A GPR Survey in Frederica Commons for the 2017 International Archaeology Day, Fort Frederica National Monument, Georgia.

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Chapter 1. Introduction and History

Introduction

The LAMAR Institute conducted a Ground Penetrating Radar survey of a small 10 meter by 5 meter area of the Fort Frederica National Monument property in Glynn County, Georgia (Figure 1). This effort was done as part of a public archaeology event at Frederica. The event, entitled, “Archaeology in Georgia: Past and Present”, celebrated International Archaeology Day and was hosted by the National Park Service.

Figure 1. Project Location.

Background Information

The fortified town of Frederica was established on the Georgia coast by General James Oglethorpe, leader of the Georgia Trustees’ colony, in 1736. The town plan consists of a grid of rectangular town lots enclosed by an earthen palisade and ditch (Figure 2). Archaeological study of Frederica dates to the 1940s and many portions of the town site have received archaeological study (National Park Service 2017). The extent of archaeological exploration is revealed in Figures 3 and 4.
Figure 2. LiDAR Map Showing Frederica Town Lots (National Park Service 2017).
Figure 3. Excavated Areas at Frederica (NPS 2017).
Frederica has received extensive GPR study over the past two decades. The first GPR survey work at Frederica was conducted in 2005 by archaeologists with the Georgia Department of Transportation. Their team sampled 11 areas of the town site for a total sample of 6,745 m². Nine of their sample grids formed a contiguous block in the northern part of the town. One grid was located in the eastern part of the town in the former Hird house lot, and a small grid was placed in the town cemetery, east of the town wall (Honerkamp 1975; Patch 2005). In 2006 the National Park Service hosted a remote sensing workshop at Frederica. As part of that educational workshop, participants surveyed an area of Frederica (20 m by 20 m, or 400 m²) using three brands of GPR equipment, as well as several other remote sensing technologies (DeVore 2006). These data were imported into GPR-Slice software and the results of that effort were briefly summarized by Goodman (2006). The LAMAR Institute sampled an area (30.5 m by 20 m, or 610 m²) outside of the Frederica town wall and near the town cemetery as part of a public archaeology day hosted by the National Park Service in 2010 (Strojan and Provenzano 2017; Elliott 2010). National Park Service archaeologists returned to Frederica in 2017 to conduct extensive GPR survey and other remote sensing technology surveys (National Park Service, Southeast Archeological Center 2017). The results of their efforts are pending.
Chapter 2. Research Methods

The project incorporated specific methodology in its research, fieldwork, laboratory analysis, and report writing. Methods employed are detailed below.

Fieldwork

Following research, the preparation of a Research Design, and project planning, LAMAR Institute archaeologist Daniel Elliott conducted the Ground Penetrating Radar (GPR) survey. The GPR survey was conducted on October 21, 2017, as part of a public archaeology outreach event entitled, “Archaeology in Georgia: Past and Present”, which celebrated International Archaeology Day hosted by the National Park Service.

The survey consisted of collecting radar information from one rectangular sample, designated Block A in the front yard of the Fort Frederica Visitors Center. The surveyor used a MALA GeoScience RAMAC X3M radar unit attached to a computer monitor. Radargrams were collected unidirectionally to minimize machine distortion of the radar data. Radargram collection began in the southwestern corner of each grid and the radargrams progressed to the east. Grid North for the survey is oriented at a bearing of 279 degrees. Block A measured 10 m north-south by 5 m east-west and encompassed an area of 50 m² (Figure 2). Eleven radargrams were collected within Block A and these were spaced 50 cm apart. The survey collected a total of 110 m of linear radar information. The schematic plan of these radargrams is shown in Figure 5. A 500 MHz shielded antenna mounted on a wheeled cart was used for the survey of Block A. Ground conditions within this sample consist of grass flanked by two concrete sidewalks. No subsurface excavation was attempted. Machine settings for Block A: Radargram orientation: North; Antenna Type: 500 MHz (shielded); Radargram spacing: 50 cm; Number of samples per scan: 512; Time window: 62.2 ns, and Sampling frequency: 7462.13 MHz.

Figure 5. Radargram Plan, Block A, Fort Frederica Visitors Center (Grid north is up, bearing 279 degrees).
Data Analysis and Reporting

The LAMAR Institute completed its GPR survey of a 10 m by 5 m area near the front entrance to the Fort Frederica Visitors Center at the Fort Frederica National Monument. These data were returned to the Elliott’s Birdhouse Laboratory for post-processing and analysis. Data was analyzed using GroundVision and GPR-Slice software (MALÅ GeoScience USA 2006; Goodman 2017). Data was interpreted based on previous scholarship by Conyers and Goodman and by the author’s extensive GPR experience in coastal Georgia (Conyers and Goodman 1997; Conyers 2004; Elliott 2010). This report complies with Federal and Georgia standards for archaeological reporting (National Park Service 1983). An electronic version of this report is being made available to the public via the LAMAR Institute’s internet website (http://thelamarinstitute.org).
Chapter 3. Results

GPR Block A explored a small area of the Fort Frederica National Monument property, just south of the Fort Frederica Visitors Center and immediately east of the sidewalk leading to the entrance. This sample was nearly rectangular and measured 10 m grid north-south by 5 m grid east-west. Figures 6 and 7 provide examples of two GPR plan views of Block A. This reflection was visible in plan and profile and it is an area of interest. Figure 8 is an isometric perspective views of the radar results in Block A. Figure 10 is an aerial view that shows the approximate location of the GPR survey block in relation to the visitors center.

Figure 6.  Profile Views of Odd-Numbered Radargrams.

Figure 7.  GPR Plan at 52 cm Depth, Block A, Fort Frederica Visitors Center (Grid North is up).

Figure 8.  GPR Overlay Plan Map of Block A, Fort Frederica Visitors Center (Grid North is up).
Figure 9. Isomorphic Perspective View of GPR Block A, Fort Frederica Visitors Center.

Figure 10. GPR Plan Map Superimposed onto Aerial Image (True North is up) (Google Earth 2017).
Chapter 4. Interpretative Summary

In October 2017 the LAMAR Institute completed GPR survey on a 10 meter by 5 meter area of the Fort Frederica National Monument property. The survey explored a grassy area at the entrance of the Fort Frederica visitors center. It is reasonable to expect that this location was disturbed during the construction of the visitors center complex and its support facilities. Cement sidewalks were located along two edges of the GPR sample. Previous archaeological study of the Fort Frederica Commons near the present study location by Charles Fairbanks failed to locate any colonial-era resources (National Park Service 2017). No excavations have been conducted in this portion of the Town Commons since 1953.

This GPR survey sampled a tiny area of the Fort Frederica National Monument property but its results are not inconsequential. GPR data reveals numerous subsurface radar anomalies within this small sample block. No obvious historic structures are suggested from these data. Some of the anomalies may represent isolated cultural features (prehistoric or historic) but additional archaeology is necessary to determine this. Some of these anomalies may represent natural tree root disturbances. It does not seem that this area has been completely destroyed by the building and sidewalk construction. Traditional archaeological testing is recommended if any ground disturbing actions are scheduled for this location.
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