD Cast Data

<u>Date</u>	<u>Location</u>
June 13, 1983 (JD) 164	$59^{\circ} 26.9'N$ $152^{\circ} 02.2'W$
July 27, 1983 (JD) 208	$59^{\circ} 24.3'N$ $153^{\circ} 04.7'W$

Preliminary velocity correctors were determined from the June 13, 1983 cast. Velocity correctors were also determined from the data obtained by the July 27, 1983 STD cast. For each set of data, actual depths minus the velocity corrections were graphed versus the velocity corrections. Velocity Table No. 3 and the final velocity tape correctors were obtained by averaging the results of the two graphs. Depths corresponding to standard velocity correction intervals were then picked off the resultant graph. A copy of the graphs, Velocity Table No. 3 and a listing of the velocity tape are provided in the separates following the text. All smooth field sheets were plotted using the preliminary velocity correctors. See letter Feb 24, 1984. New velocity table # 3 in Report.

#### Sounding Vessel Draft Corrector

The historical draft of RAINIER (2.6 fathoms) was applied to all echo soundings obtained during this survey. A listing of TC/TI tape is provided in the separates following the text.

#### Sounding Instrument Correctors

During survey operations the blanking depth was set to a value shoaler than the shoalest bottom expected. Analog depths were substituted for missing or erroneous digital soundings as part of standard scanning procedures.

The initial trace on the analog recorder was maintained at zero. Corrections for variation of the initial were applied during scanning.

Phase calibrations and belt tension checks were performed in accordance with section 4.9.6 of the Hydrographic Manual, Hydrographic Survey Guidelines and PMC OPORDER, Appendix B.

#### E. HYDROGRAPHIC SHEETS

Field sheets RA-40-1N-83, RA-40-1C-83 and RA-40-1S-83 were prepared on the RAINIER using the PDP 8/e Complot system and used modified transverse mercator projections. A list of parameters used to define the hydrographic sheets are attached on the separates following the text. All field records will be sent to the Pacific Marine Center, Seattle, Washington. The smooth field sheets for this survey are plotted at a 1:40,000 scale. Five development expansion sheets were plotted on paper at 1:10,000 scale.

#### F. CONTROL STATIONS

One new station, BLUFF POINT 2 RM 5, was established to Third-Order, Class I specification and was used for a Raydist site.

All other control stations were existing geodetic stations on the North American 1927 Datum. For more information, refer to the Horizontal Control Report, OPR-P114-RA-83.

#### G. HYDROGRAPHIC POSITION CONTROL

Range/Range was the only method used for hydrographic position control. Primary control was established by using Raydist. Calibration of Raydist was performed using sextant fixes based on Third-Order, Class I (or better) positions. Occasional checks to Raydist positions were computed using Mini-Ranger III systems.

A Raydist antennae to transducer (Andist) distance of 32.2m has been applied via the parameter tape. ✓

There were two Raydist shore stations. All soundings were based on position control from these two locations. Raydist mobile equipment consisted of the DR-S system navigator (model 2A-67A, serial number 58) and the Halow navigation interface (serial number 15). The Tables below summarize the Mini-Ranger mobile and shore equipment and Raydist shore locations. ✓

#### Mini-Ranger Mobile Equipment

<u>Vessel</u>	<u>Console</u>	<u>R/T S/N</u>
2120	715	B1108
2120	720*	2710*

 ✓

\*Replaced 715/B1108 due to failure June 17, 1983 (JD) 168

#### Mini-Ranger Shore Equipment

<u>Code</u>	<u>Transponder S/N</u>	<u>Station No.</u>
B	4951	209
C	1628	104
D	1569	103
D	1569	106
E	911721	105
O	912698	102
Z	B1106	107
Z	B1106	206

 ✓

#### Raydist Shore Equipment

<u>Code</u>	<u>Station No.</u>
Green	100
Red	101

 ✓

#### Raydist Calibration and System Check

Raydist calibrations were accomplished using two sextant angles and a check angle. Partial lane correctors were determined from the average of 3 sextant fixes with inverse distances less than 10 meters. Smooth field sheets are plotted with correctors averaged from initial and ending calibrations. ✓

Mini-Rangers were used for whole lane checks for this survey when possible. Mini-Ranger baseline calibrations were conducted at Mare Island, California on May 3, 1983. For more information concerning calibrations, refer to Electronic Control Report OPR-P114-RA-83. ✓

#### Raydist and Mini-Ranger Performance

All shore stations were positioned on Third-Order, Class I or better geodetic stations. Power to Raydist was supplied from Teledyne generators. ✓

Power to Mini-Ranger was supplied by 12-Volt batteries connected in series. The Raydist performed very well. An initial problem with the Teledyne generator at Bluff Point 2 RM 5 was alleviated by replacing the generator completely on July 9, 1983 (JD) 190. On June 17, 1983 (JD) 168, the R/T unit (console 715, R/T S/N B1108) from the Mini-Ranger system failed and was replaced (console 720, R/T S/N 2710). Mini-Ranger systems worked well, otherwise.

#### H. SHORELINE

Shoreline on the smooth field sheets is for orientation only. The shoreline was transferred from a 1:40,000 enlargement of chart 16640, 18 Ed., November 29, 1980.

#### I. CROSSLINES

Agreement of soundings at crossings were generally within 1 fm. The cross-line soundings between 59° 23.0'N and 59° 40.0'N along 152° 30.0'W, positions 2139-2159 and 2613-2624 occur over an irregular bottom. Crosslines comprised 10% of the sounding lines.

#### J. JUNCTIONS

Junctions were made to surveys: H-9708 (1977), H-9879 (1980), H-9945 (1981), H-9958 (1981), H-9967 (H-1981). Comparisons were excellent with all being within 1 fathom. Also with H-10099 (1983) and H-10105 (1983)

#### K. COMPARISON WITH PRIOR SURVEYS

Comparisons were made to surveys H-3206 (1910), 1:120,000 scale enlarged to 1:40,000 and survey H-3805 (1915), 1:120,000 scale also enlarged to 1:40,000 scale. Agreement of depths with the prior surveys is fair, 1-3 fm. Agreement of the 20 and 30 fathom contours is generally good. Significant differences are summarized in the following table:

<u>Prior Survey</u>	<u>Prior Depth</u>	<u>Present Depth (fm)</u>	<u>Location</u>
H-3206	342ft/57fm	40	59° 40' 07"N, 152° 26' 00"W ✓
H-3206	201ft/33fm	38	59° 32' 08"N, 152° 17' 27"W ✓
H-3206	187ft/31fm	38	59° 27' 56"N, 152° 18' 13"W ✓
H-3206	234ft/39fm	29	59° 25' 26"N, 152° 11' 40"W ✓
H-3206	180ft/30fm	55	59° 26' 28"N, 152° 02' 15"W ✓
*H-3206	147ft/24fm	30	59° 31' 05"N, 152° 27' 38"W ✓
*H-3805	30fm	36	59° 19' 30"N, 152° 29' 10"W ✓
H-3805	41fm	34	59° 24' 36"N, 152° 27' 22"W ✓
H-3805	64fm	50	59° 20' 05"N, 152° 19' 33"W ✓

\*Unnumbered "dashed-circle" PSR Items from chart 16640.

#### L. COMPARISON TO CHART

Comparisons were made to a 1:40,000 scale enlargement of chart 16640, 18th Ed., November 29, 1980, 1:200,000 scale. An enlargement was not obtained of chart 16640, 19th Ed. 1:200,000 scale. However, in the survey area, no changes exist between the two editions of the chart. Sounding comparisons were fair and are discussed in section K.

No dangers to navigation were found. ✓

The following is a tabulation of significant least depths determined by development:

<u>Expansion Sheet</u>	<u>Position</u>	<u>Least Depth (fm)</u>	<u>Location</u>
1	2037-2038 2041-2042	15	59° 36' 00"N 152° 10' 20"W
2	2943-2944	14	59° 31' 15"N 152° 06' 35"W
5	3508-3509	15	59° 33' 37"N 152° 08' 02"W

These depths are the shoalest found in the area of sandridge features which extends from 59° 36.0'N, 152° 10.0'W to 59° 27.0'N, 152° 08.0'W.

#### M. ADEQUACY OF SURVEY

This survey is complete and adequate to supercede all prior surveys for charting purposes. *concur*

#### N. AIDS TO NAVIGATION

There are no aids to navigation in the survey area. ✓

#### O. STATISTICS

<u>Ship</u>	<u>Linear/Nautical Miles of Hydrography</u>	<u>Square Nautical Miles of Hydrography</u>	<u>Number of Positions</u>
RAINIER (2120)	1675	373.1	<del>3540</del> 2512

Bottom Samples: 23  
Velocity Casts: 2  
Tide Stations: 3

#### P. MISCELLANEOUS

There are no reported dangers to navigation in the survey area. ✓

Supplemental Loran-C data was acquired and interfaced with the Hydroplot system in accordance with section 8.4 of the project instructions. No malfunction of the Loran-C receiver occurred during data acquisition on this survey. ✓

An area of sandwaves <sup>rising</sup> with 2-4 fathom peaks <sup>from the bottom</sup> was found from 59° 40.0'N to 59° 23.0'N along 152° 30.0'W. ✓

No anomolous currents were observed or reported during the survey. ✓

#### Q. RECOMMENDATIONS

No additional field work is recommended for this survey. Survey H-10091 is adequate to supercede all prior surveys and to update all charts that this survey covers. *concur*



## R. AUTOMATED DATA PROCESSING:

Data acquisition and processing were accomplished per instructions in the Hydrographic Manual (4th Edition), Manual Automated Hydrographic Surveys, the PMC OPORDER, Hydrographic Survey Guidelines and the Hydrographic Data requirements for the 1983 field season.

Soundings and positions were taken by a Hydroplot system using Range/Range/Hyperbolic Hydroplot program RK 112. There are daily master tapes and corresponding corrector tapes which include the TRA, electronic calibration correctors for Raydist and all depth corrections. Velocity tapes were generated from sound velocity temperature depth (STD) cast. The following is a list of all computer programs and version dates used for data acquisition or processing:

<u>Number</u>	<u>Description</u>	<u>Version</u>	<u>Checksum</u>
AM 500	Predicted Tide Generator	11/10/72	1634
RK 112	Hyperbolic, R/R Hydroplot	8/04/81	2352
RK 201	Grid, Signal, and Lattice Plot	4/18/75	1443
RK 211	Range/Range Non-Real Time Plot	2/02/81	4032
RK 300	Utility Computations	10/21/80	0021
RK 330	Reformat and Data Check	5/04/76	3460
PM 360	Electronic Corrector Abstract	2/02/76	1500
RK 409	Geodetic Utility Package	9/20/78	7405
RK 530	Layer Corrections for Velocity	5/10/76	7336
RK 561	H/R Geodetic Calibration	12/01/82	3724
AM 602	Elinore-Line Oriented Editor	12/08/82	4371
RK 606	Tape Duplicator	8/22/74	5603
AM 607	Self-Starting Binary Loader	8/10/80	5227
RK 610	Binary Tape Duplicator	12/01/82	5264
AM 902	Real Time Checkout	11/10/72	4551
DA 903	Diagnostic-Instruction Timer	2/27/76	3470
RK 905	Hydroplot Controller Checkout	3/18/81	5426
RK 935	Hydroplot Hardware Tests	3/15/82	1732
RK 950	Hardware Tests (Documentation Only)	6/02/75	

The HP-9815 and HP-97 calculators were used to compute geographic positions of electronic control stations and velocity of sound corrections for the plotting of smooth field sheets.

## S. REFERRAL TO REPORTS

The following reports contain information related to this survey:

Echo Sounding Report	OPR-P114-RA-83
Electronic Control Report	OPR-P114-RA-83
Horizontal Control Report	OPR-P114-RA-83
Coast Pilot Report	OPR-P114-RA-83

Respectfully Submitted,

*Richard B. Koehler*

Richard B. Koehler  
LTJG, NOAA

PARAMETER TAPE LISTING  
RA-40-1-83 (H-10091)

RA-40-1N-83  
SKEW:1,22,38  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=2/0  
PLSCL=40000  
PLAT=59/30/30  
PLON=152/37/00  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1N-83  
EXPANSION #1  
SKEW:90,5,8  
SCALE=1:10,000  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=30  
PLSCL=10000  
PLAT=59/35/30  
PLON=152/09/42  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1N-83  
EXPANSION #5  
SKEW:90,6,8  
SCALE=1:10,000  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=30  
PLSCL=10000  
PLAT=59/33/14  
PLON=152/07/05  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1C-83  
SKEW:0,22,38  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=2/0  
PLSCL=40000  
PLAT=59/21/30  
PLON=152/37/00  
VESNO=2120  
YR=83  
ANDIST=32.2

PARAMETER TAPE LISTING  
RA-40-1-83 (4-10091)CONT.

RA-40-1C-83  
EXPANSION #2  
SKEW:0,5,8  
SCALE=1:10,000  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=30  
PLSCL=10000  
PLAT=59/30/55  
PLON=152/07/06  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1C-83  
EXPANSION #3  
SKEW:0,7,4  
SCALE=1:10,000  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=30  
PLSCL=10000  
PLAT=59/30/22  
PLON=152/28/20  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1C-83  
EXPANSION #4  
SKEW:0,8,9  
SCALE=1:10,000  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=30  
PLSCL=10000  
PLAT=59/26/38  
PLON=152/08/38  
VESNO=2120  
YR=83  
ANDIST=32.2

RA-40-1S-83  
SKEW:0,22,38  
FEST=76000  
CLAT=6514000  
CMER=152/30/0  
GRID=2/0  
PLSCL=40000  
PLAT=59/12/00  
PLON=152/37/00  
VESNO=2120  
YR=83  
ANDIST=32.2

### Field Tide Note

Field tide reduction of soundings for survey H-10091 was based on predicted tides from Seldovia, Alaska (945-5500). Corrections were obtained from Preliminary Tidal Zoning OPR-P114-RA-83. The predicted tides were derived using program AM 500. The reference station at Seldovia was leveled to at the beginning of survey operations on May 24, 1983. Three permanent benchmarks (including the primary mark) were connected to the tide staff. Final levels were run on August 12, 1983 to five permanent benchmarks. Two subordinate stations provided data for survey H-10091:

A bubbler tide gage was installed on May 24, 1983 at the historical gage site on Flat Island (945-5452),  $59^{\circ} 19.8' N$ ,  $151^{\circ} 59.8' W$ . Five permanent benchmarks were recovered and leveled to on May 25, 1983. The staff value of the zero line on the analog tide record is +4.2 feet. The gage operated well throughout the period of hydrography. Final levels were run August 11, 1983 to five permanent benchmarks.

The second bubbler tide gage was installed on June 2, 1983 at the historical site near Oil Point (945-6463),  $59^{\circ} 38.4' N$ ,  $153^{\circ} 15.7' W$ . Five permanent benchmarks were recovered and leveled to on June 1, 1983. The staff value of the zero line on the analog tide record is +9.18 feet. The gage operated well throughout the period of hydrography. In addition to the two subordinate stations installed for this survey, there was another tide station operating concurrently for adjacent survey operations:

A bubbler tide gage was installed on June 4, 1983 at the historical site near Burr Point on Augustine Island (945-6537),  $59^{\circ} 25.2' N$ ,  $153^{\circ} 25.5' W$ . Five permanent benchmarks were recovered and leveled to on June 5, 1983. The staff value of the zero line on the analog tide record is +12.8 feet. The gage operated well throughout the period of hydrography. At the completion of survey H-10091, the two subordinate stations used to control hydrography for this survey were maintained to support the remaining hydrographic surveys of OPR-P114-RA-83. Final levels of all benchmarks at the Burr and Oil tide gages will be run at a later date. The time meridian used for records annotation at all sites was  $0^0$  (UTC).

## GEOGRAPHIC NAMES

H-10091

Name on Survey	A	B	C	D	E	F	G	H	K
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST	
Alaska (Title)									1
Cook Inlet	X								2
									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

VELOCITY TAPE LISTING ✓  
RA-40-1-83 (H-10091)  
RA-40-2-83 (H-10099)

TABLE NO. 3

000075	0	0000	0003	001	000000	000000
000154	0	0001				
000243	0	0002				
000322	0	0003				
000411	0	0004				
000495	0	0005				
000579	0	0006				
000658	0	0007				
000742	0	0008				
000821	0	0009				
000955	0	0010				
000984	0	0011				
999999	0	0012				

TC/TI TAPE LISTING ✓  
RA-40-1-83 (H-10091)

VESSEL - 2120 (RAINIER)  
FATHOMETER S/N 1071

052552 0 0026 0003 165 212000 000000  
~~060220~~ 0 0026 0003 ~~175~~ 000000 000000  
235959 222

## ELECTRONIC CORRECTOR ABSTRACT ✓

VESSEL : 2120

SHEET : RA-40-1-83

TIME	DAY	PATTERN 1	PATTERN 2
052552	165	-00044	-00074
150618	165	-00044	-00074
000022	166	-00044	-00074
053237	166	-00037	+00030
141537	166	-00037	+00030
000026	167	-00037	+00030
011834	167	-00037	+00030
080847	167	-00037	+00030
180515	167	-00037	+00030
035225	168	-00037	+00030
111028		-00030 12	+00026 42
175329	168	-00030 12	+00026 42
000003	169	-00030 12	+00026 42
040402	169	-00030 12	+00026 42
125813	169	-00030 12	+00026 42
000014	170	-00030 12	+00026 42
014623	170	-00030 12	+00026 42
113940	170	-00030 42	+00026 32
155107	170	-00030 42	+00026 32
000035	171	-00030	+00026 32
013301	171	-00030 42	+00026 32



## ELECTRONIC CORRECTOR ABSTRACT ✓

VESSEL : 2120

SHEET : RA-40-1-83

TIME	DAY	PATTERN 1	PATTERN 2
105646	171	-00030 42	+0002632
171829	171	-00030 42	+00026 32
000005	172	-00030 42	+0002632
021109	172	-00030 42	+0002632
115452	172	-00030 42	+0002632
000122	173	-00030 42	+0002632
003413	173	-00030 42	+0002632
104140	173	-00030 42	+0002632
225044	173	-00030 42	+00026 32
000538	174	-00030 42	+00026 32
023153	174	-00030 42	+00026 32
102718	174	-00030 42	+00026 32
183533	174	-00030 42	+00026 32
000025	175	-00030 42	+00026 32
122909	180	-000 <sup>4</sup> 2	+00004
191931	195	-00048	-00070
000227	209	-000 <sup>4</sup> 282	-000 <sup>41</sup> 35
103303	209	-00020 42	-000 <sup>41</sup> 35
142010		+0047 <sup>541</sup> 2	+0046 <sup>5.58</sup> 5
161000	209	-00541	+00558
<sup>1330</sup> 220727	221	-00008	-00058
003246	222	-00008	-00058

MASTER STATION LIST  
GPR-P114-RA-83  
SOUTHERN COOK INLET, ALASKA

FINAL VERSION

100	3	59	54	58131	152	42	28706	250	0036	329649	
/RED 1979 (GREEN RAYDIST) FAIRWEATHER G.P.											
101	3	59	39	38888	151	39	46043	250	0241	329649	
/BLUFF POINT 2 RM 5 1956 1983 (RED RAYDIST) FIELD G.P.											
102	3	59	39	37645	151	39	44972	250	0244	000000	
/BLUFF POINT 2 1956 NGS LISTING											
103	3	59	41	46525	153	02	49788	250	0025	000000	
/CHIT 2 1967 NGS LISTING											
104	3	59	22	16846	153	21	10454	250	0107	000000	
/MOUND 1913 NGS LISTING											
105	3	59	19	53806	151	59	34030	250	0021	000000	
/FLAT ISLAND LIGHT 1956 NGS LISTING											
<del>106</del>	<del>3</del>	<del>59</del>	<del>00</del>	<del>27638</del>	<del>153</del>	<del>22</del>	<del>26497</del>	<del>250</del>	<del>0011</del>	<del>000000</del>	
<del>/SHAW 1946 NGS LISTING</del>											
<del>107</del>	<del>3</del>	<del>58</del>	<del>52</del>	<del>30292</del>	<del>153</del>	<del>17</del>	<del>36891</del>	<del>250</del>	<del>0033</del>	<del>000000</del>	
<del>/SUKOI 1967 NGS LISTING</del>											
200	3	59	46	11106	151	51	53280	139	0022	000000	
/ANCHOR POINT LIGHT 1975 NGS LISTING											
<del>201</del>	<del>3</del>	<del>59</del>	<del>41</del>	<del>03434</del>	<del>151</del>	<del>38</del>	<del>12378</del>	<del>139</del>	<del>0343</del>	<del>000000</del>	
<del>/LOFGREN (USE) 1964 NGS LISTING</del>											
202	3	59	33	03328	151	27	54887	139	0024	000000	
/COHEN ISLAND ROCK LIGHT 1975 NGS LISTING											
203	3	59	25	30165	151	53	05113	139	0031	000000	
/POINT POGIBSHI LIGHT 1975 NGS LISTING											

204 3 59 41 35349 153 03 09872 139 0029 000000  
/BLUFF 1913 NGS LISTING

205 3 59 39 23836 153 09 16363 139 0024 000000  
/DRY 1913 NGS LISTING

206 3 59 38 01532 153 14 47033 250 0013 000000  
/OIL 1913 NGS LISTING

~~208 3 59 25 06941 153 25 13025 139 0016 000000~~  
/BURR 1913 NGS LISTING

209 3 59 27 09908 151 43 08218 139 0020 000000  
/GRAY CLIFF LIGHT CENTER 1956 NGS LISTING

~~211 3 59 41 02323 151 37 41274 139 0139 000000~~  
/KGTI TOWER 1981 RA-81 POSITION

~~215 3 58 55 06741 153 19 32648 139 0050 000000~~  
/DOUGLAS 1964 NGS LISTING

~~216 3 58 52 49113 153 17 48111 139 0062 000000~~  
/SOUTH DOUGLAS 1908 NGS LISTING

## ABSTRACT OF POSITIONS

H-10091

RA-40-1-83

<u>Day</u>	<u>Positions</u>	<u>CTRL</u>	<u>S1 M S2</u>	<u>Remarks</u>
165/169	1000-1986	04	100-101	Mainscheme Lines
169	1987-2008	04	100-101	Crosslines
169	2009-2022	04	100-101	Mainscheme Lines
169	2023-2029	04	100-101	Crossline
169	2030-2042	04	100-101	Dev. Expan. #1 59/36.0'N, 152/10.4'W
169	2043-2066	04	100-101	Crossline
169	2067-2068	04	100-101	Mainscheme Lines
169	2069-2072	04	100-101	Crossline
169/170	2073-2113	04	100-101	Mainscheme Lines
170	2114-2122	04	100-101	Crossline
170	2125-2134	04	100-101	Mainscheme Lines
170	2135-2142	04	100-101	Crosslines
170	2143-2148	04	100-101	Mainscheme Lines
170	2149-2159	04	100-101	Crossline
170/172	2160-2612	04	100-101	Mainscheme Lines
172	2613-2624	04	100-101	Crossline
172	2625-2711	04	100-101	Mainscheme Lines
172	2712-2723	04	100-101	Crossline
172	2724-2729	04	100-101	Dev. Unnumbered PSR Item (Exp. #3) 59/30.9'N, 152/28.0'
172	2730-2748	04	100-101	Crosslines
172	2749-2750	04	100-101	Mainscheme Line
172	2751-2755	04	100-101	Crossline
172/173	2756-2887	04	100-101	Mainscheme Lines
173	2888-2916	04	100-101	Crosslines
173	2917-2931	04	100-101	Mainscheme Lines
173	2932-2944	04	100-101	Dev. (Exp. #2) 59/31.3'N, 152/06.6'W
173	2947-3006	04	100-101	Mainscheme Lines
173	3007-3012	04	100-101	Crosslines
173	3013-3018	04	100-101	Dev. @ 59/28.0'N X 152/18.2'W (Not Plot on Smooth Field Sheet)
173	3019-3022	04	100-101	Crosslines
173	3023-3038	04	100-101	Dev. Unnumbered PSR Item (Exp. #3) 59/30.9'N, 152/28.0'W
173/174	3039-3382	04	100-101	Mainscheme Lines
174	3383-3391	04	100-101	Crossline
174	3392-3397	04	100-101	Mainscheme Lines
174/175	3398-3439	04	100-101	Crosslines
175	3440-3442	04	100-101	Mainscheme Lines
175	3443-3445	04	100-101	Crossline
175	3446-3451	04	100-101	Mainscheme Lines
175	3452-3455	04	100-101	Crossline
175	3456-3462	04	100-101	Mainscheme Lines
175	3463-3468	04	100-101	Crossline
180	3469-3472	04	100-101	Mainscheme Lines
180	3473-3474	04	100-101	Bottom Samples

<u>Day</u>	<u>Positions</u>	<u>CTRL</u>	<u>S1 M S2</u>	<u>Remarks</u>
195	3475-3476	04	100-101	Bottom Samples
209	3477-3491	04	100-101	Dev. (Exp. 4) Not Plotted on Field Sheets
209	3492	04	100-101	Bottom Samples
209	3493-3494	04	100-101	Mainscheme Lines
209	3495-3513	04	100-101	Dev. (Exp. #5) Not Plotted on Field Sheet
209	3514-3534	04	100-101	Bottom Samples
221/222	3536-3540	04	100-101	Bottom Samples

Vesno = (2120) RAINIER

Andist = +32.2 Meters

Rejected Positions: 1183, 1259, 1666-1667, 1737, 1813-1815, 1941-1942,  
2123-2124, 2322-2323, 2786-2787, 2945-2946, 3094,  
3507, 3518, 3523-3525, 3530-3531, 3533, 3535

OCEANOGRAPHIC LOG SHEET - M  
BOTTOM SEDIMENT DATAU.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

VESSEL		PROJ. NO.		YEAR	SOUTHERN COOK INLET, ALASKA		CHECKED BY	DATE CHECKED			
2120		OPR-P114-RA-83		83	RA-40-1-83 (PAGE 1 OF 2)		R.C. GIVENS	18 AUG 83			
SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms)	WEIGHT OF SAMPLER	AP. PROX. PENE- TRA- TION	LENGTH OF CORE	COLOR OF SED- IMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, density, cutter, state, no. type, or bottom relief, etc.)	OBS. INIT.
3473	29 JUN 83	59°N	152°W	29.7	85#			gy.	fine. S., Sh.		P M
3474	"	36° 16.00"	30° 30.34"	38.2	"			gy.	med. S.		B E B
3475	14 JUL 83	33° 04.12"	15° 17.17"	31.0	"			gn.	spk. crs. S., med. P., brk. Sh.		R C G
3476	"	35° 50.62"	20° 57.11"	27.3	"			gn.	spk. med. S., brk. Sh., fine. P.		R C G
3492	28 JUL 83	27° 31.57"	09° 49.90"	22.6	"			gy.	fine. S., P., Sh., Co.	BENTHIC MATERIALS	J E B
3514	"	33° 53.76"	04° 34.06"	23.2	"			gn.	spk. S., med. P., brk. Sh.	"	J E B
3515	"	35° 59.84"	10° 53.18"	18.8	"			gn.	spk. S., fine. P., brk. Sh., Co.		R C G
3516	"	38° 13.07"	05° 41.55"	19.2	"			gn.	spk. S., crs. P., brk. Sh., Co.		R C G
3517	"	38° 34.18"	15° 46.59"	27.0	"			gn.	med. spk. S., brk. Sh., Co.	SPONGES	R C G
3519	"	38° 38.07"	25° 59.75"	36.8	"			gn.	med. S., brk. Sh.		R C G
3520	"	29° 42.24"	29° 57.02"	29.0	"			gn.	med. spk. S.		R C G
3521	"	27° 42.46"	27° 02.16"	27.2	"			gn.	med. S., brk. Sh.		B E B
3522	"	24° 26.72"	29° 47.37"	31.5	"			gn.	med. S., brk. Sh.	SAND DOLLAR	B E B
3526	"	25° 09.18"	21° 32.37"	39.7	"			gn.	med. S., brk. Sh.		B E B
3527	"	30° 30.20"	21° 44.11"	27.2	"			gn.	med. S., brk. Sh.	CLAMS & SAND DOLLAR	B E B
3528	"	27° 49.22"	19° 16.75"	34.4	"			gn.	med. S., crs. P., brk. Sh.	SPONGE & SEANEED	B E B
3529	"	25° 36.58"	11° 12.23"	26.5	"			gn.	fine. S., crs. P., brk. Sh.	CLAMS & SPONGE	B E B

Use more than one line per sample if necessary.

\* U.S. GOVERNMENT PRINTING OFFICE: 1978-865-018/1004

**OCEANOGRAPHIC LOG SHEET - M**  
**BOTTOM SEDIMENT DATA**

[illegible]

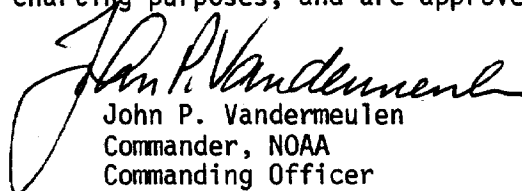
**Use more than one line per sample if necessary.**

\* U.S. GOVERNMENT PRINTING OFFICE: 1978-885-018/1084

APPROVAL SHEET  
DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY  
H-10091  
RA-40-1-83

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, Hydrographic Survey Guidelines, and the 1983 Data Requirements Letter. The data was examined daily during the execution of the survey.

The boatsheet and the accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.

  
John P. Vandermeulen  
Commander, NOAA  
Commanding Officer



# HYDROGRAPHIC SURVEY STATISTICS

H-10091

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		5
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		2
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDIAN FILES				3	Raydist Strip Charts
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES				1	1

## SHORELINE DATA

SHORELINE MAPS(List):

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List): 16640, 18th Ed.

## OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			2512
POSITIONS REVISED			
SOUNDINGS REVISED	1769		1769
CONTROL STATIONS REVISED			
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	2		2
VERIFICATION OF CONTROL	2	1	3
VERIFICATION OF POSITIONS	86	4	90
VERIFICATION OF SOUNDINGS	91	2	93
VERIFICATION OF JUNCTIONS	5	2	
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	28	2	30
COMPARISON WITH PRIOR SURVEYS AND CHARTS	1	6	7
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	2	2	4
OTHER			
Digitization	4		4
TOTALS	221	19	240

Pre-processing Examination by

Beginning Date

Ending Date

Verification of Field Data by

Beginning Date

Ending Date

I. A. Almacen

2/3/84

5/24/84

Verification Checks by

Time(Hours)

Ending Date

W. Wert, S. Otsubo, J. Green

20

7/11/84

Evaluation and Analysis by

Time(Hours)

Ending Date

C. R. Davies

19

6/12/84

Inspection by

Time(Hours)

Ending Date

D. Hill

2

7/18/84

PACIFIC MARINE CENTER  
EVALUATION REPORT

REGISTRY NO: H-10091

FIELD NO: RA-40-1-83

Alaska, Cook Inlet, Offshore Bluff Point to Flat Island

SURVEYED: June 14 - August 10, 1983

SCALE: 1:40,000

PROJECT NO: OPR-P114-RA-83

SOUNDINGS: Ross Fineline Fathometer

CONTROL: Range/Range  
Hastings Raydist

Chief of Party.....CDR J. P. Vandermeulen  
Surveyed by.....LCDR D. Yeager  
LT S. Iwamoto  
LT S. Ludwig  
LTJG M. Mathwig  
LTJG R. Koehler  
ENS B. Postle  
ENS J. Judson  
ENS J. Logue  
ENS K. Barton  
SST R. Hastings

Automated Plot by.....PMC Xynetics Plotter

Verified by.....I. A. Almacen

Evaluated by.....C. R. Davies

1. INTRODUCTION

H-10091 (1983) is a basic hydrographic survey conducted in accordance with the following:

Project Instructions OPR-P114-RA-83, dated February 18, 1983, and  
Change 1, dated March 18, 1983

H-10091 is a continuation of the project to survey southern Cook Inlet. Hydrographic operations encompassed the main channel of Cook Inlet between Bluff Point to Flat Island.

Two temporary bubbler tide gages, Flat Island (945-5452) and Oil Point (945-6463) were installed and operated concurrently with field operations. Both tide gages were utilized to zone the survey for reduction of sounding data on the smooth sheet. Soundings on the final field sheet were reduced on the basis of predicted tides from Seldovia, Alaska (945-5500). Further information is available in the Field Tide Note.

During verification, evaluation/quality control, the following data was changed:

a) Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.

b) Tide level values are from observed tides, see form 712

c) Velocity correctors were changed to reflect a corrected velocity; see MOP letter dated February 28, 1984 (copy attached).

d) electronic correctors were changed to reflect the mean of the base line correctors.

## 2. CONTROL AND SHORELINE

Positions of the horizontal control station used during survey operations are published and field geodetic positions based on the North American Datum of 1927. The smooth sheet was plotted using published and field geodetic positions. Hydrographic positioning was conducted solely using Hastings Raydist Range/Range system.

All remaining information affecting the positioning and station control of this survey is listed in paragraphs F and G of the Descriptive Report, the Horizontal Control Report and the Electronic Control Report for OPR-P114-RA-83.

Shoreline on the field sheets is for orientation only. Shoreline is not shown on H-10091 (1983) because it is an offshore survey.

## 3. HYDROGRAPHY

Soundings at crosslines are in good agreement. The hydrography contained in the survey, H-10091, is adequate to determine the bottom configuration and least depths. Generally all standard depth curves are complete and satisfactorily defined.

## 4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change 3.

## 5. JUNCTIONS

H-10091 junctions the following:

Survey	Year	Scale	Note	Color	Junctions on
H-9708	1977	1:40,000	Adjoins	Orange	North
H-9879	1980	1:20,000	Adjoins	Violet	Southeast
H-9945	1981	1:20,000	Adjoins	Brown	East
H-9958	1981	1:20,000	Adjoins	Violet	Northeast
H-9967	1981	1:20,000	Adjoins	Red	North
H-10099	1983	1:40,000	Joins	Red	West
H-10105	1983	1:40,000	Joins	Orange	South

The junctions have been satisfactorily effected with the "Joins" survey. Soundings in the junctional area of the "Adjoins" survey are in agreement. The "Adjoins" condition exists because the above mentioned surveys are unavailable. Refer to H -10091 for depth curves in junctioned area.

#### 6. COMPARISON WITH PRIOR SURVEYS

H-3206 (1910) 1:120,000. Present survey data is in fair agreement with the prior survey, with areas up to 6 fathoms shoaler on the prior.

H-3805 (1915) 1:120,000. Present survey data is in fair agreement with the prior survey, with areas of plus or minus 6 fathoms difference.

There are two dashed-circle PSR items within the limits of H-10091. They were both developed and the following depths were found:

Prior Survey	Prior Depth (fm)	Present Depth (fm)	Location
H-3206	24	30	59°31'05"N 152°27'38"W
H-3805	30	36	59°19'30"N 152°29'10"W

The 24-fathom sounding originating from H-3206 falls within an area of sand waves. The 30-fathom sounding originating from H-3805 is a Bassnett tube sounding which was considered unreliable by the hydrographer. Therefore, due to the small scale, less accurate positioning methods, sand bottom and, in the case of the 30-fathom sounding, unreliability, these two soundings are superseded by data from this survey.

H-10091 is adequate to supersede H-3206 and H-3805 within the areas of common coverage.

#### 7. COMPARISON WITH CHART

H-10091 was compared to the following:

Chart Number	Scale	Editions	Date
16640	1:200,000	19th	April 23, 1983

a) Hydrography. Present charted soundings originate with the prior surveys discussed in Section 6. There are no dangers to navigation identified or reports submitted by the ship or PMC processing for this survey. H -10091 is adequate to supersede the charted hydrography within the common area.

b) Controlling Depths. There are no controlling depths within the limits of the survey.

c) Aids to Navigation. There are no aids to navigation within the limits of the survey.

8. COMPLIANCE WITH INSTRUCTIONS

H-10091 adequately complies with the project instructions as amended and noted in section 1 of this report.

9. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey. No additional field work is required.

Respectfully submitted,

*Charles R. Davies*

Charles R. Davies  
Cartographic Technician  
July 16, 1984

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting except as noted in the Evaluation Report. The survey is recommended for approval.

*James S. Green*

James S. Green  
Supervisory Cartographer

February 21, 1984

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: P114

Hydrographic Sheet: H-10091

Locality: Southern Cook Inlet, Alaska

Time Period: June 14-August 10, 1983

Tide Station Used:

945-5452 Flat Island, Alaska  
945-6463 Oil Point, Alaska

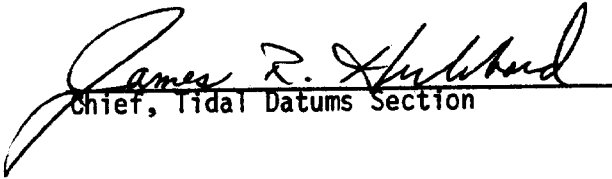
Plane of Reference (Mean Lower Low Water):

945-5452 = 13.38 ft.  
945-6463 = 15.15 ft.

Height of Mean High Water Above Plane of Reference:

945-5452 = 15.3 ft.  
945-6463 = 13.3 ft.

Remarks: Recommended Zoning: (See pages 2 thru 5)

  
Chief, Tidal Datums Section

February 21, 1984

2

H-10091

A. South of Latitude 59°20.0

1. For a zone bordered at the corners by the following points:

- a. 152°35.0' 59°17.0'
- b. 152°35.0' 59°12.0'
- c. 152°00.0' 59°12.0'
- d. 152°23.0' 59°17.0'

Zone on 945-5452 and apply x0.84 range ratio.

2. Northeast of the previous zone to a zone bordered at the corners by the following points:

- a. 152°35.0' 59°20.0'
- b. 152°12.0' 59°20.0'
- c. 151°56.5' 59°13.0'
- d. 152°00.0' 59°12.0'
- e. 152°23.0' 59°17.0'
- f. 152°35.0' 59°17.0'

Zone on 945-5452 and apply x0.87 range ratio.

3. Northeast of the previous zone to a zone bordered at the corners by the following points:

- a. 152°12.0' 59°20.0'
- b. 152°06.0' 59°20.0'
- c. 151°56.5' 59°15.0'
- d. 151°56.5' 59°13.0'

Zone on 945-5452 and apply x0.91 range ratio.

4. Northeast of the previous zone to a zone bordered at the corners by the following points:

- a. 150°06.0' 59°20.0'
- b. 152°01.0' 59°20.0'
- c. 151°56.5' 59°17.0'
- d. 151°56.5' 59°15.0'

Zone on 945-5452 and apply x0.95 range ratio.

5. Northeast of the previous zone, zone on 945-5452 and apply x0.98 range ratio.

February 21, 1984

3

H-10091

B. North of Latitude 59°20.0' to 59° 28.0'

1. East of longitude 152°35.0' to a zone bordered at the corners by the following points:

- a. 152°24.0' 59°28.0'
- b. 152°12.0' 59°20.0'

Zone on 945-5452 and apply x0.87 range ratio.

2. East of the previous zone to a zone bordered at the corners by the following points:

- a. 152°14.5' 59°28.0'
- b. 152°06.0' 59°20.0'

Zone on 945-5452 and apply x0.91 range ratio.

3. East of the previous zone to a zone bordered at the corners by the following points:

- a. 152°08.5' 59°28.0'
- b. 152°01.0' 59°20.0'

Zone on 945-5452 and apply x0.95 range ratio.

4. East of the previous zone to a zone bordered at the corners by the following points:

- a. 152°04.0' 59°28.0'
- b. 151°56.5' 59°20.0'

Zone on 945-5452 and apply x0.98 range ratio.

5. East of the previous zone, zone on 945-5452 and apply x1.02 range ratio.

C. North of latitude 59°28.0' to 59°36.0'

1. West of longitude 152°29.0' zone on 945-6463. apply a -10-minute time correction and x1.01 range ratio.

2. East of 152°29.0' to a zone bordered at the corners by the following points:

- a. 152°22.0' 59°36.0'
- b. 152°14.5' 59°28.0'

Zone on 954-5452, apply +10 minute time correction and x0.91 range ratio.



February 21, 1984

4

H-10091

3. East of the previous zone to a zone bordered at the corners by the following points:

- a.  $152^{\circ}15.0'$   $59^{\circ}36.0'$
- b.  $152^{\circ}08.5'$   $59^{\circ}28.0'$

Zone on 945-5452, apply +10 minute time correction and x0.95 range ratio.

4. East of the previous zone to a zone bordered at the corners by the following points:

- a.  $152^{\circ}09.5'$   $59^{\circ}36.0'$
- b.  $152^{\circ}04.0'$   $59^{\circ}28.0'$

Zone on 945-5452, apply +10 minute time correction and x0.98 range ratio.

5. East of the previous zone to a zone bordered at the corners by the following points:

- a.  $152^{\circ}04.0'$   $59^{\circ}36.0'$
- b.  $151^{\circ}58.0'$   $59^{\circ}28.0'$

Zone on 954-5452, apply +10 minute time correction and x1.02 range ratio.

6. East of the previous zone, zone on 945-5452, apply +10 minute time correction and x1.06 range ratio.

D. North of latitude  $59^{\circ}36.0'$

1. West of 2 points located at:

- a.  $152^{\circ}28.0'$   $59^{\circ}44.0'$
- b.  $152^{\circ}22.0'$   $59^{\circ}36.0'$

Zone on 945-6463 and apply x1.05 range ratio.

2. East of the previous zone to a zone bordered at the corners by the following points:

- a.  $152^{\circ}20.0'$   $59^{\circ}44.0'$
- b.  $152^{\circ}15.0'$   $59^{\circ}36.0'$

Zone on 945-5452, apply +20 minute time correction and x0.95 range ratio.

February 21, 1984

5

H-10091

3. East of the previous zone to a zone bordered at the corners by the following points:

- a. 152°15.0' 59°44.0'
- b. 152°09.5' 59°36.0'

Zone on 945-5452, apply +20 minute time correction and x0.98 range ratio.

4. East of the previous zone by a zone bordered at the corners by the following points:

- a. 152°09.5' 59°44.0'
- b. 152°04.0' 59°36.0'

Zone on 945-5452, apply +20 minute time correction and x1.02 range ratio.

5. East of the previous zone to a zone bordered at the corners by the following points:

- a. 152°04.5' 59°44.0'
- b. 151°58.5' 59°36.0'

Zone on 945-5452, apply +20 minute time correction and x1.06 range ratio.

6. East of the previous zone, zone on 945-5452 apply +20 minute time correction and x1.09 range ratio.

National Ocean Service  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, Washington 98102-3767

**FEB 28 1984**

N/MOP:MRK

TO: Commanding Officer  
NOAA Ship RAINIER

FROM: N/MOP - Charles K. Townsend

SUBJECT: Sound Velocity Corrections

It has been determined that the velocity tables were calculated incorrectly for all projects in which the new Sound Velocity/Depth Measuring System (SV/D) was used. Projects included are OPR-P114-RA-83, OPR-0168-RA-83, and S-0908-RA-83. Project S-0907-RA-83 used tables from OPR-0168-RA-83.

A "Data Reduction Program" was written by the ship for the HP-97 that incorrectly calculates a velocity correction factor based on the depth (determined from pressure readings) and sound velocity at that depth. Since sound velocity in most cases varies with depth, the water column must be considered in layers with a velocity correction factor determined for each layer. The corrections computed are then summed to arrive at total velocity corrections applicable to given depths. The velocity correction factors must be redone using the "summation of layers" method for all projects.

Another factor not considered in the HP-97 program is the vessel's draft. Velocity tables are tabulated so that the entering argument is the observed depth plus the draft. Using the SV/D, the first layer includes the water column from the surface to the transducer. This fact necessitates a corresponding shift in layer thickness when calculating the first layer correction unless the draft effect is negligible.

For projects OPR-0168-RA-83 and S-0908-RA-83 the incorrect pressure coefficients were entered into the "Coefficient Input Program". Sound velocity and depth values should be recomputed for these projects.

The results of these corrective actions should be submitted as addenda to the appropriate Corrections to Echo Sounding Reports (enclosed) and forwarded to the Nautical Chart Branch, N/MOP21 prior to departure in mid-February. The addendum should include a brief explanation, HP-97 program results (if applicable), layer correction worksheets, graphs, and velocity tables. Refer to the Hydrographic Manual, section 4.9.5.2, for instructions on layering and determining corrections.

Questions regarding this matter should be referred to Dennis Hill, N/MOP211, telephone 527-6853.

3805

Diag. Chart No. 8502-1, 8554-1, 8553, 8556-1

Form 504	C. & G. SURVEY L. & A. MAR 31 1916 Acc. No.
DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY	
State: <u>ALASKA</u>	
11-5613	
DESCRIPTIVE REPORT.	
Sheet No. <u>3805</u>	
LOCALITY:	
<u>Cook Inlet Approaches</u>	
191 <u>5</u>	
CHIEF OF PARTY:	
<u>R S Patton</u>	

Jim,  
Per your request,  
Frank

3805

DESCRIPTIVE REPORT

Hydrographic Sheet No. 3805

1:120,000

Approaches to Cook Inlet, Alaska.

All general information pertaining to this region is given in my seasonal report, as such information applies equally to a number of sheets. The scope of this descriptive report is therefore limited to a statement of technical matters relating to the survey.

The instructions for this work called for the hydrography from the eastern limit of the sheet west to longitude 153°, and from the deep shown on the chart in latitude 58° 40' northward to a junction with the previous work in about the latitude of Seldovia. Lines were to be run two miles apart, with splits one mile apart in depths less than 50 fathoms. All broken areas to be developed.

The soundings were made with the Bassnett sounders. Personally, I have never found any form of pressure tube which gave satisfaction and have always been reluctant to use them; in fact, this season was the first on which I had used such tubes. The exceptional conditions which justified their use in this case, are discussed in detail in my annual report dated June 30, 1915.

In order that there might be as little uncertainty as possible in connection with the use of these tubes, a check up-and-down cast was taken about every fifth position. From these check casts arbitrary corrections to the soundings as recorded by the sounders were derived. These corrections have been applied to all the soundings, and are recorded in red in the sounding records. The significant fact developed by the use of these tubes is that no systematic corrections to the registered depths could be developed. The errors were the result of conditions not only uncertain in their nature, but also which varied from day to day.

A special development was made of the region 5 to 10 miles eastward of East Amatuli Island, where 13 and 17 fathom soundings were shown on the chart. Neither shoal nor suspicious soundings were found.

Search was also made for the "Break, E.D., shown on the chart about 10 miles south of East Chugach Island. Broken ground of considerable extent, with a least found depth of 33 fathoms exists in this vicinity. It is not believed, however, that there is any depth shoal enough to be a menace to navigation. This opinion is based not so much upon the completeness of the development, as upon the fact that the work was done at a time when there was a considerable sea running, a sea which should have broken on any area shoal enough to be dangerous, or at least should have piled up sufficiently to be plainly visible. Heavy tide rips were encountered, but soundings placed in these <sup>rips</sup> reefs showed uniformly deep water. Lest the development actually made be considered insufficient it may be stated that because of the difficulty, even in comparatively smooth weather, of running, in the strong currents a closely spaced system of lines over this area, its development was postponed until a time when the sea was rough enough to indicate any danger by breaking or piling up, and it was because no such evidence of shoal water was observed, that a closer search was not made.

On the western half of the work, because of the regular and gently sloping bottom, it was thought best to depart slightly from the system outlined in the instructions.

Instead of changing at the 50 fathom curve, from a one to a two mile width between lines, the spacing was gradually widened from a little less than one mile at the northern limit to two miles at the southern.

3.

The control for the work was obtained from the triangulation of the previous years. Additional signals, as needed, were determined by sextant cuts taken in the course of the hydrography, and all such cuts were recorded in the sounding records. Because of the lack of a right object for the work at eastern limit of the sheet, a wing was added to take in the coast as far eastward as Pye Islands. To prevent distortion, this wing was not pasted to the sheet, but made to be placed alongside it by means of a given distance on lines common to the two parts.

As the party was broken up immediately upon the completion of field work, the sheet was forwarded to the Office in an unfinished condition, to be completed by the various officers on duty there during the winter.

A table of statistics is attached.

Respectfully submitted,

*R. S. Patton*

Chief of Party.

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10091

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

*A 6.6 fms. sounding was erroneously inserted into the digital data file at lat. 59°13'20.54"N, long 152°17'21.49"W. During processing. This sounding should be disregarded when plotting from the magnetic tape.*

*David W. Yeager* 7/19/84  
Chief, Nautical Chart Branch (Date)

*For per.  
Telecom with  
Dennis Hill  
2-17-87*

CLEARANCE:

N/MOP2:LWMordock

SIGNATURE AND DATE:

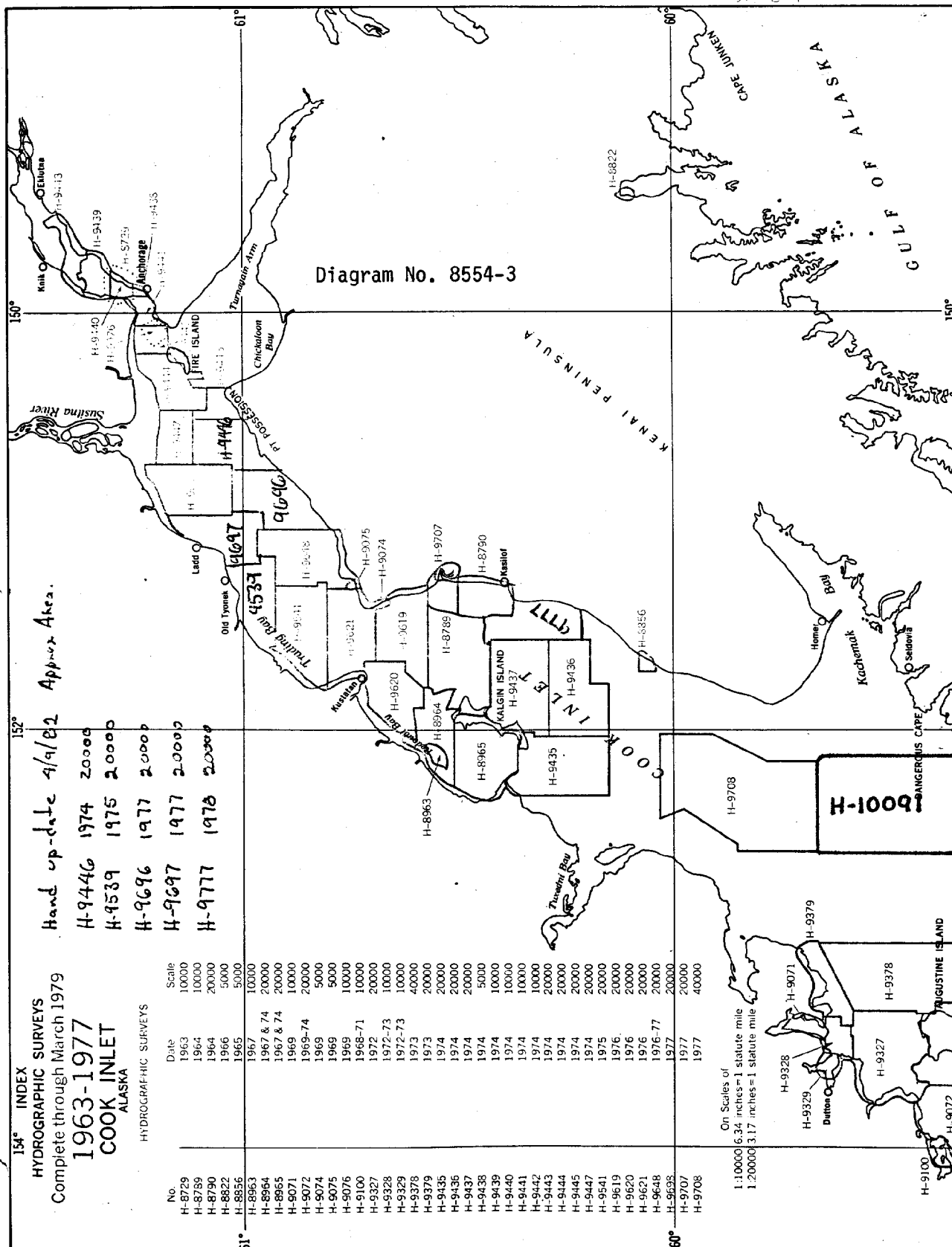
*Larry Mordock* 7/24/84

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

*Phil K. Townsend* 7/25/84  
Director, Pacific Marine Center (Date)



## Hydrographic Index No. 114E



## NAUTICAL CHART DIVISION

### RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10091

## 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
16013	11/27/84	R. F. Edwards	<del>Full</del> Part Before After Verification Review Inspection Signed Via Drawing No. 27
			Exam. for critical corr., no corr.
500	5/28/85	R. J. House	<del>Full</del> Part Before <del>After</del> Verification Review Inspection Signed Via Drawing No. 5 Exam. for critical corr., no corr.
16640	10/85	J. M. O'Connor	<del>Full</del> Part <del>Before</del> After Verification Review Inspection Signed Via Drawing No. 22 Applied - Hold for application to New Cht 16647 sched for 1986
16645	11/8/86	C. J. Carter	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 17 14 <sup>th</sup> Ed.
16640	6-22-89	P. J. Hunt	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 23 20 <sup>th</sup> Ed.
16013	3/28/91	A. J. MacKen	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. full application of snags from SS thru 16640.
531	4/12/91	A. J. MacKen	Full <del>Part Before</del> After Verification Review Inspection Signed Via H Drawing No. full application of snags from SS thru 16013.
570	4/17/91	A. J. MacKen	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. Applied 25, 47, 49, 51 & 82 meter snags from SS thru 531.
531	7-13-95	K. E. Elliott	(Full) Part Before After Verification Review Inspection Signed Via 7-25-95 R. J. House Drawing No. 21 APPL'D THRU 16013 DRG #30
			Full Part Before After Verification Review Inspection Signed Via Drawing No.