ALMR INSIDER

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LMR to FirstNet

The Alaska Land Mobile Radio (ALMR) Communications System Operations Management Office regularly searches for the latest information in order to provide ALMR member agencies with guidance on technologies such as LMR to LTE (FirstNet). We believe the following article will be of interest to our users.

"I recently became aware of growing concerns among LMR operators related to the amount of new traffic that will end up on their networks if they allow LMR-to-FirstNet connections. Traffic on LMR networks has always been a concern, so the frequency coordinators at the FCC came up with rule-of-thumb criteria to determine the number of users a channel can support. How the connection is made between the LMR network and FirstNet makes a difference in the impact to the LMR network. The Inter Subsystem Interface (ISSI) is preferred in the P25 trunked world.

The Public Safety Technology Alliance (PSTA) sub-committee on LMR/LTE interoperability has also recognized Digital Fixed-Station Interface (DFSI) as another interface technology for P25 trunked systems. While not yet fully ready for prime time, the PSTA has recommended DFSI (after some minor modifications) as another way to interface P25 conventional and analog systems. Radio over IP (RoIP) is a third way to make the connection between LMR and LTE. RoIP requires a donor radio, which is a radio on the LMR network that is connected to the RoIP gateway which, in turn, is connected to the FirstNet/LTE network. Obviously, channel loading is also influenced by whether the LMR network is a local, city, county, or a shared regional or statewide network.

An LTE device given to a person in the field, is either a replacement for, or in addition to, an LMR radio. In the first case, traffic loading should not increase since the LTE device is replacing the LMR radio. In the latter case, it is not likely that the person in the field will use both devices in Push-to-Talk

(PTT) mode at the same time, so the channel loading will remain the same. However, new devices issued to new hires and people who don't normally carry LMR handhelds could drive up traffic. Traffic will also increase during incidents when neighboring or other agencies are called in to assist.

If ISSI is used for the LMR/FirstNet connection, it is installed at the network core and fully supports groups and users. In this configuration, load on the P25 system will actually be reduced since the FirstNet/LTE network will host the over-the-air interface to the subscriber device. Loading of the core will remain the same since it manages LTE devices as though they were P25 devices.

Any increase in traffic can be managed by managing the groups and the number of users within a group. Incoming out-of-jurisdiction users can be assigned to a group while involved in an incident as if they were on the same P25 trunked network. The volume of increased traffic could result in some system delays, but most networks are under the control of the dispatch center or Incident Commander and are run with a heavy hand to minimize unneeded or unwanted traffic."

There are currently efforts underway to test and evaluate which technology is the most appropriate way to implement FirstNet PTT services into ALMR radio communications. ALMR member agencies contemplating the implementation of broadband PTT devices/applications must coordinate with the SMO and/or OMO prior to any effort to utilize FirstNet PTT to interoperate with ALMR.

Please contact our offices if you have any questions, interests or concerns about this PTT capability and how it can be integrated into our ALMR system.

(Excerpts taken from Public Safety Advocate: LMR, FirstNet PTT Operational Concerns All Things FirstNet, Andrew Seybold, October 10, 2019)

Sand Point DPS and Valdez Dispatch RoIP Demonstration Project

Although Sand Point, located on the Aleutian chain, is well outside the current Alaska Land Mobile Radio (ALMR) Communications System coverage area and over 900 miles from Valdez, a demonstration communications project utilizing ALMR and radio over IP (RoIP) is underway with the ultimate goal of Valdez dispatch answering 911 calls from Sand Point and dispatching Sand Point emergency responders, as needed.

Sand Point Police Department obtained a grant for a demonstration project for a system which would allow the Valdez Public Safety Answering Point (PSAP) to dispatch Sand Point Police, Fire and EMS personnel using a dedicated satellite IP link provided by the Sand Point Health Clinic connected to the ALMR master site in Anchorage.

In coordination with the Alaska Public Safety Communications Service (APSCS) and the ALMR System Management Office, local Alaska communications vendor, ProComm has designed and implemented the demonstration system.

Valdez has an ALMR-connected console, which would allow them to dispatch for Sand Point with the IP connection terminating at the State of Alaska Tudor Road Master Site. A cable modem connection at Tudor Road with a router and a LAN switch serves two Telex IP-224 IP to console audio RoIP interfaces.

Each of the two IP-224 RoIP interfaces outputs IP traffic as analog audio, which is connected to a conventional communications gateway (CCGW) port at the Master Site and made accessible to the Valdez dispatch console on the ALMR system. Only four-wire tone remote control (TRC) analog voice-only traffic will be interfaced to the CCGW, so there are no security concerns for administrators of the closed ALMR system.

Since the installation of the system, Sand Point first responders have been conducting radio checks periodically with no issues being experienced. Audio quality is reported to be great, as if the dispatcher is in Sand Point. They have also successfully tested the paging function for the fire department. Valdez was able to activate the fire pagers and pass the audio. There is a small delay when the Valdez dispatcher un-keys on their end before Sand Point staff can speak so complete Sand Point voice traffic is heard in Valdez and vice versa. It's not a lengthy delay, but enough that requires awareness on the part of both agencies, since they are not used to it. Over the coming weeks, system testing will continue in three planned phases.

According to Chief Hal Henning, the first phase of the beta testing, which they are currently in has consisted of conducting radio checks and pager tests with Valdez. When they move to the second phase, Valdez will take calls and dispatch during daytime hours only. Currently, they are awaiting an acceptable 911 solution for call-forwarding to Valdez before moving to the second phase of testing. Telalaska is researching a solution that would enable Sand Point to either still receive 911 calls should phone connectivity off the island be interrupted, or a way for them to be notified in the event that connectivity is interrupted, so they can un-forward the 911 line from Valdez, allowing them to receive calls locally until the connectivity is restored.

Once they move to the final phase of beta testing, Valdez will take calls and dispatch 24/7. After the third phase, if everything is successful and the City Council moves to approve it, Valdez would become Sand Point's primary dispatch center.

(Article written by Mr. Del Smith, ALMR Operations Manager with input from Chief Hal Henning, Sand Point DPS)

Radio Interference Highlights Need for Proper Maintenance

In the January 2019 Insider, an article discussed the importance of radio maintenance to ensure radios operating on ALMR are working properly. Aside from the need for the radios to operate at maximum efficiency, an improperly maintained radio can, as occurred recently, affect the performance of ALMR repeater sites.

The recent addition of the DiagnostX devices on the ALMR System has helped identify radios that are not within manufacturer specifications. The information from the DiagnostX reports identifies radios in need of maintenance and is provided to owning agencies each quarter by the Operations Management Office (OMO). Agencies are then requested to have their radios serviced.

A recent interference problem at one of the ALMR sites resulted from a radio that had been identified in the

July 2019 DiagnostX report as needing maintenance, but apparently was not serviced, and as a result, an ALMR site was taken entirely offline for several hours in December by interference from the radio. While this is an extreme case, it highlights the need to identify radios in need of service and to get them serviced in an expeditious manner for the benefit of the owning agency and other ALMR members who could be adversely affected by a site outage, as occurred in this case.

As stated in previous Insider articles, as a general rule, ALMR recommends all radios be serviced at least annually to ensure they are operating at peak efficiency. Absent that, attention to radios identified in DiagnostX reports provided to member agencies is extremely important.

(Article by Mr. Del Smith and Ms. Sherry Shafer, ALMR Operations Management Office)

Update on Cybersecurity for ALMR

ALMR provides a robust communications system for the 129 member agencies, with the benefits of day-to-day independent operations and interoperability between agencies, when needed. An added benefit to all members is the stringent security requirements required by the membership of the Federal agencies.

The ALMR partnership of the Department of Defense (DOD), Non-DOD Federal agencies, State of Alaska (SOA) and the Alaska Municipal League (AML) enables all members to operate on a system that meets the strict security requirements of the DOD Risk Management Framework (RMF).

The update of the ALMR System to the 7.17.3 software platform, which has been underway since May has been completed. The final step in the update process was a security review and scan conducted by a Motorola securi-ty team. The entire ALMR System has been examined to ensure that all devices were scanned, any existing vulnera-bilities identified and any potential risks have been mitigat-ed.

The entire RMF process for the System has been carefully documented by the ALMR Information Systems Security Manager (ISSM) and identifies the vulnerabilities, potential mitigation strategies and any issues encountered during the RMF documentation process.

The DOD approving authority (AO), which falls under the purview of the Alaskan Command J6, is reviewing the RMF documentation and should be signing the approval to oper-ate (ATO) for the ALMR System for the next three years in the near future.

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

Upcoming Changes to ALMR Radio Programming

Over the past year, with input from many ALMR users, the User Council (UC) Talkgroup and Codeplug Sub-committee developed an alternative to the way the Inci-dent Command (IC) Zones are currently set up in sub-scriber codeplugs. We felt the zones needed to be simpli-fied and more user friendly. The change was unanimous-ly approved by the UC and Executive Council and now the subcommittee is developing an implementation plan, which will require re-programming all radios on the Sys-tem, and a change to how dispatch console are setup.

We are replacing all the State IC, and IOP zones, as well as Regions A-F, with three zones: North, South Central, and Southeast (SE). The State ADMIN Zone will remain the same. The basic concept is there will be seven chan-nels: one "call" channel where dispatch will listen, five command channels and one multicast channel. Then next nine channels will be conventional channels for local incident scene use. The required programming will be all three areas for statewide users, then just the one zone for radios that would be in that specific area. The ADMIN Zone will not be required, but should be programmed in radios, if you have room or if you have the need for it.

The concept for the new zones is a common area/channels where all agencies could handle incidents, but it would be more condensed, simple and useful to incident command-ers (ICs) and incident personnel. When an incident oc-curs, the IC would call on the respective North, South Central, or SE zone dispatch call channel to inform them of the need to use a command talkgroup. The incident would then use one or more of the vTac channels as their local Tac channel.

More information will be forthcoming, but in the mean-time if you are looking at updating or changing your codeplug, please be aware of this upcoming change. If you have any questions or concerns or are seeking assis-tance in developing a codeplug reflecting the new zones, please contact the ALMR Help Desk.

(Article by Mr. Nate Skinner, User Council Vice Chair and Talkgroup and Codeplug Subcommittee Lead)

Update on Alaska Public Safety Communications Services (APSCS) Projects

The July 2019 newsletter listed several infrastructure projects that were underway. Projects completed since July include repair of the tower and replacement of shel-ters at Kodiak's Pillar Mountain site, installation of sev-eral emergency backup generators, and contracted tower inspections and receipt of associated reports. The out-standing projects include replacement of battery plants and HVAC systems to ensure reliable cooling and short-term emergency power is available to protect both the services and the valuable equipment hosted in State sites. You may have noticed an increase in the number of scheduled outage notices from the ALMR Help Desk.

That is a sign of the lifecycle refresh work replacing 55-hops of legacy microwave and refreshing the hardware and software that comprises the system's network equip-ment. Both of those are well underway and work will continue through this summer. The final project is the Genesis upgrade on the ALMR System. That is in pro-gress and should be completed in the next month or two. We want to thank everyone for their support and pa-tience as we work to significantly improve the health of the System. We appreciate the impacts outages have on everyone and will keep them to the minimum necessary.

(Article by Mr. Scott Stormo, APSCS Manager)

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In-Building Coverage Verification

For years, public-safety radio systems have been built to provide reliable mission-critical communications with sufficient outdoor coverage; however, in-building radio coverage has posed many challenges for system operators. This issue has become more urgent. First responders expect in-building radio coverage to be at least equal to their cellphone coverage, prompting governmental and first responder organizations to rapidly adopt in-building coverage requirements. These requirements are frequently based on codes developed by the National Fire Protection Agency (NFPA) and the International Code Council (ICC).

Following the events of 9/11, in-building coverage became an issue of national urgency in the United States. However, it is up to local officials in cities, counties and states, referred to as authorities having jurisdiction (AHJ), to create and enforce regulations. Early AHJ requirements varied widely in the absence of national and international standards.

In the early 2000s, the NFPA and the ICC began to add requirements for indoor network performance. The NFPA developed the NFPA 1221 standard, originally in NFPA 72, while the ICC developed the International Fire Code (IFC). Essentially, these codes state that building occupancy requires proof of meeting indoor coverage performance standards, following specific testing and reporting requirements. NFPA and IFC standards are typically updated every two to three years.

Under NFPA and IFC standards, the building owner/property manager is responsible for conducting testing and producing reports. Owners need to understand the testing requirements and implement a plan for verifying coverage to acquire and maintain occupancy permits.

(Excerpts from article by David Adams and John Johnson, Mission Critical Magazine, Apr-May 2019)

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2019 Year-End Statistics

Agencies: 129

Subscribers: 22,191

Group Calls (cumulative): 13,300,919

Push to Talks (cumulative): 24,623,138

Busies (cumulative)/ Percentage rate of calls: 9,119 / .06 percent