

Wireless Communications

Providing challenges, solutions for Air Force people

LMR USE: A primary communication tool, but they present challenges to the user.

CELLULAR PHONES: Keep people in touch with their units and can offer e-mail and picture-taking capability.

LAPTOPS: Their portability makes them an asset during TDYs. They can be used to file trip reports or watch a DVD during time off.

IRIDIUM PHONES: A futuristic alternative to cellular service, they offer coverage in regions where cell phone can't get a signal.

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TINKER AIR FORCE BASE, Okla. — Wireless technology developments in recent years have greatly increased the amount of information available and the rate of receiving this information. Airmen have benefited from these improvements in-garrison, deployed and off-duty. While there are many good things that come from wireless technology usage, the equipment has its limitations.

Land Mobile Radios are still the work-horse of wireless communications. They have been around since the 1960s and can be seen being used by just about every career field and every rank. LMRs are typically maintained by contractors, and repairs, replacement parts and upgrades can be expensive.

Also, acquiring frequency clearances can be difficult in foreign countries. LMRs work best in short range; however, areas with thick vegetation and hilly terrain can degrade reception. Because they can be encrypted, LMRs are typically used in the field as a command and control asset and are not usually found in the office environment.

Recent developments in technology have provided comm solutions where LMRs are not a solution. These newer

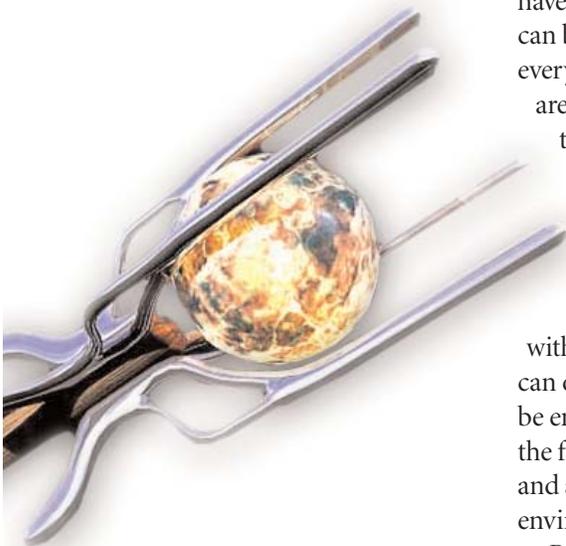
technologies can also make the in-garrison and off-duty life of an airman much more convenient.

Cellular telephones make personnel easily accessible 24 hours a day. Commanders, first sergeants and those on mobility status rely on their cells, either personal phones or those issued to them, to keep up to date with situations in their work centers. Added features on phones, such as e-mail and picture taking capability, can work in a pinch when a computer or camera is not available. Two-way pagers on cell phones can replace LMRs in certain circumstances.

This 24-hour availability is beneficial, but can have its side effects. No one wants to be the person who has his or her phone ring in a meeting when they forgot to turn it off, or receive a call about work during the weekend while enjoying time with family. Cell phones can also help make meeting friends off-duty easier, provide a tow truck when a car breaks down or contact a designated driver when someone has had too much to drink.

Laptop computers, found everywhere both at work and home, also make temporary duty assignments easier for Air Force people. Laptops can store files given from other TDY participants, be used to draft trip reports and even show a DVD on the flight home.

Satellite communications also offer a



wireless option. **Iridium satellite tele-phones** operate similar to cellular tele-phones but establish connectivity on a satellite constellation. They operate anywhere in the world, making them a popular option for site surveys. Iridiums can connect to DSN or commercial lines and have voice mail and secure call options. Their portability makes them useful for mobile missions, and they can also be used to activate communications circuits. They have a lower per minute cost than cell phones. Their drawbacks include a high initial cost of \$4,000, and they generally cannot be operated indoors.

But, its worldwide connectivity makes Iridiums a popular option when traditional and cell phones are not available. For example, 1st Lt. Carlos Serbia is planning the communications architecture for an upcoming 3rd Combat Communications Group mission to the mountains of Ecuador. The terrain between mission sites does not allow for voice services via microwave connectivity, and there is no cell phone coverage in the area. Lieutenant Serbia relies on Iridium service in these mountainous areas. He said, "Iridiums give you a capability that you cannot match with any current Air Force technology."

There are other devices that can be used for personal communications. **Personal Digital Assistants** can easily organize appointments and provide a means to check e-mail remotely. **Commercial walkie-talkies** also provide communications, but they are not used on Air Force deployments because frequency clearances cannot be obtained.

Frequency clearances

Frequency clearances can be difficult to get because available band-

width is limited and valuable.

Frequency manager Staff Sgt. Scott Cook said, "The main issue with wireless technology is cluttering of the radio frequency spectrum by government and civilian agencies worldwide."

Sergeant Cook saw this cluttering first-hand. He saw blips on a TPS-75 radar that indicated a downed aircraft. People at the base where he was stationed spent seven hours searching for it. What they discovered was the source of the radar signals was a goat with a wireless chip embedded in its

neck. It had wandered into the path of the radar and was believed to be the cause of the radar blip. The result of frequency interference between the radar and the chip in the goat was panic and wasted manpower.

Along with frequency clearance difficulties, wireless communications tools face another difficulty. Many of them violate emissions security regulations when in a classified area. Various devices have different parameters to stay in range with to avoid violating emission security regulations. People need to review AFI 33-203, AFMAN 33-214 v2, or contact their unit information assurance officer for specific regulations.

Operations Iraqi Freedom and Enduring Freedom have shown wireless communications are necessary to get C2 information rapidly to personnel on the front lines. Wireless communications capabilities continue to grow for both on-duty and off-duty use.

Wireless revolution

The next frontier in wireless communications comes with the development of wireless computer networks. **WLANS** have been assessed and implemented by the Air Force Communications Agency's Technology Directorate for the past 10 years.

Currently, the Combat Information Transport System Program Management Office is responsible for developing WLAN architecture in compliance with Air Force security regulations. Current WLAN systems do not provide access points with strong enough security to support most Air Force requirements, but fast improvements in encryption technology show WLANS will soon be the next big communications implementation.

WI-FI GADGETS



According to statistical research, laptops are replacing many desktop systems because of their convenience.



Blackberry Personal Digital Assistants help commanders stay organized and in touch with their support staffs.



Around since the '60s, Land Mobile Radios remain the wireless workhorse of the Air Force, but they present obstacles.

