Project 25 for Managers
—*Joe P. Blaschka, Jr., P.E.*

There is a flood of information about Project 25 (P25), its need for interoperability, and how much money there is available for P25 systems and equipment. If you believed all the hype about P25 you would think buying a P25 radio would solve all your communications problems. Communications would be possible with all agencies, at all times, everywhere. If that is what you are dreaming, wake up and get back to work! As managers there are many P25 issues to be concerned with besides interoperability. A few of them are:

- Can I afford this technology?
- How much does it cost to maintain?
- Do I need special test equipment?
- Is this a competitive market?
- Will I end up in a sole source situation?
- How will my existing equipment interface to the new equipment or will it?
- Are there any hidden costs?
- Are there operational issues that will cause problem for my users?
- Does narrowbanding require P25?
- Will my users need training with this new equipment?

The answers to those questions are: possibly not, more, yes, partially, possibly, depends, yes, yes, no, yes. Wasn't that helpful? Now for more detail.

P25 History
P25 started as a response to two events that were taking place in the late 1980s and early 1990s. In the 1980s, APCO developed a functionally oriented trunking standard called APCO 16 in hopes of having a common trunking platform develop between the various equipment manufacturers. This did not occur and three manufacturers developed proprietary systems that all met APCO 16 without being compatible with each other. Secondly, the Federal Communications Commission's (FCC) work on refarming the frequencies looked like very narrow bandwidths (6.25 kHz) would be required by 2005. The very narrow bandwidths would require a new technology, most likely digital. Out of this, APCO Project 25 was developed in the early 1990s resulting in new conventional and trunking standards that defined not only the functions but also the technical details of the equipment interfaces. APCO started the standard that was then transferred to the American National Standards Institute (ANSI) process so it could become a legally recognized standard. It should be recognized that for conventional users, interoperability was not a technical problem. Analog FM (the most widely used technology today) is covered by a set of ANSI standards and virtually any analog FM radio can talk to any other analog FM radio in the same frequency band.

P25 Standards
The main point of P25 is to develop standards any manufacturer can build to. These standards are highly technical and define to the smallest detail how the equipment must communicate with other equipment. P25 only defines a basic set of functions. Manufacturers may develop optional features and functions that are manufacturer specific. For example, if a manufacturer develops a P25 compliant encryption system, it will work with other manufacturer's P25 compliant encrypted radios. However, a manufacturer may bring out a non-P25 compliant encryption scheme resulting in a proprietary product. Currently, the main standards developed are:

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Common Air Interface (CAI): This defines how the radios talk to each other. Applies to conventional and trunking radios. Radios still have to be within the same frequency band.

Trunking: This applies to how the radios work within a trunking system. Radios still have to be within the same frequency band.

These two standards generally have been successful. Different manufacturers are building compatible equipment for both trunking and conventional systems.

The standards do not yet fully define console interfaces or equipment-to-equipment interfaces. For example, at this point, there is no standard for the interface between a base station and a voting comparator. This can result in proprietary interfaces and a single vendor solution.

Making The Decision
There are many issues to think about when considering a P25 radio system. Some of the main questions are:

How Is This Funded?
Grant funding may come with a requirement that the equipment purchased be P25 compatible or compliant. This may require P25 equipment be purchased but the grants generally do not require the equipment be installed in the P25 mode.

What Are The Long-Term Costs?
Grant funding is a wonderful source to help re-build or upgrade a communications system. Unfortunately, grant funding goes away sometimes over a period of years and sometimes abruptly. Can the long-term costs be supported? Implementing a P25 system will mean all future radio purchases must be P25 compliant equipment. This will raise the cost of future replacements and upgrades. Are there ongoing software maintenance fees? Can I afford to expand the system on my own? Will my maintenance costs be higher? Are my infrastructure costs going to be higher?

What Are The True Implementation Costs?
Grant funding may cover the initial equipment costs assuming everything has been included. Have any infrastructure costs been considered? Does converting to digital affect the links to my sites? Am I going to have to upgrade my microwave or use different types of channel cards? Do I need to purchase new test equipment for the radio shop, as virtually all older test equipment does not support P25? Will the technicians need to be trained on the new technology? Can I manage the new technology or will I need to obtain system management support? Will my users need training on the new radios and how they operate? How much time will it take to support the system users handling routine questions as the technology is being implemented?

How Will I Maintain Interoperability?
If you decide to implement P25, how does this affect the agencies surrounding you? Do any of the other agencies you rely on for mutual aid have P25 radio equipment? P25 radio equipment is capable of operating in an analog mode. So, your users can monitor and communicate with other agencies using analog equipment but those other agencies will not be able to monitor your P25 communications. This may result in a loss of functionality users have enjoyed for many years. This could be a significant problem for fire users. P25 does not solve the multiple band problem. If your police users are on UHF and your fire users are on VHF, changing to P25 does not solve that interoperability problem. There may be audio quality problems patching one P25 radio system to another P25 radio system.

Do I Have Any Special Requirements?
Currently, there are no P25 fire alerting pagers. This means your fire tone out channel will need to stay analog FM until another method of fire alerting is implemented. Volunteer fire responders will not be able to monitor the fire channels unless they have a P25 scanner or radio. Are you currently using receiver voting? If so, implementing receiver voting is currently a single vendor solution for the foreseeable future. Receiver voting is significantly more expensive than with analog FM voting. Are you using simulcast? If so, depending on your specific system, additional sites may need to be constructed because the overlap spacing requirements for P25 are stricter than for analog FM. Do you need encryption? If so, implementing encryption using the P25 platform may result in better audio than other technologies.

These are just some of the basic questions that need to be answered before implementing a P25 system. P25 is just like any other technology. It by itself is neither good nor bad, it is up to those deploying the technology to determine if it meets an operational requirement and how it affects those that use the technology on a daily basis.

THOUGHTS—

The American Revolution was a beginning not a consummation.
—Woodrow Wilson

All publicity is good, except an obituary notice.
—Brendan Behan

Common sense often isn't common practice.
—Dr. Jennifer James

THINKING ABOUT … CONTINUED

CSEPP System Followup

Submitted by Dean Hane

The Chemical Stockpile Emergency Preparedness Program (CSEPP) completed the construction and implementation of their new trunked simulcast radio network last summer. Since then, all public safety agencies in Umatilla and Morrow counties have converted to the new 450 MHz system as their primary method of dispatch communications. This article serves to provide an update on the performance, operation, and management of the system since completion.

Last month, CSEPP completed their annual training exercise of a chemical agent release at the Umatilla Army Depot and used the new system to communicate, coordinate, and respond to the various emergencies simulated during the exercise. Centralized command and control was performed and all first responders were now capable of supporting the event, largely due to improved communications in the field. One element of the exercise was the simulated failure of telephone systems, which meant the radio system would be used to a much larger extent. CSEPP is pleased to report that the new radio system handled the increased traffic flawlessly. Although the system design and integrity showed its value, this also shows the importance of planning and operations. Users knew which channels to use, they knew the chain of command and communications, and they carried out their duties to respond to the event.

The operation of the system is handled on a day-to-day basis by the communications coordinator who assists users in coordinating repairs, programming issues, and other service-related items. Additionally, ADCOMM provides system management support services to assist in system planning, technical opera-

tions, and interoperability solutions. System maintenance is performed through a Motorola service agreement. The users drive a large portion of system operation since it must work for them not only during emergencies but for day-to-day operations as well. Their input is required so that technical and management personnel can support the needs in the field.

One of the benefits to implementing the system was to have a "managed" system. As part of this managed system, an advisory board has been created to govern the system. The board is comprised of first responders from law, fire, and dispatch center disciplines who administer the policies of the system. This is another successful element of managing the system, whereas users may submit requests, communicate issues, and have direct input to how the system is used.

For the short term, projects are underway to upgrade consoles at one dispatch center and implement interoperable communications infrastructure at several sites. The success of the system will continue to rest with the first responders, user agencies, FEMA, and the vendors who support the system.

Do You Want To Keep Your FCC License?

Submitted by Joel Harrington

Most public safety and business licensees are unaware that the FCC requires notification that their new or modified license has been constructed within one year of the license grant date. It is extremely important that an FCC Form 601 Schedule K be filed no later than 15 days after the deadline. Complete Schedule K filing details can be found at http://wireless.fcc.gov/licensing/const-req/.

Not filing a license construction notification or extension in a timely manner will soon cause your FCC license to be automatically terminated by the FCC's

Universal Licensing System (ULS) with no appeal rights. Until now the FCC did not act on a missed Schedule K filing until a licensee wanted to modify or renew an existing license. The FCC's Wireless Telecommunications Bureau (WTB) is now getting very serious. They issued a public notice DA 05-137 (http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-05-137A1.pdf) on January 21, 2005, regarding termination of unconstructed licenses. This public notice is part of an FCC outreach to provide additional information about their automatic license termination program and its implementation. Soon the FCC will begin the process of identifying all licenses or frequencies for which a Schedule K or extension was not filed. You should immediately audit all of your FCC licenses (land mobile and microwave) and file the necessary Schedule Ks and waiver requests. Now more than ever, the licensee contact and address of record information must be updated in the ULS. The clock is ticking. Contact ADCOMM Engineering Company regarding our FCC licensing services.

THINGS TO PONDER—

- A good time to keep your mouth shut is when you're in deep water.

- How come it takes so little time for a child who is afraid of the dark to become a teenager who wants to stay out all night?

- Business conventions are important because they demonstrate how many people a company can operate without.

- Why is it that at class reunions you feel younger than everyone else looks?

THE LAST BYTE

Goodbye to a Friend and Mentor

Friend, co-worker, mentor, peer, Colonel, and just plan Dick, were all names I called Dick Quantz. I first met Dick in the middle 1970s when I was still working for Motorola. I was helping the WSP with a problem they were having using their new mobile telephones. Those first encounters started a relationship that lasted until he passed away this last March. I like to believe we still have a relationship, just on a different frequency. Dick helped give ADCOMM a kick start in 1979 with his great knowledge of public safety communications and by setting a high standard of performance for himself and for me to emulate. I was a young impatient engineer back then and Dick taught me much about being thorough and thoughtful when using technology and empathetic to the users of the technology from dispatchers to first responders. When I attended his memorial service, I was struck by the number of people who shared a similar experience. He was a true gentleman, a man of integrity and honor. His word was gold. Our world would be a better place if we had more people like Colonel Quantz setting an example for us to follow. Dick, I hope your channels are clear and all communications are 5 by 9.

—Joe Blaschka, Jr., P.E.

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