

6221a

U. S. COAST & GEODETIC SURVEY  
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Form 504  
Ed. June, 1923

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R.S. Patton, Director

State: New Jersey

DESCRIPTIVE REPORT

Topographic } Sheet No. G  
Hydrographic }

LOCALITY

~~Entrance to~~

Raritan River and Arthur Kill

Vicinity of Perth Amboy

193 4

CHIEF OF PARTY

E. R. McCarthy

6221a

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. G. 6221a

REGISTER NO.

State NEW JERSEY & NEW YORK

General locality & Arthur Kill  
PARITAN RIVER FROM ITS MOUTH TO PERKINS D.F.  
BRIDGE AND ARTHUR KILL TO LATITUDE 25° 01'.

Locality Vicinity of Perth Amboy large

Scale 1:5,000 Date of survey October, 1934

Vessel \_\_\_\_\_ Field Party No. 14

Chief of party Lieut. E. R. McCarthy

Surveyed by J. R. Brosnan

Inked by J. R. Brosnan

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

Contour, Approximate contour, Form line interval -- feet

Instructions dated May 10, 1934

Remarks: \_\_\_\_\_

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

DESCRIPTIVE REPORT  
TO ACCOMPANY  
TOPOGRAPHIC SHEET NO. G.

NEW JERSEY

Party No. 14

E. R. McCarthy,  
Lieut.(j.g.) C&GS,  
Chief of Party.

DESCRIPTIVE REPORT  
TO ACCOMPANY  
TOPOGRAPHIC SHEET NO. G.

AUTHORITY:

Instructions of the Director dated May 10, 1934.

LIMITS:

Raritan River from its mouth to the Pennsylvania Railroad Bridge and Arthur Kill from its mouth to Latitude  $25^{\circ} 31'$ . Includes a small section of Raritan Bay south of the Sunoco Oil Company docks.

METHODS & CLOSURES:

All stations were located by graphic triangulation except station General Cable (USE) and R & H (USE). Two sets of sextant angles were taken at each of these stations. Short traverses were run. These traverses were checked by frequent re-sections and no adjustments were necessary.

PURPOSE:

This sheet was executed on 5,000 scale as a check on the air-photo compilation as the stations located were identical with those spotted on the photographs by the air-photo compilation party of Lieut. R. C. Bolstad.

DESCRIPTION OF COAST:

The south shore of Raritan Bay is developed with coal loading elevators, power plants, barge racks and loading docks. Arthur Kill which is an important waterway, is developed on the west side (Perth Amboy) with manufacturing plants, coal elevators, barge racks and marine railways. The east shore of this waterway is developed with small wharves and marine railways with a small amount of sand beach on the southern end.

TOWNS & BOROS:

SOUTH AMBOY:

South Amboy is on the south shore of Raritan Bay at the mouth of the Raritan River and is important commercially for the shipment of coal, petroleum and building material.

PERTH AMBOY:

Perth Amboy is a manufacturing town located excellently for shipping by boats, railway or motor. A ferry and a bridge connects Perth Amboy to Staten Island. The water front is lined

with docks but in recent years, due to a decline in business, these docks have run down and are in need of repairs. There is a drydock here capable of hauling out boats to a size of large sea-going tugs.

T  
TOTENVILLE:

A few small marine railways are located here. The town is largely residential.

U. S. ENGINEERS SURVEYS:

The control of the U. S. Engineers consists of a system of traverse and triangulation along both banks of the Kill, which was originally put down about 1912 and has been revised, added to, and - in sections - re-run at irregular intervals up to the present time. The greater part of it comprises a base line for control of their hydrographic surveys.

Some of the base line stations are monumented with permanent concrete marks and the sounding stations - usually on piers and docks - located from base line monuments. The sounding stations are marked with nails or tacks or wooden hubs and are not intended for permanency.

Some of the base line stations were located by the 1932 triangulation survey and some additional base line monuments and all the sounding stations that could be recovered by topography.

The co-ordinate system of the Engineers was plotted on the sheet by assuming that the co-ordinates of the station Mon 6A (USE) was correct as given and then making a projection by drawing in the two thousand five hundred (2,500) foot intervals perpendicular to and parallel to the latitudes.

A number of engineer stations located by triangulation or topography were then plotted by co-ordinates and the following differences noted:

WEST BANK -- ARTHUR KILL

|                     |                                              |
|---------------------|----------------------------------------------|
| Rack (USE)          | -1 meter (N), 1 meter (W) of true station    |
| General Cable (USE) | -No error.                                   |
| Dry Dock (USE)      | -2.5 meters (N), 1 meter (W) of true station |
| R & H (USE)         | -1 meter (N), 1 meter (W) of true station    |
| Chemical (USE)      | -1 meter (N), 1 meter (W) of true station    |
| Mercantile (USE)    | -No error (N&S), 1 meter (W) of true station |

WEST BANK - ARTHUR KILL (Continued)

|              |                                                   |
|--------------|---------------------------------------------------|
| Texaco (USE) | ---- 3 meters (N), No error (E&W) of true station |
| High (USE)   | ---- 5 meters (N), 3.3 meters (W) of true station |
| RNR 2 (USE)  | ---- 5 meters (N), 6 meters (W) of true station   |
| Sunoco (USE) | ---- 5 meters (N), 8 meters (W) of true station   |
| Sunoil (USE) | ---- 3.2 meters (N), 9 meters (W) of true station |

EAST BANK - ARTHUR KILL

|               |                                                    |
|---------------|----------------------------------------------------|
| Bentley (USE) | --- 0.5 meters (S), 0.5 meters (W) of true station |
| NIRA (USE)    | --- 1.5 meters (S), 2.5 meters (W) of true station |
| Willow        | --- 1.0 meters (S), 0.5 meters (W) of true station |

AIR-PHOTO COMPILATION:

The primary purpose of Sheet "G", scale (1:5,000) was to test the accuracy of the location of signals by air-photo compilation methods.

The topographic party of 1934 recovered a large number of the points located by the air-photo compilation party and located them by graphic triangulation with practically no error. Discrepancies between the two locations (topographic and compilation) are shown on the following table. It will be noted that the average error is 1.7 meters, the average N & S error is 0.63 meters and the average E & W error is 1.6 meters.

LANDMARKS:

List of landmarks is attached.

SHORELINE:

All shoreline shown in pencil was taken from blueprints furnished by the air-photo office.

Respectfully submitted,

*J. R. Brosnan*

J. R. Brosnan,  
Topographer, C & G Survey.

Approved & Forwarded:

*E. R. McCarthy*

E. R. McCarthy,  
Lieut.(j.g.) C&GS,  
Chief of Party.



SUPPLEMENTAL REPORT OF CHIEF OF PARTY:

The accuracy of the air photo compilation methods as shown by the survey is not better than an average of 1.7 meters. This value for a scale of 1:5,000 and considering the large amount of control seems high.

The maximum difference is five meters and the minimum difference zero. The corrections are both plus and minus indicating that there is no systematic error in compilation.

The sheet does not constitute an absolute test on the accuracy of air-photo compilation methods as the original photographs were taken on a 1:24,000 scale and enlarged to a 1:5,000.

Respectfully submitted,

*E. R. McCarthy*

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E. R. McCarthy,  
Lieut.(j.g.) C&GS,  
Chief of Party.

*See Review of T-5109 (Air Photo Compilation)*

COMPARATIVE VALUES OF POSITIONS AS DETERMINED BY  
GRAPHICAL CONTROL AND AIR-PHOTO TOPOGRAPHIC METHODS

| Name                    | Latitude |    |    | D.M.   | A.P. Error | Longitude |    |    | D.P.   | A.P. Error | Remarks     |
|-------------------------|----------|----|----|--------|------------|-----------|----|----|--------|------------|-------------|
|                         | °        | '  | "  | Meters |            | °         | '  | "  | Meters |            |             |
| Sunoil (USE)            | 40       | 29 | 00 | 243✓   | 243 0      | 74        | 16 | 50 | 126✓   | 121 - 5    |             |
| Sunoco (USE)            | 40       | 29 | 00 | 595✓   | 592 - 3    | 74        | 16 | 00 | 460✓   | 459 - 1    |             |
| Penn. (USE)             | 40       | 29 | 00 | 717✓   | 715 - 2    | 74        | 16 | 00 | 549✓   | 550 / 1    |             |
| Penn. sub (USE)         | 40       | 29 | 00 | 714✓   | 714 0      | 74        | 16 | 00 | 572✓   | 575 / 1    |             |
| High (USE)              | 40       | 29 | 30 | 838✓   | 838 0      | 74        | 16 | 00 | 183✓   | 186 / 2    |             |
| New Ferry sub<br>(USE)  | 40       | 29 | 30 | (46)✓  | (46) 0     | 74        | 15 | 00 | 237✓   | 242 / 5    |             |
| Mercantile (USE)        | 40       | 30 | 00 | 760✓   | 765 / 5    | 74        | 15 | 50 | 314✓   | 314 0      |             |
| Texaco (USE)            | 40       | 30 | 00 | 332✓   | 332 0      | 74        | 15 | 50 | 378✓   | 378 0      |             |
| Perth (USE)             | 40       | 30 | 00 | 36✓    | 36 0       | 74        | 15 | 50 | 655✓   | 657 / 2    |             |
| N.I.R.A. (USE)          | 40       | 30 | 00 | 828✓   | 828 0      | 74        | 15 | 00 | (222)✓ | (224) / 2  |             |
| Mon Willow (USE)        | 40       | 30 | 00 | 426✓   | 425 - 1    | 74        | 15 | 00 | (226)✓ | (226) 0    |             |
| Chemical (USE)          | 40       | 30 | 30 | 165✓   | 164 - 1    | 74        | 15 | 30 | 181✓   | 182 / 1    |             |
| Dry Dock (USE)          | 40       | 30 | 30 | 340✓   | 340 0      | 74        | 15 | 30 | 98✓    | 101 / 3    |             |
| Public Service<br>(USE) | 40       | 30 | 30 | 664✓   | 663 - 1    | 74        | 15 | 00 | (26)✓  | (24) - 2   |             |
| Rack (USE)              | 40       | 31 | 00 | 922✓   | 922 0      | 74        | 15 | 00 | 527✓   | 527 0      |             |
| Battery (USE)           | 40       | 29 |    | (411)✓ |            | 74        | 14 |    | (75)✓  |            | 10000 scale |
| Wards Pt.(USE)          | 40       | 29 | 30 | 605✓   |            | 74        | 15 | 00 | 111✓   |            | 10000 "     |

Average =  $15 / 11$  M.  
0.65 M.

Average =  $15 / 25$  M.  
1.60 M.

Average error both directions =  $\sqrt{(0.65)^2 + (1.6)^2} = \sqrt{2.95} = 1.72$  M.



DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY

## LANDMARKS FOR CHARTS

## NON-FLOATING AIDS TO NAVIGATION

Manila, Fla.

February, 1935

DIRECTOR, U.S. COAST AND GEODETIC SURVEY:

The following determined objects are prominent, can be readily distinguished from seaward from the description given below, and should be charted:

E. R. McCarthy

*Chief of Party.*

[illegible]

A list of objects carefully selected because of their value as landmarks as determined from seaward, together with individual descriptions, must be furnished in a special report on this form, and a copy of such report must be attached by the Chief of Party to his descriptive report.

The selection, determination, and description of these points are an important factor in the value of the chart. Landmarks selected at appropriate intervals can be clearly charted. However, when none is outstanding, a group of two or three objects may by their interrelationship provide positive identification. A group so selected should be indicated.

The description of each object should be short, but such as will clearly identify it; for example, a standpipe, elevated tank, gas tank, church spire, tall stack, red chimney, radio mast, etc. Assign numerals to landmarks to indicate: (1) Offshore, (2) inshore, (3) harbor, 1, 2, 3 would be a mark useful on all charts. Generally, flagstaves and like objects are not sufficiently permanent to chart.

REVIEW OF GRAPHIC CONTROL SURVEY T-622/a, SCALE 1/5000,

## Date of Review

1. This survey has been reviewed in connection with Air Photo Compilation Nos. T-5109, , with particular attention to the following details:

- (a) Projection has been checked in the Field.
- (b) Accuracy of location of plane table control points.
- (c) Discrepancies between detail on this survey and the air photo compilations listed above.
- (d) Discrepancies found in descriptions submitted on Form 524 when compared with the air photo compilations listed above.

2. Refer to the reviews and descriptive reports of air photo compilations Nos. T-5109, , for a more complete discussion of any errors or discrepancies found.

Any material errors found on this survey are noted in subsequent paragraphs of this review, and these have been reported to the Field Records Section and the Cartographic Section.

Notes and corrections resulting from the review are shown on this survey in green.

① Flagpole & ② Perth *rejection*  
Descent Stations Chemical, Dry Dock Texaco, High, Sunoil, Rack,  
Public Service, Sunoco, & Switch House are filed under T-5109

6/28/35

Frank G. Enghine

6221b

U. S. COAST & GEODETIC SURVEY  
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Acc. No.

|                                                                                     |              |
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| Form 504<br>Ed. June, 1928                                                          |              |
| DEPARTMENT OF COMMERCE<br>U. S. COAST AND GEODETIC SURVEY<br>R. S. Patton, Director |              |
| State: New Jersey                                                                   |              |
| DESCRIPTIVE REPORT                                                                  |              |
| Topographic<br>Hydrographic                                                         | Sheet No. GG |
| LOCALITY                                                                            |              |
| The South River                                                                     |              |
| Sayerville to Old Bridge                                                            |              |
| 1934                                                                                |              |
| CHIEF OF PARTY                                                                      |              |
| E. R. McCarthy                                                                      |              |

U. S. GOVERNMENT PRINTING OFFICE: 1918

6221b



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. G. G.

REGISTER NO. 6221b

State New Jersey

General locality South River

Locality Sayerville to Old Bridge

Scale 1:10,000 Date of survey October, 1934

Vessel Field Party No. 14

Chief of party E. R. McCarthy

Surveyed by A. E. Durie

Inked by A. E. Durie and S. M. Green Jr.

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

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

Instructions dated May 10, 1934

Remarks: .....

Descriptive Report  
to accompany  
Topographic Sheet GG

AUTHORITY:

Instructions of the Director dated May 10, 1934.

LIMITS:

The South River, Sayerville to Old Bridge.

CONTROL:

Ample control stations well distributed over the sheet from 1932 - 34 triangulation.

METHODS:

All topographic stations were located by plane table cuts. Shoreline was located only where needed to supplement the aerial photo topography. A short dead end traverse was run to locate the tanks and stacks at Old Bridge.

DESCRIPTION OF SHORELINE:

The South River shoreline in general is a narrow fringe of marsh and grass backed by clay banks. There are many brick and tile manufacturing plants located on both sides of the river, most of which have been out of operation for several years and at present are more or less in a dilapidated condition.

BOROS:

Old Bridge was the only boro within the surveyed limits of the sheet. It is small and is the location of a few manufacturing plants (breweries, sand and gravel firms).

U. S. ENGINEERS SURVEYS:

The engineers control on the South River is a dead end traverse which began at RnR 16 and came to a dead end at Old Bridge. Some of the base stations tied into the traverse were located by triangulation, but no attempt made to compute the traverse.

The Original control was a triangulation survey by the Port Raritan Commission in 1928. Very little information concerning it is available and the stations established in 1934

U. S. ENGINEERS SURVEYS: (CON'T)

should serve as control for the U. S. Engineers Surveys.

None of the Engineers stations were permanently marked.

LANDMARKS:

List of landmarks is attached.

Respectfully Submitted..

*A. E. Durie*

A. E. Durie, Surveyor,  
U. S. C. & G. Survey,  
Topographer.

Approved and Forwarded:

*E. R. McCarthy*

E. R. McCarthy, Chief of Party No.14  
U. S. C. & G. Survey.

DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEYLANDMARKS FOR CHARTS  
Sheet GG

Miami, Florida

February 26, 1935

DIRECTOR, U.S. COAST AND GEODETIC SURVEY:

The following determined objects are prominent, can be readily distinguished from seaward from the description given below, and should be charted:

E. R. McCarthy

Chief of Party.

| DESCRIPTION                                                       | POSITION |    |             |    |    | N.A.<br>DATUM<br>1927 | METHOD<br>OF DETER-<br>MINATION | CHARTS<br>AFFECTED |
|-------------------------------------------------------------------|----------|----|-------------|----|----|-----------------------|---------------------------------|--------------------|
|                                                                   | LATITUDE |    | LONGITUDE   |    |    |                       |                                 |                    |
|                                                                   | °        | '  | D.M. METERS | °  | '  |                       |                                 |                    |
| SPIRE<br>(Trian. Catholic Ch.<br>Sayerville 1932)                 | 40       | 27 | 904.7       | 74 | 21 | 908.9                 | "                               | Trian.             |
| TANK (BLEW) blk.<br>(Tri. Tank No. 1 Hercules<br>Powder Co. 1932) | 40       | 27 | 351.7       | 74 | 20 | 366.9                 | "                               | Trian.             |
| TOWER open metal<br>(Tri. Tower, Hercules Pwd.<br>Co. 1934)       | 40       | 27 | 132.3       | 74 | 20 | 587.5                 | "                               | Trian.             |
| TANK (BLEW) blk.<br>(Tri. Hercules 1934)                          | 40       | 27 | 53.7        | 74 | 20 | 348.0                 | "                               | Trian.             |
| SPIRE, green<br>(Tri. St. Marys Cath. Ch. 1932)                   | 40       | 26 | 1836.8      | 74 | 22 | 978.2                 | "                               | Trian.             |
| DOVE, green<br>(Tri. Dove Creek Ch. 1932)                         | 40       | 26 | 1220.6      | 74 | 22 | 579.3                 | "                               | Trian.             |
| STACK blk. metal<br>(Tri. Stack-Concrete Prod. 1934)              | 40       | 26 | 734.3       | 74 | 21 | 1039.5                | "                               | Trian.             |
| STACK, Yel. brick<br>(Tri. Tall Stack-O.B. Water<br>Works 1934)   | 40       | 25 | 1040.4      | 74 | 20 | 418.7                 | "                               | Trian.             |
| STACK blk metal<br>(Tri. Metal stack-Eastern<br>(Co. '34)         | 40       | 25 | 918.3       | 74 | 21 | 452.4                 | "                               | Trian.             |
| TANK (BLEW)<br>(Old Bridge 1934)                                  | 40       | 25 | 204.4       | 74 | 21 | 754.6                 | "                               | Trian.             |

A list of objects carefully selected because of their value as landmarks as determined from seaward, together with individual descriptions, must be furnished in a special report on this form, and a copy of such report must be attached by the Chief of Party to his descriptive report.

The selection, determination, and description of these points are an important factor in the value of the chart. Landmarks selected at appropriate intervals can be clearly charted. However, when none is outstanding, a group of two or three objects may by their interrelationship provide positive identification. A group so selected should be indicated.

The description of each object should be short, but such as will clearly identify it; for example, a standpipe, elevated tank, gas tank, church spire, tall stack, red chimney, radio mast, etc. Assign numerals to landmarks to indicate: (1) Offshore, (2) inshore, (3) harbor, 1, 2, 3 would be a mark useful on all charts. Generally, flagstaves and like objects are not sufficiently permanent to chart.



REVIEW OF GRAPHIC CONTROL SURVEY T-62216 SCALE 1:10,000

## Date of Review

1. This survey has been reviewed in connection with Air Photo Compilation Nos. T-5103 , , with particular attention to the following details:

- ✓(a) Projection has been checked in the Field.
- ✓(b) Accuracy of location of plane table control points.
- ✓(c) Discrepancies between detail on this survey and the air photo compilations listed above.
- ✓(d) Discrepancies found in descriptions submitted on Form 524 when compared with the air photo compilations listed above.

2. Refer to the reviews and descriptive reports of air photo compilations Nos. T-5103 , , for a more complete discussion of any errors or discrepancies found.

Any material errors found on this survey are noted in subsequent paragraphs of this review, and these have been reported to the Field Records Section and the Cartographic Section.

Notes and corrections resulting from the review are shown on this survey in green.

*D. G. Jones*  
8-26-35  
*D. G. Jones*