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Abstract

Within the boundaries of the Idaho National Laboratory, an ongoing archaeological investigation of a late 19th century stage station was expanded with the use of Electro-Magnetic and Magnetic geophysical surveying. The station known as the Powell Stage Station was a primary transportation hub on the Snake River Plain, bridging the gap between railroad supply depots in Blackfoot, Idaho and booming mining camps throughout Central Idaho. Initial investigations have shown a strong magnetic signature from a buried road and previously unknown features that were not detected by visual surface surveys. Data gained from this project aids in federally directed cultural resource and land management use requirements and has contributed additional information for archeological interpretation and cultural resource preservation.

Introduction

The Powell Stage Station lies on the western edge of the northern Snake River Plain of Idaho, along the banks of the Big Lost River within the current boundaries of the Department of Energy's Idaho National Laboratory (INL). The Station played a key role in the early transportation and economic development of central and eastern Idaho. As an isolated outpost (Figure 1) along a primary supply route for central Idaho mining camps and districts, the Powell Station offered many amenities to early travelers and freighters during the late 1880s mining booms. Traffic was likely high through the area, as the proprietor of the Station, George Washington Powell, maintained the only known bridge crossing of the Big Lost River in the immediate area.

Today, remains of structures and features at the Station merely hint at what was a fairly substantial and important focus of historic activity. For example, remains of a cabin foundation and the remnants of a basalt store and post office are the only two visible building features that exist on the surface. The current ground surface offers no indication of the location of other structures that likely existed at the site, such as an outhouse, barn and other outbuildings. Photographs from the 1890s suggest that additional buildings did exist at the site, but the images are not clear enough to draw any definitive conclusions with regard to the nature or location of the additional structures.

Figure 1: Primary Stage Roads and Stations on the northern Snake River Plain, including the Powell Stage Station.

Previous Survey and Research

The existence and location of the Powell Stage Station had been lost to history until a research project (Gilbert, 2009) focusing on a ghost town revealed that a stage station bearing the same name was located just a few miles away. Historic documents revealed that the 1909 town, first named Powell and later Pioneer, initially took its name from the proprietor of a nearby stage station (Blackfoot News, 1901). After several years of archival research, an INL historian found descendants of George Washington Powell to be living less than 50 miles from their great grandfather's stage station. Interviews and field trips with the family have added rich detail to the historic context under development for the Station, including three family photographs of the stage station, two that were taken during its heyday in the late 1800s and one later in 1933. All three of these photographs have proven invaluable in locating and interpreting the Powell Stage Station.

Concurrent with additional archival research on the stage station, field crews carried out surveys to try to pinpoint its location. Local lore, shared among employees at the INL, described a basalt foundation located along the Big Lost River as a stage station, but it was not until a wildfire swept over the area in 2000 that INL archaeologists were able to link legend with proof (Figure 2). While seemingly devastating, the wild fire turned out to be a blessing in disguise. It burned all of the vegetation surrounding the station's basalt foundation, revealing more features. The additional features included two different sets of basalt bridge abutments, a non-natural depression and other basalt cobbles that appeared out of place.

Figure 2: Photograph of the stage station taken after a wildfire swept over the area in 2000 (Photograph courtesy of Hollie Gilbert).

Removal of the vegetation from the surface features at the stage station allowed archaeologists to compare the photographs provided by the Powell family with the physical remains. These comparisons were decisive in the final determination that the area was indeed the original site of the Powell Stage Station. The two earliest photographs (Figures 3 and 4) were taken from two different angles while the Station was in operation. The earliest photograph (Figure 3) taken before the stone store was constructed prior to 1896 (Blackfoot News, 1896) was shot from the northwest edge of the site looking southeast. The other photograph (Figure 4) was taken after the store was constructed and shot from the southwest edge of the site looking northeast. Each of these photographs depicts a different view of the stage station and, more importantly, they show two different bridges. The first photograph (Figure 3) shows a bridge crossing in the northern portion of the site and the other (Figure 4) shows a bridge crossing in the southern section of the site. The photographs proved that the bridge abutments revealed by the 2000 wildfire, were those associated with the Powell Stage Station.

The two earliest photographs also indicated the locations of buildings and, possibly, other structures in the vicinity of the station. Some of these buildings and site features are plainly visible in the photographs, while others in the background are less visible.

During the summer of 2001 a geomorphological study, including backhoe trenches was initiated by the Department of Energy near the site of the Powell Stage Station. In an effort to effectively protect and manage the cultural resources at the site, INL archaeologists with the assistances of students from Idaho State University formally recorded, mapped and collected surface artifacts associated with the stage station (Pace, 2001). While the trenching project did not directly impact the Station's structures, it did approach the southern bridge abutments on the west side of the river. During project activities, archaeologists monitoring the site noted an anomaly in the trench that appeared to be a cross section of an old road bed.

Figure 3: Photograph of the Powell Stage Station taken prior to 1896, with northern bridge in foreground. Photograph was taken prior to the construction of the stone store and post office (Photographer unknown).

Figure 4: Photograph of the Powell Stage Station taken after 1896, with the southern bridge in foreground. The photograph clearly shows the rock store and post office on the right side and a cabin located behind the man in front of the horse on the left side. Other possible structures could be located behind the rock building, but are too faint to make a definitive determination (Photographer unknown).

Taken in 1933, the third photograph (Figure 5) shows G. W. Powell's sons standing in front of a basalt wall that was identified by the family as the Powell Stage Station. Although most of the stones were removed from the original rock structure after the photograph was taken, enough of the wall remains in situ today to reveal diagnostic shapes in the rocks that definitively match rocks in the 1933 photograph. As they had done with the bridge abutments, comparison of this photograph with the remains of the rock wall allowed archaeologists to determine for certain that this foundation was indeed that of the Powell store and post office and the location of the late nineteenth century Powell Stage Station.

Figure 5: 1933 photograph of the Powell store and post office rock wall (Photographer unknown).

Geophysical Results

During the summer of 2008, INL geophysicists working with archaeologists conducted two geophysical surveys. The first phase of the survey was conducted using a set of cesium vapor magnetometers with an integrated GPS unit mounted on a single wheeled platform. The survey area was chosen based on artifact density and data were collected across the primary site in one half meter transects. During the second phase a six-wheeled all terrain vehicle (ATV) was used to pull four cesium vapor magnetometers and a GPS unit on a small trailer. The ATV combed a portion of the area lying outside of the primary survey area in one meter transects. The use of the ATV in the less archaeologically sensitive areas was strictly controlled to prevent excessive ground and artifact disturbance and allowed for more efficient data collection. Geophysicists preprocessed the data using INL codes to assess data quality, remove spikes and correct some timing/GPS issues, results were then generated and plotted using Geosoft®.

Initial results from the magnetic surveys show several correlations with historical knowledge and produced new areas of archaeological interest. Figure 7 shows the raw data plotted over an aerial photograph with modern features apparent including the river bed and the DOE test trench project area. Figure 8 shows interpretation added to the geophysical results. The results align well with known surface cultural features including the existing foundation of the rock store and post office and large

depression. The magnetic results also indicate the presence of additional outlying structures that have no current surface manifestations as well as possible responses of activity areas as well as old stage roads. Future investigations should help to clarify the nature of the numerous signatures identified in the area of high activity along the river bank. These results indicate it may be possible to calibrate this method so that old stage roads could become more easily identifiable for protection.

Conclusions

The Powell Stage Station Project presents one example of the type of archeological investigations presently occurring on the INL that focus on historical archeological resources. The investigation demonstrates the invaluable support geophysics can lend to archeological field studies. The magnetic surveys conducted at the Powell Stage Station yielded several areas of interest for further archaeological investigation, site management, and protection. The unexpected geophysical response of the old wagon roads holds promise for future collaborative work between geophysicists and archaeologists. When combined with historical research, the application of magnetic methods can help locate subsurface sections of original routes of historic trails and roads to help guide preservation of these irreplaceable resources and facilitate future research.

Figure 6: GPS generated map of the Powell Stage Station showing current and historic features as well as old sand bombs associated with a World War II bombing range.

Figure 7: Plot of raw data overlaid on aerial photo showing survey areas with respect to river and modern physical features. The southern survey area is the primary site south of the Big Lost River and the secondary areas are north of the river.

Figure 8: Geophysical Interpretation of data collected at Powell stage Station shows good correlation with known surface features including the existing foundation of the rock house. In addition the results provide clues to the existence of other out structures that have no current surface indication. Numerous signatures are present along the River, indicating high activity and possibly the location of old stage roads and staging areas. The magnetic signature of these probable roads is unexpected and suggests several avenues of possible future research.

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