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Major SATS Activities for 2016

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The State of Alaska (SOA) Telecommunications System (SATS) team had a particularly challenging year in 2016. We were working with limited funds to operate and maintain the system supporting our customers across Alaska. We were also faced with the retirements of a couple of long-serving personnel. Along with their departure, went decades of experience that cannot be easily replaced. We will continue to work on filling vacancies to rebuild our staff and obtaining appropriate experience levels to provide the level of service needed to support our public safety and business customers. Some of the most significant events of the year included:

Cottonwood ALMR Site Rebuild

A State of Alaska microwave radio site in Wasilla, known as Cottonwood, was struck by lightning on the evening of Sunday May 29, 2016. Cottonwood is a key hub site that connects the Tudor Road Master Site to the MATCOM 9-1-1 dispatch center, Goose Creek Correctional Center, various State agencies, and microwave going out to radio sites along the Glenn Highway and up and down the Richardson Highway. The lightning strike destroyed the Alaska Land Mobile Radio (ALMR) Communications System receive antenna at the top of the tower. A second lightning strike on the electric service pole next to the site destroyed the power transformer and melted the underground electric service wire going to the site. A fiber optic cable coming into the site also caught fire inside the shelter and badly burned one wall, which caused extensive smoke damage to the electronic equipment.

The State radio and network circuits to the sites along the Glenn and Richardson Highways were rerouted, via the Parks Highway, through Fairbanks and out the Alaska Highway to Delta. The rerouting of circuits carried by the new Multiprotocol Label Switching (MPLS) network equipment happened automatically. The remaining ALMR circuits

that had not yet been moved to MPLS were manually rerouted by State technicians the next day, after receiving authorization to travel over the holiday weekend.

In addition to the rerouting efforts by the State, a circuit connecting MATCOM 9-1-1 dispatch center and Goose Creek Correctional Center to the ALMR System was provisioned by a supporting commercial provider at another local area SATS site. The commercial provider was also able to reestablish other circuits supporting various State agencies at this same local site.

Over the next week and a half, the SATS team along with our partners and contractor support, completely rehabbed and rebuilt the site with either new, spare, begged or borrowed equipment to fully restore services from this key site. This was an impressive accomplishment, in such a short time, as it would normally take three to four weeks to build a complete site shelter, along with the months of lead time for planning and procuring the equipment to do the work.

Ernestine Power Restoration

In September, a state-owned powerline providing commercial power to a SATS site, known as Ernestine, failed. The powerline was installed during the oil spill response and is well past its life expectancy. The site was one of several in a long string providing data and voice services including public safety radio, from Glennallen to Valdez and on to Cordova.

The SATS team once again rallied all hands to work to resolve the power service to the site before the snow fell, making the restoration work impossible. We were able to install a large fuel tank and a long-run generator to enable the site to run on generator power for several weeks at a time, while we worked with commercial partners to locate the powerline failure (continued on page 2)

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and attempt to repair the damage on the line. Once the likely failure point was discovered, the team flew and hiked to the location installing a splice patch, as the snow was steadily working its way down the mountainside towards them.

Unfortunately, the initial patch did not restore the service, so additional investigative work and another splice was done. However, by working straight through two weekends, and pulling together plans on the fly, the team was able to restore services to customers in an area where challenging weather and road maintenance work is routine. The only wide area communications means for area road maintainers and public safety workers comes from services made available through the SATS network.

The quick work and rapid planning to robust the emergency generator capability and repair the powerline avoided the need to refuel the site on a weekly basis during the harsh winter months, when flying to the site would often not even be possible. That cost avoidance of weekly helicopter rental saved the state approximately \$100,000 and prevented frequent radio, voice and data outages to many State agencies and the citizens of Alaska they serve.

Alaska Land Mobile Radio Contract Support
ALMR provides public safety grade radio communications and 9-1-1 dispatch service to the first responders

and the people of Alaska. ALMR is the primary and, in most cases, the only means of daily and emergency dispatch-serviced, radio communications for 125 State, local, Department of Defense (DOD) and Federal agencies across the state. A large part of the complex technology that serves those agencies and the public is owned and shared by State, DOD, and local partners to maximize the ability to communicate together during both emergencies and daily routine activities. The partnership enables efficiencies and cost savings to all partners that would not be realized if each partner built, owned, and operated their own system. The State in partnership with the DOD awarded and renegotiated new support contracts after nearly a year of work. The result of that work was a cost savings of approximately 50 percent from the prior contracts.

There are some increased risks taken on by the State of Alaska under the new contracts but, in many cases, we were able to increase the overall services provided. That hard work in negotiating the new contracts restored balance to the ALMR budget and ensured both the first responders, and the public they serve, will have a technically supported public safety communications and 9-1-1 dispatch system.

(Article by Mr. Scott Stormo, SATS/ALMR Manager)

Working Group Name Change Signals Support for LMR Sustainment

The name of the National Public Safety Telecommunications Council (NPSTC) land mobile radio (LMR) to Long Term Evolution (LTE) Migration Working Group, with a focus on interoperability between LMR and the First Responder Network Authority (FirstNet) LTE network, was changed to the LMR LTE Integration and Interoperability Working Group. Industry officials have said the change will help public-safety LMR system managers seeking funding for sustainment, modernization and expansion.

Lawmakers approving budgets are under the perception that an imminent migration from LMR to LTE is underway, but that isn't the case, said meeting attendees. Replacing "migration" with "integration and interoperability" is a better message to lawmakers and others, according to public safety officials.

"There is a need for consistent messaging that LMR systems are important and need sustainment," said Chris Kindelspire, chair of the NPSTC Working Group. "The use of the word migration may be viewed as indicating that public safety is moving from LMR to LTE." Kindelspire recommended the name change, and the governing board approved it unanimously. Agencies

may choose to continue using proven LMR systems for voice, while using new and emerging technologies including LTE for new applications to perform their missions. Industry insiders said the ultimate result may be an interworking between LMR and LTE systems, not actual interoperability, which implies a complete exchange of voice, data and signaling.

In addition to the name change, the group is working with Public Safety Communications Research (PSCR) to better understand the technical complexity of direct mode/off network communications and created five use cases to validate existing NPSTC push-to-talk (PTT) requirements.

Key issues identified were unit ID and alias, emergency button, scan, and off-network communications. The working group, under its new name, will continue to work with PSCR to resolve these issues.

(Article from Mr. Del Smith, Operations Manager, as extracted from the Nov/Dec 2016 E-Distribution Mission Critical Communications)

A Cautionary Note Regarding the Adoption of Advanced Technologies to Supplement Land Mobile Radio

In addition to using land mobile radio (LMR) systems, many public safety agencies are using commercial cellular data services or wireless broadband services to augment LMR capabilities. However, there are many drawbacks to using commercial services that are not designed and dedicated for public safety operations. The following table compares publicly-owned, dedicated LMR systems against offerings to privately-owned, commercial cellular networks.

Publicly owned, Dedicated LMR Systems	Privately owned, Commercial Cellular Networks
Intended to provide highest reliability at reasonable cost	Designed as "best effort" and offer no assurance of call completion or coverage; can become overwhelmed during major incidents
Designed to provide maximum coverage per base station site, and to service as many areas and people as possible	Designed to maximize the number of paying users on the system and to ensure the generation of revenue and highest profitability of infrastructure investments
Allows simultaneous communications with multiple users, across multiple jurisdictions and levels of government	Conversations are typically between two users
Based on dispatch operations from a centralized control center	Communications are typically linear, and between individual subscribers
Designed to be robust and resilient	Designed to support the generation of revenue
Developed by a state or local government or a single agency, which may or may not be a public safety agency; the system may be dedicated solely to public safety or shared with other agencies, utilities, or regional entities	Equally accessible to all. Intended to maximize system capacity and profit by allowing more users wireless access. Does not provide public safety priority over other users

Emergency communications are often accomplished through many technologies, each with varying capabilities, standards, and requirements. None is expected to replace the other; rather, they supplement capabilities already in place and to provide back-up or secondary means of communications in the event that the primary means of communications fails. The public safety community recognizes this reality and continues to reiterate that LMR remains the primary tool for emergency responders. As such, local, state, federal and tribal public safety agencies are planning for the National Public Safety Broadband Network (NPSBN), while also sustaining LMR systems as the primary and only means of proven and effective mission-critical voice communications.

Most public safety agencies see a future in which LMR systems and wireless broadband services will converge to supplement one another. Other public safety agencies believe there will be a convergence of technology, but it will take many years. In either case, the public safety community will need to support a multi-path approach to emergency communications, maintaining LMR systems' operability and interoperability, while also planning for the deployment of new technologies.

With the NPSBN development and initial early builder deployments underway, many local, state, federal and tribal public officials may wrongly believe the NPSBN will replace current LMR systems and that LMR systems and funding can be phased out. Public safety agencies recognize that LMR systems provide a key capability during response operations - mission-critical voice communications - that will not be immediately available through the NPSBN. Additionally, completion of the NPSBN remains years away.

(Article by Ms. Sherry Shafer as extracted from SAFECOM/NCSWIC Funding and Sustainment Resources Sept 2016)

FCC Changes Rules to Allow Railroad Police to Use Public Safety Interoperability Channels

Recently, in recognition of the need for direct interoperability between local, state and federal responders and railroad police in the lower 48 states, the FCC modified the rules regarding access to the public safety interoperability channels. However, this has not been an issue for Alaska Railroad law enforcement, since they have been ALMR members since 2008.

On August 23, the Federal Communications Commission (FCC) changed its part 90 rules to allow railroad police officers to use public safety interoperability frequencies to communicate with public safety entities already authorized to use those channels. The FCC decision "facilitates railroad police access to the interoperability channels, minimizes burdens on public safety entities and railroad police and ensures consistency with

public safety needs and interoperability plans."

The ruling permits "railroad police officers empowered to carry out law enforcement functions to use public safety interoperability channels in the VHF (150-174 MHz and 220-222 MHz), UHF (450-470 MHz), 700 MHz narrowband (769-775/799-805 MHz), and 800 MHz National Public Safety Planning Advisory Committee (NPSPAC) bands (806-809/851-854 MHz)." For more details, including when the new rules become effective, read http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0823/FCC-16-113A1.pdf.

(Article by Ms. Sherry Shafer with excerpts from "FCC Changes Rules to Allow Railroad Police to Use Public Safety Interoperability Channels," August 29, 2016)

End-of-life Gold Elite Consoles Being Replaced

The end of Motorola product support for the nearly 30-year old technology utilized in Gold Elite dispatch consoles in the State of Alaska (SOA) and several local agency dispatch centers will occur in 2018. Additionally, the current Alaska Land Mobile Radio (ALMR) System software platform is Motorola version 7.13 and Gold Elite consoles will not be able to operate on versions 7.14 and beyond.

Continued use of the Gold Elites prevents updating of the System software platform to take advantage of increased capabilities provided by advancing technology. Agencies that connect to ALMR over the airwaves (RF) can continue to utilize their Gold Elites, but need to be aware that support and parts for the consoles will likely be difficult to find or not available starting in 2018. A direct connection (IP) to the ALMR system, which the MCC7100/7500 provide, is required to take advantage of the many capabilities

available from the P25 digital, wide area network.

A SOA contract has been put in place and a project is underway to replace the Gold Elites with the state-of-the-art IP-based Motorola MCC7500 consoles at Fairbanks Alaska State Troopers (AST) Dispatch, Goose Creek Correctional Center, Ketchikan AST, the Department of Military and Veteran Affairs (DMVA) Emergency Operations Center (EOC) and the Tudor Road Master Site. The Division of Forestry previously installed MCC7100s at several of their locations.

Concurrently, but under a separate local government contract, the Kenai Peninsula Borough is also installing MCC7500 consoles in the Soldotna Public Safety Communications Center (SPSCC).

(Article by Mr. Del Smith, ALMR Operations Manager)

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2016 ALMR Factoids

Cumulative Voice Calls:

13,254,494

Cumulative Data Allocations:

3,451,175

Total Subscriber Units*:

20,512

Total Member Agencies*:

125

(*end of year)

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