Transcript: ALMR System Upgrade: How will it affect me (November 2023)

Welcome to this Alaska Land mobile radio training, the ALMR system upgrade. How will it affect me?

In this training, we will review the ALMR system upgrade currently in progress for the 2022 to 2024 time frame, explain the details and objectives, and review any impacts that you may experience as a user.

The ALMR system is a computer controlled digital radio system that is known as an APCO P25 compliant system. P25, or Project 25, is a set of standards for public safety and other radio systems. The ALMR system is controlled by a project 25 compliant vendor which is Motorola. The Motorola system software running the core system and components needs to be upgraded from time to time just like any other computer system. However there are special concerns for AMR that come into play when we talk about upgrading software. The primary concern is our Department of Defense partners on the system and their regulatory requirements for cyber security and other matters. Due to DoD security regulations, the system software that was running previously on the system needed to be upgraded to the most up to date version.

The system software upgrade that is currently in process is in many ways similar to software upgrades that you may have experienced before, as the system has been upgraded several times since it was installed in the early 2000s. However, this system upgrade is highly technical and from a logistical standpoint has many challenges, which is why the upgrade window spans multiple years. The primary change is the new Motorola system software changing the technology we use for radio transmission from the older technology known as FDMA To newer technology, known as TDMA.

TDMA is an acronym that stands for time division multiple access. There is a video on the ALMR website which explains the TDMA technology in more detail. However, having to transition to the TDMA technology also required that the hardware At each individual radio frequency site required replacement. This included hardware such as the radio repeaters and antennas used at the site. With over 80 RF sites in the almrsystem, some of which are not accessible at all times of the year, and many of which are off the road system, This was a logistical challenge which took multiple years to accomplish due to weather, Supply chain and other factors.

In addition to the radio hardware at each individual site, the backhaul network that runs the system required to be upgraded from an older transmission technology to new digital transmission technologies. This network, known as SATS or the State of Alaska Telecommunications System was already able to transmit the bandwidth and the speeds required for the upgrade. However, it did mean that hardware both in the main system core and at each RF site had to be upgraded as well. Part of this upgrade is still in progress, waiting for supply chain issues to be resolved to receive and stage network equipment. This will occur in 2024 and similar

to the 2022 and 2023 site work, will require logistical planning and special support to ensure that the upgrade can occur in the correct window.

The transition to TDMA will essentially double the capacity of each channel on the system, which will benefit all users to the increased capacity and increased backhaul available to the sites. The transition to TDMA is expected to be accomplished near the end of 2026, which is the current goal. The TDMA transition has required all users to upgrade their subscriber units or radios to current versions. Those users that had the current versions already did not require an upgrade. However, there were many radios on the system that will not support TDMA. They are currently scheduled to be replaced at the end of 2026.

In addition to the TDMA replacement. The benefit of the hardware, the sites that we previously talked about, such as the antennas, repeaters and network equipment will ensure reliability far into the future. In addition, there are some benefits that really are not able to be discovered yet due to emerging technologies. The upgraded Motorola system software will likely support new features in the future. As an example, one feature that may be supported soon is the availability of location on push to talk for dispatchers and others to be able to identify the locations of specific radio units. As technologies continue to evolve, the ALMR system will continue to monitor those that are available, evaluate the benefits, costs and security implications and roll those out that are of need and desire to the ALMR user base.

Many of the changes due to the system upgrades apply to a system wide level, and individual users may or may not see significant changes. The core network remains the same which means the location of radio frequency sites and the number of towers is the same as prior to the upgrade. However, you may notice some improvements with coverage due to new antennas and fine tuning the location of those antennas.

Because more of the system and more of the backhaul system is becoming computer based, the upgrades and maintenance required for that equipment may become more frequent but could be in shorter duration. For instance, network equipment needs patches and security updates similar to any computer. Currently, ALMR has maintenance windows that typically happen in the slow overnight hours, and those are announced via the ALMR Help desk. In addition, subscriber unit upgrade cycles are likely to become more critical. As the system upgrade goes on and it is more technologies are put into place. What we found was that many radios were out of date and were beyond the manufacturer supported useful life. Every radio unit has a support life and an end of support date. Typically, agencies should expect to upgrade their subscriber units - typically five to seven years should be the average before an upgrade is scheduled. Your manufacturer can be consulted for the exact timeline and support of your current radios and the radios that are coming through in the future. It is encouraged that each agency has a fiscal mechanism to fund these upgrades.

As more and more technologies become more and more consolidated into computer units and being able to be upgraded by software and software controlled issues, the cybersecurity requirements become more and more critical. It may be necessary in the future to apply patches

or to do more advanced radio maintenance as more features come into play, especially as features become connected to other systems such as being able to connect to the Internet, First Net devices and others. Stay tuned to the System Management Office and ALMR newsletter for news about upgrade cycles and other developments in this space.

Please don't hesitate to contact us if you have any questions about your specific radio inventory. Contact information for the Almar helpdesk and the Operations Management Office is available on this slide. Do not hesitate to reach out to the Almar team if you have questions about this training or any other questions regarding the system upgrade management or other matters.