BARRETT COMMUNICATIONS

Case Study

Emergency communications for Critical Infrastructure

Customer

The Arkansas Airport Operators Association (AAOA) in the United States of America is responsible for most of the 91 airports in Arkansas. The Northeast Arkansas region is known for its seismic activity along the New Madrid fault. Airport communications have relied on the Arkansas Wireless Information Network, which is a statewide trunking system which provides excellent coverage throughout the state, it is however reliant on land based infrastructure, including repeater towers and microwave links.

Requirements

The Assistant Airport Director, Mr Mark Mellinger recognized the need for a reliable Airport centric emergency communications system that was not reliant on infrastructure and would allow communications of both voice and data.

A Barrett HF radio communications solution was proposed by NVIS Communications, a Barrett approved Systems Integrator in the USA. Mr John Rosica, President of NVIS Communications, commented "we knew the solution we proposed would provide first class emergency communications; but it also required an FCC license for specific HF channels and an Arkansas Department of Aeronautics grant. We assisted Mr Mellinger in submitting a strong case for the license and grant, both of which were approved."

Solution

The communications plan was rolled out in stages, the first stage commenced at the end of 2010, with installation in 2011. Stage one incorporated four Barrett 2050 HF transceivers, two with the Barrett 2020 fax and data and email system with internally fitted Clover 2000 modems together with antennas, support equipment, installation and training. The station at the Northwest Arkansas Regional Airport also required a Barrett 2076 remote site controller to provide remote control access of the radio. The 2076 utilized the Airport's wireless LAN to provide full radio control and VoIP audio in the Communications Center. At the NW Arkansas Regional Airport the transceiver and antenna could not be located within the Airport Communications Centre, so another site on the airport was located to house this system.

In July 2012, stage two commenced with the installation at the Hot Springs, AR Airport. A Barrett 2050 HF transceiver and 912 antenna were installed. In September 2012, a third station was installed at Fort Smith AR Airport, with a Barrett 2050 with internal Clover modem and 912 antenna. Since the installation of the Hot Springs station, Mr Mellinger has conducted daily checks and was able to establish an ALE (Automatic Link Establishment) link throughout August 2012. Weekly voice checks were conducted between Northwest Arkansas and Hot Springs Airports with excellent results. The distance between the two stations is approximately 150 miles. Mr John Rosica of NVIS Communications commented that "the NVIS capability of the 912 Multi-wire Broadband antenna and the efficiency of the ALE in the Barrett 2050 have greatly contributed to the success of the solution".

Benefits

The AAOA's operation plan, in the event of a disaster, is to deploy to a damaged airport and re-establish communications with the outside world. In late August 2012 this emergency plan was implemented over the three days it took for Tropical Storm Isaac to move through Arkansas. Daily damage reports were relayed via HF voice, with excellent link quality. ALE links were established on the first attempt almost every time. The secure calls were conducted with excellent results and the Status Request and Beacon features of the radio were utilized daily.

A Barrett PRC-2090 HF Manpack transceiver with vehicle docking station was also incorporated into the solution for mobile use with the Barrett 2019 mobile antenna. The PRC-2090 was fitted with an internal data modem and is highly portable with a battery pack and whip antenna.

Mr Mellinger said "We are planning further expansion of the Barrett solution to fully enable email capability across the network with connectivity into the telephone network plus interoperability with other government agencies and a cross gate to allow team leaders in other areas of the airport to have access to the HF solution from their a VHF/UHF networks. I am very happy with the Barrett HF solution and the expertise of John Rosica and his team at NVIS Communications."

Additional critical infrastructure applications

Barrett Communications has been providing solutions to customers for over 40 years to meet their needs for critical infrastructure services, in addition to Arkansas Airport, we have provided systems to the Chilean Civil Aviation Authority (DGAC).

During the earthquakes of 2010, where the typical terrestrial microwave backbone, fibre optic and LMR communications mediums were disrupted, the Barrett communications emergency system provided clear and reliable communications throughout the country's airports in the most difficult situations, from desert in the north, to the mountains and Antarctic conditions in the south, Barrett HF radio was the only reliable communications medium.

Beyond aviation Barrett Communications have provided emergency communications systems for the crude oil pipeline between Tanzania and Zambia. In 1966 a joint agreement was established between the governments of Tanzania and Zambia called TAZAMA. This pipeline pumps crude oil 1,710 km from Dar-Es-Salaam to the Ndola Fuel Terminal. The pipeline is a life line to land locked Zambia providing fuel for the whole country and is of important strategic value.

TAZAMA have been using the Barrett 900 Series for many years, which has provided a reliable and continuous communications service. In 2012, TAZAMA upgraded their whole network with Barrett 2050 HF transceivers utilising data, email and voice. TAZAMA needs to maintain voice, data and email communications continuously, as pumping crude oil is a 24 hour per day, 7 day per week operation. HF radio communication is the only reliable communications source that can link the 10 remote sites. Land line telephones are not reliable or available, satellite communications are far too expensive and cellular mobile technology is not available in all locations.