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

**DESCRIPTIVE REPORT**

<table>
<thead>
<tr>
<th>Type of Survey</th>
<th>TOPOGRAPHIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field No.</td>
<td>T-8629</td>
</tr>
<tr>
<td>Project No.</td>
<td>T-8630</td>
</tr>
<tr>
<td>Office No.</td>
<td>T-8631</td>
</tr>
<tr>
<td>PH-43 (49)</td>
<td></td>
</tr>
</tbody>
</table>

**LOCALITY**

- **State**: ALASKA
- **General locality**: BERING SEA
- **Locality**: ST. MATTHEW ISLAND

**194 B**

**CHIEF OF PARTY**

T.E. Reed

**LIBRARY & ARCHIVES**

**DATE**: April 12 - 1951
DATA RECORD

T - 8629, T-8630, & T-8631

Project No. (II): Ph-43(49) Quadrangle Name (IV):

Chief of Party: Officer-in-Charge: Thos. B. Reed
Instructions dated (II) (III): 14 March 1949
Copy filed in Division of Photogrammetry (IV) Office Files

Method of Compilation (III): Multiplex

Manuscript Scale (III): 1:20,000 Stereoscopic Plotting Instrument Scale (III): 1:10,000

Scale Factor (III):


Applied to Chart No. 6851 Date: Nov. 30, 1949 Date registered (IV): 2-7-51

Publication Scale (IV):

Publication date (IV):

Geographic Datum (III): St. Matthew 1944

Vertical Datum (III): Sea Level at time

Mean sea level except as follows: of photography

Elevations shown as (2) refer to mean high water
Elevations shown as (2) refer to sounding datum

i.e., mean low water or mean lower low water

Reference Station (III): See G-6176 (Alaska No. 79)

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.

Form T- Page 1
Areas contoured by various personnel
(Show name within area)

D. M. Brant

Form T-Page 2 &
Areas contoured by various personnel
(Show name within area)
(ii) (iii)
DATA RECORD

Field Inspection by (I): None

Planetable contouring by (II): ———

Completion Surveys by (II): ———

Mean High Water Location (III) (State date and method of location):
Stereoscopic examination of photographs and drawn with multiplex.

Projection and Grids ruled by (IV): W.E.W.

Projection and Grids checked by (IV): W.E.W.

Control plotted by (III): Washington Office

Control checked by (III): Washington Office

Radial Plotting:
Control extension by (III): Charles Hanavich

Stereoscopic Instrument compilation (III):
Planimetry and Contours

Vertical Control Bridged by: Albert K. Heywood

Manuscript delineated by (III):
T-8629 - B. A. Dew
T-8630 - B. A. Dew
T-8631 - C. A. Lipscomb

Photogrammetric Office Review by (III):
Al K. Heywood

Elevations on Manuscript checked by (II) (III): S. W. Trow

Date: 1949
Date: 1949
Date: Feb, 1949
Date: Feb, 1949
Date: Sept. Oct, 1949
Date: Sept, 1949
Date: Oct, 1949
Date: Oct, 1949
Date: Oct, 1949

Form T-Page 8
Camera (kind or source) (III): Navy, Metrogon 151.70 MM lens

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Time</th>
<th>Scale</th>
<th>Stage of Tide</th>
</tr>
</thead>
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<td></td>
<td>7-16-48</td>
<td></td>
<td>1:20,000</td>
<td>Unknown</td>
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</table>

Tide (III)

Reference Station: None
Subordinate Station: None
Subordinate Station: None

Washington Office Review by (IV): G. B. Wilsey
Final Drafting by (IV): Taylor, Day, Texas
Drafting verified for reproduction by (IV): HD Hallam

Proof Edit by (IV):

Land Area (Sq. Statute Miles) (III): 117 total
Shoreline (More than 200 meters to opposite shore) (III): 99 mi.
Shoreline (Less than 200 meters to opposite shore) (III): None
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): None
Number of Temporary Photo Hydro Stations established (III): None

Remarks:

Ratio of Ranges | Mean Range | Spring Range
---|---|---

Date: March 1950
Date: Sept 1950
Date: Sept. 11, 1950

Form T-Page 4
Summary to Accompany

T-8629
T-8630
T-8651

Topographic Maps T-8629, T-8630 and T-8651 cover the area of St. Matthew Island, Hall Island and Pinnacle Island, Bering Sea, Alaska, as shown on the accompanying index.

These topographic maps were radial plotted and the planimetry and contours delineated without benefit of field inspection of any kind.

Data pertaining to T-8629, T-8630 and T-8651 is filed as follows:

A. Division of Photogrammetry General Files
   1. Acetate manuscripts
   2. Duplicate of the descriptive report

B. Bureau Archives
   1. A cloth backed lithographic print of the reviewed maps at the compilation scale
   2. Registered original descriptive report
Radial Plot Report

(St. Matthew, Hall, and Pinnacle Islands)

27. Radial Plot:

One main radial plot was laid for St. Matthew and Hall Islands. A total of 112 transparent templates (acetate) were used. Another minor radial plot, covering Pinnacle Island, consisted of 3 transparent templates. The templates were prepared from single lens photographs (U. S. Navy), which were at a scale of 1:20,000, and dated 16 July 1948.

In the main plot the area is found between latitudes 60°01' and 60°04', and longitudes 172°13' and 173°07', and is comprised of three maps: manuscripts (numbered T-8629, T-8630, and T-8631). The small plot for Pinnacle Island lies between latitudes 60°11' and 60°13', and longitudes 172°41' and 172°48'; this area is attached as an insert on map manuscript T-8629. Photographic coverage for both areas is adequate.

Except for the area of the smaller radial plot, the density of control is too inadequate to lay an accurate radial plot for all of St. Matthew Island, and no control was available on Hall Island. The control stations - a total of 11 stations - on St. Matthew Island are centralized at about the mid-vey section of the Island.

Since no field identification of the control stations had been made, an attempt was made (with poor success) to identify these stations on the photographs from their descriptions and some sketches, which were found in the field notebooks (Observations of Horizontal Angles). Of the 11 control stations on St. Matthew Island, it was possible to identify only 3 stations with a reasonable degree of accuracy; they were: Narol, 1944; St. Matthew Loran Antenna, 1944; and Rock A, 1944. These were the only 3 stations that could be held in the main plot.

A tabulation of the remaining 8 control stations on St. Matthew Island follows:

1. Intersection station Hill A, 1944: Point identified as the probable location of station falls about 120 meters east of the station. The identified point is the photograph center of photograph 152. The identified point and the station are on line along the ridge top of a hill where the station is located.
2. Intersection station Hill B, 1944: Point identified as the probable location of station falls about 30 meters south of the station. The identified point and the station are on line along a ridge top of a hill where the station is located.

3. Intersection station Hill D, 1944: Point identified as likely site of station is about 15 meters north of the station. The identified point and the station appear to be on line with edge of a high ridge where the station is located.

4. Intersection station Sugar Loaf ltn., 1944: Identified point is top of mountain and falls about 12 meters south-southeast of the plotted station.

5. Triangulation station Matthew's Astro., 1944: Point identified as likely site of station is 50 meters northwest of plotted station. Identified point and station are on line along a vegetation line along which the station is located.

6. Triangulation station Middle, 1944: Point identified as possible location of station is about 22 meters west of the station. The identified point and station are on line along the edge of a small and narrow ridge where the station is located.

7. Base A, 1944, according to the description, is an unmarked intersection station. The description for this station was too indefinite.

8. Intersection station Matthew's Astro. Azimuth, 1944: The description for this station was too indefinite to attempt to identify the location of it.

To bridge Serichef Strait between photographs 32 and 34 (photo. 33 - all water free), that is from St. Matthew Island to Hall Island, a mean value of the 3 distances between photograph centers 30-31, 31-32, and 34-35 was determined; this mean value was doubled and the resultant value used as the controlling distance between photograph centers 32 and 34. To control the azimuth, e
straightedge was used to align photograph centers 31, 32, 34, and 35 (azimuth from 34 to 35 held as fixed) along a medium straight course in line of flight had been maintained.

The accuracy of this plot is questionable under the conditions noted above, and in view of the fact that the plot is a graphic extension east and northwest of the control area in which directional orientation was held by azimuths and cross azimuths, and its horizontal position fixed by pass points. Incidentally, at station Narol, 1944, an angle was available from intersection station Rock A, 1944, to the north end of Gull Rock; it was used to check the azimuth of the plot. Gull Rock is about 400 meters north of the center of photograph 39.

A small radial plot was laid for Pinnacle Island in which 4 control stations were available and held to. By using a stereoscope, these stations were identified in the office from their descriptions; they are:

1. Intersection station Gull Rock, 1944.

The closure and adjustment of the plot is believed to be satisfactory.

Approved by: Submitted by:

L. C. Lande

Charles Hanzovich
28 February 1949
ST. MATTHEW ISLAND
T-8629, T-8630 & T-8631

<table>
<thead>
<tr>
<th>Station</th>
<th>Elev. M</th>
<th>Elev. Ft.</th>
<th>Manueipt</th>
<th>Multiplex Shown on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthews Astro, 1944</td>
<td>7.62</td>
<td>25</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>Matthews &quot; Azimuth, 1944</td>
<td>60.61</td>
<td>199</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Middle, 1944</td>
<td>219.02</td>
<td>719</td>
<td>700</td>
<td>720</td>
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<tr>
<td>Narol, 1944</td>
<td>102.04</td>
<td>335</td>
<td>300</td>
<td>335</td>
</tr>
<tr>
<td>Pinnacle Island, 1944</td>
<td>373.78</td>
<td>1223</td>
<td>1250</td>
<td>1250</td>
</tr>
<tr>
<td>Hill A, 1944</td>
<td>358.33</td>
<td>1176</td>
<td>1000</td>
<td>-</td>
</tr>
<tr>
<td>Sugarloaf Mountain, 1944</td>
<td>408.84</td>
<td>1341</td>
<td>1380</td>
<td>1380</td>
</tr>
</tbody>
</table>

Summary of Discrepancies between Δ Descriptions & Surrounding Detail

<table>
<thead>
<tr>
<th>DESC</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hill A, 1944</td>
<td>Top of Hill Falls east of top 175 meters</td>
</tr>
<tr>
<td>Hill B, 1944</td>
<td>Top of Hill Falls 70m. NE of top</td>
</tr>
<tr>
<td>Hill D, 1944</td>
<td>High Pt. N of Notch Falls S of the top</td>
</tr>
<tr>
<td>Pinnacle ID, 1944</td>
<td>High Point Falls 20m NW of Top</td>
</tr>
<tr>
<td>Pin, 1944</td>
<td>Small, flat topped pinnacle Falls 15 m. SE of Top</td>
</tr>
</tbody>
</table>
31. **DELINEATION**

All details including the shoreline were delineated by the multiplex plotting instrument in accordance with Project Instructions dated 14 March 1949. Small gaps appear in the manuscripts where bluffs in shadow obscure detail.

32. **CONTROL**

(a) Horizontal control.

The Baltimore Office was furnished by the Washington Office 1:20,000 base sheets with radial plot positions. These base sheets were enlarged photographically to a 1:10,000 multiplex plotting scale. Radial plot positions were then pricked through to the multiplex work sheets.

(b) Vertical control.

Vertical control was bridged by multiplex using the "BZ" curve. Four strips were bridged. The strips were chosen so that each initial model contained sufficient water area to use for leveling. Enough models were set in each flight so that the last model in the strip contained at least one water surface elevation as a check in the accuracy of the "BZ" curve. Each successive model in the flight was then carefully "tacked" to scale. The height of the projectors above the table was plotted against the distance away from the first projector. Through these plotted points a smooth "BZ" curve was drawn. Six elevations in each model were read during this orientation and to each of them a proportional BZ correction applied from the curve. Where flights ran parallel or normal to each other common elevations with corrections applied from different curves tied within ± three feet.

The strips bridged by multiplex are as follows:

<table>
<thead>
<tr>
<th>STATION</th>
<th>ELEVATION</th>
<th>MULTIPLEX ELEV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthews Astro.</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Astro. Azimuth</td>
<td>199</td>
<td>Could not identify</td>
</tr>
<tr>
<td>Middle</td>
<td>719</td>
<td>720</td>
</tr>
<tr>
<td>Pinnacle I.</td>
<td>1223</td>
<td>1250 in</td>
</tr>
<tr>
<td>Narol</td>
<td>335</td>
<td>Located/gap area</td>
</tr>
<tr>
<td>Sugarloaf Mt.</td>
<td>1341</td>
<td>1380</td>
</tr>
</tbody>
</table>

A few vertical control points were furnished, some noted to be of doubtful accuracy. Listed below are the elevations given and the multiplex readings:

<table>
<thead>
<tr>
<th>STATION</th>
<th>ELEVATION</th>
<th>MULTIPLEX ELEV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak A</td>
<td>1176</td>
<td>Could not identify</td>
</tr>
<tr>
<td>&quot; B</td>
<td>897</td>
<td>&quot; &quot; &quot;</td>
</tr>
<tr>
<td>&quot; C</td>
<td>967</td>
<td>1065</td>
</tr>
</tbody>
</table>
32. CONTROL
   (b) Vertical control (continued)

   The stage of tide at the time of photography was used as a datum in the bridging of vertical control.

33. SUPPLEMENTAL DATA

   None.

34. CONTOURS AND DRAINAGE

   The quality of both photographs and diapositives was excellent.

   Contours were drawn at one hundred foot intervals. Where better relief expression could be shown with intermediate contours fifty-foot intervals are shown.

   Three small gaps appear. It was not possible to draw contours in these areas due to high bluffs in shadow.

35. SHORELINE AND ALONGSHORE DETAILS

   No field inspection of the MHW line furnished. The MHW line was drawn by multiplex aided by stereoscopic examination of the 1:20,000 contact prints. Small gaps or dashed lines are shown where the shoreline was obscured by shadows or its delineation uncertain.

   No low water line is shown.

36. OFFSHORE DETAILS

   Numerous rocks offshore were plotted by multiplex.

37. LANDMARKS AND AIDS

   Elevations for many small rocks could not be determined with accuracy by stereophotogrammetric methods because of their pinnacle shapes or their being partially covered by surf. Many of the larger rocks and islets have no elevation provided by stereophotogrammetric methods because the compilation office was not instructed to observe them.

   (No field inspection of this map area was done prior to compilation.

38. CONTROL FOR FUTURE SURVEYS

   None.
39. **JUNCTIONS**

Junctions have been made between the three maps.

40. **HORIZONTAL AND VERTICAL ACCURACY**

Contours are believed to be within one-half contour interval of their true elevation. The areas which contained bluffs in shadow are believed to be ± one full interval.

The density of horizontal control was inadequate to lay an accurate radial plot.

Due to the inadequacy of both horizontal and vertical control these maps do not comply with the National Standards of Map Accuracy.

46. **COMPARISON WITH EXISTING MAPS**

None

47. **COMPARISON WITH NAUTICAL CHARTS**

Visual comparison was made with Chart No. 8851. The comparison was poor. This survey should supersede the existing chart.

48. **GEOGRAPHIC NAME LIST**

Geographic names were taken from U.S.C. & G.S. Chart No. 8851, 8th edition, published March 1947. List of approved names attached.

Respectfully submitted
12 October 1949

Albert K. Haywood
Cartographic Draftsman
Descriptive Report and Review

Approved and forwarded
16 October 1949

Thos. B. Reed
Officer in Charge
Baltimore Photogrammetric Office
PHOTOGRAMMETRIC OFFICE REVIEW

1. Projection and grids
2. Title
3. Manuscript numbers
4. Manuscript size

CONTROL STATIONS

5. Horizontal control stations of third-order or higher accuracy
6. Recoverable horizontal stations of less than third-order accuracy (topographic stations)
7. Photo hydro stations
8. Bench marks
9. Plotting of sextant fixes
10. Photogrammetric plot report
11. Detail points

ALONGSHORE AREAS
(Nautical Chart Data)

12. Shoreline
13. Low-water line
14. Rocks, shoals, etc.
15. Bridges
16. Aids to navigation
17. Landmarks
18. Other alongshore physical features
19. Other alongshore cultural features

PHYSICAL FEATURES

20. Water features
21. Natural ground cover
22. Planetary contours
23. Stereoscopic Instrument contours
24. Contours in general
25. Spot elevations
26. Other physical features

CULTURAL FEATURES

27. Roads
28. Buildings
29. Railroads
30. Other cultural features

BOUNDARIES

31. Boundary lines
32. Public land lines

MISCELLANEOUS

33. Geographic names
34. Junctions
35. Legibility of the manuscript
36. Discrepancy overlay
37. Descriptive Report
38. Field inspection photographs
39. Forms

Reviewer
Supervisor, Review Section or Unit

41. Remarks (see attached sheet)

FIELD COMPLETION ADDITIONS AND CORRECTIONS TO THE MANUSCRIPT

42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The manuscript is now complete except as noted under item 43.

Compiler
Supervisor

43. Remarks:
PHOTOGRAMMETRIC OFFICE REVIEW

1. Projection and grids
2. Title
3. Manuscript numbers
4. Manuscript size

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39. Forms

40. Reviewer
41. Remarks (see attached sheet)

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Compiler
Supervisor
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<th>Name on Survey</th>
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<th>C</th>
<th>D</th>
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<th>F</th>
<th>G</th>
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<td>♫</td>
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<td>♫</td>
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<td>Elephant Rock</td>
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<td>♫</td>
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<td>Glory of Russia Cape</td>
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<td></td>
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<td>♫</td>
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* = Decis. BN
* = Approved Name
1 - 31-50
A.f.W.
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<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>Bering Sea</td>
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<tr>
<td>St. Matthew I.</td>
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<tr>
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<td>Cape Upright</td>
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* = Decis. BCN
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1-10-50
D. J. W.
62. Comparison with Registered Topographic Surveys: None

63. Comparison with Maps of Other Agencies: None

64. Comparison with Contemporary Hydrographic Surveys: None

65. Comparison with Nautical Charts. - Chart No. 8651 - A landmark waterfall is shown on the south side of St. Matthew Island, T-8629, and on the west side of Hall Island, T-8631. Streams in these areas appear to be dry at the time of the photography, so it is suggested that these waterfalls are seasonal.

The Arre Rocks, southwest of Hall Island, T-8631, are shown as three rocks. Only two rocks are visible on the photographs, and only two rocks are shown on the manuscript.

66. Adequacy of Results and Future Surveys. - These are provisional maps subject to correction or recirculation when additional control is established on the island and when such control is accurately identified on the aerial photographs by field methods. These provisional maps are correct as regards the interpretation and delineation of details but are subject to error in geographic position and orientation, particularly at the northern end of St. Matthew Island and at Hall Island.

These maps do not comply with the National Standards of Accuracy.

67. Control. - The following statement is a part of the Descriptive Report to accompany Astronomic and Triangulation Computations, St. Matthew Island, Bering Sea, Alaska, 1944, by R. C. Applequist, Chief of Party:

"...The cuts to rocks will probably be more useful for orientation of the photographs than the cuts to the hills as the hills are all quite rounded."

This statement is added as further explanation to the statements in Item 27 Radial Plot, in this Descriptive Report.
68. Delineation.—Form lines were added from stereoscopic examination of the photographs in the area of deep shadow on the north side of St. Matthew Island on T-8630 between Longitude 172°-47' and 172°-50', where the detail could not be seen in the multiplex models.

All photogrammetric elevations were rounded-off to the nearest five feet, which is believed to be more consistent with the probable accuracy of the multiplex readings.

All photogrammetric elevations are printed in vertical type on these manuscripts, instead of slant type as specified in the instructions.

Reviewed by:

Gordon B. Willey

Approved by:

A. V. Griffiths
Chief, Review Section
Division of Photogrammetry

H. H. Henderson
Chief, Nautical Chart Branch
Division of Charts

O. J. Reading
Chief, Div. of Photogrammetry

W. M. Scoble
Chief, Div. Coastal Surveys
### NAUTICAL CHARTS BRANCH

**SURVEY NO. T 8629-30-31.**

**Record of Application to Charts**

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