5655

Form 504
Rev. Dec. 1933
DEPARTMENT OF COMMERCE

77-3

[redacted]

Partially applied to Ch. 570 by N. R. Ed. in 1938 (see B.R.)
Applied to Ch. 570 May 7/41 B.R.

Form 537a
Ed. Nov. 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

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. 5655

REGISTER NO. 5656 T5655

State MARYLAND

General locality CHESAPEAKE BAY (Northern Part)

Locality BOHEMIA RIVER & Vicinity

Scale 1:10,000 Date of ~~survey~~ Photographs Apr-30 ~~May 1~~, 1937

Vessel Air Photographic Survey Party

Chief of party L. W. Swanson

Surveyed by Field Inspection J.C.Partington, E.L.Jones, Compilation D.A.Jones, W.C.Russell

Inked by W. C. Russell

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

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

Instructions dated ~~March 14~~ May 13, 19~~38~~

Remarks:

GPO

STATISTICS

MAP DRAWING SHEET NO. 5655

STATE OF MARYLAND

CHESAPEAKE BAY, BOHEMIA RIVER

AIR PHOTOGRAPHS:

1213	1215	1197	1199
1214	1216	1198	

DATE OF PHOTOGRAPHS: - - - See below. ~~May 1, 1937~~

TIME - - - - - - ~~Unknown~~

SCALE FACTOR	1:9,650	J. C. Partington
PROJECTION	Ruling machine (1:9,650)	No date
PROJECTION CHECKED	Washington Office	No date
CONTROL PLOTTED	S. B. Grenell	No date available
CONTROL CHECKED	J. P. Lushene	" " "
RADIAL LINE PLOT	S. B. Grenell, J. P. Lushene	No date available
RADIAL LINE PLOT CHECKED	Washington Office	" " "
PRELIMINARY REVEIW		L. W. Swanson
AREA (land)	Square Statute Miles	24.
AREA (shoals)	Square Statute Miles	0.0
SHORELINE (More than 200 m. from opposite shore)	Stat. Miles	23.3
SHORELINE (Creeks)	Statute Miles	7.0
DATUM		NORTH AMERICAN 1927

REFERENCE STATION COURT 2 (U.S.E.) 1937

Lat. 39 - 30 - 47.930 1478.2 meters

Long. 75 - 53 - 06.437 [illegible] meters

(field computations) 153.8

Maryland System of Plane Coordinates

Photo	Date	time
1213-16	4-30-37	11:48 - 11:51
1197-99	"	11:36 - 11:38

REPORT

AIR PHOTOGRAPHIC SURVEY SHEET(Register) NO. 5655

GENERAL INFORMATION.

The shoreline field inspection for this area was made during August and October 1937. The detail field inspection back from the shoreline was made during June 1938. All the field inspection was done by Air Photographic Survey Party # 25 of Baltimore, Md. *

The photographs were taken by the U. S. Coast and Geodetic Survey Nine Lens Aerial Camera by the U. S. Army Corp.

CONTROL

The following triangulation stations fall within the tracing limits of this sheet and were used in controlling the plot.

Court2 (U.S.E.) 1937	3 (U.S.E.) 1937
C (U.S.E) 1937	4 (U.S.E.) 1937
D-2 (U.S.E.) 1937	5-2 (U.S.E.) 1937
E (U.S.E.) 1937	Haley R. M. # 1, 1934
2 (U.S.E.) 1937	

The following five triangulation stations fall outside the tracing limits but within the outside limits of the sheet and were used in controlling the plot.

Cayots, 1934	B (U.S.E.) 1937
Creek (U.S.E.) 1937	6-2 (U.S.E.) 1937
A2 (U.S.E.) 1937	

RADIAL PLOT

The radial plot was carried through from sheet # 5654 to sheet # 5655 to about one mile east of the junction by the template method as described in Descriptive Report for sheet number 5654. The sheet was then sent, along with several others from Baltimore to the party at S. E. Channel in Norfolk, Va.

[redacted]

Detail subsequent to the date of the photography, necessarily the same date as the photography except by the hydrography, this will be noted hereon.
8/15/38.

The reasoning back of this experiment is, that since detailing of a map drawing takes considerable experience and time, and since the field officer and temporary draftsmen in the Air Photographic parties have only limited opportunities in drafting experience, especially in detailing of map drawings, they would naturally take more time than an experienced draftsman, under the standards required. The time ordinarily consumed by a field personal in detailing, could then be used to better advantage in other important phases of the work, and the detailing left to an experienced draftsman.

With these thoughts in mind, several ideas were outlined and put into practice on Map Drawing Sheet # 5655.

The following are general notes which were adhered to in carrying out the detailing of this sheet.

At no time should accuracy be sacrificed for speed.
Ink in centerline only of all roads (label type and width of roads.)
Ink in houses, buildings, etc.
Outline all wooded areas, swamps, cultivation, etc.,and label.
No refinement as to drafting is necessary, as long as information is shown accurately.
Ink in shoreline, all docks, wharves, etc., and disregard different weighhs of lines as required in a finished map drawing.
Ink in scattered trees, all hedges, and any other detail which cannot be outlined.
Ink in all curves at intersections of roads that might not be plainly shown byythe centerline intersections.
Ink in fencelines and ditches in solid lines and label.
Where there is any indefinite shoreline along swamp, ink in detail complete.
Label all detail, geographic names, and any other information on the map drawing.
All information to be inked in freehand. Acid or Weber ink preferred.

The above suggestions were carried out, and in the opinion of the compiler, they were very satisfactory, and with considerable saving of time in the field office.

It is believed this method has a decided advantage over the method of complete detailing b y the field compiler, for the following reasons:

It is much faster, since it is necessary only to outline and label certain areas such as trees, swamps, orchards, etc., and not complete detail.
The centerline only of roads with appropriate labels of width and type, are necessary. For the average draftsman, this is a decided advantage, in that it is rather hard to maintain uniform and accurate widths of roads, especially around curves of varying radii.
By drawing fences in full lines and labeling, time is saved in that they do not have to be scratched to make uniform dashes.

As expert drafting is not essential, no effort need be made to make uniform widths of lines or character of trees, as long as all information is shown accurately and labeled.

There is a psychological effect, the compiler believes, back of this method, that is one of the greatest aids in saving time when adopted by the draftsman. Knowing that the sheet upon which he is working is not the final map drawing; that finished drafting is not essential; that corrections can be made easily without maring the map drawing; that information can be puton in freehand; he will tend to speed up the detailing by banishing the fear of maring or spoiling the finished map drawing.

The actual time, by this method, in completing the map drawing, excluding the main shoreline, was twelve working days. It is conservatively estimated that the shoreline, which was put on by another party, could be traced and inked in one and one half days, making a total of thirteen and one half days (working days) by this method. From past experience, it is conservatively estimated that a draftsman of average speed could completely detail this map drawing in about thirty five working days. It is believed that a saving in time of about three weeks work in the field can be accomplished by this method, on a sheet of this area and type of country.

[redacted]

COMPARISON WITH PREVIOUS SURVEYS.

In comparing the map drawing with an old topographic sheet (no title or number) scale 1:10,000, the shoreline, in general, checked very well. The direction of Morgan Creek at the mouth has changed. Since this area is made up of marshland, it is entirely possible, that through the years, this change could take place.

The bridge across the Bohemia River on U. S. highway # 213 apparently has been built and location changed since old survey. At the north end of the bridge, at the approach, the shoreline has been filled in and a change is noted at this point.

L.S.E. Bridge list 1935
Horiz. cl. 40'
M.H.W. vertical cl. 12'
Bascule

In general, the old main roads agree with the present main roads.

No comparison was made with chart 1226, as scale difference was too great for detailed comparison. See Review

JUNCTIONS.

Junction was made with map drawing # 5654 on the west side of this sheet. All junctions of detail was made good without adjustment.

NAMES.

Geographic names shown on this sheet are listed on form M234 in the appendix.

LANDMARKS.

There are no land marks for charts as observed from land atea in making field inspection. landmarks to be submitted by the hydrographic party.

RECOMMENDATION FOR FUTURE SURVEYS.

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

The probable error is not greater than five meters for all radial points and well defined objects along the water front and in areas well controlled. The error of other detail of importance on the sheet is probably not greater than ten meters.

Respectfully submitted,

William C. Russell

William C. Russell,
Ensign, U.S.C. & G.Survey.

Approved:
L.W. Swanson
L. W. Swanson,
Chief of Party.

	Remarks	Decisions
1	T-186(1855)	
2	Augustine Herman, 1st Settler ✓ Local Sign "~~Port~~ Herman"	G.N. 69 (1935)
3		
4		
5	REFERENCES: T-186(1855)	
6	✓ Mr. L.T.Boulden, Post Office Empl. Elkton, Md. T-2412 (1899)	
7	✓ Mr. Charles W. Cooling, T-186(1855) T-2412 Chesapeake City, Md.	
8	T-2912	
9	✓ Mr. Andrew Leybold, Earleville, Md., R.D. #1 T-2412	
10	✓ Mr. Harry H. Austin, Earleville, Md., R.D.#1 T-2412	
11	✓ Mr. J.G.Steele, T-2412 Chesapeake City, Md.	
12	T-2412	
13	T-2412	
14	T-2412 T-186(1855)	
15	T-2412	
16	~~Big Hack~~ Pt. Local usage ✓ T-2412	
17		
18	~~Stony~~ Battery ✓ T-2412	
19		
20		
21		
22	T-2412	Note - wrong location on overlay
23		
24	Doubtful on exact Pt. ✓	
25		
26	On T-2412 but not named.	
27	" " "	
	" " "	

M 234

GEOGRAPHIC NAMES

Survey No. T - 5655

Name on Survey	A On Chart No. 1226	B On previous survey No. T-2717 (1905)	C On U. S. quadrangle Maps Cecilton, Elkton	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K C&GS 1957 Sec. C.	
Courthouse Pt.	77 ✓	2 words ✓	✓	✓		✓		✓	✓	1
Port Herman (village)	77 ✓	✓	Port Herman ✓	Herman ✓		Herman ✓				2
Old Town Pt. Wharf	✓	✓	✓	✓				"Old" ✓	✓	3
Town Pt. Neck	✓	✓	✓	✓						4
Town Pt.	77 ✓	✓	✓	✓		✓		✓		5
Rich Pt.	✓			✓						6
Stony Pt.	✓	✓		✓						7
Manor Cr.	✓	✓		✓						8
Greenbrier Pt.	✓			✓						9
Great Bohemia Cr.	✓		✓	✓		✓	✓		✓	10
Georges Pt.	✓			✓						11
Little Bohemia Cr.	✓		✓	✓		✓	✓		✓	12
Free School Pt.	✓			✓						13
Scotchman Cr.	✓		✓	✓ sign						14
Little Hack Pt.	✓			✓						15
Old Hack Pt.	✓			✓ Big						16
Long Pt.	✓			✓						17
Battery Pt.	✓			✓						18
Bohemia River	77 ✓	✓	✓	✓		✓	✓		✓	19
Town Point (town)			✓	✓		✓	✓			20
Veazey Neck			✓	✓						21
Parlor Pt. (Bohemia R.)	see GNS for location	✓		✓						22
Veazey Cove				✓						23
Hack Pt. (settlement)				✓						24
Herring Cr.	✓	✓		✓						25
Morgan Cr.				✓						26
Sweet Potato Cr.				✓						27
Pooles Cr.				✓						

M 234

GEOGRAPHIC NAMES

Survey No. T - 5655

Name on Survey	A On Chart No. 1226	B On previous survey No. T-2465	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 C.P. 1937 Sec.	
Piney Cr. Cove	✓✓	✓✓	✓	⊖ ✓						1
Piney Cr.	✓✓	✓✓	✓	⊖ ✓						2
Muddy Cr.	✓✓	✓✓		⊖ ✓						3
Jones Cr.	✓✓	✓✓		✓						4
Oldfield Pt.	✓✓	✓	✓	⊖		✓		✓		5
Elk River	✓	✓	✓			✓	✓	✓	✓	6
Hylands Pt	✓	✓								7
										8
										9
										10
										11
										12
										13
										14
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										24
										25
										26
										27

Names underlined in red approved by L. Heck on 8-2-38

M 234

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. 16a, b, c, d, e, g and i; 26; 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. 26; and 66 g, n) additional shoreline details not visible on photos to be turned in by hydrographic party for office revision

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)

None

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)

None

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.

None

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. 12b; 44; and 66 e, h, i)

7. High water line on marshy and mangrove coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44)
Possible minor corrections will result from hydrographic survey.

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." M-67

8. The representation of low water lines, reefs, coral reefs and rocks, and legends pertaining to them is satisfactory. (Par. 35, ~~37~~, ~~38~~, ~~39~~, 40, ~~41~~)

9. Recoverable objects have been located and described on Form 524 in accordance with circular 30, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 29, 30, and 57)
None

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 60)
None to be submitted by hydro. party.

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. 16~~f~~)

12. Geographic names are shown on the ~~overlay tracing~~ sheet. 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. 64, and ~~66k~~)

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

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

15. The drafting is satisfactory and particular attention has been given the following: This sheet is to be redrawn— This sheet was drawn roughly in outline as requested by Washington Office.
    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:

It is believed that the notes and lengend on the sheet together with the Descriptive Report are complete and that the field inspection prints and office photos will not be needed in the redrafting of this sheet. However the person that redraws this work should follow the notes legend and Descriptive Report closely.

18. Examined and approved;

L W Swanson
Chief of Party

19. Remarks after review in office:

SECTION OF FIELD RECORDS

REVIEW OF AIR PHOTOGRAPHIC SURVEY T-5655

Scale: 1:10,000

Photographs taken May 1, 1937. Compiled March to July, 1938.

Refer to pages 1 to 3 of the descriptive report for additional data.

Chief of Party: L. W. Swanson. Radial Plot by: S. B. Grenell.
J. P. Lushene.
Radial Plot checked by: L. C. Lande. Inked in Field by: W. C. Russell.
Redrawn in office by: C. R. Wittmann.

There are no contemporary plane table surveys in this area. Shoreline and hydrographic control stations were located by the photographic plot.

CONTEMPORARY HYDROGRAPHIC SURVEYS

The contemporary hydrographic survey, Field No. 1005, is not yet in the office. Upon receipt of the hydrographic survey, a comparison will be made and any corrections or additions to T-5655 resulting from the hydrographic survey will be added in red on the temporary file copy. These same corrections and additions will be made on the negatives and plate for T-5655 prior to the final printing. An additional discussion regarding the comparison with the hydrographic survey will be added to this review if needed.

Temporary stations located on T-5655 for control of hydrography will remain on the celluloid T-5655 as a semi-permanent record but these stations will not appear on the finished prints of T-5655.

All stations and other details in black on the boat sheet and smooth sheet were printed direct from a reproduction of T-5655 and require no verification as regards correctness of transfer.

PREVIOUS TOPOGRAPHIC SURVEYS See note on opposite page

Comparison of T-5655 with the previous topographic surveys listed below shows that T-5655 is complete and adequate to supersede the sections of those surveys which it covers except for the details noted.

Refer also to page 6 of the descriptive report regarding comparisons made by the field party.

Shore line changes have been small in this area. There have been numerous cultural changes since the last surveys.

T-186 (1:20,000) 1855, except for contours.
T-2351 (1:10,000) 1898
T-2412 (1:10,000) 1899, except for contours.
T-2465 (1:10,000) 1900, " " "

The results from one sheet do not give conclusive cost or time figures. The comparative figures given below indicate that the total cost is no more than by the usual method and asaa further test a number of additional sheets should be completed in this manner when office personnel are available.

	T-5655	Similar sheet by usual method
1. Field drafting	13 4/7 d.	35 d.
2. Office drafting or retouching	15 4/7 d. *	1 2/7 d.
3. Preparation of blueline (Not necessary by usual method)	6/7 d.	----
4. Negative work	6/7 d.	4 & 6/7 d.
5. Total	30 6/7 d.	41 39 1/7 d.

* Better than average draftsman. Average time would be about 23 days. Adding 8 4/7 days to time on T-5655 or total of 38 3/7 days.

Reviewed in office by: L. C. Lande Inspected by: B. G. Jones

Examined and approved: T. B. Reed

Thos B Reed
Chief, Section of Field Records

Fred. L. Peacock
Chief, Section of Field Work

K.T. Adams
Chief, Division of Charts

G Lande
Chief, Division of Hydrography and Topography.

M-350

T-5655

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 O Reed Jr

Positions checked ~~by~~ on Ruling Machine by HORJr.

Grid inked on machine by HORJr

Intersections inked by _____

Points used for plotting grid:

x = ~~2,~~1,300,000 Ft	x ~~2,~~1,310,000
y = 615,000 Ft	y 595,000
x = ~~2,~~1,300,000	x
y = 580,000	y
x ~~2,~~1,320,000	x
y 615,000	y
x ~~2,~~1,320,000	x
y 580,000	y

Triangulation stations used for checking grid:

X = ~~2,~~1,314,557.93; Y = 613,757.13

1. Court 2, 1937
2. Intersection of Projection Lines 39°26'00" & 75°53'00" X = ~~2,~~1,315,418.75; Y = 589,632.75
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

after making computations the x values for this grid were changed by subtracting 1,200,000 ft. corrections have been made on these computations in red ink. BGJ 3/27/40

Form No. 742
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

GEODETIC POSITIONS FROM LAMBERT COORDINATES

STATE Md STATION X = ~~2~~ 300,000 Y = 615,000

x	2,300,000	R_b+A	26,369,112.76
C	2,000,000	y	− 615,000.00
x' $(=x-C)$	300,000	R_b+A-y	25,754,112.76
$\log (x-C)$	5.47712125	$\frac{\theta}{2}$ (in secs.)	1201.29635
$\log (R_b+A-y)$	7.41084659	$\log \frac{\theta}{2}$	3.07965016
$\log \tan \theta$	8.06627466	$\log S$	4.68557241
θ	0° 40′ 02.″5927	$\log \sin \frac{\theta}{2}$	7.76522257
	2402.5927		
$\log \theta$ (θ in secs.)	3.38068015	$\log \sin^2 \frac{\theta}{2}$	5.53044451
$\log l$	9.79770654	$\log 2$	0.30103000
$\log \frac{\theta}{l}$	3.58297361	$\log R^*$	7.41083616
$\Delta\lambda$ $(=\frac{\theta}{l})$	3828.0148	$\log y''$	3.24232117
		y''	1747.23
λ (central mer.)	77° 00′ 00.″0000		
$-\Delta\lambda$	1 03′ 48.0148	R_b+A-y	25,754,112.76
λ	75° 56′ 11.9852	y''	+ 1747.23
		R	25,755,859.99
		y	615,000.00
		y''	− 1,747.23
		y'	613,252.77
		ϕ (by interpolation)	39° 31′ 01.″9292

$\tan \theta = \frac{x-C}{R_b+A-y}$

$\Delta\lambda = \frac{\theta}{l}$

$\lambda = \lambda$ (central mer.) $-\Delta\lambda$

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

$y' = y - y''$

C is constant added to x' in computation of coordinates

R_b is map radius of lowest parallel

A is value of y' for R_b; in most cases it is zero

ϕ is interpolated from table of y'

* Use (R_b+A-y) as an approximate value of R and later correct this value when R is obtained below.

U.S. GOVERNMENT PRINTING OFFICE 11—11524

Form No. 742
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

GEODETIC POSITIONS FROM LAMBERT COORDINATES

STATE Md STATION X = ~~2,~~300,000 Y 580,000

x	2,300,000	R_b+A	26,369,112.76
C	2,~~000,000~~	y	− 580,000.00
x' $(=x-C)$	300,000	R_b+A-y	25,789,112.76
log $(x-C)$	5.47712125	$\frac{\theta}{2}$ (in secs.)	1199.6661″
log (R_b+A-y)	7.41143640	log $\frac{\theta}{2}$	3.07906040
log tan θ	8.06568485	log S	4.68557242
θ	0° 39′ 59.″3323	log sin $\frac{\theta}{2}$	7.76463282
	2399.″3322		
log θ (θ in secs.)	3.38009039	log sin^2 $\frac{\theta}{2}$	5.52926564
log l	9.79770654	log 2	0.30103000
log $\frac{\theta}{l}$	3.58238385	log R*	7.41146580
$\Delta\lambda$ $(=\frac{\theta}{l})$	3822.8200	log y''	3.24117614
		y''	
λ (central mer.)	77° 00′ 00.″0000		
$-\Delta\lambda$	1° 3′ 42.″8200	R_b+A-y	25,789,112.76
λ	75° 56′ 17.″1800	y''	+ 1744.86
		R	25,790,857.62
		y	580,000.00
		y''	− 1744.86
		y'	578,255.14
		ϕ (by interpolation)	39° 25′ 16.″0336

$\tan\theta=\frac{x-C}{R_b+A-y}$

$\Delta\lambda=\frac{\theta}{l}$

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

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

$y'=y-y''$

C is constant added to x' in computation of coordinates

R_b is map radius of lowest parallel

A is value of y' for R_b; in most cases it is zero

ϕ is interpolated from table of y'

*Use (R_b+A-y) as an approximate value of R and later correct this value when R is obtained below.

U. S. GOVERNMENT PRINTING OFFICE 11—11524

Form No. 742
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

GEODETIC POSITIONS FROM LAMBERT COORDINATES

STATE Md STATION X = ~~2,320,000~~ 615,000
Y = 615,000

x	2,320,000	R_b+A	26,369,112.76
C	2,000,000	y	− 615,000.00
x' $(=x-C)$	320,000	R_b+A-y	25,754,112.76
log $(x-C)$	5.505 14998	$\frac{\theta}{2}$ (in secs.)	1281.3748
log (R_b+A-y)	7.41084659	log $\frac{\theta}{2}$	3.10767618
log tan θ	8.09430339	log S	4.68557207
θ	0° 42′ 42.″7496	log sin $\frac{\theta}{2}$	7.793 24825
	2562.″7496		
log θ (θ in secs.)	3.40870617	log sin^2 $\frac{\theta}{2}$	5.58649655
log l	9.79770654	log 2	0.30103000
log $\frac{\theta}{l}$	3.61099963	log R*	7.41084661
$\Delta\lambda$ $(=\frac{\theta}{l})$	4083.1904	log y''	3.29837331
		y''	
λ (central mer.)	77° 60′ 00.″0000		
$-\Delta\lambda$	1° 08′ 03.1904	R_b+A-y	25,754,112.76
λ	75° 51′ 56.8096	y''	+ 1,988.00
		R	25,756,100.56
		y	615,000.00
		y''	− 1,988.00
		y'	613,012.00
		ϕ (by interpolation)	39° 30′ 59.5496

$\tan\theta=\frac{x-C}{R_b+A-y}$

$\Delta\lambda=\frac{\theta}{l}$

$\lambda=\lambda$ (central mer.) $-\Delta\lambda$

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

$y'=y-y''$

C is constant added to x' in computation of coordinates

R_b is map radius of lowest parallel

A is value of y' for R_b; in most cases it is zero

ϕ is interpolated from table of y'

* Use (R_b+A-y) as an approximate value of R and later correct this value when R is obtained below.

U. S. GOVERNMENT PRINTING OFFICE 11—11524

Form No. 742
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

800 003

GEODETIC POSITIONS FROM LAMBERT COORDINATES

STATE Md STATION X = ~~2,~~320,000 Y = 580,000

x	2,320,000	R_b+A	26,369,112.76
C	+ 2 000 000	y	580,000.00
x' $(=x-C)$	320,000	R_b+A-y	25,789,112.76
$\log (x-C)$	5.50514998	$\frac{\theta}{2}$ (in secs.)	1279.6359
$\log (R_b+A-y)$	7.41143640	$\log \frac{\theta}{2}$	3.10708641
$\log \tan \theta$	8.09371358	$\log S$	4.68557208
θ	0° 42′ 39.″2718	$\log \sin \frac{\theta}{2}$	7.79265849
	2559.″2718		
$\log \theta$ (θ in secs.)	3.40811642	$\log \sin^2 \frac{\theta}{2}$	5.58531700
$\log l$	9.79770654	$\log 2$	0.30103000
$\log \frac{\theta}{l}$	3.61040988	$\log R^*$	7.41146988
$\Delta\lambda$ $(=\frac{\theta}{l})$	4077.6494	$\log y''$	3.29978168
		y''	
λ (central mer.)	77° 00′ 00.″0000		
$-\Delta\lambda$	1 07′ 57.6494	R_b+A-y	25,789,112.76
λ	75 52′ 02.3506	y''	+ 1985.26
		R	25,791,098.02
		y	580,000.00
		y''	− 1,985.26
		y'	578,014.74
		ϕ (by interpolation)	39° 25′ 13.″1576

$\tan \theta = \frac{x-C}{R_b+A-y}$

$\Delta\lambda = \frac{\theta}{l}$

$\lambda = \lambda$ (central mer.) $-\Delta\lambda$

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

$y' = y - y''$

C is constant added to x' in computation of coordinates

R_b is map radius of lowest parallel

A is value of y' for R_b; in most cases it is zero

ϕ is interpolated from table of y'

* Use (R_b+A-y) as an approximate value of R and later correct this value when R is obtained below.

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GEODETIC POSITIONS FROM LAMBERT COORDINATES

STATE Md STATION X = ~~2,310,000~~ Y = 595,000

x	2,310,000	R_b+A	26,369,112.76
C	2 000 000	y	595,000.00
x' $(=x-C)$	310,000	R_b+A-y	25,774,112.76
log $(x-C)$	5.491,361.69	$\frac{\theta}{2}$ (in secs.)	1240.3726
log (R_b+A-y)	7.411 18372	log $\frac{\theta}{2}$	3.093 55218
log tan θ	8.0801 7797	log S	4.685 57225
θ	0° 41′ 20″.7453	log sin $\frac{\theta}{2}$	7.779 12443
	2480″.7452		
log θ (θ in secs.)	3.394.582 17	log sin^2 $\frac{\theta}{2}$	5.558 2489
log l	9.797 70654	log 2	0.301 0300
log $\frac{\theta}{l}$	3.596 87563	log R*	7.411 2151
$\Delta\lambda$ $(=\frac{\theta}{l})$	3952.5341	log y''	3.270 4940
		y''	
λ (central mer.)	77° 00′ 00″.000		
$-\Delta\lambda$	1 5 52.5341	R_b+A-y	25,774,112.76
λ	75° 54′ 07″.4659	y''	+ 1864.21
		R	25,775,976.97
		y	595,000.00
		y''	− 1864.21
		y'	593,135.79
		ϕ (by interpolation)	39° 27′ 43″.1065

$\tan\theta=\frac{x-C}{R_b+A-y}$

$\Delta\lambda=\frac{\theta}{l}$

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

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

$y'=y-y''$

C is constant added to x' in computation of coordinates

R_b is map radius of lowest parallel

A is value of y' for R_b; in most cases it is zero

ϕ is interpolated from table of y'

* Use (R_b+A-y) as an approximate value of R and later correct this value when R is obtained below.

U.S. GOVERNMENT PRINTING OFFICE 11—11524

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form No. 725a

PLANE COORDINATES ON LAMBERT PROJECTION

(For calculating machine computation)

State Md Station

ϕ = 39° 26′ 00.000″ λ = 75° 53′ 00.00″

Tabular difference of R for 1″ of ϕ =

R (for min. of ϕ)		y' (for min. of ϕ)	
Cor. for sec. of ϕ	−	Cor. for sec. of ϕ	+
R	25,786,409.18	y'	582,703.58
		y'' (=$2R \sin^2 \frac{\theta}{2}$)	+ 1,929.17
	° ′ ″	y	584,632.75
θ (for min. of λ)			
Cor. for sec. of λ	−		
θ	0 42 03.0892		
θ''	2523.0892		
$10^5 M$ (for given 10″)		$10^7 K$ (for given 10″)	
Cor. for fraction of 10″	−	Cor. for fraction of 10″	+
$10^5 M$	0.4848015909	$10^7 K$	0.29651518
$R\theta \cdot 10^{-10}$	6.506141051		
$\sin\theta$ ($\theta'' M$)		$2 \sin^2 \frac{\theta}{2}$ ($\theta'' K$)	
x' ($R \sin\theta$) ($R\theta M$)	~~3~~15,418.75	$2R \sin^2 \frac{\theta}{2}$ ($R\theta K$)	(Place result above)
	2,000,000.00		
x	~~2~~,315,418.75		
	1/1		

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

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

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

R, y', and θ are given in special tables.

$\sin\theta = \theta'' M$ (see table for M).

$2 \sin^2 \frac{\theta}{2} = \theta'' K$ (see table for K)

The factors 10^5 and 10^7 indicate that the decimal point has been moved to the right five places in M and seven places in K. To determine the position of the decimal point in the result, move the decimal point in θ'' five places to the left for M and seven places for K. Multiplication will then give the result properly pointed off.

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