## Descriptive Report

**Type of Survey:** Topographic  
**Project:** CS-318  
**Field No.:** OLD CHURCH  
**Office No.:** T-8612

### Locality

- **State:** Virginia  
- **General locality:** 4 miles northeast of Richmond  
- **Locality:** 24.5 miles southwest of Tappahannock

- **Date:** June 7, 1947  
- **Chief of Party:** William F. Deane  
- **Library & Archives:**  

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DATA RECORD

T- 8612

Quadrangle (II): OLD CHURCH

Project No. (II): CS-318


Instructions dated (II III); March 10, 1945 Copy filed in Descriptive

Report No. T- (VI) Report of the Division of Photogrammetry

Completed survey received in office: JAN. 22, 1947

Reported to Nautical Chart Section: JAN 29, 1947

Reviewed: MAY 1948 Applied to chart No. Date:

Redrafting Completed:

Registered:

Preliminary May 17, 1948

Final

Published:

Compilation Scale: 1:20,000 Published Scale: 1:24,000

Multiplex Scale: 1:8500

Scale Factor (III):

None

Geographic Datum (III): N.A. 1927 Datum Plane (III): Mean Sea Level

Reference Station (III): OLD CHURCH, 1941

Lat.: 37° 38' 39.966" Long.: 77° 13' 15.898" Adjusted Unadjusted

State Plane Coordinates (VI): VIRGINIA SOUTH ZONE

x = 2,370,291.69

y = 475,861.85

Military Grid Zone (VI)
PHOTOGRAPHS (III)

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Tide Tables, Atlantic Ocean, 1945, White House

Mean Range: 3.0 ft.  Spring Range: 3.4 ft.

Camera: (Kind or source) C&GS, Single Lens, "C"

Field Inspection by: Harland R. Cravat, Robert R. Kim, Alfred R. Knaack, Thomas W. Merriken, Jr.  Date: Spring, summer, fall, 1945

Field Edit by: J. Y. Fitzgertl  Date: August 1947

Date of Mean High-Water Line Location (III): Same as date of photographs

Projection and Grids ruled by (III)  S. Rose  Date: May 1945  (1:15,000)

" " " checked by: S. Rose  Jan 1946  (1:20,000)

Control plotted by: A.C. Rauck, Jr. (1:20,000 manuscript)  Date: Sept. 1946
Norman A. Cluff, Wash. Office (1:8500 work sheets)  June 1945

Control checked by: S.W. Trow (1:20,000 manuscript)  June 1946
S.W. Trow (1:8500 work sheets)

Radial Plot by: G.B. Willey  Date: Dec. 1945

Detailed by: H.P. Michert & A.C. Rauck, Jr.  Date: May-June 1945

Reviewed in compilation office by:  Date: Dec. 1946
Stanley W. Trow

Elevations on Field-Edit Sheet  Date: Dec. 1947
checked by: H.P. Cravat
STATISTICS (III)

Land Area (Sq. Statute Miles): 59.14

Shoreline (More than 200 meters to opposite shore): 0.0

Shoreline (Less than 200 meters to opposite shore): 16.0 statute miles

Number of Recoverable Topographic Stations established: none

Number of Temporary Hydrographic Stations located by radial plot: none

Leveling (to control stations) - miles: Sea Field Inspection Report

Roman numerals indicate whether the item is to be entered by, (II) Field Party, (III) Compilation Party, or, (VI) the Washington Office.

When entering names of personnel on this record give the surname and initials (not initials only).

Remarks: Magnetic Declination = 6°00'W, 1947-8
Statement to Accompany Descriptive Report T-8612

1. This summary of survey methods used and the method of handling T-8612 and adjoining quadrangles is provided for the convenience of those processing and using the map in the future.

2. The several mapping operations were:

   (a) Single-lens aerial photography and laboratory processing.

   (b) Field surveys for identification of shoreline, clarification of photographic details, and the establishment and identification of horizontal and vertical control.

   (c) Compilation of planimetry and contours by multiplex on 1:8500 scale manuscripts and the assembling of the multiplex manuscripts into a 1:20,000 scale manuscript.

   (d) Preliminary office review of the compiled manuscript.

   (e) Field edit and accuracy tests.

   (f) Final office review of the manuscript to insure completeness and conformance with specifications. This included correction of the manuscript in accordance with the field edit survey.

3. T-8612 and the adjoining quadrangles will be smooth drafted, published, and distributed by the Geological Survey in accordance with the agreement of March 25, 1947.

4. The following data for T-8612 may be needed from time to time either in the U. S. Geological Survey or the Coast and Geodetic Survey. They are filed and may be obtained as follows:

   (a) Filed in the Division of Photogrammetry

      (1) 1:20,000 scale manuscript; field edit and final review corrections applied.

      (2) Original 1:8500 scale multiplex manuscript not corrected after field edit.
(3) Field Edit Sheet.

(b) Filed in Coast and Geodetic Survey Archives

The descriptive report together with a 1:20,000 scale cloth mounted photographic print of manuscript is being permanently registered. When T-8612 is published a cloth backed copy of the published map will also be registered.

[Signature]

Harland R. Cravat
Cartographer Photogrammetrist
May 7, 1948
FIELD INSPECTION REPORT

2-8612, Old Church Quadrangle, (37 37 30 / 77 07 30 / 7.5)

Project CS-318

Harland R. Cravat, Chief of Party

1. Description of the Area.

Quadrangle 2-8612 is a seven and one half minute quadrangle located at the head of tide water in the Pamunkey River drainage area, and about midway, via U.S. Highway #360 between Richmond and Tappahannock, Virginia.

The Pamunkey River which is little used by water traffic in the vicinity winds through the center of the quadrangle from northwest to southeast. There are some swamp lands, but well over one fourth of the area along the river is level and very fine farm land. There are two or three large dairy farms here.

The northern and southern parts of the quadrangle away from the river are characterized by deep sharp drains and long narrow ridges with the elevation ranging from mean sea level to almost 190 feet above mean sea level.

There are two post offices in the quadrangle, Manquin and Enfield, of which both are north of the Pamunkey River.

Over half the area is covered by stands of pine, and mixed species. Pine is extensively cut for pulp, and fire wood. The majority of the hardwood has been cut over and little is being cut at present. The remainder of the land is given to agricultural activities.

There are no thickly populated areas, but a network of roads and in many sections, sufficient electric power and telephone facilities give the local population conveniences comparable to a more urban area. This is especially true along the Pamunkey River and along U.S. Highway #360, which crosses the quadrangle from southwest to northeast.
From a historical point of view the area is particularly interesting, the Old Civil War Battlefields are marked and the local people take great interest and pride in discussing the past with outsiders. This is especially true near the small settlement of Old Church and between there and the Panamukay River Bridge on U.S. Highway #550, where Stewart and McClellan were engaged in battle.

2. **Completeness of Field Inspections**

Field inspection was done in conjunction with 4th order leveling by Mr. Robert E. Kim, Photogrammetric Aid. As the roads were in very poor condition when the inspection was done and as it was done on rainy days it is felt that the inspection is neither adequate nor complete. As an aid to the field edit party the phases of the field inspection are broken down under two headings, "Adequate," and "Inadequate." It is felt the items mentioned under inadequate could be completed efficiently and economically at the time of field edit.

All field inspection notes appear on the even numbered photographs in red colored ink.

"**Adequate**"

**Roads**
Classified as per the Directors instructions dated, 30 June 1945. Also road numbers were included.

**Woods**
Classified as per the Directors Instructions dated, 30 June 1945.

**Bridges**
Bridges were classified as per Military specifications for the War Mapping Project. They may be disregarded, there were no bridges over navigable waters.

**Public Buildings**
Public Buildings were circled in red ink and the name of the building blacked on the photo, beside the circle.

**Boundaries**
Boundaries were obtained and drawn on the photos with red ink by Mr. Robert E. Kim, Photogrammetric Aid on July 15, 1945.

"**Inadequate**"

**Obscure Buildings**
Although most of the obscure buildings were circled in red ink some of them, which were situated back away from the roads were missed.

Buildings past their useful life were deleted but out buildings were not deleted.
Telephone lines
one were located

Power lines
All power lines were located which did not parallel roads.

4. **Horizontal Control**

The work consisted of locating the old horizontal control and the establishing of new control by 3rd order traverse methods. The work was done early in the spring of 1945 by Mr. Harland R Cravat, under the direction of Lt. Dale E. Sturmer, U.S.C. & G.S.

Substitute Stations

Old Church, 1941, Triangulation Station was the only existing U.S.C. & G.S. horizontal control station within the quad limits. It was positively identified by the substitute station method, on photo, of January 1945.

3rd Order Traverse

About 3.5 linear miles of 3rd order open ended traverse was completed. One traverse started at Triangulation Station Old Church and extended westward to the westerly quad limits. The other traverse was north of the quadrangle, starting at Triangulation Station Ewarsb and extended southward about 2.5 miles.

Angle measurements were made with a 7-inch White Theodolite. Three D, and R angles were measured at each hub with a horizon closure less than 10 seconds. The horizontal distances were measured with a 100 foot steel tape and check measurements with a 40 meter steel tape.

The short traverse was checked for azimuth at the terminal point by two complete sets of sun observations and the longer traverse was checked azimuth by two complete sets of Polaris observations.

The field party computed the traverses and observed azimuths. The observed azimuths checked the azimuths of the traverses within third order limits.

No stations were monomumented along the traverses and either a hub in the traverse or a substitute station was pricked for photographic control.
5. Vertical Control

The work consisted of BM recovery, establishing of new 3rd order and 4th order levels. All vertical control information appears on the photos in blue colored ink. For the most part this information is on the odd numbered photographs.

Recovery

All previous existing Geological Survey and bench marks of this bureau were pricked on the photographs and recovery notes submitted by Mr. Robert H. Kim, Photogrammetric Aid, at the time of 4th order leveling.

U.S.C. & G.S.

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U.S.G.S.

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3rd. Order Levels

About 25 miles of 3rd. order leveling was completed by Mr. Alfred R. Haasch, Engineering Aid, under the direction of Lieut. Dale E. Sturmer, U.S.C. & G.S. The methods used and character of marks are those as prescribed in special publication number 140. On the following page is a list of Bench Marks established of which M. and F 295, 1945 are west of the project limits.
New 3rd Order control Established

D 29\(^3\), 1945  M 29\(^3\), 1945
E 29\(^3\), 1945  N 29\(^3\), 1945
F 29\(^3\), 1945  P 29\(^3\), 1945
G 29\(^3\), 1945  Q 29\(^3\), 1945
H 29\(^3\), 1945  T 29\(^3\), 1945
K 29\(^3\), 1945  U 29\(^3\), 1945
L 29\(^3\), 1945  V 29\(^3\), 1945

4th Order levels

About 65 lineal miles of 4th order leveling was completed by Mr. Robert R. Kim, between the dates of 7-5-45, and 8-31-45.

Elevations were carried by trigonometric methods, using 7-inch Berger Theodolite 4670, fitted with stadia hairs, and Simmons-Adams Leveling Rods. The Berger Theodolite was used as a combination vertical angle and spirit level instrument.

Elevation computations were made to the nearest 1/100 of a foot. Trigonometric loops over one mile in length were closed on either a previously determined elevation or on a bench mark.

Short spur lines were double rodded. (Double rodded is where a foot scale was read on the front of the rod and a meter scale was read on the back of the rod. At the terminal point the spread between the feet and the meter values were computed. If the spread exceeded one foot the spur was rerun.)

All loops were closed within the specifications as designated in the Acting Directors letter of June 2, 1945, Amendment to Supplemental Instructions - Fly Levels, Project CS 516, dated 17 April 1945.

Level information appears on the photographs in blue ink. All points were pricked, and the code letters, numbers, and elevations were written on the backs of the photographs, near their respective points.

The code letters OC prefix all points, and the following system was used to segregate the closed elevations from the double rodded lines.

Elevations underscored by a full line indicate the loop was closed on an existing bench mark or previously determined elevation.

Elevations underscored by a dashed line indicate the point in question is a spur double rodded line.

No loops were left with out at least a double rodded check.
Submitted with the photos is a level layout index showing the approximate position of the spot elevations. Also on the fly leaf of each level volume is found the following information: loop (spot elevations), page closure, field notes checked by, adjustment checked by, inked on photo #, and copy checked by.

6. **Contours and Drainage:**

No contouring was done at time of field inspection, and very little drainage clarification and classification. The swamp areas along the Pamunkey River have been delineated at the time of shore line inspection.

While leveling all culverts were marked in red ink. The letters CV were used and the symbol (X) indicating the crossing.

No other drainage clarification nor classification was done as it was felt the work could be done with far less over lapping if done by the field edit party.

7. **Mean High Water:**

The shore line was inspected by Mr. Thomas W. Merrick Jr., Photogrammetric Aid, in the fall of 1945. The mean high water line was indicated by a dashed red line at intervals where the shore line was indistinct. The swamp areas were indicated by a dashed blue line.

Although the Pamunkey River is affected by tide water the high and low water lines are synonymous as far as detailing is concerned; the banks are of a steep nature.

In the areas where the river flows through low bottom lands it has formed natural levees of its banks which are a foot or two higher than the ground back from the river. This phenomenon has inundated large areas, forming swamp lands.

8. **Low Water Line:**

See item #7

9. **Wharves and Shoreline Structures:**

There were no wharves or shore line structures of a permanent nature.
10. Details offshore from the High-water line:

Since the shore line was inspected on foot it was difficult to obtain the off shore detail. No rocks or wreckage was visible and it was felt there were no such obstructions in the water. Local information also contends there are no such obstructions.

11. Landmarks and Aids to Navigation:

There were no prominent landmarks or aids to navigation within the limits of the quadrangle.

12. Hydrographic Control:

No hydrographic control was established.

13. Landing Fields and Aeronautical Aids:

There are no landing fields within the limits of the area. The Pamunkey River and main roads as U.S. Highway #560 are aids to aeronautical navigation in daytime flight. There are no beacons in the area.

14. Road Classification:

Roads were classified according to the director's instructions dated 30 June, 1945. Route numbers were included.

15. Bridges:

There are no bridges over navigable waters. Bridges were classified however according to War Mapping Instructions. They may be disregarded.

16. Buildings and Structures:

Most of the obscure buildings were circled in red ink. Public buildings were circled in red ink, and the name of the building inked on the photograph. Out buildings and buildings past their useful life have not been deleted.
26. **CONTROL:**

The Baltimore Compilation Office was furnished by the Washington
Office, vinylite multiplex instrument sheets at a scale of 1:8500. These
were used by the Washington Office to lay a steel templet radial plot.

Recovery notes for horizontal control stations in this area plus
those falling outside the north limits of this quadrangle were furnished
the compilation office. One set of 1:20,000 scale contact prints with
vertical and horizontal control points identified, and one set of 1:8500
scale ratio prints which were used in making the steel templet radial plot,
were also furnished. The ratio prints show horizontal control points,
photo control points and principal points as were used in the making of the
radial plot.

The following horizontal control stations were held to during
multiplex plotting:

Sub. Sta. OLD CHURCH, 1941  
B - HUB 6 (Old Church Traverse)  
E - HUB 19 (Epworth Traverse) North of T-3612

Inasmuch as the dispositions were not available and the horizontal
control was too far north of this quadrangle, the following horizontal
control stations were not used when plotting with the multiplex:

EPWORTH, 1941  
P.P. - 1 (Epworth Traverse)  
P.P. - 2 (Epworth Traverse)

27. **RADIAL PLOT:**

A radial plot, using steel templates, was made at the Washington
A copy of this radial plot report is filed in doc. report 7-8613.

28. **DETAILING:**

The Zeiss Wide Angle Multiplex, a German stereoscopic plotting
instrument, was used for the orthographic plotting of all planimetry
and topography in this quadrangle. The detail was plotted on eight
strips of vinylite at a scale of 1:8500.

Each strip comprised of four or five models. The horizontal
control points were held on as near as possible in order to obtain the
best overall scale. The most readily identifiable triangulation points
were given more consideration than less well defined photo points. Poorly
identified photo points were sometimes sacrificed when they could not be
held with more positive identified points.

In preparation for contouring, each model was horizontalized to
vertical control previously established in the field.

There were a minimum of four vertical control points in each model, except where the model contained extensive water areas. In these instances it was necessary to horizontalize on the water's edge.

Upon the completion of the compilation and review of these eight vinylite multiplex instrument sheets, they were reduced photographically to a scale of 1:20,000. These reductions were then traced onto the 1:20,000 scale acetate map manuscript.

As previously discussed under item 2 of the Field Inspection Report some field data was termed "Inadequate" for this quadrangle and will be completed by the field edit party.

30. MEAN HIGH WATER LINE:

The mean high water line was plotted with the multiplex after careful examination of the field photos.

Mean high water line was adequately inspected.

31. LOW WATER AND SHOAL LINES:

No data pertaining to the low water and shoal lines were furnished the compilation office, and none were plotted.

32. DETAILS OFFSHORE FROM THE HIGH WATER LINE:

At Newcastle Bridge over the Pamunkey River there is an object in the water that has not been identified by field inspection party. This has been noted on the discrepancy overlay to be investigated by the field edit party.

33. MARKERS AND SHORELINE STRUCTURES:

None

34. LANDMARKS AND AIDS TO NAVIGATION:

In the farm areas adjacent to both shores of the Pamunkey River there are numerous silos of sufficient elevation that they may be of use as landmarks. These silos were prominent enough to be accurately plotted. Field Edit recommended some silos for deletion.
35. **HYDROGRAPHIC CONTROL:**

None

36. **LANDING FIELDS AND AERONAUTICAL AIDS:**

See item 13 of the Field Inspection Report.

37. **DISCREPANCY OVERLAY:**

A discrepancy overlay was prepared to accompany this map manuscript. Omissions, discrepancies, and notes to the field edit party have been shown. A special report on geographic names was written and submitted by Harland R. Cragin. Only undisputed, new, and recommended names are shown on this map manuscript.

38. **GEOGRAPHIC NAMES:**

A special report on geographic names was written and submitted by Harland R. Cragin. Only undisputed, new, and recommended names are shown on this map manuscript.

39. **HORIZONTAL ACCURACY:**

The horizontal accuracy of this map manuscript is believed to be within the limits set forth for previous projects.

40. **VERTICAL ACCURACY:**

It is believed that over 90% of the contours are accurate to within one-half their contour interval.

41. **JUNCTIONS:**

Complete and satisfactory junctions were made with the following:

- To the east with map manuscript for Survey No. T-6611
- To the south with map manuscript for Survey No. T-6609
- To the west, a narrow strip of planimetry and topography has been transferred from the U.S. Geological Survey, Studley, 15 minute quadrangle, to this map manuscript. This junction was unsatisfactory.

To check positions of the detail along the west edge of this survey, a long multiplex bar was used. Diapositives of negatives 45-G-2052 to 45-G-2060 were made with the U.S. Coast and Geodetic Survey reduction camera. The nine multiplex models were set up with Bausch and Lomb wide angle projectors.

Control used in this strip was Z-HUB-19 which was held at the north end. At the south end B-HUB-6 and substitute station OLD CHURCH were used. Substitute Station OLD CHURCH is a poor image in the model and cannot be identified within 0.25 to 0.5 mm, thus B-HUB-6 was held and substitute station OLD CHURCH fell to the west about 0.5 mm. U.S.G.S. "PRIM TRAV. STA. NO. 31, 1916" was plotted and distances to center line of roads were measured.
41.  **JUNCTIONS:** (Continued)

The description of this station says, "25 feet (7.62 meters) north and 35 feet (10.66 meters) west from crossroads." The scaling of distances to the crossroads was 8.96 meters north and 12.56 meters west, which is within the limits of error. All planimetric detail was found to be in the same position as when plotted with Zeiss equipment except two pieces of road which have been replotted and corrected on the map manuscript.

No junction was made to the north.

42.  **BOUNDARY LINES:**

The Mongohick-Aquinton District line follows the highway on road No. 604, then east and northeast on road No. 610 in the vicinity of Enfield to the north of this map manuscript. Inasmuch as this district line follows the highway, it was not inked on the map manuscript. The respective names of the two districts were inked on each side of the road to indicate that the road is the boundary.

No data for boundary monuments were furnished the compilation office.

44.  **COMPARISON WITH EXISTING TOPOGRAPHIC QUADRANGLES:**

Comparison was made with the U.S. Geological Survey, King William, 15 minute quadrangle, scale 1:62,500, surveyed in 1917-18.

The topography is not in agreement generally. This may be due to the lapse of time between surveys and the difference in survey methods.

The comparison of planimetry showed several new roads which were not in existence during the 1917-18 Geological survey. Most prominent of these are the U.S. Route No. 360 from Manquin to west of Old Church, and the forest fire trail, Route No. 639 from Manquin to Enfield.

In addition, there are several swamp areas adjacent to the Pamunkey River which are not shown on the Geological Survey quadrangle.

45.  **COMPARISON WITH NAUTICAL CHARTS:**

Comparison was made with U.S. Coast and Geodetic Survey Chart No. 504, scale 1:40,000, published in 1936, revised 11 July 1944.

As this chart covered only an area west to longitude $77^\circ 13'$, only a partial comparison could be made.

The meandering course of the Pamunkey River is in good agreement, difference being noticed particularly in the swamp areas. A swamp south-southeast of Newcastle Bridge is not shown on the chart.
45. **COMPARISON WITH NAUTICAL CHARTS:** (Continued)

A larger area of swamp, north of Horseshoe, is shown on the chart than is delineated on this map manuscript. Newcastle Bridge is no longer in existence. Original Bridge in maps, however, a new bridge on U.S. 360 crossing Pamunkey River bears the name. Roads in general do not agree. Many new ones are in existence now which are not shown on the chart.

The contours agree only along the steep banks of the Pamunkey River. In flat areas they are in poor agreement.

No shoreline structures are in this area; therefore, no comparative notes can be made.

It is believed that after the field edit data is added to this map compilation it should supersede the previously charted information.

Respectfully submitted
19 December 1946

Albert C. Rauck, Jr.
Photogrammetric Aid

Stanley W. Trow
Cartographer
Photogrammetric Office
Review

Stanley W. Trow
Supervisor

Approved and Forwarded
22 January 1947

William F. Deane
Lieutenant, C&G Survey
Officer in Charge
Baltimore Photogrammetric Office
FIELD EDIT REPORT
T-8612
Old Church Quadrangle
(37-37.5/77.0-07.5/7.5)
Project CS-316
Riley J. Sipe
Chief of Party

The field edit of this quadrangle was completed in the period 20 June to 10 July 1947 by I. Y. Fitzgerald, Cartographer. All work was done in accordance with the Director's Field Edit Instructions, dated 24 August 1945; Field Edit Instructions - Supplement I, dated 4 February 1946; and other recent Instructions applicable to field edit as herein noted.

46. METHODS:

All delineated features such as roads, structures and drainage were checked while walking and/or riding over the roads and trails.

The relief as depicted by the contours was observed closely while checking other features. In areas where the contours did not appear to "fit the ground" the planetable was used to check and correct them if necessary. Some minor corrections were made visually.

Deletions and some additions were made directly on the field edit sheet. Some additions and corrections were noted on the photographs and a reference to the appropriate photograph made on the field edit sheet.

Structures erected and clearings made subsequent to photography were located by measurements from topographic details or by planetable methods.

The uses of the various colored inks were noted on the field edit sheet.

47. ADEQUACY OF THE COMPILATION:

With due consideration given to the amount of field inspection completed prior to compilation, the compilation is adequate. Because of the lack of field inspection many buildings were compiled which were deleted by field edit.
46. ACCURACY TESTS:

One vertical accuracy test was made. Starting on U.S.C. and G.S. BM M-88 at New Castle Bridge and proceeding northeastward along U.S. Route 360. U.S.G.S. PTS 32.76 at Manquin was closed 0.60 ft. low. Elevations were adjusted to this BM and carried to the closing BM, U.S.C. and G.S. K-88 at Central Garage. Closure on K-88 0.13 ft. high. Refer to review report by the field editor party.

No horizontal accuracy test was made in this quadrangle. Refer to Review Report for Accuracy Tests.

6. CONTOURS AND DRAINAGE:

The contours, with a few minor exceptions adequately depict the relief. There were exceptions when making the vertical accuracy test, determination of stream elevations, and an area questioned by the compiler. No discrepancies of importance were discovered during visual inspection.

Drainage on the whole was adequate. Some streams compiled as perennial were changed to intermittent.

Revisions of the swamp line along the Pamunkey River was necessary in two areas.

7. MEAN HIGH WATER LINE:

The mean high water line along the Pamunkey River was changed from apparent to fast shoreline in areas of change in swamp line as mentioned in the preceding paragraph.

9. WHARVES AND SHORELINE STRUCTURES:

An object is shown projecting towards the channel from the north bank of the Pamunkey River at a point approximately one mile east of New Castle Bridge. Upon examination this object was found to be a pier of the old bridge which spanned the river at this point.

This pier parallels the channel. An accumulation of driftwood creates the impression that it projects from the bank. A close stereoscopic examination together with this knowledge will enable the reviewer to correct the shape on the manuscript.

14. ROAD CLASSIFICATION:

All roads were reclassified in accordance with Photogrammetry Instructions No. 10, Road Classification, dated 14 April 1947.
16. BUILDINGS AND STRUCTURES:

New structures were added to the field edit sheet. (See Item 46).

Obscured and omitted structures were delineated on the photographs and a reference made on the field edit sheet.

17. BOUNDARY MONUMENTS AND LINES:

The legal description of the boundary between Hanover and New Kent Counties is given in the Field Edit Report of Quadrangle T-8609.

18. GEOGRAPHIC NAMES:

Delete the name PAMUNKEY. This was a station on the old Richmond and Rappahannock River Railroad. This railroad was abandoned 33 years ago and the name subsequently fell into disuse.

References:

- S.S. Robinson, Farmer
  - Falls, Va.  Resident 60 years
- J. D. West, Storekeeper
  - R.F.D. #1, Tunstall, Va.  Resident 60 years
- J. A. Williams, Rural Carrier
  - Quinton, Va.  Resident 60 years

The name RETREAT is misplaced on the manuscript.

The name NEW CASTLE BRIDGE is still used although the original bridge was destroyed many years ago.

49. JUNCTIONS:

A junction on the west with U.S.G.S. Quadrangle "Studley" was made. This consisted of effecting a junction of U.S. Route 360 in southern section of the quadrangle, and a junction of contours and a road in the northern section of the quadrangle.

The position of U.S. Route 360 was fixed by measurements from B-Hub-6 in quadrangle T-8612 and TT-22D in quadrangle Studley. The distance from B-Hub-6 to the centerline of the road was 36m.

The distance from TT-22D was 50 feet. All other roads in this section can be junctioned by the Washington Office using the new fixed position of U.S. Route 360 as a base.
JUNCTIONS (Cont'd)

A junction of the contours in the northern section north of the Pamunkey River was made by a planetable traverse with elevation based upon OC 52 (125.9).

A junction of the contours south of the Pamunkey River were based upon a road intersection elevation of 101 feet in Quadrangle Studley.

To junction the road in the northern section, a planetable traverse was run along this road from its junction with Fire Trail No. 639. Orientation was made southeastwardly along the Fire Trail. The traverse was carried to the second junction of the road with the Fire Trail and thence back along the Fire Trail to a junction in quadrangle T-8612.

50. REVIEW OF THE FIRST PROOF:

The following gentlemen have consented to review a first proof of this quadrangle:

S.S. Robinson J.D. West
Falls, Va. R.F.D. #1, Tunstall, Va.

Mr. Robinson is a farmer and has been a resident of the area for 60 years. He has, at different times, cruised timber, done surveying and property appraising. He is thoroughly familiar with the entire area.

Mr. West is a storekeeper and a resident of 60 years. He is, perhaps, not as familiar with the area as is Mr. Robinson.

Submitted:
15 August 1947

J. J. Fitzgerald
I. A. Fitzgerald,
Cartographer
Division of Photogrammetry
Review Report of
Topographic Map Manuscript T-8612

Subject numbers not used in this report have been adequately covered in other parts of the descriptive report.

28. Detailing.—All additions and corrections made by the reviewer, have been shown in red ink on the map manuscript. In addition to the routine review corrections, the following changes were made:

A. Multiplex spot elevations removed.
B. Obsolete bridge classifications removed.
C. Denominations in Church names removed.
D. Doubtful bench mark locations clarified.
E. Woods re-classified in accordance with Photogrammetry Instructions No. 15, dated 16 June 1947.

41. Junctions.—

Contours:

All questionable contours between this map manuscript and Studley Quadrangle were junctioned by planar traverse methods.

In most instances, a satisfactory junction was made at the neat line, but occasionally it was necessary to work back into Studley Quadrangle seeking agreement. If this was not accomplished within 1/4 inch outside the neat line of T-8612, no further effort was made to afford a contour junctions.

Planimetry:

The southern portion of the junction between this map manuscript and Studley Quadrangle is not in agreement. In addition to the exhaustive investigation made by the compilers to clear up the discrepancies, field measurements were made by Mr. Stanley Hathorn.

The field measurements were in agreement with the compilation of T-8612, and were used as conclusive evidence that further work on planimetry discrepancies is unwarranted.

44. Comparison with Existing Topographic Surveys: Comparison was made with both (a) previous surveys and (b) quadrangle. The planimetry and topography in all common areas is superseded by T-8612.
(a) Previous Surveys

3383  1:20,000  1912-1913

(b) U.S.G.S., New Kent, Va., Quadrangle, 15',

45. Comparison with Nautical Charts.--

504  1:40,000  March 1936  Re-issue Jan. 1947

Planimetric and shoreline details on the chart are
superseded by those on T-8612 in all areas common to
both. This map manuscript has not been applied to
nautical Charts.

48. Accuracy Tests.--

A. Vertical

All points tested were within tolerances
prescribed by national map accuracy standards.
A summary and abstract of vertical accuracy
test is attached to this report.

B. Horizontal

A U. S. Geological Survey 1916 transit
traverse, adjusted to the North American 1927
datum, was used to make a horizontal accuracy
investigation.

Eleven of these described points, verified
as identical points, were plotted on the map
manuscript by geographic coordinates. No attempt
was made to verify indefinite points such as Y road
intersections.

The result of the accuracy test was well
within the limits of national map accuracy re-
quirements. A tabulation of the horizontal accuracy
test is attached to this report.
Reviewed:

Harland R. Cravat
Cartographer, Photogrammetrist
May 1948

APPROVED BY:

S. V. Griffith
Chief, Review Section & Div. of Photogrammetry

C. H. Catling
Chief, Nautical Chart Br. Div. of Charts

K. T. Adams
Chief, Div. of Photogrammetry

C. K. Green
Chief, Div. of Coastal Surveys
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### TOPOGRAPHIC MAPPING

**Summary & Abstract of Vertical Accuracy Test**

Project No. 318 Quad. No. 612 Quad. Name Old Church  
Method of Testing Profile Plane table. Profile  
Tested by YF Date July 1946 Evaluated by HBC  
Contour interval 20ft. 0.6 M.N. allowable shift at 1:70,000 map or manuscript scale.

60% Total number of points tested  
98% of points within ½ contour interval or better  
1 Test points correct within ½ contour interval  
7 Test points in error between ½ and full contour interval  
0 Test points in error over full contour interval

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Names underlined in red are approved 12/31/47. L. Hecht
# Nautical Charts Branch

Survey No. 8612

Record of Application to Charts

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A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.