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RESTRICTED

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Form 504 Rev. Dec. 1933 DEPARTMENT OF COMMERCE U.S. COAST AND GEODETIC SURVEY R. S. PATTON, DIRECTOR	
DESCRIPTIVE REPORT	
Topographic <del>Hydrographic</del>	Sheet No. D
State British West Indies	
LOCALITY	
Trinidad	
Gulf of Paria	
South coast of Point Gourde	
19340-41	
CHIEF OF PARTY	
Fred. L. Peacock	

6773

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 Letter No. D

REGISTER NO. T6773 RESTRICTED

State Trinidad, B.W.I.

General locality Gulf of Paria

Locality South Coast of Point Gourde

Scale 1/4800 Date of survey Dec. 19, 1940 to Jan. 10, 1941.

Vessel OCEANOGRAPHER

Chief of Party Fred. L. Peacock

Surveyed by Ira T. Sanders and John C. Bull

Inked by John C. Bull

Heights in feet above <sup>MHW</sup>~~20 to 50 feet~~ to ground ~~to tops of trees~~Contour ~~Approximate contours~~ ~~Some lines~~ interval 10 feet

Instructions dated November 9, 1940, 19

Remarks:

DESCRIPTIVE REPORT  
To Accompany  
TOPOGRAPHIC SHEET FIELD NO. 'D'

Scale 1:4800

January 28, 1941.

INSTRUCTIONS:

The survey executed on this sheet was done in accordance with the instructions dated November 9, 1940, Project H.T.-257. ✓

LIMITS OF SURVEY:

The survey on this sheet includes the area on the south side of POINT GOURDE south of the line formed by triangulation stations ALICE 1940, Lat. 10-40-14.96, Long. 61-34-52.27, westward along the ridge through triangulation stations QUARRY 1940, HIGH 1940, to TRAIL 1940, Lat. 10-40-08.63, Long. 61-37-21.88. Then to the 100-foot contour along the hill side westward to unmarked intersection station BATH, Lat. 10-39-44.47, Long. 61-37-46.15. Then the shore line only, northwestward to triangulation station CARLOS 1940, Lat. 10-39-56.09, Long. 61-38-11.50. ✓

CONTROL:

The control on this sheet consists of second order triangulation stations and unmarked intersection stations established by the party of Fred. L. Peacock in 1940. The datum for this control is the one established by the Lands and Surveys Department, Trinidad and Tobago, B.W.I. Geographic positions were obtained for triangulation stations LENAGAN, CRONSTADT, AND GASPER GRANDE, also the length and azimuth of the line LENAGAN-CRONSTADT, and the length and azimuth of the line CRONSTADT-GASPER GRANDE. From these two bases a breakdown scheme of triangulation was established. The closures of this breakdown triangulation were of second order accuracy. ✓

METHODS OF SURVEY:

The usual planetable methods described in the Topographic Manual were used for location of the shore line. Most of the hydrographic signals were located by cuts from triangulation stations, the positions computed, and the signals plotted on the sheet. This was necessary because the topographer could not see to take cuts for hydrographic locations when occupying the triangulation stations. The steep bluffs, heavy woods, and thick underbrush made traversing impossible. However, the topographer was able to determine table locations for accurate location of the shore line and a few additional hydrographic signals necessary to complete the hydrography. ✓ The shore line on this sheet is very steep and the high water and low water line is the same except in a few of the coves where short stretches of gravel beach are found. These are indicated on the sheet in the usual manner.

CONTOURS:

A detailed reconnaissance of the area to be contoured was made and the area found to be very rough and heavily wooded. It was decided that control traverses should be run between triangulation stations ALICE to QUARRY, QUARRY to HIGH, HIGH to TRAIL, and TRAIL to Intersection station LEP in Telephone Bay; then short intermediate traverses south from the control traverse to the edge of the bluff in a system of lines that would best show the features in the area to be contoured. ✓

These lines were cleared by a party of natives supervised by an officer to insure their proper location. The proper location of the side lines was very important because no side shots could be taken due to the heavy undergrowth. The woods and undergrowth was so heavy that on slightly overcast days the topographer experienced great difficulty when reading angles of elevation and laying off distances on the sheet. ✓

The topographer then ran the control traverse and drove stakes at each setup point and at the intersection of the cleared lanes for the short intermediate traverses. The position, elevation, and azimuth of each stake was determined. From these positions the short intermediate traverses were run south to the bluff with no check on the south ends. It was impracticable to clear an area at the end of these lines of sufficient size to allow the topographer to obtain a fix. The topographer checked on position, azimuth, and elevation whenever possible. ✓

Great care was exercised on all traverses because of the very short distance the rod could be seen. The table was plumbed over the stakes,  $f + c$  corrections applied, and forward and backward distances and elevations were determined. ✓

The short intermediate traverses to the south were considered the same as side shots taken in open country where a check on each elevation determined is not required. ✓

In the contoured area on this sheet west of Triangulation Station CROWN, 1940, slopes beyond the limit of determination by alidade vertical circle were encountered. In this area the following method was used: ✓

A stake was driven at the top of the bluff or cliff, as near the water as possible, in each of the cleared lanes through the jungle. A careful determination of the position of each stake was made by sextant angles on signals on the offlying islands. Each sextant angle was observed and read twice to avoid errors. The sextant positions were carefully plotted on the sheet with a steel protractor. ✓

A seven-inch theodolite was then plumbed over each stake and the angle of elevation between the stake and a point on the signal over Triangulation Station CONVICT, 1940 was observed. The elevation above M.H.W. of this point on the signal had been previously determined by the triangulation observing party to be 11.3 feet above B.M. #3 Carenage tide station. ✓

The elevation angle measurements consisted of two: one with circle left, and one with circle right. Distances between the various stakes and Station CONVICT, 1940 were carefully scaled, and the ground elevation at each stake computed. The angle at each stake between CONVICT, 1940 or one of the other signals to the axis of its corresponding cleared lane, was turned off by theodolite. Distances along the axis of each lane were then measured on the slope. The angle of elevation to each measured point was carefully determined by theodolite vertical circle, and the corresponding elevations and horizontal distances computed. ✓

#### CONTOUR INTERVAL:

In the area surveyed on this sheet five-foot contours could not clearly be shown therefore ten-foot contour intervals were adopted. ✓

#### ACCOMPANYING OVERLAY:

The accompanying overlay was prepared by the topographer to show every elevation determined on the sheet. So many elevations were determined that all cannot be shown on the inked sheet. If all elevations are shown the contour lines would have to be broken in so many places in order not to obliterate the elevations, that they would be confusing. Overlay attached to this report. ✓

#### TRAVERSES AND CLOSING ERRORS:

The main traverse from ALICE to QUARRY, QUARRY to HIGH, HIGH to TRAIL is the junction with Sheet Field No. "B". T-6771 (1940-41)

The traverse from ALICE to QUARRY closed flat with an elevation check of 0.1 foot. ✓

The traverse from QUARRY to HIGH closed flat with an elevation check of 0.5 foot. No attempt was made to adjust this elevation check because of the roughness of the country. ✓

The traverse from HIGH to TRAIL closed 3.0 meters in azimuth with no elevation discrepancy. This traverse was adjusted by holding HIGH fixed and swinging the traverse to the correct position of TRAIL. The intermediate traverses from this line were run after the adjustment was made. ✓

The traverse from TRAIL to intersection station LEP closed flat with an elevation check of 0.1 foot. ✓

The traverse from QUARRY to PHONE closed 2.0 meters in distance and azimuth with an elevation check of 1.0 foot as compared with the elevation of PHONE as determined by one way trigonometric elevations on CONVICT, Corerra Id. This traverse was adjusted in the manner described in the Topographic Manual.

A traverse from Triangulation Station TRAIL, 1940 to Signal BUG was run with no discrepancy in azimuth or distance, and 0.2 foot discrepancy in elevation. Setups off the traverse for the determination of desired elevations were determined by azimuth and stadia distances from points on the traverse located in intersections of cleared lanes.

A traverse for the location of the foot trail between Telephone Bay and Triangulation Station TRAIL, 1940 was run from Signal LEP to Triangulation Station TRAIL, 1940 with a misclosure of 2 meters in azimuth and no discrepancy in elevation. This traverse was adjusted in the usual manner.

GENERAL DESCRIPTION:

The entire area surveyed on this sheet is heavily wooded with broad leaf trees and thick tropical undergrowth. The surface of the ground is very broken and there are many sharp rock outcrops. The shore line is very steep and the face of the bluff is of blue limestone. The elevation of the bluff varies in height from 10 feet to 85 feet. Just north of Signal TOP the bluff line rises to 85 feet, 20 meters from the shore line. In general, there is a vertical rise 10 to 20 feet from the shore line, then a steep slope to the top of the bluff, then a gradual slope to the top of the ridge. Along the shore line the high-water-line and the low-water-line are the same except in some of the coves where short stretches of gravel beach are found.

In the vicinity of Signal BUG the low-water-line was obtained from the hydrographic sheet. In the vicinities of Triangulation Station PHONE and Hydrographic Signals ACE, COP, USE, and TON the low-water-line was not obtained by the hydrographic party. In these vicinities the low water line is sketched in by the topographer and in none of these places is the low-water-line more than 5 meters outside of the high-water-line. These beaches are characterized by an abrupt drop from the high-water-line to the low-water-line, then a gradual deepening offshore. This is caused by the wave action piling up the pebbles at the high-water-line. These are shown on the sheet in the usual manner. Along the shore line the limestone formation is undermined and in a number of places large cracks in the bluff have occurred due to this condition. The large offlying rocks in the vicinity of Signals COL and TOP, the large crack 95 meters west of Signal TOP, and the caves in the vicinity of Signals

RED, ZOG, ZIP, and BOX are evidence of the undermining of the shore line. In the vicinities, 50 meters west of Signal HIP to 80 meters northeast of Signal COL, and from Signal COP to Signal LEP, red clay bluffs are found. Between Signals HIP and COL, the height of the bluff varies from 25 to 53 feet. Between Signals COP and LEP, the height of the bluff varies from 5 to 69 feet.

The Pea patches shown on the sheet have not been cultivated in a number of years and are now grown-up with bushes and vines. The limits cannot be clearly defined therefore they are shown with dashed lines.

#### JUNCTIONS:

T-6771 (1940-41)

This sheet is joined on the north by Sheet Field No. "B" along the main traverse line from Triangulation Stations ALICE to QUARRY, QUARRY to HIGH, HIGH to TRAIL. Along this traverse, stakes were set for each setup and both topographic parties determined the location and elevation of each stake thus insuring a check on location and elevation for a junction of contours. At the junction of Sheet Field No. "B" along the traverse from ALICE to QUARRY, the contours from the south run to the line of the cliff just north of the traverse line. The cliff shown here is caused by quarry operations on the north side of the hill.

T-6772 (1940-41)

On the west, this sheet is joined by Sheet Field No. "C" at Triangulation Station CARLOS, 1940.

#### MAGNETICS:

The declinatoire forming part of the accessories of Alidade No. 164 was used for determination of the Magnetic Meridian at Triangulation Station CROWN, 1940 at 10:30 A.M., January 10, 1941.

Variation as determined equals  $6^{\circ} 22.4'$  west. Chart value approx.  $7^{\circ} 20' W$

Standardization data for this declinatoire is not now available but it is proposed to determine its error, if any, at a magnetic station in Norfolk, Virginia on arrival there.

#### GEOGRAPHIC NAMES:

The authority for the geographic names that appear on this sheet is obtained from maps of the area furnished this party by the Land and Surveys Department, Trinidad and Tobago, B.W.I. All names are penciled on the sheet so that they may be verified by the Washington Office.

#### NEW NAMES:

No new names appear on this sheet.

LIST OF PLANETABLE POSITIONS:

Planetable locations of hydrographic stations were determined ✓  
as follows:

One meter 38 degrees true from Signal CAN.  
Standard hydrographic mark set in a drill ✓  
hole and flush with the surface of the rock.  
Lat. 10-40 plus 332.0 meters,  
Long. 61-36 plus 1646.6 meters.

Signal RED. Standard hydrographic mark set ✓  
in a drill hole and flush with the vertical  
surface of the cliff.  
Lat. 10-39 plus 1420.7 meters  
Long. 61-37 plus 1292.9 meters.

LAND MARKS:

No land marks for charts are found on this sheet. ✓

STATISTICS:

Statute miles of shore line --- 2.4 ✓  
Square miles of area ----- 0.3 .  
Number of elevations determined- 414

Respectfully submitted,

*Ira T. Sanders*

Ira T. Sanders,  
Junior H&G Engineer.

*John C. Bull*  
John C. Bull, Aid.

Approved and forwarded:

*Fred. L. Peacock*  
Fred. L. Peacock,  
Chief of Party, C&GS.



Elevations for control of contours

Sheet "D"

ALICE 1940

QUARRY 1940 A

TRAIL 1940

HIGH 1940

PHONE 1940

10° 40'

61° 37'

CROWN 1940

## DIVISION OF CHARTS

## SURVEYS SECTION

REVIEW OF TOPOGRAPHIC SURVEY NO. 6773 (1940-41) FIELD NO. D

Trinidad, B.W.I.; Gulf of Paria; South Coast of Point Gourde  
Surveyed in December 1940 - January 1941, Scale 1:4,800  
Instructions dated November 9, 1940 (OCEANOGRAPHIC)

Plane Table SurveyAluminum Mounted

Chief of Party - F. L. Peacock  
Surveyed by - I. T. Sanders; J. C. Bull  
Inked by - J. C. Bull  
Reviewed by - J. A. McCormick, June 21, 1941  
Inspected by - H. R. Edmonston

1. Junctions with Contemporary Surveys

Satisfactory junctions were effected with T-6771  
(1940-41) on the northeast and with T-6772 (1940-41)  
on the west.

2. Comparison with Prior Surveys

Copies of previous British surveys of the area are  
not available in this office.

3. Comparison with H.O. Chart 1964 (Corrected to Feb. 1941)  
H.O. Chart 2115 (Corrected to Jan. 1941)

Charted shoreline is in fair to good agreement with that  
of the present survey. Charted contours appear to be  
considerably generalized. The survey shows the area in  
much better detail in both respects.

4. Condition of Survey

An overlay tracing, showing all elevations determined  
on the survey, is attached to the descriptive report.

5. Compliance with Instructions for the Project

Excellent.

6. Additional Field Work Recommended

None.

Examined and approved:

*Thos Board*

Chief, Surveys Section

*J. S. Jordan*

Chief, Division of Charts

*C. H. Green*

Chief, Section of Hydrography

*G. H. Hude*

Chief, Division of Coastal  
Surveys