10033

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-20-4-82

Office No. H-10033

LOCALITY

State ..... Alaska

General Locality ..... Cook Inlet

Locality ..... Vicinity of Perl Island and East Chugach Island

1982-84

CHIEF OF PARTY
CAPT. R.J.Land, & CAPT. J.P. Vandermuelen

LIBRARY & ARCHIVES

DATE ..... September 17, 1985

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

H-10033

HYDROGRAPHIC TITLE SHEET

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 20-4-82

State: Alaska

General locality: Cook Inlet

Locality: Vicinity of Perl Island and East Chugach Island

Scale: 1:20,000 Date of survey: July 24 - August 5, 1982

Instructions dated: February 24, 1982 Project No.: OPR-P114-RA-82
Change #1 March 26, 1982, Change #2 May 25, 1982

Vessel: NOAA Ship RAINIER S221, Launches RA-3 (2123), RA-4 (2124), RA-5 (2125)

Chief of party: CAPT R.J. Land

Surveyed by: LT Ludwig, LTJG Ohlinger, ENS Koehler, ENS Postle

Soundings taken by echo sounder, hand lead, pole: Ross Fineline Fathometer and associated equipment

Graphic record scaled by: RAINIER Survey Department Ship's Personnel

Graphic record checked by: RAINIER Survey Department Ship's Personnel

Verification by ~~Protracted by~~: B. Mueller, R. Shipley Automated plot by: PMC Xynetics Plotter

Evaluation by ~~Verification by~~: A. Luceno

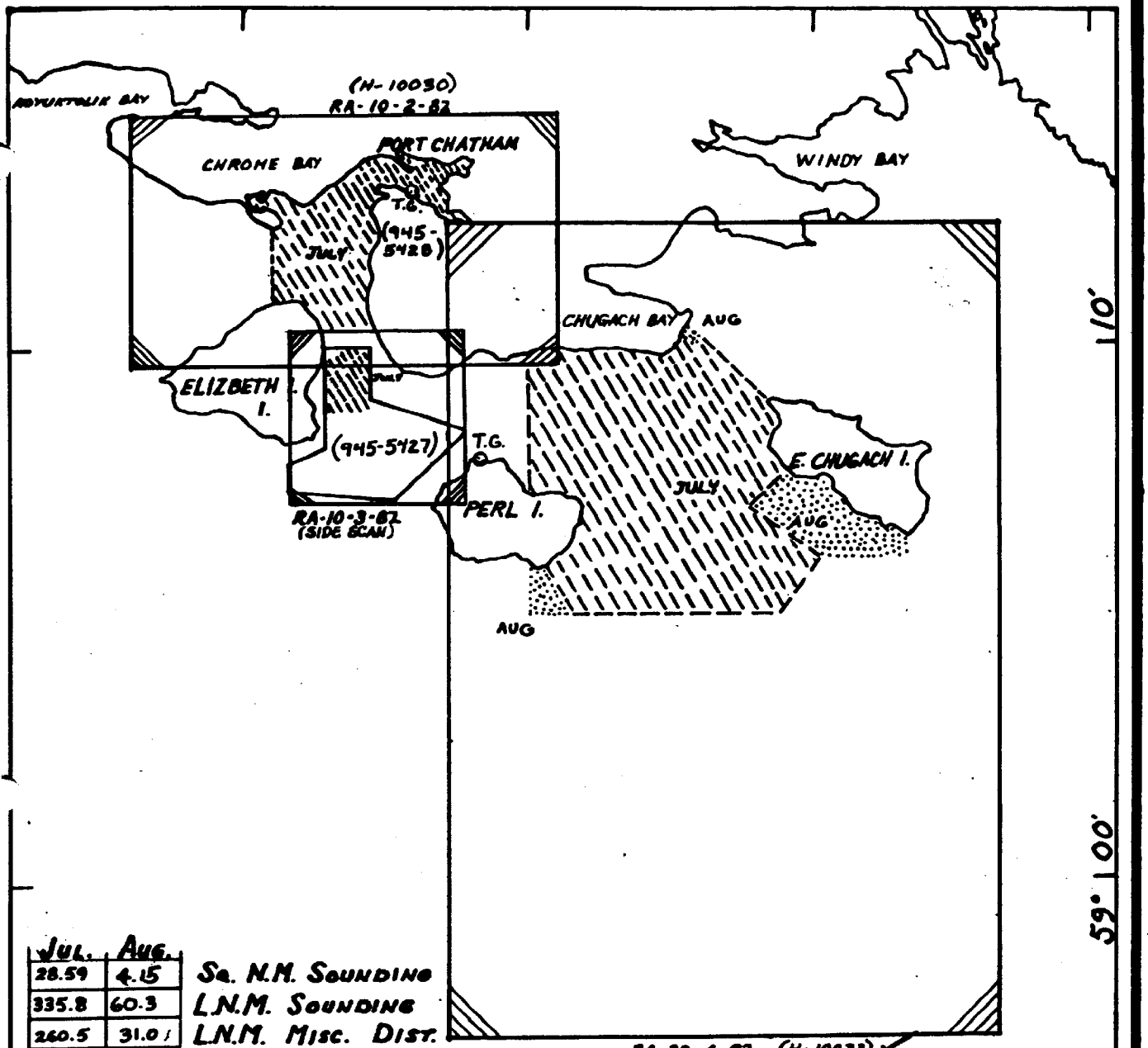
Soundings in fathoms ~~feet~~ at ~~XXXX~~ MLLW

REMARKS: Marginal notes in black by evaluator, Separates filed with the hydrographic data.

Chris / Surv MSM 5/12/86

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174



JUL.	AUG.	
28.59	4.15	Sq. N.M. Sounding
335.8	60.3	L.N.M. Sounding
260.5	31.0	L.N.M. Misc. Dist.
48	0	Botton Samples (Grab)
9	0	Water Samples Analysed
16	5	Electronic Control Stations
1	0	Nansen Cast
2	0	Tide Gage
7	0.	Stations Established By Traverse
269/314	0	L.N.M. Sidescan (Sound./Misc.)

PROGRESS SKETCH

OPR-P114-RA-82

HYDROGRAPHIC SURVEY

SOUTHERN COOK INLET, ALASKA

NOAA SHIP RAINIER

RALPH J. LAND CAPT. NOAA

COMMANDING

JULY 7 - AUGUST 5, 1982

A. PROJECT

Survey H-10033 was conducted in accordance with Project Instructions numbered OPR-P114-RA-82, Southern Cook Inlet, Alaska, dated February 24, 1982 and supplements to the Project Instructions Change No. 1, dated March ~~30~~ 26, 1982 and Change No. 2, dated ~~June 3~~ May 25, 1982.

B. AREA SURVEYED

Survey H-10033 was performed in Southern Cook Inlet in the vicinity of Perl Island to E. Chugach Island.

The actual area included the area between 151°40.~~0~~5'W and 151°26.5'W for its west and east limits respectively and the Kenai Peninsula (approximately 59°10.0'N)and 59°05.0'N for its northern and southern limits respectively.

C. SOUNDING VESSEL

All soundings were obtained using the following hydrographic launches: RA-3 (2123), RA-4 (2124), RA-5 (2125), and RA-6 (2126). No unusual sounding vessel configurations or problems were encountered.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Introduction

Echo sounding corrections for survey RA-20-4-82 are discussed in this section. The following corrections are discussed: sound velocity, draft, settlement and squat, instrumentation corrections for blanking, phase and initial drift errors and sounding equipment.

Sounding Equipment

Echo soundings were obtained by each hydrographic launch using the Ross Fineline Fathometer systems. This includes the Ross model 400 transceiver, Ross model 5000 analog trace recorder, Ross model 6000 digitizer and a 100 kHz transducer. Table 1 summarizes the Ross component serial numbers.

TABLE 1

Echo Sounding Component Serial Numbers

Launch	2123	2124	2125	2126
Transceiver	1041	1080	1040	1042
Analog Recorder	1071	1046	1042	1070
Digitizer	1041	1080	1040	1042

Sound Velocity Correctors

A Nansen cast performed on August 5, 1982 at 59°07.2'N, 151°38.9'W determined the velocity correctors for this survey. These values are listed in Velocity Table No. 6.

Water samples collected from the Nansen casts were analyzed for salinity using standard laboratory procedures (see H.O. 607, Instruction Manual for Obtaining Oceanographic Data, Third Edition, U.S. Naval Oceanographic Office, 1968). The salinometer used for salinity analysis was Beckman model No. RS-7B (S/N 59265). The unit was last calibrated in April, 1982 by the Northwest Regional Calibration Center, Bellevue, Washington (see separates following text for calibration results). The results of the Nansen casts were input into computer program RK530: Velocity Correction Computations (May 10, 1976 version) and run on the RAINIER's PDP 8/e digital computer system to yield velocity correction tables. The standard velocity correctors for the survey sheets were then obtained by plotting the actual depth minus velocity correction versus velocity correction and picking off depths that correspond to standard correction intervals (see Hydrographic Manual, 4th Edition). A list of the computed correctors are provided in the separates following the text.

TRA for other launches as listed on the Abstract of TC/TI Tape Listing are submitted with the tape and data package.

Launch Settlement and Squat Corrections

Settlement and squat tests were conducted at Shilshole Bay Marina in Puget Sound, Washington on April 2 and April 6, 1982 and at Port Chatham, Alaska on July 23, 1982.

The second location was to obtain new settlement and squat correctors for RA-3 after the side scan equipment was installed. The largest difference in readings for RA-3 in the two settlemnt and squat tests was 0.1 feet. This difference is insignificant since soundings for Southern Cook Inlet were obtained in fathoms.

Tests were conducted with an observer on shore who sighted through a level to a leveling rod located over the transducer on the launch. The readings started a 0 RPM and went to 2600 RPM. A second set of readings were taken at full speed back down to 0 RPM. These two runs were averaged to arrive at the final readings. The readings are included in the separates following the text.

Launch Draft Correctors

Corrections for launch drafts were determined from standard bar checks (see Hydrographic Manual, Fourth Edition, 1976). Bar checks were

performed daily except when wind and/or rough seas prevented launch personnel from obtaining accurate bar checks. Mean fathometer depth values were corrected for velocity and subtracted from the true bar depths. The resulting values agreed with the historic value of 0.3 fathoms. The only launch with values that were different was RA-3. This was due to the increased weight of the additional side scan sonar equipment. The new TRA of RA-3 was computed to be 0.45 fathoms, using bar check data.

Refer to sect. I of Eval Report

All smooth field sheets were plotted with a launch TRA value of 0.3 fathoms. It is recommended the soundings from RA-3 should be smooth plotted by the Pacific Marine Center with a TRA value of 0.45 fathoms.

Sounding Instrument Correctors

During survey operations the blanking depth was set to a value shoaler than the shoalest bottom expected and was adjusted as needed when the depth changed. Corresponding analog trace depths were substituted for missing digital soundings during field scanning operations.

The initial trace on the analog recorders was continuously and scrupulously monitored by dedicated and highly trained personnel to prevent any error that might be caused by a drifting initial. These same personnel also performed phase calibrations to prevent belt length error and stylus/paper misalignment on launch fathometers in accordance to the PMC OPORDER.

Manual Sounding Correctors

Manual soundings were taken with hand-held lines where required. Depth markings on these lines were compared with a steel measuring tape before survey operations and found to be accurate.

E. HYDROGRAPHIC SHEETS

Field Sheet RA-20-4N was the only sheet prepared using the PDP 8/e complot system on board the RAINIER. The sheet was based on a modified transverse mercator projection. A list of parameters used to define the hydrographic sheet is attached on the separates following the text. All field records will be sent to the Pacific Marine Center, Seattle, Washington for verification. The smooth field sheet for this survey is plotted at a 1:20,000 scale. In addition, there are five smooth expansion sheets at a 1:2500 scale. The shoal soundings of each development have been transferred to the smooth sheet.

F. CHUGACH ISLANDS CONTROL STATIONS

The following control stations were either recovered or extablished for this survey:

Recovered	Established
EAST CHUGACH LIGHT	PERL ISLAND LIGHT
END 1931	
GET 9131	
HIKE 1980	
NAG 1931	
PEA 1931	
PERL ROCK LIGHT	
SPIT 2 1977	
TOP 1931	

Although Perl Island Light had a previous G.P. the structure had been removed and rebuilt in a slightly different location. It was reobserved and a new G.P. was determined.

All stations are of Third Order Class I specifications. The North American Datum of 1927 was used.

G. HYDROGRAPHIC POSITION CONTROL

Electronic range/range positioning control was used for hydrography. Motorola Mini-Ranger III positioning systems were used. The table below summarizes the location of all Mini-Ranger mobile and shore equipment.

Table 2

Mini-Ranger Mobile Equipment

Vessel	Console S/N	RT S/N
2123	720	2710
	711	1648
2124	30269	1636
2125	715	1557
	711	1646
2126	711	1646

TABLE 3

Mini-Ranger Shore Equipment

CODE	TRANSPONDER S/N	STATION
A	1573	115, 119
B	4951	116
C	1628	113
D	1569	115, 117
E	911721	114
F	911711	115, 201
0	911632	201
1	B1106	119

Console - R/T pair 711, 1646 was used in launch 2124 JD 206-210 and in launch 2125 JD 211-212. This explains the multiple entries in Table 2. On August 6, 1982 launch 2124 was damaged while being lifted from the water. The damage included console S/N 30269. No ending calibration was possible for this console. Daily system checks were within specifications. There is no reason to believe that data quality was jeopardized. See the Electronic Control Report, OPR-P114-RA-82 for details.

Mini-Ranger Calibrations and Systems Checks

System checks were performed daily except when fog conditions prevented visual checks. These checks were completed by observing horizontal sextant angles to visible Third Order, Class I or better geodetic stations. Mini-Ranger baseline took place July 4, 5, July 24, and August 19, 1982. For details refer to the Electronic Control Report OPR-P114-RA-82. Only initial correctors were used to smooth plot the field data. The initial calibrations also determined minimum signal strength cutoff values for each console - R/T pair.

Mini-Ranger Performance

All shore stations were positioned over Third Order, Class I or better geodetic stations. Power was supplied by two or four 12 volt batteries connected in series and/or parallel. Overall, shore transponder units performed satisfactorily as did mobile equipment.

H. SHORELINE

The Shoreline for this survey was taken from film ozalids TP-00823 and TP-00824. The shoreline along the northern shore at Perl Island and the western shore of East Chugach Island was not completed for this field sheet due to time constraints and bad weather. There was also a number of main-scheme lines that ran near the south western shore of East Chugach Island and a rocky area off the south eastern shore of the Kenai Peninsula that could not be completed due to the lack of time, poor visibility and heavy surging along the shorelines. In addition, the field edit was not completed.

I. CROSSLINES

A total of 35.2 miles of crosslines were run, representing 13.3% of the mainscheme mileage. Agreement of the 280 comparisons between crosslines and mainscheme soundings is a follows:

Refer to sect. 4.c of Eval. Report.

0-5.0 fathoms	2 comparisons within 0.2 fathoms
5.0 - 11 fathoms	3 comparisons within .5 fathoms 2 comparisons within 1.5 fathoms
11 - 55 fathoms	266 comparisons within 1.5 fathoms 6 comparisons within 3.0 fathoms 1 comparison between 4.0 - 5.0 fathoms

Crossline agreement was excellent since 97% of the comparisons meet the criteria as stated in Section 1.1.2 Part B. II.1 of the Hydrographic Manual. The observed discrepancies found here are not unusual since most of the soundings are not exactly coincident.

Refer to sect. 3 of Eval. Report

J. JUNCTION

The junction of this survey was compared with FAIRWEATHER Survey H-9890 (FA-20-3S-80). The following is a statement on the agreement of the comparisons:

H-9890

Refer to sect. 4.c of Eval Report

0 - 5.0 fathoms	3 comparisons within 0.2 fathoms 2 comparisons within 0.5 fathoms
5.0 - 11 fathoms	3 comparisons within 0.5 fathoms 2 comparisons within 1.5 fathoms
11 - 55 fathoms	72 comparisons within 1.5 fathoms

Junction agreement was excellent since 95% of the comparisons meet the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

K. COMPARISON WITH PRIOR SURVEYS

This survey was compared with prior surveys H-3802 (1915) 1:60,000, H-3803 (1915) 1:20,000, H-5187 (1931) 1:20,000 and H-5188 (1931) 1:20,000. The following is a statement on the agreement of the comparisons:

H-3802

11 - 55 fathoms	50 comparisons within 1.5 fathoms 6 comparisons within 3.0 fathoms 6 comparisons within 4.0 fathoms

81% of the comparisons meet the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

H-3803

0 - 5.0 fathoms	8 comparisons within 0.2 fathoms 5 comparisons within 0.5 fathoms 3 comparisons within 1.0 fathoms 4 comparisons between 1.0 - 7.0 fathoms
5 - 11 fathoms	8 comparisons within 0.5 fathoms 13 comparisons within 1.0 fathoms 3 comparisons within 1.5 fathoms 3 comparisons within 1.5 - 6.0 fathoms
11-55 fathoms	332 comparisons within 1.5 fathoms 28 comparisons within 3.0 fathoms 7 comparisons within 4.0 fathoms

Refer to sect. 4. of Eval. Report

84% of the comparisons meet with the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

H-5187

0 - 5.0 fathoms	3 comparisons within 0.2 fathoms 2 comparisons within 0.5 fathoms 2 comparisons within 1.0 fathoms 6 comparisons between 1.0 - 8.0 fathoms
5.0 - 11 fathoms	26 comparisons within 0.5 fathoms 20 comparisons within 1.0 fathoms 6 comparisons within 1.5 fathoms
11 - 55 fathoms	306 comparisons within 1.5 fathoms 30 comparisons within 3.0 fathoms 1 comparison within 4.0 fathoms

83% of the comparisons meet with the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

H-5188

0 - 5.0 fathoms	1 comparison within 0.2 fathoms
5.0 - 11 fathoms	9 comparisons within 0.5 fathoms 7 comparisons within 1.0 fathoms 1 comparison within 1.5 fathoms 2 comparisons between 1.5 - 4.0 fathoms
11 - 55 fathoms	184 comparisons within 1.5 fathoms 19 comparisons within 3.0 fathoms 2 comparisons within 4.0 fathoms

86% of the comparisons meet with the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

The results of this survey show good agreement with prior surveys H-3802, H-3803, H-5187, and H-5188. Most of the discrepancies were caused by soundings not exactly being coincident, datum shift applied to all four prior surveys and transferring soundings from a 1:60,000 1915 prior survey (H-3802) to the 1:20,000 1982 field sheet. *Refer to sect. 6 of Eval. Report*

PSR #47 (2 to 4 fathom discrepancy)

The area concerning PSR #47 is bounded on the east and west by longitudes 151°37.2'W to 151°40.0'W respectively and on the south and north by latitudes 59°08.4'N to 59°08.9'N respectively. After running sounding lines at 200 meters, then splitting them to 100 meters, discrepancies (2-4 fathoms) were found when comparing the 1982 survey (using predicted tides) to prior surveys and the most recent chart (1980). Where the earlier surveys show shoaler depths the more recent survey (RA-20-4N-82) shows those soundings to be 2-4 fathoms deeper. It is recommended that the soundings for this survey be placed on the next chart. No expansion sheet was needed for this PSR item. *concur*

PSR Unnumbered (18 fathoms - verify or disprove)

The location of this PSR item was at 59°08.0'N, 151°33.3'W. A least depth of 18.0 fathoms (using predicted tides) was located by launch RA-3 at 59°07'57.6"N, 151°33'10.2"W. The shoalest sounding was recorded on the launch fathometer (3rd out of position number 3499, JD 216). It is recommended that the 18.0 fathom sounding be placed on the next chart. *concur*

PSR Unnumbered (11 fathoms - verify or disprove)

The location of this PSR item was at 57°07'06"N, 151°32'24"W. A least depth of 11 fathoms (using predicted tides) was located by launch RA-3 at 59°07'07"N, 151°32'23"W and 59°07'05.6"N, 151°32'23"W. The shoalest

of 11.7 fathoms rec.# 76250 pos.# 6046+03 59°07'09.7"N, 151°32'25.4"W & rec.# 76370 pos.# 6051 59°07'07.6"N, 151°32'22.2"W

sounding was recorded on the launch fathogram (~~2nd out of position number 3349, JD 209 and 2nd out of position number 3353, JD 209~~). It is recommended that the 11.0 fathom sounding be retained on the next chart. concur

PSR Unnumbered (Sounding should be 39, verify or disprove)

The location of this PSR item was at 59°05'51"N, 151°33'12"W. A least depth of 34.0 fathoms (using ~~predicted~~ actual tides) was located by launches RA-4 and RA-5 at 59°05'52.8"N, 151°33'18"W and 59°05'52.6"N, 151°33'18.5"W respectively. The shoalest sounding was recorded on launch RA-4's fathogram (3rd out of position number 4465, JD 216) and for RA-5's fathogram (10th out of position number 5091, JD 209). It is recommended that the 34.0 fathom sounding be placed on the next chart. concur

PSR Unnumbered (29fathoms, verify or disprove)

The location of this PSR item was at 59°05'30"N, 151°32'27"W. A least depth of 30.0 fathoms (using ~~predicted~~ actual tides) was located ~~at~~ in the immediate vicinity ~~various locations~~ by launch RA-4. Most of the least depths (30 fathoms) were centered at 59°05'30"N, 151°32'20"W. It is recommended that the 30.0 fathom sounding be placed on the next chart. concur

Expansion Sheet #1 (1:2500)

This sheet addressed a 33 fathom unnumbered PSR item and a 29 fathom unnumbered RSR item. Relevant information concerning this sheet has already been previously mentioned in the PSR description.

Expansion Sheet #2 (1:2500)

This sheet addressed a shoaling area centered at 59°07'54"N, 151°39'00"W. The shoalest sounding occurs at 59°07"53.4"N, 151°38'53"W. A shoal sounding of 9.4 fathoms (4th out of position number 4306) was found by launch RA-4 in the survey area. It is recommended that the 9.4 fathom sounding be placed on the next chart. concur

and 9.8 fathoms at pos. 4056+03 59°07'53.58"N 151°38'52.96"W

Expansion Sheet #3 (1:2500)

This sheet addressed an 18 fathom unnumbered PSR item. Relevant information concerning this sheet has already been mentioned in the PSR description. ✓

Expansion Sheet #4 (1:2500)

This sheet addressed a shoal area near the shoreline centered at 59°09'41"N, 151°37'19"W, and a detached position on a rock at 59°09'39"N, 151°37'13"W. A least depth of 6.8 fathoms (using ~~predicted~~ actual tides) was located by launch RA-4 at 59°09'41"N, 151°37'19"W. ~~The shoalest sounding and the detached position was recorded on the launch fathometer.~~ pos. 4110+02

(~~2nd out of position number 4110, JD 207/position number 4029, JD 206~~). Also on this sheet a rock observed awash at 202947 UTC and located by launch RA-4 at 59°09'38.5"N, 151°37'16.4"W (Position number 4029, JD 206). It is recommended that the least depth and the rock awash positions be placed on the next chart. *concur*

Expansion Sheet #5 (1:2500)

This sheet addressed an eleven fathom unnumbered PSR item. Relevant information concerning this sheet has already been mentioned in the PSR description.

L. COMPARISON WITH THE CHART

This survey compared with Chart 16645, 12th Edition, October 21, 1978, at a scale of 1:82,662. The soundings compared as follows:

0 - 5.0 fathoms	1 comparison within 0.2 fathoms 1 comparison within 0.5 fathoms 2 comparisons within 1.0 fathoms 1 comparison between 1.0 - 3.0 fathoms
5.0 - 11 fathoms	2 comparisons between 1.5 - 7.0 fathoms
11 - 55 fathoms	27 comparisons within 1.5 fathoms 4 comparisons within 3.0 fathoms 2 comparisons within 4.0 fathoms 2 comparisons between 4.0 - 13.0 fathoms

Refer to sect 4.C of Eval. Report

67% of the comparisons meet the criteria as stated in Section 1.1.2 Part B.II.1 of the Hydrographic Manual.

The results of this survey do not show good agreement with the published chart 16645 (1:82,662). Since compared soundings have to be transferred from a 1:82,662 chart to a 1:20,000 field sheet, discrepancies will result. *Refer to sect. C of Eval. Report*

M. ADEQUACY OF SURVEY

This survey is incomplete and field edit must be completed before this survey can supersede all prior surveys for charting purposes. In addition, two hydrographic field sheets are incomplete. *survey resumed and completed in 1984.*

N. AIDS TO NAVIGATION

There were no floating aids to navigation in the survey area. *Refer to sect. 7 of Eval. Report*

O. STATISTICS

Survey Launch	Linear Nautical Miles of Hydro	Square Nautical Miles of Hydro	Number of Positions
RA-3	78.3	---	~~195~~ 298
RA-4	139.0	---	~~564~~ 530
RA-5	31.0	---	~~164~~ 144
RA-6	17.0	---	112
TOTALS	265.3	24.7	~~1035~~ ~~1084~~

Bottom Samples: 17

One tide station was maintained on Perl Island (North) near Station END.

One Nansen cast was taken in the survey area.

P. MISCELLANEOUS

All NAV DOWN errors generated during the course of hydrography on the computer launches were corrected in the corrector tapes.

Q. RECOMMENDATIONS

This survey is considered incomplete since the field edit was not completed.

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished per instructions in the Hydrographic Manual (4th Edition), Manual of Automated Hydrographic Surveys, the PMC OPORDER, Hydrographic Survey Guidelines and the Hydrographic Data Requirements for 1982.

Soundings and positions were taken by an ASI Logger and a Hydroplot system using range-range program RK112. There are daily master tapes and corresponding corrector tapes which include the TRA for the launches and electronic control baseline correctors for mini-ranger consoles and R/T units and all depth corrections. Velocity tapes were generated from Nansen cast data. The following is a list of all computer programs and version dates used for data acquisition or processing:

	PDP 8/e Programs	Version Date
RK112	Hyperbolic, R/R Hydroplot	08/04/81
RK201	Grid, Signal and Lattice Plot	04/18/75
RK211	Range-Range Non-Real Time Plot	02/02/82

	PDP 8/e Programs	Version Date
RK212	Visual Station Table Load	04/01/74
RK216	Range Azimuth Non-Real Plot	02/09/81
RK300	Utility Computations	10/21/80
RK330	Reformat and Data Check	05/04/76
PM360	Electronic Corrector Abstract	02/02/76
RK407	Geodetic Inverse/Direct Computation	09/25/78
AM500	Predicted Tide Generator	11/10/72
RK530	Layer Corrections for Velocity	01/10/76
RK561	H/R Geodetic Calibration	02/19/75
AM602	Elinore-Line Oriented Editor	05/20/75
AM603	Tape Consolidator	10/10/72
RK606	Tape Duplicator	08/22/74

The HP97 and HP9815A programmable calculators were used to compute geographic positions of electronic control stations and visual signals for calibrations.

S. REFERRAL TO REPORTS

The following reports contain information related to this survey:

Echo Sounding Report	OPR-P114-RA-82
Electronic Control Report	OPR-P114-RA-82
Horizontal Control Report	OPR-P114-RA-82
Coast Pilot Report	OPR-P114-RA-82

Respectfully submitted,

James W. O'Clock LT, NOAA Corps

James W. O'Clock
LT, NOAA

APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

H-10033

RA-20-4-82

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, and the Instruction Manual for Automated Hydrographic Surveys. 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.

Ralph J. Land
Captain, NOAA
Commanding Officer

NOAA FORM 76-
(8-74)

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

Replaces C&GS Form 567.

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): NOAA Ship RAINIER

STATE: Alaska

LOCALITY: Perl Island to East Chugach Island

DATE: 9/19/82

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-P114-RA-82	N.A.	H-10033	N.A. 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE // D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
LIGHT	(EAST CHUGACH LIGHT,1977) 1982 LIGHT LIST #3458	59 06	25.029 774.5	151 26	29.533 470.1		Triang. Rec. 7/26/82	16645
LIGHT	(PERL ISLAND LIGHT,1982) FIELD POSITION	59 07	06.675 206.5	151 38	16.550 263.3		Triang. Rec. 8/05/82	16645
	PERL ISLAND LIGHT 1 - 1982 LIGHT LIST #3459							
	LIGHT LIST POSITIONAL ERROR							
	KC-Kef-L-8(83)							

FIELD TIDE NOTE

Field tide correctors for H-10033 were based on predicted tides for Seldovia, Alaska. The predicted tides were interpolated using program AM500. Zoning correctors were received from C3, Rockville, Maryland.

The gage was located on Perl Island, Alaska at 59°07'48"N, 151°41'48"W and was installed on July 11, 1982. The gage was removed July 30, 1982. The staff value of 0 on the tide record is -12.6 ft. and time meridian for records annotation is 000° (UCT).

March 14, 1983

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 945-5427, Perl Island, AK

Period: July 24 - August 5, 1982

HYDROGRAPHIC SHEET: H-10033

OPR: P114

Locality: Chugach Islands, Southern Cook Inlet

Plane of reference (mean lower low water): 13.27 feet

Height of Mean High Water above Plane of Reference is 12.5 feet

REMARKS: Recommended Zoning

1. Northwest of a line formed by two points located at:

   Latitude $59^{0}10.0'$N and $59^{0}07.3'$N
   Longitude $151^{0}35.0'$W and $151^{0}40.0'$W

   Zone direct on 945-5427 Perl Island, AK

2. Southeast of the previous line, zone on 945-5427 Perl Island, AK, and apply X0.95 range ratio.

Chief, Datums and Information Branch

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-10033

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 20-4-82

State Alaska

General locality Cook Inlet

Locality Vicinity of Perl Island and East Chugach Island

Scale 1:20,000 Date of survey 19 July to 8 August 1984

Instructions dated 16 Feb. 1984; Change No. 1- 27 April 1984 Change No. 2 - 21 June 1984 Project No. OPR-P114-RA-84

Vessel Launches RA-3 (2123), RA-4 (2124), RA-5 (2125), RA-6 (2126)

Chief of party CDR J.P. Vandermeulen

Surveyed by LT T. Rulon, LTJG S. Konrad, ENS J. Judson, ENS K. Barton, ENS C. Wilson ENS J. Griffin, ENS M. Pickett, SST K. Hastings

Soundings taken by echo sounder, hand lead, ~~pole~~ XXXX DSF-6000N Echo Sounder, hand lead line

Graphic record scaled by RAINIER Personnel

Graphic record checked by RAINIER Personnel

Verification by ~~Protracted by~~ B. Meuller and R. Shipley Automated plot by PMC Xynetics Plotter

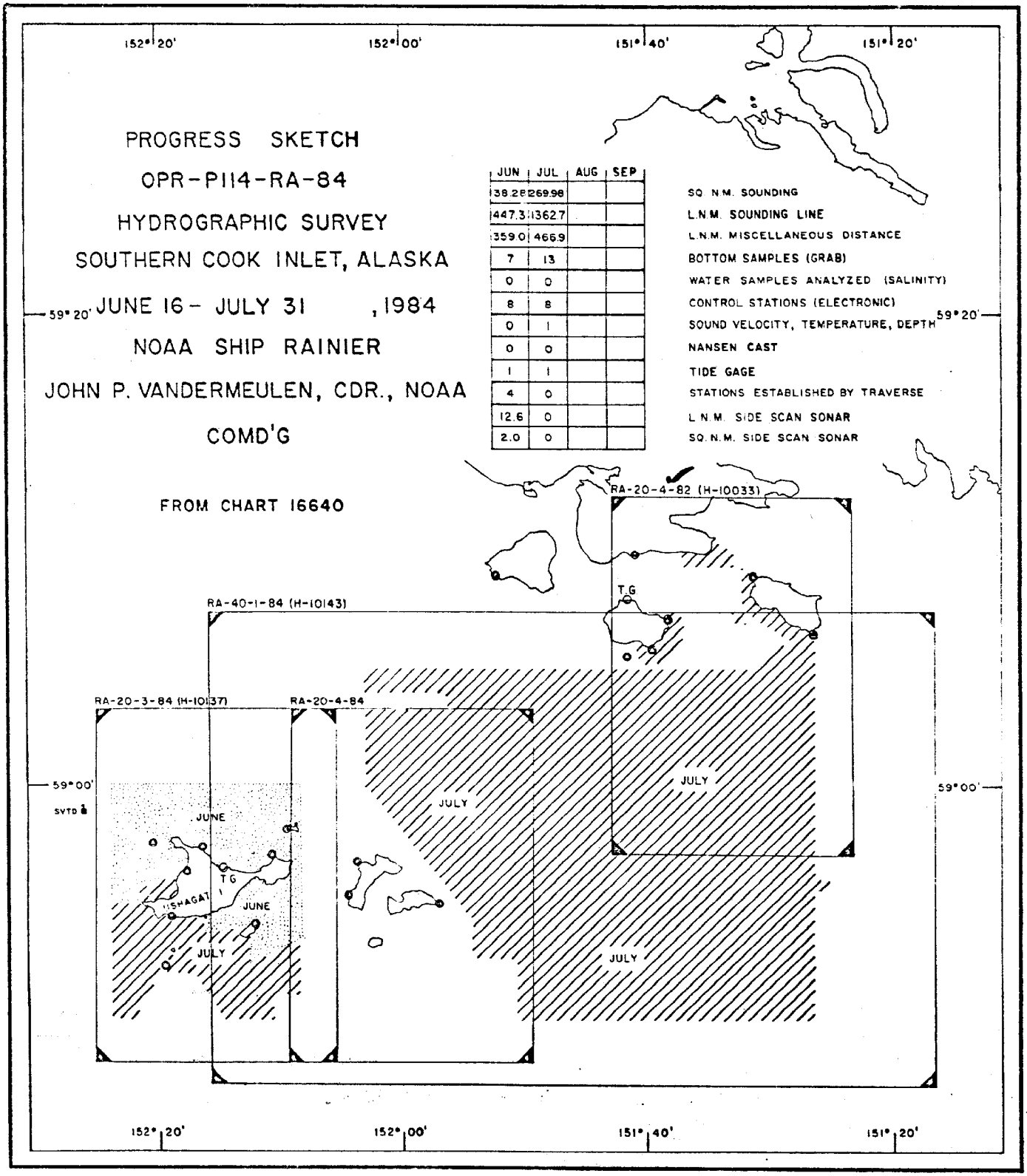
Evaluation by ~~Verification by~~ A. Luceno

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

REMARKS: This survey has been performed to complete field work done by the NOAA Ship RAINIER for Survey H-10033, in July to August 1982, project number OPR-P114-RA-82, field number RA-20-4-82.

Marginal notes in black by evaluator. Separates are filed with the hydrographic data.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-665-010-1174


152° 20'
152° 00'
151° 40'
151° 20'
PROGRESS SKETCH
OPR-P114-RA-84
HYDROGRAPHIC SURVEY
SOUTHERN COOK INLET, ALASKA
59° 20'
JUNE 16 - JULY 31 , 1984
NOAA SHIP RAINIER
JOHN P. VANDERMEULEN, CDR., NOAA
COMD'G
FROM CHART 16640
JUN | JUL | AUG | SEP
38.28 | 269.98
447.3 | 1362.7
359.0 | 466.9
7 | 13
0 | 0
8 | 8
0 | 1
0 | 0
1 | 1
4 | 0
12.6 | 0
2.0 | 0
SQ N.M. SOUNDING
L.N.M. SOUNDING LINE
L.N.M. MISCELLANEOUS DISTANCE
BOTTOM SAMPLES (GRAB)
WATER SAMPLES ANALYZED (SALINITY)
CONTROL STATIONS (ELECTRONIC)
SOUND VELOCITY, TEMPERATURE, DEPTH
NANSEN CAST
TIDE GAGE
STATIONS ESTABLISHED BY TRAVERSE
L.N.M. SIDE SCAN SONAR
SQ.N.M. SIDE SCAN SONAR
RA-20-4-82 (H-10033)
RA-40-1-84 (H-10143)
RA-20-3-84 (H-10137)
RA-20-4-84
T.G.
JULY
JUNE
ISHAGAT
59° 00'
SVTD

A. PROJECT

This field work was done to complete Survey H-10033 (RA-20-4N-82), performed by the NOAA Ship RAINIER from July 24 to August 5, 1984. This 1984 survey was accomplished in accordance with Project Instructions OPR-P114-RA-84, Southern Cook Inlet, Alaska, dated February 28, 1984, Change No. 1, dated April 27, 1984 and Change No. 2, dated June 21, 1984.

B. AREA SURVEYED

This survey was conducted in the vicinity of the south and east sides of Perl Island, the south and west sides of East Chugach Island and the south shore of the Kenai Peninsula. The splits and developments were run in areas described in the Pre-processing Examination dated December 7, 1982.

The inclusive dates of this survey were from July 19 to August 8, 1984 (JD 201-221).

C. SOUNDING VESSEL

Hydrographic data was collected using Launches RA-3 (2123), RA-4 (2124), RA-5 (2125) and RA-6 (2126). No unusual vessel configurations or problems occurred during this time.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Survey launches were equipped with Raytheon DSF-6000N dual beam echo sounders and depths ranged from 0 to 30 fathoms.

VESSEL	SOUNDING EQUIPMENT	SERIAL NO.
2123	Raytheon DSF-6000N	A119N
2124	"	A117N
2125	"	A123N
2126	"	A103N

Both hardware and operational problems were encountered with the DSF-6000N echo sounders which were especially noticeable while in shallow water and while operating in the dual beam/high digitize mode. For more information regarding this see Corrections to Echo Soundings Report OPR-P114-RA-84.

The DSF-6000N echo sounders were operated primarily in the dual beam/high digitize mode. Approximately 5 percent of the time the high frequency beam could not track the bottom and instead appeared as noise on the graphic record. When this occurred the depth values were scanned from the low frequency beam trace, or, at times, the echo sounders

were operated in the wide beam only mode. There were no discrepancies at the junctions of the wide beam and narrow beam data as the two traces were in close agreement at the points of changeover.

All soundings were taken from the launches under Mini-Ranger Range/Range or Range/Azimuth control. Since the echo sounding transducers on launches are directly below the Mini-Ranger R/T units the ANDIST associated with the survey data is 0.0 meters. The final field sheets are plotted with this value.

Bar checks were conducted at least once daily for both beams of the DSF-6000N echo sounder as per the Provisional Operating and Processing Instructions for the DSF-6000N Echo Sounder. All bar checks were performed within the survey area. They were used to confirm proper system function and bar check data were combined with the velocity data to determine launch TRA correctors. The TRA for the wide and narrow beams were within 0.1 fathom of each other and were averaged together to obtain a single TRA value.

The TRA calculations resulted in a 0.3 fathom TRA for launches 2123, 2125 and 2126 and a 0.2 fathom TRA for launch 2124. The 0.2 fathom TRA differed from the historical value of 0.3 fathoms when using the Ross echo sounder. This difference is due to an apparent instrument error of 0.1 fathom. The final smooth sheet was plotted with a ~~preliminary~~ TRA of 0.3 fathom for all launches *except for launch 2124 where TRA is 0.2 fathom.*

Velocity corrections were derived from one Nansen cast taken during the survey at Lat. 59/01/12 N and Long. 151/54/42 W. The velocity correctors apply to both beams of the DSF-6000N echo sounders. A printout of the velocity table is included in the separates following the text.

TC/TI tapes were made in accordance with PMC OPORDER. Appendix Q. Printouts of the TC/TI tapes are included in the separates following the text.

For further details on corrections to echo soundings for this survey, see Corrections to Echo Soundings Report, Project OPR-P114-RA-84.

E. HYDROGRAPHIC SHEETS

One field sheet designated RA-20-4N-82 was prepared on the RAINIER by AST Richard Cole, using the PDP/8e Hydroplot system which produces modified transverse Mercator projections. The same method was used to prepare five 1:5,000 scale expansion plots covering developments in the survey area. These expansion plots were prepared to provide a more legible presentation of developments and tight line

spacing. A list of parameters used to define these field sheets is provided in the separates following the text.

All data and accompanying field records will be sent to Pacific Marine Center, Seattle, Washington for verification.

F. CONTROL STATIONS

All control stations for this survey were existing Third Order Horizontal Control stations. A copy of the station list is appended to this report. For more information about recovery, method of location and description of stations refer to the Horizontal Control Report, OPR-P114-RA-84.

STATION NAME	SIGNAL NUMBER	GEOGRAPHIC POSITION
East E. Chugach Light, 1977	19 ~~108~~	59/06/25.029 151/26/29.533
Spit 2, 1977	7 ~~114~~	59/08/48.786 151/31/14.587
Perl Rock Light, 1980	202 ~~113~~	59/05/26.266 151/41/32.582
Hike, 1980	114	59/09/42.111 151/40/43.871
Perl Island Light, 1982	6 ~~115~~	59/07/06.675 151/38/16.550
Top 1931	8 ~~116~~	59/05/46.006 151/39/27.627

It should be noted that, except for station HIKE 1980, signal numbers for the present survey work are different from those used in 1982.

G. HYDROGRAPHIC POSITION CONTROL

Range/Range and Range/Azimuth were the methods used for hydrographic position control. Motorola Mini-Ranger III and Wild Theodolites (S/N's 75599, 73226 and 68648) were the instruments used. The tables below summarize the location of all Mini-Ranger mobile and shore equipment.

MINI-RANGER MOBILE EQUIPMENT

VESSEL	CONSOLE	R/T S/N	APPLICABLE DATES
2123	720	2710	7/19-7/21/84
2124*	B0269	B1388	7/19-7/31/84
2125*	B0269	B1388	7/20/84
2126	711	B1405	7/19-7/21/84

* For logistical reasons, Launch RA-5 was used in place of RA-4 making it necessary to swap the Mini-Ranger console/RT pair (RA-5's system was in use on the RAINIER).

MINI-RANGER SHORE EQUIPMENT

CODE	TRANSPONDER S/N	STATION #
D*	1569	114
E	911721	~~113~~ 202
F	911711	~~108~~ 119
0*	C1789	114
1	C1883	116
2	B1106	115
3	1628	117

* Codes 0 and D were set up on the same station. Code D was equipped with a high-gain antenna.

CALIBRATIONS AND EQUIPMENT PERFORMANCE

Mini-Ranger calibrations and system checks were performed in accordance with PMC OPORDER, Appendices M and S. Code D, set up on station 114, was not critically calibrated. Comparisons between code 0 (which was critically calibrated) and code D, both set up on the same station, proved that the Mini-Ranger was operating properly. Overall, Mini-Ranger performance was good throughout the survey.

Initial Mini-Ranger baseline calibrations for this project were conducted at Lake Union, Seattle, Washington on May 22 and 23, 1984. Ending calibrations were performed on August 25 and 26, 1984 on Homer Spit, Homer, Alaska. Only initial correctors were used to plot the smooth field sheet. The initial calibrations also determine the minimum signal strength cutoff values for each system. Daily systems checks were performed to confirm baseline correctors. An Abstract of Electronic Correctors is included in the separates following the text. For more informatiom regarding calibrations and systems checks, refer to the Electronic Control Report, OPR-P114-RA-84.

H. SHORELINE

The shoreline for this survey was transferred from map TP-00824 and TP-00823.

Sounding operations were conducted as near to shore as possible and into areas considered foul by the field editor. Soundings in the foul area were not shown on the smooth field sheet. Field edit of the shoreline was performed during this survey and information regarding changes can be found in the Field Edit Report, OPR-P114-RA-84. Rocks located by the hydrographer are shown in red on the smooth field sheet.

Field Edit of the area north of East Chugach Island, not adjacent to hydrography, was planned to be accomplished in late August. Additionally, the field editor will specifically investigate a prior survey (H-5187) rock at Lat. 59/06/12[6]N and Long. 151/26/5[4]' W.

I. CROSSLINES

Crosslines were run and agreement of soundings at crossings was within 1 fathom and not exceeding 5 fathoms in areas of steep bottom gradients. However, due to the nature of this survey, a total percentage of crossline mileage in comparison to mainscheme mileage is not applicable.

Where crosslines were run over existing data from the 1982 work (H-10033), agreement was excellent, meeting the same comparison criteria as stated above.

J. JUNCTIONS

This survey junctions with one contemporary surveys:

SURVEY	SCALE	YEAR	LOCATION
H-10143	1:40,000	1984	south
H-9890	1:20,000	1980	west

All sounding comparisons were within 2 fathoms and contour lines continued in a smooth line with no abrupt changes.

K. COMPARISON WITH PRIOR SURVEYS

This survey was compared to the following prior surveys:

SURVEY	SCALE	YEAR
H-3803	1:20,000	1915
H-5188	1:20,000	1931
H-5187	1:20,000	1931
~~H-5192~~	~~1:40,000~~	~~1931~~
H-3802	1:40,000	1915

Comparisons were quite good, falling within 1-2 fathoms. Areas of steep bottom gradient along the northeast corner of Perl Island resulted in some discrepancies of up to 5 fathoms.

The following tables list soundings that are significantly shoaler than on the prior surveys. These shoaler soundings are recommended for charting.

H-3803

Present Depth	Prior Depth	Geo. Position
0.[8] fm*	8.0 fm	59/10/0[8]0 N
		151/33/4[8]/[5]0 W

Pos. 3421+01

1982

H-5188

Present Depth	Prior Depth	Geo. Position	
~~2.4~~ fm** 3.0 RK	12.0 fm	59/05/5~~45~~ N 151/38/18 W	Pos.# 6280
~~4.5~~ fm** 5.3 RK	11.0 fm	59/05/5~~7~~ 8 N 151/37/42 W	Pos.# 6279 ✓
6.~~4~~ 9 fm	9.0 fm	59/06/3~~0~~ 1 N 151/37/42 W	Pos.# 6267 + 02

H-5187

Present Depth	Prior Depth	Geo. Position
2.~~0~~ 4 fm	4.5 fm	59/07/1~~8~~ 9 N 151/30/0~~6~~ 4 W
8.9 fm	13.0 fm	59/08/06 N 151/32/09 W ✓
2.0 fm	5.9 fm	59/07/1~~5~~ 3 N 151/29/~~39~~ 41 W

* This sounding represents an area of five soundings that are shoaler, by up to 8 fathoms, than the prior survey. It should be noted that this is in an area foul with rocks and kelp.

** These soundings were reported to the U.S. Coast Guard as dangers to navigation. See section L.

K(a). COMPARISON WITH SURVEY H-10033, 1982 FIELD WORK

This survey was performed to complete the NOAA Ship RAINIER's 1982 field work. In areas of insufficient development, splits were run between existing data. In areas where "holidays" existed, sounding lines were run to sufficiently cover the area. ✓

Comparisons were excellent and fell within 0 to 2 fathoms. Contours continued smoothly with no abrupt changes.

L. COMPARISON WITH CHART

This survey was compared with two charts:

Chart #	Scale	Edition	Date
16645	1:82,662	14th	7/30/83
16606	1:77,062	7th	10/20/79

Present charted soundings originate with the prior surveys discussed in section K and K(a). Two soundings mentioned in section K above were submitted to the U.S. Coast Guard as dangers to navigations on 10 August 1984. Dives were made on each of the shoals to determine the least depth. Extensive developments were run over the shoals and can be seen on Expansion Sheet No. 2.

M. ADEQUACY OF SURVEY

Survey H-10033 should now be considered complete and sufficient to supersede all prior surveys for charting purposes.

N. AIDS TO NAVIGATION

No new Aids to Navigation were found that were not contained in the Light List.

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

O. STATISTICS

Launch	Linear Nautical Miles of Hydro	Number of Positions
2123	33.266	225 ~~238~~
2124	23.000	~~175~~ ~~170~~
2125	10.800	92 ~~97~~
2126	33.700	~~247~~ ~~275~~
total	100.766	739 ~~775~~

Area: 8.58 SQM

Tide Stations: 1

Velocity Casts: 1

There were no bottom samples taken.

P. MISCELLANEOUS

No anomalous currents or tidal situations were observed or reported during this survey.

Q. RECOMMENDATIONS

This survey is complete and adequate for charting purposes and no additional field work is recommended at this time.

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished in accordance with 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 collected by a Hydroplot system using Range/Range Hyperbolic Hydroplot program RK 112. ASI Loggers were used to collect Range/Azimuth data and the logger tapes were reformatted to master tape format. The daily master, logger and corrector tapes are included as part of this survey. The following is a list of all computer programs and version dates used for data acquisition and processing.

NUMBER	DESCRIPTION	VERSION
RK 112	Hyperbolic, R/R Hydroplot	10/12/83
RK 116	Range-Azimuth Hydroplot	10/12/83
RK 201	Grid, Signal, and Lattice Plot	4/18/75
RK 211	Range-Range Non-Real Time Plot	2/13/84
RK 212	Visual Station Table Load	4/01/74
RK 216	Range-Azimuth Non-Real Time Plot	2/24/84
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	5/04/76
PM 360	Electronic Corrector Abstract	2/02/76
RK 407	Geodetic Inverse/Direct Computation	9/25/78
AM 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections for Velocity	5/10/76
RK 561	H/R Geodetic Calibration	12/01/82
AM 602	Elinore--Line Oriented Editor	12/08/82
RK 606	Tape Duplicator	8/22/74
AM 607	Self-Starting Binary Loader	8/10/80
RK 610	Binary Tape Duplicator	12/01/82
RK 612	Line Printer List	3/22/78
RK 900	Plot Test Tape Generator for AM 902	5/07/76
PM 901	Core Check	3/01/72
AM 902	Real Time Checkout	11/10/72
DA 903	Diagnostic--Instruction Timer	2/27/76
RK 905	Hydroplot Controller Checkout	3/18/81
RK 935	Hydroplot Hardware Tests	3/15/82
RK 950	Hardware Tests (Documentation Only)	6/02/75

S. REFERENCES TO OTHER REPORTS

The following reports contain information related to this survey.

Echo Sounding Report	OPR-P114-RA-84
Electronic Control Report	OPR-P114-RA-84
Horizontal Control Report	OPR-P114-RA-84
Coast Pilot Report	OPR-P114-RA-84
Field Edit Report	OPR-P114-RA-84
Descriptive Report (H-10033)	OPR-P114-RA-82

Respectfully Submitted,

Kenneth W. Barton

Kenneth W. Barton
Ensign, NOAA

E

2314Z WTEF WTEF DE NOJ NOJ
RYRYRYRYRYRYRYRYRYRYRYYRYRYRYRYR
RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
ZBO 1 R K

JOP | 4332.0 KHz
NOD | 2241Z
10 Aug 84

M

RTTUZYUW RUHPTEF0188 2232241-UUUU--RUHPSUU.
ZNR UUUUU
R 102241Z AUG 84
FM NOAAS RAINIER
TO CCGDSEVENTEEN JUNEAU AK
INFO NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS
NOTICE TO MARINERS
1. A SUBMERGED ROCK PINNACLE HAS BEEN FOUND NEAR
PERL ISLAND AT LATITUDE 59/05/55 N, LONGITUDE 151/38/20 W
WITH A LEAST DEPTH OF 2.4 FATHOMS AT PREDICTED MLLW.
2. A SUBMERGED ROCK PINNACLE HAS BEEN FOUND NEAR PERL
ISLAND AT LATITUDE 59/05/58 N, LONGITUDE 151/37/42 W
WITH A LEAST DEPTH OF 4.5 FATHOMS AT PREDICTED MLLW.
THIS INFORMATION WAS OBTAINED DURING RAINIER SURVEY
RA-20-4N-84, H-10033 AND AFFECTS CHARTS 16606,16665.
BT
#0188

NNNN

2318Z WTE F WTEF DE NOJNOJ QSL 102241Z ZBO 1R INT QRV K

OA/002

Action 2+1

DE SSC (AUTOMATIC RELAY) -ZOC-
R 102241Z AUG 84
FM NOAAS RAINIER
TO RUWMDMA/CCGDSEVENTEEN JUNEAU AK
INFO OA/NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS
NOTICE TO MARINERS
1. A SUBMERGED ROCK PINNACLE HAS BEEN FOUND NEAR PERL ISLAND AT LATITUDE 59/05/55 N, LONGITUDE 151/38/20 W WITH A LEAST DEPTH OF 2.4 FATHOMS AT PREDICTED MLLW.
2. A SUBMERGED ROCK PINNACCLE HAS BEEN FOUND NEAR PERL ISLAND AT LATITUDE 59/05/58 N, LONGITUDE 151/37/42 W WITH A LEAST DEPTH OF 4.5 FATHOMS AT PREDICTED MLLW.
THIS INFORMATION WAS OBTAINED DURING RAINIER SURVEY RA-20-4N-84, H-10033 AND AFFECTS CHARTS 16606, 16695.
BT
TOD-08:11:01:37

should be 16645

1531

ACTION.....2.....REPLY BY:(LTR/MSG).....ADD'L FOLLOW UP.....

CC: MOP/X2/1/2/.../.../.../....IN DATE.....08/13/84...MSG RELEASE [illegible]

OA/007

DE SSC (AUTOMATIC RELAY) -ZOC-
R 102351Z AUG 84
FM NOAAS RAINIER
TO RUWMDMA/CCGDSEVENTEEN JUNEAU AK
INFO OA/NOAAMOP SEATTLE WA
ACCT CM-VCAA
BT
UNCLAS
REF MY R 102241Z AUG 84
CORRECT LAST CHART NUMBER IN LAST SENTENCE TO
READ 16645 IN LIEU OF 16695.
BT
TOD-08:11:05:16

NNN

1536

ACTION.....REPLY BY:(LTR/MSG).....ADD'L FOLLOW UP.....

CC: MOP/X2/1/2/.../.../.../....IN DATE....08/13/84...MSG RELEASE....

APPROVAL SHEET

DESRCIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

H-10033

RA-20-1-82

Completed August 1984

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OPORDER, Hydrographic Survey Guidelines, and the Instruction Manual for Automated Hydrographic Surveys. 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, CDR, NOAA
Commanding Officer
NOAA Ship RAINIER

114 1 59 09 42111 151 40 43871 250 0000 000000
/HIKE, 1980

115 6 59 07 49216 151 40 59129 250 0000 000000
/END/~~WND~~, 1931

116 6 59 07 06675 151 38 16550 250 0024 000000
/PERL ISLAND LIGHT, 1982

117 6 59 08 48786 151 31 14587 250 0000 000000
/SPIT 2, 1977

118 3 59 05 46006 151 39 27627 250 0000 000000
/TOP, 1931

119 3 59 06 25029 151 26 29533 250 0111 000000
/EAST CHUGACH LT., 1977

~~800 3 59 05 59785 151 45 56097 250 0000 000000~~
~~/NAG 1981~~

201 3 59 05 26267 151 41132513 250 0000 000000
/PEA, 1931

202 3 59 05 26266 151 41 32582 250 0020 000000
/PERL RK ~~LT.~~ LIGHT, 1980

~~203 3 59 08 49791 151 52 28805 250 0015 000000~~
~~/CAPE ELIZABETH LIGHT~~

FIELD TIDE NOTE
RA-20-4N-82
H-10033

Field tide reduction of soundings for survey H-10033 was based on predicted tides from Seldovia, Alaska (945-5500). Corections were obtained from Preliminary Tidal Zoning OPR-P114-RA-82. The predicted tides were derived using program AM500.

The reference station at Seldovia was leveled on June 21, 1984. Five permanent benchmarks (including the primary mark) were connected to the ETG reading mark. Levels were run at the end of survey operations on August 24, 1984. Initial and final levels compared very well.

A subordinate station at Perl Island, Alaska (945-5427) provided data for this survey. A standard Bristol Bubbler tide gage was installed on a prominent rock cliff on the north side of Perl Island on July 18, 1984, (59/07/48N, 151/41/48W). Five permanant benchmarks were recovered near the site. A staff was installed and initial levels were run to these marks on July 18, 1984.

Excellent records were obtained and the gage will be removed following the final levels planned for September 1, 1984. The staff fell during a storm August 20 and was not replaced. One day of records was lost from 1400 hr 22 August to 1330 hr 23 August due to a malfunction of the pen.

DATE: 1/2/85

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-10033

Locality: Chugach Island, Cook Inlet, Alaska

Time Period: July 19 - August 8, 1984

Tide Station Used: 945-5427 Perl Island, Alaska

Plane of Reference (Mean Lower Low Water): 20.28 ft.

Height of Mean High Water Above Plane of Reference: 12.8 ft.

Remarks: Recommended Zoning:

1. Southeast of a line formed by 2 points located at $58^{o}57.0'$ $151^{o}35.0'$ and $59^{o}07.5'$ $151^{o}23.0'$
   Apply x0.89 range ratio to all heights.
2. Northwest of the previous line to a line formed by 2 points located at $59^{o}04.5'$ $151^{o}43.0'$ and $59^{o}13.0'$ $151^{o}29.0'$
   Apply x0.94 range ratio to all heights.
3. Northwest of the previous line, zone direct.

James R. Hubbard
Chief, Tidal Datums Section

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10033

RA-20-4-82 (completed 1984)

* Name on Survey

Name on Survey	A ON CHART NO. 16606 & 16645	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
EAST CHUGACH ISLAND										1
PERL ISLAND	X	X	X							2
CHUGACH ISLANDS										3
ALASKA (title)										4
KENNEDY ENTRANCE	16645 N/C									5
PERL ROCK										6
*GULF OF ALASKA										7
										8
* Added 8-7-85 per telecon with Charles Harrington										9
						Denis Hill				10
										11
										12
										13
										14
										15
										16
										17
										18
				Approved:						19
										20
				Charles S. Harrington						21
				Chief Geographer - N/CG2x5						22
				OCT 15 1984						23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 77-27(H)
(9-83)

U.S. DEPARTMENT OF COMMERCE

HYDROGRAPHIC SURVEY STATISTICS

REGISTRY NUMBER: H-10033

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	7
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	2

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDION FILES	2					
ENVELOPES						
VOLUMES						
CAHIERS						
BOXES						

SHORELINE DATA

SHORELINE MAPS (List):

PHOTOBATHYMETRIC MAPS (List):

NOTES TO THE HYDROGRAPHER (List):

SPECIAL REPORTS (List):

NAUTICAL CHARTS (List):

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			1823
POSITIONS REVISED	379		
SOUNDINGS REVISED	162		
CONTROL STATIONS REVISED			

	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION			
VERIFICATION OF CONTROL			
VERIFICATION OF POSITIONS	96.5		96.5
VERIFICATION OF SOUNDINGS	153.0		153.0
VERIFICATION OF JUNCTIONS			
APPLICATION OF PHOTOBATHYMETRY			
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	47		47
COMPARISON WITH PRIOR SURVEYS AND CHARTS		32	32
EVALUATION OF SIDE SCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT		51	51
GEOGRAPHIC NAMES			
OTHER* Digitization	10		10
*USE OTHER SIDE OF FORM FOR REMARKS — TOTALS	306.5	83	389.5

Pre-processing Examination by		*Beginning Date*	*Ending Date* 10/12/84
Verification of Field Data by R. Shipley, R. Mueller	2/7/85	*Time (Hours)*	*Ending Date* 6/27/85
Verification Check by J. Stringham, B. Olmstead, J. Green	42	*Time (Hours)*	*Ending Date* 7/29/85
Evaluation and Analysis by A. Luceno	7/9/85	*Time (Hours)*	*Ending Date* 7/26/85
Inspection by D. Hill	3	*Time (Hours)*	*Ending Date* 8/19/85

☆ U.S. GOVT. PRINTING OFFICE 1983: 764-006/6061

PACIFIC MARINE CENTER
EVALUATION REPORT
H-10033

1. INTRODUCTION

H-10033 is a basic hydrographic survey executed by NOAA Ship RAINIER in compliance with the following:

Project Instructions	OPR-P114-RA-82	OPR-P114-RA-84
Original dated	February 24, 1982	February 16, 1984
Change No. 1 dated	March 26, 1982	April 27, 1984
Change No. 2 dated	May 25, 1982	June 21, 1984

This survey is located in Alaska, at the southern part of Cook Inlet, in the vicinities of Perl and East Chugach Islands. The project area is bounded by latitudes 59°05'N and 59°10'N and longitudes 151°26'W and 151°41'W.

Initial field work commenced in July 1982 and ended in August 1982. Field work was resumed in July 1984 and completed in August 1984.

The projection parameters were revised to change the modified transverse mercator projection to polyconic projection and to center the hydrography on the smooth sheet.

Predicted tides for the reduction of soundings on the field sheet are based on Seldovia, Alaska reference station. Final tide correctors for reducing soundings in the smooth sheet are derived from the Bristol Bubbler tide gage at Perl Island.

The TRA value of 0.45 fathom for vessel 2123 in 1982 was not found to be valid. A TRA of 0.3 fathom was used in the smooth plotting.

2. CONTROL AND SHORELINE

The horizontal and positional control for this survey are discussed adequately in Sections F and G of the Descriptive Report, and in the Horizontal and Electronic Control Reports for OPR-P114-RA-82 and OPR-P114-RA-84. The smooth sheet is plotted using published NGS and preliminary adjusted field positions based on the North American Datum of 1927.

The following unreviewed photogrammetric manuscripts apply to this survey:

T-sheet	Scale	Date of Photography	Date of Field Edit	Class
TP-00823	1:20,000	July-August 1975 June 1976	July 1980	I
TP-00824	1:20,000	August 1975 June 1976	July 1984 (partial)	III

Shoreline and some geographic names are not shown on the smooth sheet in accordance with N/CG memorandum "Reduction of Marine Center Hydrographic Processing Backlog" dated February 16, 1984. The shoreline from the TP manuscripts is adequate to support the survey for charting purposes. Geographic names of principal topographic and hydrographic features, geographic features referenced by the hydrographer and geographic names used in the title are shown on the smooth sheet.

The limits of the foul areas shown on the smooth sheet are generally more extensive than that shown in the TP manuscripts.

3. HYDROGRAPHY

Except as noted below and in section 4 of this report, soundings are adequate to:

a. Delineate the bottom configuration, determine least depths and draw depth curves completely.

b. Reveal that there are no significant discrepancies requiring further investigation.

c. Show that the survey has been properly controlled and soundings are plotted correctly.

A small "holiday" exists at latitude 59°10'15"N, longitude 151°34'30"W. Furthermore, survey coverage would have been improved if hydrography in the northeast limits of the survey had been extended to the limits of the most recent survey of the area (H-5187, 1931), a distance ranging from 200 to 500 meters.

Soundings at line crossings generally agree to within 1.5 fathoms in depths of 11 to 55 fathoms.

Brown depth curves have been added to supplement the standard curves.

Line spacing for this survey is in accordance with the specifications for surveys on open coast with smooth bottom.

There is no conflict between the hydrography and the shoreline from the TP manuscripts.

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, except as noted in the Preprocessing Reports dated December 7, 1982 and October 9, 1984. Deficiencies mentioned in the 1982 preprocessing examination report were resolved during the 1984 field season. Other deficiencies found during the verification of the survey but which do not affect the safety of navigation are as follows:

a. Shoal indications rising more than 10-percent above the general surrounding depths tabulated below were not fully investigated as required in section 1.4.3 of the Hydrographic Manual.

	Depth	Latitude (N)	Longitude (W)	Surrounding Depths (fms)
*	8.9	59°05'32"	151°39'53"	11 to 16
	19.4	59°05'43"	151°37'03"	22 to 25
	18.9	59°05'58"	151°36'57"	22 to 24
	13.9	59°09'26"	151°33'34"	19.9 to 25
	29	59°06'10"	151°32'13"	33 to 36
	28	59°05'14"	151°32'56"	32 to 34

* The 8.9 fathom peak depth plotted on the field sheet is questionable on the DSF-6000N echogram. An investigation to resolve this item should have been performed in the field to confirm or disprove its existence. It was rescanned to a reduced 11.7 fathom sounding during office processing.

b. The assignment of identical station numbers for two different control stations in the 1982 and 1984 field seasons caused misplot of soundings whenever these control stations were involved. The 1984 station numbers were changed to conform or not conflict with the 1982 control station numbers during office verification.

c. Sections I, J, and K of the 1982 Descriptive Report list depth ranges with number of soundings compared and range of agreement. The discussion should have further mentioned trends, areas of significant deficiencies, and reasons for significant differences.

5. JUNCTIONS

H-10033 junctions with the following surveys:

Survey	Year	Scale	Location	Note
H-9890	1980	1:20,000	West	Adjoins
H-10143	1984	1:40,000	South	Adjoins

A junction was satisfactorily effected with H-9890, soundings and depth curves are in agreement.

A preliminary junction was satisfactorily effected with H-10143(1984), which is in an early processing stage at the time of this report. The final junction of the present survey with H-10143 will be completed and discussed in the evaluation of the later survey.

There is no contemporary survey to junction the northeast and eastern portion of the present survey. Depths on this survey are in reasonable agreement with the charted information in those areas.

Soundings from junction sheets were transferred to the present survey to support depth curves.

6. COMPARISONS WITH PRIOR SURVEYS

H-3802	1:60,000	1915
H-3803	1:20,000	1915
H-5187	1:20,000	1931
H-5188	1:20,000	1931

The present survey is generally deeper by 1 fathom than the prior surveys except H-3802 where deeper soundings of up to 7 fathoms in the present survey were located within the 30 fathom depth curve north of latitude 59°06'00"N and in the area offshore from the northeast end of Perl Island. The limits of foul areas on the smooth sheet are more extensive than on the prior surveys.

A rock awash at latitude 59°06'16"N, longitude 151°26'51"W was carried forward to the present survey from H-5187. A depth of 2 fathoms in surrounding depths of 6.4 to 7.1 fathoms was obtained in the current survey.

Rocks awash at positions listed below were transferred from H-5188

Latitude (N)	Longitude (W)
59°05'46.6"	151°39'11.4"
59°06'15.6"	151°38'12.0"
59°06'36.0"	151°38'01.2"
59°06'37.2"	151°38'00.0"
59°06'39.0"	151°38'02.4"

Five soundings between latitudes 59°06'12"N and 59°06'35"N and between longitudes 151°33'43"W and 151°34'53"W were brought forward from H-3802 to fill the small holiday and to support the 40 and 50 fathom depth curves in the area.

A comparison of depths and rock elevations between prior surveys and the present survey was made to determine the magnitude of the possible subsidence or uplift which might have been caused by the Prince William Sound, Alaska earthquake of 1964. Depth comparison reveals an approximate

subsidence of 0 to 2 fathoms. Rock comparison reveals a possible subsidence of 3 to 18 feet on Chugach Island, and 2 to 12 feet on Perl Island.

No subsidence correction was applied to the transferred soundings since prior survey soundings in the adjoining area show no clear indication of subsidence. The rocks awash were transferred without elevation data as a sufficiently accurate subsidence correction could not be determined. Users of the present survey are advised to use discretion and adjust data transferred from prior surveys if deemed appropriate.

"Strong current", "tide rips" and "rky" notes shown on the smooth sheet were also transferred from prior surveys.

The soundings on H-3802 and H-3803, stated in AWOIS #50266, item 47, as extending in a narrow band from latitude 59°08'25"N, longitude 151°37'35"W to latitude 59°08'26"N, longitude 151°42'03"W and differing by 2 to 4 fathoms between the two surveys are superseded by this survey. The shoaler soundings in the narrow band have not been confirmed and are considered disproven.

H-10033 is adequate to supersede the prior surveys for the area of common coverage.

7. COMPARISON WITH CHART

Chart 16645	12th Edition October 21, 1978	1:82,662
Chart 16606	7th Edition October 20, 1979	1:77,062

a. Hydrography

Sounding and other hydrographic information on the portion of the chart covered by the survey originates from the prior surveys mentioned and discussed in section 6 of this report, and from miscellaneous sources.

Geographic names appearing on the smooth sheet originate from Charts 16606 and 16645.

H-10033 is adequate to supersede the charted information for the area of common coverage.

b. Controlling Depths

There are no controlling depths within the limits of the present survey.

c. Aids to Navigation

There are no floating aids to navigation within the limits of the survey.

There are three fixed aids to navigation located within the limits of the survey:

Light List Name	Light List Number	Latitude (N)	Longitude (W)
East Chugach Light	3458	59°06'25"	151°26'30"
Perl Island Light	3459	59°07'07"	151°38'17"
Perl Rock Light	3462	59°05'26"	151°41'33"

These lights mark the feature intended and adequately serve the apparent purpose for which they were established.

8. COMPLIANCE WITH INSTRUCTIONS

H-10033 adequately complies with the project instructions and changes to instructions mentioned in section 1 of this report.

9. ADDITIONAL FIELD WORK

H-10033 is a good basic hydrographic survey. Additional field work on a priority basis is not required for this survey. However, further investigation to determine least depths in the areas listed in section 4.a, and positions and elevations for the rocks listed in section 6 of this report is recommended on an opportunity basis.

Arsenio A. Luceno
Cartographer
July 1985

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. The survey is recommended for approval.

Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10033

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.

Dennis Hill 8-23-85

FOR Chief, Nautical Chart Branch (Date)

CLEARANCE:

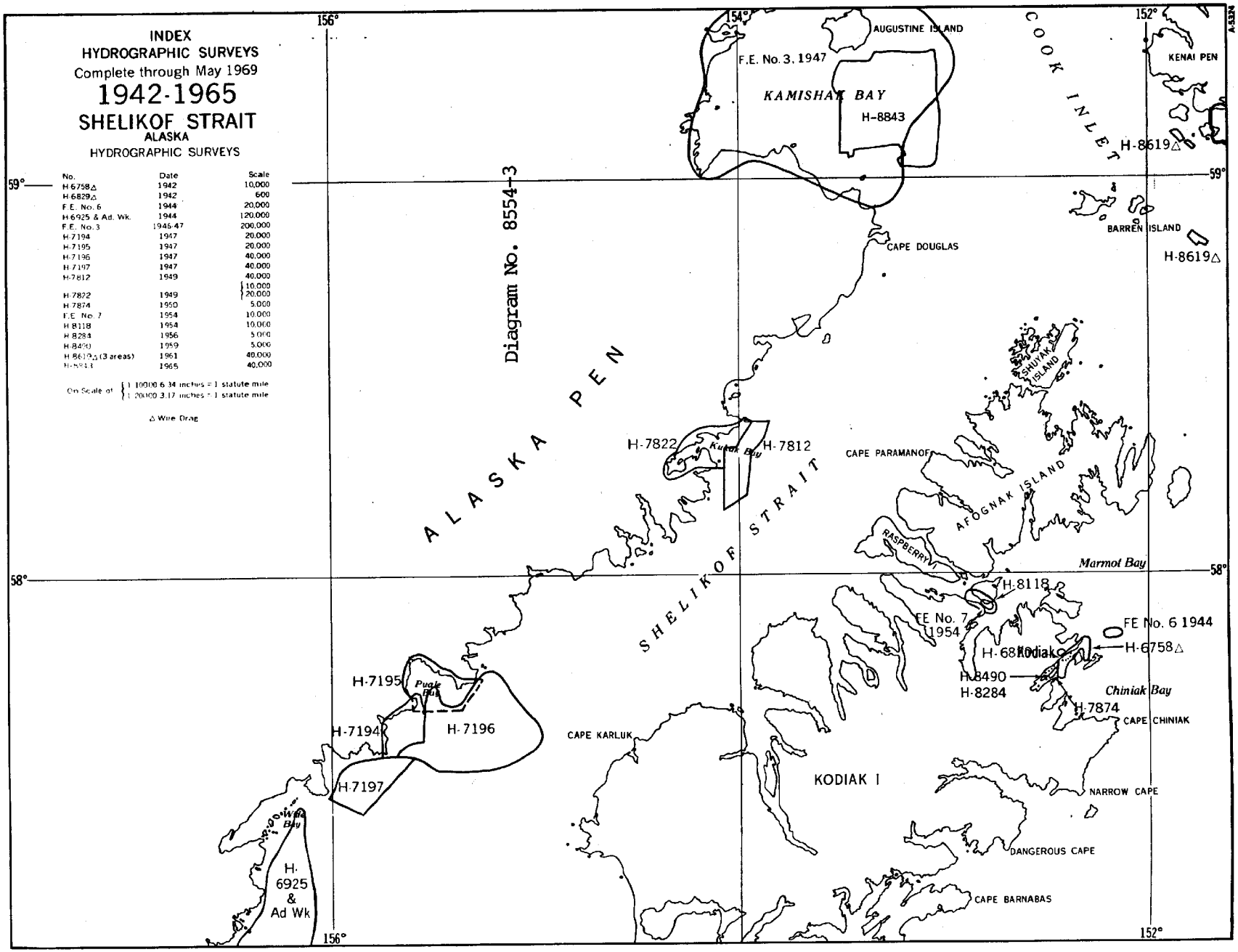
N/MOP2:LWMordock

SIGNATURE AND DATE: 8/23/85

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.

Robert L. Sandvik 8/23/85

Director, Pacific Marine Center (Date)



Hydrographic Index No. 116E

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Washington, D.C.

H-10033

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10033

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
16680	1/11/89	Cantin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 17 8th Ed.
16013	2-21-89	Ed Martin	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 28, Ema. No Corr's, Fully Applyd
16606	4-4-90	Bill Harper	
			Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 11, Applied Soundings, Deleted Soundings, App'd
			10 Fathom curve. Fully Applied
16645	11-21-91	Hdc. Church	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 18 app'd fully thru 16606 and directly
531	2/5/92	DBrumfield	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 20
17300	10-09-91	R. N. Mihailov	Full ~~Part Before~~ After Marine Center Approval Signed Via Full Application
			Drawing No. of SNDGS from S.S.
16640	3-6-92	N Church	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 24 fully app'd thru 16645 #18 and directly: 20, 30 fm curves
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			STANDARDS CK'D 9-23-85 C.Loy

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.