9698 THRU 9703

9698 THRU 9703

Diag. Cht. No. 9302

Form 504

U. S. DEPARTMENT OF COMMERCE

COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Topographic

Field No. Ph-56 Office No. T-9698 thru T-9703

LOCALITY

State Alaska

General locality Nelson Island

Locality Kigigak Island to Kagirlvar Bay

1950-52

CHIEF OF PARTY

April 6, 1961

LIBRARY & ARCHIVES

DATE

COMM-DC 61300

DATA RECORD

T-9698
T-9699
T T-9700
T-9701
T-9702
T-9703

Project No. (II): PH-56 Quadrangle Name (IV):

Field Office (II): Seattle, Wash. Chief of Party: M. J. Tonkel

Photogrammetric Office (III): Baltimore, Md.
Washington, D. C.

Officer-in-Charge: E. H. Kirsch
Div. Photogrammetry

Instructions dated (II) (III):

8 Sept 1949 14 Dec 1951
2 April 1951 21 Dec 1951
21 May 1951

Copy filed in Division of Photogrammetry (IV)

Method of Compilation (III): Reading nine lens plotters

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

Scale Factor (III):

Date received in Washington Office (IV): JUL 24 1958 Date reported to Nautical Chart Branch (IV):

Applied to Chart No. Date: Date registered (IV): 19 May 1959

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

Geographic Datum (III): N. A. 1927 Vertical Datum (III):

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

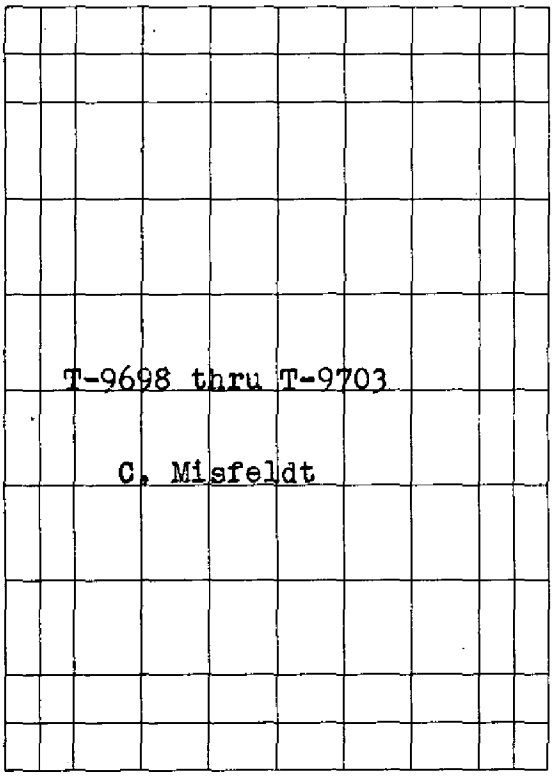
Plane Coordinates (IV): State: Zone:

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)



Areas contoured by various personnel
(Show name within area)
(II) (III)

DATA RECORD

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

Planetable contouring by (II): Date:

Completion Surveys by (II): Date:

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

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

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

Control plotted by (III): David Williams Date: June, 1955

Control checked by (III): Joseph Steinberg Date: July 1955

Radial Plot or Stereoscopic Control extension by (III): Leroy A. Senasack Date: July 1955

Stereoscopic Instrument compilation (III): Planimetry C. Misfeldt Date: June 1958

Contours Date:

Manuscript delineated by (III): C. Misfeldt Date: June 1958

Photogrammetric Office Review by (III): L. Levin Date: June 1958

Elevations on Manuscript checked by (II) (III): L. Levin Date: June 1958

M-2618-12(4)

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
28517-520	8/13/50	11:30*	1:20,000	6.5 above MLLW

* approximate - clock had stopped

Tide (III) Diurnal

Ratio of Ranges	Mean Range	Range
		8.5
9		7.6

Reference Station: Kodiak

Subordinate Station:

Subordinate Station:

Washington Office Review by (IV): J J Streifler Dec. 1958

Final Drafting by (IV): T-9698 A P Berry 2-6-60; 9699 A P Berry 1-12-60; 9700 A Boldin 11-17-59; 9701 A Boldin 12-16-59; 9702 A P Berry 12-16-59; 9703 A Boldin 1-5-60

Date:

Drafting verified for reproduction by (IV): W.O. Hallmin

Date: 2-18-60

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:

Number of BMs searched for (II): Recovered: Identified:

Number of Recoverable Photo Stations established (III):

Number of Temporary Photo Hydro Stations established (III):

Remarks:

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
28519,520	8/13/50	11:30*	1:20,000	6.5 above MLLW
28850,-852	8/14/50	12:15	"	6.7 " "
38091-093	7/19/52	9:10	"	
38095-097	7/19/52	9:15		

* approx - clock had stopped

Tide (III)

Diurnal

Ratio of Ranges	Mean Range	~~Spring~~ Range
		8.5
		7.6

Reference Station: Kodiak

Subordinate Station:

Subordinate Station:

Washington Office Review by (IV): M Stuifler Date: Jan. 1959

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:

Number of BMs searched for (II): Recovered: Identified:

Number of Recoverable Photo Stations established (III):

Number of Temporary Photo Hydro Stations established (III):

Remarks:

T-9700

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
29019-023	8/13/58	16:25*	1:20,000	1.0 above MLLW

* approximate - clock had stopped

Tide (III) Diurnal

Ratio of Ranges	Mean Range	~~Spring~~ Range
		8.5
1.2		10.2

Reference Station: Kodiak
Subordinate Station:
Subordinate Station:

Washington Office Review by (IV): L. J. Stauffer Date: Jan. 1959

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

Remarks:

M-2618-12(4)

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
28520,521	8/13/50	11:40*	1:20,000	6.5 above MLLW
28524-526	"	12:00*	"	6.5 " "
28853	8/14/50	12:20	"	6.7 " "
38093,094	7/19/52	9:15		

* approx - clock had stopped

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		8.5
0.9		7.6

Reference Station: Kodiak
Subordinate Station:
Subordinate Station:

Washington Office Review by (IV): L.A. Stauffer Date: Jan. 1959

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

Remarks:

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
28529-532	8/13/50	12:00*	1:20,000	6/6 above MLLW
29016-019	8/14/50	16:20	"	1.3 " "
38117	7/19/52	10:11	"	6/7 " "

* approx - clock had stopped

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		8.5
1.2		10.2

Reference Station: Kodiak
Subordinate Station:
Subordinate Station:

Washington Office Review by (IV): A Stempler Date: Jan. 1959

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

Remarks:

T-9703

9

Camera (kind or source) (III): Nine lens

PHOTOGRAPHS (III)

Number	Date	Time	Scale	Stage of Tide
28526-528	8/13/50	12:00	1:20,000	-
38111-115	7/19/52	10:00	"	6.8

Tide (III)

Ratio of Ranges	Mean Range	Spring Range
		8.5
1.2		10.2

Reference Station: Kodiak

Subordinate Station:

Subordinate Station:

Washington Office Review by (IV): [signature] Date: Jan. 1959

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:

Number of BMs searched for (II): Recovered: Identified:

Number of Recoverable Photo Stations established (III):

Number of Temporary Photo Hydro Stations established (III):

Remarks:

M-2618-12(4)

10

TOPOGRAPHIC MAPPING PROJECT PH-56

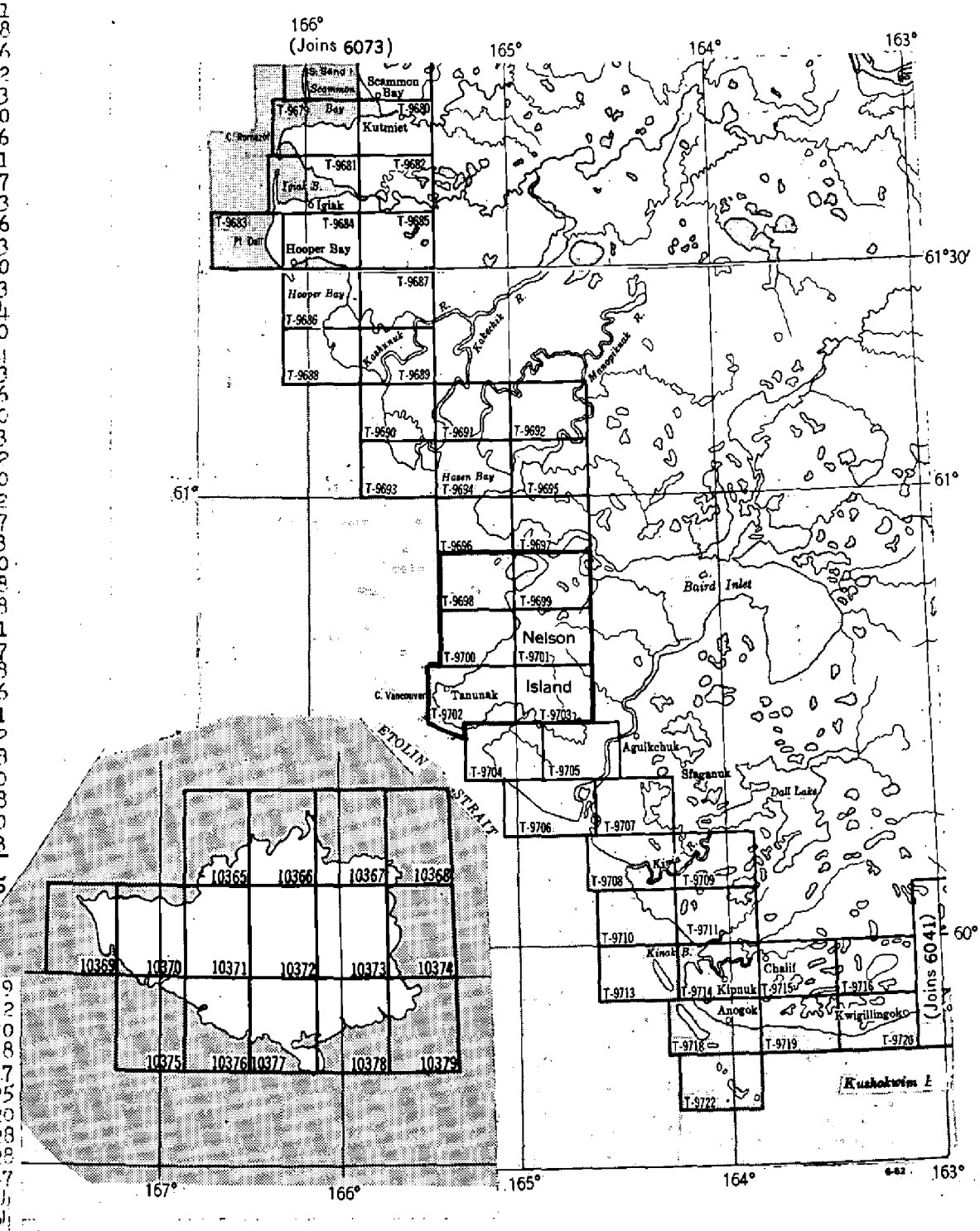
ALASKA-BERING SEA, Scammon Bay to Kuskokwim Bay and Nunivak Island

OFFICIAL MILEAGE FOR COST ACCOUNTS

Sheet No.	Area sq.miles
9679	46
9680	92
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
9708	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	11
10376	104
10377	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-1)

Summary
to accompany topographic surveys T-9698 thru T-9703

These six topographic surveys are a part of project PH-56 (24090). The project covers the west shore of Alaska from Scammon Bay to Kuskokwim Bay and Nunivak Island - Bering Sea. Subject area of the six surveys covers the northwest portion of Nelson Island and extends from Ningaluk River southward to Kangirlvar Bay.

The northern part of the area covered is marsh and tundra with interlacing streams and ponds. This low marsh area changes abruptly to reach an elevation of nearly 1500 feet in less than a mile (Erchakrtuk Mt. on T-9701). A short distance south of subject area it returns to low marshy ground again.

Project instructions originate from 1949. Field inspection was accomplished during season of 1951. The radial plot was assigned to the Baltimore District Office and accomplished during 1955; compilation from Aug. 1950 and July 1952 nine-lens photographyby stereoscopic instruments (Reading Plotter) completed in the Washington Office in June 1958.

There are no previously registered topographic maps nor contemporary hydrographic surveys of subject area.

A cronar film positive at the compilation scale of 1:20000 and The Descriptive Report will be registered and filed in the Bureau Archives.

March 1959

Original report is filed ~~with~~ under T-9679

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AERIAL PHOTOGRAPH CONTROL AND INSPECTION
CAPE AVINOF TO CAPE ROMANZOF, ALASKA

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PART I

SEASON'S REPORT
AERIAL PHOTOGRAPH CONTROL AND INSPECTION
Cape Avinof to Cape Romanzof, Alaska

Project Number: C-1057 (Ph-56)

Chief of Party: Miller J. Tonkel

Chief Photogrammetric Unit: Victor E. Serena

Authority: INSTRUCTIONS - Triangulation in Alaska, Cape Avinof to Cape Romanzof, on Nunivak Island, dated 29 March 1951.

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

Date of beginning field work: 30 May 1951

Date of ending field work: 12 September 1951

CHRONOLOGY OF ACTIVITIES:

The photogrammetric unit consisting of three civil service employees, reported to Lt. Miller J. Tonkel, Chief of the Triangulation party, in Seattle, Washington on 20 May 1951 and became an integral part of the party until the organization was disbanded upon return to Seattle on 29 September 1951.

The party left for Anchorage via Commercial Airlines on 24 May, was transported to Bethel by Military Transport Service on 26 May, and started the move into the working grounds at Eek on 27 May. The contract airplanes moved all personnel and equipment into base camp and field operations began on 30 May.

Field conditions on that date were fully compatible with planned operations. The noonday temperature was 47°. All but a few of the deeper lakes were clear of ice.

Existing ice was broken and had drifted compactly to lee. Some flow ice was observable offshore and some snow covered the shoreline. Neither ice nor snow was in such quantity as to impede progress of the work.

Total transportation for the combined group consisted of four airplanes; three Piper Cubs (PA-16, 125 H.P.), and one Stinson (SR-3B). The Stinson had limited utility for field work because of small, shallow lakes general to the project area. Early in the season, one Cub was loaned to the Nunivak Party pending arrival of contract airplanes allotted that party.

Use of the airplanes was apportioned on an objective basis calculated to keep photogrammetric and geodetic work in a state of balance for mutual support, and to achieve full, economical utilization of all available flying time.

On 12 June a sub camp was established at Nightmiut to shorten supply lines and eliminate fruitless flying time to that area. The Stinson was used as a liason airplane. All photo personnel operated from this base until work was completed as far north as Hazen Bay whereupon base camp and sub camp were transported to Hooper Bay. The remainder of the field work for G-1057(Ph-56) was accomplished from this latter camp. This project may be said to have been finished and work begun on Proj ect Ph-73A(51) on 12 September 1951.

ACTIVITIES, OTHER:

Coast and Beach Intelligence data were gathered and forms completed by the photo unit with the advice and assistance of Lt. Tonkel. The completed forms were submitted to the Director as instructed. See SHORELINE, FIELD INSPECTION REPORT.

ORGANIZATION OF PHOTOGRAMMETRIC UNIT:

	Reported	Detached
Victor E. Sarsen, GS-5	5-21-51	10-2-51
Robert J. Hemslett, GS-4	5-21-51	10-2-51
Alfred W. Crosse, GS-4	5-23-51	10-1-51

The first two weeks of the season were employed in training Messrs. Hemslett and Crosse in field methods, problems and conditions peculiar to Alaska. The training proceeded in conjunction with field work in order to acquaint the men with actual field problems and to minimize delay in progress. Subsequently the two men were sent out as a team establishing photo topographic stations and gathering data for shoreline map compilation and Coast and Beach Intelligence.

Later in the season the two men were instructed in light-keeping duties and established, identified and posted lights on supplemental horizontal and vertical control stations for angular measurement by the observing units. These duties were supplemental to duties of establishing photo topo stations. In addition Mr. Crease did most of the recording for supplemental control established by the photo unit. He was also employed in making an independent office check of field records for sketch incongruities, omissions, distance checks, etc.

It has been previously reported and is hereby repeated for emphasis, that sending untrained or inadequately trained men to Alaska is impractical and is not conducive to good field work. Close supervision of undertrained personnel is impractical under the pressure of the inordinate premium on time and transportation. I personally feel that I had had insufficient training and experience to direct all the activities of the photo unit.

METHODS EMPLOYED:

All horizontal control was identified either directly or by the substitute station method. Identification of triangulation stations preceded occupation of stations by observing units. When weather was not favorable for instrument work, or the distances difficult to measure by one man, the substitute stations were flagged and instructions given the "O" parties to complete the measurements. This procedure made it possible to work in marginal non-observing weather when demand for transportation was least likely to be critical.

The method has one weakness that must be guarded against. It is possible for builders to place station marks in other than positions indicated by reconnaissance and identified by the photo unit. On two stations (MOUTH and KENIA) this occured and stations had to be revisited and additional field data obtained.

The supplemental control was of some concern in the lake-potted, flat, flood plain between Nelson Island and Hooper Bay. Refraction is excessive during daylight hours and the area lacks points of prominence from which lake surfaces or targets can be identified. Resort was made to posting lights on such stations for intersection by the observing units on their normal, night observing schedules. Some difficulty was encountered because of inadequate experience of photogrammetric personnel with lights. Two such stations (V-0115, V-0116) have but a single direction and an unchecked double zenith distance.

ADEQUACY OF INSTRUMENTS, MATERIALS AND EQUIPMENT:

A new pocket stereoscope (Fairchild Model C 2) is unsatisfactory for field use. The instrument is heavier than the older model, the

enamel finish easily chips away, no case is provided for protection against chance rough usage, and the open-end tripod legs slip and collapse under uneven supporting surfaces. The older, lighter instrument with closed, "U"-shaped support is a much better instrument.

From past experience the K-20 camera is judged to be an ideal camera for field party photography. However, the original and replacement K-20 cameras supplied for field use during the past season were defective upon receipt. A third camera arrived at a time when the pressure of completing the triangulation tie to Mountain Village made it impossible to spare time and transportation for field photography.

The Kern theodolite (#38642) supplied the photo unit has a sluggish vertical bubble. The horizontal and vertical motions become stiff in temperatures under 50° F. Comdr. F.A. Riddell has written a letter requesting advice on action to be taken regarding this instrument.

STATISTICS:

Area surveyed (square miles)	2130
Shoreline inspected (statute miles)	360
Triangulation stations identified	81
Supplemental control stations identified	46
Topographic stations established and identified	27
Photo hydro stations identified	38

PROGRESS SKETCH:

A sketch covering the seasons work is included in this report.

SUMMARY OF FIELD WORK NOT COMPLETED:

Paragraph 4C of supplemental instructions specified the establishment of a number of stations for horizontal control of the photogrammetric plot on the barrier islands off Cape Avinof. Aerial inspection revealed that the islands are low, bare, devoid of any vestige of vegetation and that storm water breaks over the barriers introducing constant change in their topographic character. Detail, as a basis for identification of the proposed control, does not exist. It is recommended these barrier islands be located by future hydrographic surveys by other than photogrammetric means. In this connection, note that the islands in Seamen Bay are similar in nature. Their control by photogrammetric methods likewise will be impractical.

A project plan was received in August placing the northern limits of Project Pb-56(49) at Latitude 62°. Geodesy had planned to extend the triangulation scheme one figure beyond the HAGEA-COHH line into that general area, but the urgency of completing the triangulation connection to Mountain Village made this impractical. The photogrammetric work, in a northerly direction, was terminated at the mouth of the Kun River.

In two instances the vertical control spacing on Nelson Island is four rather than about three miles as specified in the instructions. Definite hill tops or points of detail could not be identified on the very round, characterless hills with any degree of accuracy for trigonometric levels. These areas are particularly difficult of access. It was considered impractical to control these points at the expense of other phases of the work.

The following stations (traverse stations but for exceptions noted) were not identified. Station PATTI could not be identified. A triangle was closed on PATTI AZ. MK. to serve as control instead. The remainder of these stations are in areas having adequate control and time did not permit identification.

Bluff Tide Staff, 1951
NW Igiak #1
NW Igiak #3
Dall Pt. Sharan Station
Hooper Bay Sharan Mast
PATTI, 1951 (Triangulation)
Tenak As. Mk., 1951 (Intersection)
Tunurak Tide Staff, 1951

Approved:

Miller J. Tenkal
Lt. - USC&G Survey
Chief of Party

Respectfully submitted:

Victor E. Serena
Cartographic Survey Aid

PART II

FIELD INSPECTION REPORT
CAPE AVINOF TO CAPE ROMANZOF
Project G-1057 Ph-56(49)

2. AREAL FIELD INSPECTION:

(a) Description of Area:

The area covered by this field inspection report averages fifteen miles in width, and extends from Kipnuk up to and including the south shore of Scammon Bay.

CAPE AVINOF - CAPE VANCOUVER

From Cape Avinof to Cape Vancouver is a low, flat plain drained by four major tidal streams. The plain is relieved by several low hills, the terminal slopes of which break off sharply into the plain. The southern portion of this area is marked by large lakes whereas the northern portion is given to more numerous, lesser lakes. The hill on which station TERN is located and the contiguous companion hill are unquestionably volcanic in origin. Driftwood is in evidence as much as two miles inshore. The inference is drawn that extreme wind-driven tides inundate extensive shoreline areas.

CAPE VANCOUVER

Cape Vancouver is a bold headland. The volcanic mountains on the Cape trend in an easterly direction losing character and elevation proceeding to their termination at Baird Inlet. Only the lakes in the Chakchak Valley are of any size. The drainage system radiates from the approximate center of the mountain range. Streams are largely in narrow valleys and none are of remarkable proportion.

NELSON - HOOPER BAY

A low plain devoid of relief lies between the mountains of Nelson Island and Hooper Bay. Great tidal streams; the Kooklevik, Ninglikfak, Kashunuk, Aphrewn, Manokinak, Aknerkochik, Azun and Baird Inlet drain the area. Countless shallow, brackish lakes lace the terrain. Driftwood far inland lends credence to reports that extreme high storm tides flood extensive portions of this plain. Father Hargrave of New Chevak states this periodic flooding is the reason for abandoning Old Chevak in favor of New Chevak. The Hooper Bay people

state the low hill upon which that village is located was completely isolated by extreme tide water in the autumn of 1950.

HOOPER BAY - IGIAK BAY

The area between Hooper Bay and Igiak Bay consists of low rolling hills the highest of which are about sixty feet. Many of the plentiful lakes among these hills have steep banks at points where they abut the hills. The lakes contain fresh water and are somewhat deeper than those in the flats to the south. A steep fifty-foot bluff, apparently cut by meandering drainage, defines this area on the south. Likewise a similar bluff exists on the north and defines the limits of the Kokechik River Valley.

CAPE ROMANZOF

Cape Romanzof is marked by forbidding steep-to bluffs and prominent outcrops on the point. The Askinuk mountains run back from the cape in an easterly direction. The mountain tops are boulder strewn; the slopes bear alder and willow brush. A number of sharp outcrops are scattered throughout the range.

(b) Items of Historical Interest:

The low-cost federal housing program and a growing appreciation of schools and the products of modern civilization are factors modifying the nomadic habits of the native population in Alaska. Hooper Bay, Tununak, and Nightmiut owe much of their growth to these concentrating and stabilizing influences. The founding of New Chevak and New Kealavik was given appreciable impetus by the housing program.

(c) Photography:

Three triangulation stations (PLAIN, KEGUE, and TOOKSOOK) are not on present photographs but fall in the area of proposed new photography. These stations were identified for use as control when photographs become available. In cases where rephotography is planned stations were identified on existing photographs and marked for possible direct identification on the new photographs. Also note that towers were built over the stations in the area of proposed photography east of Hazen Bay and that direct identification of these stations on new photographs is a possibility that should be explored.

A measure of poor photography was encountered but alternate portions of overlapping photographs were adequate for field work. In some such cases substitute stations are not readily discernible on all photographs and transfer to overlapping photographs must be done stereoptically. In as much as some inferior photography must be expected as a result of unavoidable camera failure, poor photography resulting from such causes is not deemed a fit subject for criticism.

The best possible prints are not always made available for field use. This became apparent when field prints were compared with duplicate prints prepared for compilation. There is so little ground detail in much of the Alaskan terrain that print quality assumes the utmost importance. Poor quality adds to the difficulty of identifying detail. Often subtense methods of measuring distances must be used with ensuing loss of time and productivity. It is recommended that photographs be printed with the fullest range of tone possible, compatible with demands on equipment and quality of negatives, for use by field parties.

3. HORIZONTAL CONTROL:

(a) Supplemental control was established by intersection by the triangulation party and by resection on the base triangulation net by the photo unit. For a list of supplemental control see INDEX TO FIELD WORK.

(b) No datum adjustments were made by the field party.

(c) The Aagro Stations at Kipnuk, Tamunak and Hooper Bay were established by the United States Air Force. Traverses were run to all three stations by the 1951 field party.

(d) All necessary control is considered positively identified.

(e) All Coast and Geodetic Survey stations in project area were recovered.

(f) Information pertinent to the identification of stations is stated on Form H-2226-A2.

4. VERTICAL CONTROL:

Density of vertical control was planned so that no point in the project area was more than about three miles from tidal shoreline or a point of known elevation. Elevations, carried through the main scheme triangulation and tied to tide stations, provided the basic vertical control. Extension therefrom was by the following methods:

By intersection and resection where trigonometric elevations are to be computed from non-reciprocal double zenith distances and computed lengths of lines. The supplemental stations, the numerical designation of which is preceded by the letters HV (for horizontal-vertical) fall in this category. Their position may be computed for horizontal control. Due caution should govern the use of those stations having no position check.

Most of the supplemental vertical control is based on trigonometric elevations from non-reciprocal double zenith distance observations on points, the positions and distances of which must be determined by the radial plot. Such stations have been designated by a number preceded by the letter "V" (for vertical).

A list of supplemental vertical control and the stations on which computations are based is contained in the INDEX TO FIELD WORK.

Note that double zenith distances were observed on unidentified points of elevation on Nelson Island by the triangulation unit as follows:

Station	Object Observed
HUMPTY	hill
FRONT	plateau
GRASS	peak
TOOKSOOK	peak

It appears desirable to explore the possibility of identifying these points of elevation after the plot is laid.

5. CONTOURS AND DRAINAGE:

Contours - not applicable.

Drainage of area is mentioned in DESCRIPTION OF AREA.

6. WOODLAND COVER:

There is no true woodland cover in the area. Irregular patches of 4 to 7-foot high willow and alder brush grow on slopes of hills and mountains. Such cover has been noted on photographs in areas visited by the photo unit.

7. SHORELINE AND ALONGSHORE FEATURES:

The entire shoreline in the area surveyed was inspected. Actual inspection on the ground was at points in the vicinity of stations which were visited for other purposes. The remainder of the shoreline was inspected from the air by personnel familiar with the shoreline characteristics. Supplemental data is contained on Beach Intelligence forms submitted to the Director as follows:

Beach at	Submitted
Lite, 1951	July 1951
SHORE, 1949	"
Peas, 1951	August 1951
Tasunak Village	"
BLUFF, 1951	"
July, 1951	"
Goose, 1951	September 1951
Kulu, 1951	"
Dope, 1951	"
Hooper Bay Village	October 1951
Milk, 1951	"
Dall Point	"

Of special interest in the low flat areas is the ragged nature of the sloughing marine bluffs. To a large extent the raggedness is due to differential resistance of the bluff to erosion because of slight variations in relief, because of the susceptibility of the mouths of drains to erosion, and because of the capture of lakes and ponds.

The bluffs are compounded of successive layers of blue-gray mud and fine sand interlarded between layers of root-bound humus material approaching, in some places, the consistency of peat. The peat-like material is tightly laced with roots and is relatively light. Wave action washes out the mud-sand layers causing the root material to collapse and accumulate at the base of the bluff. Subsequent wave action drags some clods considerable distances toward low water before breaking up. The incidence of high, storm driven tides tear similar root clods from the bluff and carry them inshore.

The numerous sharp points in the north shore of Tasksook Bay consist of tilted beds of sedimentary rock. The earth between these ridges of rock is a conglomeration of boulders and soil. The less rapid erosion rate of the rock beds established the prominent points. The isolated rock (RESIST, 1951), 1,000 meters out into the bay, is a resistant remnant of one of these beds.

There are great stretches of apparent shoreline in the project area. Most such shoreline occurs at the mouths of rivers and in protected bays and bights where beach gradients are gentle and a difference of tide of a few inches causes a wide horizontal displacement of the water line. Mean high water apparently flows back into the patchy marsh grass. In lieu of a distinct line, the outer limits of the marsh grass was indicated for mapping purposes.

The salt marsh grass areas, indicated on field photographs, constitute the driest and firmest footing encountered. As a rule the marshy grass and moss areas are wet and spongy - difficult to traverse even on points of elevation. It is believed the salt marsh grass areas, because of proximity to relatively warm sea water, have a lower or non-existent frost table which permits sub-surface drainage.

8. OFFSHORE FEATURES:

Offshore areas around Capes Vancouver and Romanzof are commonly foul with boulders. Most of these are small and near shore. Many cannot be detected on the photographs. Due to the number and close-in position of these hazards, applicable areas were designated "Foul with boulders". Complete offshore detail must await hydrographic surveys.

9. LANDMARKS AND AIDS:

Form 567 is being submitted as part of this report.

10. BOUNDARIES, MONUMENTS, AND LINES:

Not applicable.

11. OTHER CONTROL:

Lists of recoverable topographic and of photo hydrographic stations are included in the INDEX TO FIELD WORK.

Note that a position of unknown accuracy is available for topographic station Chen, 1951. This station was cut in by personnel from the USC&GS Ship EXPLORER after being established by the photo unit.

12. OTHER INTERIOR FEATURES:

Not applicable.

13. GEOGRAPHIC NAMES:

See Special Report, PART III, being submitted under separate cover.

14. SPECIAL REPORTS AND SUPPLEMENTAL DATA:

Coast and Beach Intelligence - See SHORELINE AND ALONGSHORE FEATURES, PART II, of this report.

Geographic Names - See 13 above.

Transmitting Letter, 13 December 1951 - To: The Director.
Transmitting Letter, 8 January 1952 - To: The Director
Transmitting Letter, 8 January 1952 - To: The Director
Transmitting Letter, 1 February 1952 - To: The Director
Transmitting Letter, 6 February 1952 - To: The Director

Note: Field data on stations noted in red have been duplicated from PH-73A(57), and attached to the records of this project (PH-56). These stations, prior to forwarding all field records on PH-73A to the AMS, were selected in the event they were needed to supplement the control data on PH-56.

CH

15. RECORDS:

The Triangulation Party records for Ph-56(49) and Ph-73A(51) are combined under Project C-1057.

All "V" station data except V-0115 and V-0116 are submitted with the photogrammetric records.

The observations and abstracts for PK 01, from CHAIN and GRASS are submitted with the triangulation records along with angular records and abstracts for all HV stations except HV-004.

Approved:

Miller J. Tonkel
Lt.-USC&G Survey

Respectfully submitted:

Victor E. Serena
Cartographic Survey Aid

INDEX TO FIELD WORK

TRIANGULATION STATIONS, RECOVERED AND IDENTIFIED:

Stations identified on trimetrogon and 620 field photos by field party in 1949.

Station	Photo No.
CURLEW, 1949	28713
KIPNUK, 1949	28696
KIPNUK NE BASE, 1949	28698
KIPNUK SW BASE, 1949	28698
MANY, 1949	28547
SHORE, 1949	28548
TENT, 1949	28713

TRIANGULATION STATIONS, IDENTIFIED:

Station	Photo No.
AKUM, 1951	28717
ANTLER, 1951	28798
APHKEWN, 1951	29040
ASTER, 1951	29030
BLUFF, 1951	28531
BOTTOM, 1951	28545
BRANCH, 1951	29038
BREAK, 1951	28834
CAROL, 1951	28807
CHAIN, 1951	28523
CHEVAK, 1951	28806
CHUNCHAK, 1951	28522
COICH, 1951	29058
CROSS, 1951	28840
DITCH, 1951	28506
DRIFT, 1951	28848
ELDON, 1951	29036
FAITH, 1951	28839
FILCH, 1951	28502
FLOOD, 1951	29047
CABOOSE, 1951	33647
JELLY, 1951	33647
OLIVE, 1951	33716

(See note opposite p. 8)

Station	Photo No.
FRESH, 1951	28838
FRONT, 1951	29027
GANDER, 1951	28845
GHOST, 1951	28838
GRASS, 1951	28523
GREEN, 1951	29033
HAZEN, 1951	29039
HEART, 1951	28720
HOOPER, 1951	28800
HUMPTY, 1951	29023
KASHU, 1951	29045
KEGUM, 1951	off photo limits
KIMAK, 1951	28711
KINIA, 1951	28715
KOKECHIK N. BASE, 1951	28497
KOKECHIK S. BASE, 1951	28499
MAGMA, 1951	28812
MEANDER, 1951	28539
MOUTH, 1951	28857
MYRIAD, 1951	28843
NELSON, 1951	28532
NINGA, 1951	28516
NIPPLE, 1951	29020
PATTI AZ. MK., 1951	33667 3rd order, no check
PLAIN, 1951	off photo limits
PORTAL, 1951	28530
ROMAN, 1951	28794
SLIVER, 1951	29042
SLUMP, 1951	29028
SPADE, 1951	29034
STUMP, 1951	28515
TABLE, 1951	29018
TOGEBOOK, 1951	off photo limits
TONAK, 1951	28795
TUNUNAK, 1951	29018
VICUN, 1951	28551
VISOR, 1951	28827
YOUNG, 1951	29053

TRIANGULATION INTERSECTION STATIONS, IDENTIFIED:

Station	Photo No.
Drain, 1951	28509
Inlet, 1951	28519
Huddle, 1951	28543
Patch, 1951	28524
Resist, 1951	28530
Cape Romanof, Shoran Station, 1951	28797
Salty, 1951	28512
Slough, 1951	28535
Sweet, 1951	28809
Tight, 1951	28796
Tununak, Catholic Church, Spire, 1951	29018

TRAVERSE STATIONS, IDENTIFIED:

Station	Photo No.
EPI-F	28800
Hooper Bay Aid Light, 1951	28501
Hooper Bay Astro (USAF), 1942,1951	28501
Kipnuk Astro (USAF), 1942, 1951	28549
Tununk Astro (USAF), 1942, 1951	29018

SUPPLEMENTAL STATIONS, HORIZONTAL-VERTICAL CONTROL:
Established and Identified.

Station	Photo No.	Connote from observations at
HV-001	28717	AKUM, KINIA
HV-002	28716	AKUM, KIUGA
HV-003	28699	MOUTH, NELSON, PORTAL
HV-004	28721	Resection station
HV-005	28526	NIPPLE, TOOTSOOK, resection
HV-006	28719	AKUM, KEGUM
HV-007	28648	DRIFT, HINGA, STUMP
HV-008	29031	GREEN, ASTER
HV-009	29041	APHREWN, HAZE, SLIVER
HV-010	29038	BRANCH, CROSS, FAITH
HV-011	28939	FAITH, FRESH, KASHU

SUPPLEMENTAL STATIONS, VERTICAL CONTROL: Identified:

Station	Photo No.	Compute from observations at
V-0100 A&B	28713	CURLEW
V-0101 A&B	28713	CURLEW
V-0102 A&B	28713	CURLEW
V-0103 A&B	28712	CURLEW
V-0104 A&B	28712	CURLEW
V-0105 A&B	28715	KINIA ECC.
V-0106 A&B	28714	KINIA ECC.
V-0107 A&B	28715	KINIA ECC.
V-0108 A, B&C	29029	FRONT
V-0109 A&B	28527	HV-005 Ecc.
V-0110 A&B	28522	CHUKCHAK
V-0111 A&B	28522	CHUKCHAK
V-0112 A&B	29030	NIPPLE
V-0113 A&B	28522	CHUKCHAK
V-0114 A&B	28652	FRONT
V-0115	29034	SPADE
V-0116	28904	GHOST
V-0117 A&B	28926	VISOR
V-0118 A&B	28929	VISOR
V-0119 A&B	28929	VISOR
V-0120 A&B	28927	VISOR
V-0121 A&B	28907	VISOR
V-0122 A&B	28908	VISOR
V-0123	28928	resection on FAITH, FRESH, GHOST
V-0124	29046	Resection on KASHU, FLOOD, DITCH
V-0125	28900	resection on HOOPER, ANTLER, VISOR
V-0126	28906	resection on COKER, BREAK
V-0129 A&B	33649	PATTI AZ. MK.
V-0130 A&B	33649	PATTI AZ. MK.
V-0131 A&B	33649	PATTI AZ. MK.
V-0132 A&B	33716	CABOOSE
Pk. 01	28524	CHUKCHAK, CHAIN, GRASS
Pk. 02	28653	CHUKCHAK, FRONT
Pk. 03	28911	VISOR
Pk. 04	28913	CABOOSE
V-0127 A&B	33647	PATTI AZ MK
V-0128 A&B	33647	" " "
V-0133 A&B	33715	CABOOSE
V-0134 A&B	33716	"
V-0140 A&B	33716	OLIVE

(See Note opposite P. 8)

TOPOGRAPHIC STATIONS, MARKED AND IDENTIFIED: (To be located by radial plot.)

Station	Photo No.
Able, 1951	28533
Andy, 1951	28544
Babe, 1951	28519
Bean, 1951	28835
Cain, 1951	29018
*Clam, 1951	28802
Camo, 1951	28798
Dime, 1951	28507
Dolt, 1951	28858
Dope, 1951	28513
Good, 1951	29017
Herb, 1951	28496, 28795
Hoop, 1951	29052
July, 1951	28511
Kuln, 1951	28844
Lite, 1951	28546
Malt, 1951	29049
Milk, 1951	28900
Ooze, 1951	28536
Oval, 1951	28847
Peas, 1951	28838
Pond, 1951	28823
Sand, 1951	28515
Tame, 1951	28517, 28518
Trum, 1951	28795
Type, 1951	28540
Zone, 1951	28904

* Position available from observations by Ship EXPLORER.

HYDROGRAPHIC STATIONS, IDENTIFIED: (To be located by radial plot.)

Station	Photo No.	Station	Photo No.
Alt	28795	Boy	28531
Arm	28531	Gam	28532
Ash	28795	Con	29053
Bit	28532	Cop	28794
Bob	29020	Dag	28532

HYDROGRAPHIC STATIONS, IDENTIFIED: - Continued - (To be located by radial plot.)

Station	Photo No.	Station	Photo No.
Egg	28532	Nut	29059
Fat	29053	Obo	29053
Fin	28531	Orb	29018
Fun	29016	Pea	28531
Gob	29016	Pie	29053
Hap	28530	Pin	28530
Imp	29016	Pun	28957
Jig	28794	Roe	28813
Job	29016	Ram	28795
Ken	29016	Ute	29[illegible]
Lou	29053	Vet	29022
Lum	29016	War	29022
Mad	29017	Yak	29021
Neg	28530	Zof	28795

LANDMARKS, IDENTIFIED:

Station	Photo No.
*OUTCROP, pinnacle of massive group (Hydro Cap)	28794
PEAK, chimney rock (RIPPLE, 1951)	29020
ROCK (RESIST, 1951)	28530
SPIRE, church (TUNUNAK, CATHOLIC CHURCH, SPIRE, 1951)	29018
*SPIRE, church (Kipnuk)	28549
TOWER, Aid Light, open construction, 40 feet high. (HOOPER BAY AID LIGHT, 1951)	28901

* To be located by the radial plot.

SHORELINE, INSPECTED:

Photo No.	Photo No.	Photo No.	Photo No.
28501	28508	28514	28519
28504	28510	28515	28520
28505	28511	28516	28529
28506	28512	28517	28530
28507	28513	28518	28531

GEOLOGIC INTERPRETATION - Continued

Photo No.	Photo No.	Photo No.	Photo No.
28532	28547	28844	29021
28533	28548	28845	29022
28535	28697	28846	29023
28536	28794	28849	29032
28537	28795	28850	29033
28538	28796	28851	29039
28539	28797	28857	29040
28540	28801	28858	29043
28541	28823	29016	29050
28542	28838	29017	29052
28543	28830	29018	27058
28544	28831	29019	*33659
28545	28832	29020	*33724
28546	28843		

* 1951 photography

VEGETAL COVER AND CULTURAL FEATURES:

Photo No.	Photo No.	Photo No.	Photo No.
28500	28520	28544	28717
28501	28522	28545	28720
28504	28523	28546	28721
28505	28530	28547	28794
28506	28531	28548	28795
28507	28532	28549	28796
28508	28535	28551	28797
28510	28536	28696	28798
28511	28537	28697	28799
28512	28538	28698	28800
28513	28539	28711	28801
28515	28540	28713	28805
28516	28541	28714	28806
28518	28542	28715	28809
28519	28543	28716	28812

VEGETAL COVER AND CULTURAL FEATURES: - Continued

Photo No.	Photo No.	Photo No.	Photo No.
28827	28848	29027	29045
28828	28849	29028	29046
28830	28850	29031	29050
28831	28851	29032	29051
28832	28852	29033	29052
28834	28857	29036	29053
28838	28858	29038	29058
28839	29016	29039	*33659
28843	29018	29040	*33667
28844	29020	29042	*33722
28845	29022	29043	*33724
28846	29023		

*1951 photographs being submitted with Project Ph-73A(51).

Note: Photos filed under PH-56(49)

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)

KIPNUK, ALASKA — Season — 1951

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.

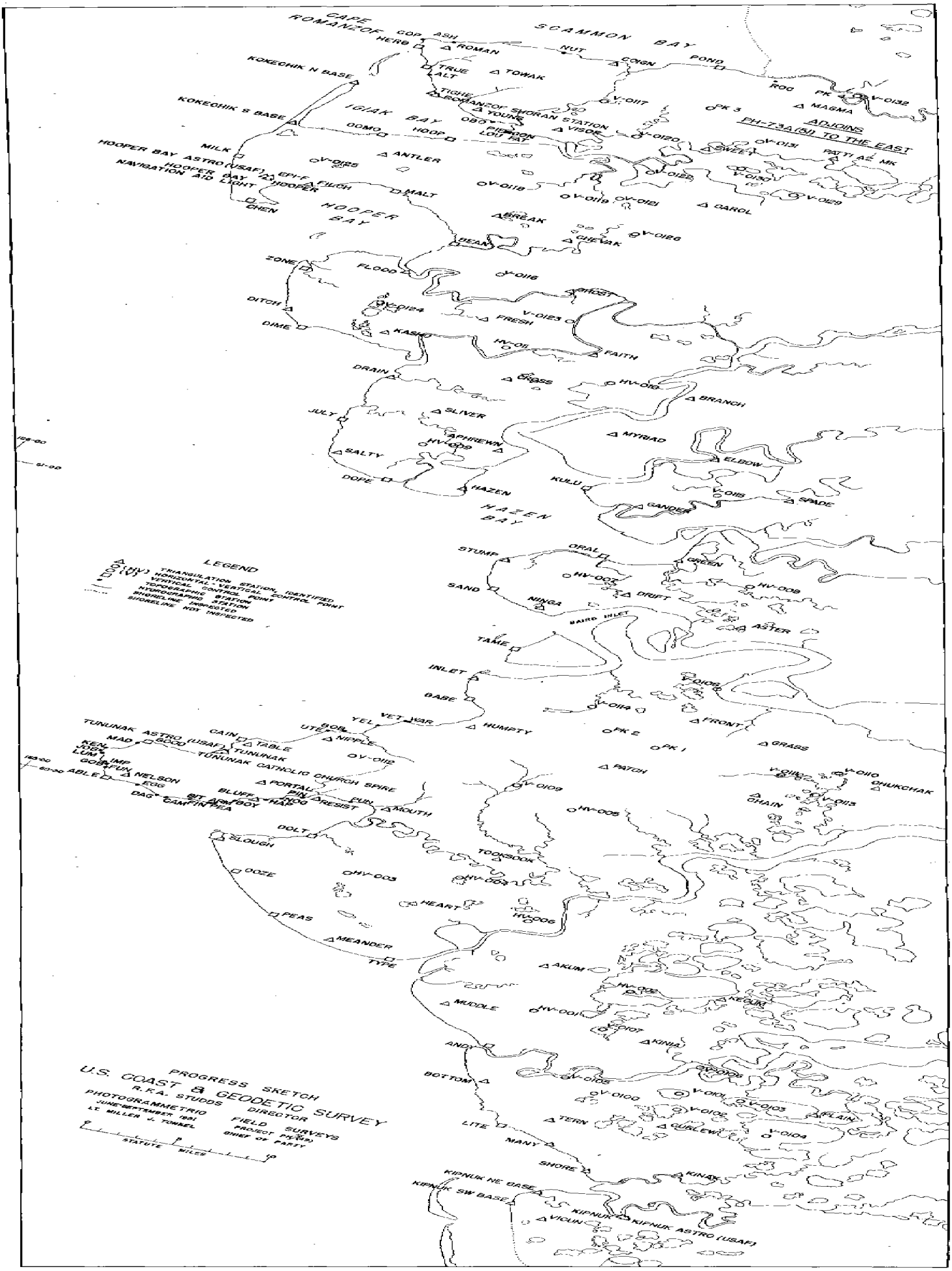
The positions given have been checked after listing by O.S. Risvold

By: Miller J. Tonkel
Chief of Party.

STATE	Territory of Alaska		POSITION										
			LATITUDE			LONGITUDE			METHOD OF LOCATION AND SURVEY NO.	DATE OF LOCATION	HARBOR CHART	INSHORE CHART	OFFSHORE CHART	CHARTS AFFECTED
CHARTING NAME	DESCRIPTION	SIGNAL NAME	° '	D.M. METERS		° '	D.P. METERS	DATUM						
OUTCROP	Pinnacle of massive group	Hydro. Cap	61 49			166 06		N.A. 1927	Radial Plot	1951			X	9302 9370
PEAK	Chimney rock (NIPTLE, 1951)		60 38	415.52		165 08	28.74	"	Tri.	"			X	9302
ROCK	(Resist, 1951)		60 31	1810.11		165 03	151.40	"	"	"			X	9000 9302
SPIRE	Church, Kipnuk		59 56			164 02		"	Radial Plot	"			X	9000 9302
SPIRE	(Tuntuak Catholic Church Church, spire, 1951)		60 35	19.81		165 15	433.70	"	Tri.	"			X	9302
TOWER	Open construction (Hooper Bay Aid Light, 1951)		61 32			166 06		"	Traverse	"			X	9302

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.

U. S. GOVERNMENT PRINTING OFFICE: 1949 O - 853418


CAPE ROMANZOF
SCAMMON BAY
IGIAK BAY
HOOPER BAY
HAZEN BAY
KOKECHIK N BASE
KOKECHIK S BASE
HOOPER BAY ASTRO (USAF)
NAVIGATION AID LIGHT
TUNUNAK ASTRO (USAF)
TUNUNAK CATHOLIC CHURCH SPIRE
KIPNUK NE BASE
KIPNUK SW BASE
KIPNUK ASTRO (USAF)
PH-7-3A(SI) TO THE EAST
ADJOINS
LEGEND
TRIANGULATION STATION, IDENTIFIED
HORIZONTAL CONTROL POINT
VERTICAL CONTROL POINT
TOPOGRAPHIC STATION
HYDROGRAPHIC STATION
SHORELINE INSPECTED
SHORELINE NOT INSPECTED
PROGRESS SKETCH
U.S. COAST & GEODETIC SURVEY
R.R.A. STUDDS DIRECTOR
PHOTOGRAMMETRIC FIELD SURVEYS
JUNE-SEPTEMBER 1951 PROJECT PH-7(3)
LT. MILLER J. TOMMEL CHIEF OF PARTY
STATUTE MILES

PHOTOGRAMMETRIC PLOT REPORT
Project Ph-56
Surveys T-9698 thru T-9703

21. AREA COVERED

This radial plot covers the area of Surveys T-9798 thru T-9703. These topographic surveys cover part of the area of Nelson Island at Etolin Strait between Ningaluk River and Tooksook Bay. The surveys will be compiled with the Reading Plotter.

22. METHOD - RADIAL PLOT

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

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

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

Photographs:
All photographs used were nine-lens metal mounted photographs at a scale of 1:20,000. Sixty-three (63) photographs were used in the plot - numbered as follows:

28518 thru 28539
28550 thru 28553
28555
29015 thru 29023
38090 thru 38098
38109 thru 38115
38117 thru 38122
38180 thru 38184

Templets:
Vinylite templets were made from all photographs using a master templet to adjust for errors due to chamber displacement. Radial lines were scratched on the templets and scratches were filled in with china marking wax 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:
For difficulty encountered in this area see Radial Plot Report for Surveys T-9691, T-9692 and T-9694 thru T-9697.

This radial plot was laid directly on the map manuscripts beginning with photograph 28531 and continuing northeasterly to photograph 28522. Then the flight starting with photograph 38115 was laid extending it northeasterly to photograph 38109. In doing so it was found that the previous trouble lay with the identification of Triangulation Station PATCH, 1951. These two flights were continuous and adequately controlled; and offered a good base to tie in the five flights to the north.

All the flights northwesterly of the two previously mentioned flights were laid, and then the flights to the southeast, and tied into control stations MEANDER, 1951; HEART, 1951 and HV stations 003, 004 and 006. A rigid plot was obtained and no difficulty was encountered with the exception of flight 29015 thru 29023. (See paragraph 25).

Transfer of Points:

The position of all centers, passpoints 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 remaining templet as it was removed; and finally on the map manuscripts.

23. ADEQUACY OF CONTROL

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

PATCH, 1951, Sub. Pt. "B" - The radially plotted position falls 1.3 mm northwest of the plotted position. This Sub. Pt. is believed to be misidentified. During stereoscopic verification of this point it was noted that by measuring back in approximate azimuth, there is another small mound of moss. This point was not repricked. Sub. Pt. "A" was good and held in plot.

HUMPTY, 1951, Sub. Pt. - The radially plotted position falls 0.4 mm northwest of the plotted position. This Sub. Pt. is believed to be misidentified. While studying this area stereoscopically it was noted there were several other patches of grass in azimuth with the station. This point was not repricked.

TOOKSOOK, 1951 - This station falls outside of the area of 1950 photography available at the time of field inspection. TOOKSOOK, was pricked in the office with the aid of the stereoscope and information available on the C.S.I. card made in the field in 1951. It is believed that sometime between the time the station was marked on the ground and the photographs taken in 1952, the markings disappeared. The radially plotted position falls 0.4 mm east of the plotted position. This point is not needed for rectification for the reason there is an abundance of "R" points in this area on the photographs. No attempt was made to reprick this station.

24. SUPPLEMENTAL CONTROL

None.

25. PHOTOGRAPHY

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

Though several tilted photographs were used in this plot, no filt

determination was necessary because the degree of tilt was not enough to affect the plot.

One of the fiducial marks was missing in chamber 4 and one in chamber 8 on all 1952 photographs. Chamber No. 1 is missing completely from photograph No. 29022.

Most of the entire flight of photographs 29015 thru 29023 was twisted and tilted. This flight was laid holding intersection of pass points from other photographs. Difficulty was encountered while laying this flight to hold NELSON, 1951 and TABLE, 1951; both elevated triangulation stations.

26. VERTICAL CONTROL

It was noted while making up Vertical Control Sheets for each map manuscript, the published elevation for TUNUNAK, 1951 is listed as 10.32 meters (36 feet). This may be an error in conversion to feet.

V-0112 - While pricking these two points in the office it was noted that the field identification and horizontal angle did not agree and also points appeared to be on the wrong side of the lake. The points used in the radial plot were office identified. Even though they check themselves by 0.6 of a foot it is felt advisable to verify them by rectifying photograph 29019 first before using these points for rectifying other photographs.

V-0111 - The elevation was not computed because: (1) The horizontal angles do not check the radially plotted position. (2) The photographs affected fall outside of the project limits. (3) Sufficient "R" points and points of known elevation are in the immediate vicinity if rectification is desired of these photographs.

V-0110 - This point falls on one photograph only.

V-0108 and V-0114 - These points were rejected because of the abundance of "R" points in the vicinity.

PK-01 - This is a very flat topped peak. The horizontal angles place the point over on the edge of the table topped peak. The point was computed using the distance to both the radially plotted position and position established by the horizontal angles. It was noted, however, that the vertical angle from GRASS, 1951 did not check out; but a vertical angle to an unidentified peak does. It is believed advisable to verify this elevation by rectifying photograph 38093 before using it on other photographs.

PK-02 - This is a very large table-topped peak and although it was field identified it could move several hundred meters. The outside edge of this table-topped peak was traced onto the map manuscript. The elevation was computed using both the radially plotted position and the edge of the peak and horizontal angle cuts for distance (s) on Form 29D. The elevation does not check by approximately 23 feet. This peak should be rejected for rectification of the photographs.

SLOUGH, 1951 - There is no published elevation for this station but since the Sub Pts were marsh points they were made "R" points for rectification.

RESIST, 1951 - There seems to be no published elevation for this station. The field man on the C. S. I. card states it is approximately 20 feet high. Use with caution.

27. RECOVERABLE TOPOGRAPHIC STATIONS

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

The position of GOOD, 1951 may very well be in error of 0.3 mm or even greater. The field man failed to describe what he was trying to prick for an azimuth point and on the field photograph there are three prick holes. It also should be pointed out that the distance between the photo[redacted] point and the photo[redacted] azimuth point is far too short for a good azimuth to the station.

28. SUPPLEMENTAL MAP MANUSCRIPT

A vinylite sheet was prepared for the area east of survey T-9701 to include stations GRASS, 1951; CHUKCHAK, 1951 and CHAIN, 1951. The sheet contains all of positions of the control stations, Sub. Pts., vertical points, pass points, etc. If it is desired to have a map manuscript for this area, the points may be transferred from this sheet which was forwarded to the Washington Office.

Respectfully submitted
16 July 1957

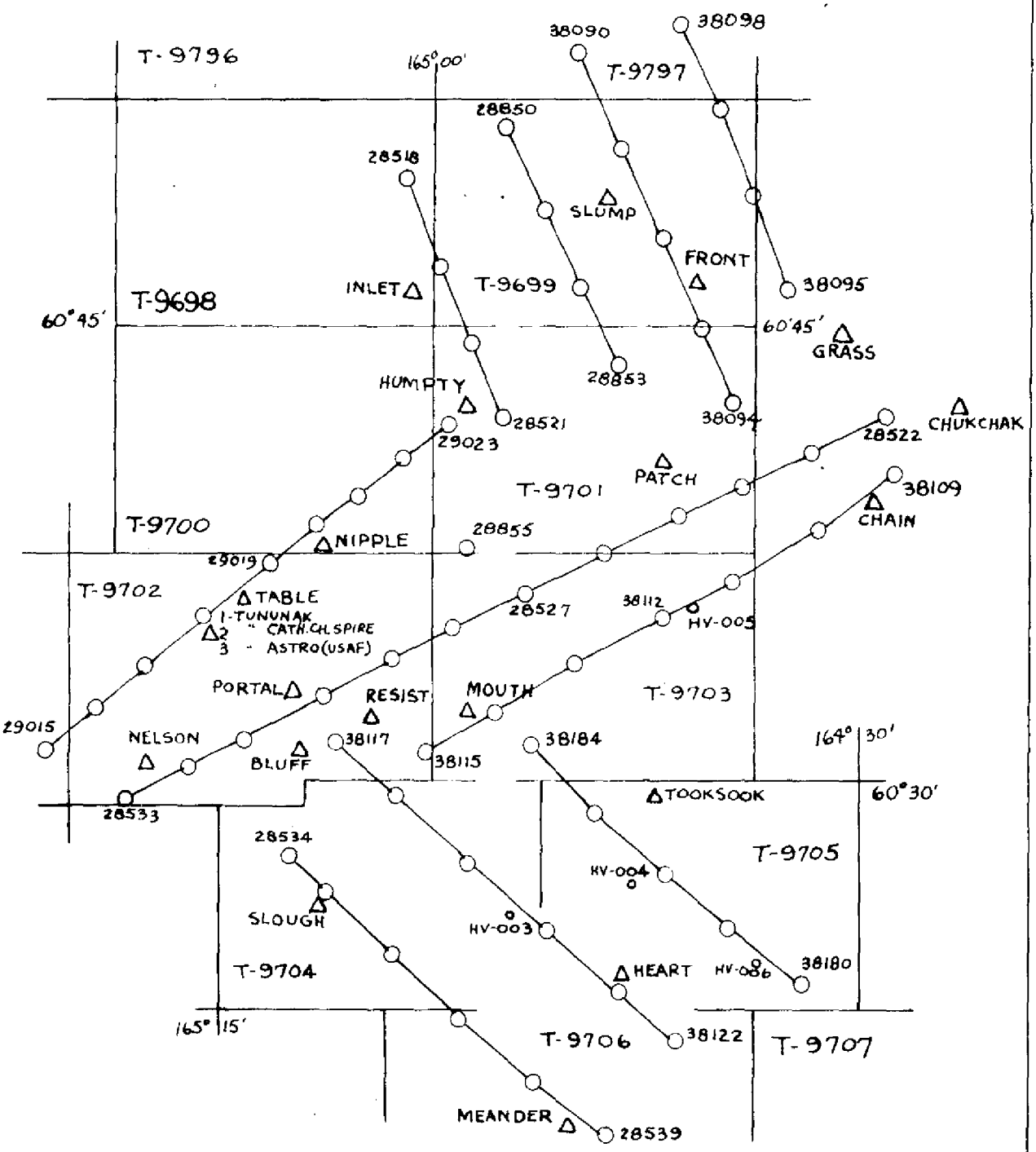
Leroy A. Senasack

Leroy A. Senasack,
Carto. Photo. Aid

Approved and forwarded

William F. Deane

William F. Deane,
CDR. C&GS
Baltimore District Officer



LAYOUT SKETCH

PROJECT PH-56

SURVEYS T-9698 thru T-9703

○ Nine lens office photographs

△ Control stations identified

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT
CONTROL RECORD

MAP T- 9698 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)
INLET, 1951	IV p. 387	N.A. 1927	60 46 36.089			1117.0 (740.1)	
			165 02 07.491			113.4 (794.8)	
Sub. Pt. "A", INLET, 1951		"	60 46			1158.8 (698.3)	
			165 02			148.0 (760.2)	
Sub. Pt. "B" INLET, 1951		"	60 46			986.9 (870.2)	
			165 02			209.1 (699.1)	

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/11/55

CHECKED BY: H. R. Rudolph DATE 6/6/55

COMM-DC-57843

FORM 164
(4-23-54)

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

MAP T-9699 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)
FRONT, 1951	IV p. 381	N.A. 1927	60	46	45.045				1394.2	(462.9)		
			164	40	24.362				368.7	(539.4)		
Sub. Pt. "A" FRONT, 1951		"	60	46					1408.6	(448.5)		
			164	40					411.5	(496.6)		
Sub. Pt. "B" FRONT, 1951		"	60	46					1199.5	(657.6)		
			164	40					482.5	(425.6)		
SLUMP, 1951	IV p. 386	"	60	48	49.702				1538.4	(318.7)		
			164	46	44.845				678.0	(229.1)		
Sub. Pt. "A" SLUMP, 1951		"	60	48					1537.0	(320.1)		
			164	46					617.1	(290.0)		
Sub. Pt. "B" SLUMP, 1951		"	60	48					1510.8	(346.3)		
			164	46					578.9	(328.2)		
GRASS, 1951	IV p. 380	"	60	45	32.633	E. of sheet			1010.1	(847.1)		
			164	33	14.038				212.6	(696.0)		
Sub. Pt. "A" GRASS, 1951		"	60	45					1013.0	(844.2)		
			164	33					345.1	(563.5)		
Sub. Pt. "B" GRASS, 1951		"	60	45					1023.1	(834.1)		
			164	33					98.7	(809.9)		

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/11/55 CHECKED BY: H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

42

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT CONTROL RECORD

MAP T- 9700 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)
NIPPLE, 1951	IV p. 380	N.A. 1927	60 38 14.692			454.7 (1402.4)	
			165 08 01.878			28.6 (883.5)	
Sub. Pt. "A" NIPPLE, 1951		"	60 38			458.5 (1398.6)	
			165 08			31.7 (880.4)	
Sub. Pt. "B" NIPPLE, 1951		"	60 38			494.6 (1362.5)	
			165 08			26.2 (885.9)	

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/11/55 CHECKED BY: H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

FORM 164
(4-23-54)

U.S. DEPARTMENT OF COMMERCE
DESCRIPTIVE REPORT

COAST AND GEODETIC SURVEY
CONTROL RECORD

MAP T- 9701 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)
HUMPTY, 1951	IV p. 380	N.A. 1927	60 41 58.414			1808.0 (49.1)	
			164 57 23.835			361.6 (548.7)	
Sub. Pt. HUMPTY, 1951		"	60 41			1767.5 (89.6)	
			164 57			249.6 (660.7)	
PATCH, 1951	IV p. 387	"	60 40 16.781			519.4 (1337.7)	
			164 43 33.939			515.4 (395.8)	
Sub. Pt. "A" PATCH, 1951		"	60 40			896.9 (960.2)	
			164 43			533.8 (377.4)	
Sub. Pt. "B" PATCH, 1951		"	60 40			883.5 (973.6)	
			164 43			689.4 (221.8)	
CHAIN, 1951	IV p. 386	"	60 40 16.279			503.9 (1353.2)	
			164 28 59.358	E. of sheet		901.4 (9.8)	
Sub. Pt. "A" CHAIN, 1951		"	60 40			393.9 (1463.2)	
			164 28			810.8 (100.4)	
Sub. Pt. "B" CHAIN, 1951		"	60 40			651.3 (1205.8)	
			164 29			53.6 (857.6)	
CHUKCHAK, 1951	IV p. 381	"	60 43 05.827	E of sheet		180.3 (1676.8)	
			164 20 05.215			79.1 (830.7)	
Sub. Pt. "A" CHUKCHAK, 1951		"	60 43			155.2 (1701.9)	
			164 20			67.3 (842.5)	
Sub. Pt. "B" CHUKCHAK, 1951		"	60 43			106.1 (1751.0)	
			164 20			55.4 (854.4)	

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/12/55 CHECKED BY: H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

FORM 164
(4-23-54)

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

DESCRIPTIVE REPORT — CONTROL RECORD

MAP T-9702 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)
RESIST, 1951	IV p. 388	N.A. 1927	60	31	59.765				1849.8	(7.3)		
			165	03	08.795				134.1	(780.9)		
PORTAL, 1951	IV p. 385	"	60	32	47.230				1461.8	(395.3)		
			165	09	34.207				521.5	(393.2)		
Sub. Pt. "A" PORTAL, 1951		"	60	32					1412.7	(444.4)		
			165	09					496.1	(418.6)		
Sub. Pt. "B" PORTAL, 1951		"	60	32					1533.0	(324.1)		
			165	09					538.3	(376.4)		
NELSON, 1951	IV p. 380	"	60	31	11.999				371.4	(1485.7)	— (1485.7)	
			165	20	55.774				850.9	(64.5)		
Sub. Pt. "A" NELSON, 1951		"	60	31					476.0	(1381.1)		
			165	20					791.7	(123.7)		
Sub. Pt. "B" NELSON, 1951		"	60	31					484.4	(1372.7)		
			165	20					787.9	(127.5)		
BLUFF, 1951	IV p. 385	"	60	31	03.628				112.3	(1744.8)		
			165	08	19.705				300.7	(614.8)		
Sub. Pt. "A" BLUFF, 1951		"	60	31					86.5	(1770.6)		
			165	08					284.7	(630.8)		
Sub. Pt. "B" BLUFF, 1951		"	60	31					118.7	(1738.4)		
			165	08					259.8	(655.7)		
TUNUNAK ASTRO (USAF), 1951	IV p. 388	"	60	35	11.003				340.6	(1516.5)		
			165	15	05.359				81.6	(831.9)		
Sub. Pt. TUNUNAK ASTRO		"	60	35					225.4	(1631.7)		
			165	15					57.9	(855.6)		

1 FT. = .3048006 METER

COMPUTED BY J. Steinberg DATE 5/16/55 CHECKED BY H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

FORM 164
(4-23-54)

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

DESCRIPTIVE REPORT — CONTROL RECORD

MAP T- 9702 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)
TUNUNAK CATHOLIC CHURCH SPIRE, 1951	IV p. 388	N.A. 1927	60	35	01.908				59.1	(1798.0)		
			165	15	28.546				434.7	(478.9)		
TUNUNAK, 1951	IV p. 386	"	60	35	10.615				328.6	(1528.5)		
			165	15	01.740				26.5	(887.0)		
Sub. Pt. "A" TUNUNAK, 1951		"	60	35					365.2	(1491.9)		
			165	15					99.5	(814.0)		
Sub. Pt. "B" TUNUNAK, 1951		"	60	35					384.8	(1472.3)		
			165	15					112.4	(801.1)		
TABLE, 1951	IV p. 385	"	60	36	24.297				752.0	(1105.1)		
			165	13	44.731				680.6	(232.3)		
Sub. Pt. "A" TABLE, 1951		"	60	36					734.4	(1122.7)		
			165	13					644.0	(268.9)		
Sub. Pt. "B" TABLE, 1951		"	60	36					775.8	(1081.3)		
			165	13					580.4	(332.5)		

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/16/55 CHECKED BY: H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

FORM 164
(4-23-54)

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

DESCRIPTIVE REPORT — CONTROL RECORD

MAP T-9703 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)
MOUTH, 1951	IV p. 385	N.A. 1927	60 32 22.854				707.4	(1149.7)		
			164 57 02.168				33.1	(881.8)		
Sub. Pt. "A" MOUTH, 1951		"	60 32				662.0	(1192.1)		
			164 57				75.1	(839.8)		
Sub. Pt. "B" MOUTH, 1951		"	60 32				506.0	(1351.1)		
			164 57				123.6	(791.3)		
HV-005		"	60 35 43.18				1336.5	(520.6)		
			164 42 27.02				411.3	(502.0)		
Sub. Pt. "A" HV-005			PLOT GRAPHICALLY							
Sub. Pt. "B" HV-005			PLOT GRAPHICALLY							

1 FT. = .3048006 METER

COMPUTED BY: J. Steinberg DATE 5/16/55

CHECKED BY: H. R. Rudolph DATE 7 June 1955

COMM-DC-57843

Compilation Report

T-9698 thru T-9703

31. Delineation

The manuscripts were compiled on the Reading Nine-lens Plotter, model "A". A small area in the south east corner of T-9703 was not compiled because of the lack of photography.

32. Control

See radial plot report for discussion of horizontal and vertical control.

Inasmuch as none of the elevations of the supplemental vertical control points could be verified during the radial plot process, they were not used for rectification or model orientation. In areas where the main scheme stations were too sparse for rectification, elevations were determined by vertical bridging on the plotters.

The published elevation of triangulation station MOUTH (T-9703) could not be held on the instrument. There was sufficient tidewater control to indicate that this elevation is 7 feet too high. The instrument elevation was shown on the manuscript.

33. Supplemental Data

None

34. Contours & Drainage

There was no difficulty encountered in delineating the contours or drainage.

35. & 36. Shoreline, Alongshore and Offshore Details

No comment

37. Landmarks & Aids

The descriptions and positions of all landmarks were submitted by the field party. There are no aids to navigation.

38. Control for Future Surveys

topo ~~type~~ Forms No. 524 were submitted for the following photo stations

T-9701	BABE
T-9702	ABLE, GOOD

39. Junctions

Junctions were made with all contemporary surveys as shown on the attached location diagram.

40. Horizontal and Vertical Accuracy

There are no known areas of questionable horizontal or vertical accuracy.

46. Comparison with Existing Maps

The area of these maps is covered by U.S.G.S., 1:250,000 scale maps - BAIRD INLET and NUNIVAK ISLANDS, dated 1951. The location of the village of UKAK, on G.S. quad. BAIRD INLET, was moved approximately 15 miles southward. The position of TANUNAK landing strip on G. S. quad NUMIVAK ISLAND is apparently in error. It is shown in its correct location on T-9702.

47. Comparison with Nautical Charts

The largest scale nautical chart of the area is No. 9302, revised 12/24/56 scale ~~1:534,000~~. 1:1,534,076

Items to be applied to charts immediately - none

Items to be carried forward - none

1534076

Approved by

Louis Levin
Supervisor, Nine Lens Stereo. Unit

Submitted by

Clarence Misfeldt
Cartographer

Notes to Hydrographer

T-9698

One topographic station - TAME, 1951 - was established in the field and its position determined by radial plot.

No photo hydro stations were established.

Notes to Hydrographer

T-9699

No topo or hydro stations were established.

Notes to Hydrographer

T-9700

No topographic stations were established.

The following photo hydro stations were established.

Hydro-Name	Photo No.	Description
UTE	29020	center of boulder
BOB	"	top of 5' boulder, most prominent in vicinity
YEL	29021	center of largest boulder in vicinity
VET	29022	center of boulder
WAR	29022	" " "

Notes to Hydrographer

T-9701

There were no topo or photo hydro stations established.

Notes to the Hydrographer

T-9702

The following topographic stations were established in the field and their positions determined by radial plot methods:

CAIN 1951 ABLE 1951

GOOD 1951

The following photo hydro stations were established

Neme	Photo No.	Description
EGG	28532	center of boulder
FUN	29017	seaward edge
GOB	29017	top of largest most seaward boulder
IMP	29017	center of boulder
LUM	29017	center of boulder
JOB	29017	top, seaward edge of bluff
KEN	29017	boulder - top of bluff
MAD	29017	center of boulder
ORB	29018	center of boulder
PIN	28530	seaward face - exposed bedrock
NOG	28530	seaward point
HAP	28530	bayward point of rock
BOY	28531	sharp bayward side of point
ARM	28531	bayward face of rk outcrop
DAG	28532	top of largest and highest boulder in group
CAM	28532	center of central boulder of three at MHWL
BIT	28532	center of split boulder
FIN	28531	top of lone pinnacle rock
PEA	28531	E gable, green roof, of frame bldg.

Notes to Hydrographer

T-9703

There were no topo or photo hydro stations established.

Review Report of
Topographic Surveys T-9698 thru T-9703
January 1959

62. Comparison with Registered Topographic Surveys:

There are no registered topographic surveys of this area.

63. Comparison with Maps of Other Agencies:

BAIRD INLET, ALASKA, 1:250000 Ed. of 1951, US Geological Survey
NUNIVAK ISLAND, " " " " " " " "

These charts are of a topographic reconnaissance series and agree with subject survey as well as map-type and scale differences allow.

64. Comparison with Contemporary Hydrographic Surveys:

None!

65. Comparison with Nautical Charts:

9302 1:1534076 Revised to 9/29/58

This is the largest-scale nautical chart of subject area and unsuitable for a detailed comparison.

66. Adequacy of Results and Future Surveys:

Subject surveys (6) comply with project instructions and meet requirements of adequacy and accuracy.

Reviewed by:

Josef J. Streifler

Approved by:

L C Lundy
Chief, Review & Drafting Section
Photogrammetry Division

L W Swanson
Chief, Photogrammetry Division
March 30, 1961

J E Waugh
Chief, Nautical Chart ~~Branch~~
~~Charts~~ Division 5/18/61

Nautical Chart Division
Office of Cartography

K. O. Emery
Chief, Coastal Surveys Division
Assistant Director for Oceanography

GEOGRAPHIC NAMES

Survey No.

T-9698

57

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
Bering Sea										1
Hazen Bay National										2
Wildlife Refuge										3
Kigigak Island										4
Nelson Island										5
										6
				Names approved 1-20-59						7
									L. Heck	8
										9
										10
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										15
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										27

M 234

GEOGRAPHIC NAMES

Survey No.

T-9699

58

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Nelson Island										1
Kigigak Island										2
Ningaluk River										3
Nunakak Camp										4
				Names approved 1-20-59 L. Heck						5
										6
										7
										8
										9
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										12
										13
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M 234

GEOGRAPHIC NAMES

Survey No.

T-9700

59

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	K	
~~Bering Sea~~										1
Ikalugtulik River										2
Killinupak Mountain										3
				Names approved 1-20-59						4
								L. Heck		5
										6
										7
										8
										9
										10
										11
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M 234

GEOGRAPHIC NAMES

Survey No.

T-9701

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Nelson Island										1
Erchakrtuk Mt.										2
Kaluyut Mountains										3
Bering Sea										4
Ukak				Names approved 1-20-59 L. Heck						5
										6
										7
										8
										9
										10
										11
										12
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M 234

GEOGRAPHIC NAMES

Survey No.

T-9702

Name on Survey	On Chart No. A	On previous survey No. B	On U. S. quadrangle Maps C	From local information D	On local Maps E	P. O. Guide or Map F	Rand McNally Atlas G	U. S. Light List H	61 K	
Bering Sea										1
Tanunak Bay										2
Etolin Strait										3
Kagirlvar Bay										4
Chinit Point										5
Ugchirnak Mt										6
Tanunak										7
Tanunak River										8
Talurarevuk Point										9
Cape Vancouver										10
Kitnik Mt										11
Atrnak Pt										12
Nealruk Mt										13
Alekuchak River										14
Nunakolek										15
Umkumiut										16
Uluruk Point										17
										18
				Names approved 1-20-59						19
				L. Heck						20
										21
										22
										23
										24
										25
										26
										27

M 234

GEOGRAPHIC NAMES

Survey No. T-9703

62

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
Nelson Island										1
Kangirlvar Bay										2
Kasinuk Mt.										3
Tooksook River										4
					Names approved 1-20-59 L. Heck					5
										6
										7
										8
										9
										10
										11
										12
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										27

M 234

NAUTICAL CHARTS BRANCH

SURVEY NO. T-9698 thru T-9703.

Record of Application to Charts

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