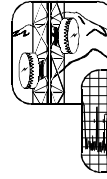


Talk Group



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Technology and Teamwork

On June 23, 2002, Valley Communications Center (Valley Com) in Kent, Washington answered the first 9-1-1 call and dispatched the first units from their new 24,000-square-foot, \$15.4-million dispatch center. The success of this project was primarily due to the teamwork exhibited by the operations staff, technical staff, architect's team, building project manager, building contractor, and the technical integration project management team. This project



relied on close coordination between all the parties involved throughout the concept, design, and implementation. Communications and a willingness to identify and resolve issues in a team-oriented environment was a key part of this project. ADCOMM Engineering was the Technology Integration Project Manager and provided both engineering and hands-on implementation assistance.

This center represents the latest in state-of-the-art design using computerized building system and security controls, Gigabit fiber core data switching network, copper and fiber to each wall outlet, ergonomically designed work stations, and a relaxing environment resulting from the coordination of lighting and colors. There are approximately 75 miles of data, fiber, and miscellaneous wiring and cabling installed.

Valley Com would be glad to answer any questions you have about their new facility. You can reach them at 253-372-1300.

THE LIGHTER

SIDE

What those software version numbers mean

1.0: Our final beta – released because the project team all quit and the marketing guys were in a cold sweat.

1.1: We fixed all the killer bugs.

1.2: Well, we introduced a few new bugs fixing the killer bugs and so we had to fix them, too.

2.0: This is the product we really wanted to begin with. It's not what you need yet, but we're working on it.

2.5: Hey, we finally got it right! You should be really happy with this.

3.0: More features and, by the way, you'll need to double the RAM and add a faster processor.

Time is on our side*

The work time to buy various products and services has decreased greatly.

Half Gallon of Milk	37 min	31 min.	21 min.	16 min.	13 min.	10 min.	8.7 min.	8 min.	7 min.
Loaf of Bread	13 min.	10 min.	7 min.	6 min.	5.4 min.	4 min.	4 min.	4 min.	3.5 min.
Gallon of Gasoline	32 min.	22 min.	17 min.	11 min.	8.3 min.	6.4 min.	10 min.	6.5 min.	5.7 min.
McDonald's Big Mac	M	M	M	M	M	10 min.	9 min.	9.5 min.	8 min.
100 Miles of Air Travel	M	12 hrs. 46 min.	8 hrs. 14 min.	4 hrs. 7 min.	2 hrs. 43 min.	1 hr. 42 min.	1 hr. 27 min.	1 hr. 11 min.	1 hr. 2 min.
	1920	1930	1940	1950	1960	1970	1980	1990	1999

*Excerpted from Insight Magazine

For Your Information

Non-Ionizing Electromagnetic Radiation (NIER)

Submitted by Tom Manley

There is a long history of regulation relating to RF exposure and a great body of knowledge on the biological effects of NIER. These effects are generally recognized as transitory in nature with no measurable lasting effect or demonstrable connection to specific disease. The regulations involve the usual "alphabet soup" agencies: FCC, ANSI, IEEE, NCRP. Considerations over many years by these agencies has resulted in the present-day basis for the FCC's requirements.¹ The existing regulations are based on the degree to which various frequencies of NIER measurably produce heat in body tissue or affect the behavior of test animals. In general, the limits of the FCC regulations were chosen to be 1/50th of the point where any such effects have been observed, a reasonably conservative approach. In ADCOMM's work evaluating NIER, it is relatively straightforward to keep a radio site safe both for the public (uncontrolled environments) and for those who may be called on to work around active RF radiators (controlled environments).

Knowing the exposure produced by your equipment at one point in time is not the only issue. It is necessary to know what you have installed at a site, along with others, is safe and, then, to keep track of the usage and condition of the site so that safety is maintained. Otherwise, how can you really know what a concerned individual, worker or citizen, might actually encounter ... or respond to what is perceived?

Indeed, most sites ADCOMM has reviewed fall well within the guidelines of

the FCC. Occasionally, however, an actual problem is found or the perception of a problem arises. Sites are sometimes found to be noncompliant: access to a rooftop that can only be made by looking directly into the face of a sector of panel antennas, the unpermitted installation of antennas in a viewpoint location exactly where someone is drawn to admire the view for awhile. Or it could be a problem of perception: the antenna sectors looming on the rooftop across from your living room window, the monopole next to the park where your children play.

The FCC has continued its efforts to deal with these issues. The requirement to document a site's exposure has increased over the years so that, as of September 1, 2000, all sites must be shown to be compliant and must regularly update that documentation. It is also prudent business. Just as tower loading and physical issues can limit co-locators on a site so can a high RF environment. Knowing your site and the RF environment it creates can help address community concerns that might otherwise encumber establishing or expanding a site. Likewise, workers around RF facilities need to know they are safe and how to remain so on your site.

CSEPP Serves Public Safety

Submitted by Dean Hane

The Chemical Stockpile Emergency Preparedness Program (CSEPP) serves to rid several thousand tons of lethal nerve agent from the Umatilla Chemical Depot in northeastern Oregon. The Army has been storing Sarin, VX, mustard, and other chemical agents here since 1962 and is expected to begin incineration of the weapons in the summer of 2003. CSEPP was developed by the Federal Emergency Management Agency (FEMA) to assist in providing safety and security systems for the first responders and citizens of the surrounding communities. As part of this safety program,

CSEPP will be implementing a new tactical radio communications system for fire, law, and CSEPP response personnel in Umatilla and Morrow counties.

The existing system consists primarily of VHF simplex channels and base stations with limited coverage. Although most portable and mobile units have recently been upgraded, there is still a lack of coverage, frequencies, and features required for interagency communications.

Much of the existing infrastructure is outdated and may not provide reliable communications when needed. The remaining methods of communication happen on a single UHF repeater, cellular phones, and Nextel phones. Clearly, there is a need for an improved and integrated public safety radio communication system.

After much planning and discussion, the first responders in the bi-county area decided on the purchase of a Motorola SmartNet, trunked, simulcast system. The new radio system will consist of seven channels and seven sites. Due to the difficult terrain in the two counties, it was determined to use 450 MHz for the trunking system's operating frequencies. This was the first 450 MHz trunking application processed by APCO. Initially, there will be 450 subscriber units loaded on the system. There are four dispatch centers in the county that will require upgrades, two of which will be directly connected to the trunking controllers. The new system will dramatically improve coverage in the bi-county region, greatly increase the number of usable channels to the first responders, and allow new features including PTT identification, console priority, emergency identification, and system management tools.

¹American National Standards Institute and the Institute of Electrical and Electronic Engineers, ANSI/IEEE C95.1-1992 (previously released as C95.1-1991), National Council on Radiation Protection and Measurements, NCRP Report No. 86, 1986.

The remaining system configuration will consist of 12 link sites that include a combination of microwave and fiber optic connections. The link system will be designed in a protective loop configuration to prevent a single point of failure from degrading the system. Several additional sites will be developed that include new shelters, towers, and power systems.

System infrastructure development will allow a long, useful life cycle for users and provide for growth needs in the future.

The system is scheduled to go online in the summer of 2003 and will be the primary means of communication for first responders in the bi-county area. It will provide public safety personnel with reliable communications in support of day-to-day activities as well as interagency coordination during any CSEPP events. Ultimately, the citizens of Umatilla and Morrow counties will have improved safety and will be better served.

Increasing Fire & EMS Dispatch Speed and Accuracy

Submitted by Mark Nelson

Background

Recently, ADCOMM supported Valley Communications Center in Kent, Washington, by designing and implementing an alternative that provides quicker dispatch of fire and EMS units with greater accuracy and convenient recall of the dispatch information.

Network Design

We recommended a seven-site VHF simulcast radio system. Dalman Technical Services' COSMOS 4 system was selected to provide the network control equipment. Other equipment included:

- **Vytek Wireless:** Transmitters
- **Zetron:** Paging terminals and transmitter controllers

- **Spectracom:** Timing sources
- **Peregrine Controls:** Station alerting decoder

Interconnection to radio sites was provided using channels on existing digital microwave.

One of the reasons the COSMOS 4 system was selected is the automatic delay adjustment feature that is available in this product. Valley Com was interested in limiting maintenance costs. COSMOS 4 provides automatic bulk delay adjustment that automatically adjusts the signal for simulcast operation.

The paging system is linked directly to Valley Com's CAD system, which speeds the selection of units and people to be notified. Users are able to repeatedly recall the text message from pagers and dispatchers and radio channels are not burdened with repeating information.

Simulcast System Design

Simulcast systems require that the signal from each site be transmitted at exactly the same instant. Signals that are transmitted at different times can cause missed or garbled messages.

Individual delays are added to each path to make all of the paths equivalent to the longest path. The COSMOS 4 system adds the delay automatically. GPS receivers are used to provide a highly accurate reference and allow calculation of the amount of delay required for each path.

Lessons Learned

Deployment of the alphanumeric paging system required integration of multiple technologies. Planning, careful design and system integration, and involvement of the users, setting expectations for system performance, describing differences between tone and voice alerting systems, and flexibility in making system adjustments to accommodate system users are critical factors for a successful deployment.

Although each of the technology components used in ValleyCom's system had been deployed in various systems throughout the world, the combination of components supporting a POCSAG alphanumeric paging system had not been previously installed. Several issues needed to be resolved before the system could be successfully implemented.

ADCOMM discovered that some of the refurbished pagers performed better than others. During system testing, the area was driven while test pages were sent every 60 seconds. Some pagers received the messages more reliably than other units.

Finally, co-channel operation of another paging system caused certain pages to be missed or garbled when the co-channel transmitter captured the receiver and effectively blocked the desired signal. Coordinating operation with the co-channel licensee eliminated this problem.

Conclusion

Alphanumeric paging systems can be designed and deployed as a method of decreasing the time required to dispatch fire and EMS personnel. Integration with computer aided dispatch systems and satellite based timing sources decrease maintenance costs and improves system reliability. Comprehensive system design and thorough planning are keys to a successful implementation.

WITTY WORDS OF WISDOM —

You can always find free cheese in a mousetrap.

—Don't Squat With Your Spurs On! II

**Check out our new website:
www.adcommeng.com**

THE LAST BYTE

Interoperability?

Press reports, PSWN, vendors, FCC, APCO Project 25, digital, analog, all promise interoperability—but what is interoperability? To the first responders, it may simply be the ability to communicate among all the responding personnel. To the vendors, it may be the newest sales ploy to convince their customers they have to buy new radios and technology. To the federal government, it may be the latest buzz word so they can feel good about helping public safety communications without really dealing with the issues. Do we all have to move to 700 MHz digital to achieve interoperability? If you buy Project 25 digital radios, will that guarantee interoperability? Unfortunately, interoperability is not as simple as many want you to believe. It seems there are many racing pell mell towards new technologies chasing the illusion of interoperability. There is a saying that all politics are local. Interoperability is much the same way.

In most of the United States, analog VHF FM is the technology with the most interoperability. Many, if not most, areas with large 800 MHz trunked radio systems have VHF analog FM gateways to communicate with the surrounding agencies or for mutual aid. While many federal government agencies are moving to Project 25 digital radios, they will still work in the analog mode. These other technologies all have their place and in many cases provide much needed capacity or additional features. In some cases, they provide improved interoperability over a county or maybe even a state where wildly disparate systems hindered inter-communication. However, be careful listening to all the hype about the new technologies from the vendors, press, and even the government. Determine what your real operational requirements are and the best approach to meeting those. Do you really need an advanced technology or can a less complex technology be used to resolve an operational problem? Choosing appropriate technology can save you money and heartburn.

CONFERENCE DATES

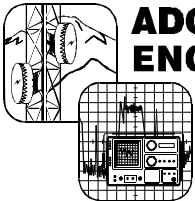
NENA Best Practices Conference: November 3-6, 2003, in St. Louis, Missouri

NENA Technical Development Conference: March 15-20, 2003, in Orlando, Florida

NENA Annual Conference: June 15-19, 2003, in Denver Colorado

MAILING LIST

Is your address correct? Do you want to be added to our mailing list? If so, send us any additions or deletions.



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