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

**DESCRIPTIVE REPORT**

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<tr>
<td>Office No.</td>
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<td>T-9690 thru</td>
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**LOCALITY**

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<tr>
<td>Locality</td>
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<tr>
<td>Bay</td>
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**CHIEF OF PARTY**

M.J. Tonkel, Chief of Field Party
E.H. Kirsch, Baltimore Photo. Office
L.W. Swanson, Div. of Photo., Wash., D.C.

**DATE**
November 10, 1959
DATA RECORD

T-9690 Aprothluk River
T-9691 Manokinak River
T-9692 (Partial)
T-9693 Opagyaruk River
T-9694 Hazen Bay
T-9695 (Partial)

Field Office (II): Portland, Oregon
Photogrammetric Office (III): Baltimore, Md.
Washington, D.C.

Chief of Party: M. T. Tonkel
Officer-in-Charge: E. H. Kirsch
L. W. Swanson

Instructions dated (II) (III):
2 Sept 1949 14 Dec 1951
2 April 1951 21 Dec 1951

Copy filed in Division of Photogrammetry (IV)

Method of Compilation (III): Reading Nine-lens Plotters

Manuscript Scale (III): 1:20,000
Stereoscopic Plotting Instrument Scale (III): 1:20,000

Scale Factor (III): ---

Date received in Washington Office (IV): Date reported to Nautical Chart Branch (IV):

Applied to Chart No. Date: Date registered (IV): 10/17/57

Publication Scale (IV): Publication date (IV):

Geographic Datum (III): N. A. 1927

Vertical Datum (III):
Mean sea level except as follows:
Elevations shown as (T) refer to mean high water
Elevations shown as (S) refer to sounding datum
I.e., mean low water or mean lower low water

Reference Station (III):

Lat.: Long.:
Adjusted Unadjusted

Plane Coordinates (IV): State:
UTM X=
Zone:

Roman numerals indicate whether the item is to be entered by (II) Field Party, (III) Photogrammetric Office,
or (IV) Washington Office.

When entering names of personnel on this record give the surname and initials, not initials only.
Areas contoured by various personnel
(Show name within area)
(II) (III)

W. Hainboag
DATA RECORD

Field Inspection by (II): V. E. Serena
Date: May-Sept 1951

Planetary contouring by (II): None
Date:

Completion Surveys by (II): None
Date:

Mean High Water Location (III) (State date and method of location): From nine-lens photos and field inspection 1951

Projection and Grids ruled by (IV): A. Riley
Date: Feb. 1955

Projection and Grids checked by (IV): A. Riley
Date: Feb. 1955

Control plotted by (III): J. L. Schleupner
Date: April 1955

Control checked by (III): J. Steinberg
Date: April 1955

Radial Plot or Stereoscopic: E. L. Williams
Date: Sept 1955

Control extension by (III): L. A. Senasak
Date: Dec. 1955

Stereoscopic Instrument compilation (III): W. Heinbaugh
Date: Nov. 1956

Contours

Planimetry

Manuscript delineated by (III): W. Heinbaugh
Date: Nov. 1956

J. B. McDonald

Photogrammetric Office Review by (III): L. Levin
Date: Dec. 1956

Elevations on Manuscript
checked by (II) (III): L. Levin
Date: Dec. 1956

Form T Page 3
PHOTOGRAPHS (III)

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* Times are approximate.

Tide (III)

Reference Station: Kodiak
Subordinate Station: **
Subordinate Station:

Washington Office Review by (IV): **
Final Drafting by (IV): JOHN W. FRAZIER (T-9692)
Drafting verified for reproduction by (IV): W.M. HALLIN

Proof Edit by (IV):

Land Area (Sq. Statute Miles) (III):
Shoreline (More than 200 meters to opposite shore) (III):
Shoreline (Less than 200 meters to opposite shore) (III):
Control Leveling - Miles (II):
Number of Triangulation Stations searched for (II): Recovered: Identified:
Number of BMs searched for (II): Recovered: Identified:
Number of Recoverable Photo Stations established (III):
Number of Temporary Photo Hydro Stations established (III):

Remarks:
** See index and tide curves on following pages.
FIELD INSPECTION REPORT

T 9690 thru T 9695

The field inspection report for the entire project is included in the report for T 9679.
21. AREA COVERED

This radial plot covers the area of Surveys T-9691, T-9692 and T-9694 thru T-9697. These surveys cover the area between Kachik River and Ningaluk River in Hazen Bay on the west coast of Alaska. The surveys will be compiled with the Reading Plotter.

22. METHOD - RADIAL PLOT

Map manuscripts:
Vinylite sheets with polyconic projections in black and Universal Traverse Mercator grids in red, at a scale of 1:20,000, were furnished by the Washington Office.

All control stations and substitute stations were plotted using the beam compass and meter bar.

A sketch showing the layout of these surveys and the distribution of photograph centers and control is attached to this report.

Photographs:
All photographs used were nine-lens metal mounted photographs at a scale of 1:20,000. Thirty-eight (38) photographs were used in the plot - numbered as follows:
28514 thru 28519
28643 thru 28852
38063 thru 38092
38096 thru 38107

Templets:
Vinylite templets were made from all photographs using a master templet to adjust for errors due to chamber displacements. Radial lines were scratched on the templets and scratches were filled in with china marking pencils. Red pencil was used for all shoreline (Rectification) pass points and, black pencil was used for all other radial lines.

Closure and Adjustment to Control:

This radial plot was laid directly on the map manuscripts beginning with photograph 38083 and continuing southeasterly to photograph 38092. Then the flight starting with photograph 38107 was laid extending it southeasterly to photograph 38096. These two flights were continuous and adequately controlled; and, offered a good base for adding the two flights 28843 thru 28852 and 28514 thru 28519 to the west.

The flights laid for this plot resulted in a rigid plot. No difficulty was encountered in extending from the previous plot for surveys T-9686 thru T-9690 and T-9693 to the north and east of this plot to control station INLET, 1951; SLUMP, 1951; and FRONT, 1951 at the southern end of this plot.
22. METHOD - RADIAL PLOT (cont'd)

Closure and Adjustment to Control: (cont'd)

An effort was made to extend this plot to the southerly end of the flights laid as listed under sub-paragraph headed "PHOTOGRAPHS", and to effect a tie between these north-south flights and flight 28522 thru 28528 which is an east-west flight. However, control station GRASS, 1951 and PATCH, 1951 could not be held. This difficulty could not be resolved without the addition of more map manuscripts and flights of photographs for which the plot table was not large enough. For this reason, the plot was stopped at control stations which could be held with certainty. The pass points and photograph centers were pricked off only to the southern limits of surveys T-9696 and T-9697. It is felt that the positions of these pass points are all within the standards of accuracy and that the difficulty in the area around GRASS, 1951 and PATCH, 1951 will be resolved to the next plot.

Transfer of Points:
The position of all centers, pass points and control stations were pricked on the top templetts and circled with a 3 mm circle. They were then established on the remaining templetts and map manuscripts by drilling down through them with a small (.01 inch) jewlers drill. All points were circled on each remaining templet as it was removed, and finally on the map manuscripts.

23. ADEQUACY OF CONTROL

The horizontal control was adequate for a satisfactory radial plot in the area covered by this report. All control stations were held.

24. SUPPLEMENTAL CONTROL

None

25. PHOTOGRAPHY

The definition of the photographs was good, and the coverage was adequate for the area of this report.

Though several tilted photographs were used in this plot, no tilt determination was necessary because the degree of tilt was not enough to affect the plot.

One of the fiducial marks was missing in chamber 4 and one in chamber 8 on all the 1952 photographs.

Some conjugate centers were pricked in the Washington Office before the photographs were received in this office. It was noted that many of the circles were not round as if made by a faulty pen. Those circles on conjugate centers in line of flight were corrected.
26. VERTICAL CONTROL

No field identified V-points in this area were pricked in the office because there are sufficient shoreline pass points for rectification, and V-points are all in marsh.

The elevation of STUMP, 1951 is 4.8 meters (16 feet). In a stereoscopic study of the area, this elevation appears to be too high.  

* See compilation report

27. RECOVERABLE TOPOGRAPHIC STATIONS

The positions of all recoverable topographic stations which were identified were established in the radial plot. Those identified by a substitute point were plotted with a steel protractor and meter bar before the map manuscripts were disassembled.

Respectfully submitted
14 December 1955

Leroy A. Senasack
Carto. Photo. Aid

Approved and forwarded

E.H. Kirsch
Officer in charge
Baltimore District Office
LAYOUT SKETCH
PROJECT 6056
SURVEYS T-9691, T-9692 & T-9694 thru T-9697

○ Nine lens office photographs
△ Control stations identified
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<th>SOURCE OF INFORMATION (INDEX)</th>
<th>DATUM</th>
<th>LATITUDE OR $\rho$-COORDINATE</th>
<th>LONGITUDE OR $\lambda$-COORDINATE</th>
<th>DISTANCE FROM GRID IN FEET OR PROJECTION LINE IN METERS</th>
<th>DATUM CORRECTION</th>
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CHECKED BY: A. Queen  DATE: 4/15/55
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<th>LONGITUDE OR ( x )-COORDINATE</th>
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31. Delineation

The manuscripts were delineated graphically and on the Reading Nine-lens plotters. The MHWL on the coastline and major streams was delineated on the Reading Plotters, all other hydrographic features were delineated directly onto the manuscript from rectified photos using the radial plot pass points for orientation. The eastern halves of T-9692 and T-9695 were not compiled because of the lack of photography.

32. Control

See radial plot for report on horizontal control. The vertical control was adequate. There were sufficient tide water streams to orient the stereo models without the use of the elevations furnished by the field party.

33. Supplemental Data - None

34. Contours and Drainage

The entire area of the manuscripts is below the elevation of the lowest supplemental contour.

35. & 36. Shoreline Alongshore & Offshore Details

The field inspection of the shoreline was adequate. The approximate L.W.L., which was not field inspected, was in most areas delineated from the 29,000 series photos which were taken near the time of low tide. No low water photography was available for the outer coast shoreline from Long. 165°05' to Lat. 61°09'.

37. Landmarks and Aids: None

38. Control for Future Survey

Forms 524 were submitted for the following topographic stations whose positions were obtained photographically:

July, 1951 - T-9690; Dope T-9693; Kulu, 1951, Oral, 1951 - T-9694

39. Junction:

Junctions were made with all contemporary surveys shown on the index.
40. Horizontal and Vertical Accuracy

The horizontal positions of all detail points are within the accuracy requirements. Due to the plethora of tide water streams the spot elevations are well within the accuracy requirements.

46. Comparison with Existing Maps

The area of these manuscripts is covered by the following 1:250,000 scale USGS maps: HOOPER BAY 1951 and MARSHALL, 1951.

47. Comparison with Nautical Charts

The largest scale Nautical Chart of the area is No. 9302.

Items to be applied to Nautical Charts Immediately: none.

Items to be carried forward: none.

Submitted by:

Louis Levin
Supervisory Cartographer

Approved by:

K. N. Maki,
Cartographic Engineer
Geographic Names
Survey No. T-9690

ALASKA
APROTHLUK RIVER
APHREWEN RIVER
BERING SEA
OPAGYARAK RIVER
TUTAKOKE RIVER

Names approved
Geographic Names
Survey No. T-9691

ALASKA
APHREWN RIVER
ANERKOCHIK RIVER
HAZEN BAY
KANOKINAK RIVER
TUNGALUK SLOUGH

Names approved:
[Signature]
Geographic Names
Survey No. T-9692

NANOKINAK RIVER
ANERKOCHIK RIVER

Names approved: [Signature]
GEOGRAPHIC NAMES

Survey No. T-9693

ALASKA
BERING SEA
APROTHLUK RIVER
OPAGYARAK RIVER

Names approved by:

[Signature]

L. Heck
Geographic Names
Survey No. 9694

HAZEN BAY
APHREWN RIVER
APROTHLUK RIVER
MANOKINAK RIVER
ANERKOKHIK RIVER
NASKONAT PENINSULA
Geographic Names
Survey No. T-9695

AZUN RIVER
HAZEN BAY
NAROKACHIK RIVER
KEALAVIK RIVER
Notes to Hydrographer

T-9690 thru T-9695

The following topographic stations were established in the field and their positions determined photogrammetrically:

- T-9690 - July, 1951
- T-9691 - none
- T-9692 - none
- T-9693 - Dope 1951
- T-9694 - Kulu, 1951; Oral, 1951
- T-9695 - none

No photo hydro stations were established.
62. Comparison with Registered Topographic Surveys

There are no registered topographic surveys of this area.

63. Comparison with Maps of other Agencies

See Item 46.

64. Comparison with Contemporary Hydrographic Surveys

There are no contemporary hydrographic surveys of this area.

65. Comparison with Nautical Charts

9302 1:1,534,076 1952 corr. to 12-24-56

This is the only Nautical Chart covering all topographic surveys of this project.

66. Adequacy of Results and Future Surveys

Shoreline inspection appears adequate. Lack of inshore inspection may have resulted in minor errors in office interpretation. Other than these, no deficiencies in accuracy and adequacy were indicated.

Reviewed by:

[Signature]

Josef J. Streifler

APPROVED BY

[Signature]

L. E. Lande
Chief, Review & Drafting Sec.
Photogrammetry Div.

[Signature]

M. S. Swanson
Chief, Photogrammetry Division

[Signature]

Chief, Nautical Chart Br.
Charts Division

Chief, Coastal Surveys

4 Nov. 59
Summary to Accompany Topographic Maps T-9690 thru T-9695

The six (6) sheets of this combined report of project Ph-24090 (6056) are in the Hazen Bay area, Bering Sea. See accompanying project index.

The subject manuscripts were compiled graphically - direct from rectified photographs for extensive marsh areas - and on the Reading Nine Lens Plotters for balance of details.

Maximum ground elevation will be indicated on all final registration copies - the entire area being lower than the 25 feet supplemental contour.

There are no previous topographic surveys - nor contemporary hydrographic surveys of the subject area.

The Army Map Service will publish the four (4) westerly manuscripts as standard topographic quadrangles at the scale of 1:50,000 (see accompanying project index).

A "Cronar" film positive at manuscript scale and the descriptive report, as well as a cloth-backed print of the two AMS quadrangles in color after final printing, will be registered and filed in the Bureau Archives.

February 1957
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February 1957
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M 234
TOPOGRAPHIC MAPPING PROJECT 6056 240.90

ALASKA-BERING SEA, Scammon Bay to Kuskokwim Bay and Nunivak Island

OFFICIAL MILEAGE FOR COST ACCOUNTS

Sheet No. Area sq.miles

9670 46 1.6
9671 66 91
9672 96 12
9673 12 103
9674 103 46
9675 46 91
9676 91 17
9677 17 86
9678 86 103
9679 103 40
9680 40 23
9681 23 34
9682 34 80
9683 80 34
9684 34 103
9685 103 6
9686 6 110
9687 110 222
9688 222 110
9689 110 80
9690 80 112
9691 112 57
9692 57 103
9693 103 40
9694 40 108
9695 108 68
9696 68 91
9697 91 17
9698 17 108
9699 108 6
9700 6 91
9701 91 112
9702 112 57
9703 57 103
9704 103 40
9705 40 108
9706 108 68
9707 68 91
9708 91 17
9709 17 108
9710 108 6
9711 6 91
9712 91 112
9713 112 57
9714 57 103
9715 103 40
9716 40 108
9717 108 68
9718 68 91
9719 91 17
9720 17 108
9721 108 6
9722 6 91

Sub-total...2,685

Nunivak Island

10365 49
10366 112
10367 70
10368 8
10369 47
10370 195
10371 220
10372 238
10373 228
10374 37
10375 44
10376 164
10377 158
10378 109
10379 38

Sub-total 1,614
Sub-total 2,685
Total... l.299

Compiled 1:20,000 scale, from 1:20,000 scale nine-lens photographs taken August 1950 and June, 1951; additional nine-lens photography to be taken Season 1952.

(Refer to Air-Photo Indexes B-42, 50, 51, 52 and E-11)
# Nautical Charts Branch

Survey No. T-9690 thru T-9695

Record of Application to Charts

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A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.