

ALMR INSIDER

Volume 13, Issue 3

July 15, 2019

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ALMR System Update to 7.17.3 Progress Report

Installation of version 7.17.3 of the Alaska Land Mobile Radio (ALMR) ASTRO operating system got underway May 29th. The funding, planning, preparation and implementation process has been ongoing for the past 24 months. Motorola provides support and pre-tested software updates to system components for five iterations of their software platform. The last update of the operating system software and hardware occurred in 2013. ALMR was overdue for an update in order to take advantage of advances in technology and ensure system security meets the Federal requirements.

Coordination for funding the update between the different fiscal years of the State of Alaska (SOA), Department of Defense (DOD) and the Municipality of Anchorage (MOA) delayed the update. Of the total \$8.1M, the SOA share was \$3.6M, DOD was \$2.8M and the MOA was \$1.7M.

The update of the System to 7.17.3 involves not only software, but a substantial number of hardware components that make up the ALMR/AWARN system involving three master site zone controllers and 97 VHF and 700MHz sites. The dispatch consoles in 15 dispatch centers are also included in the update. Updated system software and hardware includes base stations, site controllers, comparators, routers, LAN switches, servers, dispatch consoles, logging equipment, network management terminals, Network Fault

Management products, network security devices (firewalls and intrusion detection sensors) and associated peripheral infrastructure software.

Certified hardware version updates and/or replacements necessary to upgrade the System with an equivalent level of functionality, if required, were included to maintain the existing features and functionality of the System. Final processes and adjustments to complete the 7.17.3 update are currently scheduled into this September.

The State of Alaska Telecommunications System (SATS) microwave provides the wide area capability of the ALMR System allowing, as an example, Troopers stationed in Kodiak to be dispatched by Fairbank AST Dispatch center. Prior to ALMR, this type of remote dispatching did not exist. Another example of the capabilities that SATS-supported ALMR provides member agencies is the ability to communicate directly between a subscriber in Fairbanks and another in Ketchikan. Therefore, the proper maintenance and updates to the SATS microwave system is critical to the continued success of ALMR and its support to the users. Following the update to the ALMR System, the SOA Office of Information Technology (OIT) will be updating several segments of the SATS microwave.

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

In-Vehicle Repeaters and Wireless Mics

The ALMR Communications System was designed and implemented to provide 90 percent mobile radio coverage within the coverage footprint. In the years since the System was implemented, the number of portable subscribers put into service by ALMR member agencies has dramatically increased, as agencies have chosen to equip a majority of their first responders with a radio.

However, even with advances in technology, portable radios available for use on land mobile radios systems like ALMR usually have a

power output of four to five watts. On the other hand, mobile radios are generally in the 40 to 50 watt range. Clearly, a mobile radio with substantially more wattage and a roof mounted antenna will transmit and receive much better than a handheld portable, particularly in poorer coverage areas.

Currently, improving and extending ALMR coverage by adding additional ALMR sites to ensure that portables can achieve 90 percent coverage in all areas of the System footprint is unlikely. However, there (continued on page 3)

Alaska Public Safety Communication Services FY19 - 20 Projects

Several upgrade and technology refresh projects are underway this year, but before I get to those, I wanted to let you know we have unofficially “rebranded” our office as Alaska Public Safety Communication Services (APSCS) from the State of Alaska Telecommunications System (SATS). Much has changed in both the technology and services that we have supported in the decades since SATS was first established and the SATS title no longer accurately describes what we were doing today. APSCS more accurately covers what we do now and what we could be doing in the future and is a more appropriate title, even if SATS remains the term used to refer to the physical infrastructure sites and ALMR remains the term used to describe the land mobile radio services.

Now on to our projects. We received permission last fall to move forward on projects to address several deferred maintenance issues and concerns, which included replacement of aging equipment and software that were negatively impacting our public safety communication systems quality of service. The funding also launched projects to acquire tools and equipment necessary to improve system operations and more efficiently support customer radios accessing ALMR. Some of those projects have been completed to date. Others will be ongoing over the next several months.

The projects that have been largely completed include:

An asset management and work order system has been installed, configured and reached Initial Operating Capability. We retired a homegrown system that was becoming obsolete, rapidly failing and was cost prohibitive to maintain. Commshop® by Mcmtech™ was purchased after a few years of research and evaluation. It is designed for radio shops to manage subscribers and, more recently, they began to implement features to support management of the radio system infrastructure sites. Both the APSCS team and the ALMR team have begun using it to track and manage assets and work orders.

APSCS purchased five service monitors capable of running “auto tune” procedures on radios to test and tune them within minutes. That compares to a couple of hours of complicated testing by hand. We also purchased a system called DiagnostX™ to help identify radios that are “out of tune” by monitoring the radio signal for anomalies from the RF site where the DiagnostX™ equipment is installed. Annual radio maintenance is recommended by manufacturers and is nearly impossible to accomplish on a system as large as ALMR, due to the variety of user agencies. DiagnostX™ will help identify specific radios that need to be “auto tuned” by the new service monitors. The service monitors were provided to every APSCS office location, so we can troubleshoot and repair radios in the field, eliminating the need for the customer to bring the radio to Anchorage for support. Together these two services will save time, increase productivity and decrease radio turn-around time for our customers.

Several other projects have been funded and procured and will be implemented over the next year. Those projects include a lifecycle replacement of 55-hops of microwave; a lifecycle refresh of our mission-critical network

equipment and software; a contract for the required periodic tower inspections including analysis and mapping of our communications towers; a refresh and upgrade of a tool that monitors and reports on alarms and statistics on the ALMR network; a rebuild of our Pillar Mountain site on Kodiak; and finally, a refresh of several site infrastructure components including generators, battery plants and heating, ventilation and air conditioning (HVAC) systems.

The microwave project will replace all remaining end-of-life and end-of-support microwave on the SATS network. When complete we will have modern, IP-based microwave throughout the system. The refresh of the networking equipment and software is critical to sustaining manufacturer support on the heart of the SATS network. The equipment has significantly improved uptime of all services as a single site failure no longer causes outages to multiple sites and potentially the entire system. It also greatly simplifies the provisioning of circuits, as they no longer must be “hard wired” from end-to-end. This network technology is required for future system versions of ALMR, and we will be well prepared for that day.

Towers should be inspected every three or five years depending on the type of tower. This contracted project will bring our tower inspections into compliance. It will also provide us with detailed reports to guide us towards recommended and required repairs. The Pillar Mountain project includes significant contracted tower repairs, based on a prior inspection. It also includes installation of a new shelter where we will combine equipment currently located in two smaller shelters, that are both severely degraded from years of rough weather and the salt air environment.

The implementation of a new version of Genesis software and hardware on the ALMR system will allow review and analysis on alarm data over an unlimited period. Our current release only stores 10,000 alarms/alerts and typically overwrites itself after a few days. Sometimes it does so after a few hours during periods of high alarm activity. With an unlimited alarm storage, we will be able to produce reports and metrics to evaluate site availability uptime. That metric will be compared against Service Level Agreement expectations of up to 99.999%. The result can be used to perform root-cause analysis and assist with focusing future resources to address the causes.

Finally, several air conditioners, generators and battery plants are being replaced. Many of those systems have been in place since the sites were first constructed and are no longer working as originally designed. In some cases, they are not working at all. These and many other infrastructure components are critical to providing the public safety grade infrastructure required to support emergency communications and 9-1-1 dispatch services.

It will be an extremely busy several months in order to complete all these projects with lots of travel and time away from home. In the end, the system will be in a much better state of health with many of the highest priority deferred maintenance problems addressed.

(Article by Mr. Scott Stormo, Alaska Public Safety Communication Services)

In-Vehicle Repeaters and Wireless Mics (continued)

are potential solutions that an agency seeking to improve coverage in some areas of their jurisdiction can explore. Two potential solutions are vehicular repeaters and wireless microphones.

Vehicular repeaters are connected via cabling to the mobile radio in the vehicle. When a handheld radio transmits a signal, the vehicular repeater receives the transmission and instantly re-broadcasts through the mobile radio and conversely, when the mobile radio receives a transmission, it instantly re-broadcasts the signal to the handheld radio through the vehicular repeater. This process of sending and receiving transmissions, gives the portable radio the same coverage as the mobile radio.

Another potential solution involves a wireless microphone carried by the first responder away from the vehicle. The microphone connects over the air to the in-vehicle mobile radio via Wi-Fi or Bluetooth and receives the radio traffic the mobile receives. The first responder, even though away from the vehicle, can hear the radio traffic being received by the mobile radio and respond via the microphone, as appropriate.

Vendors listed on the ALMR webpage can be contacted to obtain more specific information and performance metrics regarding these items.

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

911 SAVES Act to Reclassify 911 Dispatchers as First Responders

U.S. Representatives Norma J. Torres, the only former 9-1-1 dispatcher serving in Congress, and Brian Fitzpatrick, a former Federal Bureau of Investigation (FBI) Special Agent and Federal prosecutor, introduced H.R. 1629, the bipartisan 911 Supporting Accurate Views of Emergency Services (SAVES) Act to reclassify 9-1-1 call-takers and dispatchers from “Office and Administrative Support Occupations” to “Protective Service Occupations” in the Office of Management and Budget (OMB) Standard Occupational Classification (SOC) catalog. The current classification reflects an outdated, misinformed view of the nation’s 100,000 public safety telecommunicators. The 911 SAVES Act is the first bill of its kind to give 9-1-1 dispatchers the recognition they deserve for the work they do every day to protect and save the lives of the public and first responders. Torres added, “The 911 SAVES Act recognizes the significance of these roles and ensures all classification standards put public safety first. I’m proud to work with Congressman Fitzpatrick to finally give 9-1-1 dispatchers their due, making us all safer in the long run.”

“As a former FBI Agent, I know the work done by our 9-1-1 operators and dispatchers is critical for the safety of our community. When we are in danger, we call 9-1-1 and rely on those on the other end of the line to make sure we get the help we need,” said Congressman Fitzpatrick. “This legislation will give our 9-1-1 operators and dispatchers the resources, benefits, and recognition they deserve.”

Specifically, the 911 SAVES Act would direct OMB to update their classification for public safety telecommunicators as a protective service within the SOC catalog. Federal agencies rely on the SOC, a vast catalog of occupations, for statistical purposes. Including public safety telecommunicators in the protective service group would make the SOC a more accurate and useful resource, and would better align the SOC with related classification systems.

The bill has been endorsed by the Association of Public Safety Communications Officials (APCO) International, the National Emergency Number Association (NENA):

The 9-1-1 Association, and the American Federation of State, County and Municipal Employees (AFSCME). Federal Communications Commissioner Jessica Rosenworcel also applauds all efforts to get 9-1-1 operators the designation they deserve.

APCO Executive Director and CEO Derek K. Poarch said, “The work performed by Public Safety Telecommunicators is nothing short of extraordinary, and it is 100 percent ‘protective.’ Passage of the 9-1-1 SAVES Act will be a win for public safety, and APCO is going to do everything it can to help make sure that happens.”

NENA President Jamison Peevyhouse said, “We applaud Rep. Torres, a longtime supporter of the 9-1-1 community, and Rep. Fitzpatrick for their leadership on this issue. NENA and its members have long advocated for an accurate statistical classification for 9-1-1 professionals to support critical research into the mental and physical impacts of 9-1-1 jobs. We urge all members of Congress to support this non-partisan, cost-free measure that reflects the respect and support the American public has for its 9-1-1 professionals, who answer more than 240 million calls for help every year.”

“Dispatchers play an essential role in saving lives and in helping me do my job safely. They are our eyes and ears before we arrive on scene. They receive advanced training to effectively assess a situation, ask the right questions, and communicate vital information, so that we know what to expect when we get to the scene of an emergency,” said Lindsay Washington, an Emergency Medical Technician and local president of EMS Workers United/AFSCME District Council 20. “9-1-1 dispatchers deserve the benefits and respect a first responder classification affords.”

Torres and Fitzpatrick were joined in introducing the bill by co-sponsors from Florida, California, Minnesota, North Carolina and Pennsylvania.

Article prepared by Ms. Sherry Shafer with excerpts from “911 SAVES Act to Reclassify 911 Dispatchers as First Responders,” by EfficientGov Staff, March 11, 2019)

ALMR System Updates

ALMR was recently updated to the 7.17.3 iteration of the Motorola Solutions system software and hardware. To ensure ALMR takes advantage of developments in technology and security, the logical progression in two years is an update to 7.19. However, the Quantars (site radios) in 72 State of Alaska (SOA) ALMR sites have reached end of life and aren't capable of operating on software iterations beyond 7.17. SOA's ALMR partners, the Department of Defense (DOD) and the Municipality of Anchorage (MOA) Anchorage Wide Area Radio Network (AWARN), now have or are installing Motorola GTR8000 site radios, which are required for updating to 7.19 and beyond. To ensure the continuation of interoperability provided by the System to member agencies, the partners need to update to the next software iteration at the same time.

Aside from the obvious critically important need to maintain the interoperability and cost benefits that ALMR brings to member agencies, moving beyond 7.17 will allow the potential for

doubling the capacity for voice traffic on the System. ALMR is currently a P25 Phase 1 system utilizing Frequency Division Multiple Access (FDMA). P25 Phase 2 utilizes Time Division Multiple Access (TDMA). When the SOA completes replacement of Quantars with GTR8000s, and the ALMR partners update in unison to 7.19 or beyond, the currently available ALMR voice channels will effectively double.

Although, the exact timeline for migration to Phase 2 has not been determined, ALMR agencies contemplating purchasing replacement radios need confirmation from their vendors that the new radios will be able to operate in Phase 2. That may involve purchasing Phase 2-ready radios, or at a minimum, radios capable of being upgraded after purchase to Phase 2, at an additional cost at that time.

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

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DOD Upgrades Six Sites

The Department of Defense (DOD) will be upgrading six of their sites (Site Summit, Birch Hill, Fort Greely, Donnelly Dome, Black Rapids and Clear) starting this month to replace the Quantar site radios with GTR8000 site radios. Quantars have reached their end of life. At this point, the State of Alaska will have to replace the remaining Quantars on the System prior to the next update.

(Article by Ms. Sherry Shafer)

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