

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. 70

REGISTER NO. T 5284

State New Jersey

General locality Eastern Coast of New Jersey

Locality Manasquan River

Scale 1:10,000 * Photographs- 4/19/32, 5/20/32, 7/24/32, 1/23/1933
Date of survey

Vessel Air Photo Compilation Party No. 12

Chief of party Roswell C. Bolstad

Surveyed by See "Statistics Sheet" in this report.

Inked by H. Mach

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 the scale of 1:10,000 and printed

by Photo Lithography

* Blue print on scale 1:10,000

- STATISTICS -
on
SHEET, FIELD NO. 70, REG. NO. T 5284

PHOTOGRAPHS AS FOLLOWS

66-32-(80-85) taken May 20, 1932
66-33-(31-34) " May 20, 1932
66-11-(26-30) " April 19, 1932
66- 51-(31-32) " Jan-July 24, 1932
M2705-M2714 (870-14) taken January 23, 1933 @ 11:49 A.M.

PROJECTION BY G. Crowther 8/27/34
PROJECTION CHECKED J.P.O'Donnell
A.P.O'Donnell 8/28/34
CONTROL PLOTTED G. Crowther 9/9/34
CONTROL CHECKED J.G. Albert 9/10/34
TOPOGRAPHY TRANSFERRED none
SMOOTH RADIAL LINE PLOT H.L. Hawkins 10/26/34
RADIAL LINE PLOT CHECKED W.E. Hackett 10/28/34
J.B. Moreland (shoreline) 11/ 5/34
DETAIL INKED & H. Mach 1/15/35
PRELIMINARY REVIEW J.G. Albert 6/20/35

AREA OF DETAIL INKED 21.2 sq. Statute Miles (Land Area)

AREA OF DETAIL INKED 0.2 sq. Statute Miles
(Shoals in Water Area)

LENGTH OF SHORELINE (more than 200 m. from nearest opposite
shore) 16.3 Statute Mi.

LENGTH OF SHORELINE (rivers and sloughs less than 200 m. wide)
26.1 Statute Miles.

LENGTH OF STREETS, ROADS TRAILS RAILROADS etc. 187.6 Statute Mi.

GENERAL LOCATION Eastern Coast of New Jersey

LOCATION Manasquan River

DATUM North American 1927

Latitude 40° 06' 41.851" (1290.8m.)

STATION Zeigler, 1934

Longitude 74° 04' 16.955" (401.5m.)

(Adj.)

COMPILERS REPORT
for
AIR PHOTO TOPOGRAPHIC SHEET, FIELD NO 70.

GENERAL INFORMATION

The AIR PHOTO FIELD INSPECTION REPORT dated Nov. 19, 1934, attached to the descriptive report for sheet No. T 5279 furnished the necessary field data for the compilation of this sheet.

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

The hourly times of the photographs used in this compilation were not available so the stage of the tide of the photographs was not determined. The field inspection party however sketched the high water line on the photographs in the field.

The photographs used in the compilation of this sheet were taken by the Aero Service Corporation of 1612 Chancellor St., Phila. Pa. with a single lens camera of 6" focal length, equipped with a n. Orthomesser lens. The photographs were taken at approximately a scale of 1:22,000 and enlarged to the scale of 1:10,000

Photographs of Jan 23 1935 used for reference only. Not used for plotting or field inspection. These photos were loaned by the W.L. Beach Croston Beach and are listed on the preceding page.

CONTROL

(A) Sources

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

- (a) Triangulation by Lieut. E.R. McCarthy in 1934, final adjusted office computations.
- (b) Topography on aluminum control sheets by Lieut. E.R. McCarthy in 1934.
- (c) Track traverse data of the Pennsylvania R.R. south from Allaire Station.

In addition to the triangulation control stated above, the following topographic signals were scaled from the aluminum control sheets, spotted on the photographs and used in controlling the plot:

Hun (F.P.)	M.N.R. 26 USE
Mat (Chy)	M.N.R. 27 USE
Pil (F.P.)	M.N.R. 31 USE
Par (Red roof Bath Ho.) *	M.N.R. 33 USE
Ta nk (near Hip)	M.N.R. 35 USE
M.N.R. 2 USE	P.M. 206 USE
M.N.R. 4 USE	No name (N. Wly angle in blkhd)
M.N.R. 5 USE	Ult
* M.N.R. 11 USE	Ode (Windmill)
M.N.R. 13 USE	Ill (Chy Yel. Ho.)
M.N.R. 16 USE	Bridge Tenders Ho.
M.N.R. 21 USE	M.N.R. 39 USE
M.N.R. 24 USE	

** Where elevations determined by triangulation see notes on back of this page.*

NOTE

The U.S.E. stations listed at bottom of page 3 have been computed and filed as triangulation (File no. GTZ(G2161) New Jersey) by McCarthy and are shown as triangulation stations on his Graphic Control Sheet No. T-6216a.

These stations were computed from a U.S.C. & G.S. base using angles of the U.S. Engineers observations and with several point checks with triangulation of the C. & G.S. (See McCarthy's report filed with triangulation above)

ADDITIONAL NOTE

As regards differences in location mentioned on the opposite page:

(1) The amount of these differences is as noted in red.

(2) MnR 27 U.S.E. - Triangulation position is accepted and plotted on the compilation. The photo plot agrees with other triangulation and with graphic control in this vicinity. The difference is due to incorrect spotting on the photographs.

(3) MnR 4 U.S.E. - Triangulation position accepted for same reason stated in (2) above.

(4) ~~0 III (chim. on yellow Ho)~~ and 0 Tanks (near H.P.) - spotting on photos subject to small error. Positions on T6216a accepted and shown on compilation.

(5) 0 II (chim. on yellow Ho) Air photo position accepted.

(6) 0 U.I.T. station not recoverable and not shown on compilation. Difficult to spot on photos and exact position not determined by photo plot. Probably in error on T6216a and has been referred to verifier as affecting H 5613. ^{station not used for hydrography} and is not recoverable.

B. J. Jones
4/20/36

The control toward the northwestern end of the sheet was considered inadequate to control the plot. The track traverse data of the Pennsylvania Railroad was therefore obtained and tied in to stations Allaire Tank and Jackson on the southerly part of Sheet Field No. 69, by field measurements near Allaire Station, and tied to the radial plot at the southeastern end of the traverse by several radial points in an area near triangulation stations. Various points along the railroad that could be spotted definitely on the photographs were then used as supplementary control.

Recoverable objects T.B.M. 1 and T.B.M. 3 were located on this compilation from an excerpt of Lieut. McCarthy's Topographic sheet. Spotting of these points on the photographs is practically impossible.

(B) Errors

The following signals from Lieut. McCarthy's Topographic sheets were found in error by the radial line plot.

° M.N.R. 27 USE	was located 12 m. on Az. 225°	(from North)	from the given position.
* Ill (Chy on Yel. Ho.)	" 14 ⁴ m. on Az. 15° 00'	"	"
+ M.N.R. 4 USE	" 11.5 m. on Az. 320° 30'	"	2
Ult	" 57 m. on Az. 02° 00'	"	"
Tank (near Hip)	" 7 m. on Az. 30°	"	"

The M.N.R. stations and signal Ult were pricked on the photographs from ground measurements. As the photographs were taken more than two years ago, it was very difficult to find suitable points on the ground from which to measure and which could be spotted on the photographs. It is therefore possible that these signals may be spotted slightly in error in the case of those a few meters out. It is improbable that the field inspection party could spot signal Ult so far in error however.

The control is in general strong and the radial lines gave good intersections. It is therefore believed that if the above signals are spotted correctly on the photographs, the positions given on the aluminum control sheet are in error as stated.

See opposite page

(C) Discrepancies

No discrepancies were found between this compilation and the Pennsylvania R.R. track traverse data used as supplementary control on this sheet. Except for this track traverse data, no control established by other organizations was used in the compilation of this sheet.

Topographic signal "End". The end of the pier on which Topographic signal "End" was located by Lieut. McCarthy's field party is thirty (30) meters east of the position as given by Lieut. McCarthy. The point shown on this compilation was radially plotted from photographs M2711, M2712, M2713 (870-14)

It is very possible that the end of this pier has been partially destroyed since the latest photographs were taken which would account for the discrepancy between the position as given by the D.M.S and D.P.s. and the radial plot.

See review at back.

COMPILATION

(A) Method

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

(B) Adjustments of Plot

The photographs of this area appear to have very little difference in scale due to variation in altitude or to tilting of the plane. In some areas however, considerable proportioning was necessary due to differences in the elevation of the ground.

No unusual adjustments to the extent of causing any appreciable error in this compilation was 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 topographic detail.

The double full line was used to indicate first order roads, the double broken line was used to indicate roads of lesser importance, and trails and paths have been shown by the single broken line. In most cases, unless marked on the field prints, the classification of these roads had to be determined under the stereoscope.

Wherever the course of a stream could not be traced definitely, the marsh symbol has been used to indicate the wet condition of the ground. This is especially true of the area west of Triangulation station "Ziegler". Where the marsh symbol appears in a narrow strip, the ground is lower than the surrounding territory. Stereoscopic study shows definite depressions in this area indicating that there might be a stream there. It was thought best to indicate the marsh as stated above instead of approximating the location of the stream.

The ground along the north shore of the Manasquan River from M.N.R. 17 USE to M.N.R. 39 USE is decidedly high and in some places there are thirty foot banks. Along the south shore of this river the ground also rises sharply and is lined with steep slopes from just north of M.N.R. 30 USE to a point about 500m. north of M.N.R. 36 USE.

The limits of the shoals in the Manasquan River Inlet are clearly defined on photo No. 66-51-32 and have been verified by the field inspection party. However, Lieut. McCarthy's Hydrographic sheet for this area will cover this area thoroughly with respect to shoals up to a more recent date. The shoals are shown on this sheet and are subject to change in case of a disagreement with the hydrography.

The Pennsylvania R.R. at a point just below parallel 40° 05' and east of Old Sams Pond changes from two to four tracks at the point shown on this sheet. This does not agree with the information furnished by the field inspection party, as noted on photo 66-11-27. The railroad track traverse data locates the point of change at the point shown on this compilation.

The Manasquan River extends beyond the point shown as its end on this sheet; The river is very narrow as is shown by the Navesink Inlet sheet of the U.S. Geological Survey. Its course beyond this point becomes very difficult to trace and is not shown.

The south shore of the inlet to Wreck Pond is shown with a dashed line to indicate a changing high water line; Photographs of this area taken at different times show this inlet in varying positions and it was therefore thought best to dash the high water line despite the fact that the field inspection party had sketched the high water line on photograph 66-51-30. * changed to solid

line and marked - subject to frequent change *egg*

BRIDGES, MANASQUAN RIVER

T 6216a

U.S.E. 1927 List

(1) R.R. Bridge

Bascule	Bascule
Overall length 1162'.....	-----
Clear. H. W. 4'.....	3'
Clear width of draw 48.5'.....	53.7'

(2) H.W. Bridge

Jack knife.....	Bascule
H.W. Clear. 7'.....	4.2'
Clear width of draw 50'.....	50'

(3) Old Squan Bridge

Swing (2 channel spans).....	Swing
H.W. Clear 5'.....	5.6'
Clear width of draw 32' and 32'.....	32.4' and 32'

Bay Head Manasquan Canal Bridge

Clear width of draw, 50.0'	
H. W. Clear.	13.0'

(D) Bridges

As the combined operations party of Lieut. McCarthy was operating in this area at the time of the field inspection, no bridges were measured by the field inspection party. The data necessary for these bridges will have to be obtained from the topographic and hydrographic sheets of Lieut. McCarthy. (cf. T-6216a)

There are three bridges on the Manasquan River, none of which are mentioned in the Coast Pilot for this area.

See opposite page for clearance values from graphic control survey T 6216a and U.S.C. list for 1927.

(E) Information from other sources

The track traverse data of the Pennsylvania R.R. was obtained from the division offices of the Pennsylvania R.R.

Several new names were obtained from the Map of this area published by the U.S. Geological Survey and were checked in the field.

(F) Conflicting Names

There are no names shown on this sheet that conflict with any names shown on the present charts of this area.

There are, however, several new names shown.

Newberry Lake. This lake is so named on the U.S. Geological Survey map of this area. It was locally verified by the field inspection party.

Cooks Pond, Old Sams Pond, Little Silver Lake. These names were also obtained from the U.S. Geological Survey Map and a map published by The Department of Conservation and Development of New Jersey, Division of Geology and Topography, Atlas Sheet No. 29. These names were locally verified by the field inspection party.

Osborn Island. This name appears on the above mentioned Atlas Sheet No. 29 spelled with an "e" on the end (Osborne). The U.S. Geological Survey and a Survey of this area made by the U.S.E.D. give this spelling without the final "e". It is so spelled on this compilation.

called Lake Louise on A. 5615

COMPARISON WITH OTHER SURVEYS

The junction with other sheets adjoining is satisfactory. The western limit of this sheet was determined by the photographs available.

The high water line between the railroad bridge over the Manasquan River and T.B.M. 3 as shown on this sheet differs decidedly from the high water line shown by Lieut. McCarthy. Photos taken during 1932 and 1933 show no change in this high water line. This is indicative that tidal currents do not affect the shoreline. Lieut. McCarthy shows a very great difference in the high water line at the eastern end of the two islands in this area. The field inspection party, operating in this area at the same time as Lieut. McCarthy, sketched this area on the photographs in the position shown on this sheet. The eastern end of the island on which triangulation station "Shell" is located shows a definite outline on the photographs where ~~revetment~~ banks have been constructed to hold the hydraulic fill recently.

placed on these islands. This is very clearly shown on photograph No. M 2711 (870-14) taken in 1933. The island to the north is an analagous case. These outlines were verified by the field inspection party.

For these reasons the high water line of these islands has been shown on this compilation as located by the field inspection party and not as located by Lieut. McCarthy. *

Sheet T 2470, affecting the northerly part of the ocean shore, was considered too old for minute comparison inasmuch as combined operations were carried on in this area in 1934.

** H.W. line from photo plot accepted
McCarthy's sheets shows only small section
of H.W. line detail. B.G.G.*

LANDMARKS

The list of landmarks for this area including those to be removed from the chart has undoubtedly been submitted by Lieut. McCarthy. No copy of this was furnished this office.

On Chart 1216, at Lat. 40° 07.6' Long. 74° 01.8' a Cup. is shown as a landmark. This is also shown on sheet T2470 as triangulation station Beach Ho. N Cup. Careful stereoscopic inspection of a large hotel in this area failed to reveal any cupolas. The shape and location of the hotel has changed also and it is believed that the former station has been lost and that this landmark should be removed from the charts.

No recoverable objects were located by the radial line plot as Lieut. McCarthy covered this area thoroughly with triangulation, locating almost all prominent objects in that manner.

*List of Landmarks attached to
Report T 6216 a-b*

RECOMMENDATIONS FOR FURTHER SURVEYS

The compilation of this sheet is believed to have a probable error of not over two (2) meters in well defined detail of importance for charting purposes, and of not over four (4) meters for other data. It is understood that the widths of the smaller roads and similar objects may be slightly expanded in order to keep the detail clear and to keep it from printing 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 additional surveys in this area are not required.

Submitted by

H. Mach
H. Mach
Draftsman

Assisted by

J.G. Albert
J.G. Albert.
Draftsman
H.L. Hawkins
H.L. Hawkins
Draftsman

RECOVERABLE TOPOGRAPHIC STATIONS

This list includes all recoverable stations, monumented or prominent natural objects suitable for hydrographic fixes shown on this sheet with the small black circle.

Description	Latitude			Longitude			Method of D P m determination
	o	'	D M m.	o	'		
Hun (F.P.)	40	07.9		74	01.8		A.C.S.
Mut (Chy)	40	07.5		74	01.9		A.C.S.
Pil (F.P.)	40	07.3		74	01.9		A.C.S.
Par (Red Roof Gab. Ho.)	40	06.6		74	02.0		A.C.S.
Ill (Chy. Yel Ho)	40	04	(707) 1144	74	03	(191) 1231	*A.P.T.
Ode (Windmill)	40	05.7		74	04.5		A.C.S.
P.M.206	40	06.0		74	02.8		A.C.S.
T.B.M. 1	40	06.1		74	02.1		A.C.S.
T.B.M. 3	40	06.2		74	02.1		A.C.S.
M.N.R. 2 USE	40	06.0		74	02.2		A.C.S.
M.N.R. 4 USE	40	06	(1693) 161	74	02	(618) 804	*A.P.T.
M.N.R. 5 USE	40	06.7		74	02.6		A.C.S.
M.N.R.11 USE	40	06.6		74	02.7		A.C.S.
M.N.R. 13 USE	40	06.4		74	03.0		A.C.S.
M.N.R. 16 USE	40	05.3		74	04.1		A.C.S.
M.N.R. 21 USE	40	05.6		74	04.3		A.C.S.
M.N.R. 24 USE	40	05.5		74	04.9		A.C.S.
M.N.R. 26 USE	40	05.8		74	05.3		A.C.S.
M.N.R. 27 USE	40	05	(180) 1671	74	05	(1248) 173	*A.P.T.
M.N.R. 28 USE	40	06.0		74	05.5		A.C.S.
M.N.R. 31 USE	40	06.3		74	05.2		A.C.S.
M.N.R. 33 USE	40	06.5		74	05.5		A.C.S.
M.N.R. 35 USE	40	06.8		74	05.5		A.C.S.

See Note *
next
page

List of recoverable topographic stations (cont.)

Description	Latitude			Longitude			Method of Determination
	o	'	D M m.	o	'	D P m.	
M.N.R. 39 USE	40	07.4	(504)	74	05.8	(607)	A.C.S.
Tank (near Hip)	40	04	1347	74	02	n814	*A.P.T.

see note
below *

Note:

A.C.S. denotes aluminum control sheet.
 *A.P.T. denotes position by 1935 Air Photo
 Topography, being a new location for signals
 from 1934 aluminum control sheets which were
 found to be in error.

* Note:

The Mnr stations listed on the preceding page have
 been located by triangulation File GTZ(G2161)New
 Jersey. See note opposite preceding page 4 for ex-
 planation

Remarks

Decisions

1	Two WORDS. D.G.N. } One word	ON U.S.G.S QUAD
2		
3		
4		
5		
6		
7	On photo-compilation only.	
8		
9	On photo-compilation only.	
10	Do.	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

GEOGRAPHIC NAMES

Survey No. T5284

Name on Survey	Source of Information										
	A	B	C	D	E	F	G	H	K		
<u>Sea Girt</u>	1216 1215						✓	✓	✓		1
<u>Manasquan</u>	1216		✓				✓	✓	✓		2
<u>Newberry Lake</u>				✓							3
<u>Manasquan Inlet</u>	1216										4
<u>Brielle</u>	1216		✓			✓	✓	✓			5
<u>Manasquan River</u>	1216		✓								6
<u>Cooks Pond</u>		Lake Louise									7
<u>Point Pleasant</u>	1216		✓			✓	✓	✓			8
<u>Old Sams Pond</u>											9
<u>LITTLE SILVER LAKE</u>											10
<u>Osborn Island</u>			USGS ✓								11
Wreck WRECK POND											12
ATLANTIC OCEAN											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

On Chart No.
 On previous survey No. #5615
 On U. S. quadrangle Maps
 From local information
 On local Maps
 P. O. Guide or Map
 Rand McNally Atlas
 U. S. Light List
By gmt.

Names underlined in red approved
 by *C. E. Ogden* on 3/3/36.

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:

$\frac{x}{y}$ _____

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. B.E.A.S.K.

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE New Jersey

STATION T-5284-1

x	2 155 000	$\log S_e$	5.19032772
K		$\log (1200/3937)$	9.48401583
$x' (=x-K)$	+ 155,000.00	$\log (1/R)$	1086
$x^2/(6\rho_0^2)_e$	1.42	$\log S_m$	4.67435441
S_e	154,998.58	cor. arc to sine	396
		$\log S_1$	4.67435045
$3 \log x'$	5.57099510	$\log A$	8.50911533
$\log 1/(6\rho_0^2)_e$	4.5810213	$\log \sec \phi$	0.11652606
$\log x'^2/(6\rho_0^2)_e$	0.15201640	$\log \Delta\lambda_1$	3.29999184
		cor. sine to arc	+ 677
$\log S_m^2$	9.34870882	$\log \Delta\lambda$	3.29999861
$\log C$	1.330219	$\Delta\lambda$	1995.2560
$\log \Delta\phi$	0.678928		
y	470 000.00		
ϕ' (by interpolation)	40° 07' 25".3219	λ (central mer.)	74° 40' 00.0
$\Delta\phi$	4.7745	$\Delta\lambda$	33 15.2560
ϕ	40 07 20.5474	λ	74 06 44.7440

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

ϕ' is interpolated from table of y

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

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

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

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

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

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

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE New Jersey

STATION T-5284-2

x	2,190 000.00	log S_1	5. 278 74 763
K		log (1200/3937)	9 . 4 8 4 0 1 5 8 3
x' (=x-K)	+ 190 000.00	log (1/R)	10 8 6
$x'^3/(6\rho_0^2)_s$	2.61	log S_m	4. 76 277 4 32
S_s	189 997.39	cor. arc to sine	595
		log S_1	4. 76 276 8 37
3 log x'	5. 83 626 80	log A	8. 509 115 34
log 1/(6\rho_0^2)_s	4. 58 102 13	log sec ϕ	0. 116 521 80
log $x'^3/(6\rho_0^2)_s$	0. 41 728 210	log $\Delta\lambda_1$	3. 38 840 55 1
		cor. sine to arc	+ 10 13
log S_m^2	9. 52 554 8 64	log $\Delta\lambda$	3. 3 884 15 64
log C	1. 330 219	$\Delta\lambda$	2445. 770 2
log $\Delta\phi$	0. 85 576 7 64		
y	470, 000.00		
ϕ' (by interpolation)	40° 07' 25. 3219	λ (central mer.)	74° 40' "
$\Delta\phi$	7. 174 1	$\Delta\lambda$	40 45. 770 2
ϕ	40 07 18. 147 8	λ	73 59 14. 229 8

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' is interpolated from table of y

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

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

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

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

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

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

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE New Jersey

STATION T-5284-3

x	2,155,000.00	$\log S_0$	5.19032772
K		$\log (1200/3937)$	9.48401583
$x' (=x-K)$	+155,000.00	$\log (1/R)$	1086
$x'^3/(6\rho_0^2)_0$	1.42	$\log S_m$	4.67435441
S_0	154 998.58	cor. arc to sine	896
		$\log S_1$	4.67435045
$3 \log x'$	5.57099510	$\log A$	8.50911639
$\log 1/(6\rho_0^2)_0$	4.5810213	$\log \sec \phi$	0.11626322
$\log x'^3/(6\rho_0^2)_0$	0.15201640	$\log \Delta\lambda_1$	3.29973006
		cor. sine to arc	+ 674
$\log S_m^2$	9.34870882	$\log \Delta\lambda$	3.29973680
$\log C$	1.329590	$\Delta\lambda$	1994.0535
$\log \Delta\phi$	0.278299		
y	455 000.00		
ϕ' (by interpolation)	40° 04' 57.0831"	λ (central mer.)	74° 40' "
$\Delta\phi$	4.7676	$\Delta\lambda$	33 14.0535
ϕ	40° 04' 52.3155"	λ	74° 06' 45.9465

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

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

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

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

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

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

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

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE New Jersey

STATION T-5284-4

x	2,190,000.00	$\log S_0$	5.27874763
K		$\log (1200/3937)$	9.48401583
$x' (=x-K)$	+190,000.00	$\log (1/R)$	1086
$x'^2/(6\rho_0^2)$	2.161	$\log S_m$	4.76277432
S_0	189,997.39	cor. arc to sine	595
		$\log S_1$	4.76276837
$3 \log x'$	5.83626080	$\log A$	8.50911639
$\log 1/(6\rho_0^2)$	4.5810213	$\log \sec \phi$	0.11625898
$\log x'^2/(6\rho_0^2)$	0.41728210	$\log \Delta\lambda_1$	3.38814374
		cor. sine to arc	+ 1016
$\log S_m^2$	9.52554864	$\log \Delta\lambda$	3.38815390
$\log C$	1.329590	$\Delta\lambda$	2444.2966
$\log \Delta\phi$	0.855139		
y	455,000.00		
ϕ' (by interpolation)	40° 04' 57.0831"	λ (central mer.)	74° 40' "
$\Delta\phi$	7.1637	$\Delta\lambda$	- 40 44.2966
ϕ	40° 04' 49.9194"	λ	73 59 15.7034

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' is interpolated from table of y

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

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

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

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

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

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

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE New Jersey STATION T-5284-5

x	2,175 000.00	log S_0	
K		log (1200/3937)	9 . 4 8 4 0 1 5 8 3
$x' (=x-K)$		log (1/R)	
$x'^3/(6\rho_0^2)$	-	log S_m	
S_0		cor. arc to sine	-
		log S_1	4.72705463
$3 \log x'$		log A	8.50911569
log $1/(6\rho_0^2)$		log sec ϕ	0.11643608
log $x'^3/(6\rho_0^2)$		log $\Delta\lambda_1$	3.35260640
		cor. sine to arc	+ 864
log S_m^2	9.45411936	log $\Delta\lambda$	3.35261504
log C	1.330009	$\Delta\lambda$	2252.2419
log $\Delta\phi$	0.784128		
	4		
y	365 000 00		
ϕ' (by interpolation)	40 06 35.9091	λ (central mer.)	74 40 "
$\Delta\phi$	- 6.0831	$\Delta\lambda$	37 32.2419
ϕ	40 06 29.8260	λ	74 02 27.7581

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

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 5284
Scale 1:10,000

Comparison with Graphic Control Surveys

T 6216a (1934), 1:10,000 - All described stations and inland waterway beacons were transferred from T 6216a to the compilation. These stations, together with copious triangulation in this area, give a spacing of one station approximately every quarter mile, which spacing was considered adequate for all future needs. For this reason, the numerous remaining recoverable objects not described (cupolas, flagpoles, etc.) were not transferred to the compilation.

Note

Station END (d), described as being the end of a pier which was torn away in August 1933 and rebuilt to a different length, is not shown on the compilation.

Station ILL (d) stated on page 4 of the preceding report to have been located 11 meters in error by the plane table party was found to have been only 4 meters out because the position of the station was incorrectly transferred from the graphic control sheet to the celluloid T 5284. The new position has been noted on the Form 524 card for the station.

The shape of the islands just inside the Manasquan River inlet does not agree with the compilation as stated on page 6 of the preceding report. While T 6216a is of slightly later date than the photographs, the field inspection in this area was contemporary with the plane table survey and therefore would have spotted any change since the date of the photographs. Stereoscopic examination of the photographs seems to justify the interpretation made by the field inspection and the compilation therefore is accepted as correct.

Note

The azimuth of the short stretch of railroad shown on T 6216a is slightly in error. This sort of error is practically impossible with photographs and this compilation is, therefore, accepted as correct.

Stations transferred by *R. M. Berry* and checked by *L. A. McGann*.

T 6215b (1934), 1:10,000 - Described stations JEL and ZEE were transferred from T 6215b to the compilation. No detail appears on T 6215b except numerous ^{undescribed} recoverable objects (flagpoles, cupolas, etc.) which have not been transferred. There is no conflict between T 6215b and the compilation.

Stations transferred by *R. M. Berry* and checked by *L. A. McGann*.

because of the density of recoverable stations already on the compilation

See report T6216a for discussion of W.S.E. Stas. and W.S.E. Grid shown in pencil on T6216a.

Stas 20w, Ale, and Kap on T6216a, Manasquan River are in shallow water near shore, are probably stakes, but are not described and are not shown in this compilation.

* A small wreck inside the shoal area in Debbies Creek just opposite the second island north of the mouth of Debbies Creek (40°06.6'-74°02.7') is not shown on the charts of this area.

Comparison with Previous Topographic Surveys

T 116 bis (1839), 1:10,000
 T 1084 (1868), 1:10,000
 T 2459 (1869), 1:20,000

Except for some contours on T 1084 the compilation is adequate to supersede all the above old topographic surveys in all points of detail throughout the area common to the compilation and the above surveys.

Comparison with Contemporary Hydrographic Surveys

H 5615 (1934), 1:10,000 - Shoreline on H 5615 was transferred from the air photo sheet and the few small discrepancies may be ascribed to careless transfer. *⊙ Wt on H 5615 as taken from T6216a. May be in error (see preceding page) and has been referred to the Hydro Verifier. Signal Wt not used for Hydrography. B&J.*
 There is no conflict between H 5615 and the compilation.

Comparison with Charts

* No. 1216 - All lights and beacons shown on the compilation except on the inland waterway are charted. Numerous cultural changes have taken place since the date of the surveys represented on the chart. There are no major differences.

* No. 3243 - Chart 3243 shows the inland waterway and, except for details incidental to the showing of the route of the inland waterway, is identical with chart 1216 in the area common to the two charts. All the beacons shown on the inland waterway are shown on chart 3243. There are no major differences.

General

The attention of the Division of Geographic Names is hereby called to the fact that the inland lake just south of Manasquan Inlet is called "Cook's Pond" on the air photo sheet and "Lake Louise" on the hydrographic and graphic control sheets. These names have both been approved. (T 5284 and H 5615.) *Refer to Capt. Hand for decision and to be corrected accordingly.*

A statement of the accuracy of this compilation better than that given on page 7 of the preceding report would be 0.2 mm. to 0.5 mm. for intersected points and 0.2 mm. to 1.00 mm. for other detail.

High Water Line on the Outer Coast

High water line on this compilation is of the date of the field inspection, July-October 1934. Field inspection report for the project is filed under T 5279

See page 3, first section of report, T 5279 regarding ground inspection on this project for changes during the interval between the date of the photographs, April-July 1932 and the field inspection, July-October 1934.

Changes in high water line were marked on the photographs by reference distances and sketching.

This method lends itself more readily to delineation of large changes than to small detail. In this area there is in general an abundance of permanent objects to which reference measurements can be made.

On this compilation very few changes are indicated and in general the H.W. line on the outer is about the same as of the date of the photographs, April to July 1932. Changes have occurred at sea girt and Manasquan embts

J. G. Jones

Landmarks, Lights and Beacons

The cupola, charted on chart No. 1216, lat. $40^{\circ} 07.6'$, long. $74^{\circ} 01.8'$, is recommended removed on page 7 of the preceding report.

All other landmarks, lights and beacons charted in this area or listed in the 1936 Light List are shown on the compilation.

Note The Naval Radio Compass Sta. at Manasquan chart 1216 was not located by the Graphic Control Survey nor by Field Inspection of the photos and is not shown on this compilation

April 9, 1936.

R. M. Berry
R. M. Berry

Additional Note:

Of the U.S. Engineers triangulation stations, only those stations to which C. & G.S. connections had been made were plotted on the compilation. ^{by the field party} The Manasquan River scheme of the U.S. Engineers was computed by McCarthy using the values of angles furnished by the Engineers and positions of the several stations that were tied in to the C. & G.S. system. For methods and checks, see McCarthy's Report on Computation, copy of which is attached as page 6 of the Descriptive Report T-6216a-b.

The remainder of these stations were added to the compilation in this office using McCarthy's computed positions filed as triangulation (File GTZ(G-2161) New Jersey). Stations plotted by R.M. Berry and checked by L.A. McGann.
R. M. Berry *L. A. McGann*

Additional Note:

Numerous small errors in location, shape, and number of buildings are present on this compilation. In view of the large amount of very detailed comparison with the photographs that would be necessitated by any attempt at rectification of these errors, no such attempt has been made.

V.B.G. Jones 4/20/36

REVIEW OF PHOTO TOPOGRAPHIC SURVEY NO. T 5284

Title (Par. 56)

Chief of Party Roswell C. Bolstad Compiled by See Statistics Sheet.

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

1. The survey and preparation for it conform to the requirements of the Topographic Manual. (Par. 8; and 16, a, b, c, d, e, g and i.) Paragraph 8 not applicable to this party.
2. The character and scope of the compilation satisfy the instructions and the "Notes on the Compilation of Planimetric Line Maps from Five Lens Aerial Photographs".
3. The control and adjustment of the radial plot were adequate. (Par. 12, 29.)
4. There is sufficient control on maps from other sources that were transmitted by the field party for their application to the charts. (Par. 28.)
5. High water line on marshy ~~and mangrove~~ coast is clear and adequate for chart compilation. (Par. 16a, 43, 44.)
6. 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.)
7. Important details shown on previous surveys and on the chart have been compared with this sheet and a statement has been entered in the report regarding the removal from the chart or change in position of important detail such as rocks, lights, beacons, prominent objects, bridges, docks, and structures along the water front.
8. The span, draw and clearance of bridges are shown. (Par. 16c.)
See Paragraph (D) Bridges, page 6
9. The data furnished by the Field Inspection is adequate.

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Use reverse side for extending remarks.

10. The descriptive report covers all details listed in the Manual, so far as they apply to this survey. (Par. 64, 65 and 66.)
11. The descriptive report also contains all additional information required in photo topography as prescribed in the instructions and in the "Notes on the Compilation of Planimetric Line Maps from Five Lens Aerial Photographs".
12. The descriptions of recoverable stations and references to shore line were accomplished on Form 524, and scaling of positions checked. (Par. 29, 30 and 57.) None submitted, refer to Lieut. McCarthy's reports for this area, 1934.
13. A list of landmarks for charts was furnished on Form 567 and scaling of positions checked. (Par. 16d, e, 60.) None submitted, refer to Lieut. McCarthy's reports for this area in 1934.
14. The geographic datum of the sheet is North American, 1927 and the reference station is correctly noted. (Par. 34.)
15. Junctions with contemporary surveys are adequate.
16. Geographic names are shown on the sheet and are covered by the Descriptive Report. (Par. 64, 66k.)
17. The quality of the drafting is good. (Par. 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 45, 46.)
18. No additional surveying is recommended.

19. Remarks: Any additional notes affecting this area may be found in the reports submitted by Lieut. E.R. McCarthy for his 1934 field work.

20. Examined and approved:

J. H. Albert - Draftsman
Russell C. Rolstad
 Chief of Party

21. Remarks after review in office:

Reviewed in office by: *Ralph Moore Berry*

V. B. Jones

Examined and approved:

B. K. Green
 Chief, Section of Field Records

Fred. L. Peacock
 Chief, Section of Field Work

L. O. Rolstad
 Chief, Division of Charts

Glenn
 Chief, Division of
 Hydrography and Topography.

Room 1209

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY DESCRIPTIVE REPORT PHOTOSTAT OF	}	No. H No. T 5284	{	received registered verified reviewed approved
--	---	---------------------	---	--

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE		Initial	Attention called to
20			
22			
24			
25		<i>[initials]</i>	<i>Page 6 Bridges</i>
26			
30			
40			
62			
63			
82			
83			
88			
90			

RETURN TO

82 Jones Rm 1209

please return promptly

42
22

applied to drawing of chart 1216 - Jan 3, 1937 - JFW
applied to chart 825 May 20, 1939 - JFW