

9443

Diag. Cht. No. 8553

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey ... HYDROGRAPHIC
Field No. ... RA-20-1-74
Office No. ... H-9443

LOCALITY

State ... ALASKA
General Locality ... COOK INLET
Locality ... UPPER PORTION OF KNIK ARM

19 74

CHIEF OF PARTY
Cdr. K. W. Jeffers, NOAA

LIBRARY & ARCHIVES

DATE ... 1/5/76

9443

DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY

RA-20-1-74

H-9443

Scale 1:20,000

1974

NOAA SHIP RAINIER
CDR. K.WILLIAM JEFFERS
Commanding

HYDROGRAPHIC TITLE SHEET

H-9443

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-20-1-74

State ALASKA

General locality COOK INLET

Upper Portion of

Locality KNIK ARM, ~~GOOSE BAY~~

Scale 1:20,000

Date of survey 14 June - 20 June, 1974

Instructions dated 8 February 1974

Project No. OPR-469-RA-74

Vessel NOAA SHIP RAINIER, MSS 21 LAUNCHES 2123 and 2125

Chief of party CDR K. WILLIAM JEFFERS

Surveyed by OFFICERS OF THE RAINIER

Soundings taken by echo sounder, ~~hand lead, pole~~ ROSS MODEL 5000, S/N 1041, 1042

Graphic record scaled by SHIP'S PERSONNEL

Graphic record checked by SHIP'S PERSONNEL

Protracted by _____ Automated plot by PMC HARRIS/XYNETICS PLOTTE

Verification Soundings checked by KAROL HOOPS

Soundings in ~~FATHOMS~~ feet at ~~LOW~~ MLLW _____

REMARKS: The survey was made in GMT. The survey is complete as required
by the project instructions.

Amended to std 3/10/76
CS

A. Project

This hydrographic survey was conducted in accordance with PROJECT INSTRUCTIONS, OPR-469-RA-74, Upper Cook Inlet, Alaska, dated 8 February, 1974.

B. Area Surveyed

The general area covered by this survey is between Eagle Bay and Eklutna in Knik Arm. The boat sheet limits were bounded on the south by latitude $61^{\circ}21'15''N$, on the north by latitude $61^{\circ}31'00''N$, on the east by longitude $149^{\circ}21'20''W$, and on the west by $149^{\circ}54'30''W$.

The survey began on 14 June, 1974 (JD165) and ended on 20 June, 1974 (JD171).

The survey made a junction with the survey:

<u>Registry Number</u>	<u>Field Number</u>	<u>Scale</u>
H-9439	RA-10-3-74	1:10,000

C. Sounding Vessels

Noaa Ship Rainier launches 2123(RA-3) and 2125(RA-5) obtained all soundings for this survey.

D. Sounding Equipment and Corrections to Echo Soundings

Sounding equipment operated well during the survey. Ross fathometers (Model 5000, S/N: RA-3-1042, RA-5-1041) and Ross digitizers (Model 6000, S/N: RA-3-1042, RA-5-1041) obtained all soundings. Both launches worked within the entire range of depths and in various areas

of the survey. Technicians monitored the fathometers continuously during operation and kept the initial value on the analog trace at zero. In addition the fathograms were scanned during real-time sounding acquisition to compare analog and digitized values. Major discrepancies between the values were changed to agree with the analog value. ✓

The blanking function was employed to reduce spurious returns, and the fathometers were internally phased and adjusted so as to have no phase correction. Phase checks were made routinely by setting the Ross switch to "Calibrate Phase Set" and entering a depth to assure no change in phasing.

All applicable corrections were incorporated on a TC/TI (Transducer Correction/Table Indicator) tape for automated processing (refer to Separate Following the Text for listings of these tapes). A transducer correction (TRA) was determined for each of the launches from routine bar checks. When bar check data were not available, due to weather or currents, a value for TRA for each launch was used from the previous day's bar check. Velocity corrections were computed from one TDC cast taken on June 18. During the project, Nansen casts were taken for comparison with TDC casts. Results agreed well. A vertical cast was taken for launch 2125(RA-5) also during the project. Values from the vertical casts did not agree (one to two foot difference) with the depths obtained from the Ross fathometers. During execution of the vertical casts the currents would put an unavoidable slope in the lead line and in addition it was difficult to determine when the lead line hit the bottom. As a result, an accurate depth for sounding comparison could not be attained. It is recommended that these vertical casts not effect the corrections.

E. Boat Sheet

The Transverse Mercator Projection and soundings were plotted by RAINIER personnel using the ship's PDP8/e computer Hydroplot system. Equipment in the system included the PDP8/e computer (S/N 1011), and Complot Plotter (Model DP-3, S/N4670, 4).

The central meridian for the project was $150^{\circ}10'00''\text{W}$, and the control latitude was 6,738,000 meters north of latitude zero. Rough plots were made daily, and a final plot collated as the work progressed. The final plot was begun and completed August 12, 1974. A good grade of polyester drafting film (mylar, .003 inches thickness) was used for the final plot. No discernable distortion could be detected in the boat sheet during the period of the final plot.

F. Station Control

Electronic control stations for this survey made use of existing stations ARM USE 1941, 1964, and ROSE 1914, 1964, in addition to newly established topographic stations of third order precision. Topographic station SKI 1974 was obtained from an existing reference mark for triangulation station BIRCH 1941, 1964. This unmarked disk was stamped SKI 1974 and traversed (open) with tapes. Topographic station LAP 1974 was intersected with a T-2 theodolite. Refer to Geodetic Control Report, OPR-469-RA-74, for more specific procedures used in establishing these stations. It should be noted that these topographic stations were located close to bluff edges for reception purposes. As a result these stations will probably be lost in the near future due to the extensive erosion of the area.

Control stations for visual three-point fix Mini-Ranger calibration included the electronic control stations and other existing triangulation stations.

The ASCII signal tape used during the project contained more stations than included in the Station List and ASCII signal tape submitted with this report. Field Copy of Stations used during the project reflects these additional signals and is included in the Separates Following the Text.

G. Position Control.

This survey made use of the super-high frequency (SHF) Motorola Mini-Ranger III (range-range system) for position control of soundings. The system worked satisfactorily during the survey. Mini-Ranger stations that were established as described in section "F. Station Control" of this report were located to prevent weak geometric configurations at range-range intersections (greater than 30 degrees). For information concerning the definition of areas that were controlled by the various pairs of electronic control stations refer to Abstract of Positions in the Separates Following the Text.

Occasionally during the survey the Mini-Ranger system would malfunction for short periods of time giving erratic ranges or no ranges at all. The cause of the malfunctions could not be ascertained at the time of the survey but was believed to be either reflections problems from the steep bluffs, phase cancellation, or electrical interference from the numerous military installations in the area. In any event the malfunctions did not seriously affect the survey and were handled with little difficulty in the processing of the data. Soundings that involved Mini-

Ranger malfunctions were deleted from the master tape and inserted on the corrector tape to be plotted using time and course between soundings with adequate fix data.

Mini-Ranger equipment used aboard the launch 2125(RA-5) changed during the survey as indicated by the following table:

<u>Date</u>	<u>Local Time</u>	<u>Component</u>	<u>RA-5 S/N</u>
05 May 74	0800	Range Console	711
		Receiver-Transmitter	718
17 June 74	1600	Range Console	715
		Receiver-Transmitter	720

Mini-Ranger equipment aboard 2123(RA-3) remained the same through the survey. It is as follows:

<u>Component</u>	<u>RA-3 S/N</u>
Range Console	720
Receiver-Transmitter	727

Calibration of the Mini-Ranger system was accomplished once in the morning and once in the afternoon, visibility permitting, by using visual three-point fixes (sextant). A mathematical solution for three-point fixes was obtained by using program AM 560S (with slope correction) in the PDP8/e computer. Results of the calibration were analyzed and the corrections obtained from the analysis were applied through the corrector tape when the data was processed in the evening. Therefore, the position control of the plot of the soundings on the boat sheet include the correctors obtained from the calibrations. Mini-Ranger range slope correction, however, was not applied to position control of soundings. Refer to Electronic Control Report (Mini-Ranger System), OPR-469-RA-74, for further information concerning the operation of the Mini-Ranger III system during the project.

H. Shoreline

Due to project instructions, shoreline verification was deemed unnecessary. The main intent of this survey was for reconnaissance of the area. Since tidal delineation was extremely difficult to determine and since the usage of the area is minimal, a thorough survey northward of the completed hydrography was regarded as impractical.

The low water line in the vicinity of Goose Bay was not well defined due to the steepness of bottom topography.

I Crosslines

Crosslines totaled 17.3 nautical miles or 9.86 per cent of the main scheme of soundings. Crossline soundings agreed poorly with the main scheme sounding. In some areas, discrepancies of over 10 feet were observed. This probably can be attributed to the fact that the predicted tides used to plot the final boat sheet were interpolated between Anchorage reference station and Eklutna subordinate station. Observed tide correctors to be applied at Pacific Marine Center's Processing Division will probably make crossings agree within closer limits.

Crossline soundings are plotted in red.

J. Junctions

A junction was made with contemporary survey RA-10-3-74, Registry Number H-9439. Comparisons were poor with soundings differing from 2 feet at the minimum, to 7 feet at the maximum. ^{see Verifiers Report} As with the crosslines, this poor agreement is probably due to the lack of accurate tidal data.

Recommendations for this note refer to D.R.
of H. 9443 (1974) page 8 TP's P and Q. ~~the~~ chart
8553 and 8557, affected.

~~Note~~ CAUTION

Mariners should be aware of a tidal bore
beginning in the vicinity of Goose Bay ~~and~~
that heads northward up Knik Arm at a vel-
ocity of 2-3 knots and an average height
of 18 inches. In addition, it is noted that this
area is highly susceptible to shifting mudflats
and continual change.

Area 6
Kinnik

OK to chart note - use hydrographic
survey as authority.

mR
6/15/76

Mariners should be aware of a tidal bore beginning in the vicinity of Goose Bay that heads northward up Knik Arm at a velocity of 2-3 knots and an average height of 18 inches. In addition, it is noted that this area is highly susceptible to shifting mud flats and continual change.

* See Quality Control Report par 5.

K. Comparison with Prior Surveys

* There ~~were~~ ^{was one} ~~no~~ items listed in the presurvey review pertinent to this sheet. Prior surveys H-3200 (1910) and H-3674 (1914) agreed poorly, though general submarine contours were similar. All the mudflats have shifted significantly and merit recharting.

L. Comparison with Chart

This survey was compared with C&GS Chart 8557, scale 1:40,000, 14th Edition dated December 29, 1973 and C&GS Chart 8553, scale 1:94,154, 15th Edition dated the same. Existence of a channel extending up through the central portion of Knik Arm as shown on Chart 8553 was not found. In addition, mudflats west of Goose Bay have shifted considerably as shown on both Chart 8553 and Chart 8557. In general, soundings were shallower than depicted on above charts.

M. Adequacy of Survey

This hydrographic survey, H-9443 (RA-20-1-74) is complete and adequate to supersede prior surveys for charting purposes.

The fathogram was scanned in the field and checked for peaks and deeps. Changes and additions were made to the original records accordingly.

N. Aids to Navigation

No aids to navigation were located in the area covered by this survey. No new aids are recommended.

O. Statistics

This survey contains 175.1 nautical miles of soundings covering an area of 9.2 square nautical miles obtained by the following vessels:

<u>Vessel</u>	<u>Nautical Miles</u>	<u>Positions</u>
2123	90.4	506
2125	84.7	290
Totals	175.1	796

Refer to Abstract of Positions in Separates Following the Text for further information on statistics.

p. Miscellaneous

Perhaps worth mentioning for safety purposes is the presence of a tidal bore in the vicinity of this boat sheet. During maximal tidal ranges, this bore formulates just north of Goose Bay and proceeds northward up Knik Arm at a velocity of 2-3 knots and an average height of about 18 inches. For further information on this phenomenon, refer to Tidal Bore Report, Knik Arm, Alaska, OPR-469-RA-74. in NOS Archives.

Q. Recommendations

The only recommendations would be to add to future charts a notice of the changeability of mudflats in the area of Goose Bay. In addition some warning of the tidal bore to mariners would seem to be appropriate. Further hydrography in this area to complete the boat sheet would be futile. It was found by our launches that all the area northward of the completed hydrography bares at low water. However, there is a possibility of a small channel running through Knik Arm on the extreme western side. It is suggested that because of the lack of use and the rapidly

shifting nature of the area, additional investigations would be impractical.

R. References to Reports

Corrections to Echo Soundings, OPR-469-RA-74.

Geodetic Control Report, OPR-469-RA-74.

Electronic Control Report (Mini-Ranger System), OPR-469-RA-74.

Field Edit Report, OPR-469-RA-74.

Report to Accompany Hydrographic Survey, H-9443, OPR-469-RA-74.

Tidal Bore Report, Knik Arm, Alaska, OPR-469-RA-74.

Landmarks for Charting Report, OPR-469-RA-74.

S. Data Processing Procedures

Data acquisition and processing was conducted using standard procedures. Soundings were obtained using the Hydrolog/Hydroplot system with computer program AM 100 (version date 10 November, 1972) in launch 2125 (RA-5), and using the ASI (Aircraft Scientific Instrument) Logger System in launch 2123 (RA-3). For 2125 (RA-5), raw data tapes were corrected for misdepths and Mini-Ranger malfunctions to directly produce electronic master tapes. For 2123 (RA-3), the raw data was corrected as stated, but then the electronic master tape was generated from the raw data tape using computer program AM 331-H/R Logger to master format (version date, 1 April, 1973). For each electronic master tape and electronic corrector tape was made that included TRA and Mini-Ranger calibration correctors. Also included on the electronic corrector tape were peaks,

deeps, and Mini-Ranger malfunctions that were time and coursed between soundings with good fix data. The boat sheet was plotted with these tapes. Revised master and corrector tapes are supplied with Mini-Ranger correctors as averaged from the entire project. These additional tapes are submitted, per Mini-Ranger pair, per launch, per sheet. Pacific Marine Center's Processing Division is to decide whether daily correctors or average correctors are to apply.

Proper formats were observed for all tapes and printouts were made for all of these tapes. Ignore correctors in the corrector words on master tapes. Use daily correctors as supplied on the corrector tapes.

Other computer programs used during the survey include the following programs:

<u>Program</u>	<u>Version Date</u>	<u>Description</u>
AM 200	23 March 1973	Offline Plot
AM 201	10 November 1972	Grid & Lattice Plot
AM 300	24 May 1973	Utility Computations
AM 301	8 December 1972	VISTA
AM 331	1 April 1973	H/R Logger to Master
AM 500	10 November 1972	Predicted Tide Generator
AM 560S	10 April 1972	Mini-Ranger Calibration with Slope Correction
AM 602	10 March 1972	Elinore
PM 340	1 December 1972	Master Tape Reduction to Sea Level
AM 407	10 November 1972	Geodetic Inverse
RK 408	10 November 1972	Direct Geodetic Computation

Respectfully submitted,



Richard W. Ellis
ENS, NOAA

TIDE NOTE

RA-20-1-74 (H-9443)

Tide reducers for boatsheet soundings were generated by Hydro Plot Program AM 500, using the daily values of Anchorage, Alaska reference station listed in "Tide Tables, High and Low Water Predictions, 1974, West Coast of North and South America, "with the following correctors applied:

<u>BOATSHEET</u>	<u>CORRECTIONS TO ANCHORAGE</u>			
	<u>Time*</u>		<u>Height*</u>	
	H	L	H	L
RA-20-1A-74	+60	+20	0.00	0.00
RA-20-1B-74	+40	+50	0.00	0.00

*Time is given in minutes; height, in feet.

The correctors were derived from an interpolation of the time and height differences between Anchorage and Eklutna for the area of the survey.

Verified Form 362, value of MLLW, Form 712, time and height relationships between gages, and recommended tidal zoning for the smooth sheet will be furnished by Tide Branch (C331) Rockville. The tide gages within the survey and/or bracketing it are:

<u>STATION</u>	<u>LOCATION</u>	<u>DATES OF INSTALLATION/REMOVAL</u>
1. Anchorage	61 14.3'N, 149 53.3"W	N/A
2. EKLUTNA	61 28.2'N, 149 21.3'W	1 June/21 June
3. Goose Creek	61 23.5'N, 149 51.3'W	24 May/20 June

It should be noted that Anchorage reference station is the control station for all hydrography accomplished by RAINIER on project OPR-469 during 1974.

TC/TI TAPE LISTING
RA-20-1B-74(H-9443)
FATHOMETER: ROSS 1042
VESSEL: 2123(RA-3)

213122	0	0018	0002	165	000000	000000
000000	0	0018	0002	166	000000	000000
000519	0	0018	0002	167	000000	000000
000458	0	0018	0002	168	000000	000000
000000	0	0018	0002	169	000000	000000
193500	0	0018				

*The following data are filed in the cabinet
with the field record data:*

- VEL corrector tape listings*
- Miniranger calibration abstracts*
- List of Miniranger sta. & vis. Signal list for 1974 work*
- Signal Tape list*
- Parameter Tape lists*
- Computer parameters*
- Duplicated signal list*

TC/TI TAPE LISTING
RA-20-1B-74(H-9443)
FATHOMETER: ROSS 1041
VESSEL: 2125(RA-5)

230159	0	0016	0002	165	000000	000000
000004	0	0016	0002	166	000000	000000
000358	0	0016	0002	167	000000	000000
001257	0	0016	0002	168	000000	000000
180705	0	0016	0002	170	000000	000000
183000	0	0016				

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2123 (RA-3)

SHEET : RA-20-1B-74

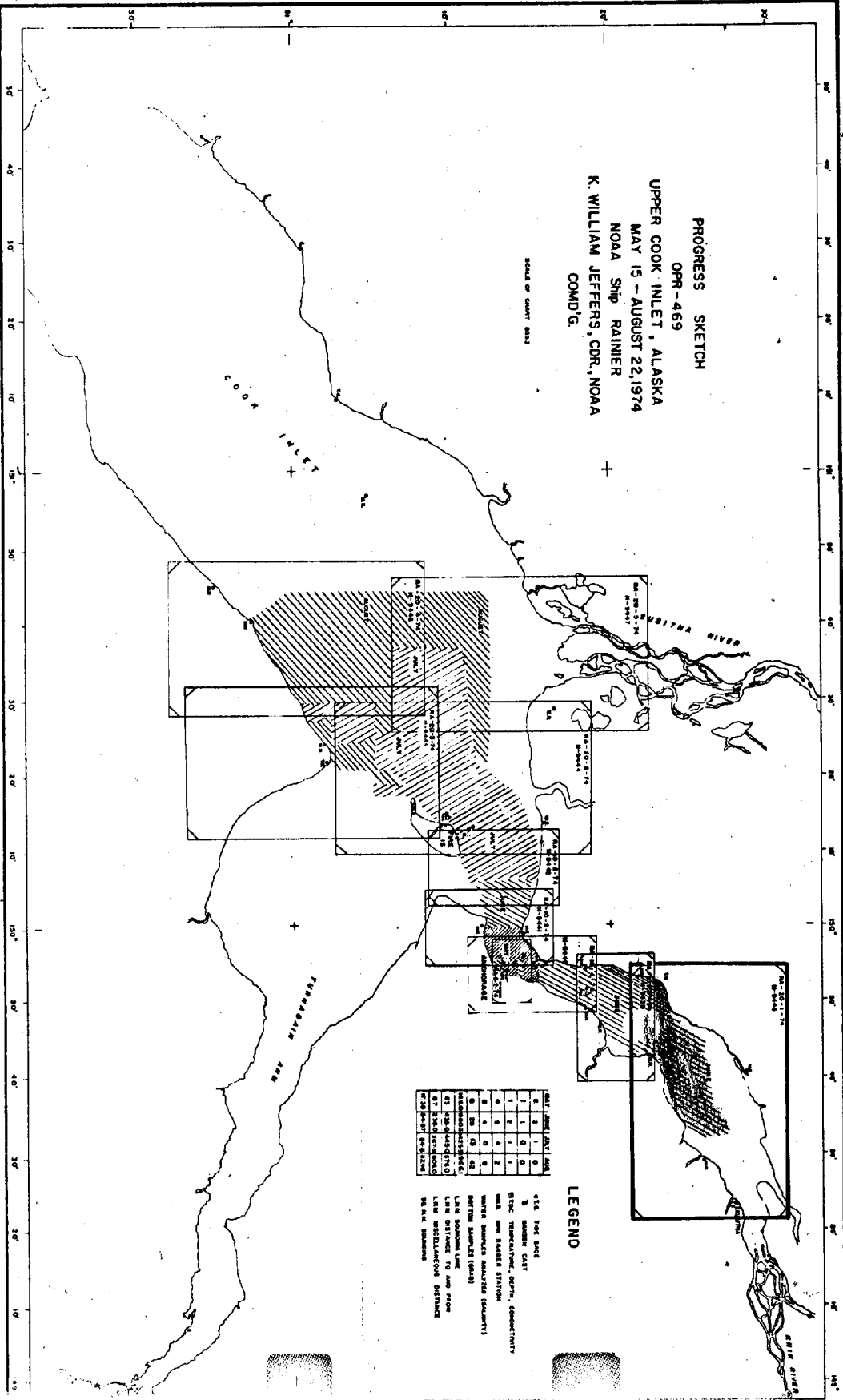
TIME	DAY	PATTERN 1	PATTERN 2
213122	165	+00003	-00007
231643		+00002	-00004
000000	166	+00002	-00004
200728	166	-00010	-00002
000519	167	-00010	-00002
221253	167	-00010	-00002
000458	168	-00010	-00002
191816	168	-00001	-00004
224530		+00002	-00004
000000	169	+00002	-00004
180732	169	-00006	+00011
181309	169	-00006	-00002

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2125 (RA-5)

SHEET : RA-20-1B-74

TIME	DAY	PATTERN 1	PATTERN 2
230159	165	+00005	+00006
000004	166	+00005	+00006
200405	166	+00004	-00006
000358	167	+00004	-00006
225707	167	+00007	-00013
001257	168	+00007	-00013
180705	170	+00001	+00024



STATION LIST

H-9443
RA-20-1B-74

STA	O	LATITUDE	LONGITUDE	CRT	ELEV	F.	KHZ	TYPE/NAME	SOURCE
106	7	61 18 30584	149 49 02638	243	0021	149835	DAVE 1974 RESECTION	REF.	
107	2	61 19 24380	149 47 05491	243	0044	149835	SKI 1974 OPEN TAPED TRAVERSE	REF.	
108	6	61 21 38090	149 53 20460	139	0060	149835	ARM USE 1941,1964		
109	7	61 22 13524	149 42 59924	243	0040	149835	LAP 1974 RESECTION	REF.	
110	5	61 28 22216	149 40 45257	139	0024	149835	ROSE 1914,1964		
201	7	61 09 34034	150 01 54683	139	::::	000000	SITE POINT RADOME 1964		
212	7	61 17 01974	149 49 22604	139	::::	000000	GLOBE BIE USE 1961,1964		
213	5	61 19 05814	149 54 57722	139	::::	000000	MULE 1973		
214	7	61 19 23850	149 47 06044	139	::::	000000	BIRCH USE 1941,1964		
216	2	61 22 19513	149 43 06059	139	::::	000000	PAL 2 1973		
217	7	61 23 48762	149 51 10551	139	::::	000000	SITE BAY RADOME 1964		

* REFER TO "GEODETIC CONTROL REPORT", OPR-469-RA-74
FOR COMPUTATIONS

50 METERS PRIOR TO 13 JULY 1974

:::: VISUAL SIGNAL--NO ELEVATION OBSERVED IN THE FIELD
G.P.'S APPEAR AS ON PARAMETER TAPES

APPROVAL SHEET

H-9443
RA-20-1-74

OPR-469-RA-74
Knik Arm, Alaska

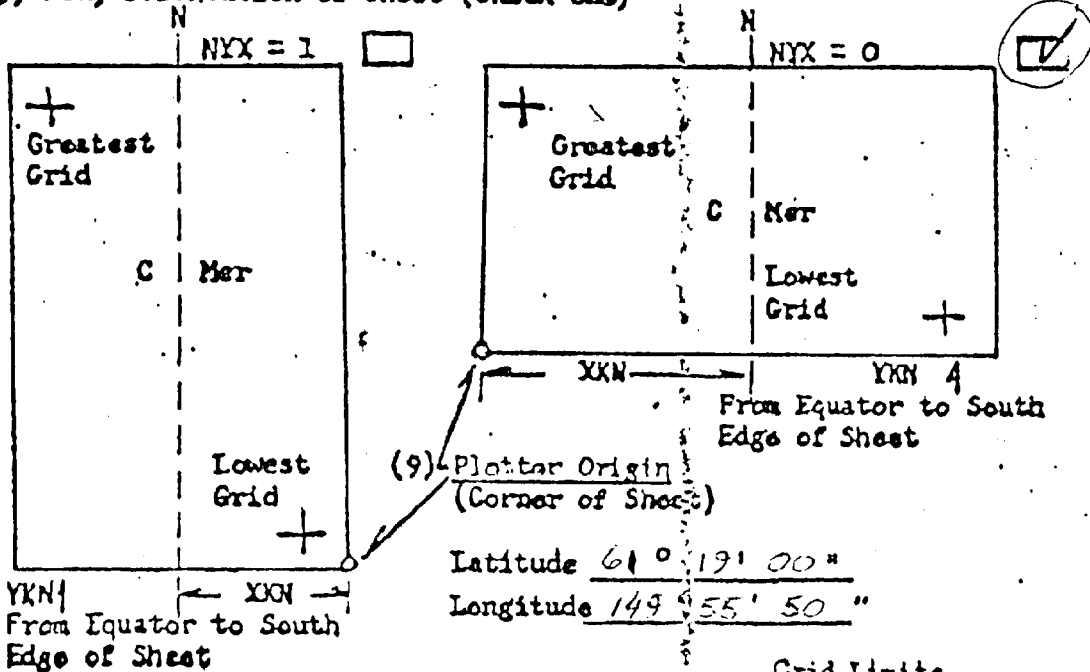
In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, Instruction Manual for Automated Hydrographic Surveys, and PMC OORDER. The data was examined daily during the execution of the survey.

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


K. William Jeffers, CDR., NOAA
Commanding

MANUAL FOR DIGITAL COMPUTING
POLYCONIC PROJECTION

- (1) Project No. 469 (4) Requested by Processing
 (2) H No. 9443 (5) Ship or Office _____
 (3) Field No. RA-20-1-74 (6) Date Required _____
 (7) Visual Pt.(0) or Fathoms (1) (8) Electronic (fill out form #3)
 (10) XKN (SP 5) Distance from GER to East Edge (NYX = 1) 12 350, 8 8374
 or West Edge (NYX = 0). (Origin) 12,351.230 Meters
 (11) YKN (SP 241) Distance from Equator to South Edge
 of Sheet. (Origin) 6,800,576.728 Meters
 (12) Central Meridian 149° 42' 00"
 (13) Survey Scale 1: 20,000
 (14) Size of Sheet (Check one) 36x60 42x60
 (15) NYX, Orientation of sheet (Check one)



Grid Limits

- | | | |
|-------------------------|---------------------|--------------------|
| (16) Greatest Latitude | <u>61° 28' 00"</u> | (Projection Line |
| (17) Lowest Latitude | <u>61° 20' 00"</u> | Interval Page 4 |
| (18) Difference | <u>8' 00"</u> | Hydro Manual) |
| (19) | <u>1 00"</u> | (20) <u>8</u> XSN |
| (21) Greatest Longitude | <u>149° 55' 00"</u> | |
| (22) Lowest Longitude | <u>149° 29' 00"</u> | (24) <u>1 00"</u> |
| (23) Difference | <u>26' 00"</u> | (25) <u>26</u> XSN |



GREEN

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center

Reply to Attn. of: CPM

Date : 16 December 1974

To : C3, Associate Director Marine Surveys and Maps

From : *[Signature]*
H. R. Lippold, Jr.
Director, Pacific Marine Center

Subject: Survey of Knik Arm, Cook Inlet, Alaska

Please Note:
IF SURVEY AREA IS
complete via C3
then let's process - per

Ship RAINIER conducted hydrographic surveys in Knik Arm in accordance with Project Instructions OPR-469 dated 8 February 1974. Paragraph 1.3, Project Instructions, specified basic surveys to 61°20'N, and for work further north to be limited to reconnaissance surveys. On Sheet H-9443 (RA-20-1-74), RAINIER extended basic surveys to approximately 61°26'N. The Descriptive Report (copy attached) states that a thorough survey northward of the completed hydrography is impractical. *schedule up*

All work on this survey is in compliance with the Project Instructions. It is recommended that further surveys in Knik Arm not be scheduled and that H-9443 be declared a complete survey for processing purposes.

Attachment

cc: C.O., RAINIER
CPM3 ✓
Cdr. Pickens, Anchorage

RECEIVED



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

JAN 14 1975

PACIFIC MARINE CENTER

Date : JAN 14 1975

Reply to Attn. of: C323

To : Director, Pacific Marine Center (CPM)

From : *Robert C. Munson*
Associate Director
Office of Marine Surveys and Maps

Subject: Survey of Knik Arm, Cook Inlet, Alaska (Your memo, 12/16/74)

Inasmuch as the work accomplished by the RAINIER on survey H-9443 apparently complies with the project instructions, further hydrography will not be required in Knik Arm and survey H-9443 can be considered a complete survey for processing as you recommend in your memorandum.

JG:

*OK let's run on this to
process the sheet to
the smooth sheet
phase.*

WWT

~~11/11~~

~~1~~ *WWT*

~~3~~ *WWT*

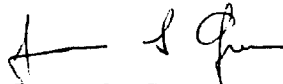
EXP-2-31

CANDY FILE

APPROVAL SHEET

The smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual, except as noted in the Verifier's Report.

Examined and approved,



James S. Green
Supervisory Cartographic Technician

Approved and forwarded,



Donald E. Nortrup, LCDR, NOAA
Chief, Processing Division
Pacific Marine Center

4/1/75

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 Form 362

Tide Station Used (NOAA Form 77-12): Goose Creek

Period: June 1974

HYDROGRAPHIC SHEET: H-9443

OPR: 469

Locality: Knik Arm, Upper Cook Inlet

Plane of reference (mean lower low water): 10.4 ft. May 23-June 8
10.7 ft. June 11-June 24

Height of Mean High Water above Plane of Reference is 29.8 ft.

Remarks: Recommended zoning:

South of $61^{\circ}24'$ - zone direct on Goose Creek.

North of $61^{\circ}24'$ - apply a time correction of +15 minutes.

James R. Halstead
for Chief, Tides Branch

H-9443

Name on Survey

	On Coast No	On Island No	On U.S. Island	From 2000 Islands	On 2000	P.O. Code	Rang. No.	U.S. Dist.		
	A	B	C	D	E	F	G	H	K	
✓ GOOSE BAY										1
✓ GOOSE CREEK										2
✓ KNIK ARM										3
✓ EAGLE BAY										4
✓ FIRE CREEK										5
										6
										7
										8
										9
										10
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										24
										25
										26

Approved

C. E. Harrington
Staff Geographer CSK

23 JAN 1976

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. E-9443

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET 2 2-Overlays		1	BOAT SHEETS		2	
DESCRIPTIVE REPORT		1	OVERLAYS		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS	1 & Misc. P/O.		1			
VOLUMES						
BOXES						
T-SHEET PRINTS (List) T-12003(2), T-12004(2), T-12005(2) 1:20,000 reductions						
SPECIAL REPORTS (List)						

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				838
POSITIONS CHECKED		838		
POSITIONS REVISED		43		
DEPTH SOUNDINGS REVISED		25		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		0		
	TIME (MANHOURS)			
Verification of Control		4		
Verification of Positions		26		
Verification of Soundings		107		
Smooth Sheet Compilation		10		
ALL OTHER WORK		26	HIT	
TOTALS		173	13	
PRE-VERIFICATION BY <i>A.E. Eichelberger</i> A.E. Eichelberger, Carto Tech	BEGINNING DATE 12/16/74	ENDING DATE 12/16/74		
VERIFICATION BY <i>Karol Hoops</i> Karol Hoops, Carto Tech	BEGINNING DATE 12/31/74	ENDING DATE 11/10/75		
REVIEW BY <i>HIT</i>	BEGINNING DATE	ENDING DATE 12/75		

Inspect QC *D.R. Engle*

13 hrs
32 hrs

REGISTRY NO. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey; the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

REGISTRY NO. 9443

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

Sounding no. 307307 was reversed during quality control inspection. The tape should be corrected accordingly. Soundings on pos. # 3340 and 3340 + 1000 were rejected when junction was made with H- 9439 and should be corrected on tape.

This survey was verified and plotted at the Pacific Marine Center, Seattle, Washington. Information relating to this survey is provided as specified in Chapter 6 of the Provisional Hydrographic Manual.

I. INTRODUCTION

Few problems were encountered during verification with the following exceptions:

- a. Soundings between positions 3484-3485 have been excessed as positions of these soundings could not be reconciled.
- b. Crossline soundings ~~509600~~ through ~~509700~~ have been excessed since the line is consistently deeper than the main scheme. Fathometer paper feed was sticking and no accurate analog is available.

Projection parameters used to prepare the boatsheet have been revised to center the hydrography on the smooth sheet and to include as many of the controlling stations as possible. Parameters used by PMC are appended.

Tide reduction values were changed between the boatsheet stage and verification of soundings. The boatsheet used corrections based on the Anchorage standard gage (see Ship's Tide Note). This caused many discrepancies in the hydrographic scheme.

Special note should be made to the existence of the tidal bore as mentioned in the ship's Descriptive Report.

Tide correctors for this survey were abstracted from marigrams from the Goose Creek Tide Gage by Tides Branch, Rockville. These tides could not be compared accurately with the predicted tides from Anchorage due to the extreme tide range and tidal bore. Since no problems were encountered in junction zones, tide correctors are accepted as correct.

The signal list supplied by the ship has not been changed except to round the seconds to the hundredth. The control listing used for verification is also appended.

II. CONTROL AND SHORELINE

The following unreviewed Class I Maps were used to transfer shoreline.

T-12003(2) 1:20,000 reduction

- a. Date of Photography July 1973

c. Date of Field Edit May-Sept 1974
d. Date of Final Compilation January 1975

T-12005(2) 1:20,000 reduction

a. Date of Photography June and July 1973
c. Date of Field Edit May 1974
d. Date of Final Compilation February 1975

No shoreline manuscripts are available north of 61°22'30".

III. HYDROGRAPHY

The basic hydrography incorporated in this survey was adequate to delineate the bottom characteristics and determine the least depths.

When verified tides were applied, little difficulty was encountered reconciling the soundings of the main scheme and crosslines. Verification of soundings were routinely accomplished.

No detached position on rocks, buoys, or bottom samples were incorporated in this survey.

IV. CONDITION OF SURVEY

Due to the fact that the ship has the capability of plotting each sounding with its own geographic position, the vessel did not record positions at frequent enough intervals to show a similar path of the vessel using straight line interpolation. Many duplicate position numbers were inserted with the given range values for an inbetween sounding in order to help remedy the problem.

There are many two position lines incorporated in this survey.

Even after considering these problems, the hydrographic records, overlays, smooth sheet and report are adequate and conform to the requirements of the hydrographic manual.

V. JUNCTIONS

This survey junctions with contemporary survey H-9439 1:10,000 (1974) to the south. The junction between H-9443 and H-9439 was accomplished with no difficulty. Agreement of reduced soundings was good. Difficulty encountered by the ship personnel is attributed to inaccurate tide reducers. The junction was in good agreement, therefore, junction curves and the junction note were inked.

VI. COMPARISON WITH PRIOR SURVEYS

*One presurvey review item is located within the survey limits. The 6 foot sounding located at approximately 61°22'36"N, 149°52'03"W when

* See Quality Control Report par. 5

plotted falls within the 18 foot curve. This item was not investigated on its own merit. See chartlet appended. The depths from this survey should be charted.

Prior surveys H-3200 (1910) and H-3674 (1914) are of limited value for comparison between prior and present depths. There has been major earthquake activity in this region in recent years while currents and mud bottom have resulted in shoaling and other significant changes in depths and bottom configuration. *No soundings or rocks are carried forward to this survey.

*After reviewing the prior surveys it is concluded that H-9443 should supersede all prior surveys of the area.

VII. COMPARISON WITH CHART *(See also Quality Control Report par.*

** see Quality Control Report par. 5.*

Comparison with Chart 8557, 1:40,000 14th Edition dated December 29, 1973 was accomplished at Pacific Marine Center. It was confirmed that the mud flats have shifted considerably and the charted channel non-existent.

The one ^{landmark} aid to navigation within the survey limits is Site Bay Radome and was used as signal number 217 Site Bay Radome, 1964.

The present survey soundings should supersede charted soundings in Goose Bay.

VIII. COMPLIANCE WITH INSTRUCTIONS

This survey was considered reconnaissance. Therefore, line spacing as outlined in the project instructions dated 8 February 1974 was not followed.

IX. ADDITIONAL FIELD WORK

This survey is adequate to supersede charted information in the area. No additional field work is recommended as there is little navigable water northeast of Goose Bay in Upper Knik Arm.

X. NOTES TO COMPILER

Depth curves were inspected prior to transferring curves to the smooth sheet by A.E. Eichelberger, Cartographic Technician.

Respectfully submitted,



Karol M. Hoops
Cartographic Technician
December 3, 1975



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY, Pacific Marine Center
1801 Fairview Ave. E., Seattle, Washington 98102

Date : 4 December 1975

Reply to Attn. of: CPM 3

To : H. R. Lippold, RADM
Director

From : Donald E. Nortrup, LCDR
Chief, Processing Division

Subject: FMC Hydrographic Survey Inspection Team Report - H-9443

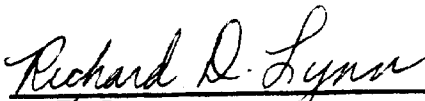
H-9443 is a reconnaissance survey of Knik Arm, Alaska conducted by NOAA Ship RAINIER in 1974 in compliance with Project Instructions OPR-469-FA, RA-74 dated 15 February 1974. Upon request of PMC, 16 December 1974, the survey was designated complete and subject to processing by the Office of Marine Surveys and Maps, 14 January 1975. The survey fulfills the requirements of basic survey with the exception of line spacing and shoreline compilation. No shoreline manuscripts were available for the survey area north of 61°22'30"N.

The inspection team finds H-9443 to be a good reconnaissance survey with good coverage and adequate delineation of depth curves and development. Although this survey reflects significant changes in the charted data the team concurs in the verifiers recommendation that this survey supersede all prior surveys and charted information.

The inspection team recommends that this survey receive final administrative approval.



D. E. Nortrup, LCDR



R. E. Lynn




D. R. Seidel, LCDR

ADMINISTRATIVE APPROVAL

H-9443

The Smooth Sheet and reports of this survey have been reviewed and found to be complete and adequate for charting.


H. R. Lippitt, RADM
Director, Pacific Marine Center

12/15/75
Date

H-9443

Items for Future Presurvey Reviews

This area is subject to very severe change because of the mud bottom and strong current action. The 1964 earthquake, severe in nearby Anchorage, is believed to have caused change in the bottom in Knik Arm also.

The 6-foot shoal charted in latitude 61°22.59', longitude 149°52.05' from H-3674 (1914) and carried forward to the present survey should be investigated on any future survey of the area.

Resurvey Cycle Information

<u>Position</u>	<u>Index</u>	<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle (Years)</u>
612	1494	9	1	25
612	1495	9	1	25
612	1500	9	1	25



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

C323

February 12, 1976

TO: A. J. Patrick, Acting Chief
Marine Surveys Division

FROM: D. R. Engle
Quality Evaluator *D. R. Engle*

SUBJECT: Quality Control Report, H-9443 (1974), Cook Inlet,
Upper Portion of Knik Arm

A quality control inspection of H-9443 has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, shoreline transfer, decisions and actions by the verifier, and cartographic presentation of data.

The following deficiencies are noted:

1. A 5-foot scanning error between positions 3073 and 3074 was noted which resulted in the plotting of an erroneous 23-foot depth on a shoal indication in latitude $61^{\circ}23.22'$, longitude $149^{\circ}49.60'$. The 23 was revised to 18 feet during quality control inspection.
2. A landmark (Site Bay Radome, 1964) was not described as such on the smooth sheet. All charted and recommended landmarks should be shown on the smooth sheet with their names, descriptions, and elevations if available, as illustrated in appendix B-4 of the provisional manual. The landmark symbol, a 2 mm. circle, should be used if the landmark is not a basic control station.
3. Site Bay Radome, 1964, referred to in the verifier's report as an aid to navigation, should instead be described as a landmark. Aids to navigation are devices designed and maintained for the specific purpose of assisting the navigator, while landmarks are conspicuous objects determined to aid the navigator but generally designed for purposes unrelated to navigation.
4. The verifier's report under "Control and Shoreline" made no reference to control but gave more information than necessary regarding shoreline origin. A reference to sections F and G



of the descriptive report would have sufficed for origin of control. A statement that the shoreline shown in black ink originates with Class I Photogrammetric Manuscripts T-12003 and T-12005(2) of 1973-74 would give all the necessary information regarding contemporary topography. The year of the photography was 1973, and 1974 was the year of field edit. The date of compilation or review is unnecessary.

Shoreline north of $61^{\circ}22.5'$ was applied in brown ink during quality control inspection. It is the approximate high water line from Geological Survey quadrangles as determined from photography of 1950 to 1957.

5. The 6-foot shoal, a Presurvey Review item charted in latitude $61^{\circ}22.59'$, longitude $149^{\circ}52.05'$ from H-3674 (1914), is not considered disproved by the present survey and was carried forward to the present survey during quality control inspection. Because bottom characteristics were not determined by the present survey, a few were carried forward from H-3674 in areas where the bottom had not changed significantly.

6. The verifier's report did not include a discussion of the comparison between the present survey and chart 8553, which alone covers the northeastern part of the survey area. This comparison is necessary to supersede the charted information. Comparison with chart 8553, 15th edition dated December 29, 1973, was accomplished during quality control inspection. The charted hydrography was determined to originate with the prior surveys discussed in the verifier's report, and is thereby superseded.

With the above exceptions, the survey is considered to be adequate and to comply with the project instructions.

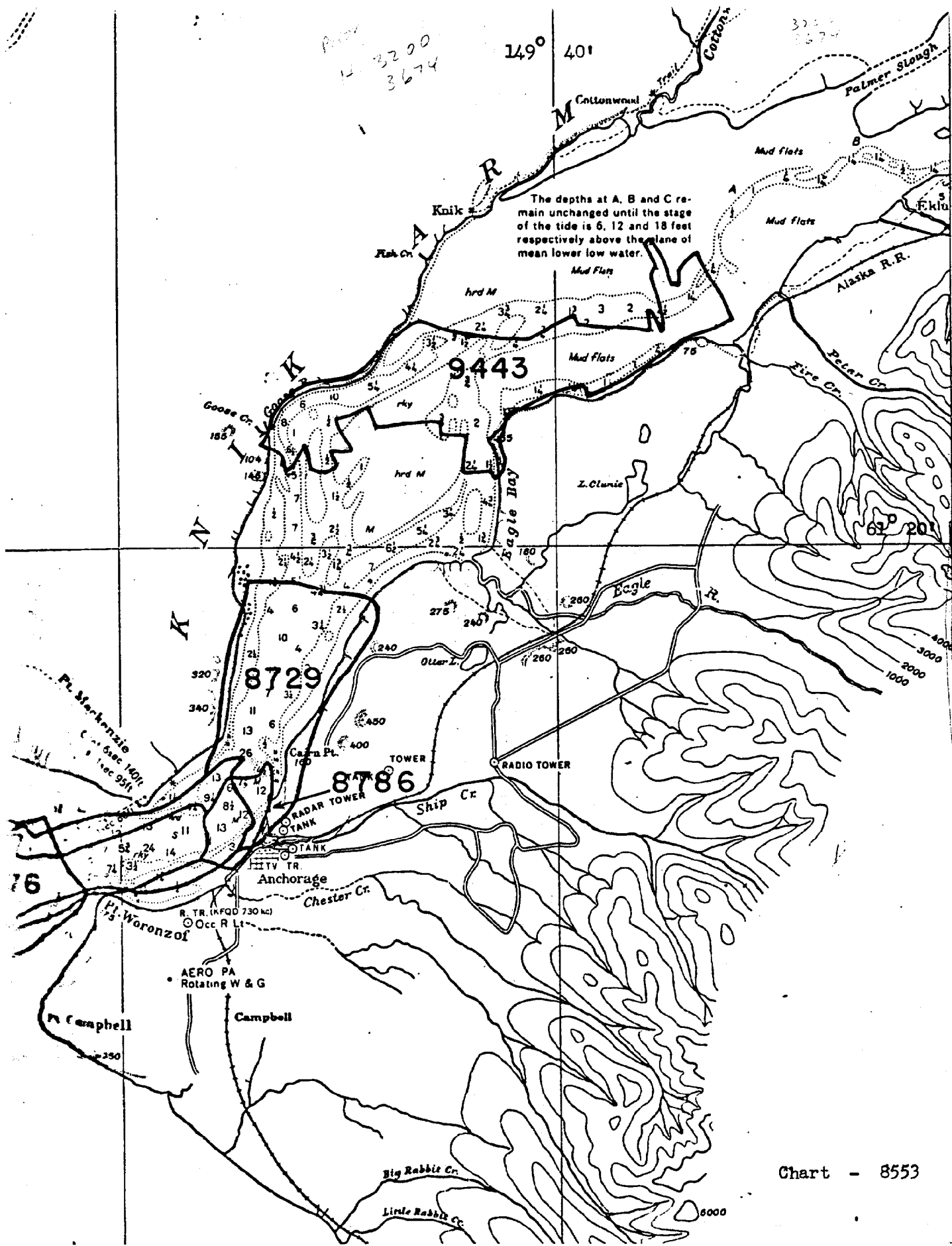
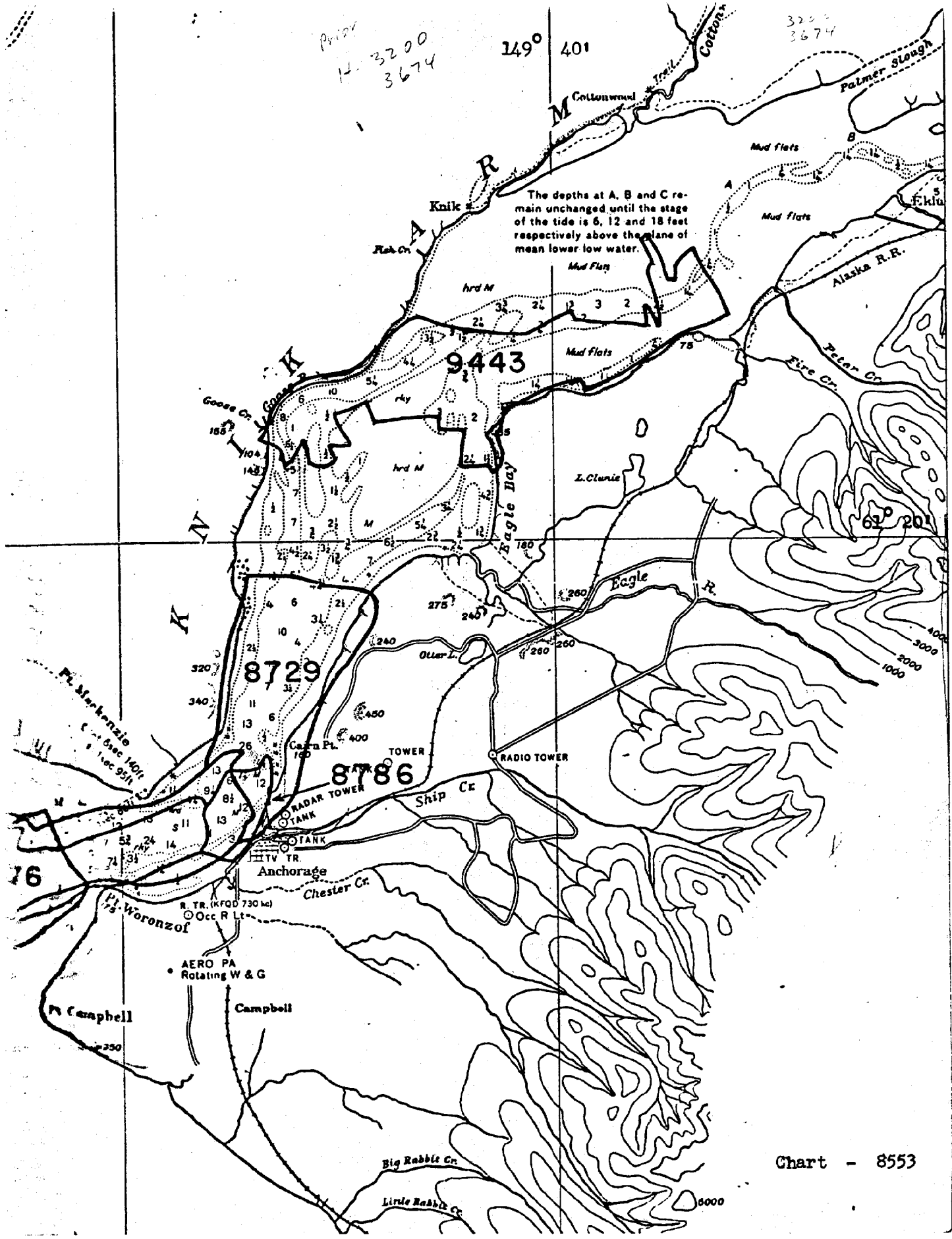


Chart - 8553

Prior
H 3290
3674

149° 40'

3290
3674



The depths at A, B and C remain unchanged until the stage of the tide is 6, 12 and 18 feet respectively above the plane of mean lower low water.

8729

9443

8786

Chart - 8553

11

11

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