

Low Cost Mobile Data System Boosts Rescue Range for Blaine County

Robert Croft
Manager, MDC Systems
Electronic Systems Technology, Inc.

Sun Valley Ski Resort in Idaho is famous for its rugged peaks and year round snow. It's the perfect place

to ski, but made implementing a reliable wireless communication system a challenge. Captain Ed Fuller of the Blaine County Sheriff's Department had the responsibility to find a Mobile Data Computer (MDC) system that would work well in the mountainous terrain and enhance the area of coverage for their search and rescue missions. The Base Station for the MDC System is located in the town of Hailey, ID, which is at 4800' elevation. The surrounding Sawtooth Mountain peaks range from 8,000' to 9,000' elevation.

Captain Fuller issued a RFP and awarded the MDC system contract to Electronic Systems Technology (EST) in Kennewick, WA. EST specializes in turn-key small to mid-sized MDC systems. A formal radio frequency (RF) site survey, the foundation of a radio network for the MDC system, was completed in February 2000. During the site survey, an EST Customer Support engineer performed on-site measurements and analysis to determine factors needed to design the ESTeem RF data communications system including RF signal levels between systems, co-channel emitter frequencies/signal strengths, and RF data quality. The mountain locations for the repeater sites required the field engineer to be taken into the mountains via snow mobile to complete the repeater site testing.

After completion of the analysis, a formal Site Survey Report was prepared to document the findings and plan the installation and hardware requirements for the MDC system. The site survey found that the county would need 1 base station located in the Sheriff's Department building in Hailey, three repeater sites (Figure 1) installed on existing towers and 16 mobile units installed in their patrol vehicles. One laptop computer with an ESTeem

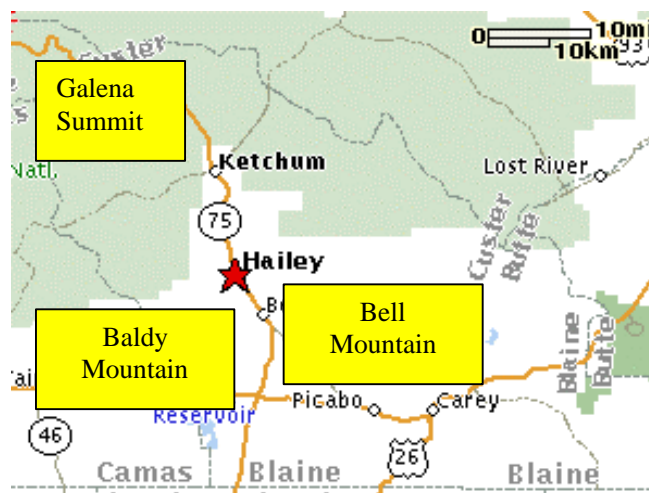


Figure 1: Repeater Site Layout

modem can be moved from a patrol vehicle to an airplane for remote communication. This mobile setup has a dual function for portability between vehicle aircraft. The portable unit allows Blaine County support for search and rescue missions where they couldn't communicate by voice but their MDC system still worked reliably.

“Portability offers dual function in vehicle and aircraft.”

The ESTeem 192M, 150-174 MHz, VHF radio modem was selected for this application because to provided the best communication range in this mountainous environment. Its affordability, secure packet burst encrypted transmissions, high data rate of 19,200 bps and a data accuracy of greater than one part in 100 million also established the ESTeem product as the best choice for this difficult wireless application.

The base station was located in the Sheriff's Department. Components include an ESTeem 192M modem with power supply, linear amplifier with power supply, lightning arrestor, an SCA base station computer and an antenna that was mounted on the roof. (Figure 2).

Low Cost Mobile Data System Boosts Rescue Range for Blaine County

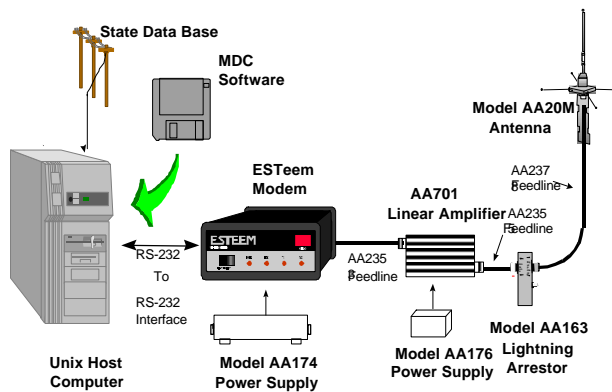


Figure 2: Base Station Diagram

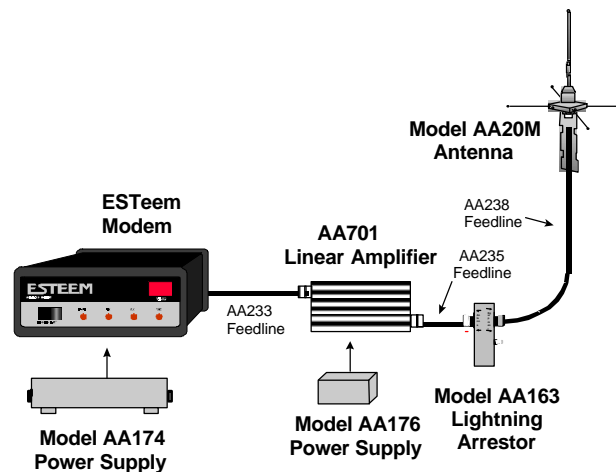


Figure 4: Repeater Site Diagram

An ESTeem Model 192M modem was mounted behind the passenger seat of the patrol cars along with a laptop computer that was mounted next to the driver's seat for easy access (Figure 3).

The repeater modules include an ESTeem 192M modem with power supply, a linear amplifier with power supply, a lightning arrestor and an antenna. These four components were installed in weatherproof enclosures providing protection from the elements and installed on existing towers at 8,500' Bell Mountain, 9,100' Baldy Mountain and 8,701' Galena Mountain (Figure 4).

Once the MDC system infrastructure was in place, EST engineers verified the results of the site survey. This critical re-evaluation of the RF system insured the ESTeem MDC system would provide coverage in every corner of the county.

The software package, Premier MDC™, is provided by SCA, a Motorola Company. Premier MDC is a

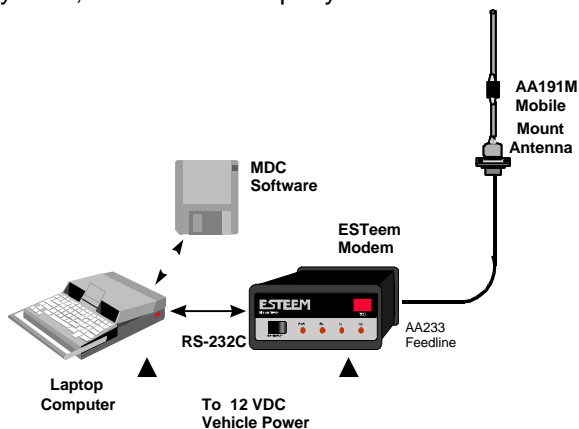


Figure 3: Vehicle Diagram

state-of-the-art, Microsoft Windows® -based, mobile data software solution that provides public safety personnel with real-time wireless access to NCIC, NLETS and state and local databases using advanced radio technology. Premier MDC also delivers access to legacy systems and other applications, CAD/RMS integration and messaging.

The ESTeem MDC RF system has provided Blaine County Idaho the cost-effective communication solution it was looking for. They have a data communications system that has made them efficient and reliable even in the mountains of Idaho.

EST holds the US and Canadian patents on the wireless modem. The first ESTeem product was type accepted in 1984, and today EST manufactures 9 distinct wireless modem products that are keeping businesses moving throughout the world.

This document is copyrighted by Electronic Systems Technology (EST) with all rights reserved. Under the copyright laws, this document may not be copied, in whole or part, without the written consent of EST. Under the law, copying includes translating into another language. EST, EST logo, and ESTeem are registered trademarks of Electronic Systems Technology, Inc. Simultaneously published in the United States and Canada. All rights reserved. For more information contact:

Electronic Systems Technology, Inc.
 415 North Quay Street
 Kennewick, WA 99336
 Ph: (509) 735-9092 Fax: (509) 783-5475
www.esteem.com