9723 THRU 9730

9723 THRU 9730

Diag. Cht. No. 9302

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Shoreline

Field No. 6056 Office No. T-9723 thru T-9730

LOCALITY

State Alaska

General locality Nunivak Island

Locality N. Coast - Cape Manning to Cape Mohican

19~~4~~50-51

CHIEF OF PARTY

M. J. Tonkel, Chief of Field Party
E. H. Kirsch, B'more Photo. Office

LIBRARY & ARCHIVES

DATE September 17, 1957

B-1870-1 (1)

DATA RECORD

T - 9723 to T-9730, inclusive

Project No. (II): Ph-56 or 6056 Quadrangle Name (IV):

Field Office (II): Portland, Oregon Chief of Party: M. J. Tonkel

Photogrammetric Office (III): Baltimore, Md.
Washington, D. C. Officer-in-Charge: E. H. Kirsch

Instructions dated (II) (III): 2 April 1951
14 December 1951
21 December 1951

Copy filed in Division of Photogrammetry (IV)
Office Files

Method of Compilation (III): 9-Lens Reading Plotter

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

Scale Factor (III): NA 1927

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

Applied to Chart No. Date: Date registered (IV): 18 Apr 1957

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

Geographic Datum (III): NA 1927 Vertical Datum (III): MHW

Mean sea level except as follows:
Elevations shown as (25) refer to mean high water
Elevations shown as (5) refer to sounding datum
i.e., mean low water or mean lower low water

Reference Station (III):

Lat.: Long.: Adjusted ~~Unadjusted~~

Plane Coordinates (IV): UTM State: Zone: 3

Y= X=

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.

M-2618-12(4)

DATA RECORD

T-9723

Field Inspection by (II): I Zirpel Jr. Date: July 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection by airplane indicated MHW on 1950 photos. A combination of this inspection and modified predicted tide data was applied to the 1952 photos. Cape Etolin was compiled with 1950 photos only.

Projection and Grids ruled by (IV): Austin Riley Date: 2-25-54

Projection and Grids checked by (IV): H. D. Wolfe Date: 3-2-54

Control plotted by (III): J. Steinberg Date: 8-23-54

Control checked by (III): A. Queen Date: 9-29-54

Radial Plot or Stereoscopic Control extension by (III): L. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry Clarence Misfeldt Date: April 1955

~~Contours~~ Date:

Manuscript delineated by (III): * ~~Clarence Misfeldt (plotter sheets only)~~ Date: ~~Sept. 1955~~

*~~Work Sheets only~~. Inapplicable

Photogrammetric Office Review by (III): Clarence Misfeldt * Date: Sept. 1955

* Work Sheets Only

Elevations on Manuscript checked by (II) (III): Date:

DATA RECORD

T-9724

Field Inspection by (II): I. Zirpel Date: July 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection from airplane; Shoreline N of Dahtik Cove from 1950 photography, S of cove from 1952 photography

Projection and Grids ruled by (IV): Austin Riley Date: 3-19-54

Projection and Grids checked by (IV): H. D. Wolfe Date: 4-2-54

Control plotted by (III): L. A. Senasack Date: 5-26-54

Control checked by (III): A. Queen Date: 5-26-54

Radial Plot or Stereoscopic Control extension by (III): L. A. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry J. Battley, C. Misfeldt Date: Sept. 1955

Contours Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): *J. Battley Date: Sept. 1955

*Work Sheets only.

Elevations on Manuscript checked by (II) (III): Date:

M-2618-12(4)

DATA RECORD

T-9725

Field Inspection by (II): I. Zirpel Jr. Date: July 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection by airplane indicated MHW on 1950 photos. A combination of this inspection and modified predicted tide data was applied to the 1952 photos.

Projection and Grids ruled by (IV): Austin Riley Date: 2-26-54

Projection and Grids checked by (IV): H. D. Wolfe Date: 4-2-54

Control plotted by (III): J. Steinberg Date: 8-23-54

Control checked by (III): A. Queen Date: 9-29-54

Radial Plot or Stereoscopic Control extension by (III): L. A. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry C. Misfeldt Date: March 1955

Contours Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): C. Misfeldt (plotter sheets only) Date: Sept. 1955

Elevations on Manuscript checked by (II) (III): Date:

M-2618-12(4)

DATA RECORD

T-9726

Field Inspection by (II): I. Zirpel Date: July 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): From shoreline inspection from airplane and office delineation on 1950 photography.

Projection and Grids ruled by (IV): Austin Riley Date: 2-25-54

Projection and Grids checked by (IV): H. D. Wolfe Date: 3-2-54

Control plotted by (III): J. Steinberg Date: 8-24-54

Control checked by (III): A. Queen Date: 9-29-54

Radial Plot or Stereoscopic Control extension by (III): L. A. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry C. Misfeldt W. Heinbaugh Date: Sept. 1955

Contours Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): *J. Battley Date: 9-30-55

*Instrument work sheets only.

Elevations on Manuscript checked by (II) (III): Date:

DATA RECORD

T-9727

Field Inspection by (II): I. Zirpel Date: July 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Shoreline inspection from airplane and office delineation on 1950 photography.

Projection and Grids ruled by (IV): J. Allen Date: 1-4-52

Projection and Grids checked by (IV): H. D. Wolfe Date: 1-7-51

Control plotted by (III): J. Steinberg Date: 8-24-54

Control checked by (III): A. Queen Date: 9-29-54

Radial Plot or Stereoscopic Control extension by (III): L. A. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry) W. Heinbaugh Date: 9-16-55
Contours) Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): *J. Battley Date: 10-3-55
*Work sheets only.

Elevations on Manuscript checked by (II) (III): Date:

M-2618-12(4)

DATA RECORD

T-9728

Field Inspection by (II): I Zirpel Date: Sept. 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection from airplane and interpretation from 1952 office photos.

Projection and Grids ruled by (IV): J. Allen Date: 5 Jan. 1952

Projection and Grids checked by (IV): H. D. Wolfe Date: 8 Jan. 1952

Control plotted by (III): A. Queen Date: 4-27-54

Control checked by (III): L. Senasack Date: 5-17-54

Radial Plot ~~or Stereoscopic Control~~ by (III): L. Senasack Date: 6-9-54

Stereoscopic Instrument compilation (III): Planimetry L. Levin and C. Misfeldt Date: Aug. 1954

Contours Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): *C. Misfeldt Date: 12 July 1955

*Instrument work sheets only.

Elevations on Manuscript checked by (II) (III): Date:

M-2618-12(4)

DATA RECORD
T-9729

Field Inspection by (II): I. Zirpel Jr. Date: Sept. 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection by airplane indicated MHW on 1950 photos. A combination of this inspection and modified predicted tide data was applied to the 1952 photos.

Projection and Grids ruled by (IV): Austin Riley Date: 3-19-54

Projection and Grids checked by (IV): Austin Riley Date: 4-2-54

Control plotted by (III): Albert Queen Date: 4-27-54

Control checked by (III): Leroy A. Senasack Date: 5-17-54

Radial Plot ~~or Stereoscopic Control extension by (III)~~: Leroy A. Senasack Date: 7-23-54

Stereoscopic Instrument compilation (III): Planimetry C. Misfeldt Date: Sept. 1954

Contours Date:

Manuscript ~~delineated~~ scribed by (III): No manuscript Date:

Photogrammetric Office Review by (III): C. Misfeldt (plotter sheets only) Date: Sept. 1955

Elevations on Manuscript checked by (II) (III): Date:

DATA RECORD

T-9730

Field Inspection by (II): I. Zirpel Date: Sept. 1951

Planetable contouring by (II): None Date:

Completion Surveys by (II): None Date:

Mean High Water Location (III) (State date and method of location): Field inspection from airplane on 1950 photos, office compilation on 1952 photos.

Projection and Grids ruled by (IV): Austin Riley Date: 3-18-54

Projection and Grids checked by (IV): Austin Riley Date: 4-2-54

Control plotted by (III): L. A. Senasack Date: 5-26-54

Control checked by (III): A. Queen Date: 5-26-54

Radial Plot or Stereoscopic Control extension by (III): L. A. Senasack Date: 12-15-54

Stereoscopic Instrument compilation (III): Planimetry J. Battley Date: July 1955

Contours Date:

Manuscript delineated by (III): Inapplicable Date:

Photogrammetric Office Review by (III): *J. Battley, W. Heinbaugh Date: Sept. 1955
*Instrument work sheets only.

Elevations on Manuscript checked by (II) (III): Date:

M-2618-12(4)

T-9723

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
28879-81 28884-85	8/14/50	Approx. 1300	1:20,000	2.6 above MLLW

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		8.4 *

Reference Station: Kodiak)
Subordinate Station: Tachikuga) *
Subordinate Station: Mekoryuk)
Nash Harbor)

Washington Office Review by (IV): Everett H. Ramey Date: 9 Jan 1956

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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: 2 established
Number of BMs searched for (II): Recovered: Identified: 1 TBM established
Number of Recoverable Photo Stations established (III): 3 (includes one TBM)
Number of Temporary Photo Hydro Stations established (III): One

Remarks: *Tide data furnished by Division of Tides and Currents

M-2618-12(4)

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
Office				
38222, 223	7/19/52	15:50	1:20,000	4.6 above MLLW
38226-229	"	15:555	"	"
Field				
28902-904	8/14/50	Approx. 13:50	1:20,000	
28930-932	"	" 14:30	"	

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		5.8*

Reference Station: Kodiak)
Subordinate Station: Tachikuga) *
Subordinate Station: Mekoryuk)
Nash Harbor)

Washington Office Review by (IV): Everett H. Ramey Date: 20 Dec 1955

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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): established
Number of Triangulation Stations ~~searched for~~ (II): 3 Recovered: Identified: 3
Number of BMs searched for (II): Recovered: Identified:
Topo
Number of Recoverable Photo Stations established (III): One
Number of Temporary Photo Hydro Stations established (III): One

Remarks:

M-2618-12(4)

T-9725

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
38218-21	7/19/52	15:50	1:20000	4' above MLLW
38229-31	"	16:05		
38194-98	"	15:20		
28879-80	8/14/50	Approx. 13:05	1:20000	2' " "
28898-28907	"	" 13:30		2' " "

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		7.1*

Reference Station: Kodiak)
Subordinate Station: Tachikuga) *
Subordinate Station: Nash Harbor)
Makoryuk)

Washington Office Review by (IV): Everett H. Ramey Date: 20 Dec 1955

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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~~ established (II): 1 Recovered: Identified: 1
Number of BMs searched for (II): None Recovered: Identified:
Number of Recoverable Photo Stations established (III): 2
Number of Temporary Photo Hydro Stations established (III): None

Remarks: *Tide data furnished by Division of Tides and Currents.

M-2618-12(4)

T-9726

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

	Number	Date	Time	Scale	Stage of Tide *
Office	28887-890	8-14-50	13:20 approx.	1:20,000	3.4 above MLLW
	28876-879	"	13:00 "	"	2.9 "

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		9.0*

Reference Station: Kudiak
Subordinate Station: Nash Harbor
Subordinate Station: Mekoryuk, Tackikuga

Washington Office Review by (IV): Everett H. Ramey Date: 9 Jan 1956

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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: 2
Number of BMs searched for (II): Recovered: Identified:
Number of Recoverable Photo Stations established (III): 2
Number of Temporary Photo Hydro Stations established (III): 1

Remarks: *Tide data furnished by Division of Tides and Currents.

M-2618-12(4)

Camera (kind or source) (III): C&GS 9-Lens T-9727

PHOTOGRAPHS (III)

	Number	Date	Time	Scale	Stage of Tide *
Office	28875 28876	8-14-50	1300	1:20,000	2.9 above MLLW

Tide (III)

Reference Station: Kodiak	Diurnal		
	Ratio of Ranges	Mean Range	Spring Range
Subordinate Station: Tachikuga			9.3 *
Subordinate Station: Nash Harbor, Mekoryuk			

Washington Office Review by (IV): Everett H. Ramey Date: 6 Jan 1956

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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): 2 Recovered: 2 Identified: 2
Number of BMs searched for (II): Recovered: Identified:
Number of Recoverable Photo Stations established (III): None
Number of Temporary Photo Hydro Stations established (III): None

Remarks: *Tide data furnished by Division of Tides and Currents.

M-2618-12(4)

T-9728

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
38316-318	7/19/52	17:40	1:20,000	4.4 above MLLW
38321-324	"	17:45	1:20,000	4.5 " "
Field				
28993, 994				
28963-967	8-14-50	Approx. 15:00	1:20,000	1.0 " "

Tide (III)

Diurnal

Ratio of Ranges	Mean Range	~~Spring~~ Range
	4.2	4.6

Reference Station: Kodiak)
Subordinate Station: Tachikuga)
Subordinate Station: Nash Harbor)
Nekoryuk)

Washington Office Review by (IV): Everett H. Ramey Date: 28 Oct 1955

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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): established
Number of Triangulation Stations ~~searched for~~ (II): Recovered: Identified: 3
Number of BMs searched for (II): Recovered: Identified:
Number of Recoverable Photo Stations established (III): 1 /topo
Number of Temporary Photo Hydro Stations established (III): 5

Remarks: Tide data is based on information furnished directly from Division of Tides and Currents.

M-2618-12(4)

T-9729

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
38281-85	7/19/52	17:05	1:20,000	4.5 above MLLW
38313-15	7/19/52	17:40	1:20,000	4.5 " "
Field Inspection				
28933-38	8/14/50	Approx. 14:50	1:20,000	Approx. 1.1 "
28961-62	8/14/50	Approx. 15:00	1:20,000	

Tide (III)

Diurnal

Ratio of Ranges	Mean Range	~~Spring~~ Range
	-	
		5.2 *

Reference Station: Kodiak
Subordinate Station: Tachikuga
Subordinate Station: Nash Harbor
Mekoryuk

Washington Office Review by (IV): Everett H. Ramey Date: 7 Dec 1955

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

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): established
Number of Triangulation Stations ~~searched for~~ (II): 3 Recovered: Identified: 3
Number of BMs searched for (II): Recovered: Identified: One tidal bench mark established
Number of Recoverable Photo Stations ~~established~~ (III): 1
Number of Temporary Photo Hydro Stations established (III): 7

Remarks: *Tide data furnished by Division of Tides and Currents.

M-2618-12(4)

T-9730

Camera (kind or source) (III): C&GS 9-Lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide *
38275, 276	7/19/52	17:00	1:20,000	4.4 above MLLW
Field 28937, 938	8/14/50	Approx. 14:30	1:20,000	

Tide (III)

Ratio of Ranges	Mean Range	Spring Range	
		5.0	*

Reference Station: Kodiak
Subordinate Station: Tachikuga
Subordinate Station: Nash Harbor
Mekoryuk

Washington Office Review by (IV): Everett H. Ramey Date: 7 Dec 1955

Final Drafting by (IV): Date:

Drafting verified for reproduction by (IV): Date:

Proof Edit by (IV): Date:

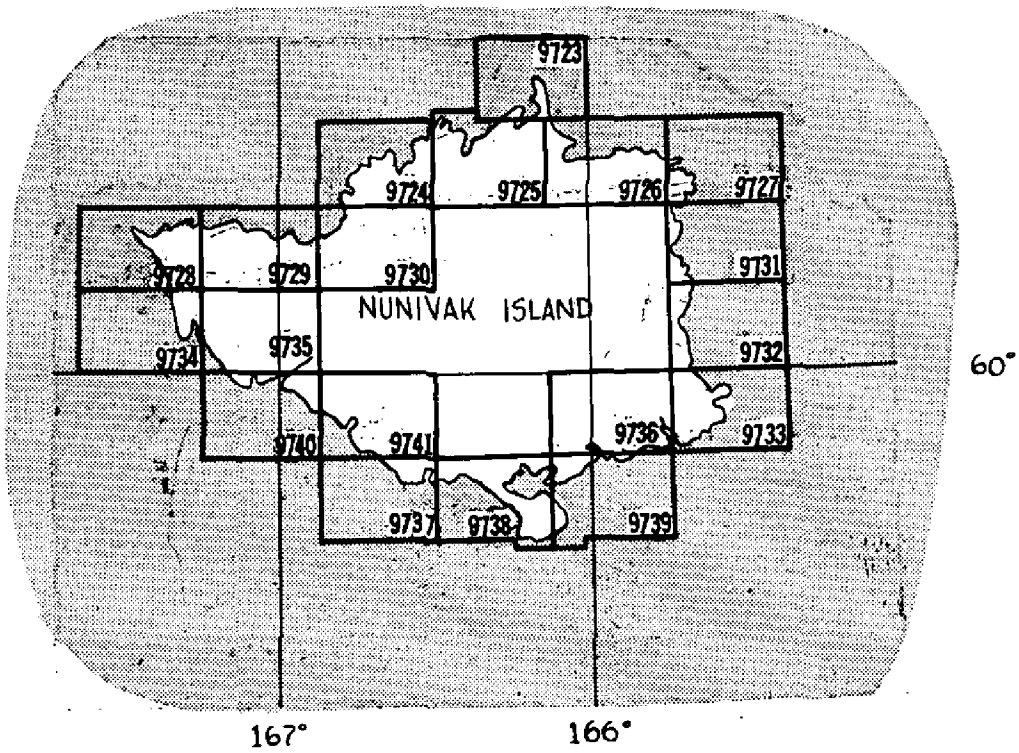
Land Area (Sq. Statute Miles) (III):
Shoreline (More than 200 meters to opposite shore) (III):
Shoreline (Less than 200 meters to opposite shore) (III):
Control Leveling - Miles (II): established
Number of Triangulation Stations ~~searched for~~ (II): 2 Recovered: Identified: 2
Number of BMs searched for (II): Recovered: Identified:
Number of Recoverable Photo Stations established (III): 1
Number of Temporary Photo Hydro Stations established (III):

Remarks: *Tide data furnished by Division of Tides and Currents.

M-2618-12(4)

SHORELINE MAPPING PROJECT 6056

Nunivak Is., Alaska



Official mileage for Cost Accounts

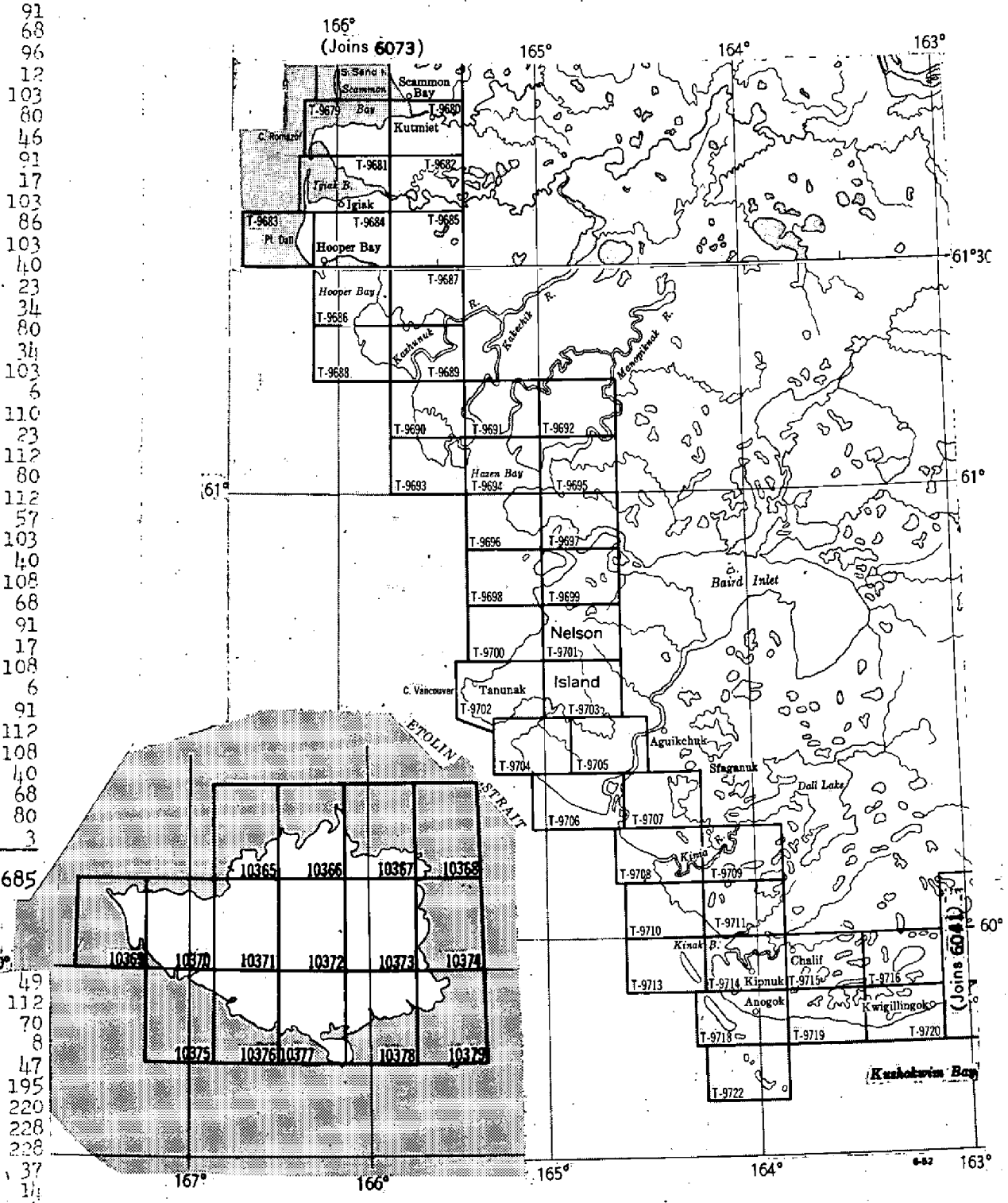
Sheet	Area Sq.Mi.	Lin.Mi. Shoreline
9723	6	10
9724	49	11
9725	106	10
9726	70	13
9727	8	17
9728	36	19
9729	88	15
9730	106	12
9731	15	23
9732	22	21
9733	35	20
9734	11	10
9735	107	5
9736	105	4
9737	10	9
9738	44	25
9739	14	9
9740	14	11
9741	94	8
Totals	940	252

TOPOGRAPHIC MAPPING PROJECT 6056

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

OFFICIAL MILEAGE FOR COST ACCOUNTS

Sheet No.	Area sq.miles
[redacted]	46
9680	91
9681	68
9682	96
9683	12
9684	103
9685	80
9686	46
9687	91
9688	17
9689	103
9690	86
9691	103
9692	40
9693	23
9694	34
9695	80
9696	34
9697	103
9698	6
9699	110
9700	23
9701	112
9702	80
9703	112
9704	57
9705	103
9706	40
9707	108
[redacted]	68
9709	91
9710	17
9711	108
9713	6
9714	91
9715	112
9716	108
9718	40
9719	68
9720	80
9722	3
Sub-total	2,685
Nunivak Island	
10365	49
10366	112
10367	70
10368	8
10369	47
10370	195
10371	220
10372	228
10373	228
10374	37
10375	14
10376	101
10[redacted]	158
10378	109
10379	35
Sub-total	1,614
Sub-total	2,685
TOTAL	4,299



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-10.)

Summary to Accompany Maps of
Nunivak Island in Project 6056

Nunivak Island has been mapped under Project 6056 by a series of shoreline maps at a scale of 1:20,000 and a series of topographic maps at a scale of 1:40,000. The shoreline maps are numbered T-9723 to T-9741, inclusive, and the topographic maps are numbered T-10365 to T-10379, inclusive. These two series of maps were adopted so as to satisfy the requirements of the Army Map Service and this Bureau, and to expedite drafting and compilation procedures.

Field work in advance of compilation was done in 1951 and included the establishment of horizontal and vertical control, tidal observations, limited inspection of shoreline and interior features, and the investigation of geographic names. No additional field work was accomplished.

The maps of this project were compiled using instrument work sheets at 1:20,000 scale from the nine-lens plotters. Photographs were nine-lens taken in 1950 and 1952. The shoreline manuscripts at 1:20,000 scale cover only shoreline and adjacent prominent planimetric features. Maps T-9728, T-9734, T-9735 and T-9740 are the exception to this and show contours and other topographic features. These were compiled prior to the adoption of the 1:40,000 scale topographic series for Bureau use which were compiled using work sheets reduced to 1:40,000 scale.

Items registered under T-numbers will include crones prints of the map manuscripts and a copy of the corresponding descriptive reports.

PROJECT REPORT

AERIAL PHOTOGRAPH CONTROL AND INSPECTION

NUNIVAK ISLAND, ALASKA

PROJECT Ph-56(49) June-Sept. 1951

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Part 2

Photographs obtained by field party for beach intelligence (under separate cover)

Geographic Names Report (under separate cover)

PROJECT REPORT
AERIAL PHOTOGRAPH CONTROL AND INSPECTION
NUNIVAK ISLAND, ALASKA
Project Ph-56(49) 1951

B. INSTRUCTIONS:

The work on this project was done in accordance with the following instructions:

1. Instructions - Triangulation in Alaska, Cape Avinof to Cape Romanzof, on Nunivak Island, Project No. G-1057, dated 29 March 1951.

2. Supplemental Instructions - Photogrammetric Surveys - Project No. G-1057 (Ph-56) - Cape Avinof to Cape Romanzof and Nunivak Island, Alaska dated 2 April 1951.

C. ACTIVITIES OF THE PARTY:

The photogrammetric work covered by this report was done in conjunction with triangulation Project G-1057, Nunivak Island. Party organization and activities are covered in the Season's Report for that Project.

The photogrammetric personnel consisted of three men; Irving Zirpel, Jr., Cartographer; Philip G. Mellon, Cartographic Survey Aid; and Donald D. Carrier, Jr., Cartographic Survey Aid; who were attached to the triangulation party for the purpose of complying with the photogrammetric instructions issued to the triangulation party.

The writer reported in Seattle, Washington to Lt. M.J. Tonkel on 20 May 1951 and departed for Anchorage, Alaska, via commercial airline on 24 May 1951. Transportation from Anchorage to Bethel was furnished by MATS on 26 May 1951. Mr. N.E. Sylar and I. Zirpel, Jr. proceded from Bethel to Nunivak Island to begin reconnaissance and establish camp for the party attached to the Nunivak Island project. Transportation to the island for these two men was furnished by a contract plane and a Northern Consolidated Norseman. Due to default in the contract no planes were available on the island until 7 June. Philip G. Mellon arrived in Mekoryuk with the geodetic personnel on 6 June. Donald D. Carrier arrived 1 July. Base camp was established in Mekoryuk and was housed in buildings furnished by the Alaska Native service. On 27 July base camp was moved to Tachikugamiut and all operations were worked out of there until the Ship PATHFINDER moved the camp back to Mekoryuk on 30 August.

The Photogrammetric Survey consisted of (1) the establishment of supplementary horizontal control stations as required for topographic mapping, and the identification of horizontal control on aerial photographs; (2) the establishment of vertical control stations as required for contouring, and the identification of vertical control stations on aerial photographs; (3) shoreline inspection and coast and beach information; (4) selection and identification of alongshore photo-topographic stations; (5) inspection and clarification by notes on the photographs of photographic details throughout the project; (6) selection and identification on the photographs of landmarks for nautical charts and of aids to maritime and air navigation; (7) taking aerial photographs with hand held camera, and (8) selection and identification of photo-hydrographic stations to supplement topographic stations.

The island had complete nine-lens coverage at 1:20,000 and one set of reduced scale nine-lens photographs (approximate scale 1:67,000) all of which were furnished to the field party. All field inspection and identification was done on the full size (1:20,000) nine-lens photographs, which were cut into approximate nine inch squares and taped together to facilitate carrying in the field and for use under the stereoscope. The photographs were not cut as suggested in the Photogrammetry Instructions No. 43 7-26-50, as photographs cut in this manner are impractical for use in the confined space of an airplane and carrying in the field. Photographs cut in nine inch squares are readily usable under small pocket stereoscopes and are satisfactory for carrying in the field and use in small airplanes.

The photogrammetric unit had no allotment for an airplane so was entirely dependent on geodetic planes for transportation. The majority of the triangulation reconnaissance was done by the photogrammetric unit as Mr. Sylar was taken sick early in the season. The necessity for reconnaissance, to keep the geodetic party operating, prevented the photogrammetric unit from accomplishing their work until the reconnaissance was complete. The photo unit also built signals on and marked all intersection stations on the project. These operations are time consuming and kept the photogrammetric unit's identification of vertical and horizontal control far behind geodetic observations.

Identification (horizontal and vertical) was done almost completely by the photogrammetric unit. Observations for the establishment of vertical control and for subtense distances were made, where possible, by the triangulation observers with a photoman present for the identification. Several stations were occupied by the photogrammetric unit for additional horizontal and vertical control.

The cooperation between the observing units and the photogrammetric unit was very good as Mr. Sylar, at the beginning of the season, stressed to the "O" parties the importance of the photogrammetric work.

A large number of triangulation stations had need for the subtense method to determine the distance to identifiable photo points. Stations that were on top of rock buttes or on cinder cones had no sub points that were easily accessible and subtense methods were used. This method is described in the project report"Cape Krusenstern to Point Hope, Alaska, Project Ph-28(47), 1950, page 4, under Stadia Traverse by Means of a Theodolite and 30 Meter Tape". This is a very satisfactory method of determining the distance and difference in elevation to sub points that cannot be measured in the standard manner without a great loss of time. Some ground control stations have two substitute stations identified but the ones requiring a subtense distance, in general, have only one substitute station identified. In such cases extreme care was taken in obtaining good positive points.

The entire shoreline of the Island was inspected visually from the air by personnel familiar with the existing ground conditions and the interpretation of photographs. See section on Shoreline Inspection.

The camping equipment was furnished by geodesy except for the ten by twelve white tent used for the photo office.

D. INADEQUACIES IN PHOTOGRAPHS AND EQUIPMENT:

The photographs for the project were taken in August of 1950 and were good with the exception of the lens failure encountered in three flights across the southwest portion of the island. This failure was in one of the oblique lenses and these three flight lines were scheduled for photography during the 1951 season. Identification of the stations in these flights should be transferable to new photographs with very little trouble.

The only instrumental difficulties were with a developing tank for the 620 film and a K-20 camera. During the season of 1950,, Loadamat daylight loading tanks were used and were very satisfactory. The FR tank used this season was poor and was discarded after being tried several times. The K-20 camera furnished did not transport the film properly giving double exposures and is being shipped back to Washington.

Transportation for the photogrammetric personnel was the biggest problem. As stated in previous reports the photogrammetric unit was dependent upon geodetic planes and therefore planes were available only when the triangulation party had no need for them. At times photogrammetric needs could be coordinated with the needs of the geodetic party but in these instances time was lost in waiting to be picked up after work was completed.

It is almost impossible to plan the photogrammetric work ahead because of the uncertainty of the observing schedules and time of moving. Photogrammetric personnel working at the time of these moves lost much valuable time in waiting for transportation from one station to another. To take advantage of the weather a plane should be available at all times. As observed in the past geodetic planes are available to the photogrammetric unit usually at a time of inclement weather and are generally in full use by the geodetic party when good weather prevails. Photogrammetric work is time consuming and requires a good bit of reconnaissance, checking lines, and identifing peaks and lakes. The job can not be adequately done without having some method of transportation available at all times.

The photogrammetric personnel attached to the Alaskan parties should be well trained in all field phases of photogrammetry before being assigned to that area. There is not enough time to train personnel and still take maximum advantage of the weather and transportation.

E. AREA COVERED:

The entire area of Nunivak Island was covered by this survey.

F. DESCRIPTION OF THE AREA:

This section of the report gives a general description of the area covered by this project.

Nunivak Island is entirely volcanic and is characterized by numerous cinder cones and water filled craters. Three volcanic mountains are outstanding, Roberts Mt. approximately 1800 feet, Seemalik approximately 830 feet, and Twin Mt. approximately 700 feet. Roberts Mt. has a small crater on the top with a number of lava flows and rock fields on the side and at the base. Twin Mt. is a breached cinder cone covered with moss and grass, while Seemalik seems to be a volcanic core or plug forming a rock butte. The southern part of the island is the main area for craters and cinder cones while the volcanic cores or buttes are more prominent on the northern half and west end of the island. The more recent lava flows are restricted to the area just south of Roberts Mt. Aside from the prominent volcanic features the remainder of the island seems to be rolling lava beds covered with a heavy mat of vegetation, mostly moss and grass. The ground is broken by numerous frost bumps and beaded streams which give evidence of permafrost. The vegetational growth on the island is confined to thick layers of moss and grass. There is no evidence of brush even along the stream beds.

The shoreline can be divided into three general groups: (1) High vertical bluffs which run westward from Nash Harbor around Cape Mohican and along the south shore as far as Dahloongamiut (local name). (2) Wide sand beaches backed by high sand dunes. (These are present on the southern extreme of the island extending northeast and northwest of Cape Mendenhall.). (3) The most predominent shoreline feature is 20 to 30 feet basaltic bluffs that were formed when the lava flows reached the sea. These surround the remainder of the island and make landing very difficult.

Two villages are permanent; Nash Harbor and Mekoryuk. Nash Harbor is, generally, only occupied during the winter and Mekoryuk the year round. Numerous camps of tent frames and barabaras (sod igloos) are scattered about the island and are used for fishing or sealing camps.

G. TRIANGULATION AND RECONNAISSANCE:

The reconnaissance for the project was done by Mr. N.E. Sylar and one photogrammetric man, the writer, when Mr. Sylar was taken sick.

The stands and marks were bombed in from the planes and the "O" parties did all their own building. Only a few times were light keepers used. The "O" parties consisted of two men on Wild instruments and three on Parkhurst instruments. In cases of difficult packs additional men were used.

The project called for area triangulation with stations established from 6 to 8 miles along the main shore, and a sufficient number of stations established in the interior of the island so that no point on the island was more than 6 or 7 miles from a station.

To fill these requirements a number of intersection stations were established along the main shore of the island. The photogrammetric personnel marked and built all the signals on these stations. Ten-foot cross-banner signals were plumbed over the marks. Cape Mohican Light was also cut in as an intersection station. All intersection stations were described on Form 525b and copies were given to the triangulation party. Astronomical station NUNIVAK ISLAND, 1902 was recovered and tied in to the triangulation by traverse, subtense and triangulation. Astronomical station CAPE ETOLIN, 1874 was searched for but was not found. Stations V-11, V-12, V-13, and V-14 are resection stations occupied by the photogrammetric unit. These stations were primarily established for vertical control but can be used for horizontal control although several of them have no check positions. These four stations are unmarked and no description has been written. Unless these supplemental stations are placed on rock buttes tripod set-ups are very unstable. The best method found to set up in these unstable areas was to drive two by fours into the ground as far as possible and set the tripod legs on them. Duck boards are preferable at these set-ups but are not absolutely necessary.

INGRA and MELLON have no check on their positions and station NASH was not identified. Station TIM was identified but only two cuts were taken to this station giving a very slim and weak triangle. This station cannot be used for horizontal control, but may be of some use for vertical control.

Very few peaks were cut in by the "O" parties. Most of the peaks are the breached tops of craters with no definite high point that could be cut in from two or more stations. What appears to be the high point from one station is not what appears from another station, thereby forming very poor intersections. The peaks identified by the photogrammetric unit are for vertical control and should be cut in from the radial plot. Single positions were taken on these peaks and they should not be used for horizontal control. Distances to these peaks used for vertical control should be scaled from the plot, and the horizontal angles used for a check on the identification.

The distance to the substitute station for BUTTE was established from subtense measurement. The distance was too long for the desired 60 meter base so a 120 meter base had to be used to subtend the proper angle. It was impossible, because of blocked lines, to observe the substitute station from other triangulation stations for a check, so care should be used in holding the plot to this point.

All horizontal control stations were positively identified and there should be no trouble in transferring points to the office photographs. Near vertical photographs were taken with the K-20 of a number of these stations and these should help in the transfer.

H. VERTICAL CONTROL:

The instructions for this project called for the establishment and identification of vertical control throughout the project so that no place in the project is more than 3 miles from either tidal shoreline or an identified point of known elevation.

The required vertical control was established in several ways:

(a) Resection and intersection stations with trigonometric elevations determined by nonreciprocal vertical angles. With this method the distances are available without waiting for the radial plot. From these stations vertical control was extended to lake surfaces and peaks.

(b) Trigonometric elevations from nonreciprocal vertical angles to points identified on aerial photographs with the positions of the points determined by the radial plot.

The triangulation scheme provided the basic vertical control and this was tied in by observations to three tide staffs established during the season, one at Mekoryuk, one at Nash Harbor, and one at Tachiugamiut. The stations at Tachikugamiut and Nash Harbor were established and observed by the Ship PATHFINDER.

All lakes and peaks were observed from triangulation, intersection or resection stations. Most of the observing was done by the triangulation "O" parties with a photogrammetric man present for identification. Water surfaces have been designated by "V" followed by a four digit number. Where possible two points were identified on the same lake to serve as a check and these are lettered A and B, thus two points on the same lake would be V-1031 A and V-1031 B. In four cases lakes have been cut in from two triangulation stations, the same points were not observed but they should serve as a check. Lake V-1002 A and B cut in from SPIRE is the same lake as V-1022 A and B cut in from ROBERTS, Lake V-1032 A and B cut in from ROBERTS is the same lake as V-1061 cut in from REINDEER, lake V-1034 A and B cut in from ROBERTS is the same lake as V-1060 A and B cut in from REINDEER, and lake V-1091 A and B cut in from CLEAR is the same lake as V-1106 cut in from LUKLUK. A single horizontal position has been taken on all lakes and is recorded in the margin of the DZD book. The peaks identified have been designated by a three digit numeral such as Peak 101. Peak 106 was not pricked in the field and should be identified with the office stereoscope. All information is submitted on pricking card.

Pricking cards Form M-2226-12 are furnished for all vertical control points with sketches and horizontal angles. All vertical angles are submitted on Zenith Abstract forms.

Vertical control point V-10 was intended to be a resection station, but due to the unstability of the ground it was not practical; however, nonreciprocal vertical observations were obtained on two triangulation stations. This station will have to be cut in from the radial plot and its elevation computed from vertical angles. The difference in elevation was hand leveled from the station to the lake surface.

The island is well covered by vertical control points and the only area where there is a paucity of vertical control is a small area west of Cape Manning.

In a few instances points on desired lakes were not identifiable from the station. In such cases signals were built and identified on the lake giving positive identification to the points. Under ordinary circumstances, these lakes would be too flat or far off to give good positive control. A number of vertical control points on the lake shores were positively identified by flying the line after observations had been taken. This gave positive identification where in some cases it might have been doubtful.

Bench Mark No. 1 (Tachikugamiut) and Bench Mark No. 1 (Nash Harbor) were pricked direct. Both of these bench marks were tied in to the tide staffs by double run levels. Station TIDE was primarily established as a Bench Mark for the tide staff at Mekoryuk, but was later tied into the triangulation scheme and identified as horizontal control.

The difference in elevation between triangulation stations and their sub points has been computed and is noted on the pricking cards.

See the index to field work of this report for list of lake surfaces and the stations they are to be computed from.

I. TOPOGRAPHIC STATIONS:

Topographic stations, spaced with triangulation stations adjacent to the shoreline and suitable for the same purpose, were established about every 3 to 4 miles along the main shore of the island, with one exception. At the west end of the island, bluffs varying from 150 feet high to 350 feet are impassible. To establish topographic stations on the top of these bluffs would have required a large amount of time and expense and would be of very little use to the hydrographic party because of their inaccessibility. This area was supplemented with hydrographic stations that should be readily identifiable by a hydrographic party. See section on Hydrographic Stations of this report. No suitable objects to aid the hydrographic party were identifiable at the base of the bluffs.

The azimuth mark for station TWIN was identified for and can be used as a recoverable topographic station.

With the exception of WASH, and TWIN AZ. all stations are marked with standard topographic discs. The majority of stations established are brazed on pipe, but a few were set in drill holes in rock. All stations are witnessed either by a small cairn or drift wood log. Station WASH is an offshore pinnacle rock and is not marked but was identified from the air. All objects identified from the air were carefully studied in the field and pricked under the stereoscope in the field office.

Four topographic stations were located by a three-point sextant fix mainly because no substitute stations were available for identification. On all of these stations triangulation stations were used for the fix and a fourth station was taken for a check.

Listed below are the stations located by three-point sextant fix:

ALEX, FLAG, HIGH, OBOE

Topographic stations were described on Form 524 and pricking cards made out for each station for photogrammetric information. The pricking cards are attached to the 524 forms.

Near vertical photographs were taken with the K-20 of some of the recoverable topographic stations. Inclement weather prohibited photography of all the stations. See section on field photography.

Topographic stations to be located by the radial plot are listed in the statistics section of this report.

J. HYDROGRAPHIC STATIONS:

Hydrographic stations have been selected along the shoreline to supplement the topographic stations. In the area of vertical bluffs on the western end of the island a number of stream valleys at the top of the bluff were pricked. The establishment of topographic stations, in this area, was impractical due to the inaccessibility and the amount of time it would have taken to establish them. The hydrographic stations identified in this area should be readily identifiable by the boat parties where topographic stations would not. The hydrographic stations are designated by three digit numbers, and a brief description and sketch of each has been submitted on a pricking card.*

* Cards filed in Photogrammetry Div. under T-numbers. SWR

There are very few buildings on the island that would make desirable hydro stations and all the buildings that are suitable have been identified. No offshore rocks were picked as hydro stations. Usually in the areas of offshore rocks there was an over abundance and it would be difficult for the hydrographic party to positively identify any one.

All the hydro stations were selected after careful study from the air.

All hydros should be located by the radial plot.

K. SHORELINE:

The entire shoreline of the island was inspected visually from the air by personnel familiar with existing ground conditions and the interpretation of aerial photographs.

Inspection on the ground was done from all topographic stations and triangulation stations visited and in other places where it was necessary to land. The instructions called for inspection only in the vicinity of control stations, but in areas of numerous offshore rocks and ledges field notes help the compiler, where it would be confusing without any delineation by the field inspector.

Where the shore consists of ledges, sunken rocks, foul areas, and rocks awash, field notes have been inked on the photographs. There are a number of these areas around the island and it was not possible to note all rocks awash and the stage of tide at the time of observation. The three general types of shoreline on the island were stated in the section "Description of the Area". The beach areas were covered by the "Coast and Beach Intelligence" forms sent to the Director 8 September 1951. Eight of these forms were sent in numbered consecutively with the approximate locations listed below.

No. 1 Beach between topographic station BENT and topographic station HARD.

No. 2 The beach in the vicinity of topographic station PIPE.

No. 3 The beach in the vicinity of topographic station ITEM.

No. 4 The beach at the head of the small bight at the village of Tachikugamiut.

No. 5 The beach area between triangulation station BLUFF and triangulation station CLIFF.

No. 6 The beach area between triangulation station SANDY and topographic station BENT.

No. 7 The beach area between triangulation station BEACH and topographic station FLAG.

No. 8 The beach at the village of Mekoryuk and the sand spit on the southwest side of Cape Etolin.

These forms and the field notes inked on the photographs should give a composite picture of the shoreline and the beach conditions of the island. Oblique pictures, from the air and from the ground, were taken with the hand held camera and will be submitted under separate cover.

The elevation of all offshore rocks, shoals and other features were estimated by flying over the feature. In many cases this may be a very rough value as estimation from an airplane is difficult unless there is enough elevation to be determined by the altimeter in the plane.

Shoals at varying depth surround the island and all approaches to the island are hazardous. Hydrographic surveys are needed to chart these as a number of them are not visible on the photographs and there was no way of determining their position and depth without a large expenditure of time.

The shoreline is all fast land and relatively stable except in some of the shallow bays. The only areas where shifting may occur is on the beaches along the south shore of the island, this being due to ice action and along shore currents. The grass covered sand dunes in the beach areas are constantly shifted by wind action and are only stable if covered by a heavy growth of grass or moss.

Most of the coast is rock bound and there is no shifting or sloughing in these areas. The small bights in the coast usually have a beach at the head with steep gradient to both the foreshore and the backshore. The entrances to these bights are usually foul with boulders and the beaches are strewn with boulders and ledge rock.

The tide table gives the mean range of tide for Tachikuga (Tachikugamiut) at 3.0 feet. Observations made during the field season give an approximate range of about 6 feet. Seasonal storms and prevailing winds seem to be unpredictable factors effecting the tides.

In a few low flat areas the approximate MHWL was delineated at the edge of the grass, The water floods some of these flats but for all practical purposes the MHWL should be delineated at the grass line.

No detailed description of the shoreline will be given in this report as all pertinent information has been inked on the photographs and with that information and the beach intelligence reports the compiler should have sufficient data to accurately map the shoreline.

L. FIELD PHOTOGRAPHY:

In various places in this report the taking of photographs in the field has been mentioned. This section will bring together under one heading the remarks on this subject.

Purposes for which photographs were obtained in the field include:

1. Near vertical photographs of triangulation and topographic stations for the purpose of identifying the station and the substitute stations. These were taken for aid in future recovery and to help the compiler in transferring the points to various office photographs.

2. Oblique photographs of the shoreline to supplement the Coast and Beach reports.

3. Near vertical photographs of triangulation stations where identification was difficult or new mapping photographs were to be taken after the field season. All the photographs serve as a check on the station identification.

4. Near vertical photographs of hydrographic stations selected.

The cameras furnished the photogrammetric party were a 620 Kodak Tourist with an f-4.5 lens and speeds up to 1/200 of a second, and a K-20 aerial with an f-4.5 lens and speeds up to 1/500 of a second. The 620 was dropped in the bay at the first of the season so was of no use throughout the rest of the project. The film furnished for the K-20 was super XX in 20-foot rolls taking 50 exposures.

A Smith Developing tank was used for developing the film and all prints were made on velite paper which was very satisfactory. Dk-60a developer was used and the grain was fine enough to give good prints. DK 76 developer was tried but the increase in developing time did not seem to give any better results in the negatives.

As a whole the field photography on this project was poor and a number of stations were not photographed. The lack of transportation and inclement weather were the main hinderances. Out of the entire season there were about five or six days that were good for photography at an altitude of about 4000 feet. During these days the planes were in full use and time could not be spared for photography. With the plane situation the way it has been the past years no definite plans can be made to obtain good photography. To take any pictures at all the planes had to be used when they were available whether the weather was conducive to good photography or not. The pictures taken this year were taken on days when a number of stations were obscured by clouds and the pictures either had to be taken through the breaks or under the ceiling which was about 1500 to 2000 feet. Pictures to be of any value should be taken at an altitude of about 4500 feet; ones taken at this altitude cover enough ground to include both the sub point and the station and still have the station visible on the photograph. Photographs at lower altitudes do not cover enough area and at times show motion if lighting conditions are poor and slow shutter speeds are used.

The plane used for photography was a cub on floats which is not satisfactory. To clear the floats and obtain a near vertical picture the plane has to be put into a steep bank and the picture taken when the photographer believes he has the camera in a near vertical position. The plane cannot be held in a bank without stalling long enough to give a good air base for stereo-pairs to be taken. Because of this a lot of value is lost in the field prints as stereo-pairs are highly desired. The only practical method of doing this would be to cut a hole or port in the bottom of the fuselage behind the baggage compartment and then by sitting or lying in the baggage compartment the photographer could get vertical pictures between the floats. On projects where good photography is desired it is recommended to take all pictures from wheel ships.

Various altitudes have been tried for taking of the field pictures and it seems that the best results are obtained from about 4000 feet to about 4500 feet. At this altitude the station and duck boards are still visible without taking excessive time to mark the stations with cloth or paint.

The use of the K-20 camera is far superior to the 620 Kodak. With the K-20 it is much easier to get stereo-pairs with one flight over the station whereas with the 620, the station has to be circled to give enough time to transport the film. Also with the 620, is the necessity of changing rolls while in flight as an eight exposure roll does not last long in comparison with the 50 exposure roll of the K-20.

M. CONTROL OF THE RADIAL PLOT:

Control of the radial plot is based primarily on the triangulation established by N.E. Sylar during the season of 1951, and several resection stations established by the photogrammetric unit assigned to this project.

The area was well covered by the main scheme and supplemental stations. Several stations have computed positions but no check. These are INGRA, MELLON, V-11, V-12, and V-14.

A tabulation of stations for the control of the radial plot is included in the STATISTICS section of this report.

N. OBJECTS TO BE LOCATED BY THE RADIAL PLOT:

When laying the radial plot the positions of all topographic stations, Hydrographic stations, vertical control stations except triangulation, resection or intersection, are to be obtained. The topographic stations have been identified by the substitute station method, direct prick and three point sextant fix; all hydrographic stations have been identified by direct pricks and are gables of cabins, prominent points of drains at the top of bluff or the top of rocks or pinnacles; vertical control stations have been identified by the substitute station method (V-10) or direct pricks. The vertical control points consist of identified points on lake shores, tops of peaks and established bench marks.

O. AERONAUTICAL AIDS:

There are no aeronautical aids in the area covered by this project.

P. NAUTICAL AIDS:

The only aid to navigation within the project area listed in the 1951 Light List is No. 2617 on Cape Mohican which is listed as follows: "CAPE MOHICAN, Fl. W., 3 sec., U., on cape, light 278 feet above water, seen 9 miles, candle power 140 200 mm e, flash 1 sec., small white house, established 1944." A triangulation position of it was obtained by N.E. Sylar in 1951 under the name of CAPE MOHICAN LIGHT. The small white building was visible on the photographs and was pricked direct.

The only other aids to navigation are the temporary bouys placed in the channel of the Mekoryuk River by the natives to mark the entrance for the Ship NORTH STAR. These bouys are not of any permanent nature and are shifted as the channel shifts. Only vessels with shallow draft can enter the river and a native pilot can be obtained by calling the radio station KTPX on a frequency of 3385 at Mekoryuk.

The island is relatively barren of any conspicuous land marks. A few have been identified on the photographs and are listed on the landmark form 567 attached to this report.

Q. COMPUTATION OF VERTICAL CONTROL:

Computations for elevations were not made in the field as these are all dependent on the elevations carried by the triangulation party and these were not computed. The elevations of the lake surfaces have to be computed after the radial plot has been laid as the distances required are indeterminate until a position is determined for the lake point identified. In the cases of V-11, V-12, V-13, and V-14 the distances can be obtained directly from the position computations and need not wait for the radial plot.

No copies of triangulation zenith abstracts were furnished to the photogrammetric unit and these will have to be obtained from the Division of Geodesy.

The water level of the lakes varies during the season. The maximum variation observed was about 1.5 feet.

In the index to field work of this report is a list of lake surfaces to be computed and the stations that each point should be computed from.

R. RECORDS SUBMITTED:

All field records have been submitted to the Washington Office as listed below:

Transmitting letter dated 8 September 1951.
Transmitting letter dated 6 December 1951.
Transmitting letter dated 7 December 1951.
Transmitting letter dated 10 December 1951.

Approved:

Miller J. Tonkel
Lt. USC&G Survey

Respectfully submitted:

Irving Zirpel, Jr.
Cartographer

STATISTICS
Ph-56(49)

PHOTOGRAPH CONTROL (Triangulation, intersection, and resection stations for control of radial plot) 48

1. Triangulation stations; marked, identified 29
   BEACH, BLUFF, BUTTE, CHASE, CLEAR, CLIFF, CRATER, DANIEL, DOLLY, ETOLIN, GRASS, HARBOR, INLET, JINGIA, KNOLL, LUKLUK, MANNING, MEKORYUK, MELLON, MOHICAN N.W. BASE, MOHICAN S.E. BASE, MOUND, MUSK OX, PARKER, PIERCE, REINDEER, ROBERTS, SEGER, TWIN

2. Intersection stations; marked, identified 14
   BIGHT, CINDER, DEWEY, INGRA, KICKJOOIT, LEROY, POINT, ROUND, SANDY, SPIRE, TACHY, TIM,* TUNDRA, TIDE

   * See §27

3. Intersection stations; not marked, identified 1
   CAPE MOHICAN LIGHT

4. Resection stations; not marked, identified 4
   V-11, V-12, V-13, V-14

TOPOGRAPHIC STATIONS ** 58

1. Topographic stations; marked, identified 26
   ALEX, BEAT, BENT, CARL, CART, FLAG, HARD, HEAD, HIGH, HOPE, ITEM, KING, KNOT, LAKE, MARK, OBOE, PIPE, POLE, POND, ROCK, SETH, SNOW, SOCK, TENT, WOOD, YARD

2. Topographic stations; not marked, identified 1
   WASH

3. Geodetic stations suitable for topographic stations* . . . 31
   TIDE, MEKORYUK, ETOLIN, POINT, MELLON, BIGHT, MANNING, LEROY, ROUND, TWIN, TWIN AZ., INGRA, CHASE, SANDY, CINDER, MOUND, BEACH, DEWEY, CLIFF, BLUFF, TACHY, PIERCE, DOLLY, CAPE MOHICAN LIGHT, GRASS, NASH, HARBOR, JINGIA, INLET, KICKJOOIT, 1902 Astronomical station NUNIVAK ISLAND

* alongshore stations suitable for use in hydrographic surveying. EHK

HYDROGRAPHIC STATIONS 22
100 through 121

SHORELINE INSPECTED, statute miles 273

Triangulation established; not identified 3
E.P.I., SHORAN, NASH

Triangulation recovered, not identified 1
NUNIVAK ISLAND ASTRO, 1902

LANDMARKS, selected, identified 5
GABLE, TWIN, ROBERTS, GABLE, CAPE MOHICAN LIGHT

ELEVATIONS DETERMINED 129

1. Peaks, identified 5
103, 104, 105, 106, 107

2. Water surfaces, identified 117
V-1000 through V-1116

3. Occupied, not marked 5
V-10, V-11, V-12, V-13, V-14

4. Bench marks, identified 2
B.M. #1 (Tachikugamiut), B.M.# 1 (Nash Harbor)

STATIONS OCCUPIED FOR VERTICAL CONTROL 21
V-10, V-11, V-12, V-13, V-14, SPIRE, TWIN, MUSK OX, ROBERTS, CRATER, MOUND, DANIEL, REINDEER, PARKER, BUTTE, CLEAR, KNOLL, CLIFF, TUNDRA, LUKLUK, CINDER

STATIONS OCCUPIED FOR HORIZONTAL CONTROL 6
ETOLIN, DOLLY, V-11, V-12, V-13, V-14

AREA COVERED, square statute miles 1685

INDEX TO FIELD WORK

NUNIVAK ISLAND, ALASKA

Project Ph-56(49)

Season 1951

Triangulation Established in 1951 and Identified:

Station Name	Photo No.
* BEACH	28976
BLUFF	28971
BUTTE	29001
* CHASE	28919
CLEAR	28968
* CLIFF	28974
* CRATER	28947
* DANIEL	28900
DOLLY	28968
* ETOLIN	28880
GRASS	28993
HARBOR	28937
* INLET	28903
* JINGIA	28932
KNOLL	28969
LUKLUK	28962
* MANNING	28876
* MEKORYUK	28880
* MELLON	28877
MOHICAN N.W. BASE	28967
MOHICAN SE BASE	28967
* MOUND	28978
MUSK OX	28909
* PARKER	28941
PIERCE	28968
* REINDEER	28957
* ROBERTS	28945
SEGER	28897
* TWIN	28916

1902 Astronomical Station "Nunivak Island" tied in by sub-tense and traverse.

* Photos taken with hand-held camera

Intersection Stations marked and identified:

Station Name	Photo No.
* BIGHT	28876
* CINDER	28953
* DEWEY	28974
* INGRA	29013
* KICKJOOIT	28902
LEROY	28892
* POINT	28879
* ROUND	28895
* SANDY	28950
SPIRE	28911
TACHY	28970
TIM	28934
TUNDRA	28938
* TIDE	28881

Intersection Stations not marked and identified:

Station Name	Photo No.
CAPE MOHICAN LIGHT	28965

Resection Stations not marked and identified:

Station Name	Photo No.
V-11	28960
V-12	28961
V-13	28906
V-14	28927

Azimuth marks good for topographic stations, identified:

Station Name	Photo No.
* TWIN AZ.	28915

Topographic Stations Marked, identified:

Station Name	Photo No.
ALEX	28979
BEAT	28977
* BENT	29011
CARL	28972
CART	28877
FLAG	28978
HARD	28953
* HEAD	28877
* HIGH	28978
HOPE	28895
ITEM	28971
* KING	28884
KNOT	28967
LAKE	28951
* MARK	28916
OBOE	29011
PIPE	28974
* POLE	28938
* POND	28916
* ROCK	28975
* SETH	28882
SNOW	28895
SOCK	28969
* TENT	28904
WASH (Not marked)	28966
* WOOD	28880
* YARD	28901

Peaks, identified:

Number	Photo	Compute from observations at
103	28948	CRATER
104	28957	REINDEER
105	28959	REINDEER AND BUTTE
106	28910	MUSK OX
107	28955	CINDER

Hydrographic stations, identified:

Number	Photo No.
100	28954
101	28978
102	28979
103	28970
104	28937
105	28937
106	28937
107	28937
108	28937
109	28935
110	28935
111	28933
112	28933
113	28965
114_a	28965
115	28965
116	28968
117	28968
118	28968
119	28880
* 120	28887
* 121	28904

Water surfaces, identified:

V Number	Photo	Compute from observations at
V-1000	28912	SPIRE
V-1001 A&B	28912	SPIRE
V-1002 A&B	28912	SPIRE (use as check on
V-1003 A&B	28912	SPIRE V-1022)
V-1004	28911	SPIRE
V-1005 A&B	28912	SPIRE
V-1006	28915	TWIN
V-1007 A&B	28915	TWIN
V-1008 A&B	28915	TWIN
V-1009 A&B	28915	TWIN

Water surfaces, identified: (Continued)

V Number	Photo	Compute from observations at
V-1010 A&B	28921	TWIN
V-1011	28921	TWIN
V-1012 A&B	28921	TWIN
V-1013	28923	TWIN
V-1014 A&B	28909	MUSK OX
V-1015 A&B	28900	MUSK OX
V-1016 A&B	28945	ROBERTS
V-1017	28944	ROBERTS
V-1018 A&B	28944	ROBERTS
V-1019 A&B	28944	ROBERTS
V-1020 A&B	28926	ROBERTS
V-1021	28926	ROBERTS
V-1022 A&B	28924	ROBERTS (Use as check on V-1002)
V-1023	28924	ROBERTS
V-1024	28924	ROBERTS
V-1025 A&B	28946	ROBERTS
V-1026	28946	ROBERTS
V-1027 A&B	28946	ROBERTS
V-1028 A&B	28946	ROBERTS
V-1029 A&B	28946	ROBERTS
V-1030	28955	ROBERTS
V-1031	28955	ROBERTS
V-1032 A&B	28956	ROBERTS (Use as check on V-1061)
V-1033	28956	ROBERTS
V-1034 A&B	28956	ROBERTS (Use as check on V-1060)
V-1035	28944	ROBERTS
V-1036 A&B	28948	CRATER
V-1037	28948	CRATER
V-1038	28948	CRATER
V-1039 A&B.	28948	CRATER
V-1040 A&B	28948	CRATER
V-1041 A&B	28948	CRATER
V-1042 A&B	28948	CRATER
V-1043 A&B	29008	CRATER
V-1044	29008	CRATER
V-1045	29008	CRATER
V-1046 A&B	28978	MOUND
V-1047	28978	MOUND
V-1048	28978	MOUND
V-1049 A&B	28978	MOUND

Water surfaces, identified: Continued

V Number	Photo	Compute from observations at
V-1050 A&B	28900	DANIEL
V-1051	28900	DANIEL
V-1052	28900	DANIEL
V-1053 A&B	28900	DANIEL
V-1054 A&B	28957	REINDEER
V-1055	28957	REINDEER
V-1056 A&B	28957	REINDEER
V-1057	28957	REINDEER
V-1058 A&B	28957	REINDEER
V-1059 A&B	28957	REINDEER
V-1060 A&B	28957	REINDEER (Use as check on V-1034)
V-1061	28975	REINDEER (Use as check on V-1032)
V-1062 A&B	28975	REINDEER
V-1063 A&B	28975	REINDEER
V-1064 A&B	28975	REINDEER
V-1065 A&B	28975	REINDEER
V-1066 A&B	28973	REINDEER
V-1067 A&B	28973	REINDEER
V-1068	28973	REINDEER
V-1069	28973	REINDEER
V-1070 (1)	28959	REINDEER
V-1070 (2) A&B	28959	REINDEER
V-1071 A&B	28958	REINDEER
V-1072 A&B	28958	REINDEER
V-1073	28957	REINDEER
V-1074	28898	MUSK OX
V-1075	28907	MUSK OX
V-1076	28943	PARKER
V-1077	28927	PARKER
V-1078 A&B	28927	PARKER
V-1079	28928	PARKER
V-1080	28941	PARKER
V-1081 A&B	28941	PARKER
V-1082	28940	PARKER
V-1083	28941	PARKER
V-1084	28941	PARKER
V-1085 A&B	29001	BUTTE
V-1086 A&B	29001	BUTTE
V-1087 A&B	29001	BUTTE
V-1088 A&B	28960	BUTTE

Water surfaces, identified: - Continued

V Number	Photo	Compute from observations at
V-1089 A&B	28958	BUTTE
V-1090	28968	CLEAR
V-1091 A&B	28968	CLEAR (Use as check on V-1106)
V-1092 A&B	28969	CLEAR
V-1093	28969	CLEAR
V-1094	28960	KNOLL
V-1095 A&B	28974	CLIFF
V-1096	28999	V-11
V-1097 A&B	28999	V-11
V-1098 A&B	28960	V-11
V-1098 A&B	28960	V-11
V-1099 A&B	28938	TUNDRA
V-1100 A&B	28938	TUNDRA
V-1101 A&B	28938	TUNDRA
V-1102	28939	TUNDRA
V-1104 A&B	28963	LUKLUK
V-1105 A&B	28962	LUKLUK
V-1106	28963	LUKLUK (Use as check on V-1091)
V-1107 A&B	28963	LUKLUK
V-1108	28963	LUKLUK
V-1109	28963	LUKLUK
V-1110 A&B	28929	V-13
V-1111	28907	V-13
V-1112	28907	V-13
V-1113 A&B	28925	SPIRE
V-1114 A&B	28896	SPIRE
V-1115	28895	SPIRE
V-1116 A&B	28927	V-14

Additional Vertical Control:

V-10	28890

Landmarks; identified:

CAPE MOHICAN LIGHT	28965
Gable (Hydro #105)	28937
TWIN	28916
Roberts	28945
Gable (Mekoryuk)	28880

Shoreline:

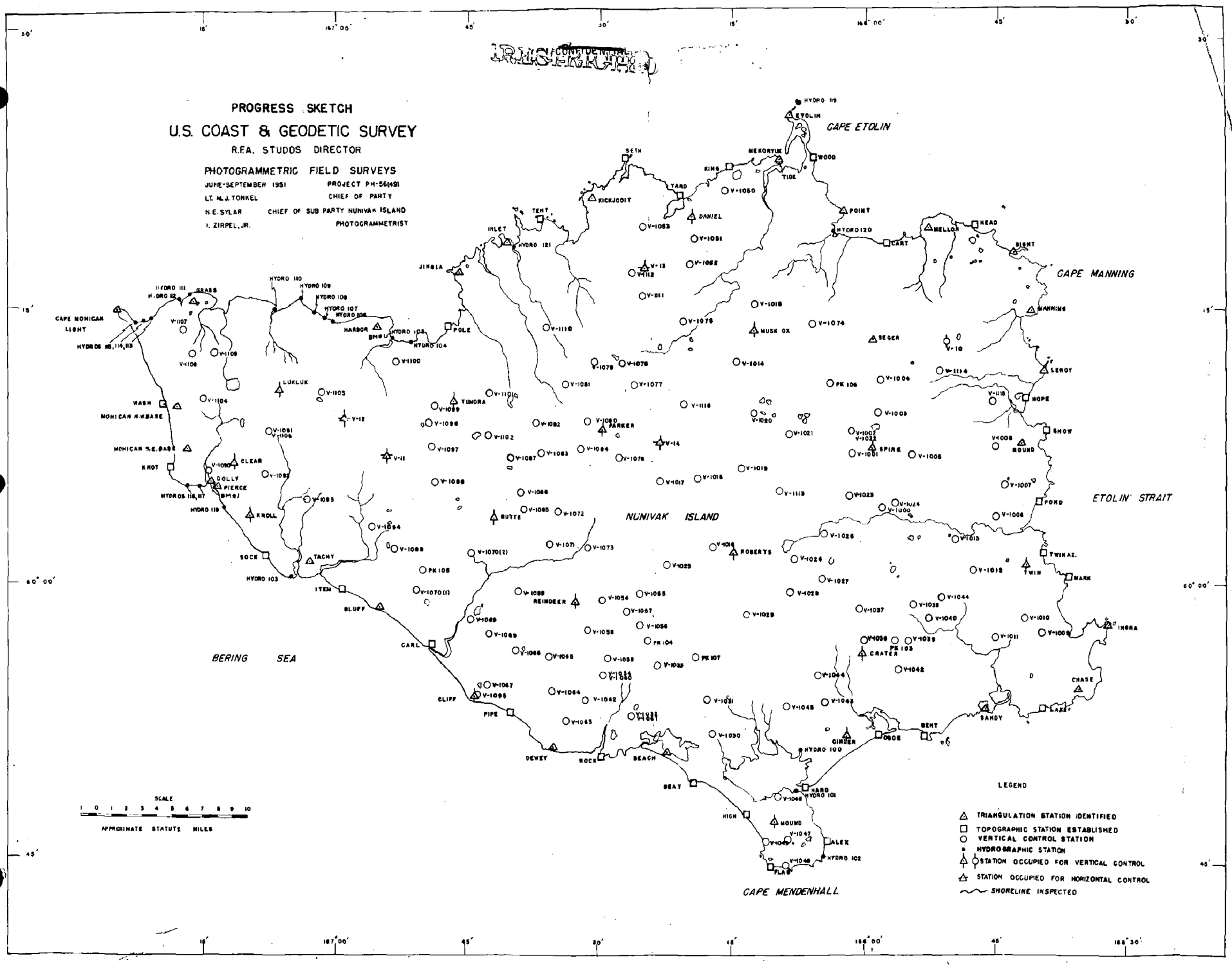
Photo No.	Photo No.	Photo No.
28875	28916	28966
28877	28931	28967
28880	28933	28968
28885	28935	28970
28887	28937	28972
28892	28951	28974
28894	28953	28976
28902	28954	28978
28904	28965	29011
		29013

Vegetation and cultural features:

28875	28923	28956
28877	28925	28957
28879	28927	28959
28880	28929	28960
28885	28931	28962
28888	28933	28964
28890	28934	28966
28895	28937	28967
28896	28938	28968
28897	28940	28969
28899	28941	28971
28900	28943	28972
28902	28944	28973
28904	28945	28974
28906	28946	28976
28908	28948	28978
28911	28951	29002
28912	28953	29005
28919	28954	29006
		29011

Bench Marks established 1951: identified:

Station	Photo No.
B.M. #1 (Tachikugamiut)	28969
B.M. #1 (Nash Harbor)	28937


PROGRESS SKETCH
U.S. COAST & GEODETIC SURVEY
R.F.A. STUDDS DIRECTOR
PHOTOGRAMMETRIC FIELD SURVEYS
JUNE-SEPTEMBER 1951
PROJECT PH-56(49)
LT. M.J. TONKEL
CHIEF OF PARTY
N.E. SYLAR
CHIEF OF SUB PARTY NUNIVAK ISLAND
I. ZIRPEL, JR.
PHOTOGRAMMETRIST
CAPE ETOLIN
CAPE MANNING
ETOLIN STRAIT
NUNIVAK ISLAND
BERING SEA
CAPE MENDENHALL
CAPE MOHICAN LIGHT
SCALE
APPROXIMATE STATUTE MILES
LEGEND
TRIANGULATION STATION IDENTIFIED
TOPOGRAPHIC STATION ESTABLISHED
VERTICAL CONTROL STATION
HYDROGRAPHIC STATION
STATION OCCUPIED FOR VERTICAL CONTROL
STATION OCCUPIED FOR HORIZONTAL CONTROL
SHORELINE INSPECTED

PHOTOGRAMMETRIC PLOT REPORT
Project Ph-56
Surveys T-9723 thru T-9742, and ~~T-9944 thru T-9948~~

Sheets were renumbered during compilation. (See attached index)

21. AREA COVERED

This radial plot covers the area of Surveys T-9723 thru T-9742 inclusive, ~~and T-9944 thru T-9949 inclusive~~. These topographic surveys cover the entire area of Nunivak Island which is near the west coast of Alaska in Bering Sea. These surveys will be compiled with the Reading Plotter.

22. METHOD-RADIAL PLOT

Map manuscripts:
Vinylite sheets with polyconic projections in black and Universal Transverse Mercator grids in red, at a scale of 1:20,000, were furnished by the Washington office. No base sheets were used except for surveys T-9724 and T-~~9731~~*, which were of considerably larger scale than the adjoining manuscripts.

* Area covered by T-10372 EMK

All control stations and substitute stations were plotted using 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 are nine-lens metal mounted photographs at a scale of 1:20,000. One hundred and thirty-seven (137) photographs were used in the plot, numbered as follows:

28875 thru 28881	38194 thru 38196	38280 thru 38282
28884 thru 28892	38198 thru 38200	38284 thru 38298
28894 thru 28902	38211 thru 38223	38300 and 38301
28967 thru 28979	38226 thru 38239	38303 thru 38316
	38242 and 38243	38318
	38265 thru 38277	38321 thru 38336

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:
The radial plot was constructed directly on the map manuscripts and the two base sheets which had been made for the two manuscripts that were out of scale. The radial plot was constructed in four parts. The first part consisted of surveys T-9728 and T-9734. The second plot

22. METHOD-RADIAL PLOT (cont'd)

Closure and Adjustment to Control: (cont'd)

covered T-9729, T-9734 and T-9740. The third plot covered most of the areas of ~~T-9736~~, T-9741 ~~and 9742~~ and T-~~9944~~ thru T-~~9948~~. This third plot was the complete coverage of the three southernmost flights so that all three flights could be released. The last plot was the largest and completed the entire area of Nunivak Island.

The first two parts offered little difficulty after two stations were repricked. The two sub. pts. for HARBOR, 1951 would not hold and after stereoscopic study the station was identified direct and held. LUKLUK, 1951 was misidentified in the field and after a preliminary plot, the sub. pts. were reidentified in the office and held.

The third part of the radial plotting consisted of extending the four southern flights southeastward to the southern shoreline in T-~~9944~~. There was considerable adjustment and readjustment of the templets in order to get a good plot because of several tilted photographs in T-~~9742~~ where there was no control. Photo. 38293 was finally bypassed and laid last. ROBERTS, 1951 was on the flight line and near photo. 38293, making the plot a little weak here. In order to strengthen the plot, several photos in the next two flights were prepared and bridged to SPIRE AND MUSKOX, 1951. Because of the long horizontal bridge between control stations and several tilted photos in Survey T-9742*, the positions in this area may be weak. No tilt determination was practicable without control points or shoreline pass points, so the templets were readjusted several times until the best possible plot was obtained.

The fourth and final part was by far the largest and the size was necessary because of the long bridges between control stations in the center of the island and the need to bypass the several considerably tilted photographs. The diagonal direction of the flight lines also made it impractical to break up the large part of the plot. This part of the plot was started by relaying the flight 38286 through 38298, used in the third part, and holding centers and points previously established. Successive flights were adjusted northward to SPIRE, 1951, where tilted photographs in T-9732* had to be bypassed. This was done by adjusting photographs in T-9724 and T-9725 first, extending the plot across T-9726 and T-9727, and then adjusting those in T-9732* last. Photograph 28896 was so badly tilted that it was not used in adjustment of the plot but placed last on top of the completed plot to establish points on the templet for rectification. No tilt determination was made.

All control was held in the plot except V-13, 1951. This station was established primarily for vertical control.

Transfer of Points:

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

23. ADEQUACY OF CONTROL

There was adequate control for all shoreline areas. There are no control stations in Surveys *~~T-9738 and T-9742~~. With good photographs this might possibly have been adequate, but there were several tilted photographs in each area, making adjustment difficult and the plot less rigid than desired. There was extensive bridging northeast and southwest from ROBERTS, 1951. This also resulted in making the plots larger than desirable, particularly the northern area.

*T-10373 & T-10377

All control stations were held except as follows:

HARBOR, 1951 - The plot was not rigid when the sub. pts. were held and extended to TUNDRA, 1951. A study of photographs revealed that HARBOR could be identified direct on the 1952 photographs, taken after the station had been established. The station was held as reidentified and a good plot obtained. The radially plotted position for sub. pt. "A" falls ~~on~~ 0.3 mm. southeast and sub. pt. "B" falls 0.4 mm. southeast from the computed positions.

LUKLUK, 1951 - A preliminary plot showed that this station was misidentified in the field on 1950 photographs which were of poor quality near the station. The 1952 office photographs were studied stereoscopically at the correct location as determined by the preliminary plot and the sub. pts. could be identified in the office on another part of the mountain top. The office identified points were held in the plot.

INLET, 1951 - There was a discrepancy in the azimuth station showing either PARKER or MUSKOX was used. Both were computed and plotted until it was established by a study of photographs and by the radial plot that PARKER, 1951 was the correct azimuth station.

MELLON, 1951 - The radially plotted position for sub. pt. "B" falls 1.0 mm. NW, from the true position. It was probably misidentified but since sub. pt. "A" was held, there was no attempt to reidentify "B".

ROUND, 1951 - Both sub. pts. were rejected. It is possible that they are reversed. The field man rejected one of them. The station was identified direct by using a reduced K-20 photograph and was held in the plot.

V-13, 1951 - The radially plotted position for the sub. pt. falls 0.9 mm. south of the true position. This point may be misidentified due to poor image on the photograph. Since this station was established for vertical control, the position may be weak. It was bypassed and a good plot obtained in this area without this station.

24. SUPPLEMENTAL CONTROL

None.

25. PHOTOGRAPHY

The definition of the photographs was good.

Photographic coverage was adequate. Two additional photographs were requested at Cape Mohican, 38280 and 38322 in order to get adequate coverage of the south coast of the Cape and for shoreline at the foot of a bluff near GRASS, 1951. South of the village of Mekoryuk two photographs, 28885 and 28886 were found to be considerably tilted and there was poor side lap with the flight to the south. Additional 1952 photos. 38194 thru 38200 were requested to strengthen the plot in this area.

One of the fiducial marks was missing in chamber 4 and one in chamber 8, on all the 1952 photographs. A special master templet was used to correct for displacements.

No tilt determination was made for any of the several considerably tilted photos. Photos 28896 and 38293 were found to be badly tilted and were bypassed, then laid last for establishing points for rectification. There were several other tilted photographs noted - but it is impractical to determine tilt and correct for it in the plot. Among those that were tilted (indicated by red "T" on sketch) were:

28885, 28886
38214, 38215, 38268, 38305, and 38331 thru 38333.
(55-39)

Some work on pricking conjugate centers was done in the Washington office before they were received. It was noted that many of the circles were not round as if made by a faulty pen. Those circles in line of flight were corrected.

26. VERTICAL CONTROL

After the plot was completed, azimuths to vertical control points were checked with the field identified points. The following discrepancies were noted while doing this, or during office pricking, or following computation of the elevations:

PEAK 103 - (~~T-9944~~ T-9736) - There was a discrepancy of ten degrees in the direct and reverse readings for azimuth. When the apparent discrepancy was corrected, the field identified point was found to be correct.

PEAK 105 - ~~T-9736)~~ T-10371 - The azimuth from BUTTE, 1951 was correct but the angle from REINDEER, 1951 was far to the south. When the elevation was computed, it was below sea level showing that another peak was observed. The elevation from BUTTE was accepted but there is no check on it.

V-10 - (~~T-9732~~ T-10373) - The three point fix given was very weak and plotted over 300 meters from the photogrammetric position which was used in computations. Since the sub. pt. and station are at the same elevation, the elevation was computed using the sub. pt. position and allowing for the difference in position. The elevation of the water surface was also computed on Form 29D. V-10 is not shown on the manuscript and all reference to this point is to Sub. Pt. V-10, 1951.

26. VERTICAL CONTROL (cont'd)

V-1087 (T-10371 ~~T-9736~~) - The elevations for points "A" and "B" did not check by 7 meters. By comparing the readings of several stations, it was noted that there seemed to be an error of 4' in the "L" readings for V-1087A. When this correction was applied, the recomputed elevation checked with "B" by 0.3 meter. Since this error is not proven, this elevation should be used with caution.

V-1089 (T-9741) - The azimuth did not check the field identified points on the lake. There were no image points that could be reidentified on the azimuths. There was another lake more nearly on the azimuths but the shape was different. The new lake was pricked and labeled V-1089 (1) and elevations computed for both lakes. Since it cannot be determined which is the correct lake, the elevation of the correct one should be verified during rectification of one of the photographs.

V-1093 (T-9735) - The azimuths did not check the photogrammetric position. One azimuth, from KNOLL, 1951, came from geodetic records and might be a different point on the lake. The azimuths intersected outside the lake. A second point on the lake nearest to the intersection was pricked and labeled V-1093A. Both positions and elevations are doubtful and should be used with caution.

V-1110 (T-9730) - After finding discrepancy in computed elevations, a study of field book DZD Vol. 2, page 37, revealed the probable error. (see note in book). The assumed correct angle was used in recomputing the elevation.

For the following vertical control points, the azimuths given in field books and identification cards indicated that another peak or lake was observed on by the field party or that the wrong point on a lake was identified. They were reidentified and new positions labeled as indicated:

PEAK 106 (T-10373 ~~T-9732~~) - Rejected. New peak identified and labeled PEAK 106 (1).

V-1008 (T-10373 ~~T-9732~~) - "B" was rejected, and new point V-1008 B(1) was used. A note on back of identification card indicated field man was doubtful about "B".

V-1027 (T-10373 ~~T-9738~~) - "A" was a very indefinite point but was used in getting a mean elevation. This elevation should be checked carefully during rectification.

V-1033 (T-10377 ~~T-9742~~) - Rejected and new points labeled V-1033 (1) were used.

V-1037 (T-9736 ~~T-9944~~) - A new point V-1037(1) was used and should be verified when rectifying photograph 38294.

V-1040 (T-9736 ~~T-9944~~) - "B" was rejected and a new point V-1040 B(1) was used.

26. VERTICAL CONTROL (cont'd)

V-1041 (T-~~9944~~ T-9736) - "A" was rejected and a new point V-1041 A(1) was identified.

V-1043 (~~T-9944~~ T-9736) - Another similar point of grass on the lake was repricked and the elevation checked with V-1043A. The misidentification was due to the correct point of grass being obscured by the fiducial marks on the photograph.

V-1055 (~~T-9742~~ T-10377) - Points on another lake were pricked and computed. The correct lake cannot be determined from azimuths and should be checked during rectification.

V-1070 (~~T-9736~~ T-10371) - A prominent point on another lake was repricked and labeled V-1070 (1).

V-1076 (~~T-9737~~ T-10372) - The azimuth appears to be one degree off and should be 87° 44' 22.6". This should be verified when rectifying photograph 38929.

V-1081 (T-9730) - "B" was rejected and a new point labeled V-1081 B (1).

V-1096 (T-9730) - The azimuth appears to be one degree off. It should be 357° 43'. This azimuth would go through the point identified which is probably correct.

V-1108 (T-9728) - New lake repricked and labeled V-1108 (office). This should be verified when rectifying photographs.

27. RECOVERABLE TOPOGRAPHIC STATIONS

All identified recoverable topographic stations which were identified were established in the radial plot. Those identified by a substitute point were plotted with steel protractor before the manuscripts were disassembled.

Four stations were not identified but sextant fixes were furnished. These fixes were used in attempts to establish positions with very poor results. The results are as follows:

ALEX, 1951 (T-~~9948~~ T-9739) - The position is believed to be good. The azimuth to REINDEER, 1951 held station BUTTE, 1951 and is probably incorrectly labeled. The azimuth to MOUND, 1951 was slightly off but held CAIRN AT MOUND, 1951 which probably was visible and used.

FLAG, 1951 (T-~~9947~~ T-9738) - All four azimuth stations could not be held. Two positions were shown on the manuscript using both BEACH and MOUND as azimuths. One using REINDEER was marked "A" and falls on the ledge, not on the island as shown on Form 524. Position "B", using ROBERTS, falls on the mainland of Nunivak Island and is obviously incorrect.

HIGH, 1951 (T-9738 ~~T-9947~~) - Two positions were also shown for this station, again using REINDEER (for "A") or ROBERTS (for "B") with two other stations. "A" is considered better because there is some doubt that the observer could see ROBERTS and may have used another peak for azimuth.

OBOE, 1951 (T-9739 ~~T-9948~~) - This fix also did not hold all four stations used for azimuths and two positions were shown. "A" using MOUND is believed to be better. "B" using ROBERTS falls closer to the approximate position shown on field photograph 29011, but it is not on the highest part of the dune as described on Form 524.

The position for ALEX, 1951 is considered as good enough for a recoverable topographic station but the position of the other three cannot be regarded as reliable. It is recommended that the positions of FLAG, HIGH, and OBOE as obtained from sextant fixes be rejected as unsuitable and not sufficiently accurate. It may be possible to identify and locate one or more of these from the description on Form 524 and obtain a suitable position during compilation of planimetry.

TIM, 1951 was set as a triangulation station, but no position was established in the field because of small angle of intersection. This station was identified and cut in by radial plot and shown as a recoverable topographic station (less than third-order). There appears to be a discrepancy in the distances to the sub. pts. and it was decided to use "B" to establish the position. "A" is off radially indicating an error in distance.

All photo hydro stations identified in the field were located in the radial plot and shown on the map manuscripts.

Respectfully submitted
3 January 1955

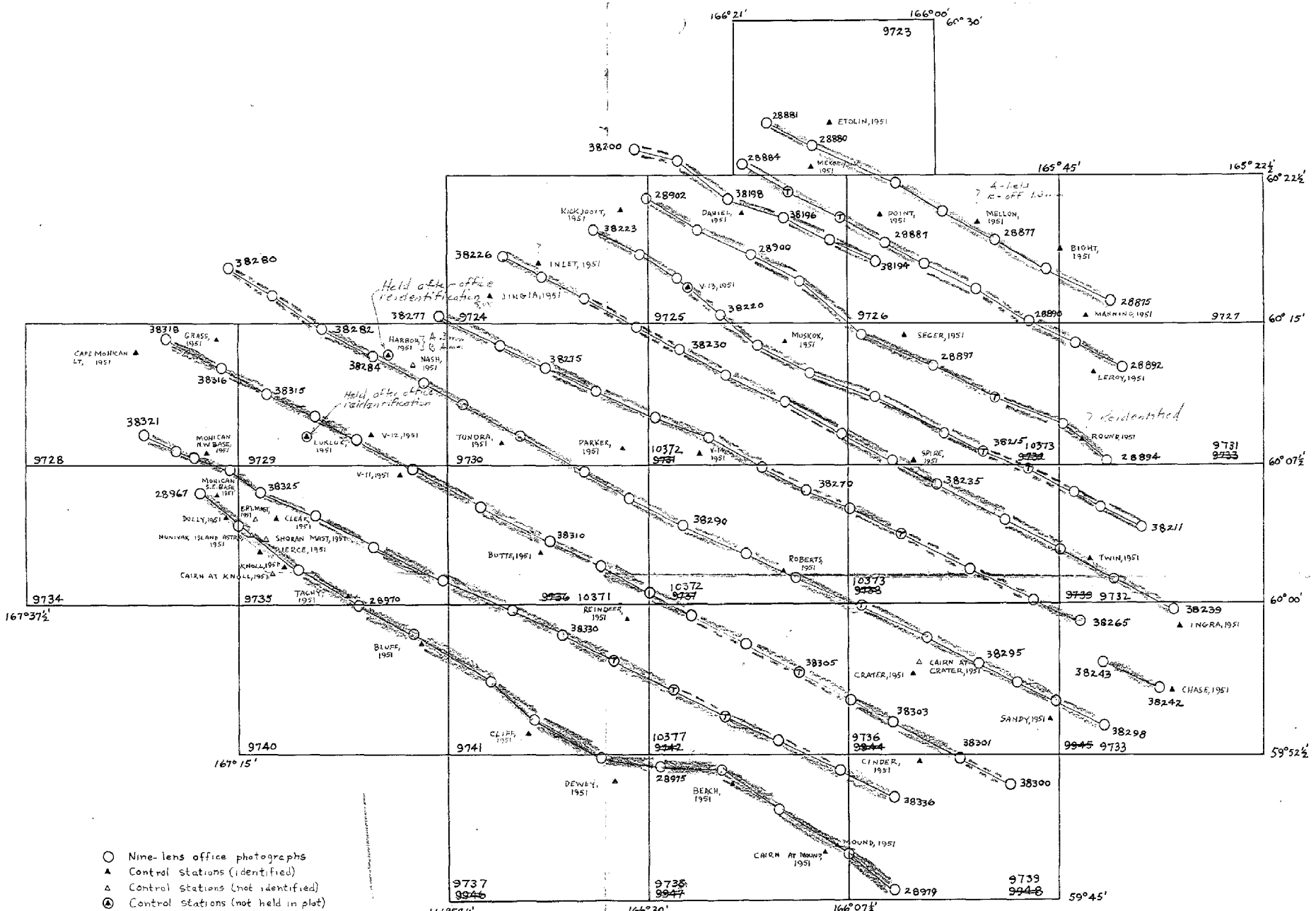
Frank J. Tarcza

Frank J. Tarcza
Supervisory Cartographer

Approved and forwarded

E. H. Kirsch.

E. H. Kirsch,
Comdr. USC&GS
Officer in Charge
Balto. Photo. Office



○ Nine-lens office photographs
▲ Control Stations (identified)
△ Control Stations (not identified)
Ⓐ Control Stations (not held in plat)
T Tilted photographs
Well controlled
Poorly controlled

LAYOUT SKETCH

PROJECT PH 56

SURVEYS T-9723 to T-9742 and T-9944 to T-9948

Note renumbering of surveys (4-digit numbers denote shoreline surveys, 5-digit numbers denote topographic surveys.)

FORM 164
(4-23-54)

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

DESCRIPTIVE REPORT — CONTROL RECORD

MAP T- 9723 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE ° ' "	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD	(BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)
ETOLIN, 1951	Nunivak Island p. 1	N.A. 1927	60 25 42.935				1328.8	528.2		
			166 09 29.546				452.0	465.9		
Sub. Pt. ETOLIN, 1951			60 25				1163.9	693.1		
			166 09				643.7	274.2		
MEKORYUK, 1951	Nunivak Island p. 5	N.A. 1927	60 23 11.573				358.2	1498.8		
			166 11 02.527				38.7	880.5		
Sub. Pt. MEKORYUK, 1951			60 23				371.3	1485.7		
			166 11				55.1	864.1		

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 17 June 1954 CHECKED BY: J. Steinberg DATE 28 June 1954

COMM-DC-57843

FORM 164
(4-23-54)

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

DESCRIPTIVE REPORT — CONTROL RECORD

MAP T- 9724 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE			DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD	(BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)
			°	'	"							
KICKJOOIT, 1951	p. 8	N.A. 1927	60	20	59.794				1850.6	(6.4)		
			166	33	34.485				528.9	(391.3)		
Sub. Pt. A KICKJOOIT, 1951			60	20					1819.8	(37.2)		
			166	33					478.6	(441.6)		
Sub. Pt. B KICKJOOIT, 1951			60	21					0.9	(1856.1)		
			166	33					454.2	(466.0)		
INLET, 1951	p. 2	N.A. 1927	60	18	32.556				1007.6	(849.4)		
			166	44	05.015				77.0	(844.3)		
Sub. Pt. A INLET, 1951			60	18					958.9	(898.1)		
			166	44					206.5	(714.8)		
Sub. Pt. B INLET, 1951			60	18					1022.9	(834.1)		
			166	44					165.6	(755.7)		
JINGIA, 1951	p. 5	N.A. 1927	60	16	15.235				471.5	(1385.5)		
			166	49	10.918				167.8	(754.6)		
Sub. Pt. JINGIA, 1951			60	16					546.6	(1310.4)		
			166	49					228.1	(694.3)		

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 25 May 1954 CHECKED BY: L. A. Senasack DATE 25 May 1954

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT
CONTROL RECORD

MAP T-9725 ✓ PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
DANIEL, 1951	Nunivak Island p. 2	N.A. 1927	60 20 19.541			604.8 (1252.2)	
			166 21 28.930			443.8 (476.7)	
Sub. Pt. A DANIEL, 1951			60 20			599.6 (1257.4)	
			166 21			270.5 (650.0)	
Sub. Pt. B DANIEL, 1951			60 20			557.0 (1300.0)	
			166 21			255.8 (664.7)	
V-13, 1951	Comp.	N.A. 1927	60 17 18.571			574.8 (1282.2)	
			166 26 50.382			774.1 (147.8)	
Sub. Pt. V-13, 1951			60 17			520.2 (1336.8)	CNR Not held in plot.
			166 26			711.1 (210.8)	

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 22 June 1954 CHECKED BY: J. Steinberg DATE 28 June 1954

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
DESCRIPTIVE REPORT
CONTROL RECORD

MAP T- 9726 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE °	'	"	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD	(BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD	(BACK)
MELLON, 1951	Nunivak Island p. 5	N.A. 1927	60	19	52.607				1628.2	(228.8)		
			165	54	10.130				155.4	(765.3)		
Sub. Pt. A MELLON, 1951			60	19					1750.3	(106.7)		
			165	54					248.7	(672.0)		
Sub. Pt. B MELLON, 1951			60	19					1564.7	(292.3)	Not held in plot.	
			165	53					871.5	(49.2)		
POINT, 1951	Nunivak Island p. 7	N.A. 1927	60	20	40.984				1268.5	(588.5)		
			166	03	56.730				870.2	(50.2)		
Sub. Pt. A POINT, 1951			60	20					1330.2	(526.8)		
			166	03					908.8	(11.6)		
Sub. Pt. B POINT, 1951			60	20					1157.0	(700.0)		
			166	03					916.6	(3.8)		

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 16 June 1954 CHECKED BY: J. Steinberg DATE 28 June 1954

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
DESCRIPTIVE REPORT
CONTROL RECORD

MAP T- 9727 ✓ PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE ° ' "	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
MANNING, 1951	Nunivak Island p. 1	N.A. 1927	60 15 25.609			792.6 (1064.4)	
			165 42 10.688			164.4 (758.4)	
Sub. Pt. A MANNING, 1951			60 15			876.1 (980.9)	
			165 42			354.8 (568.0)	
Sub. Pt. B MANNING, 1951			60 15			755.5 (1101.5)	
			165 42			79.0 (843.8)	
BIGHT, 1951	Nunivak Island p. 7	N.A. 1927	60 18 25.636			793.4 (1063.6)	
			165 44 38.416			590.0 (331.5)	
Sub. Pt. BIGHT, 1951			60 18			709.3 (1147.7)	
			165 45			64.6 (856.9)	

1 FT. = .3048006 METER

COMM-DC-57843

COMPUTED BY: A. Queen DATE 16 June 1954 CHECKED BY: J. Steinberg DATE 28 June 1954

Photogrammetry

MAP T-9128 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE ° ' "	DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
GRASS, 1951	Nunivak Island p. 5	N.A. 1927	60 13 33.209			1027.8 (829.2)	
			167 18 29.309			451.2 (472.5)	
Sub Pt. "A" GRASS, 1951			60 13			1029.7 (827.3)	
			167 18			432.7 (491.0)	
Sub Pt. "B" GRASS, 1951			60 13			1053.0 (804.0)	
			167 18			474.3 (449.4)	
CAPE MOHICAN LIGHT, 1951	Nunivak Island p. 9	"	60 12 43.772			1354.7 (502.3)	
			167 27 20.391			314.0 (610.0)	
MOHICAN NORTH WEST BASE, 1951	" p. 4	"	60 07 46.447			1437.5 (419.5)	
			167 18 56.931			879.0 (47.4)	
Sub Pt. "A" MOHICAN N. W. BASE, 1951			60 07			1602.0 (255.0)	
			167 18			790.2 (136.2)	
Sub Pt. "B" MOHICAN N. W. BASE, 1951			60 07			1579.1 (277.9)	
			167 18			758.4 (168.0)	

1 FT. = .3048006 METER

M-2388-12

COMPUTED BY: A. Queen DATE 19 April 1954 CHECKED BY: L. A. Senasack DATE 6 May 1954

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT
CONTROL RECORD

MAP T- 9729 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE ° ' "	DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS FORWARD (BACK)	DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)	FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS FORWARD (BACK)
HARBOR, 1951	p. 3	NA 1927	60 12 51.559			1595.8 (261.2)	
			166 59 04.336			66.8 (857.2)	
Sub. Pt. A HARBOR, 1951			60 12			1497.4 (359.6)	Not held in plot. ENR See §23
			166 59			16.0 (908.0)	
Sub. Pt. B HARBOR, 1951			60 12			1418.4 (438.6)	Not held in plot. ENR See §23
			166 59			42.0 (882.0)	
NASH, 1951	p. 5	NA 1927	60 12 28.907			894.6 (962.3)	
			166 56 24.644			379.6 (544.6)	
LUKLUK, 1951	p. 3	"	60 09 09.584			296.6 (1560.3)	
			167 08 07.838			120.9 (804.8)	
Sub. Pt. A LUKLUK, 1951			60 09			233.9 (1623.0)	
			167 08			155.8 (769.9)	
Sub. Pt. B LUKLUK, 1951			60 09			270.4 (1586.5)	
			167 08			174.1 (751.6)	
V-12, 1951			60 07 46.673			1444.5 (412.5)	
			167 00 45.289			699.3 (227.1)	
Sub. Pt. V-12, 1951			60 07			1457.9 (399.1)	
			167 00			568.8 (357.6)	

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 20 April 1954 CHECKED BY: L. A. Senasack DATE 11 May 1954

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T- 9730 PROJECT NO. Ph-56 SCALE OF MAP 1:20,000 SCALE FACTOR

STATION	SOURCE OF INFORMATION (INDEX)	DATUM	LATITUDE OR y-COORDINATE / LONGITUDE OR x-COORDINATE			DISTANCE FROM GRID IN FEET. OR PROJECTION LINE IN METERS		DATUM CORRECTION	N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS		FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS	
			°	'	"	FORWARD	(BACK)		FORWARD	(BACK)	FORWARD	(BACK)
TUNDRA, 1951	p. 8	N.A. 1927	60	09	06.406				198.3	(1658.7)		
			166	48	27.927				430.9	(494.9)		
Sub. Pt. TUNDRA, 1951			60	09					324.4	(1532.6)		
			166	48					400.6	(525.2)		
PARKER, 1951	p. 2	N.A. 1927	60	08	26.242				812.2	(1044.8)		
			166	31	49.648				766.3	(159.8)		
Sub. Pt. A PARKER, 1951			60	08					771.7	(1085.3)		
			166	31					816.0	(110.1)		
Sub. Pt. B PARKER, 1951			60	08					808.9	(1048.1)		
			166	31					775.0	(151.1)		

1 FT. = .3048006 METER

COMPUTED BY: A. Queen DATE 24 May 1954 CHECKED BY: L. A. Senasack DATE 26 May 1954

COMM-DC-57843

COMPILATION REPORT
T-9723-9730

31. This report covers the shoreline delineation of the northern coast of Nunivak Island from Cape Manning westward to Cape Mohican.

The topography and shoreline were compiled simultaneously on the Reading Nine-lens plotters using rectified (negative) nine-lens photographs. The area from Cape Manning to Mekoryuk was delineated with 1950 photographs. All other areas were delineated with 1952 photography.

Shoreline manuscripts had been delineated by the Baltimore Office for parts of T-9723, T-9725, T-9726; and T-9724, 9729 and T-9730. (See instructions dated 14 December 1951.) In attempting to junction the instrument work sheets with these manuscripts it was found that they were on an unadjusted datum which differed from NA 1927 datum by 40 meters in latitude and 13 meters in longitude. The shoreline was therefore recompiled on the instrument using 1952 photography wherever it was available. The low water lines and offshore foul areas were for the most part taken directly from the Baltimore manuscripts which were compiled from low water photographs.

The compilation office review was applied to the instrument work sheets. The work sheets were then adjusted as near as possible to the base manuscript and UTM grid ticks were applied. They were then sent to the photo lab. for reduction to 1:40,000 scale and forwarded to the drafting section where the shoreline detail, only, is to be inked at 1:20,000 scale and the 1:40,000 scale reductions are to be mosaiced for blue line prints. (See report for 1:40,000 scale topographic manuscripts T-10365-10369 covering all of Nunivak Island.)

32. (See radial plot report)

33. SUPPLEMENTAL DATA: None

34. CONTOURING AND DRAINAGE: Not applicable.

35 and 36.
SHORELINE, ALONGSHORE AND OFFSHORE DETAILS:

Some difficulty was encountered in interpreting the field inspection. The field party's term "ledge rock" seemed to apply at times to what appeared to be a ledge and at other times to isolated rocks. In other instances the field symbol for the M.H.W.L. was used to indicate a narrow ledge area; consequently much of the offshore and alongshore areas were compiled from office interpretation.

37. LANDMARKS AND AIDS:

One form 567, superseding all other landmarks submitted for these sheets, is being submitted. Copy attached.

38. CONTROL FOR FUTURE SURVEYS:

Notes for the Hydrographer are submitted for each map included in this report.

Eleven Forms 524 have been submitted as follows: T-9723 - 3; T-9724 - 1; T-9725 - 2; T-9726 - 2; T-9727 - none; T-9728 - 1; T-9729 - 1; T-9730 - 1.

39. JUNCTIONS:

Only the work sheet junctions were made in this section.
Junctions were made during drafting and review for all maps. E.H.R.

40. HORIZONTAL AND VERTICAL ACCURACY: See radial plot report. See §6

46. Comparison was made with advance shoreline manuscripts T-9723, T-9724, T-9725, T-9726, T-9729, T-9730* and, except for the difference in horizontal datum (see Paragraph 31), they are in general agreement. Some changes were noted in the offshore and alongshore details. It was felt that some of the ledge areas on the advanced prints were too extensive and in two instances were reduced to rocks awash by this section. E.H.R.

*Superseded by final manuscripts which are discussed in this report.

Comparison was made with USGS 1:250,000 scale Numivak Island. See §3

47. Comparison was made with Nautical Charts Nos. 9102 and 8851.

Items To Be Applied To Nautical Charts Immediately: The Nautical Chart Branch was notified, orally, on September 28, 1955, of the datum difference between the advance manuscripts listed in Paragraph 31 and those covered by this report. See § W.A.B.

48. GEOGRAPHIC NAMES LISTS:

All names have been shown on the work sheets and have been listed and attached to the report of the 1:40,000 scale topo manuscripts. Inasmuch as a selection has not as yet been made for the shoreline sheets they are not included in this report.

Respectfully submitted:

Louis Levin

Louis Levin
Supervisory Cartographer
Nine Lens Unit

Approved and Forwarded:

Charles Theurer

Charles Theurer
Supervisory Photogrammetric Engineer

Form 567
April 1945

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

TO BE CHARTED
TO BE DELETED } STRIKE OUT ONE

Washington, D. C. October 20, 1955

I recommend that the following objects which ~~have~~ *(have not)* been inspected from seaward to determine their value as landmarks be charted on ~~(deleted from)~~ the charts indicated.

The positions given have been checked after listing by L. Levin

N. E. Sylar (Field 1951)
Chief of Party.

STATE

CHARTING NAME	DESCRIPTION	SIGNAL NAME	POSITION LATITUDE ° ′	LATITUDE D.M. METERS	LONGITUDE ° ′	LONGITUDE D.P. METERS	DATUM	METHOD OF LOCATION AND SURVEY NO.	DATE OF LOCATION	HARBOR CHART	INSHORE CHART	OFFSHORE CHART	CHARTS AFFECTED
*Gable	West gable of large wooden building in Nash Harbor	Hydro 105	60 12	443	166 56	28	NA 1927	Radial plot T-9729	1951	X		X	8851 9302
*Gable	SE gable/school building in Makoryuk	"	60 23	463	166 11	83	"	T-9723	1951	X		X	"
**CAPE MOHICAN LIGHT	Small white ho. with lt. on top 278' bluff	Cape Mohican Light	60 12	43.8	167 27	20.4	"	Triang.	1951			X	9302

*Supersedes positions furnished by Baltimore Office, February 1952, which were on unadjusted datum.

**Supersedes positions furnished by field party which were on unadjusted datum.

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and *nonfloating aids* to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.

10—51696-1 U. S. GOVERNMENT PRINTING OFFICE

Review Report
Shoreline Surveys T-9723 thru T-9730
20 December 1955

62. Comparison with Registered Topographic Surveys:

T-2610 1:40000 1902

A portion of this survey falls in the area of T-9728 and is to be superseded by T-9728 for nautical charting purposes.

63. Comparison with Maps of Other Agencies:

Nunivak Island, Alaska 1:250000 1951 (USGS)

Topographic and planimetric details are very sketchy and approximate on this map which precludes a detailed comparison.

64. Comparison with Contemporary Hydrographic Surveys:

None.

65. Comparison with Nautical Charts:

8851 March 1953
9302 1952 corrected to 53-6/15

Chart 8851 which shows two bays at 1:20000 scale should be corrected in alongshore details by these surveys. Differences are minor in importance.

66. Adequacy of Results and Future Surveys:

Only a limited field inspection of alongshore rocks was done. Thus, these features are somewhat generalized and are subject to errors in office interpretation of foul limits, rock heights, etc. Otherwise, no significant deficiencies in accuracy or adequacy of the maps were indicated. *

Everett H. Ramey
Everett H. Ramey

* Here we should have infra red photography. Report after report in Alaska as these same. LWS

APPROVED BY:

L C Lauda
Chief, Review and Drafting Section
Photogrammetry Division

Wallace A. Bruder
Chief, Nautical Chart Branch
Charts Division

L W Swanson
Chief, Photogrammetry Division
26 Aug. 1957

Chief, Coastal Surveys Division

T-9723

NOTES TO THE HYDROGRAPHER

The following topographic station was established by theodolite azimuth and distance:

Tide 1951 rocky point at base of bluff identified on 28881

The following topographic stations were established by radial-line plot:

King 1951 top of 22-foot bluff on point identified on 28884

Wood 1951 highest part of grass covered point identified on 28880

The following hydrographic station was established by radial-line plot:

119 east gable of small building identified on 28880

T-9724

NOTES TO THE HYDROGRAPHER

One topographic station, Tent, 1951, was located by radial plot

The following photo hydro station was located:

Station	Description	Photo No.
No. 121	N. gable of small wooden shack	28904

T-9725

NOTES TO THE HYDROGRAPHER

The following topographic stations were established by radial-line plot:

Seth, 1951, point of rock at top of bluff, identified on 28882

Yard, 1951, highest grass area on top of small point, identified on 28901

T-9726

NOTES TO THE HYDROGRAPHER

The following photo topo stations were established:

Cart, 1951

Head, 1951

The following photo hydro station was established:

	Description	Photo No.
#120	E gable of small wooden building at the head of the bay and on W. side of entrance to small lagoon	28887

T-9727

NOTES TO HYDROGRAPHER

No photo hydro or topographic stations were established.

T-9728

NOTES TO THE HYDROGRAPHER

One topographic station, Wash, 1951, was established.

The following photo hydro stations were identified and located on the map manuscript:

No.	Description	Identified on Photo No.
111	Stream on top of vertical bluff	28933
112	Pinnacle rock	28933
113	Point of rock	28965
114	Rock point on top of cliff	28965
115	Sharp ridge of rock base at beach	28965

T-9729

NOTES TO THE HYDROGRAPHER

Tidal Bench Mark #1 (Nash Harbor) was established by ~~second order triangulation~~ Photo 28937

No topographic stations were located. Tim 1951 See §27 / Gable 1951 Form 567

The following photo hydro stations were established:

Station	Identified on Photo No.
104	28937
105	"
106	"
107	"
108	"
109	28935
110	"

(See pricking cards for descriptions of the photo hydro stations.

T-9730

Notes to the hydrographer:

The following topographic station was located by radial-line plot:

Station	Identified on field photo
Pole, 1951	28938

T-9723 Part. Applied after V&R. 10/21/66 John P. Wein Ch. 8851

T-9729 Fully Applied after V&R. 11/22/66 John P. Wein Ch. 8851

T-9723 Exam No Corr Consider fully Appd after V&R 2-18-70 Becker Cht 8851