

5285

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 } Sheet No. T5285
Hydrographic }

LOCALITY

Bay Head - Mantoloking
~~Atlantic Coast of New Jersey~~

Bayhead to Mantoloking

Metedeconk River

Date of Photos 19352

CHIEF OF PARTY

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

Applied to drawing of Chart 1216- Jan. 6, 1937- J.F.W.
" " compilation " 825 1939 R.L.J.

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. 71

REGISTER NO. T5285

State New Jersey

General locality Atlantic Coast of New Jersey Bay Head
Mantoloking

Locality Bayhead to Mantoloking Metedeconk River

Scale 1:10,000 Date of survey photographs Apr. 4, 1932; Apr. 19, 1932
May 20, 1932
Date of Compilation June 10, 1935

Vessel Air Photo Compilation Party No. 22, New York City

Chief of party Roswell C. Holstad

Surveyed by See data sheet enclosed in Descriptive Report for this sheet.

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 scale of 1:10,000 and printed by

Photo Lithography

-STATISTICS-

on

SHEET, FIELD NO. 71 REG. NO. T5285

PHOTOS, NO. <u>66-4-63</u>	DATE <u>Apr. 4, 1932</u>
PHOTOS, NOS. <u>66-11-23 to 66-11-26 incl.</u>	DATE <u>Apr. 19, 1932</u>
PHOTOS, NOS. <u>66-32-76 to 66-32-80 incl.</u>	DATE <u>May 20, 1932</u>
PHOTOS, NOS. <u>66-33-34 to 66-33-39 incl.</u>	DATE <u>May 20, 1932</u>
PHOTOS, NOS. <u>(870-14) M2715 to M2725</u>	DATE <u>Jan. 23, 1933</u>

Scale factor of this sheet is 1.000

PROJECTION	<u>G. Crowther</u> G. Crowther	<u>8-29-34</u>
PROJECTION CHECKED	<u>W. D. Ayers</u> W. D. Ayers	<u>8-29-34</u>
CONTROL PLOTTED	<u>R. H. Peckworth</u> R. H. Peckworth	<u>9-10-34</u>
CONTROL CHECKED	<u>J. P. O'Donnell</u> J. P. O'Donnell	<u>9-11-34</u>
TOPOGRAPHY TRANSFERRED	<u>H. L. Hawkins</u> H. L. Hawkins	<u>11-12-34</u>
TOPOGRAPHY CHECKED	<u>J. P. O'Donnell</u> J. P. O'Donnell	<u>11-12-34</u>
SMOOTH RADIAL LINE PLOT	<u>J. P. O'Donnell</u> J. P. O'Donnell	<u>9-11-34 to 9-16-34</u>
RADIAL PLOT CHECKED	<u>G. Crowther</u> G. Crowther	<u>6-7-35 to 6-8-35</u>
DETAIL INKED	<u>H. Mach</u> H. Mach	<u>2-21-35 to 6-10-35</u> (Intermittently)
PRELIMINARY REVIEW OF SHEET	<u>G. Crowther</u> G. Crowther	<u>6-10-35 to 6-20-35</u>

AREA OF DETAIL INKED 16.5 sq. Statute Miles (Land Area)

AREA OF DETAIL INKED 1.0 sq. Statute Miles (Shoals in water area)

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

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

LENGTH OF STREETS, ROADS, TRAILS, RAILROADS, etc. 120 Statute Miles

GENERAL LOCATION Atlantic Coast of New Jersey

LOCATION Bayhead to Mantoloking

DATUM North American 1927

STATION Bay Head (N.J.) 1932 Latitude 40° 04' 01.34" (35.3 m.)
Longitude 74° 02' 39.84" (944.2 m.)

(Office Adjusted Position)

adjusted

COMPILER'S REPORT

for

AIR PHOTO TOPOGRAPHIC SHEET, FIELD NO. 71

GENERAL INFORMATION

The Air Photo Field Inspection Report, attached to the descriptive report for Air Photo Topographic Sheet, Reg. Nos. T5286 and T5279, furnished the necessary field information for the compilation of this sheet.

The STATISTICS sheet (page 2) lists all 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., using a single lens camera equipped with an 8 inch focal length, Orthomesser lens, and enlargements made to a 1:10,000 scale from the original negatives which are on an approximate scale of 1:22,000. Since the time at which the photos were taken was not available, the stage of tide could not be determined.

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, North American 1927 datum, field positions unadjusted.
- (b) Triangulation by Lieut. C.D. Meaney in 1932, North American 1927 datum, field positions unadjusted for some stations and adjusted for others.
- (c) Aluminum Control Sheets, 1934 by Lieut. E.R. McCarthy (no index numbers of Lieut. McCarthy's Aluminum Control Sheets have been received in this office; positions of the signals from these sheets were scaled in the field and forwarded to this office.)
- (d) Theodolite observed recoverable topographic stations (see Field Inspection Report attached to Air Photo Compilation Sheet, Reg. No. T5286) as follows:
 - "Creek"
 - "Pen"

These stations are computed from observed angles and are on North American 1927 datum.

The following topographic signals, from Lieut. McCarthy's Aluminum Control Sheets (see (c) above) were spotted on the photos and used in controlling the sheet: X

T6246 Bayhead Chapel	Vin	Lol	Kin
T6246a Ill (Chy - Yellow House)		(Canal) Bridge Tender's House	T6246b
T6246b Fat (N. Gable Boat Ho.)		Shop - E. Gable Machine Shop	

NOTE: The difference in location of objects between this compilation and the graphic control surveys as listed on the opposite page and on page 5 have been examined and disposed of as indicated by notes in red.

These differences represent only local errors and do not indicate any appreciable error in the planetable traverses on the photo plot except in the case of O PEN on graphic control survey T 6216b listed on page 5. In this case the photo compilation has been checked by theodolite cuts and by graphic control survey T 6375b and is accepted as correct. The error on T 6216b apparently applies in varying amounts to all locations for about 1/2 mile south of latitude $40^{\circ} 01.8$ and west of longitude $74^{\circ} 04.2'$.

Notes have been made in green on T 6216a and T 6216b regarding the errors noted on the opposite page and the errors reported to the verifying section where they affect the Hydrographic Survey 5615.

B.G. Jones

T6216b	Lite	Rat	Nat	Nit - Chy on Ho.
	Ham	Fig	Bigh	Nun (E. Gable Packing House)
	Ilk	Kil	Let	Chy Brown Lodge
	End	Vex	W.S.P. Use	Quam (Chy on House)
	Awl	Pup	Vat	Cross-St. Simon Large
	Wop	Yam	Tip	Man (Bridge Tender's Ho.)
	Rot	Mix	Lac	S. Gable Boat House
	T.B.M. #2	Rin	New Signal	

All control was placed on the N.A. 1927 datum before starting the compilation. The adjustment was approximate, however, any final office adjustments would be unplotable at the scale (1:10,000) of this compilation.

(B) Errors *See also opposite page*

In making the radial plot, the following relocations of A.C.S. positions resulted:

- ✓ 9 Bayhead Chapel - Lat. $40^{\circ} 04.3'$, Long. $74^{\circ} 02.7'$ - the new position as determined by the radial line plot lies 9 meters distant in azimuth 117° (from north) from the position as shown on the A.C.S. ^{T6216b} This station was spotted by the field inspection party and shows clearly on the single lens photos. Plotting of the single lens photos, and direct measurements made on photos 66-11-25 and 66-11-26 verified the A.P.T. position. *Photo Compilation Position accepted*
- ✓ 9 Nun - Lat. $40^{\circ} 03.4'$, Long. $74^{\circ} 06.8'$ - the new position as determined by the radial line plot lies 7 meters distant in azimuth 196° (from north) from the position as shown on the A.C.S. ^{T6216b} The spotting of this station by the field inspection party places it at the easterly gable of a small building. *Photo Compilation Corrected to agree with T6216b*
- ✓ 9 Rin - Lat. $40^{\circ} 03.9'$, Long. $74^{\circ} 08.0'$ - the new position as determined by the radial line plot lies 10 meters distant in azimuth 259° (from north) from the position as shown on the A.C.S. ^{T6216b} This station may be spotted in error by the field inspection party as no method of checking was available in the office. *T6216b accepted. Photo compilation error*
- ✓ 9 Bigh - Lat. $40^{\circ} 04.1'$, Long. $74^{\circ} 05.3'$ - the new position as determined by the radial line plot lies 10 meters distant in azimuth 354° (from north) from the position as shown on the A.C.S. ^{T6216b} This station is a hydro signal banner and the spotting by the field inspection party could not be verified in the office by any other means. *T6216b accepted*
- ✓ 9 Nit - Lat. $40^{\circ} 03.1'$, Long. $74^{\circ} 02.8'$ - the new position as determined by the radial line plot lies 17 meters distant in azimuth 125° from the position as given on the A.C.S. ^{T6216b} This station is a chimney on a house which could be spotted in error by the field inspection party by only about 2 meters at most. Direct measurements on photo 66-11-25 to the railroad (which is well tied into the triangulation control) verified the A.P.T. position. *Photo Compilation Position accepted*
- ✓ 9 Quam - Lat. $40^{\circ} 02.6'$, Long. $74^{\circ} 03.0'$ - the new position as determined by the radial plot lies 9 meters distant in azimuth 110° from the position as given on the A.S.C. ^{T6216b} This station is a chimney on a house, the field spotting of which is believed to be correct and the radial location was verified by direct measurements to the railroad on photo 66-11-24. The A.P.T. position was also checked by radial *photo compilation position accepted*

plot, using photos Nos. (870-14) M2720 to M2722 on which the chimney was distinct.

- O Ill - Lat. $40^{\circ} 04.6'$, Long. $74^{\circ} 03.9'$ - the new position as determined by the radial plot lies 11 meters distant in azimuth 5° (from north) from the positions as given on the A.C.S. This station is a chimney on a house and as spotted by the field inspection party it is at the southeasterly end of the house. The A.C.S. position falls further south outside the house limits. The radial location was verified by a cut from photo 66-11-26, this cut being practically due west and definitely checking the error noted in the north-south direction. *Photo compilation position accepted see note opposite page 4.*
- ✓ O Pen - Lat. $40^{\circ} 01.7'$, Long. $74^{\circ} 04.7'$ - the new position as determined by the radial plot and verified by theodolite observations lies 14 meters distant in Azimuth 235° (from north) from the position as given on the A.C.S. *Photo Comp. Position of O Pen. accepted T62166*
- ✓ O Nat - Lat. $40^{\circ} 03.2'$, Long. $74^{\circ} 06.4'$ - the new position as determined by the radial plot lies 25 meters distant on azimuth 270° (from north) from the position as shown on the A.C.S. *T62166* it is believed that the error is in the take-off of the position from the Aluminum Sheet, since the small celluloid tracing from the A.C.S. shows the station position in the same position as the radial plot. *Command D. 11 T62166 accepted. No error in position.*

(C) Discrepancies

Railroad Traverse (Atlantic Division of the Pennsylvania Railroad) was used to help control the sheet on the outer coast. This traverse checked out correctly with the radial plot at various intersections, such as road crossings, and no adjustment of the traverse or plot was necessary.

No other control stations established by other organizations were used in this compilation.

COMPILATION

(A) Method

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

(B) Adjustment of Plot

The plot, as finally adjusted, yielded results which it is believed are within the required limits of accuracy (as stated in the paragraph RECOMMENDATIONS FOR FURTHER SURVEYS below). However, difficulty was encountered with the plot due to the insufficient overlapping of adjacent flights and of adjacent photos in the same flight. An adjustment at the lower end of the sheet with the radial plot of sheet T5286 was necessary but only slight and as finally adjusted the junction is perfect.

In addition to the errors noted in the positions of several topo control signals as listed under paragraph "Errors" above, small errors (14 meters) were discovered in the positions of "Pop", "Vat", "Wop", "Yam", "Fig", "New Signal" and "Ham". As other stations in this area checked very well it was thought best to adjust the plot so as to hold the A.C.S.

positions of those stations. Furthermore, there is no detail of importance in the area, that is, it consists of marsh, brush etc.

The railroad traverse along the outer coast which was plotted and used as control was of great value in the plot. The road crossings in the traverse checked very well with the radioplots locations and the traverse was very useful in holding the azimuth of the flight 66-11-21 to 66-11-26.

(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 double full line was used to indicate first order roads, the double broken line to indicate private drive-ways and roads of lesser importance. Exceedingly poor roads, trails or paths were shown by a single broken line. In most cases, unless labeled on the field prints, the classification of the roads had to be determined from their appearance under the stereoscope.

(D) Information from Other Sources

Railroad track traverse data of the Atlantic Division of the Pennsylvania Railroad was used in controlling this sheet as stated under CONTROL (C) Discrepancies and COMPILATION (B) Adjustment of Plot.

(E) Conflicting Names

There are no names on this sheet that conflict with the names on the present U.S.C. & G.S. Charts.

COMPARISON WITH OTHER SURVEYS

This sheet joins with sheet No. T5284 on the north and sheet No. T5286 on the south. Junctions with these sheets have been compared and found satisfactory.

LANDMARKS

It is assumed that a list of landmarks for this area has been previously submitted by Lieut. McCarthy, who was operating in this area in the summer and fall of 1934, although no list has been forwarded to this office.

There are many objects (such as houses, ends of docks, etc.) which are within the accuracy specified under the following heading, RECOMMENDATIONS FOR FURTHER SURVEYS, and may be used to obtain hydrographic "fixes". Care should be taken in using the houses to use the center of the house as the size shown on this sheet may be somewhat expanded.

RECOMMENDATIONS FOR FURTHER SURVEYS

The compilation of this sheet is believed to have a probable error of not more than 2 meters in well defined detail of importance for charting and of not over 4 meters for other detail. It is ~~believed~~ understood that the widths of roads and similar objects may

be slightly expanded in order to keep the detail clear and to keep it from 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.

Assisted by

G. Crowther
G. Crowther
Surveyor

Submitted by

H. Mach

H. Mach
Draftsman

LIST OF RECOVERABLE TOPOGRAPHIC STATIONS

(Includes all recoverable objects, sufficiently prominent for use as hydrographic fixes, shown as topographic stations with a small black circle on this sheet and not described on Form 524 by this party.)

Description	Latitude			Longitude			Method of determination
	°	'	D.M. meters	°	'	D.P. meters	
Bayhead Chapel (spire)	40	04	(1481) 370	74	02	(475) 947	A.P.T.*
Nun (east gable)	40	03	(1085) 766 773	74	06	(257) 1165 1163	A.P.T.*
Nit (chimney on house)	40	03	(1716) 134	74	02	(233) 1189	A.P.T.*
Quam (chimney on house)	40	002	(840) 1011	74	02	(62) 1362	A.P.T.*
Ill (chimney on house)	40	04	(708) 11443	74	03	(191) 1231	A.P.T.*
Lite (flagpole)	40	03.4		74	03.2		A.C.S. 1934
T.B.M. #2 (monument)	40	03.5		74	07.0		A.C.S. 1934
✓ Vex (flagpole)	40	03.1		74	07.7		A.C.S. 1934
Chimney Brown Lodge	40	03.2		74	07.4		A.C.S. 1934
Cross (St. Simon, large)	40	02.1		74	03.1		A.C.S. 1934
Man (center of house)	40	02.4		74	03.4		A.C.S. 1934
Fat (north gable boathouse)	40	03.5		74	04.7		A.C.S. 1934
Bridge Tender's Ho. (center)	40	04.3		74	03.6		A.C.S. 1934
Shop (east gable)	40	04.1		74	03.1		A.C.S. 1934
S. Gable Boathouse	40	03.4		74	04.9		A.C.S. 1934

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.

RECOVERABLE TOPOGRAPHIC STATIONS

(includes all recoverable objects, sufficiently prominent for use as hydrographic fixes, shown as topographic stations with a small black circle on this sheet and described on Form 524 by this party)

Description	Latitude			Longitude			Method
	°	'	D.M. meters	°	'	D.P. meters	
E. Chy. White Ho.	40	01	128	74	07	1318	1935 Theodolite
N. Gab. Grey Ho.	40	01	62	74	07	718	1935 Theodolite

Note: These stations located by theodolite observations were verified by air photo topography.

Remarks

Decisions

1		
2		
3		
4	<i>On photo compilation only.</i>	
5		
6		
7		
8		
9		
10		
11	<i>On photo compilation only.</i>	
12		
13		
14		
15	<i>On photo compilation only.</i>	
16	<i>"</i>	
17	<i>D.G.N. TWO WORDS BAY HEAD. P.O. GUIDE.</i>	<i>RAND McNALLY</i>
18	<i>On photo compilation only.</i>	
19		
20		
21		
22		
23		
24		
25		
26		
27		

GEOGRAPHIC NAMES

Survey No.

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
<u>Silverton</u> ✓	1216		✓				✓			1
<u>Cedar Bridge</u> ✓			✓							2
<u>Osbornville</u> ✓	1216					✓	✓			3
<u>Kettle Harbor</u> ✓				✓						4
<u>Kettle Creek</u> ✓	1216		✓				✓			5
Silverton										6
<u>Metedeconk River</u> ✓	1216		✓				✓			7
<u>Metedeconk Neck</u> ✓	1216		✓							8
<u>Havens Cove</u> ✓	1216		✓							9
<u>Havens Point</u> ✓	1216		✓							10
<u>Sloop Point</u> ✓				✓						11
<u>Swan Point</u> ✓	1216		✓							12
<u>Adamston</u> ✓						✓	✓			13
<u>Herring Island</u> ✓	1216									14
<u>Beaver Dam Creek</u> ✓										15
<u>Wardell Neck</u> ✓				✓						16
<u>Bayhead</u> ✓	1216					✓	✓			17
<u>Twilight Lake</u> ✓										18
<u>BARNEGAT BAY</u> ✓	1216						✓			19
<u>Mantoloking</u> ✓							✓			20
<u>Laurelton</u> ✓	1216			✓		✓	✓		*	21
										22
										23
										24
										25
										26
										27

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 New Jersey

STATION T-5285-1

x	<u>2,150 000.00</u>	$\log S_0$	<u>5.176 08752</u>
K		$\log (1200/3937)$	<u>9.484 01583</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>4.660 11421</u>
S_0	<u>149 498.71</u>	cor. arc to sine	<u>371</u>
$3 \log x'$	<u>5.528 27378</u>	$\log S_1$	<u>4.660 11050</u>
$\log 1/(6\rho_0^2)_0$	<u>4.581 0213</u>	$\log A$	<u>8.509 11671</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.109 29508</u>	$\log \sec \phi$	<u>0.116 17624</u>
		$\log \Delta\lambda_1$	<u>3.285 40345</u>
$\log S_m^2$	<u>9.320 22842</u>	cor. sine to arc	<u>+ 633</u>
$\log C$	<u>1.329 380</u>	$\log \Delta\lambda$	<u>3.285 40 978</u>
$\log \Delta\phi$	<u>0.649 608</u>	$\Delta\lambda$	<u>1929.3445</u>
y	<u>450,000.00</u>		
ϕ' (by interpolation)	<u>40 04 07.6700</u>	λ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>4.4628</u>	$\Delta\lambda$	<u>- 32 09.3445</u>
ϕ	<u>40 04 03.2072</u>	λ	<u>74 07 50.6555</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

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-5285-2

x	<u>2,185 000.00</u>	$\log S_0$	<u>5.26716607</u>
K		$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+185 000 00</u>	$\log (1/R)$	<u>1.086</u>
$x'^3/(6\rho_0^2)_0$	<u>2.41</u>	$\log S_m$	<u>4.75119276</u>
S_0	<u>184 997.59</u>	cor. arc to sine	<u>564</u>
		$\log S_1$	<u>4.75118712</u>
$3 \log x'$	<u>5.80151519</u>	$\log A$	<u>8.50911678</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11617211</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.38253649</u>	$\log \Delta\lambda_1$	<u>3.37647597</u>
	<u>950238552</u>	cor. sine to arc	<u>+ 964</u>
$\log S_m^2$	<u>950237429</u>	$\log \Delta\lambda$	<u>3.37648561</u>
$\log C$	<u>1.329380</u>	$\Delta\lambda$	<u>2379.4994</u>
$\log \Delta\phi$	<u>0.831765</u>		
y	<u>450,000.00</u>		
ϕ' (by interpolation)	<u>40 04 07.6700</u>	λ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>6.7882</u>	$\Delta\lambda$	<u>39 39.4994</u>
ϕ	<u>40 04 00.8818</u>	λ	<u>74 00 20.5006</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

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-5285-3

x	<u>2,150 000.00</u>	$\log S_0$	<u>5.17608752</u>
K		$\log (1200/3937)$	<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>4.66011421</u>
S_0	<u>149 998.71</u>	cor. arc to sine	<u>371</u>
		$\log S_1$	<u>4.66011050</u>
$3 \log x'$	<u>5.52827378</u>	$\log A$	<u>8.50911777</u>
$\log 1/(6\rho_0^2)_0$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11591390</u>
$\log x'^3/(6\rho_0^2)_0$	<u>0.10929508</u>	$\log \Delta\lambda_1$	<u>3.28514217</u>
		cor. sine to arc	<u>+ 632</u>
$\log S_m^2$	<u>9.32022842</u>	$\log \Delta\lambda$	<u>3.28514849</u>
$\log C$	<u>1.328751</u>	$\Delta\lambda$	<u>1928.1841</u>
$\log \Delta\phi$	<u>0.648979</u>		
y	<u>435 000.00</u>		
ϕ' (by interpolation)	<u>40 01 39.4297</u>	λ (central mer.)	<u>74 40 "</u>
$\Delta\phi$	<u>4.4563</u>	$\Delta\lambda$	<u>32 08.1841</u>
ϕ	<u>40 01 34.9734</u>	λ	<u>74 07 51.8159</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

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-5285-4

x	<u>2,185 000.00</u>	$\log S_e$	<u>5.267 16 607</u>
K		$\log (1200/3937)$	<u>9 . 4 8 4 0 1 5 8 3</u>
$x' (=x-K)$	<u>+185 000.00</u>	$\log (1/R)$	<u>1086</u>
$x'^3/(6\rho_0^2)_e$	<u>2.41</u>	$\log S_m$	<u>4.751 19 276</u>
S_e	<u>184 997.59</u>	cor. arc to sine	<u>564</u>
		$\log S_1$	<u>4.751 18 712 ✓</u>
$3 \log x'$	<u>5.801 51 519</u>	$\log A$	<u>8.509 11 778</u>
$\log 1/(6\rho_0^2)_e$	<u>4.581 02 13</u>	$\log \sec \phi$	<u>0.115 90 980</u>
$\log x'^3/(6\rho_0^2)_e$	<u>0.382 53 649</u>	$\log \Delta\lambda_1$	<u>3.376 21 470</u>
		cor. sine to arc	<u>+ 962</u>
$\log S_m^2$	<u>9.502 38 552 ✓</u>	$\log \Delta\lambda$	<u>3.376 22 432</u>
$\log C$	<u>1.328 751</u>	$\Delta\lambda$	<u>2378.0683</u>
$\log \Delta\phi$	<u>0.831 13 652</u>		
y	<u>435 000.00</u>		
ϕ' (by interpolation)	<u>40° 01' 39.4297</u>	λ (central mer.)	<u>74° 40' "</u>
$\Delta\phi$	<u>6.7785</u>	$\Delta\lambda$	<u>39 38.0683</u>
ϕ	<u>40 01 32.6512</u>	λ	<u>74 00 21.9317</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

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-5285-5

x	<u>2,170,000.00</u>	$\log S_e$	<u>5.23044414</u>
K		$\log (1200/3937)$	<u>9.48401583</u>
$x' (=x-K)$	<u>+170,000.00</u>	$\log (1/R)$	<u>1086</u>
$x'^3/(6\rho_o^2)_e$	<u>1.87</u>	$\log S_m$	<u>4.71447083</u>
S_e	<u>169948.13</u>	cor. arc to sine	<u>476</u>
		$\log S_1$	<u>4.71446607</u>
$3 \log x'$	<u>5.69134676</u>	$\log A$	<u>8.50911742</u>
$\log 1/(6\rho_o^2)_e$	<u>4.5810213</u>	$\log \sec \phi$	<u>0.11599907</u>
$\log x'^3/(6\rho_o^2)_e$	<u>0.27236806</u>	$\log \Delta\lambda_1$	<u>3.33958256</u>
		cor. sine to arc	<u>+ 813</u>
$\log S_m^2$	<u>9.42894166</u>	$\log \Delta\lambda$	<u>3.33959069</u>
$\log C$	<u>1.328960</u>	$\Delta\lambda$	<u>2185.7007</u>
$\log \Delta\phi$	<u>0.757902</u>		
y	<u>440,000.00</u>		
ϕ' (by interpolation)	<u>40° 02' 28.8432"</u>	λ (central mer.)	<u>74° 40'</u>
$\Delta\phi$	<u>5.7267</u>	$\Delta\lambda$	<u>36 25.7007</u>
ϕ	<u>40 02 23.1165</u>	λ	<u>74 03 34.2993</u>

Explanation of form:

$$x' = x - K$$

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

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

R = scale reduction factor

ϕ' is interpolated from table of y

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

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

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

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

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

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

REVIEW OF AIR PHOTO COMPILATION T 5285
Scale 1:10,000

Comparison with Graphic Control Surveys

T 6216a, (June 1934), 1:10,000

Only one station "111" in the area of this compilation. See page 4 and 5 of preceding descriptive report T 5285 for discussion of error.

T 6216b, (1934), 1:10,000

Entire sheet within the area of this compilation. See pages 4 and 5 of preceding descriptive report T 5285 for discussion and list of differences in location of objects.

In addition to the objects listed on pages 4 and 5 of report T 5285 the following undescribed planetable stations in Metedeconk River are slightly offshore and are probably stakes or piles. They do not show on the photographs and are not on this compilation; o His, o Let, o Ute and o Lot.

Except as mentioned above the compilation and T 6216b are in agreement.

A number of described stations have been transferred from T 6216b to this compilation in this office by direct transfer and have been checked by plotting from the card descriptions. *Bgg*

Except as listed below all detail on T 6216b is on this compilation.

1. Magnetic declination.
2. Temporary planetable stations.

31. Undescribed recoverable planetable stations such as gables of houses, chimneys, etc., which were located on T 6216b for control of Hydrography and have not been transferred to this compilation because of the density of recoverable stations already shown.

T 6375a and T 6375b, (May 1935), 1:10,000

These graphic control surveys cover the area of the compilation south of latitude $40^{\circ} 02.4'$ and are in agreement with the compilation except as noted below.

Recoverable stations on T 6375a and b have been transferred to the compilation in this office by *Bgg* and checked by *F.G.E. and R.B.*

All detail on T 6375a and b in the common area is now on the compilation except for temporary planetable stations, magnetic declination, and o Echim, white HC. This later station has not been transferred as it is within a few meters of o HO (d). (Lat. $40^{\circ} 01.1$, Long. $74^{\circ} 07.9'$)

2. Wreck of the ...

0 1 15 (...)

0 1 15 (...)

Note The following detail was added to this compilation ~~from~~ during the office verification from field inspection notes on the photos. This detail has been added subsequent to the review and application of H 5615 to the charts. It has been reported to the verifying section and noted in the report H 5615. *egg*

- | | | | |
|-----------|------------------------|--------------------------|----------|
| 1. Wreck | Lat $40^{\circ} 03.3'$ | Long $74^{\circ} 06.7'$ | <i>r</i> |
| 2. Wreck | Lat $40^{\circ} 03.8'$ | Long $74^{\circ} 04.9'$ | <i>r</i> |
| 3. Piling | Lat $40^{\circ} 03.8'$ | Long $74^{\circ} 04.98'$ | <i>r</i> |

HW Line on T 6375b (shown only north to 40° 02.4') is inshore of the compilation shoreline of November 1934 by from 1 to 25 meters. The compilation shoreline has not been changed as the control surveys furnish the later shoreline for a portion of the compilation only.

Comparison with Previous Topographic Surveys

x? T 116 (1839), 1:10,000; T 1084 (1868), 1:10,000; T 2459 (1899) 1:2,000

T 116 and T 1084 are detailed surveys covering roughly the area of the compilation. Comparison shows the same general ~~shape~~^{shape} of the shoreline but numerous small changes. There have been extensive changes due to construction of roads, railroads, the intracoastal canal, etc. T 1084 shows a fine line around the inner edges of the marsh whereas on the compilation this is represented by vegetation symbols.

T 2459 covers the outer strip of beach only.

The compilation is complete and adequate to supersede the sections of the above listed surveys which it covers.

Comparison with Hydrographic Surveys

H 5870 (1935), 1:10,000 H 5615 (1934), 1:10,000

Differences in location of signals as noted on pages 4 and 5 of the preceding descriptive report T 5285 have been reported to the verifying section for examination of possible affect on H 5615. H 5870 is not affected.

* See par. on ~~op~~ opposite page.

Otherwise the compilation detail is in agreement with the hydrography.

Comparison with Chart 1216

All Landmarks shown on the present chart and recommended by the recent graphic control surveys T 6216 and T 6375 are shown on this compilation.

The compilation shows numerous details such as roads, streets, small docks etc. not on the present chart.

Three lights shown on the compilation along the intracoastal waterway are not on chart 1216.

Bridge Data

The following information on bridges has been copied from graphic control survey T 6216b.

Hwy. Bridge	Swing Draw	Horizontal Clearance	Vert. cl.	Data from
Lat. 40° 03'	(Double)	30 ft.	at H.W. 15 ft.	T 6216b
Hwy. Bridge	Swing Draw	Horizontal Clearance	Vert. cl.	Data from
Lat. 40° 04'		50 ft.	at H.W. 14.5 ft	T 6216b
		between bulkheads		
Hwy. Bridge	Swing Draw	Horizontal Clearance	Vert. cl.	Data from
Lat. 40° 02'	(Double Channel)	50 ft. each side	at H.W. 4 ft.	T 6216b

HW Line

from HW Line on the compilation is of the date of Field Inspection, *to March 1935* about November 1934 and not of the date of the photos. Photographs for this compilation were made in April 1932, and field inspection of the coastal HW line was not made until November 1934. Since the mean High Water line is subject to frequent changes, it was determined as of November 1934 *to March 1935* by making reference measurements from permanent objects and sketching on the field photographs. See general report for the project, Page 13, T 5286. ~~The field photographs containing the record of reference measurements to HW line have not been received from the field party at this date and the frequency of such measurements is not known.~~ The accuracy of the HW line determined in this manner will depend upon the frequency of field measurements and sketching. *The method lends itself more readily to delineation of large changes than to small detail. No large changes have been indicated on the photographs for this compilation and HW line is about the same as when the pictures were taken, 1932.*

May 23, 1936

B.G. Jones

REVIEW OF PHOTO TOPOGRAPHIC SURVEY NO.

Title (Par. 56)

Chief of Party R. C. Bolstad

Compiled by (see page 2 of
Compiler's report)

Project New York Air Photo Compilation Instructions dated Nov. 15, 1938

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.)
See COMPILATION (B) Adjustment of Plot, page 5.
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.) *None*
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.)
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.)
13. A list of landmarks for charts was furnished on Form 567 and scaling of positions checked. (Par. 16d, e, 60.) *None furnished with this compilation*
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 *fair* 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:

James C. Goetz
Chief of Party

21. Remarks after review in office:

Reviewed in office by: *B.G. Jones* 5/27/36.

Examined and approved:

E. H. Green
Chief, Section of Field Records

L. O. Solant
Chief, Division of Charts

Fred. L. Peacock
Chief, Section of Field Work

Stude
Chief, Division of
Hydrography and Topography.