

245

ORIGINAL<sup>o</sup>.

Form 504  
Rev. Dec. 1933

DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY  
R. S. PATTON, DIRECTOR

## DESCRIPTIVE REPORT

**Air-photo**  
**Topographic**  
~~**Hydrographic**~~

Sheet No. T-5447

State ~~-----~~ New Jersey

LOCALITY

~~East Coast of New Jersey~~

Great Bay,

Mullica River.

1936

CHIEF OF PARTY

Roswell C. Bolstad - - Jr. H. & G. E.

U. S. GOVERNMENT PRINTING OFFICE: 1934

Applied to drawing of Chart 1216 - Aug 27, 1937 - J. W. Walker  
Applied to chart 826 May 4, 1938 HNL.

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. 79

REGISTER NO. T-5447. T5447

State New Jersey

General locality Great Bay,

Locality Mullica River

Scale 1:10,000 Date of photographs - April 20, 1932  
survey, 19

Date of Compilation - Dec. 17, 1935

Vessel Air Photo Compilation Party No. 12.

Reviewed and recommended for approval - Roswell C. Bolstad  
Chief of party Roswell C. Bolstad

Surveyed by See STATISTICS SHEET, page 2 of this report.

Inked by R. L. Fisher  
R. L. Fisher.

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

Contour, Approximate contour, Form line interval - - feet

Instructions dated November 15th., 1932

Remarks: Compiled on a scale of 1:10,000 and printed

by photo-lithography.

- STATISTICS -

on

SHEET, FIELD NO. 79, REG. NO. 2-5447

page.)

PHOTOS, NO. (See back this TO NO. \_\_\_\_\_)

DATE OF PHOTOGRAPHS April 20th., 1932 TIME Not available.

BY

DATE

FROM

TO

ROUGH RADIAL PLOT None

SCALE FACTOR (1.000) None

SCALE FACTOR CHECKED None

PROJECTION J. G. Albert 10/29/34

PROJECTION CHECKED W. E. Hackett 10/29/34

CONTROL PLOTTED J. K. Batchelor 11/3/34

CONTROL CHECKED W. E. Brown 11/3/34

TOPOGRAPHY TRANSFERRED None

TOPOGRAPHY CHECKED None

SMOOTH RADIAL LINE PLOT G. Crowther 4/29/35 - 5/22/35

RADIAL LINE PLOT CHECKED H. L. Hawkins 5/22/35 - 5/27/35

DETAIL INKED Shoreline - G. Crowther & Crowther 5/31/35 - 6/2/35

Other - R. L. Fisher 12/3/35 - 12/19/35

PRELIMINARY REVIEW Shoreline - F. M. Overby 6/3/35 - 6/4/35

Other - R. G. Boistad 12/20/35 - 12/25/35

AREA OF DETAIL INKED 20.8 sq. Statute Miles (Land Area)

AREA OF DETAIL INKED 0.0 sq. Statute Miles (Shoals in Water Area)

LENGTH OF SHORELINE (more than 200 m. from nearest opposite shore) 21.7 Statute Miles

118.9 " " (less than 200 m.)

LENGTH OF STREETS, ROADS, TRAILS, RAILROADS, etc. 41.7 Statute Miles

GENERAL LOCATION Great Bay

LOCATION Mullica River

DATUM North American 1927 (Adjusted).

STATION Proberton Radio 1932 Latitude 39°-33'-30.326" (935.3 m.)

Longitude 74°-22'-16.839" (402.0 m.)  
(adjusted)

(over)

Photographs used on this sheet:-

- ✓66-11-77 to 80 inclusive.
- ✓66-12-1 to 6 "
- ✓66-11-101
- ✓66-12-26 to 31 "
- ✓66-12-57 to 61 "
- ✓66-2-97

all taken April 20th., 1932.

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET, FIELD NO. 79.

GENERAL INFORMATION.

The Air-photo Field Inspection Report for the East Coast of New Jersey, attached to the Descriptive report for compilation, register number t-5286, furnished the necessary information for the compilation of this sheet. Additional information was obtained from Mr. J. K. Batchellor and myself (Mr. R. L. Fisher) who are acquainted with this locality having performed the photo field inspection.

This sheet has been compiled from strips of single lens photographs taken by the Aero Service Corporation, 1612 Chancellor St., Philadelphia, Pennsylvania, with a camera equipped with a special lens (Orthomessar, 8" focal length). The original negatives were on a scale of about 1:21,800, and enlargements were made to 1:10,000 scale by using the old topographic sheets to bring image of negative to proper scale. No information was available from the Aero Service Corporation in regard to the time of day at which these photographs were taken; it appears no record was kept by this company.

CONTROL.

(a) Sources.

Control for the compilation of this sheet was obtained from the following sources:-

- (1) Triangulation, 1914 by \_\_\_\_\_, (~~Final adj.~~)
- (2) " , 1931 by \_\_\_\_\_, ( " " )
- (3) " , 1932 by C. D. Meany, ( " " )
- (4) Theodolite positions by R. C. Bolstad (See field inspection report, t-5286)
- (5) Lieut. Rigg's 1935 triangulation stations Howell, Long, Mullica, Nacote, Akimbo, Great & Bay were plotted on this compilation but were not used in controlling the photo plot as they were not available until the compilation was completed.

(b) Errors.

In making the radial plot no errors in any of the above listed control stations were discovered except as noted in paragraph " Information from Other Sources".

COMPILATION.

(a) Method.

The usual radial line method of plotting was used in the compilation of this sheet.

(b) Adjustments of Plot.

By holding to all the available control no unusual adjustments of the plot were required. The photos in general have very little tilt, are close to the 1:10,000 scale, and the radial plot intersections were good. On some of the photos there is apparently a slight distortion near the edges and corners.

(c) Interpretation.

The usual graphic symbols were used as approved by the Board of Surveys and Maps (1932) and no great difficulty was experienced in

interpreting the photographic detail.

The area along the shore is low, flat and marshy with a vertical edge. There was but little difficulty in interpreting the high water line.

The area covered by this sheet is entirely flat except near the northern edge where there are a few low hills. The trees are mostly pine with some oak.

The double full line was used to indicate first order roads, the double dashed line to indicate poor motor roads, and the single dashed line to indicate exceedingly poor roads, trails and paths. The classification was determined by the field inspection party.

There are numerous ditches and small ponds in the marsh areas; only the main ditches and ponds have been shown.

(d) Information from Other Sources 46401/6402, T6400

Lt. Rigg's topographic sheets X, N, and R covering this area were not received until after the compilation was completed. These sheets were then compared with the compilation. There were some small discrepancies in the shore line; in every case the topographic sheets showed the shore line further inland. The discrepancies occur in areas where erosion is taking place. For this reason and the fact that the photos date back to 1932 the compilation was changed the slight amount necessary to agree with the 1935 topographic sheets of Lt. Rigg.

The old masonry bridge piers just east of the Mullica River Bridge do not agree in position with the ones shown on Rigg's topo. sheet "X". As the control and the rest of the detail in this area match perfectly and the piers show clearly on the photos, the compilation position was adhered to.

The position of topographic station "E. Gable French" as shown on this compilation is 3.2 meters directly north of the position as shown on Lt. Rigg's 1935 topo. sheet, field letter "X", and is considered the correct position in view of the following facts:

(1) The position of E. Gable French on Lt. Rigg's topo. sheet "X" was originally located by plane table cuts from his 1935 triangulation stations Mullica, Nacote, and Akimbo, and was found to fall about 7 meters south of the compilation position (which is Bolstad's 1935 theodolite position, see report T-5286, pages 5 & 6). The discrepancy was called to Riggs attention and was then relocated by him by a three point theodolite fix. (6D & 6R); his theodolite fix falling 4 meters north of the previous topo. position. However, without observations on a 4th. station this determination cannot be considered a check position.

(2) Lt. Bolstad's theodolite location (Lat. 39°-32'-1346.3 m.; Long. 74°-27'-751.0 m.) is a check position, being one of the stations in a quadrilateral; its position can be computed through several different ways.

(3) Lt. Bolstad's position of E. Gable French also determines the position of four other stations:- W. Gable Mullica River; Mullica S.W. Gable; W. Gable Roundabout Creek; and S. Gable Hickory Point, which were checked by Lt. Rigg on his graphic control sheets. If the position of E. Gable French was in error it would not be possible to verify these other stations. They are either all wrong together with E. Gable French or all stations are correct.

(4) The photo plot shows the theodolite position of Lt. Bolstad to be correct.

Two small docks north of station S. Gable Cramer were omitted on Lt. Rigg's topo. sheet "X". This area was revisited by the Air-photo field inspection party in December 1935 and the position of these docks was verified.

The docks on the west side of Bass River, just south of the Bass

the name of dock



Looking to Northwest.



Looking to Southeast.

Photos taken Dec. 21, 1935 on west shore of Bass River at a point 125 meters S.E. of the highway bridge draw.

#### LANDMARKS.

A list of landmarks, including those to be expunged, has been submitted by this party in the field inspection report attached to Desc. Report T-5286, and also by Lt. Rigg. They have all been shown on this sheet by either the topo. station symbol (small black circle) or triangulation symbol.

There are many other objects (such as houses, ends of docks, etc.) which are located within the accuracy specified under the paragraph Recommendations for Further Surveys, and may be used to obtain hydrographic "fixes". Care should be taken when using the houses to use the center as the size shown on the compilation may be expanded somewhat.



River Bridge, were shown incorrectly on Lt. Rigg's topo. sheet "X". This area was revisited by the field inspection party in December 1935 and the position of these docks as shown on the photographs was verified. The Kodak photos shown on the opposite page were taken at this date and clearly show the detail in question. <sup>This R not clear nor do Kodak photos show anything.</sup> <sup>F.R.G.</sup>

On topographic sheet "R" Lt. Rigg has station S. Gable Willet Thoro plotted ~~300~~ meters too far to the <sup>300th</sup> west; in his descriptive report for this sheet he states he verifies the theodolite position obtained by Bolstad in 1935.

Station W. Gable Black Ho. did not check with the position given on Lt. Rigg's topo. sheet "R" as he used the east gable. The compilation position was adhered to as the west gable faces the river front and would be more useful for future work. When photo 66-12-31 is placed under the compilation it appears that the two stations are in agreement.

The junctions with all other compilation sheets are satisfactory; this compilation was previously furnished Lt. Kirsch to make a tie in with his work which starts at the south border of this sheet.

#### (e) NAMES.

For all geographical names see the special tables included in the back of this report.

Lt. Rigg's hydrographic sheets nos. 17 & 8 were not available for this party's use and it is recommended the Office verify any names, or rather note any names which may appear thereon, and show on the over-lay sheet.

#### BRIDGES.

The only bridges of any importance to navigation fall on the western and northwestern edges of this compilation. Information concerning them is shown on the over-lay sheet; it was obtained from the bridge data contained in the field inspection report attached to Desc. Report T-5286, and also from Lt. Rigg's 1935 topo. sheet, field letter "X". Lt. Rigg's data of the Bass River, Mullica River, and Nacote Creek bridges differed slightly from the air-photo field inspection information and was adhered to as being correct.

#### RECOMMENDATIONS FOR FURTHER SURVEYS.

The compilation of this sheet is beleived to have a probable error of not over 2 meters in position for well defined detail of importance for charting, and not over 4 meters for other detail. It is understood the widths of roads and similar objects may be slightly exaggerated in order to keep the detail clear and to avoid the closing up of lines during the photo-lithographic process.

To the best of my knowledge this sheet is beleived to be complete in all detail of importance for charting purposes, within the accuracy stated above, and no additional surveys are required.

Submitted by-

*a better estimate of  
the accuracy of location  
is 0.3 to 0.5 m.m. for intersected  
points and 0.3 to 0.8 m.m.  
for other detail.*

*R. L. Fisher*  
R. L. Fisher, Draftsman.

LIST OF RECOVERABLE STATIONS.

This list includes all recoverable objects shown by a small black circle on this compilation, and when followed by the letter (d) they have been described on form 524.

NAME	LAT.	LONG.	METHOD OF DETERMINATION.
E.R.A. #2263 (d)	39°-35.7'	74°-24.3'	A.P.T.
Bog (Signal 2) (d)	39°-34.6'	74°-24.4'	T.S.
E.R.A. #1853 (d)	39°-35.5'	74°-27.5'	A.P.T.
S. Gable (Cramer) (d)	39°-34.7'	74°-27.1'	T.S. & A.C.S."X".
E.R.A. #1851 (d)	39°-32.2'	74°-28.0'	A.P.T.
N. Radio Pole (d)	39°-34.0'	74°-22.1'	T.S.
Mullica S.W. Gable (d)	39°-33.5'	74°-25.3'	T.S. & A.C.S."R".
W. Gable (Mullica River) (d)	39°-33.1'	74°-26.0'	T.S. & A.C.S."R".
E. Gable French (d)	39°-32'-1346.3 m.	74°-27'-751.0 m.	T.S. & A.P.T.*
S. Gable Willett Thoro (d)	39°-32.8'	74°-21.9'	T.S. & A.C.S."R".**
N. Gable Walk (d)	39°-32.7'	74°-21.5'	T.S.
W. Gable (Ho. on Pt.) (d)	39°-32.3'	74°-23.7'	T.S. & A.C.S."R".
W. Gable Black Ho. (d)	39°-32.2'	74°-25.9'	T.S. ***
S. Gable (Hickory Pt) (d)	39°-32.1'	74°-27.8'	T.S. & A.C.S."X".
Far (Signal) (d)	39°-34.4'	74°-23.2'	T.S.
W. Gable (Roundabout Cr.) (d)	39°-33.7'	74°-24.3'	T.S. & A.C.S."R".
(CHY) on Br. Tend. House	39°-33.3'	74°-27.9'	A.C.S."X".
(BASS) Hydro. Disk (d)	39°-35.4'	74°-26.5'	A.C.S."X".
(BROAD) Hydro. Disk (d)	39°-34.4'	74°-26.8'	A.C.S."X".
(POLE) Hydro. Disk (d)	39°-32.3'	74°-26.2'	A.C.S."X".
Light 26C	39°-32.3'	74°-24.5'	A.C.S."R".
Light 26D	39°-32.5'	74°-26.8'	A.C.S."X".
Light 26E	39°-33.3'	74°-25.1'	A.C.S."R".
Light 26 F	39°-33.3'	74°-26.4'	A.C.S."R".
(PUN) N. Gab. Red Shack	39°-33.3'	74°-26.4'	A.C.S."R".
E. Gable Shack	39°-33.1'	74°-25.3'	A.C.S."R".
(PIL) Chy. Sm. Unpainted Shack	39°-33.8'	74°-25.0'	A.C.S."R".
(DEEP) Hydro. Disk (d)	39°-33.0'	74°-24.3'	A.C.S."R".
So. Gable White House	39°-33.3'	74°-23.3'	A.C.S."R".
(WILL) Hydro Disk (d)	39°-32.7'	74°-21.9'	A.C.S."R".

NOTE:- A.C.S. denotes Aluminum Control Sheet, Rigg, 1935.

T.S. denotes Theodolite-observed Control Station (See pages 5 & 6 in field inspection report attached to Desc. report T-5286.)

A.P.T. denotes location by Air Photo Topography (Radial plot).

\* (See page 4, Information from Other Sources, this report.)

\*\* (See page 5, Information from Other Sources, this report.)

\*\*\* (See page 5, Information from Other Sources, this report.)

The positions and descriptions of the T.S. and A.P.T. stations were furnished Rigg before his topography was completed, and were all verified by his graphic control sheets (when shown above with A.C.S. following T.S.) with the exception of E. Gable French which is discussed on page 4, this report.

## Remarks

## Decisions

1		
2	* Not known as such today. Called Big Thorofare and Big Creek. Verified by 2 men. See Rigg's Special Report on Geographic Names, 1935.	
3		
4		
5		
6		
7	<i>Not shown on chart 1216.</i>	
8	<i>do</i>	
9	<i>do</i>	
10	<i>do</i>	
11	*N.J.State cast iron Hwy. sign calls "Loveland's Thoro." <i>Delete the s</i> 3 men verified. (Noted by Mr. R.L.Fisher, air-photo field inspector.)	
12	*Cramers Creek is labeled on N.J.State cast iron Hwy. sign; 5 men verified. (Noted by Mr. Fisher, air-photo field inspector.) <i>Delete the s</i> <i>preserve from.</i>	
13	<i>do</i>	
14	<i>do</i>	
15	*Formerly called "Doctor Point" on old Geol. maps.	
16	<i>do</i>	
17	<i>do</i> Official map of N.J.State Hwy. Commission shows.	
18	<i>do</i> Official map of N.J.State Hwy. Commission shows.	
19	<i>Added from chart of approved geographic names.</i>	<i>F.R.G.</i>
20	" " " " " " "	<i>F.R.G.</i>
21		
22		
23		
24		
25		
26		
27		

# GEOGRAPHIC NAMES

Survey No. T-5447  
Air-photo Compilation.

Name on Survey	A	B	C	D	E	F	G	H	K	
✓ <u>Great Bay</u>	x	Topo. "R"	x	6 men x	x				x	1
✓ <u>BIG THOROFARE</u> <del>Willet Thoro.*</del>	x	*	x	2 men x*						2
✓ <u>Rondabout Creek</u>	x	x	x	2 men x						3
✓ <u>Big Creek</u>		x								4
✓ <u>Graveling Point</u>		x		2 men x						5
✓ <u>Deep Point</u>	x	x	✓ x	2 men x						6
✓ <u>Mullica River</u>		x	x	5 men x					x	7
✓ <u>Swimming Over Point</u>		x								8
✓ <u>Nacore Creek</u>		x	x	5 men x					x	9
✓ <u>Akimbo Point</u>		x								10
✓ <u>Loveland Thorofare *</u>		x	x	3 men x*					*	11
✓ <u>Cramer Creek*</u>		x		3 men x*					*	12
✓ <u>Broad Creek</u>		x								13
✓ <u>Bass River</u>		x	x	5 men x					x	14
✓ <u>Mosses Point</u> *		x	*							15
✓ <u>Jobs Creek</u>		x								16
✓ <u>New Gretna</u>			x	3 men x	✓				x	17
✓ <u>Bass River</u> <i>settlement</i>			x						x	18
✓ <u>Basses Bay</u>										19
✓ <u>Judies Creek</u>										20
										21
										22
										23
										24
										25
										26
										27

Names underlined in red approved  
by *C. E. Egnor* 3/5/36

\* see me about this  
7/24/36 *(signature)*

NR  
T-5447\*

## 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 \_\_\_\_\_

Positions checked by \_\_\_\_\_

Grid inked on machine by \_\_\_\_\_

Intersections inked by \_\_\_\_\_

Points used for plotting grid:

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

$\frac{x}{y}$  \_\_\_\_\_

Triangulation stations used for checking grid:

1. \_\_\_\_\_ 5. \_\_\_\_\_

2. \_\_\_\_\_ 6. \_\_\_\_\_

3. \_\_\_\_\_ 7. \_\_\_\_\_

4. \_\_\_\_\_ 8. \_\_\_\_\_

\* This grid was not plotted on celluloid because of poor projection. The attached computations may be used later. R.E. Ask



# GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION \_\_\_\_\_

$x$	<u>2,060,000.00</u>	$\log S_e$	<u>4.77815067</u>
$K$	<u>2,</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>60,000.00</u>	$\log (1/R)$	<u>1.086</u>
$x'^3/(6\rho_0^2)_e$	<u>— .08</u>	$\log S_m$	<u>4.26217736</u>
$S_e$	<u>59,999.92</u>	cor. arc to sine	<u>— 59</u>
$3 \log x'$	<u>14.33445375</u>	$\log S_1$	<u>4.26217677</u>
$\log 1/(6\rho_0^2)_e$	<u>4.5810213</u>	$\log A$	<u>8.56912885</u>
$\log x'^3/(6\rho_0^2)_e$	<u>8.9154750</u>	$\log \sec \phi$	<u>0.11314526</u>
		$\log \Delta \lambda_1$	<u>2.88445138</u>
		cor. sine to arc	<u>+ 100</u>
$\log S_m^2$	<u>8.52435472</u>	$\log \Delta \lambda$	<u>2.88445238</u>
$\log C$	<u>1.322024</u>	$\Delta \lambda$	<u>766.3945</u>
$\log \Delta \phi$	<u>9.846379</u>		
$y$	<u>275,000.00</u>		
$\phi'$ (by interpolation)	<u>39 35 18.1344</u>	$\lambda$ (central mer.)	<u>74 40</u>
$\Delta \phi$	<u>— .7021</u>	$\Delta \lambda$	<u>— 12 46.3945</u>
$\phi$	<u>39 35 17.4323</u>	$\lambda$	<u>74 27 13.6055</u>

Explanation of form:

$$x' = x - K$$

$$S_e = x' - \frac{x'^3}{(6\rho_0^2)_e}$$

$$S_m = \frac{1}{R} \left( \frac{1200}{3937} \right) S_e$$

$R$  = scale reduction factor

$\phi'$  is interpolated from table of  $y$

$$\Delta \phi = C S_m^2$$

$$\phi = \phi' - \Delta \phi$$

$$\Delta \lambda_1 = S_1 A \sec \phi$$

$$\log S_1 = \log S_m - \text{cor. arc to sine}$$

$$\log \Delta \lambda = \log \Delta \lambda_1 + \text{cor. arc to sine}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta \lambda$$

# GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION \_\_\_\_\_

$x$	<u>2,080,000.00</u>	$\log S_e$	<u>4.90308490</u>
$K$	<u>2,</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>80,000.00</u>	$\log (1/R)$	<u>10.86</u>
$x'^3/(6\rho_0^2)_e$	<u>— .20</u>	$\log S_m$	<u>4.38711559</u>
$S_e$	<u>79,999.80</u>	cor. arc to sine	<u>— 10.6</u>
		$\log S_1$	<u>4.38711453</u>
$3 \log x'$	<u>14.70926997</u>	$\log A$	<u>8.50912885</u>
$\log 1/(6\rho_0^2)_e$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11314481</u>
$\log x'^3/(6\rho_0^2)_e$	<u>9.2902913</u>	$\log \Delta\lambda_1$	<u>3.00938819</u>
		cor. sine to arc	<u>+ 17.8</u>
$\log S_m^2$	<u>8.77423118</u>	$\log \Delta\lambda$	<u>3.00938997</u>
$\log C$	<u>1.322024</u>	$\Delta\lambda$	<u>1021.8566</u>
$\log \Delta\phi$	<u>0.096255</u>		
$y$	<u>275,000.00</u>		
$\phi'$ (by interpolation)	<u>39 25 18.1344</u>	$\lambda$ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>— 1.2481</u>	$\Delta\lambda$	<u>— 17 01.8566</u>
$\phi$	<u>39 35 16.8863</u>	$\lambda$	<u>74 22 58.1434</u>

Explanation of form:

$$x' = x - K$$

$$S_e = x' - \frac{x'^3}{(6\rho_0^2)_e}$$

$$S_m = \frac{1}{R} \left( \frac{1200}{3937} \right) S_e$$

$R$  = scale reduction factor

$\phi'$  is interpolated from table of  $y$

$$\Delta\phi = C S_m^2$$

$$\phi = \phi' - \Delta\phi$$

$$\Delta\lambda_1 = S_1 A \sec \phi$$

$$\log S_1 = \log S_m - \text{cor. arc to sine}$$

$$\log \Delta\lambda = \log \Delta\lambda_1 + \text{cor. arc to sine}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta\lambda$$

T= 5447

# GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J.

STATION \_\_\_\_\_

$x$	<u>2,060,000.00</u>	$\log S_0$	<u>4.77815067</u>
$K$	<u>2</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>60,000.00</u>	$\log (1/R)$	<u>1086</u>
$x'^3/(6\rho_0^2)_0$	<u>108</u>	$\log S_m$	<u>4.26217736</u>
$S_0$	<u>59,999.92</u>	cor. arc to sine	<u>59</u>
$3 \log x'$	<u>14.33445375</u>	$\log S_1$	<u>4.26217677</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log A$	<u>8.50912989</u>
$\log x'^3/(6\rho_0^2)_0$	<u>8.9154750</u>	$\log \sec \phi$	<u>0.11288783</u>
$\log S_m^2$	<u>8.52425472</u>	$\log \Delta \lambda_1$	<u>2.88419449</u>
$\log C$	<u>1.321393</u>	cor. sine to arc	<u>+ 160</u>
$\log \Delta \phi$	<u>9.845748</u>	$\log \Delta \lambda$	<u>2.88419549</u>
$y$	<u>260,000.00</u>	$\Delta \lambda$	<u>765.9413</u>
$\phi'$ (by interpolation)	<u>39 32 49.8818</u>	$\lambda$ (central mer.)	<u>74 40 "</u>
$\Delta \phi$	<u>70.10</u>	$\Delta \lambda$	<u>12 45.9413</u>
$\phi$	<u>39 32 49.1808</u>	$\lambda$	<u>74 27 14.0587</u>

Explanation of form:

$$x' = x - K$$

$$S_0 = x' - \frac{x'^3}{(6\rho_0^2)_0}$$

$$S_m = \frac{1}{R} \left( \frac{1200}{3937} \right) S_0$$

$R$  = scale reduction factor

$\phi'$  is interpolated from table of  $y$

$$\Delta \phi = C S_m^2$$

$$\phi = \phi' - \Delta \phi$$

$$\Delta \lambda_1 = S_1 A \sec \phi$$

$$\log S_1 = \log S_m - \text{cor. arc to sine}$$

$$\log \Delta \lambda = \log \Delta \lambda_1 + \text{cor. arc to sine}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta \lambda$$



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T-5447

# GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J.

STATION \_\_\_\_\_

$x$	<u>2,085,000.00</u>	$\log S_r$	<u>4.92981773</u>
$K$	<u>2.</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>85,000.00</u>	$\log (1/R)$	<u>10.86</u>
$x'^3/(6\rho_0^2)_0$	<u>.23</u>	$\log S_m$	<u>4.41344444</u>
$S_r$	<u>84,999.77</u>	cor. arc to sine	<u>119</u>
$3 \log x'$	<u>14.78825679</u>	$\log S_1$	<u>4.41344325</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log A$	<u>8.50912989</u>
$\log x'^3/(6\rho_0^2)_0$	<u>9.3692781</u>	$\log \sec \phi$	<u>0.11288666</u>
$\log S_m^2$	<u>8.82688888</u>	$\log \Delta\lambda_1$	<u>3.03545986</u>
$\log C$	<u>1.321393</u>	cor. sine to arc	<u>+ 200</u>
$\log \Delta\phi$	<u>0.148282</u>	$\log \Delta\lambda$	<u>3.03546180</u>
$y$	<u>260,000.00</u>	$\Delta\lambda$	<u>1085.0801</u>
$\phi'$ (by interpolation)	<u>39 32 49.8818</u>	$\lambda$ (central mer.)	<u>74 40</u>
$\Delta\phi$	<u>1.3249</u>	$\Delta\lambda$	<u>- 18 05.0801</u>
$\phi$	<u>39 32 48.5569</u>	$\lambda$	<u>74 21 54.9199</u>

Explanation of form:

$$x' = x - K$$

$$S_r = x' - \frac{x'^3}{(6\rho_0^2)_0}$$

$$S_m = \frac{1}{R} \left( \frac{1200}{3937} \right) S_r$$

$R$  = scale reduction factor

$\phi'$  is interpolated from table of  $y$

$$\Delta\phi = C S_m^2$$

$$\phi = \phi' - \Delta\phi$$

$$\Delta\lambda_1 = S_1 A \sec \phi$$

$$\log S_1 = \log S_m - \text{cor. arc to sine}$$

$$\log \Delta\lambda = \log \Delta\lambda_1 + \text{cor. arc to sine}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta\lambda$$

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T-5447

# GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION \_\_\_\_\_

$x$	<u>2,070,000.00</u>	$\log S_0$	<u>4.84509723</u>
$K$	<u>2</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>70,000.00</u>	$\log (1/R)$	<u>1.086</u>
$x'^3/(6\rho_0^2)$	<u>0.13</u>	$\log S_m$	<u>4.32912392</u>
$S_0$	<u>69,999.87</u>	cor. arc to sine	<u>81</u>
$3 \log x'$	<u>14.53529412</u>	$\log S_1$	<u>4.32912311</u>
$\log 1/(6\rho_0^2)$	<u>4.5810213</u>	$\log A$	<u>8.60912954</u>
$\log x'^3/(6\rho_0^2)$	<u>9.1163154</u>	$\log \sec \phi$	<u>0.11297323</u>
$\log S_m^2$	<u>8.65824784</u>	$\log \Delta\lambda_1$	<u>2.95122598</u>
$\log C$	<u>1.321603</u>	cor. sine to arc	<u>+ 136</u>
$\log \Delta\phi$	<u>9.979851</u>	$\log \Delta\lambda$	<u>2.95122734</u>
$y$	<u>265,000.00</u>	$\Delta\lambda$	<u>893.7732</u>
$\phi'$ (by interpolation)	<u>39 33 39.2995</u>	$\lambda$ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>0.9547</u>	$\Delta\lambda$	<u>74 14 53.7732</u>
$\phi$	<u>39 33 38.3448</u>	$\lambda$	<u>74 25 06.2268</u>

Explanation of form:

$$x' = x - K$$

$$S_0 = x' - \frac{x'^3}{(6\rho_0^2)}$$

$$S_m = \frac{1}{R} \left( \frac{1200}{3937} \right) S_0$$

$R$  = scale reduction factor

$\phi'$  is interpolated from table of  $y$

$$\Delta\phi = C S_m^2$$

$$\phi = \phi' - \Delta\phi$$

$$\Delta\lambda_1 = S_1 A \sec \phi$$

$$\log S_1 = \log S_m - \text{cor. arc to sine}$$

$$\log \Delta\lambda = \log \Delta\lambda_1 + \text{cor. arc to sine}$$

$$\lambda = \lambda \text{ (central mer.)} - \Delta\lambda$$

REVIEW OF AIR PHOTO COMPILATION T-5447  
Scale 1:10,000

Data Record

Triangulation to 1935  
Photographs to 1932  
Planetable surveys to 1935  
Field inspection to 1935

All detail on this compilation is of the date of the 1932 photographs except for the following additions from the 1935 planetable surveys: Location of lights, recoverable topographic stations and a number of small corrections to high water line and piers.

Comparison with Graphic Control Surveys

1. T-6400a (Jan. 1935), 1:10,000

No discrepancies noted.

2. T-6401b (May 1935), 1:10,000

Station So. Gable (Willett Thoro) (d) is plotted some three meters to the southwest of the position it occupies on T-5447. In his report on T-6401b Rigg states that he verified the theodolite position obtained by Bolstad, the latter position being the one on file and used on the air photo compilation.

Rigg in checking Bolstad's theodolite observed station W. Gable Black Ho. (d) used the east gable of the same house. The discrepancy was noted but no check was made on Bolstad's station. The latter station is shown on T-5447. Rigg's station (not described) is shown only on T-6401b.

3. T-6402 (May 1935), 1:10,000

The descriptive report for T-5447 discusses (page 4) a large discrepancy between the positions of station E. Gable French (d) as located by Rigg on T-6402 and by Bolstad on T-5447. This reviewer replotted the station from Bolstad's theodolite observed position and found it to check within 1 1/2 m. with Rigg's position. Considering that the projection in this locality is only fair, it is believed that Bolstad's position for this station is within the specified accuracy of this compilation.

A bridge across Bass River, near New Gretna, occupies a position parallel to and 5 meters to the south of that shown on T-5447. This is likewise true of some small detail just south of the bridge. The compilation position is accepted as correct.

No other discrepancies.

All detail on the above graphic control sheets falling within the area of this compilation is now shown on T-5447 with the exception of temporary planetable stations and magnetic meridians.

Comparison with Contemporary Hydrographic Surveys

1. H-5893 (July 1935), 1:10,000

Along a few short sections of shoreline this survey shows minor discrepancies with T-5447. This is due to the fact that, since the high water line had been traced from T-5447 to the hydrographic sheet, small changes had been made on T-5447 to agree with the graphic control sheets in this area which are of a later date. These differences are, however, inconsequential.

Several lights on H-5893 are called beacons (Lights 26-C, 26-D, 26-F). These are lights maintained by the N. J. C. & N. Commission.

No other discrepancies.

2. H-5894 (June 1935), 1:10,000

As above, Light 26-D is called Beacon 26-D. See above paragraph. No major differences.

Comparison with Previous Topographic Surveys

T- 119 (1840-41), 1:20,000

T-1333 (1871), 1:20,000

The above sheets show the usual time changes, the majority occurring in the swampy regions bordering on Great Bay and the Mullica River. Several channels have been cut through the points of land formed by the meandering of the Mullica River. T-5447 is complete and adequate to supersede the above surveys.

Comparison with Charts

No. 1216, (1:80,000), February 1936

No. 3243, (1:80,000), August 1936

A group of three islands in the mouth of the Mullica River is shown as a single island on chart 1216. A point of land at lat.  $39^{\circ} 32.2'$ , long.  $74^{\circ} 24.6'$  has been severed from the mainland by two channels; this is not shown on either chart.

There are other minor changes in shoreline.

A light, 26-C, at lat.  $39^{\circ} 32.2'$ , long.  $74^{\circ} 24.5'$  is not shown on chart 1216. This is a light maintained by the N.J.C. & N. Commission during summer months.

There are no other aids to navigation in that area common to the compilation and charts.

Remarks

Drafting of shoreline and topographic symbols is poorly executed.

T-5634 is the junction sheet to the south of T-5447. On the former sheet is shown a large number of ditches extending to the junction. None have been shown on T-5447 although they exist and are as numerous.

April 5, 1937

Frank R. Gollon.

*Frank R. Gollon*  
*V. B. Jones*

## REVIEW OF AIR PHOTO COMPILATION NO. T-5447

Chief of Party: Roswell C. Bolstad.

Compiled by: R. L. Fisher.  
(See page 2.)

Project: Air Photo Compilation Party "12 Instructions dated: Nov. 15, 1932.

- ✓ 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)
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) No Blueprints secured of this area.
- ✓ 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.  
Lt. Rigg's hydrographic sheets were never forwarded to this party for examination and comparison.
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 c,h,i)
7. High water line on marshy ~~and mangrove~~ coast is clear and adequate for chart compilation. (Par. 16a, 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) None shown on this sheet.
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) See page 6.
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) See back of page 4.
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. 16c)
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. 64, and 66k)
13. The geographic datum of the compilation is N.A. 1927 and the reference station is correctly noted.
14. Junctions with adjoining compilations have been examined and are in agreement. (Par. 66j) Junction with Lt. Kirsch's compilations to the south was previously furnished him; since no information has been received from him contrary it is assumed the junction is correct.
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: Any additional reports and requirements affecting this area are referred to the reports of Lt. Rigg who conducted a 1935 combined-operations party in this area. Field inspection report attached to Descriptive Report T-5286 also gives additional information.

18. Examined and approved;

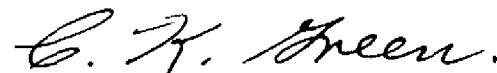
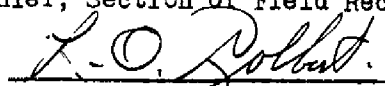
  
Roswell C. Bolstad.  
Chief of Party

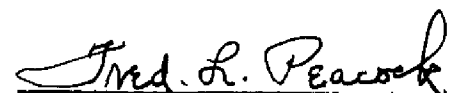

19. Remarks after review in office:

Reviewed in office by:



Examined and approved:

  
Chief, Section of Field Records  
  
Chief, Division of Charts

  
Chief, Section of Field Work  
  
Chief, Division of Hydrography  
and Topography.