

5567

U. S. COAST & GEODETIC SURVEY
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Form 504
Rev. Dec. 1933
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

Airphoto
Topographic } Sheet No. 5567
~~Hydrographic~~

U. S. COAST & GEODETIC SURV.
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State North Carolina

LOCALITY

~~East coast~~ Alligator River

and
Alligator River - Pungo River

Canal
Western Part
New Lake

~~1934~~
Date of Photographs 1934.

CHIEF OF PARTY

S. B. Grenell

5
2025

Applied to chart 831 Nov. 4, 1936 H.M.E.

MAR 2 1936

Acc. No. _____

Form 504
Rev. Dec. 1933

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

DESCRIPTIVE REPORT

AIRPHOTO
Topographic } Sheet No. GENERAL
~~Topographic~~

GENERAL REPORT FOR
COMPILATIONS 5567 to 5573

State North Carolina

LOCALITY

Inside Route from Albemarle
Sound to the Pungo River.

193 5

CHIEF OF PARTY

S. E. Grenell

GENERAL REPORT
BY
THE CHIEF OF PARTY
FOR
COMPILATIONS 5567 to 5573

Albemarle Sound to Pungo River

The purpose of this report is to outline the method of field inspection and compilation of the block of sheets covering the Inside Route from the north end of the Alligator River through the Alligator River - Pungo River Canal, and to discuss unusual features of topographic formation and control not included in the individual sheet reports.

FIELD INSPECTION:-

The area including the canal on compilations 5567-8 was field inspected by the regular party from the chartered launch JEAN. This unit consisted of four draftsmen from the compilation party and a launch engineer and cook. The draftsmen from the office were rotated from time to time as noted in previous reports. The balance of the area, including the Alligator River, was inspected at a much later date and under different circumstances.

Previous control in the Alligator River was almost entirely destroyed or lost so it was necessary for Commander R.P. Eyman, who was in charge of the party making the hydrographic survey of that area, to put in a second order control scheme in advance of his survey. Due to the fact that there are no settlements along this section of the waterway, all field work was conducted from the M.V. NATOMA which was anchored in various places along the river and used as a quarter-boat and base of operations.

From time to time, as the control scheme advanced, two men were sent from this office to spot control on photographs, but, because of the difficulty of locating and tying-in this control, the work was completed in small lots over a considerable period of time. Also the inspection party had to work with the control units thus cutting down the area covered with the result that the notes on general topographic features and the local place names are not as complete as could be desired.

The greater part of the control along the river was established on off-lying cypress trees or clumps making it very difficult to tie-in except on those prints on which the individual cypress clumps could be picked out. All sheets but one in this area are on 1:20,000 scale making the control spotting quite difficult. Considering these difficulties, the field inspection party did an excellent job as indicated by the checks obtained in the radial plots.

The same system was used in checking local place names as described in the General Report previously submitted for compilations 5550 to 5556. *Filed with T5550*

CONTROL:-

The control for this section came from the following schemes: First Order Arc, R. D. Horne, 1933; Second Order supplementary schemes, K. G. Crosby, 1935; Second Order Scheme, Albemarle Sound, G. C. Mattison, 1933; Second and Third order Scheme, R. P. Eyman, 1935.

In some sections, principally along the Alligator River-Pungo River Canal, the control was hardly adequate. There was sufficient control along the line of the canal to hold the azimuth but there were few stations so located as to hold the outer wing sections. This was in no way the fault of Lieut. Crosby, who put in the control, but due to the vast areas of impenetrable swamp in those sections where it would have been most desirable to place stations to get the best flight control. With perfect photographs this would not have been so important, but with these distorted prints it is felt that the outer wing areas may be weak in location. However, these areas may be up to standard because all junctions made with adjoining flights checked excellently.

Due to the general swampy nature of the country and the few connecting roads, it was impossible to supplement the control with traverse as was done in other sections.

RADIAL PLOTS:-

Except in the section noted in the previous paragraph, the control for this area was adequate. No particular difficulty was experienced in running the radial plots except the usual trouble in all plots on this project due to the errors inherent in the photographs themselves, as discussed in the copy of a letter to the Director attached to the end of this report. For further information on this photo error, refer to letters to the Director dated March 25th and April 15th, 1935. Also refer to the Paragraph "Radial Plot Difficulties" in the General Report for compilations 5550 to 5566. *Filed in Report T 5550 Pages 5 to 8a*

There were many 'stray' cuts on radial point intersections due to faulty pricking of points on some prints. This was not due to carelessness on the part of the 'prickers' but because in the dense swamp and cypress shoreline areas it was often necessary to prick tree tops or shadows for points. This was most often true along the cypress bordered shoreline where off-lying trees were pricked. It was the practice, where possible, to prick the base of these tall trees to avoid the varying displacement due to elevation in the outer wing sections but frequently this base point had to be estimated due to overhanging trees.

This method of pricking tree bases was particularly successful on the 1:10,000 compilation 5573 where the stereoscope was used to check all points pricked on tall trees with the result that very little trouble was encountered on this plot.

GENERAL TOPOGRAPHIC FEATURES:-

The entire area through which the canal passes between the Alligator and Pungo Rivers is very low. This country, while not entirely flooded the year around, is called "swamp" and is under water for periods each year. The difference between "fast land" and "swamp" is a difference in elevation of one or two feet only and is seldom clearly marked. These higher land areas can be cultivated if properly drained and several large cultivated areas appear on the compilations where extensive systems of drainage canals and ditches exist. However, the greater portion of this area is dense, virgin swamp covered with a mixed growth consisting principally of gum and oak with some pine on the higher levels and considerable cypress along the rivers and streams.

During exceptionally dry years these swamps burn in places, the fires spreading for months at a time until extingui-

shed by rains and rising water. Much of the underlying soil is peat formation which sometimes burns out to a considerable depth. Lake MATTAMUSKEET in this section was formed in this manner. It is about nine miles wide and eighteen miles long, very shallow and has recently been purchased by the Biological Survey as a wild fowl refuge. The edge of this lake appears in the south west corner of compilation 5568.

The cutting of the Inside Route Canal has aided the drainage projects by lowering the ground water level and preventing the widespread flooding of crops. It has also dried out sections of swamp adjacent to the waterway sufficiently to permit brush fires - see burned over areas indicated on compilation 5568.

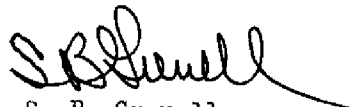
The shoreline formation along the Alligator River from the vicinity of Cherry Landing (Comp. 5573) northward to Albemarle Sound is unique in that "fast land" appears along the shoreline in a few isolated places only. Most of the "shoreline" - so called - is determined by the edge of the dense cypress growth which forms a forest wall terminating the open water. This cypress may be a thin fringe only between fast land and open water, or it may be a wide band extending inland for 1/4 to 1/2 mile with no definite line of demarkation where it fades into the regular mixed swamp growth.

On the 1:20,000 scale prints this cypress appears to have a dense, irregular edge which has been shown on the compilation as a wavy, broken line representing high water. Large off-lying clumps of cypress have been shown as dots or with small cypress tree symbols. On the 1:10,000 prints this edge appears as a lacy fringe of cypress trees, each separate clump showing clearly, so it was possible to indicate very accurately by small symbol these individual clumps thus giving a broken but very accurate shoreline. This feature appears on compilation 5573 and should be especially noted.

COMPARISON WITH CONTEMPORARY SURVEYS:-

The only contemporary surveys in this region are the few, aluminum-mounted topo sheets, R.P. Eymann, 1935, on which the control for hydrography was located. The short sections of shoreline rodded in around the triangulation stations and other set-ups checked almost exactly with the compilation. Most of the topo signals along the upper river were located on offlying cypress trees by graphic triangulation. It is interesting to note that most of these signals fell in the symbols used to denote lone cypress trees on the compilation, when the shoreline was transferred to the smooth hydrographic sheets with the projector. The sounding lines between stations also followed the trend of the shoreline giving further proof of the excellent agreement between the control survey and the final compilation.

Respectfully submitted,



S. B. Grenell,
Jr. H. & G. Engr.,
Chief of Party.

COPY

March 15, 1935

To: The Director,
U. S. C. & G. Survey,
Washington, D. C.

From: Lieut. (j.g.) S. B. Gronell,
Chief of Party No. 18,
Washington, North Carolina

Subject: Radial Plot Difficulties.

*See Report T 5550
Pages 5 to 8a
for discussion of camera
errors mentioned in this
letter. B.G.G.*

We have been attempting for the past week to run through the radial plots on compilations 5550 and 5551, Pungo River, North Carolina. These are the first plots attempted on this project and were being rushed to furnish shoreline for the hydrographic parties under J. S. Bond.

From the first it was evident that something was radically wrong. The first step was to check control station picking and mounting. Both of these operations had been carefully executed and nothing was discovered. Repeated attempts were made to carry through the azimuth on fixed pictures - that is on pictures having control in at least three wings. The control is ample and well distributed so that at least every alternate picture is fixed and many pictures had control in all four wings and the "B" print.

It was noted that the control could be held in three wings only and that the points in the fourth wing would fall off approximately 1.5 m.m. in the outer wing. Several plots were run through holding the control in three wings, each time allowing one wing to fall off - i.e. - holding A, B, C. and E one time; A, B, D and E another and so on. The results to date seem to indicate that the flight azimuths through the straight pictures can be held only when the "C" wing is allowed to fall off. This condition also holds fairly well when the "C" wing is held and the "A" wing falls off but the distribution of control is such on the "A" wing side as to indicate that the wing is correct.

The control is so intense and so well distributed as to make certain that the error is not a coincidence in faulty picking, because when the "C" wing is allowed to fall off, all stations in the wing invariably fall off in the same direction and approximately the same amount depending on their distance out from the center.

The writer has come to the conclusion that some one wing - probably the "C" wing is in error due to either a lens of the camera being out in collimation or an error in setting the transforming printer. Although it is evident that something is wrong it is very difficult to determine the location, direction and amount of this error so that the proper corrections can be made.

It also appears that the "D" wing has not been enlarged sufficiently because in several instances two control stations appear on the edges of the forward wing or "straight "D" about equidistant from the principal point and on opposite sides and equidistant from the azimuth line and in almost every case the radial lines fall the same distance inside of the control points on the colluloid compilation indicating that the picture is too small. The incorrect amount of displacement in this wing due to tilt confirms the above assumption.

With the pictures as they are it is impossible to run through a radial plot that will check to the required standard. It is therefore respectfully requested

that advice be given as to the procedure to follow in further analysing and correcting these errors.

S. B. Grenell
Chief of Party

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. 5567

REGISTER NO.

State North Carolina

General locality Alligator and Pungo River Canal

Locality New Lake Alligator and Pungo River canal (Western Part)

Scale 1:20,000 Date of survey Fall of 1934
* Photographs

Vessel Airphoto Compilation Party # 18

Chief of party S. B. Grenell

Compiled by: S. B. Grenell & J. C. Tison, Jr.
Surveyed by:

Inked by S. B. Grenell

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

Contour, Approximate contour, Form line interval x x feet

Instructions dated December 14, 1934, 19

Remarks:

Blue print on seal 1:19607

NOTES ON COMPILATION

One copy of this form must accompany each chart from beginning to completion. The last draftsman, whose name appears on this form, is responsible for it and all personnel will endeavor to keep these forms up to date and correctly posted. This form is very important inasmuch as the final Descriptive Report of the Chart compiled is based upon the information contained herein.

SHEET NO. 5567
M - 83
PHOTO NO. 62 TO PHOTO NO. 76
BY START FINISH
ROUGH RADIAL PLOT J. C. Tison, Jr. 6/4/35
SCALE FACTOR(1.02) ditto ditto
SCALE FACTOR CHECKED S. B. Grenell ditto
PROJECTION Washington Office Projection Machine
PROJECTION CHECKED S. B. Grenell
CONTROL PLOTTED J. C. Tison, Jr. 7/1/35
CONTROL CHECKED F. B. Hickman 7/1/35
TOPOGRAPHY TRANSFERRED x x x
TOPOGRAPHY CHECKED x x x
SMOOTH RADIAL LINE PLOT J. C. Tison, Jr. 7/2/35 7/17/35
RADIAL LINE PLOT CHECKED S. B. Grenell 7/18/35
DETAIL INKED J. B. Williams, Jr. 7/19/35 8/3/35
S. B. Grenell 1/30/36 completed
AREA DETAIL INKED 61.6 sq. Statute Miles
LENGTH OF SHORELINE OVER 300 m. 11.4 Statute Miles
LENGTH OF SHORELINE UNDER 300 m. 11.4 Statute Miles
GENERAL LOCATION North Carolina
LOCATION Alligator River - Fungo River Canal
DATUM STATION SIXTEEN 1935 Latitude 35 - 34 - 13.72 (422.8 m.)
Longitude 76 - 21 - 24.11 (607.1 m.)
Datum: N. A. 1927

REPORT OF COMPILATION:

This compilation was begun by J. B. Williams, Jr. draftsman, and later completed by the chief of party after the party complement had been reduced. In reviewing this compilation, special reference should be made to the General Report for Compilations 5567 to 5573 for general discussion of the topography and notes on radial plots and control. *The general report for compilations is attached to Desc. Report T-5550.*

RADIAL LINE PLOT: By J. C. Tison, Jr., Aid.
(See note below.)

"Considerable difficulty was encountered in securing good intersections for points located more than 1/3 the distance out on wing prints. By using successive straight pictures a set of intersections would be obtained which would not check intersections from skew prints.

The control in this area was so distributed that the azimuth of the flight was rigidly held, while only occasional control points were available for holding the 'A' and 'C' wings. Considerable scale difference in prints and apparently faulty orientation of some wing prints was believed to cause most of the trouble. By using only radial lines located along the center portion of wing prints, and by swinging individually those wing prints on which control points appeared and faulty orientation was apparent, the radial plot was carried through.

All control was held and all points common to adjoining flights checked the location of those points as determined on those flights. All junctions smoothed through without difficulty". *Refer to pages 5 to 8a, report for compilation T-5550 for a discussion of camera errors in this area and the need for more than the usual amount of ground control.*

ADJUSTMENT OF PHOTOGRAPHS:

*Jan.
8/30/36.*

In general, the intensity and distribution of radial points was adequate for control of the definite detail. Due to photograph errors (as discussed in the preceding paragraph) the intersedtions in the outer-wing areas are weak and definite detail has been taken far out in two areas only. The section around LAKE MATTAMUSKEET in the south east corner of the compilation is rigidly held by control station POST-1933, and should be well within the limiting error. The other section is around NEW LAKE in the north east corner of the compilation. There were no control stations in this area north of the ship canal so the detail is "held" by the radial plot only. This lake does not appear on any Coast Survey sheet to date so it was decided to include as much of the lake as possible, even though the location might be slightly in error. The radial plot smoothed through this section fairly well so it is believed that the detail around the lake is very close to correct in location.

INTERPRETATION OF DETAIL:

The main feature on this compilation is the ship canal which crosses the central portion of the sheet. This feature

fell almost entirely in the "B" prints and was very distinct in every detail. Most of the control was along the canal bank so it is very strongly located.

The definite detail such as roads, canals and ditches which border Lake Mattamuskeet were fairly well defined and covered by ample field notes for identification. The border of the lake, however, is very indefinite ~~and has been shown by a short dash-line~~. This is principally due to the fact that the lake was formerly drained for agriculture but is now abandoned and flooded and what "shoreline" appears is formed by the tops of grass clumps and the banks of the old canals which drained the lake bottom. The lake is very shallow and was formed many years ago by the burning away of the peat bog formation which comprises the sub-soil in this region.

NEW LAKE to the northward is much deeper and of a different formation. It is believed locally that this lake is an old meteor crater as are Phelps Lake and Pungo Lake in the same section (not on the compilation). There is a ridge of elevated land - now cultivated - along the south and east border of the lake, which might bear out the meteor-crater theory. There is a fringe of tall cypress along the edge of this elevated fringe which masks the ~~true~~ shoreline of the lake.

The canal system extending southwestward from the lake passes through a region of flat grassland. This was timbered at one time but has been logged off and the undergrowth is burned off periodically to allow grass to grow for grazing. The balance of the heavily-wooded areas are swamp or semi-swamp covered with a dense, tangled growth consisting mainly of gum and swamp oak with some scattering pine and cypress and a dense undergrowth of deciduous brush and vines.

SPECIAL SYMBOLS:

The spoil banks along the canal have been shown with sand dots. One abandoned tram road bed running northward from triangulation station MILL-1935 has been shown by a single line of dots. There was formerly a standard-gauge, branch-line railroad running to New Holland and passing along the south west border of the compilation. This road has been abandoned and the rails and ties removed but the old embankment still remains as a prominent topographic feature as indicated by a double row of dots. This railroad crossed the bed of Lake Mattamuskeet - now flooded.

COMPARISON WITH CONTEMPORARY SURVEYS:

All junctions with adjoining compilations have been carefully checked and are complete in every detail. There are no field topographic sheets for this area.

PLACE NAMES:

ALLIGATOR RIVER - PUNGO RIVER CANAL

Charted name.

LAKE MATTAMUSKEET

Well established

NEW LAKE

Shown on various airway maps
as "Alligator Lake" but known
locally as New Lake only.
Should be labeled NEW LAKE.

RESPECTFULLY SUBMITTED,

S. B. Grenell,
Jr. H. & G. E.,
Chief of Party.

Remarks

Decisions

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3	<i>Sometimes called Alligator Lake.</i>	
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GEOGRAPHIC NAMES

Survey No.

Name on Survey

On Chart No.
 On previous survey No.
 On U. S. Quadrangle Maps
 From local information
 On local Maps
 P. O. Guide or Map
 Rand McNally Atlas
 U. S. Light List

	A	B	C	D	E	F	G	H	K	
<u>Alligator River -</u>	1231									1
<u>Pungo River Canal</u>										2
<u>New Lake</u>				✓						3
<u>Lake Mattamuskeet</u>				✓						4
										5
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Names underlined in red survey
 by *[Signature]* on 3/26/36

REVIEW OF AIR PHOTO COMPILATION T 5567 (1934)
Scale 1:20,000

Comparison with Previous Topographic Surveys

T 1310 (1873), 1:20,000. Only a small portion, about one-half square mile, of this compilation on its western limits is covered by survey T 1310. The compilation is adequate to supersede this portion of the survey T 1310.

There are no graphic control or hydrographic surveys of this area.

Comparison with charts Nos. 1231, 3252

The report for this compilation does not mention landmarks. Chart letter 180 (1936) covers the aids to navigation while chart letter 199 (1936) covers landmarks for the whole project.

The report for this compilation does not mention the probable error of plotting. This error is estimated to be about 0.5 mm. for the Alligator River-Pungo River Canal and from 0.8 to 2.0 mm. for the areas near Lake Mattamuskeet and New Lake.

The field inspection party states that the high water line around the section of Lake Mattamuskeet shown on this compilation is far back in the sypress swamp. The position of this line cannot be determined. The marshes shown are clumps of grass practically covered with water.

March 31, 1936.

Leonard A. McGowan
✓ B. G. Jones

REVIEW OF AIR PHOTO COMPILATION NO. 5567

Chief of Party: J. B. GRENNELL

Compiled by: J. B. Williams Jr.
S. B. Grenell

Project: Party # 18

Instructions dated: 12-14-34

1. The charts of this area have been examined and topographic information necessary to bring the charts up to date is shown on this compilation. (Par. 16a, b, c, d, e, g and i; 26; and 64) ✓
2. ~~Change in position, or non-existence of wharfs, lights, and other topographic detail of particular importance to navigation which affect the chart, is discussed in the descriptive report.~~ (Par. 26; and 66 g, n) ✓
3. ~~Ground surveys by plane table, sextant, or theodolite have been used to supplement the photographic plot where necessary to obtain complete information, and all such surveys are discussed in the descriptive report.~~ (Par. 65; and 66 d, e) ✓
No supplemental surveys made ✓
4. ~~Blue-prints and maps from other sources which were transmitted by the field party contain sufficient control for their application to the charts.~~ (Par. 28) *None transmitted.* ✓
5. Differences between this compilation and contemporary plane table and hydrographic surveys have been examined and rectified in the field before forwarding the compilations to the office and are discussed in the descriptive report. *No contemporary surveys* ✓
6. The control and adjustment of the photo plot are discussed in the descriptive report. Unusual or large adjustments are discussed in detail and limits of the area affected are stated. (Par. 12b; 44; and 66 c, h, i) ✓
7. High water line on marshy ~~and mangrove~~ coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44) ✓
See descriptive report ✓

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Refer also to the pamphlet "Notes on the Compilation of Planimetric Line Maps from Five Lens Air Photographs."

8. ~~The representation of low water lines, reefs, coral reefs and rocks, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41)~~ *None ✓*
9. Recoverable objects have been located and described on Form 524 in accordance with circular 30, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 29, 30, and 57)
No Recoverable objects. located and described ✓
10. A list of landmarks was furnished on Form 567 and instructions in the Director's letter of July 16, 1934, Landmarks for Charts, complied with. (Par. 16d, e; and 60)
No Landmarks ✓
11. ~~All bridges shown on the compilation are accompanied by a note stating whether fixed or draw, clearance, and width of draw if a draw bridge. Additional information of importance to navigation is given in the descriptive report. (Par. 16c)~~ ✓
No bridges on this compilation. ✓
12. Geographic names are shown on the overlay tracing. The accepted local usage of new names has been determined and they are listed in the report, together with a general statement as to source of information and a specific statement when advisable. Complete discussion of place names differing from the charts and from the U. S. G. S. Quadrangles is given in the descriptive report, together with reasons for recommendations made. (Par. 64, and 66k) ✓
13. The geographic datum of the compilation is *N.A. 1927* and the reference station is correctly noted.
14. Junctions with adjoining compilations have been examined and are in agreement. (Par. 66j) ✓
15. The drafting is satisfactory and particular attention has been given the following:
1. Standard symbols authorized by the Board of Surveys and Maps have been used throughout except as noted in the report. ✓
 2. The degrees and minutes of Latitude and Longitude are correctly marked. ✓

- 3. All station points are exactly marked by fine black dots. ✓✓
- 4. Closely spaced lines are drawn sharp and clear for printing. ✓✓
- 5. Topographic symbols for similar features are of uniform weight. ✓✓
- 6. All drawing has been retouched where partially rubbed off. ✓✓
- 7. Buildings are drawn with clear straight lines and square corners where such is the case on the ground. ✓✓

(Par. 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48)

16. No additional surveying is recommended at this time. ✓

17. Remarks:

18. Examined and approved;

Jan. 31, 1936

J. B. Gentry

Chief of Party

19. Remarks after review in office:

Reviewed in office by: *Leonard A. McSauer, March 31, 1936.*
V. B. Jones

Examined and approved:

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

L. O. Lobert.
Chief, Division of Charts

Fred. L. Peacock
Chief, Section of Field Work

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