5674

DESCRIPTIVE REPORT

<table>
<thead>
<tr>
<th>Topographic</th>
<th>Sheet No. T.5674</th>
</tr>
</thead>
</table>

**State**  
MARYLAND

**Locality**  
SUSQUEHANNA RIVER

**Photograph Taken**  
April 30, 1937

**Chief of Party**  
L.W. SWANSON
App. 4 Ch. 572 - Apil 1946 - Oct 52
TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. T - 5674

STATE MARYLAND

General locality /NAVY DE GRACE TO PORT DEPOSIT/

Locality /SUSQUEHANNA RIVER/

Scale 1:16,000 x 0.965 Date of Photographs April 30 - May 19, 37.

Air Photographic Survey Party No. 2

Chief of party L.W. SWANSON

Field inspection: Shoreline, L.W. Swanson and D.L. Jones

Surveyed by Compilation: I.M. Zeakind

Inked by I.M. Zeakind

Heights in feet above *** to ground to tops of trees

Contour, Approximate contour, Form line interval *** feet

Instructions dated May 13, 1938

Remarks: 
STATISTICS

AIR PHOTOGRAPHIC SURVEY SHEET NO. T - 5674
STATE OF MARYLAND
SUSQUEHANNA RIVER

AIR PHOTOGRAPHS  DATE    TIME
1284-35       4:30-37       2:39-2:40
1395-08       2:53-2:56
7310-11       2:57-2:58

SCALE FACTOR----------J.C. Partington-------------------1 : 9650
PROJECTION---------------Ruling Machine------------------Washington Office
PROJECTION CHECKED-------------------Washington Office
CONTROL PLOTTED BY-------J.C. Partington------------------Mar. 23, 1938
CONTROL CHECKED BY-------W.C. Russell------------------Mar. 28, 1938
RADIAL LINE PLOT---J.C. Partington, L.W. Swanson,
E.L. Jones and W.C. Russell---Mar. 23 to 24, 1938.

RADIAL POINTS PICKED BY---E.L. Jones, ADDITIONAL POINTS BY--
W.C. Russell, I.M. Zekind

SHORE LINE INKED BY------W.C. Russell and I.M. Zekind -------
DETAIL INKED BY-----------I.M. Zekind------------------------
AREA (land)----------------19.6 square statute miles---------
AREA (shoals)-------------0.0 " "-----------------
SHORELINE (more than 200 meters from opposite shore) -------
-----------------------------------------------21.5 statute miles

SHORELINE (Creeks)---------1.0 " "
RAILROADS----------------23.0 " 
ROADS, STREETS, TRAILS-----403.0 " 

DATUM---------------------North American 1927
REFERENCE STATION----------Mt. St. Helens, 1933
Latitude 39° 33' 43.999" (1556.9 m) ADJUSTED
Longitude 76° 07' 56.534" (1349.6 m)

PRELIMINARY REVIEW----------L.W. Swanson

\[ y = 1,044,631 \text{ FT} \]
\[ y = 630,814 \text{ FT} \]

Maryland System Plane Coordinates

\[ x = 1,044,631 \text{ FT} \]
\[ y = 630,814 \text{ FT} \]

Field inspection in Nov. 1937 and May 1938

Details on T-5674 arc of the date of the

photographs. Off for two revised pairs located by

agm

4,360 m. 1938 and restated lines

to strengthen location of whose line

of the center and of the Susquehanna

River on T-5674. 13ag
PLANE COORDINATE GRID SYSTEM

Positions of grid intersections used for fitting the grid to this compilation were computed by Division of Geodesy and the computation forms are included in this report.

Positions plotted by H. D. REED, JR.

Positions checked by

Grid inked on machine by

Intersections inked by

Points used for plotting grid:

\[
\begin{align*}
\text{x:} & \quad 1,035,000 - E \\
\text{y:} & \quad 630,000 - E
\end{align*}
\]

\[
\begin{align*}
\text{x:} & \quad 1,055,000 \\
\text{y:} & \quad 620,000
\end{align*}
\]

\[
\begin{align*}
\text{x:} & \quad 1,075,000 \\
\text{y:} & \quad 635,000
\end{align*}
\]

\[
\begin{align*}
\text{x:} & \quad 1,055,000 \\
\text{y:} & \quad 650,000
\end{align*}
\]

Triangulation stations used for checking grid:

\[
L = 1,049.031 - \theta = 630.312
\]

1. Meigs
2. Hare de Grace Lt. Ho.
3. 
4. 
5. 
6. 
7. 
8. 

\[
\begin{align*}
\text{x:} & \quad 1,053,087 - E \\
\text{y:} & \quad 625,965
\end{align*}
\]
DESCRIPTIVE REPORT

to accompany
AIR PHOTOGRAPHIC SURVEY SHEET NO. T-5674
State of Maryland
SUSQUEHANNA RIVER

GENERAL INFORMATION.

The field inspection of shore line was made in November 1937, and that of land area during May 1938, by Air Photographic Survey Party #2 of Baltimore, Md.

The photographs were taken by the U.S. Coast and Geodetic Survey Nine Lens Camera (Aerial) by the U.S. Army Air Corps on April 30 and May 1, 1937.

CONTROL.

The control for this survey consisted of triangulation stations "Meigs, 1933" established by R.D. Horne in 1933; "Pt. Concord, Havre de Grace Light House, 1897," and "Standpipes, Aberdeen, 1898" both of which appear in Special Publication No. 114, "Triangulation in Maryland".

RADIAL PLOT.

The notation under this heading in Descriptive Report T-5676 applies to this sheet except for the following:

(c) Relief.

There are considerable differences in relief in the portion of this sheet approximately north of lat. 39°35′5″. Most of the differences in relief occur on the east coast of the Susquehanna River north of the above-mentioned latitude.

Attention is also called to the fact that in detailing from picture #1285 considerable descriptancy was found in wings Nos. 2, 7 & 9. It was necessary to adjust each wing for detailing.

Attention is also called to the fact that in the area north of a diagonal running between projection intersections lat. 39°36′, long. 76°09′, and lat. 39°35′, long. 76°07′, it was not possible to get 3 radial cuts to picked points, as this is the outside flight. These points were, therefore, shown on this sheet by green circles. The shore line and islands on the west side of the Susquehanna River north of lat. 39 36′ are not in agreement with photographs. The shore line and islands as delineated by the hydrographic party of Lt. Galien
Note: Because of the weakness of the plot in that area the shoreline of the lagoon near above lat. 39° 36’ was first measured by the plotters for the hydrographic party and then readjusted to correct distortions made by the hydrographic party. This is accepted by the office review as of sufficient accuracy for charting on scales of 1:20,000 or smaller scales. The plot and adjustment as made in the field is accepted as the best that can be accomplished with the available control and photographs.

R.G. Jones
12/14/19
was used on this sheet, since their shore line was located graphically by sextant cuts or fixes. The shore line of the two surveys are therefore now in agreement. This area was not originally detailed by this party, as it was felt that due to lack of control and pictures the detailing should not be carried beyond the southern end of Spencer Island. This additional work to the north was asked for by the commanding officer of the "Mikawe." See Hydrographic Sheet and Descriptive Report of this area.

Additional radial points shown by blue circles were plotted during the detailing of this sheet in areas where the photographs were off scale or where there were large differences in relief.

The detail on this sheet was shown in accordance with instructions for detailing Chesapeake Bay Sheets dated May 13, 1938.

Except for control, all information shown on this sheet was taken from the field inspection and from the photographs.

The northern part of this sheet bounded by projections lat. 39°36' to lat 39°37' and long. 76°05' to long. 76°06' was not completed due to lack of pictures.

The name of the one track railroad running along the west bank of the Susquehanna River north of Havre de Grace is shown on the overlay as "Stone & Webster (Private) R.R." The name is not definitely known, but was built by Stone & Webster for use in the construction of the Conowingo Dam. This track is maintained and is used by one supply train a week, which runs from Havre de Grace to the Conowingo Dam.

COMPARISON WITH PREVIOUS SURVEYS.

A comparison between this sheet and a bromide enlargement of plane table sheet T-2382, 1899, shows good agreement in the inland areas along roads, houses, creeks, railroads, fences and wooded areas.

In general the shore line agreement is good. However, in the vicinity of lat. 39°35.1' and long. 76°07', the peninsula shown on this sheet does not extend as far south as shown on T-2382. There is no indication on the pictures of the island shown on T-2382, just west of the southern end of the above mentioned peninsula.

The island shown on this sheet west of the northern end of this peninsula does not appear on T-2382. However, northeast of the location of this island there appears on T-2382 a group of small islands which does not appear on this sheet.

Field and stereoscopic examination of pictures indicate that the Susquehanna and Tidewater Canal shown on T-2382 no longer exists. It has been filled in. See hydrographic sheet of this area.
COMPARISON WITH CHART NO. 1226.

Very little of the area detailed on this sheet is shown on the above chart.

JUNCTIONS.

Junctions were made with the following sheets:

On the east with T - 5673
" " S.E. " T - 5675
" " S.W. " T - 5676

The junctions were everywhere in good agreement except of the road in lat. 39'35.5" and long. 76'06". The junction of the road shown on T 5673 is about 7 metres south of that shown on this sheet. It is recommended that the road on T 5673 be made to agree with that shown on this sheet, as the control is stronger and therefore, better intersections could be obtained on this sheet. * This junction has beencorrected 4/23/19.

GEOGRAPHIC NAMES.

Geographic names shown on this sheet are listed on form M 234 herewith.

LANDMARKS.

Pt. Concord, Havre de Grace Lighthouse 1897, is the only charted landmark falling on this sheet.

RECOMMENDATION FOR FUTURE SURVEYS.

This sheet is believed to be complete in all detail of importance for charting and no additional surveys are required.

The probable error is not greater than 5 meters for all radial points and well defined objects along the shoreline and in areas which are well controlled. The error of the other detail of importance on this sheet is probably not greater than 10 meters.

Respectfully submitted,

[Signature]

Forwarded approved

[Signature]

L.W. Swanson,
chief of Party
<table>
<thead>
<tr>
<th>CHART No.</th>
<th>L. M.</th>
<th>SWANSON</th>
</tr>
</thead>
<tbody>
<tr>
<td>1935</td>
<td>1</td>
<td>1936</td>
</tr>
</tbody>
</table>

The positions given have been checked after sighting. The positions indicate the chart is outdated. I recommend that the following objects, which have not been inspected from seaward to determine their value as landmarks, be recommended for charting.

TO BE CHARTED
U.S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE
REVIEW OF AIR PHOTO COMPILATION NO.

Chief of Party: Compiled by:

Project: Instructions dated:

1. The charts of this area have been examined and topographic information necessary to bring the charts up to date is shown on this compilation. (Par. 186, 18a, 18f, 18c, 18d, 18e, and 18f, 28; and 64)

2. Change in position, or non-existence of wharfs, lights, and other topographic detail of particular importance to navigation which affect the chart, is discussed in the descriptive report. (Par. 28; and 66 g; m)

3. Ground surveys by plane table, sextant, or theodolite have been used to supplement the photographic plot where necessary to obtain complete information, and all such surveys are discussed in the descriptive report. (Par. 65; and 66 d; e)

4. Blue-prints and maps from other sources which were transmitted by the field party contain sufficient control for their application to the charts. (Par. 28)

5. Differences between this compilation and contemporary plane table and hydrographic surveys have been examined and rectified in the field before forwarding the compilations to the office and are discussed in the descriptive report.

6. The control and adjustment of the photo plot are discussed in the descriptive report. Unusual or large adjustments are discussed in detail and limits of the area affected are stated. (Par. 18d; 44; and 66 c; h; i)

7. High water line on marshy coast is clear and adequate for chart compilation. (Par. 18a, 43; and 44)

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Refer also to the pamphlet "Notes on the Compilation of Planimetric Line Maps from Five Lens Air Photographs."
8. The representation of low water lines, reefs, coral reefs, and rocks, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41)

9. Recoverable objects have been located and described on Form 584 in accordance with circular 33, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 67, 68, and 69)

10. A list of landmarks was furnished on Form 567 and instructions in the Director's letter of July 16, 1934, Landmarks for Charts, complied with. (Par. 16d, e, and 65)

11. All bridges shown on the compilation are accompanied by a note stating whether fixed or draw, clearance, and width of draw if a draw bridge. Additional information of importance to navigation is given in the descriptive report. (Par. 18c)

12. Geographic names are shown on the overlay tracing. The accepted local usage of new names has been determined and they are listed in the report, together with a general statement as to source of information and a specific statement when advisable. Complete discussion of place names differing from the charts and from the U. S. G. S. Quadrangles is given in the descriptive report, together with reasons for recommendations made. (Par. 82, and 86k)

13. The geographic datum of the compilation is N.A. 1927.Off, and the reference station is correctly noted.

14. Junctions with adjoining compilations have been examined and are in agreement. (Par. 66f)

15. The drafting is satisfactory and particular attention has been given the following:

1. Standard symbols authorized by the Board of Surveys and Maps have been used throughout except as noted in the report.

2. The degrees and minutes of Latitude and Longitude are correctly marked.
3. All station points are exactly marked by fine black dots.

4. Closely spaced lines are drawn sharp and clear for printing.

5. Topographic symbols for similar features are of uniform weight.

6. All drawing has been retouched where partially rubbed off.

7. Buildings are drawn with clear straight lines and square corners where such is the case on the ground.

(Par. 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48)

16. No additional surveying is recommended at this time.

17. Remarks:
   Additional control would have been desirable in the northern limits of this sheet.

18. Examined and approved;

   

   Chief of Party

19. Remarks after review in office:
<table>
<thead>
<tr>
<th>Remarks</th>
<th>Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Great Id. - P.C. Dept. Map Garretts I. - T 2382 Harford Co., Md.</td>
<td>395760 U S G B</td>
</tr>
<tr>
<td>#2 Sometime Local Use</td>
<td>395761</td>
</tr>
<tr>
<td>#3 Happy Valley Branch - U.S.G.S. Quad Havre de Grace</td>
<td>&quot;</td>
</tr>
<tr>
<td>#4</td>
<td>396761</td>
</tr>
<tr>
<td>#5</td>
<td>395761</td>
</tr>
<tr>
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<td>396761</td>
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<td>#19</td>
<td>395761</td>
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<tr>
<td>#20 Not shown on Photo Survey T 3674 1823</td>
<td>396761</td>
</tr>
<tr>
<td>#21 Location not definite. Can be added from hydro Survey</td>
<td>395761</td>
</tr>
<tr>
<td>#22</td>
<td>&quot;</td>
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<tr>
<td>#23</td>
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<tr>
<td>#24</td>
<td>395760</td>
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<tr>
<td>#25</td>
<td>395761</td>
</tr>
<tr>
<td>#26</td>
<td>396761</td>
</tr>
<tr>
<td>#27</td>
<td>&quot;</td>
</tr>
<tr>
<td>Name on Survey</td>
<td>A</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Garrett Island</td>
<td>✓</td>
</tr>
<tr>
<td>Mt. Ararat</td>
<td>✓</td>
</tr>
<tr>
<td>Happy Valley Branch</td>
<td>✓</td>
</tr>
<tr>
<td>Happy Bay</td>
<td>x</td>
</tr>
<tr>
<td>Port Deposit</td>
<td>x</td>
</tr>
<tr>
<td>Lapidum</td>
<td>x</td>
</tr>
<tr>
<td>St. Catherine Is.</td>
<td>x</td>
</tr>
<tr>
<td>Havre de Grace</td>
<td>✓</td>
</tr>
<tr>
<td>Concord Pt.</td>
<td>x</td>
</tr>
<tr>
<td>Oakington</td>
<td>x</td>
</tr>
<tr>
<td>Swan Creek (vill.)</td>
<td>x</td>
</tr>
<tr>
<td>Gasheys Creek</td>
<td>✓</td>
</tr>
<tr>
<td>Swan Creek</td>
<td>x</td>
</tr>
<tr>
<td>Roberts Island</td>
<td>x</td>
</tr>
<tr>
<td>Wood Island</td>
<td>x</td>
</tr>
<tr>
<td>Snake Island</td>
<td>x</td>
</tr>
<tr>
<td>Spencer Island</td>
<td>x</td>
</tr>
<tr>
<td>Pa. R.R. - Columbia &amp; Port Deposit Branch</td>
<td>x</td>
</tr>
<tr>
<td>Rock Run (vill.)</td>
<td>x</td>
</tr>
<tr>
<td>Velvet Rock Branch</td>
<td>x</td>
</tr>
<tr>
<td>Tome Institute</td>
<td>x</td>
</tr>
<tr>
<td>Care's Battery</td>
<td>x</td>
</tr>
<tr>
<td>M. Felix</td>
<td>✓</td>
</tr>
<tr>
<td>Chesapeake Bay</td>
<td>x</td>
</tr>
<tr>
<td>Jusquannahanna River</td>
<td>x</td>
</tr>
<tr>
<td>Earlton</td>
<td>x</td>
</tr>
<tr>
<td>Rock Run</td>
<td>x</td>
</tr>
<tr>
<td>Steels Is.</td>
<td>x</td>
</tr>
</tbody>
</table>

Names underlined in red approved by L. Heck on 6/23/39

M 234 VR
Plane coordinates on Lambert projection

\[ \phi = 39^\circ 32' 26.130, \lambda = 76^\circ 05' 06.342 \]

Tabular difference of \( R \) for 1" of \( \phi \):

<table>
<thead>
<tr>
<th>( R ) (for min. of ( \phi ))</th>
<th>( y' ) (for min. of ( \phi ))</th>
<th>Cor. for sec. of ( \phi )</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,744,341</td>
<td>( y' )</td>
<td>Cor. for sec. of ( \phi )</td>
<td>+</td>
</tr>
<tr>
<td>( \theta ) (for min. of ( \lambda ))</td>
<td>( y'' = 2R \sin^2 \frac{\theta}{2} )</td>
<td>+ 1293</td>
<td>+</td>
</tr>
<tr>
<td>Cor. for sec. of ( \lambda )</td>
<td>( y )</td>
<td>623,065</td>
<td></td>
</tr>
<tr>
<td>( \theta )</td>
<td>34 27.2121/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \theta'' \) for machine computation:

- \( \log \theta'' \)
- \( \text{colog } 2 \)
- \( S \) for \( \theta \)
- \( \sin \theta \)
- \( \log R \)
- \( \log x' \)
- \( R \sin \theta \)
- \( x'' = R \sin \theta \)
- \( x' = 2,000,000.00 \)
- \( x = 2,258,039 \)

\[ x = 2,000,000.00 + R \sin \theta \]
\[ y = y' + 2R \sin^2 \frac{\theta}{2} \]
\[ y' \] the value of \( y \) on the central meridian for the latitude of the station

\( S = \log \text{of ratio for reducing arc expressed in seconds to sines} \)

(see log tables)

\( R, y', \) and \( \theta \) are given in special tables.
Plane coordinates on Lambert projection

\[
\begin{align*}
\phi &= 39° 36' 54.50'' \\
\lambda &= 76° 09' 57.26''
\end{align*}
\]

\[
\begin{align*}
\text{State} & \quad \text{Md.} & \quad \text{Station} & \quad \text{y} = 650,000 & \quad x = 2,235,000 \\
\text{Tabular difference of } R & \text{ for } 1'' \text{ of } \phi & \text{y'} & \text{y''} (=2R \sin^2 \frac{\phi}{2}) & \text{y} = 648,927 & + 1,074
\end{align*}
\]

\[
\begin{align*}
\theta & \quad \text{for } \min. \text{ of } \lambda \\
\text{Cor. for sec. of } \lambda & \quad \text{y''} \\
\text{R} & \quad 25,720,186 & \text{y'} & \quad \text{y} = 650,001 \\
\theta & \quad + 0 31 24.6221 & \text{y''} & \quad \text{y'} & \quad \text{y} = 650,001
\end{align*}
\]

\[
\begin{align*}
\theta'' & \quad \text{For machine computation} & \quad \text{For machine computation} \\
\text{log } \theta'' & \quad \text{log } \theta'' & \quad .0000 4 17415 \\
\text{colog } 2 & \quad \text{colog } 2 & \quad 9.69897000 \\
S & \quad S \text{ for } \frac{\phi}{2} & \quad \text{R } \sin \frac{\phi}{2} \\
\text{log } \sin \theta & \quad \sin \theta & \quad .0091367786 & \quad \text{log } \sin \frac{\phi}{2} & \quad \sin \frac{\phi}{2} \\
\log R & \quad \text{R } \sin \frac{\phi}{2} & \quad \text{R } \sin \frac{\phi}{2} \\
\log x' & \quad \text{log } \sin^2 \frac{\phi}{2} & \quad \text{log } \sin^2 \frac{\phi}{2} \\
\text{R sin } \theta & \quad \text{R sin } \theta \\
x & \quad 2,000,000.00 & \quad \log y'' & \quad \text{log } y'' & \quad .0000 4 17415 \\
\text{x} & \quad 2,235,000 & \quad \log y'' & \quad \text{log } y''
\end{align*}
\]

\[
\begin{align*}
x &= 2,000,000.00 + R \sin \theta \\
y &= y' + 2R \sin^2 \frac{\phi}{2}
\end{align*}
\]

y' is the value of y on the central meridian for the latitude of the station.

S = log of ratio for reducing arc expressed in seconds to sine (see log tables)

R, y', and \( \theta \) are given in special tables.

Grid Applied

4-11-39

(R 340)
<table>
<thead>
<tr>
<th>Plane coordinates on Lambert projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
</tr>
<tr>
<td>1,035</td>
</tr>
<tr>
<td>39° 31' 58.02&quot;</td>
</tr>
<tr>
<td>(15.91&quot;)</td>
</tr>
<tr>
<td>Tabular difference of R for n of φ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R</th>
<th>Cor. for sec. of φ</th>
<th>y' (for min. of φ)</th>
<th>Cor. for sec. of φ</th>
<th>y'' (=2R sin² φ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,750,185</td>
<td>-</td>
<td>618,928</td>
<td>+</td>
<td>1,072</td>
</tr>
<tr>
<td>θ</td>
<td>Cor. for sec. of λ</td>
<td>y</td>
<td>620,000</td>
<td></td>
</tr>
<tr>
<td>31° 22' 31&quot;</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>θ''</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For machine computation</td>
<td>&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log θ''</td>
<td>colog 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S for θ</td>
<td>S for φ²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log sin θ</td>
<td>sin θ</td>
<td>0.091261597</td>
<td></td>
<td></td>
</tr>
<tr>
<td>log R</td>
<td>R sin φ²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log x'</td>
<td>log sin² φ²</td>
<td>R sin² φ²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x'</td>
<td>R sin θ</td>
<td>2,235,600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>log y''</td>
<td>1,035,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

x = 2,000,000.00 + R sin θ
y = y' + 2R sin² φ²

y' = the value of y on the central meridian for the latitude of the station
S = log of ratio for reducing arc expressed in seconds to sine

(see log tables)

R, y', and θ are given in special tables
Plane coordinates on Lambert projection

\[
\begin{align*}
\phi &= 39^\circ 34' 25.33'' \\
\lambda &= 76^\circ 07' 51.31'' \\
x &= 2,245,000 \\
y &= 635,000
\end{align*}
\]

Tabular difference of \( R \) for 1" of \( \phi = 0.0000453/66 \)

<table>
<thead>
<tr>
<th>( \phi ) (for min. of ( \phi ))</th>
<th>( y' ) (for min. of ( \phi ))</th>
<th>( \theta ) (for min. of ( \lambda ))</th>
<th>( \theta ) (for min. of ( \lambda ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R )</td>
<td>25,735,280</td>
<td>( R )</td>
<td>32.436726</td>
</tr>
<tr>
<td>Cor. for sec. of ( \phi )</td>
<td>0,009,520,0096</td>
<td>Cor. for sec. of ( \phi )</td>
<td>0,009,520,0096</td>
</tr>
<tr>
<td>( y )</td>
<td>633,833</td>
<td>( y' ) (=2R sin(^2) ( \frac{\phi}{2} ))</td>
<td>1,166</td>
</tr>
<tr>
<td>Cor. for sec. of ( \lambda )</td>
<td>634,999</td>
<td>( y'' ) (=2R sin(^2) ( \frac{\theta}{2} ))</td>
<td>634,999</td>
</tr>
<tr>
<td>θ</td>
<td>0,009,520,0096</td>
<td>θ</td>
<td>0,009,520,0096</td>
</tr>
</tbody>
</table>

\( x = 2,000,000.00 + R \sin \theta \)

\( y' = y' + 2R \sin^2 \frac{\phi}{2} \)

\( y' \) = the value of \( y \) on the central meridian for the latitude of the station

\( S = \log \) of ratio for reducing arc expressed in seconds to sine

(see log tables)

\( R, \ y', \) and \( \theta \) are given in special tables
Plane coordinates on Lambert projection

\[ \begin{align*}
\text{State} & : \text{Md.} & \text{Station} & : \text{1, 055, 000} \\
\phi & = 39° 36' 52.61'' & \lambda & = 76° 05' 41.72'' \\
\text{Tabular difference of } R \text{ for 1'' of } \phi & = \\
\end{align*} \]

<table>
<thead>
<tr>
<th>R (for min. of ( \phi ))</th>
<th>y' (for min. of ( \phi ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cor. for sec. of ( \phi )</td>
<td>Cor. for sec. of ( \phi )</td>
</tr>
<tr>
<td>R</td>
<td>y'</td>
</tr>
<tr>
<td>25,720,377</td>
<td>648,736</td>
</tr>
<tr>
<td>( y'' (=2R \sin^2 \frac{\theta}{2}) )</td>
<td>+ 1,264</td>
</tr>
<tr>
<td>( \theta ) (for min. of ( \lambda ))</td>
<td>y</td>
</tr>
<tr>
<td>Cor. for sec. of ( \lambda )</td>
<td>650,000</td>
</tr>
<tr>
<td>( \theta )</td>
<td>+0 34 05 00 77</td>
</tr>
</tbody>
</table>

\[ \begin{align*}
\theta'' & \quad \text{For machine computation} \\
\log \theta'' & \quad \text{colog } 2 \\
S \text{ for } \theta & \quad S \text{ for } \frac{\theta}{2} \\
\log \sin \theta & \quad \sin \theta \quad 0.0099143147 \\
\log R & \quad R \sin \frac{\theta}{2} \\
\log x' & \quad \log \sin^2 \frac{\theta}{2} \quad R \sin^2 \frac{\theta}{2} \\
x' & \quad R \sin \theta \\
x & \quad \log R \\
2,000,000.00 & \quad \log 2 \quad 0.30103000 \\
\end{align*} \]

\[ \begin{align*}
x & = 2,000,000.00 + R \sin \theta \\
y & = y' + 2R \sin^2 \frac{\theta}{2} \\
y' & = \text{the value of } y \text{ on the central meridian for the latitude of the station} \\
S & = \log \text{of ratio for reducing arc expressed in seconds to sine} \\
\text{(see log tables)} \\
R, \ y', \ \text{and } \theta \text{ are given in special tables}
\]
Plane coordinates on Lambert projection

<table>
<thead>
<tr>
<th>State</th>
<th>Md.</th>
<th>Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\phi$</td>
<td>39° 31' 56.14&quot;</td>
<td>$\lambda$ = 76° 05' 45.51&quot;</td>
</tr>
<tr>
<td>$x = 2,255,000$</td>
<td>$y = 620,000$</td>
<td></td>
</tr>
</tbody>
</table>

Tabular difference of $R$ for 1" of $\phi = \frac{33.54}{-2}$

<table>
<thead>
<tr>
<th>R (for min. of $\phi$)</th>
<th>$y'$ (for min. of $\phi$)</th>
<th>Cor. for sec. of $\phi$</th>
<th>R Cor. for sec. of $\phi$</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,750,375</td>
<td>$y''$ = $2R\sin^2\frac{\theta}{2}$</td>
<td>$618,738$</td>
<td>-1</td>
</tr>
<tr>
<td>y</td>
<td>$1,263$</td>
<td>$620,001$</td>
<td></td>
</tr>
</tbody>
</table>

$\theta'$ = 0° 34' 02.6290'' $\frac{\theta}{2}$

<table>
<thead>
<tr>
<th>$\theta''$</th>
<th>For machine computation</th>
<th>$\log \theta''$</th>
<th>For machine computation</th>
<th>colog 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>log $\theta''$</td>
<td>$S$ for $\theta$</td>
<td>$0.002490340$</td>
<td>$9.69897000$</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>log sin $\theta$</th>
<th>$S$ for $\frac{\theta}{2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0027830</td>
<td>$R\sin\frac{\theta}{2}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>log R</th>
<th>log $x'$</th>
<th>$x'$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,000,000$</td>
<td>$R\sin\theta$</td>
<td>$\frac{2,000,000}{2}$</td>
</tr>
<tr>
<td>$\log y''$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$x = 2,000,000.00 + R\sin\theta$

$y = y' + 2R\sin^2\frac{\theta}{2}$

$y'$ = the value of $y$ on the central meridian for the latitude of the station

$S = \log$ of ratio for reducing arc expressed in seconds to sine

(see log tables)

$R$, $y'$, and $\theta$ are given in special tables
Plane coordinates on Lambert projection

\[
\phi = 39^\circ 33' 43.999'' \quad \lambda = 16^\circ 07' 56.534"
\]

Tabular difference of \( R \) for 1" of \( \phi \) =

<table>
<thead>
<tr>
<th>( R ) (for min. of ( \phi ))</th>
<th>( y' ) (for min. of ( \phi ))</th>
<th>( \theta ) (for min. of ( \lambda ))</th>
<th>( \theta' ) (for min. of ( \phi ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,739,462</td>
<td>( y )</td>
<td>( y'' = 2R \sin^2 \frac{\theta}{2} )</td>
<td>( y'' + 629,651 )</td>
</tr>
<tr>
<td>( \theta ) (for sec. of ( \lambda ))</td>
<td>( \theta' ) (for sec. of ( \phi ))</td>
<td>( \theta' )</td>
<td>( 1163 )</td>
</tr>
<tr>
<td>( \theta' ) (for sec. of ( \lambda ))</td>
<td>( \theta'' ) (for machine computation)</td>
<td>( \theta'' )</td>
<td>( 630,814 )</td>
</tr>
</tbody>
</table>

\( \theta'' \)

For machine computation

\[
\log \theta'' \quad 0.00451652
\]

\( \log 2 \)

9.69897000

\( S \) for \( \theta \)

\( \log \sin \theta \)

\( \sin \theta \)

0.09504114

\( \log \sin^2 \frac{\theta}{2} \)

\( \sin^2 \frac{\theta}{2} \)

\( \log R \)

\( R \sin \frac{\theta}{2} \)

\( \log x' \)

\( R \sin \theta \)

\( 2.000,000.00 \)

\( \log x \)

\( 2.244,631 \)

\( \log y'' \)

1.044.631

\( x = 2,000,000.00 + R \sin \theta \)

\( y = y' + 2R \sin^2 \frac{\theta}{2} \)

\( y' \) = the value of \( y \) on the central meridian for the latitude of the station

\( S = \log \) of ratio for reducing arc expressed in seconds to sine

(see log tables)

\( R, y', \) and \( \theta \) are given in special tables
Field Records Section

REVIEW OF AIR PHOTOGRAPHIC SURVEY T-5874.

Scale 1:10,000.

There are no graphic control surveys in this area.

Contemporary Hydrographic Surveys.

H-6364 (1938) 1:10,000.

Refer to last par. page 1 and page 2 of the descriptive report of T-5874 regarding extension of shoreline at the upper Susquehanna River for the hydrographic survey.

Two small piers at Lat. 39°32.3', Long. 75°05.4', built since the date of the photographs, were added to T-5874 from H-6364.

Except for minor differences along the upper Susquehanna River which are not sufficiently large to require adjustment, shoreline on H-6364 agrees with that on T-5874.

Former Topographic Surveys.

T-189 (1846) 1:10,000; T-2382 (1899) 1:20,000.

The tide water canal shown on the above surveys has been filled in. Except for the above mentioned this air photographic survey and the above surveys are in good agreement.

T-5874 is complete and adequate to supersede those portions of the above surveys which it covers except for contours on T-2382.

Comparison with Chart 1226.

T-5874 shows numerous additional shoreline and interior details for chart correction.

General.

The compilation and descriptive report are complete and satisfactory.

Reviewed by - L. C. Lande.

Inspected by - B. G. Jones, December 4, 1939.

Examined and Approved:

T. B. Reed,
Chief, Section of Field Records.

K. T. Adams
Chief, Division of Charts.

Raymond F. Egman
Chief, Section of Field Work.

Chief, Division of H. & T.
Description Report 75674 Supplemental

9/17/40

Items in red added to Supplemental 75674 9/17/40. The wood and new bridge shown in red have been included from nine lens photographs nos. 04941 and 04942 which were taken July 3, 1940, plotted in the office by E. V. Griffith.

The data is available in the air photo file on the bridge changes. They are shown on the drawing and these Changes but appear to be fixed.

R.G. Jones