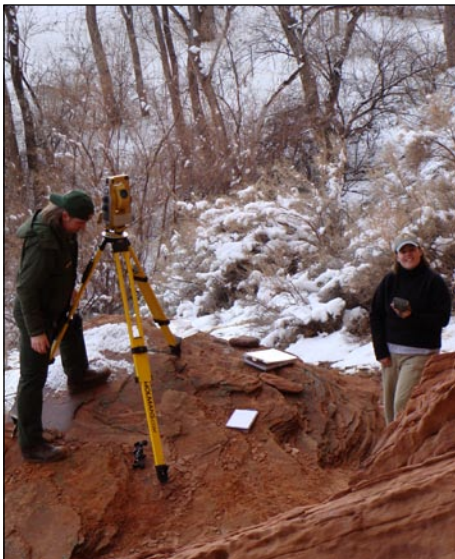




Survey
Spring 2009



A Survey for the Ages



Archaeologists Jennifer Lavris and Keith Lyons of the National Park Service use a Topcon GPT-9003A robotic total station to map archaeological sites in the canyon.

The Canyon de Chelly National Monument is one of the richest archaeological resources on the planet. Located in northeast Arizona, this unit of the National Park Service encompasses 83,840 acres and is home to a community of Navajo people and an estimated 4,000 archaeological sites, which range in complexity from fields of ancient stone tools and pottery to 60-room pueblo dwellings.

Organizing and researching such a plethora of archaeological sites demands accurate surveying data. "For virtually any research question we ask, we will need accurate spatial data," says Keith Lyons, an archaeologist who is surveying the canyon. "We want to know what resources they used, such as water and plant resources, and the locations of those resources."

To set up a network of control points, Lyons and his colleague Jennifer Lavris rented a Topcon static/RTK GR-3 GNSS (multi-constellation) system. The primary control points are established with better than 2-cm root mean square (RMS) precision using a GPS static solution.

Company: Canyon De Chelly National Monument

Location: Chinle, Arizona

Project: Surveying the Canyon De Chelly

Location: Northeast Arizona

Scope: To establish control points in the 83,840-acre canyon and survey thousands of archeological sites

Topcon Products:

GR-3 GNSS receiver
FC-200 data collector
TopSURV software
GMS-2 GIS data collector
GPT-9003A robotic total station

Topcon Dealer:

Holman's Inc., Phoenix, Arizona
Phoenix, Arizona
www.holmans.com

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AT WORK

Reconstructed acid mine drainage system

'We love the Topcon equipment. The handheld GMS 2 gets the GLONASS satellites, and with them, we can receive 12 to 15 satellites on average. Our maximum with other units has been seven satellites in some areas.' – Jennifer Lavris, Archaeologist, National Park Service



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"Once we have processed coordinates for the primary points, we can start setting secondary points using real-time kinematic technology," says Mark Gonzales, a training specialist with Holman's Inc., a Topcon survey equipment and GIS dealer in Tempe, Arizona.

One of the GR-3 receivers is set on a primary point, and a radio link is established to the second GR-3 receiver. Using a Topcon FC-200 data collector and TopSURV software, the primary point is fixed to the base unit. The base transmits the correction to the rover using a UHF radio, and in real time the rover achieves 2 to 4 cm of precision.

In addition, the archaeologists bought a hand-held Topcon

GMS-2 GPS data collection system to collect and record data points. The mapping-grade GIS tailored system has an internal camera, and it enables the archaeologists to record attribute information about various points.

"We love the Topcon equipment," says Lavris. "The handheld GMS-2 gets the GLONASS satellites, and with them, we can receive 12 to 15 satellites on average. Our maximum with other units has been seven satellites in some areas."

To map the ancient sites in detail, the archaeologists have purchased a Topcon GPT-9003A robotic total station. It comes with an FC-200 data collector with TopSURV 7 software. "We will tie into the control point network with the total station to have everything tied together spatially," Lavris says.

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Topcon's GMS-2

The GMS-2 truly represents the next generation of a compact satellite positioning receiver.

Topcon engineers have incorporated the industry leading dual-constellation satellite tracking into a small hand-held GPS receiver, the new GMS-2.

This innovative new system also provides an integrated electronic compass and digital camera powered by Topcon's revolutionary imaging technology. This powerful combination of dual-constellation satellite performance and digital imaging technology has set a new standard for GIS field mapping.

