

2574 Sheffield Road
Ottawa, Ontario K1B 3V7
(613) 745-4110
www.c-comsat.com

Atomic Energy Canada Limited Fire Service Emergency Services Application

By Paul Seguin, Satellite Application Specialist

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Introduction

Established in 1997, C-COM Satellite Systems Inc.

Problem Statement

Atomic Energy of Canada Limited (AECL) Fire Services had a communication problem

Previous Options

In the past the way to deal with the requirement for a portable Incident Command Center

C-COM Solution

C-COM received a telephone call from AECL looking for some information

Internet Connectivity

"Why would an emergency response agency need the internet"

Voice Over Internet Protocol

Emergency response agencies cannot rely of local resources being available

Video Push

One of the requests at most emergency sites is for off-site personnel.

Implementation

AECL involved C-COM in the planning stage of this vehicle.

Summary

Summarize the benefits of the C-COM solution.

Introduction

Established in 1997, C-COM Satellite Systems Inc. is a leader in the development and deployment of mobile satellite-based technology for the delivery of 2-way high-speed communication services into vehicles or other mobile structures as well as a leading service provider of reliable 2-way high-speed broadband satellite based Internet services. C-COM designs, develops and manufactures proprietary mobile self-pointing (iNetVu[®]) antenna systems, intelligent 'One-Button' controllers and accessories that allow the delivery of high-speed communication services into mobile environments, while stationary; virtually anywhere one can drive. The iNetVu[®] antenna system can be activated with the simple push of a button or with the click of mouse. Once activated, it deploys automatically in a few minutes, locks on to the selected satellite and delivers broadband Internet access, VoIP and Video services.

C-COM's product development team utilizes in-house expertise in electronics and software to bring the latest industry features to its iNetVu[®] controller technology. Field feedback and specific requests can be rapidly developed into working customer solutions. This customization makes the iNetVu family of advanced mobile antenna systems the number one choice in thousands of global applications.

There are more than 2,200 iNetVu products deployed across the globe and are considered indispensable to many of our customers who rely on this product to deliver essential connectivity.

iNetVu[®] is a registered trademark of C-COM Satellite Systems Inc.

Problem Statement

Atomic Energy of Canada Limited (AECL) Fire Services had a communication problem caused by geographical issues. Their response area covered enough geography that standard communication techniques would not guarantee connectivity throughout. Once the fire apparatus has left the fire station, the methods of communication available becomes very limited. This lack of a guaranteed communication link can translate into very trying times for the Fire officers who have been tasked with dealing with the emergency at hand.

AECL Fire Service is not just a fire department. They are responsible for the safety and well being of the employees and public that works at the facility or lives in the general area.

The facility is located 180 km. north-west of Ottawa and encompasses multiple buildings spread out over 3,700 hectares (9,100 acres) of land. The facility is responsible for the majority of the world's medical isotopes including two-thirds of the world's technetium-99m. This facility houses the major research and development efforts of AECL and houses world class expertise in physics, metallurgy, chemistry, biology and engineering.

In response to the need for better communications and to provide a mobile Incident Command Center, AECL Fire Service designed and had built a new command vehicle.

Previous Options

In the past the way to deal with the requirement for a portable Incident Command Center was through the use of a tent or two, some portable tables and chairs and perhaps a flip chart board. Communications meant having a two way radio and a clip board. Your ability to communicate was limited by a line of sight to another radio.

Today the expectation to do more and more creates extreme pressures on the agencies involved and the solutions they recommend.

The C-COM Solution

C-COM received a telephone call from AECL looking for some information on a mobile Internet solution. After a number of months and many hours of research AECL project personnel decided that a satellite based solution would work best for their requirements.

AECL had contracted with truck builder Eastway Emergency Vehicles, a division of Eastway Tank, Pump and Meter Limited to supply their new Command Vehicle.

Established in 1968, Eastway Tank, Pump and Meter Limited (Eastway Tank) is an Ottawa, Canada based manufacturer of tank trucks for both the North American and International markets. Product lines include petroleum trucks and trailers, water trucks, military refuelers and fire trucks. Tanks are manufactured to both US and Canadian D.O.T. standards.

When AECL informed Eastway that they required the inclusion of a iNetVu 1200 Mobile Satellite Antenna solution, Eastway contacted C-COM. Over the next three months the

complete plan was developed that included using the iNetVu system to provide connectivity to handle the Voice Over Internet Protocol (VOIP) services, Internet connectivity to allow for online weather updates and research of potential hazardous material response, Corporate LAN interconnection to allow for online access to critical facility records and Video Push to provide images to possible remote ECO operations.

Based on the geographical area that needed to be covered, the iNetVu® 1200 with the 7000 Controller was chosen. . This solution provides connectivity over the complete geography plus offers a wide range of bandwidths. The system would operate within the proposed IT structure and provide the customer with a reliable and cost effect solution.



AECL Mobile Command Unit

Internet Connectivity

“Why would an emergency response agency need the internet”, you ask. Most people would answer something like “waste time exploring the Internet” but nothing could be further from the truth...

A lot of applications such as weather programs, hazardous material programs, cloud dispersal analysis programs and many others rely on having Internet connectivity to function. As these programs are invaluable to assist the responders, the issue of Internet connectivity is also invaluable.

The other aspect of connectivity is to provide the ability to do research. The internet is a real gold mine of information relating to this type of emergency response. From WHIMIS specification sheet to local resources that can be called on during an event

Voice over Internet Protocol (VoIP)

Emergency response agencies cannot rely of local resources being available during natural or man-made disasters. This being said, a responding agency only has a couple of options available for voice communications. Both options require the use of satellite technology.

One choice is a using a Satellite phone. The Satellite phone is a very good tool as it is highly portable and works from almost any outdoor location. Its drawbacks are that the airtime is expensive and without an external antenna and hardwire connection it does not work under cover.

The alternative that provides very inexpensive airtime is Voice Over Internet Protocol or VOIP as it is called. This technology uses a special router that packetizes the digitized voice data and transports them over the Internet. The other end of the satellite connection uses another device to convert these digital packets back into a vocal signal.

VOIP can be used indoors or out (by using a cordless phone connected to the VOIP router), provides inexpensive fees to operate and can offer a number of telephones through one system.

AECL's vehicle has been built to include a number of telephone sets that can be activated using VoIP capability provided by the iNetVu[®] solution.

Video Push

One of the requests at most emergency sites is for off-site personnel to truly understand the environment, they want to see images. How do you send pictures from a remote site, in a timely manner, back to the EOC? You could use a BGAN system but the airtime requirements for video make the costs prohibitive.

The other option is the one AECL personnel choose. That option is to use the satellite system to provide a "pipe" to carry the video. The pipe can be either an IP connection or a raw encoded video connection. AECL has the capacity in this new vehicle to pass IP based video to any location with an internet connection.

As the ability to push video is completely dependent on the availability of high-speed access, the iNetVu[®] mobile antenna system is the perfect solution to deliver this option.

Implementation

AECL involved C-COM in the planning stage of this vehicle. C-COM worked with Eastway Emergency Vehicles to provide a communication structure that would deliver the operational characteristics that AECL required. All internal vehicle wiring was completed using Cat-6 cabling which provides an elevated level of isolation to electrical noise. As this is a communication vehicle the expected level of electrical noise is high and Cat-5 cabling would be susceptible to interference.

AECL wanted to have the flexibility to employ the latest in workgroup interaction so devices such as flat panel display with PC interface are used. This provides for online interaction with EOC and onsite personnel sharing a common work surface.

The iNetVu[®] 1200 platform was configured with a PLL LNB and 4 watt BUC compatible with the iDirect modem. The platform was mounted the rack and cabled into the body. The controller was mounted in a rack along with the modem. Two cabinets, one on either side of the truck contain computer stations, VOIP telephones, fax machine and network printer.

The iNetVu[®] 7000 Controller provides complete, automatic self-acquisition of the target satellite with a single press of the 'Find Satellite' button. This feature means that almost anyone can drive the vehicle and run the satellite system with very little training and with almost no effort at all.



Summary

The iNetVu[®] Mobile Satellite Antenna was used to address a number of communication issues that had been identified by AECL as critical elements for the success of their Mobile Command Vehicle. The plan developed with the help of Eastway Emergency Vehicles and AECL that:

- addressed the issue of Internet connectivity,
- provided Voice Over Internet Protocol service,
- allowed for the pushing of stream video from an emergency scene,
- provided a 'One Button' solution that non-technical operators could use,
- provided a robust and reliable solution that would deliver communication requirements when needed and where needed, every time.

The iNetVu[®] Mobile Antenna system selected for this solution meets all of the above requirements and provides the customer with a reliable and cost effective solution. This easy to implement, easy to operate system will assist AECL in their efforts to continue to offer world class services to all of the citizens they protect.