

5097

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U. S. COAST & GEODETIC SURVEY
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Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton, Director

State: New Jersey

DESCRIPTIVE REPORT

Photo
Topographic
~~Hydrographic~~

Sheet No. T-5097

LOCALITY
ATLANTIC COAST

Barnegat Inlet, New Jersey

Barnegat City to South of Cedar Cr.

C. C. Station

1935 2

CHIEF OF PARTY

R. C. Bolstad, Jr. H. & G. Engr.

U. S. GOVERNMENT PRINTING OFFICE: 1929

Applied to drawing of chart 1216 - July 27, 1937 - J.F. Walker
" compilation " 825 1938 P.L.J.

3774

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET

FIELD NO. 47

REGISTER NO. T-5097

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. 47

REGISTER NO. T-5097

T5097

State New Jersey

General locality Atlantic Coast

~~Barnegat Inlet, New Jersey~~

Barnegat Inlet

Locality ~~Barnegat City to South of Cedar Cr. C.G. Station~~

photographs: 4/15/32: 7/25/32: 1/23/33

Scale 1:10,000

Date of ~~survey~~

19

Date of Compilation: April 9, 1935

Vessel Air Photo Compilation Party No. 12, New York City

Reviewed and recommended for approval:

Chief of party

Rowell C. Bolstad

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

Inked by W.F. von Buehren

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

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

Instructions dated November 15, 1932

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

Photo-Lithography.

...

STATISTICS

on

SHEET, FIELD NO. 47, REG. NO. T-5097

PHOTOGRAPHS AS FOLLOWS:-

66-51-67 to 66-51-72 incl. taken July 25, 1932
 66-6-99 to 66-6-101 incl. taken April 15, 1932
 M-27 (871-14) to M-43 (871-14) taken Jan. 23, 1933 @ 12:05 P.M.
 66-51-60 to 64 incl. " July 25, 1932.

	BY	DATE	
		From	To
ROUGH RADIAL PLOT	None	-	-
SCALE FACTOR (1.000)	None	-	-
SCALE FACTOR CHECKED	None	-	-
PROJECTION	<i>D.B. Bogart</i> D.B. Bogart		10/8/34
PROJECTION CHECKED	<i>J.P. O'Donnell</i> J.P. O'Donnell		10/8/34
CONTROL PLOTTED	<i>W.E. Brown</i> W.E. Brown		10/31/34
CONTROL CHECKED	<i>D.B. Bennett</i> D.B. Bennett		1/24/35
TOPOGRAPHY TRANSFERRED	None	-	-
TOPOGRAPHY CHECKED	None	-	-
SMOOTH RADIAL LINE PLOT	<i>W.F. von Buehren</i> W.F. von Buehren	3/5/35	- 3/16/35
RADIAL LINE PLOT CHECKED	<i>J.P. O'Donnell</i> J.P. O'Donnell		3/16/35
DETAIL INKED	<i>W.F. von Buehren</i> W.F. von Buehren	3/18/35	- 4/9/35
PRELIMINARY REVIEW	<i>J.J. Lanigan</i> J.J. Lanigan	8/13/35	- 8/15/35

AREA OF DETAIL INKED 4.1 Sq. Statute Miles (Land Area)
 AREA OF DETAIL INKED 1.2 Sq. Statute Miles (Shoals in Water Area)
 LENGTH OF SHORELINE (more than 200 m. from nearest opposite shore)
22.1 Statute Miles
 LENGTH OF SHORELINE (rivers and sloughs less than 200 m. wide)
29.5 Statute Miles

LENGTH OF STREETS, ROADS, TRAILS? RAILROADS, etc. 13.0 Statute Miles

GENERAL LOCATION Barnegat Inlet, N.J. Atlantic coast

LOCATION Barnegat Inlet City to South of Cedar Creek C.G. Sta.

DATUM North American 1927

STATION Barnegat Light 1872-'32

Latitude 39° 45' 51.178 (1578.4 m.)

Longitude 74° 06' 23.894" (568.7 M.)

(Final Office Adjusted Position)

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET FIELD NO. 47

GENERAL INFORMATION

The 1934 Air Photo Field Inspection Report for the east coast of New Jersey (Metedeconk River to Townsend Inlet) attached to the descriptive report for Air Photo Topographic Sheet Reg. No. T-5286, furnished the necessary field data for the compilation of this sheet. Additional information was obtained from Messrs. R.L. Fisher and G. Crowther, Draftsman and Surveyor respectively, who made the field inspection of this area.

The accompanying STATISTICS SHEET details all the data in connection with the compilation of this sheet.

This sheet was compiled from single lens photographs taken by the Aero Service Corporation, 1612 Chancellor St., Philadelphia, Pa. The photographs are on a 1:10,000 scale enlargement from the original negatives which are on an approximate scale of 1:21,800. There are two separate sets of these photos and each was taken at a different date from the other. No record was made of the hour at which these photographs were taken and so the stage of tide could not be determined. The dates of the two flights are shown on the STATISTICS SHEET, page 2 of this report. Accurate measurements were taken at intervals by the field party to determine the high water line and the distances were noted on the photos.

In addition, a supplementary set of photographs, M27 (871-14) to M43 (871-14), taken by the Soil Erosion Service of New Jersey, was used to aid in the interpretation of photographic detail. These photographs were ~~xxx~~ taken January 23, 1935 at 12:05 P.M., at which time the tide on the outer coast was approximately 0.1' above low water and that on the Bay, about 0.6' above low water. These tides were computed from the U.S. Coast and Geodetic Survey "Predicted Tide Tables". The photographs of the Soil Erosion Service are somewhat under scale, and so they were used only to supplement those taken by the Aero Service Corporation.

CONTROL

(A) Sources

The following sources of control were used in the compilation of this sheet.

(a) Triangulation by Lieut. C.D. Meaney in 1932, field positions adjusted to the North American Datum of 1927.

(b) Theodolite-observed recoverable topographic stations. (See item 4 on page 5 of the field inspection report of this area attached to the report for sheet Reg. No. T-5286?) These stations are shown by the regulation $2\frac{1}{2}$ millimeter black circle on this compilation sheet. There are four of these stations that occur on this compilation and their names are as follows:

Shack	House (Clam Id.)
Club (S. Gable Club Ho.)	House (U.S.E.)

They are all marked (d) on the overlay sheet and they have been described on Form 524.

(c) The co-ordinates of several U.S.E. stations were obtained and the stations were plotted. Most of these plotted positions were later checked by comparison with the U.S.C. & G.S. geographic positions available in the office and also by the theodolite-observed positions obtained from the Air Photo Field Inspection Party. Only stations "Tower U.S.E." and "Flagpole U.S.E." were not checked in this manner. These two stations were checked by the radial line plot and are both shown by the regulation $2\frac{1}{2}$ mm. black circle.

(B) Errors

There are no apparent errors in the control positions for this sheet. The control is in general strong, even though it is, for the most part, located in a narrow band along the center line of flight. In a few cases, the radial line plot allowed only two flat cuts, directly along the center line of flight, thus necessitating proportioning. With this exception, the radial line plot gave good intersections.

(C) Discrepancies

All U.S.E. stations mentioned above under CONTROL (A) Sources, (c), were later checked either by the U.S.C. & G.S. geographic positions or by the radial line plot.

No other control stations, established by other organizations, were used in the compilation of this sheet.

COMPILATION

(A) Method

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

(B) Adjustment of Plot

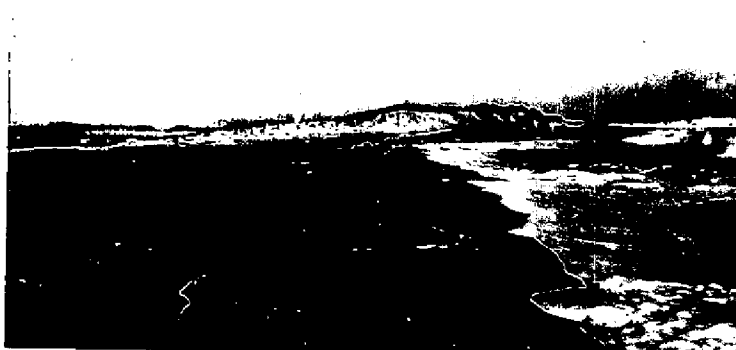
The photographs covering this area appear to have little scale fluctuation or tilt. No unusual adjustment, to the extent of causing any appreciable error, was found necessary.

(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.

Good motor roads are indicated by a double full line and poor motor roads by a double dashed line. A single ~~dash~~ dashed line was used to indicate exceedingly poor roads, trails or paths. There are many trails or roads leading from the main highways to the outer coast which are indicated by a single dashed line.

Where there was any difference in shoreline, bulkheads, docks, piers, houses etc., between the photographs taken by the Aero Service Corporation and those taken by the



At Island Beach, Barnegat Inlet (Near Δ Inlet 1932)
looking to northward. Shows eroding beach.

Additional Note:- Interpretation

The present edition of Chart No. 3243 of the U.S.C.&G. S. shows a Cable Area at Barnegat Inlet. The Air Photo Field Inspection Party did not pick up and identify the ends of the cables on the photographs when it made the inspection, and so this area is not shown on this compilation. It is assumed that Lieut. Rigg, who is conducting operations in this area at present, will pick up this information and show it on the completed sheets of his survey.

Soil Erosion Service of New Jersey, the information contained on the latter was accepted as correct, because they were taken at a later date. Any detail, however, identified and located by the Field Inspection Party was accepted in preference to that shown on any of the photographs because the photographs were taken in 1932 and 1933 and the inspection was made in early 1935.

None of the numerous ditches which occur in the marsh areas have been shown.

Some little difficulty was experienced in interpreting the high water line of many of the marsh islands; in particular, that of Sedge Islands and Sunset Shoal. The short-dashed line indicates that the positions of the high water line, shown in this area, may be questioned. Lieut. B.H. Rigg, who is at present conducting a combined-operations party in this locality, has been asked to clear up all these doubtful features and it is assumed that the results of his survey will indicate the correct position of the high water line in these questionable areas.

The shore line along the outer coast of Island Beach has been eroding quite rapidly in recent years; the Field Inspection Party estimates that the erosion has been as much as 200' in the past five years. The photograph on the opposite page shows a view of this shore line looking north from Forked River Coast Guard Station, and the bank shown on the photograph is constantly breaking off and eroding.

The water area between Barnegat Inlet and Sedge Islands is mostly shoal and is gradually filling in. This has been indicated on the overlay sheet.

~~There are two positions of high water line shown on the tip of land south of station Flagpole U.S.B. That shown by the short-dashed line was obtained from the photographs taken July 25, 1932 and that shown by the alternate long and short-dashed line was obtained from field measurements taken by the Air Photo Field Inspection Party in January 1935.~~

There are no bridges of importance to navigation which occur on this sheet.

All buildings are shown on this sheet, none having been intentionally left off.

Sand dunes on the outer coast line were determined mainly from the "M" photographs and are shown accordingly. Brush and grass occurs in the area between the dunes and the centers of the islands, and in some cases the division is very indistinct, the dunes often reaching far into the brush.

(D) Information from Other Sources

The Soil Erosion photographs were used for interpreting the photographic detail in areas where the Aero Service Corp. photographs were not distinct.

The U.S. Engineers 1932 Topographic Sheet of Barnegat Inlet, New Jersey (Drawer 44, File No. 2914) was used as an aid in interpreting the high water line in the area covering Sedge Islands and Sunset Shoal and also along the outer coast of Long Beach. In this latter instance, this sheet was followed in preference to a single measurement to the high water line given by the Air Photo Field Inspection Party, as that shown on the topographic sheet seemed most reasonable.

No other information was available from any other sources.

(E) Conflicting Names

The name "Sunset Shoal" which is shown on the overlay sheet does not occur on the present edition of U.S.C. & G.S. Chart No. 3243 of this area. This name, which does appear on the U.S. Engineers Topographic Sheet of this area, was picked up by the Field Inspection Party and its correctness was verified by questioning the local inhabitants. It is therefore assumed to be in local use and is accordingly shown on the overlay sheet and it is recommended that it be used on future editions of the Charts.

The name "High Bar" is shown on this overlay sheet in the same position as it appears on the U.S. Engineers Topographic Sheet. On U.S.C. & G.S. Chart No. 3243, however, the name appears on a sand bar south-west of Clam Island, which is outside the area covered by this compilation. Lieut. Rigg's completed sheets should show which of these two positions is the correct one.

There are no other names shown on this compilation that conflict with the names on the present U.S.C. & G.S. charts of the area.

COMPARISON WITH OTHER SURVEYS

This sheet joins with Sheet Reg. No. T-5099 on the south, with Sheet Reg. No. T-5330 on the north and with Sheets Reg. Nos. T-5096 and T-5098 on the west.

Junctions with these sheets have been compared and found satisfactory.

LANDMARKS

A list of landmarks, including those to be expunged, has been submitted by this party in the field inspection report which is attached to the Descriptive Report of Sheet Reg. No. T-5286. It is assumed that Lieut. B.H. Rigg, who is conducting operations in this area at present, will check the list and make any revisions if necessary.

There are also many other objects (such as houses, ends of docks etc.) which are located within the accuracy specified under the following heading, 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.

RECOMMENDATIONS FOR FURTHER SURVEYS

The compilation of this sheet is believed to have a probable error of not over 2 meters in well defined detail of importance for charting, and of not over 4 meters for other data. It is understood that 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 the lines and photographing as a solid area in the photo-lithographic process.

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

Submitted by:-

W. F. von Buehren
W. F. von Buehren
Draftsman

Assisted by:-

J. J. Lanigan
J. J. Lanigan
Surveyor

ADDITIONAL NOTE FOR COMPILATION? FIELD NO. 47.

After the completion of this compilation the 1935 Aluminum Control Sheets of Lieut. B.H. Rigg were furnished this party for comparison. The outer shoreline as shown on the compilation was revised where necessary in order to agree with the A.C. Sheets as they were executed at a latter date than when the field inspection of the photographs were made. There were no excessive corrections; the storm water line as shown at intervals on Lieut. Rigg's sheets has not been shown on this compilation as it could not be followed in its entirety on the photos and to show on the compilations for the remaining areas would be little better than a guess.

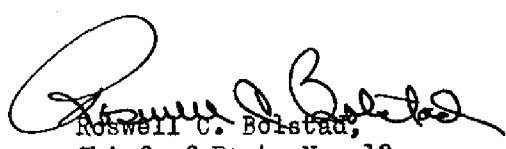
The shoal areas and marsh islands back of Barnegat Inlet are continually changing and appear at the present time to be filling in. In the absence of information by the 1935 topographic party the area has been detailed according to the 1932 photos and information furnished by the field inspecting party. The area is decidedly unstable and it is felt any small errors which may result by this method would be insignificant relative to the present rapid changes.

There are no discrepancies between this compilation and any of Lieut. Rigg's topographic control sheets of 1935; also all control (recoverable) existing in this area has been shown on the compilation. Triangulation station "Halsey 1926" is lost and has not been shown on this sheet; however the reference mark No. 1 was spotted by the field inspection party and was used in controlling the compilation and has been shown on this sheet by a small black circle. Lieut. Rigg's triangulation stations "Forked River C.G.F.T. 1935, Forked River C.G.W.T. 1935, and Barnegat C.G.W. Cable Cup. & Flagtower 1935" have been shown on this compilation although they were not used in controlling the compilation. Lieut. Rigg's position for topo. station "Flagpole (U.S.E.D.)" did not check the compilation position exactly, however as the spotting of this object on the photos was doubtful Lieut. Rigg's position was accepted as correct and is shown by a small black circle on this sheet.

The shoreline as shown on this compilation at the south side of Barnegat Inlet agrees with the shoreline as shown on Lieut. Rigg's topo. sheet "J" which was previously furnished this party for comparison. At that time it was noticed the shoreline in this area on sheet "J" did not agree with the shoreline as shown on his sheet "H"; this was called to his attention. As sheet "J" has not been furnished this party at the present time this cannot be re-investigated.

A search by the field inspecting party failed to reveal any trace of the cable area at Barnegat Inlet as shown on the present chart. There are no signs of any nature and information from the Coast Guard and other local dwellers failed to verify an existing cable area, furthermore there are no lines on poles leading to this area from the northward. No cable area has been shown on this sheet.

Dec. 11th., 1935.


Roswell C. Boistad,
Chief of Party No. 12.

Remarks

Decisions

1		SecDR H-6141
2	<i>Plural.</i>	RETAIN
3	<i>Singular</i>	RETAIN
4	<i>Questionable, as chart shows this to be a shoal south of</i>	
5	<i>claim. sd.</i>	RETAIN
6		RETAIN
7		RETAIN
8		RETAIN
9		RETAIN
10		CHART
11	Ties and rails have been removed. R.R. no longer exists.	EXPUNGE.
12	<i>Added by F.R. GOLLON</i>	
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

GEOGRAPHIC NAMES

Survey No. T-5097

1216

3243

On Chart
No.On previous survey
No.On U. S. quadrangle
MapsFrom
informationField Engrs.
Insp. PartyTopo.
Sheet

P. O. Guide or Map

Rand McNally Atlas

U. S. Light List

Name on Survey

	A	B	C	D	E	F	G	H	K	
Winter Anch	x									1
<u>Sedge Islands</u>	x			5 men x						2
<u>Clam Island</u>	x			5 men x						3
<u>High Bar</u> ?	x				<i>Remove.</i>					4
<u>Barnegat Inlet</u>	x			5 men x						5
<u>Barnegat City</u>	x			5 men x						6
<u>Island Beach</u>	x			6 men x						7
<u>Barnegat Bay</u>	x			7 men x						8
<u>Long Beach</u>	x			4 men x						9
<u>Sunset Shoal</u>				5 men x	x					10
<u>P.R.R.</u> <i>Delite</i>	x									11
<u>Atlantic Ocean</u>										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

Approved
by *O. E. Egner* 3/5/26

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 celloid because of poor projection. The attached computations may be used later. R.E. Ask

T-5097

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J.

STATION _____

x	<u>2,160,000.00</u>	$\log S_p$	<u>5. 20⁴ 3 11575</u>
K	<u>2,</u>	$\log (1200/3937)$	<u>9 . 4 8 4 0 1 5 8 3</u>
$x' (=x-K)$	<u>+ 160,000.00</u>	$\log (1/R)$	<u>10 86</u>
$x'^3/(6\rho_0^2)_s$	<u>- 1.56</u>	$\log S_m$	<u>4.687 14244</u>
S_p	<u>159,994.44</u>	cor. arc to sine	<u>- 42²</u>
		$\log S_1$	<u>4.588 1382²</u>
$3 \log x'$	<u>15.6123 5994</u>	$\log A$	<u>8.5091 2263</u>
$\log 1/(6\rho_0^2)_s$	<u>4.5810 213</u>	$\log \sec \phi$	<u>0.1146 937⁶⁷</u>
$\log x'^3/(6\rho_0^2)_s$	<u>0.1933 812</u>	$\log \Delta\lambda_1$	<u>3.314 9545²</u>
		cor. sine to arc	<u>+ 71⁶</u>
$\log S_m^2$	<u>9.374 28488</u>	$\log \Delta\lambda$	<u>3.314 9612⁸</u>
$\log C$	<u>1.3254 10</u>	$\Delta\lambda$	<u>50.9812</u> <u>2046.2642</u>
$\log \Delta\phi$	<u>0.702 095</u> <u>2</u>		
y	<u>365,000.00</u>		
ϕ' (by interpolation)	<u>39 50 07.6279</u>	λ (central mer.)	<u>74 40 00.0000</u>
$\Delta\phi$	<u>- 5.0130</u> <u>361</u>	$\Delta\lambda$	<u>- 34 40.9812</u>
ϕ	<u>39 50 02.6149</u> <u>5918</u> <u>8.06 mm</u>	λ	<u>74 05 53.7358</u> <u>127.78 mm</u>

79.9 m

1165.6 m

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' 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-5097b

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION _____

x	2,160,000.00	$\log S_g$	5.20311575
K	2	$\log (1200/3937)$	9.48401583
$x' (=x-K)$	+ 160,000.00	$\log (1/R)$	10.86
$x'^3/(6\rho_0^2)_g$	1.56	$\log S_m$	4.68814244
S_g	154,998.44	cor. arc to sine	420
		$\log S_1$	4.68813822
$3 \log x'$	15.61235994	$\log A$	8.50912367
$\log 1/(6\rho_0^2)_g$	4.5810213	$\log \sec \phi$	0.11443358
$\log x'^3/(6\rho_0^2)_g$	0.1933812	$\log \Delta\lambda_1$	3.31869585
		cor. sine to arc	+ 718
$\log S_m^2$	9.37828488	$\log \Delta\lambda$	9.31870258
$\log C$	1.325179	$\Delta\lambda$	2045.0436
$\log \Delta\phi$	0.699464		9.7578
y	350,000.00		
ϕ' (by interpolation)	39 47 39.3816	λ (central mer.)	74 40
$\Delta\phi$	5.057	$\Delta\lambda$	34
ϕ	39 47 34.3249	λ	74 05

1059.5m.

1195.4m.

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' 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-5097

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION _____

x	<u>2,160,000.00</u>	$\log S_e$	<u>5.20411575</u>
K	<u>2,000,000.00</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+ 160,000.00</u>	$\log (1/R)$	<u>1.086</u>
$x'^3/(6\rho_0^2)_0$	<u>1.56</u>	$\log S_m$	<u>4.68814244</u>
S_e	<u>159,998.44</u>	cor. arc to sine	<u>1422</u>
		$\log S_1$	<u>4.68813822</u>
$3 \log x'$	<u>15.61235994</u>	$\log A$	<u>8.50912472</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11417370</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.1933812</u>	$\log \Delta\lambda_1$	<u>3.31143664</u>
		cor. sine to arc	<u>+ 714</u>
$\log S_m^2$	<u>9.37628488</u>	$\log \Delta\lambda$	<u>3.31144378</u>
$\log C$	<u>1.324549</u>	$\Delta\lambda$	<u>2048.5368</u>
$\log \Delta\phi$	<u>0.700434</u>		
y	<u>335,000.00</u>		
ϕ' (by interpolation)	<u>39 45 11.1344</u>	λ (central mer.)	<u>74 40</u>
$\Delta\phi$	<u>5.0215</u>	$\Delta\lambda$	<u>34 08.5368</u>
ϕ	<u>39 45 06.1129</u>	λ	<u>74 05 51.4632</u>
	<u>(188.5 m.)</u>		<u>(1225.1 m.)</u>

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' 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-5097

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J.

STATION _____

x	<u>2,150,000.00</u>	$\log S_0$	<u>5.17608753</u>
K	<u>2,000,000.00</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+ 150,000.00</u>	$\log (1/R)$	<u>1.086</u>
$x'^3/(6\rho_0^2)_0$	<u>1.29</u>	$\log S_m$	<u>4.66011422</u>
S_0	<u>149,998.71</u>	cor. arc to sine	<u>271</u>
$3 \log x'$	<u>15.52827378</u>	$\log S_1$	<u>4.66011051</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5410212</u>	$\log A$	<u>8.50912471</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.1092951</u>	$\log \sec \phi$	<u>0.11417476</u>
$\log S_m^2$	<u>9.32022844</u>	$\log \Delta\lambda_1$	<u>3.28340998</u>
$\log C$	<u>1.324549</u>	cor. sine to arc	<u>+ 628</u>
$\log \Delta\phi$	<u>0.644777</u>	$\log \Delta\lambda$	<u>3.28341626</u>
y	<u>335,000.00</u>	$\Delta\lambda$	<u>1920.5086</u>
ϕ' (by interpolation)	<u>39 45 11.1344</u>	λ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>4.4134</u>	$\Delta\lambda$	<u>- 32 00.5086</u>
ϕ	<u>39 45 06.7210</u> (207.3 m.)	λ	<u>74 07 59.4914</u> (1416.3 m.)

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

ϕ' 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-5097

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION _____

x	<u>2,150,000.00</u>	$\log S_e$	<u>5.17608753</u>
K	<u>2,000,000.00</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+ 150,000.00</u>	$\log (1/R)$	<u>1086</u>
$x'^3/(6\rho_0^2)_0$	<u>- 1.29</u>	$\log S_m$	<u>4.66011422</u>
S_e	<u>149,998.71</u>	cor. arc to sine	<u>- 321</u>
		$\log S_1$	<u>4.66011051</u>
$3 \log x'$	<u>15.52827378</u>	$\log A$	<u>9.50912263</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11469473</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.1092951</u>	$\log \Delta\lambda_1$	<u>3.28392787</u>
		cor. sine to arc	<u>+ 629</u>
$\log S_m^2$	<u>9.32022844</u>	$\log \Delta\lambda$	<u>3.28393416</u>
$\log C$	<u>1.325410</u>	$\Delta\lambda$	<u>1922.8002</u>
$\log \Delta\phi$	<u>0.646038</u>		
y	<u>365,000.00</u>		
ϕ' (by interpolation)	<u>39 50 07.6279</u>	λ (central mer.)	<u>74 40 00.0000</u>
$\Delta\phi$	<u>- 4.4263</u>	$\Delta\lambda$	<u>- 32 02.8002</u>
ϕ	<u>39 50 03.2016</u>	λ	<u>74 07 57.1998</u>
	<u>98.7 m</u>		<u>1360.1 m</u>

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' 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-5097

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J.

STATION _____

x	<u>2,150,000.00</u>	$\log S_e$	<u>5.17608753</u>
K	<u>2,000,000.00</u>	$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+ 150,000.00</u>	$\log (1/R)$	<u>10.86</u>
$x'^3/(6\rho_o^2)_o$	<u>1.29</u>	$\log S_m$	<u>4.66011422</u>
S_e	<u>149,998.71</u>	cor. arc to sine	<u>3.71</u>
$3 \log x'$	<u>15.52827378</u>	$\log S_1$	<u>4.66011053</u>
$\log 1/(6\rho_o^2)_o$	<u>4.5810213</u>	$\log A$	<u>8.50912367</u>
$\log x'^3/(6\rho_o^2)_o$	<u>0.1092951</u>	$\log \sec \phi$	<u>0.11843456</u>
$\log S_m^2$	<u>9.32022844</u>	$\log \Delta\lambda_1$	<u>3.28366874</u>
$\log C$	<u>1.325179</u>	cor. sine to arc	<u>+ 6.28</u>
$\log \Delta\phi$	<u>0.645407</u>	$\log \Delta\lambda$	<u>3.28367502</u>
y	<u>350,000.00</u>	$\Delta\lambda$	<u>1921.6532</u>
ϕ' (by interpolation)	<u>39 47 39.3816</u>	λ (central mer.)	<u>74 40</u>
$\Delta\phi$	<u>4.4198</u>	$\Delta\lambda$	<u>32 01.6532</u>
ϕ	<u>39 47 34.9618</u> (1078.3 m)	λ	<u>74 07 58.3468</u> (1388.2 m)

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' 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-5097
Scale 1:10,000

Comparison with Graphic Control Surveys

T-6397b (June 1935), 1:10,000

No discrepancies noted

T-6398b (June 1935; additional work May 1936), 1:10,000

The air photo compilation has been made to agree entirely with the high water line as rodded in May 1936.

T-6499 (July 1935 and June 1936), 1:10,000

As above, the air photo compilation has been corrected in order that its high water line shall be in agreement with the rodded high water line shown on this graphic control survey.

The high water line in the vicinity of Barnegat Inlet is in a state of constant change. The change from year to year is considerable. There has been an attempt made to give the latest available information on the location of this high water line on T-5097. The result is a composite high water line drawn from several of the most recent surveys available. For this purpose the rodded high water line shown on T-6398b and T-6499 has been freely used in this compilation.

All detail on the above control sheets (three) falling within the area of this compilation is now shown on T-5097 with the exception of temporary planetable stations and magnetic meridians.

Comparison with Contemporary Hydrographic Surveys

H-6136 (Aug.-Sept. 1936), 1:20,000

The high water line about the point of land north of Barnegat Inlet agrees with that shown on the compilation before the latter had been corrected to be in agreement with the later surveys (graphic control sheet T-6398b). The compilation having been corrected, this change in location of high water line was brought to the attention of the Reviewing Section.

H-6140 (1936), 1:10,000

No discrepancies noted.

H-6141 (May-July 1936), 1:10,000

A few very minor discrepancies in size and position of several very small marshy islands have been brought to the attention of the Reviewing Section.

This hydrographic sheet has used a dashed line to represent a not too definite high water line about marshy tracts of land. The compilation differs in that such areas are represented by the conventional symbol for marsh with the omission of any line representing the high water line. This too has been brought to the attention of the Reviewing Section.

H-6142 (June-July 1936), 1:10,000

No discrepancies noted.

Comparison with Previous Topographic Surveys

T- 120	(1839),	1:20,000
T-1015	(1866),	1:10,000
T-1315b	(1873),	1:20,000
T-1371	(1874),	"
T-2457	(1899),	"
T-2458	(1899),	"

All of the above sheets show the severest kind of erosion and silting. All of these sheets show a gradual shifting of Barnegat Inlet primarily to the south and somewhat to the west. Since 1839 the point of land north of the Inlet has migrated about 1500 meters to the south; the width of the Inlet has decreased some 900 meters. Within the Inlet as without severe changes have occurred. Because of this extreme in erosion and silting none of the above sheets could be used in any way as a check upon the present compilation.

T-5097 is complete and adequate to supersede all of the above topographic sheets in those areas common to the new and older surveys.

Comparison with Chart 3243 (Oct. 1935), 1:80,000

At lat. 39° 46.8', long. 74° 05.8' is shown a fair sized island in mid-channel. This is no longer existent, the Ocean having broken through the spit of land to the east. This break has been filled in and existing conditions at the time of the last survey (May 1936) are shown on T-5097.

The high water line in the vicinity of the Inlet as shown on the chart does not conform to the compilation due to the severe erosion mentioned above.

The Penna. R. R. track shown on Long Beach has been taken up.

This compilation shows several small islands in addition to those on the present chart.

All aids to navigation and landmarks, with the exception of buoys, shown on that portion of chart 3243 covered by T-5097 are shown on the latter.

Remarks

Riggs' 1935 triangulation stations have been plotted from unadjusted values. Adjusted values now available show differences which do not exceed 0.5 m., this difference not being plottable. Therefore all stations may be considered to have been plotted from adjusted values.

Descriptions of recoverable stations (Form 524) are filed under T-6397b, T-6398b, and T-6499.

Due to the break that occurred at lat. $39^{\circ} 46.8'$, through the spit of land known as Island Beach and due to the fact that subsequent surveys gave only the new location of high water line in this vicinity, there exists some doubt whether the number of houses shown in this area is correctly depicted.

Feb. 10, 1937.

Frank R. Gollon.

Frank R. Gollon

v B G Jones

REVIEW OF AIR PHOTO COMPILATION NO.

Chief of Party: Roswell C. Bolstad

Compiled by: (see page 2 of
Compiler's Report)

Project: New York Air Photo Compilation Instructions dated: Nov. 15, 1932
Party No. 12

- ✓ 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)
- ✓ 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. 12b; 44; and 66 c, h, i)
- ✓ 7. High water line on marshy and ~~non-marshy~~ 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, ~~reef, sandbars, and shoals~~ ~~reefs~~, and legends pertaining to them is satisfactory. (Par. 36, 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)
- ✓ 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)

Previously submitted; see paragraph on LANDMARKS, page 6.
- ✓ 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)

No bridges of importance to navigation occur on this sheet.
- ✓ 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)
- ✓ 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 notes and reports affecting this area may be found in the 1934 Air Photo Field Inspection Report attached to Air Photo Topographic Sheet, Reg. No. T-5286. Reference may also be made to the report of Lieut. B.H. Rigg, who is conducting a combined-operations party in this area at the present time.

Preliminary Review:-

18. Examined and approved;

J. J. Langan
J. J. Langan
Surveyor

Roswell C. Bolstad
Roswell C. Bolstad
Chief of Party

19. Remarks after review in office:

Reviewed in office by:

Frank R. Gollon *By Jones*

Examined and approved:

C. H. Green
C. H. Green
Chief, Section of Field Records

L. O. Solbut
L. O. Solbut
Chief, Division of Charts

Fred. L. Peacock
Fred. L. Peacock
Chief, Section of Field Work

G. H. Wade
G. H. Wade
Chief, Division of Hydrography
and Topography.