T-12040 T-12045 T-12046
T-12049

T-12046 T-12049

NOAA FORM 76-35

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

DESCRIPTIVE REPORT

Type of Survey Shoreline

Job No. PH-6013 *Map No.* *

Classification No. 111 *Editions No.* 1

* T-12040, T-12045, T-12046, T-12049

LOCALITY

State Alaska

General Locality Cook Inlet

Locality Kenai

1960 ~~TO 19~~

T-12040 T-12045

REGISTRY IN ARCHIVES

DATE

☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-762-901

Additional work - Job PH-6013 - 2nd Editions of Maps T-12040, T-12045, and T-12046 were completed in 1976. The area covered by T-12049 was remapped at 1:10,000 scale in 1976 (T-12507 and T-12508).

(1)

NOAA FORM 76-36A (3-72) U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.

* T-12049, T-12045, T-12046, T-12049

DESCRIPTIVE REPORT - DATA RECORD

TYPE OF SURVEY
- [x] ORIGINAL
- [ ] RESURVEY
- [ ] REVISED

SURVEY TP- *
MAP EDITION NO. (1)
MAP CLASS III
JOB PH- 6013

PHOTOGRAMMETRIC OFFICE: Washington, D.C.

OFFICER-IN-CHARGE: L. W. Swanson

LAST PRECEEDING MAP EDITION
TYPE OF SURVEY
- [ ] ORIGINAL
- [ ] RESURVEY
- [ ] REVISED

JOB PH-
MAP CLASS
SURVEY DATES: 19__ TO 19__

I. INSTRUCTIONS DATED

1. OFFICE	2. FIELD
November 18, 1960	

II. DATUMS

1. HORIZONTAL: [x] 1927 NORTH AMERICAN — OTHER (Specify)
2. VERTICAL: [x] MEAN HIGH-WATER [ ] MEAN LOW-WATER [ ] MEAN LOWER LOW-WATER [ ] MEAN SEA LEVEL — OTHER (Specify)
3. MAP PROJECTION: Polyconic
4. GRID(S): STATE: Alaska; ZONE: Zone 4
5. SCALE: 1:20,000 — STATE: ; ZONE:

III. HISTORY OF OFFICE OPERATIONS (Refer to Summary) — Two (2) Bridging & Compilation operations

OPERATIONS		NAME	DATE
1. AEROTRIANGULATION METHOD:	BY	W. Kuncis-E. Ramey	Mar-Nov. '61
	LANDMARKS AND AIDS BY	None	
2. CONTROL AND BRIDGE POINTS METHOD:	PLOTTED BY	J.Phillips-R.Sundgren	Mar-Nov.'61
	CHECKED BY		
3. STEREOSCOPIC INSTRUMENT COMPILATION	PLANIMETRY BY	C.Cook-R.Sudgren	Mar-Nov'61
	CHECKED BY		
INSTRUMENT: Kelsh Plotter	CONTOURS BY	N/A	
SCALE: 1:15,000	CHECKED BY		
4. MANUSCRIPT DELINEATION	PLANIMETRY BY	H.Lucas-R.Sudgren	Mar-Nov.'61
	CHECKED BY		
METHOD:	CONTOURS BY	N/A	
	CHECKED BY		
SCALE:	HYDRO SUPPORT DATA BY	C.Cook	March 1961
	CHECKED BY		
5. OFFICE INSPECTION PRIOR TO FIELD EDIT	BY	K.N. Maki	Mar-Nov.'61
6. APPLICATION OF FIELD EDIT DATA	BY	N/A	
	CHECKED BY		
7. COMPILATION SECTION REVIEW	BY	J.Battley	Nov. 1961
8. FINAL REVIEW	BY	None - See Summary, Page 6	
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH	BY		
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH	BY	F.Wright-S.Blankenbaker	Dec. 1976
11. MAP REGISTERED - COASTAL SURVEY SECTION	BY	R. T. CATOR	MAR. 1977

(2)

NOAA FORM 76-36B
(3-72)

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

COMPILATION SOURCES

1. COMPILATION PHOTOGRAPHY

CAMERA(S): "W"

TIDE STAGE REFERENCE
- [X] PREDICTED TIDES
- [ ] REFERENCE STATION RECORDS
- [ ] TIDE CONTROLLED PHOTOGRAPHY

TYPES OF PHOTOGRAPHY LEGEND
- (C) COLOR
- (P) PANCHROMATIC
- (I) INFRARED

TIME REFERENCE
ZONE: Alaska-Hawaii
MERIDIAN: 150th
- [X] STANDARD
- [ ] DAYLIGHT

NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE
(P) 60-W-1396 thru 1408	8/30/60	11:25-11:31	1:30,000	+7.1 ft. MLLW
(P) 60-W-1413 thru 1418	8/30/60	11:40-11:42	1:30,000	+6.9 ft. MLLW

REMARKS
Reference Station - Seldovia

Subordinate Station - Kenia River Entrance - Mean Range 17.7 ft.

2. SOURCE OF MEAN HIGH-WATER LINE:

Office interpretation of photography listed above.

3. SOURCE OF MEAN LOW-WATER OR MEAN LOWER LOW-WATER LINE:

No lower low water line shown.

4. CONTEMPORARY HYDROGRAPHIC SURVEYS *(List only those surveys that are sources for photogrammetric survey information.)*

SURVEY NUMBER	DATE(S)	SURVEY COPY USED	SURVEY NUMBER	DATE(S)	SURVEY COPY USED

5. FINAL JUNCTIONS

NORTH	EAST	SOUTH	WEST
N/A	N/A	N/A	N/A

REMARKS

(3)

NOAA FORM 76-36C
(3-72)

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

HISTORY OF FIELD OPERATIONS

I. ☐ FIELD INSPECTION OPERATION ☐ FIELD EDIT OPERATION

OPERATION		NAME	DATE
1. CHIEF OF FIELD PARTY		See Below	
2. HORIZONTAL CONTROL	RECOVERED BY		
	ESTABLISHED BY		
	PRE-MARKED OR IDENTIFIED BY		
3. VERTICAL CONTROL	RECOVERED BY		
	ESTABLISHED BY		
	PRE-MARKED OR IDENTIFIED BY		
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED *(Triangulation Stations)* BY		
	LOCATED *(Field Methods)* BY		
	IDENTIFIED BY		
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION ☐ COMPLETE ☐ SPECIFIC NAMES ONLY ☐ NO INVESTIGATION BY		
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY		
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY		

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

PHOTO NUMBER	STATION NAME

2. VERTICAL CONTROL IDENTIFIED

PHOTO NUMBER	STATION DESIGNATION

* Field identification of control was furnished by the hydrographic party in 1964 for the final of the two bridges covering the area. Refer to the final bridge report sketch for control used in bridge - No other records available at time of examination of data by Quality Control Group in 1976.

~~No field inspection or field edit accomplished for the maps~~

3. PHOTO NUMBERS *(Clarification of details)*

None

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

None

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

5. GEOGRAPHIC NAMES: ☐ REPORT ☒ NONE

6. BOUNDARY AND LIMITS: ☐ REPORT ☐ NONE

7. SUPPLEMENTAL MAPS AND PLANS

None

8. OTHER FIELD RECORDS *(Sketch books, etc.* **DO NOT** *list data submitted to the Geodesy Division)*

None

NOAA FORM 76-36C
(3-72)

☆U. S. GOVERNMENT PRINTING OFFICE: 1973--768074/1057 REGION NO. 6

(4)

NOAA FORM 76-36D
(3-72)

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

RECORD OF SURVEY USE

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Shoreline & Alongshore area for hydro support	March 1961	Manuscript Class V Horizontal Control inadequate		March 1961
New bridge - manuscripts recompiled	Dec. 1961	Class III		Dec. 1961

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
			No field investigation - No forms 76-40
			submitted.

2. ☐ REPORT TO MARINE CHART DIVISION, COAST PILOT BRANCH. DATE FORWARDED: _____
3. ☐ REPORT TO AERONAUTICAL CHART DIVISION, AERONAUTICAL DATA SECTION. DATE FORWARDED: _____

III. FEDERAL RECORDS CENTER DATA

No records available at time data was examined by Quality Control Group - December 1976.

1. ☐ BRIDGING PHOTOGRAPHS; ☐ DUPLICATE BRIDGING REPORT; ☐ COMPUTER READOUTS.
2. ☐ CONTROL STATION IDENTIFICATION CARDS; ☐ FORM NOS 567 SUBMITTED BY FIELD PARTIES.
3. ☐ SOURCE DATA *(except for Geographic Names Report)* AS LISTED IN SECTION II, NOAA FORM 76-36C. ACCOUNT FOR EXCEPTIONS:

   No data - refer to "Summary" page 5

4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: _____

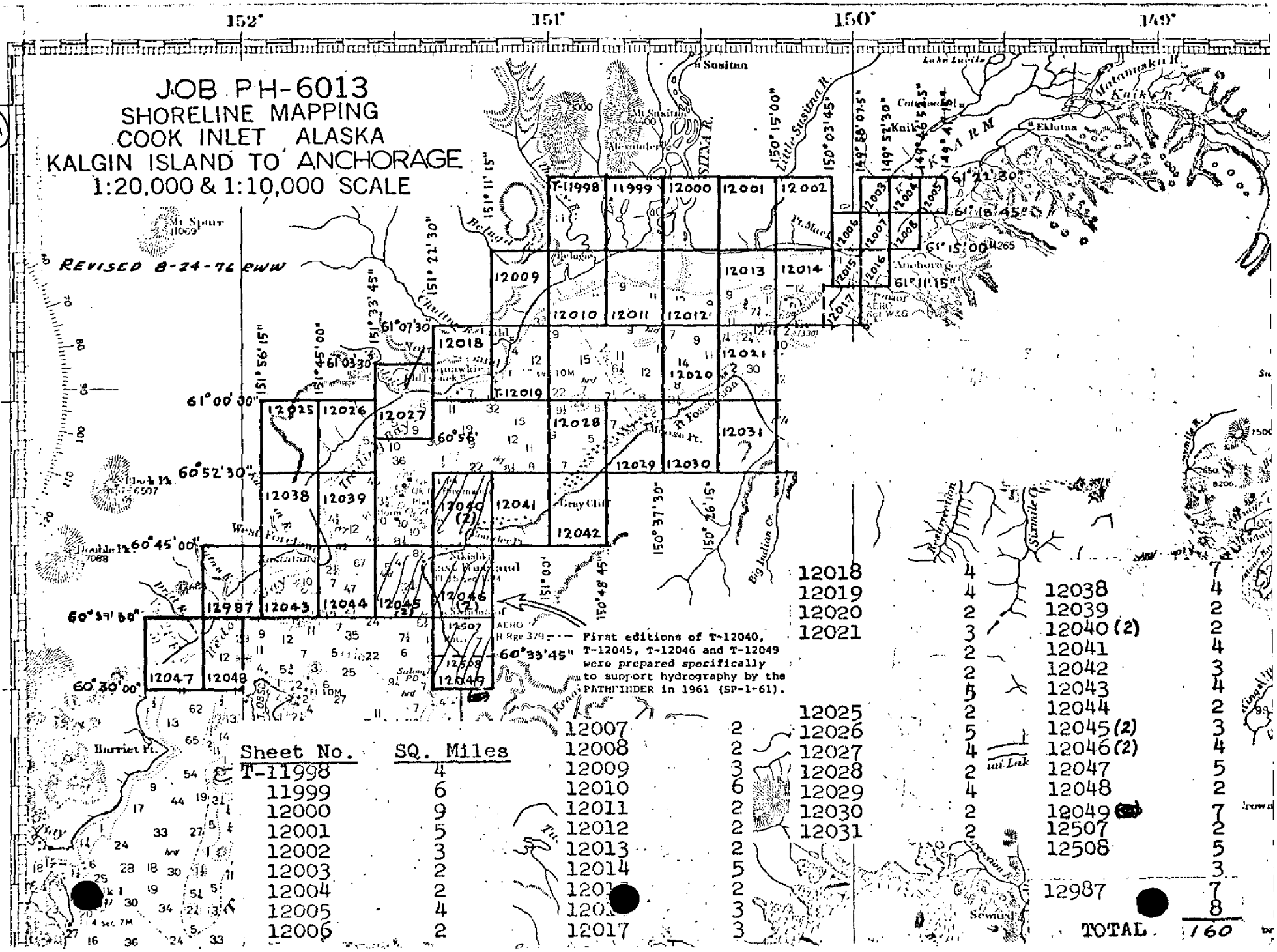
IV. SURVEY EDITIONS *(This section shall be completed each time a new map edition is registered)*

	SURVEY NUMBER	JOB NUMBER	TYPE OF SURVEY / MAP CLASS
SECOND EDITION	TP - See cover page. (2)	PH-	☐ REVISED ☑ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
THIRD EDITION	TP - _____ (3)	PH- _____	☐ REVISED ☐ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
FOURTH EDITION	TP - _____ (4)	PH - _____	☐ REVISED ☐ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	

☆U. S. GOVERNMENT PRINTING OFFICE: 1973--778075/1077 REGION NO. 6

JOB PH-6013
SHORELINE MAPPING
COOK INLET ALASKA
KALGIN ISLAND TO ANCHORAGE
1:20,000 & 1:10,000 SCALE

REVISED 8-24-76 PWW



Sheet No.	SQ. Miles
T-11998	4
11999	6
12000	9
12001	5
12002	3
12003	2
12004	2
12005	4
12006	2
12007	2
12008	2
12009	3
12010	6
12011	2
12012	2
12013	2
12014	5
12015	2
12016	3
12017	3
12018	4
12019	4
12020	2
12021	3
12025	2
12026	5
12027	4
12028	2
12029	4
12030	2
12031	2
12038	4
12039	2
12040 (2)	2
12041	4
12042	3
12043	4
12044	2
12045 (2)	3
12046 (2)	4
12047	5
12048	2
12049	7
12507	2
12508	5
12987	7
	8
TOTAL	160

SUMMARY
1st Editions: Maps T-12040, T-12045, T-12046, T-12049
Shoreline Mapping-1:20,000 Scale

These maps are a part of Job PH-6013, which is comprised of 45 maps covering the northern portion of Cook Inlet, Alaska.

Preliminary (Class V) manuscripts were compiled in March 1961 and furnished for use in hydro survey operations.

In November 1961 rebridging was accomplished using horizontal control identified by the hydro party. Class III manuscripts were compiled and furnished for use in smooth sheet processing.*

Final review and registration were postponed pending field edit. The manuscripts will not be field edited. During 1975 and 1976 aero-triangulation based on new photography and premarked control was accomplished, 2nd editions of maps T-12040, T-12045, and T-12046 were compiled, and the area covered by T-12049 was remapped at 1:10,000 scale-no 2nd edition of map T-12049 will be produced.

With the exceptions of the manuscripts and working copies of the combined Descriptive Report, all job records pertaining to these map editions are lost.* Only a cursory examination of the manuscripts was made prior to registration. Map format information was corrected and/or updated as required, and the final Descriptive Report processed.

No "Chart Maintenance Prints" were forwarded to the Marine Chart Information Branch. The final map copies will Not be routed to the Marine Chart Division for digitizing prior to registration. The Marine Surveys Division was notified concerning map registration.

A copy of this "Summary" will be routed to the Coastal Mapping Division, AMC for use in job completion operations.

Chief, Photogrammetric Branch

Chief, Coastal Mapping Division

* A field inspection report covering these four sheets was found after registering these maps. The application of the field inspected data could not be verified as no other records were found. Due to this the classification was not changed from III to II.

PRELIMINARY PHOTOGRAMMETRIC PLOT REPORT
(March 1961)
COOK INLET, ALASKA
Project PH-6013

NOTE: Refer to page 18 for report on 2nd (Final) aerotriangulation operation

This report covers only a small portion of Cook Inlet, namely, the eastern coast from Kenai River northward to East Foreland Point then northeastward to Boulder Point.

Preliminary manuscripts T-12040, T-12045, T-12046, and T-12049, 1:20,000 scale, cover the area described above and are bounded by Latitude 60°30'00" north to 60°52'30" and Longitude 151°11'15" west to 151°33'45", see attached sketch.

The photogrammetric plot consisted of two strips of photographs which were bridged on the Zeiss Stereoplanigraph C-8.

Strip No. 1 (photos 60-W-1396 thru 1408)

A twelve-model bridge was adjusted (IBM 650) using three points which were scaled from USGS Quadrangle "Kenai (C-4), Alaska - 1:63,360 scale - 1952 edition". Two additional points scaled from the quadrangle served as an approximate check of the bridge adjustment.

Strip No. 2 (photos 60-W-1414 thru 1418)

A four-model bridge was adjusted (straight line method) between office-identified "Boulder 1909" and the scaled position (quadrangle) for the light at East Foreland Point.

Discrepancies larger than usual occurred between tie points of Strip No. 1 and Strip No. 2. Because of the lack of control these discrepancies could not be readily resolved. Also the hydrographer should be mindful that positions from one strip should not be used in conjunction with positions from the other for resecting positions.

All bridge points and planimetric details on the preliminary manuscripts are properly and correctly inter-related but the position of the plot on the projection is subject to error in scale, azimuth and datum. Therefore, positions of bridge points and planimetric details should not be used in conjunction with established horizontal control until adequately referenced. Refer to "Photogrammetry Instruction No. 45, Revision I - 15 March 1954", paragraph 8, for additional information in the use of Preliminary Manuscripts in hydrographic surveys.

Horizontal Control Requirements

All horizontal control was established in 1909 and only two of the stations are described. Office identification was attempted but only the approximate vicinity of each station could be located. Therefore, prominent objects in the station vicinity were located in the bridge. These objects were preselected with the idea that the field party could use them as sub-stations for control identification. It is desirable that the field party use the office-selected photo points. This will save future rebridging, but if field recovery of the office-selected photo points is too difficult, the field party is free to identify any clear images they wish to select.

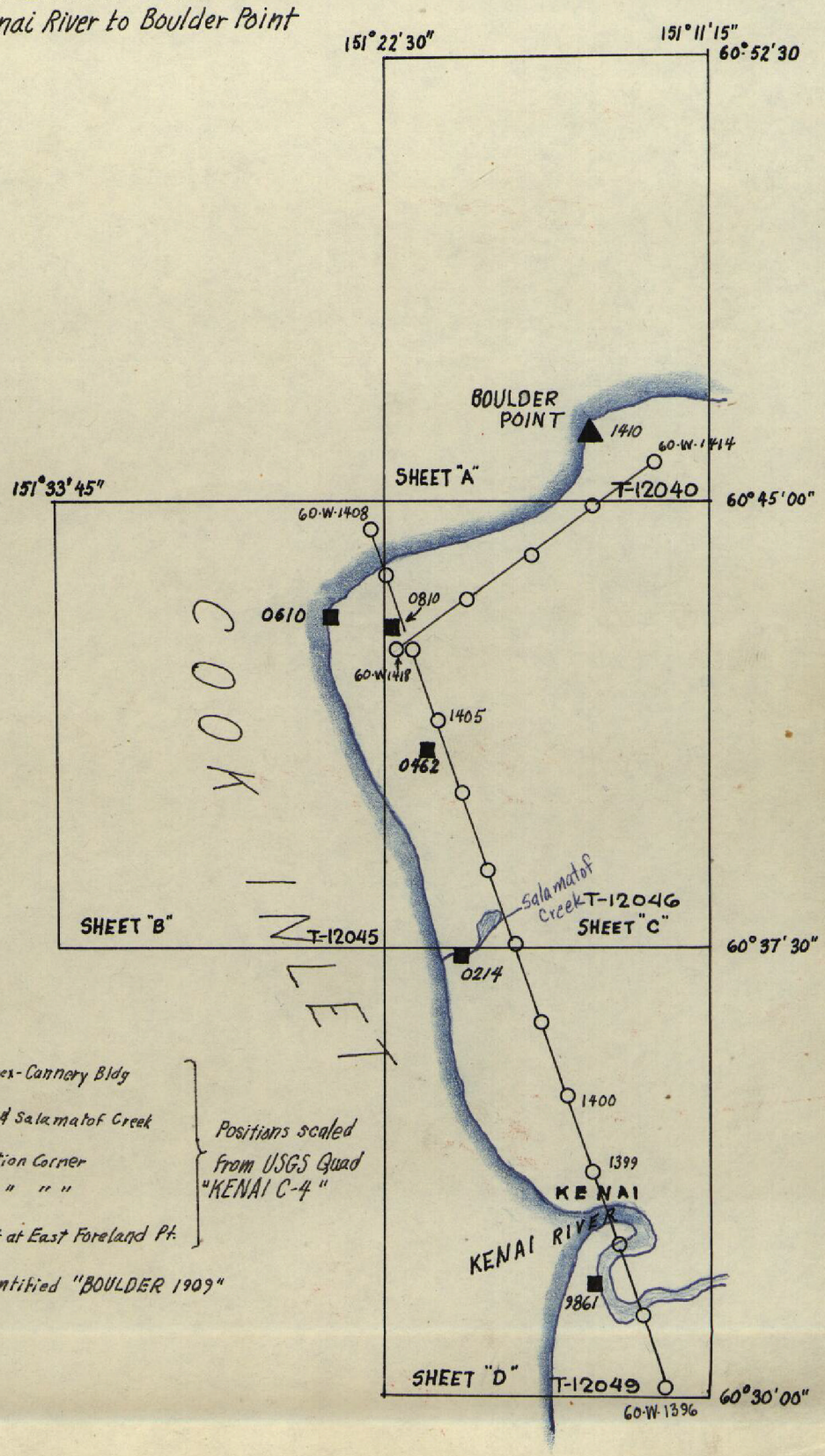
Willard A. Kuncis

Willard A. Kuncis 3/13/61

COOK INLET, ALASKA

PH-6013

PRELIMINARY SHEETS A-B-C-D (T-12040, 12045, 12046 & 12049)
Kenai River to Boulder Point



LEGEND

- Point # 9861 E Apex-Cannery Bldg
- Point # 0214 ℄ Rd & Salamatof Creek
- Point # 0462 Section Corner
- Point # 0810 " " " "
- Point # 0610 Light at East Foreland Pt.

Positions scaled from USGS Quad "KENAI C-4"

▲ #1410 Office-Identified "BOULDER 1909"

Class V manuscripts

COOK INLET, ALASKA
PH 6013
COMPILATION REPORT
April 1961

Refer to page 16 for 2nd (final) Compilation operation.

31. Delineation:

Shoreline and alongshore features were delineated on the Kelsh plotter.

32. Control:

The points in individual bridges held very well. At the junction of the two bridges (model 1417-1418) shoreline points and the light at East Foreland were held. (See plot report and notes to hydrographer.)

33. Supplemental Data:

None

34. Contours & Drainage:

Inapplicable

35. Shoreline and Alongshore Details:

The northwest shoreline (T-12046 & 12040) was in heavy shadow from the bluff and was delineated as approximate MHW.

36. thru 38.

Inapplicable

39. Junctions:

Satisfactory junctions were made on the four manuscripts.

40. Horizontal & Vertical Accuracy:

See Photogrammetric Plot Report.

41. thru 45.

None

46. Comparison with Existing Maps:

Geological Survey Quadrangle Kenai (C-4), and (D-4), Alaska, dated 1952, scale 1:36,360, were used for leveling and general reference.

47. Comparison with Nautical Charts:

C&GS Nautical Chart No. 8553, Cook Inlet, northern part, 1941, revised 1958, scale 1:194,154 was used as to compare details.

48. Geographic Names:

See list.

C E Cook

C. E. Cook

49. Notes to Hydrographer:

Reference: Photogrammetry Instruction No. 45

Shoreline points have been located throughout the project to facilitate the location of photo-hydro stations. As the 1:20,000 cronapaque photographs provided were ratioed to fit the base scale after bridging, most signals built on the shoreline or at approximately sea level, could be pricked directly on the manuscript while holding to these points. Care should be taken, however, to cut in hydrographic stations which are built on top of the bluff just behind the MHWL. In the area of junction between the two flights, (see sketch) hydrographic stations built northeast of the light at East Foreland should be located with the flight 60-W-1418-1410; points south of this light should be located with photos 60-W-1406-1396. The hydrographer should not resect his position in the vicinity of East Foreland using points located from both flight strips as a difference in scale and azimuth is evident.

Jeter P. Battley, Jr.

Jeter P. Battley, Jr.

PROJECT PH-6013
Cook Inlet, Alaska
Photogrammetric Plot Report

2nd (final) of two Plot reports

Nov. 1961

21. Area Covered:

Shoreline surveys T-12040, T-12045, T-12046 and T-12049 covering the east shoreline of Cook Inlet from Kenai River to Boulder Point. These surveys were compiled in 1961 as preliminary surveys (Sheets A, B, C and D) with office-identified stations. They were used in field operations during the 1961 season.

22. Method:

Original bridging for this project was accomplished in March 1961 referencing to office-identified control and map detail points. The resulting preliminary surveys designated as Sheets A through D, were used in 1961 field operations by the hydrographic party. This party furnished field identification for control in the area.

Supplemental bridging (Nov. 1961) to incorporate the field-identified control consisted of setting individual models to settings recorded for the original bridge. Instrument coordinates were read for the original pass points and for the control station in the appropriate models. These coordinates were then transformed to original flight coordinates. The flight coordinates were then adjusted conventionally.

Strip No. 1 comprises photographs 60W1396 through 1408 and Strip No. 2 comprises photographs 60W1414 through 1418. The adjustment of Strip No. 1 indicated a large error (approx. 70 ft.) in the identification of Station "Audry". Thus the strip was adjusted to three control stations with one as a check. Close agreement in tie points of Strip No. 2 was effected. Strip No. 2 consisted of 4 models which was controlled with two stations.

The closure to control and the agreement between strips indicates sufficient accuracy for all pass points. Strip No. 1 extends one model beyond control as Station "Audry" was rejected and is of somewhat lesser accuracy for this area.

23. Adequacy of Control:

Control was adequate for these photographs except Station "Audry" which is referred to above. The photo image chosen for this station was a small tree in a wooded area and thus was rejected as misidentified.

Station "B00" was not included in the control used in the bridging. The close ties between flights in this area indicates that the positions are accurate. The identification should be checked during compilation.

24. Supplemental Data:

None.

25. Photography:

Adequate in definition, coverage and overlap.

Sketch and Form M-2388-12.

Submitted by:

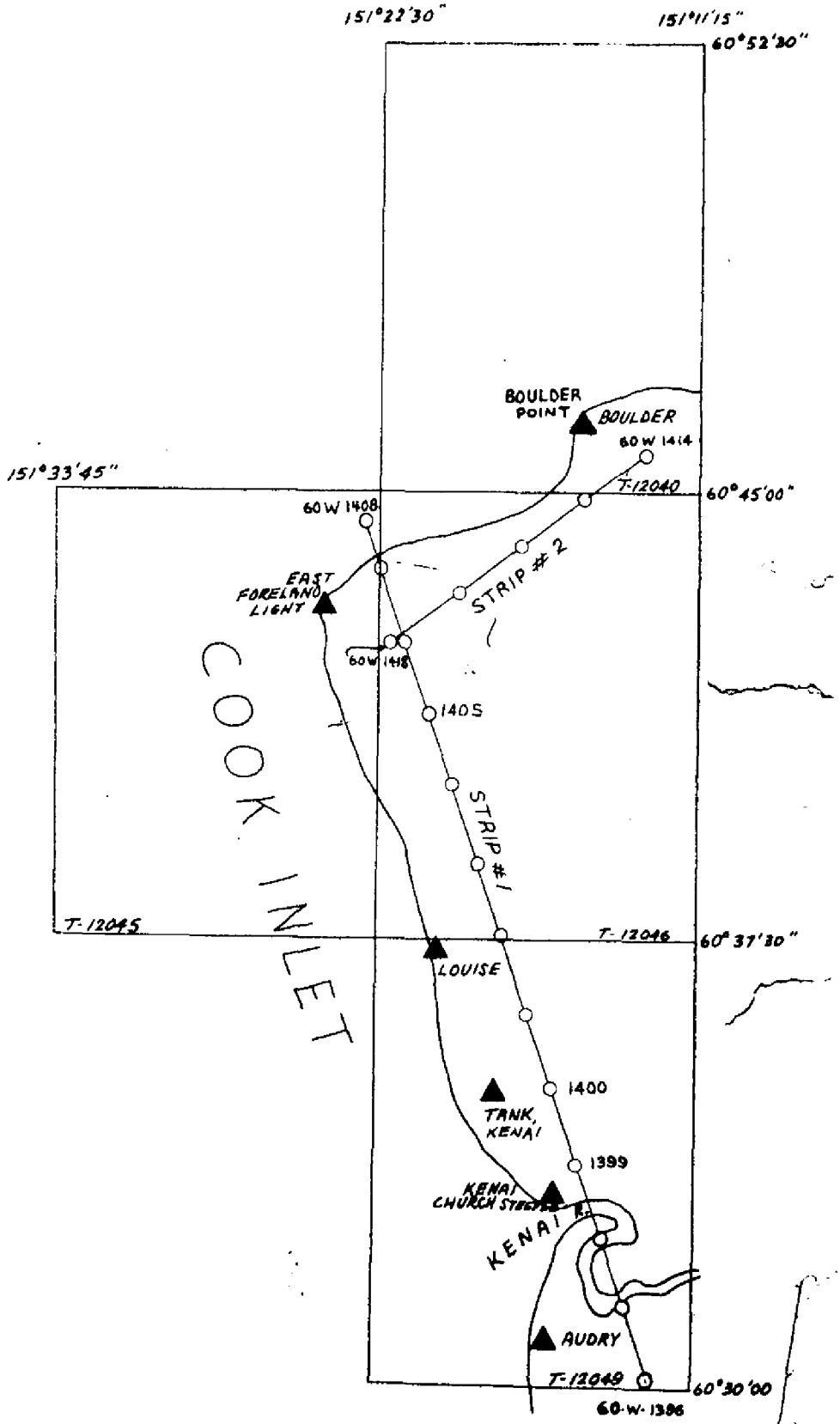
Everett H. Ramey

Everett H. Ramey
Chief, Aerotriangulation Section

COOK INLET, ALASKA

PH-6013

15



(16)

Class III manuscripts

PROJECT PH-6013
Cook Inlet, Alaska
Addendum to Compilation Report
T-12040, 12045, 12046 and 12049
December 1961
(Final Compilation Report)

Kelsh plotter work sheets used for the preliminary compilation were held to the newly furnished bridge positions which were adjusted to the field identified control. (See Photogrammetric Plot Report, November 1961). Additional shoreline points were added to the Kelsh work sheets to facilitate shoreline compilation. These points were located by radial cuts on the new manuscripts. Also established by radial cuts were positions of numerous identifiable objects picked on photos in the field for hydro control.

Compilation to the east of station BOULDER, 1909 is considered weak as positions were established by radial cuts beyond the photogrammetric plot.

The wharf at station B00 1961, though apparently complete at time of field inspection was in a stage of construction at time of photography and was delineated as such.

Though station B00 1961 was not identified on field photos a check with a near coincident hydro station verifies the control in this area.

Robert L. Sugden
Robert L. Sugden, 12/27/61

FIELD INSPECTION REPORT SEE SUMMARY PAGE 6

COOK INLET, ALASKA

PROJECT SP-1-61 1961

USC&GS Ship PATHFINDER Arthur L. Wardwell, CAPT., Comdg.

MANUSCRIPTS:-

12049, 12046, 12045, 12040, 12031, 12032, 12026, 12027, 12028, 12020, 12021, 12022, 12017, 12015, 12016, 12014, 12013, 12008, 12007, 12006, 12003, 12004, 12005, 12002, 12001, 12000, 12012, 11999, 12011, 11998, 12010, 12009, 12019, 12018, 12023, 12025, 12024, 12029, 12030, 12035, 12034, 12033, 12037, 12036

AERIAL FIELD INSPECTION:-

Areas inspected were as follows: Manuscripts No. 12049, 12046, 12045, 12040, Kenai to Boulder Point, all shoreline and alongshore features.

Balance of above listed manuscripts were used only for horizontal control identification.

The area is primarily moderately timbered with spruce, fir, alder and bear claw above the mean high water line. Shoreline varies from fine black silt at the mouth of the Kenai River mouth to large fragmented boulders at Boulder Point. Most of the beachline is sand and shingle interspersed with boulders of varying sizes. Numerous underground springs and some small creeks discharge small quantities of silt and water and are subject to constant change.

The area was inspected by cruising alongshore by launch and by walking the beach and bluff line. Foul areas now indicated on Chart No. 8553 are adequate. Two primary foul areas were noted as follows:

Kenai River Mouth
East Foreland to Moose Point

Quality of photographs was excellent. Areas of shadow were limited to the shoreline east of East Foreland and upper Knik Arm. No attempt was made to sketch in the mean high water line. Enough open areas in shadowed areas are available to adequately delineate mean high water line.

HORIZONTAL CONTROL:-

Four additional second-order triangulation stations were established between Kenai and East Foreland to supplement existing control in the area of hydrography. They were identified as follows:

AUDRY 1961	Manuscript	No.	12049	Photo No.	1397
LOUISE 1961	"	"	12049	" "	1402
BOO 1961	"	"	12045	" "	1420
HELEN 1961	Traverse from East Foreland Light 1960.				

Additional horizontal control recovery was made in upper Cook Inlet in accordance with project instructions. All stations were searched for and approximately 75 percent were recovered. Most of the stations not recovered are considered lost. It is recommended that the next vessel assigned to this project be given a Tellurometer. Simple traverse between recovered triangulation stations would adequately control presently un-controlled flight lines.

In many cases the listed triangulation station was not recovered and a U.S. Engineers' triangulation station was used as a substitute. It appears that the U.S. Engineers could not recover listed C&GS control and substituted their own stations.

Great assistance was rendered by the 5040 Air Transport Squadron at Elmendorf AFB in furnishing heliocopter service. Three days of flying enabled personnel to cover shoreline control stations over the greater part of upper Cook Inlet.

If additional control is required in the vicinity of Elmendorf AFB, use can be made of triangulation now being observed by a C&GS geodetic party. Triangulation station DORF 1961 (in the vicinity of LOOP 2) is to be set in the roof of a building on the base. By use of the description written by the observing party, an accurate office identification can be made.

Triangulation not plotted on the Photo Index was identified where it was on photographs. This control was established by G.W.M. in 1959 and H.G.C. in 1960.

VERTICAL CONTROL:-

None recovered or established.

CONTOURS AND DRAINAGE:-

No contouring was attempted.

Primary drainage features are the Kenai, Matanuska, Little Susitna, Susitna, Beluga, Kustitan, and Drift Rivers. Tidal sweep keeps some of the rivers from building up deltaic features. An extremely flat foreshore on the Matanuska, Little Susitna, Susitna and Beluga rivers give rise to wide deltas that change seasonally. Many small streams discharge around Cook Inlet but have no apparent seasonal change.

WOODLAND COVER:-

The major portion of the area is wooded and interspersed with muskeg and open grassy areas. These are easily identifiable on the photographs. In areas of increasing cultural activity, the woodland cover is being removed. No attempt was made to indicate these areas.

SHORELINE AND ALONGSHORE FEATURES:-

The mean high water line is adequately delineated on manuscripts 12049, 12046, 12045, 12040. In the area of photo hydro signals IVY and EGG, east of East Foreland, the mean high water line is as follows:

IVY 30 meters inside MHW
EGG on piles at MHW

Most of the shoreline signals are located at MHW along the beach. Many of the fishing huts set on piles at the base of the bluff were used as signals.

No attempt was made to delineate the low water line. Hydrography in the area should be satisfactory.

The foreshore area is primarily sand, small stones and boulders. The normal gradiation from stones at MHW to sand at MLW exists in all areas, except south of the Kenai River. In this area a heavy layer of silt is found in the tide zone.

OFFSHORE FEATURES:-

All offshore features are located by the hydrographer.

LANDMARKS AND AIDS:-

There are two fixed aids to navigation within the limits of the hydrographic project:

EAST FORELAND LIGHT
KENAI RIVER ENTRANCE RANGE

Both are located on Chart No. 8553.

One floating aid is also located on Chart No. 8553. Another can buoy is maintained by the oil company and is located just north of the pier.

One landmark for charts is recommended in the Descriptive Report for SP-1-61. This landmark is identified as follows:

KENAI TANK 1959, located by G.W.M. and identified on Photo No. 60W1400.

BOUNDARIES, MONUMENTS AND LINES:-

None shown.

OTHER CONTROL:-

Photo hydro signals were located in accordance with standard instructions. Signal IVY was found in error and relocated photogrammentrically, then verified by hydrographic cuts. Final location is shown on manuscript 12045.

Final location of photo hydro signals will remain in their relative position with the shoreline. Final compilation will cause a datum shift which will move both hydrography and signals the same relative amount.

DATUM DIFFERENCES:-

Radial plotting of photo identified control stations was made in the field. The following discrepancies were noted between plot positions and geographic positions.

EAST FORELAND LIGHT 1960	Lat.	-13.8 meters
	Long.	-75.4 meters
BOULDER (USE)	Lat.	-37.0 meters
	Long.	-45.2 meters
KENAI CHURCH STEEPLE 1909	Lat.	-15.3 meters
	Long.	-23.6 meters

CULTURAL FEATURES:-

Numerous fishing shacks are located along high water line in the area of hydrography. These huts are subject to damage by winter storms and are in a constant state of transition. No attempt was made to locate current huts.

The Nikiski Oil Pier was under construction at the time of photography. The completed dimensions are available from a blueprint of the structure submitted with descriptive report for Project SP-1-61.

Respectfully submitted,

Robert E. Williams,
Lieut. Comdr., C&GS

Gerald C. Saladin
Gerald C. Saladin
LTJG, C&GS

Arthur L. Wardwell
Arthur L. Wardwell,
Captain, C&GS
Comdg., Ship PATHFINDER

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Final Review
Refer to "Summary" page 6