



# **Alaska Land Mobile Radio Communications System**

## **User Council 2010 Annual Assessment on System Operations and Management Performance**

**February 2, 2011**

## **1.0 Introduction**

Per the Alaska Land Mobile Radio (ALMR) Communications System Cooperative Agreement, Article 8 - User Council, Section 16.2, Performance Monitoring.

The User Council will monitor and evaluate the performance of the System, including the efficiency and effectiveness of its operation and management, as well as the performance of contracts and user agreements. The User Council will report to the Executive Council their assessment of the operational health of the System annually, or as requested by the Executive Council.

This report provides a high-level overview of ALMR System performance monitoring by the User Council (UC) and their oversight of the day-to-day Operations and System Management functions.

## **2.0 Membership**

At the beginning of 2010, there were 98 agencies operating on ALMR. At the end of the year, the total had increased to 106 agencies utilizing 14,428 subscriber units.

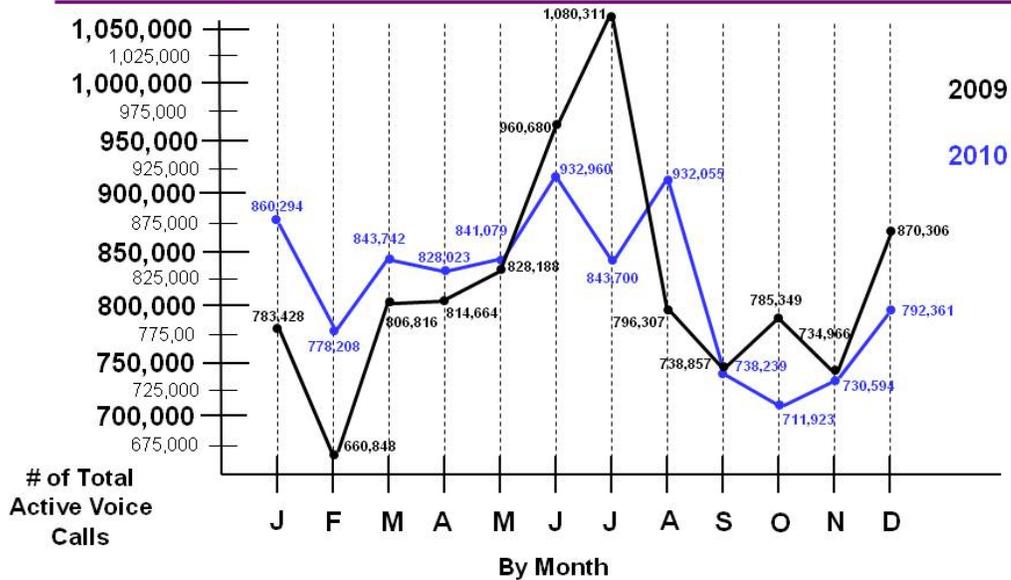
## **3.0 Metrics**

The UC is responsible for monitoring System performance and tracking various parameters including busies and voice calls per month in order to note any trends which may indicate System deficiencies. To accomplish this, they employ the Operations Management Office (OMO) to provide periodic reports. The OMO presents ALMR System metrics at the monthly UC meeting.

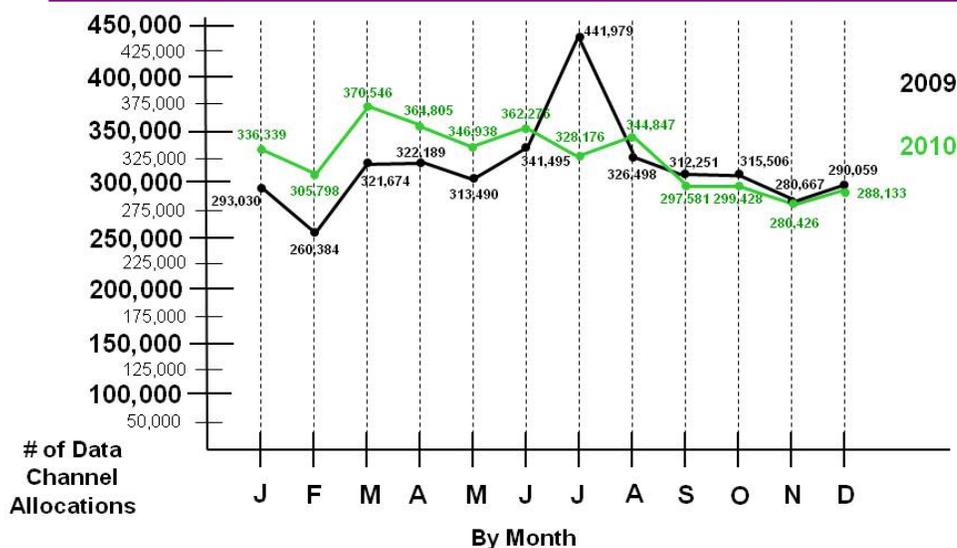
The UC has established a performance baseline standard, with respect to System busies, which identifies day-to-day and emergency operations data for individual sites by both the percentage and duration. Although individual sites may occasionally exceed the established standards, overall System performance remains well below the baseline. The OMO provides monthly statistics to the UC to determine whether those sites exceeding the standard are experiencing excessive traffic due to normal seasonal traffic or exercises, or whether there is an insufficient channel capacity at the site. This data continues to be examined periodically by the UC for long-term trend analysis.

The following charts examine the total numbers of System voice calls and data allocations per month. A comparison of the 2010 data is made to the 2009 data.

## 2009 – 2010 Comparison System Performance - Voice



## 2009 – 2010 Comparison System Performance - Data



In 2010, the ALMR System supported a total of 9,833,178 voice calls and 3,925,293 data allocations.

#### **4.0 Conflicts/De-conflicts**

Some sites continue to have channel confliction issues due to continued utilization of conventional frequencies by the State of Alaska (SOA). Others have experienced more recent conflicts, which may be attributed to frequency mixing. Therefore, channels at several ALMR sites continue to remain turned off.

- **Conflicts**
  - Site Summit Channel 6 (SOA) was turned off at the request of the Coast Guard and remains turned off while the System Management Office (SMO) continues to work on a solution. (Open)
  - Hill 3265 Channel 1 (DOD) was turned off due to suspected interference with the FAA. The technician checked the output of the repeater and it was clean. It was determined that the ALMR site was not a direct cause of the interference. The FAA changed their frequency and this cleared the interference issue. The channel was turned back on. (Closed, November 3)
  - Pole Hill was designed as a five-channel site. However, Channels 4 and 5 were not previously turned on due to a licensing issue. The SOA resolved the licensing issue, the multi-coupler and combiner were re-tuned and Channel 4 was added. The receiver board was replaced and Channel 5 was added. (Closed, August 5)
  
- **De-conflicts**
  - Frequency conflicts remain between Fire Station 12 Channel 10 (SOA) and the Municipality of Anchorage
  - Frequency conflicts remain between Pillar Mountain Channel 3 (SOA) and the Marine Highway

#### **5.0 Build out**

The ALMR System was originally designed to support 105 sites. Site equipment ownership was as follows (original design/current status):

- US Army Alaska (USARAK) – 45/45
- Elmendorf Air Force Base – 1/1
- Eielson Air Force Base – 3/3
- Clear Air Force Station – 1/1

- Municipality of Anchorage (MOA) – 15/6
- SOA – 40/32

There are currently 88 operational sites including the six MOA Anchorage Wide Area Radio Network (AWARN) sites. All Department of Defense (DOD) sites have been completed. The State has completed the build out of all funded sites.

- In 2010, there were two scheduled SOA sites completed
  - High Mountain (Ketchikan)
  - Haines
- There are no planned SOA sites scheduled for completion in 2011

## **6.0 System Coverage Issues**

ALMR was originally designed and built to provide coverage along the major roadway system in Central and South Central Alaska, major population centers in Southeast Alaska, and some portions of the Marine Highway.

During 2010, several previously identified coverage issues continue to be tracked by the OMO, while one new issue was brought to their attention.

- Skagway  
The ALMR site at Skagway does not provide coverage over the last six miles of the Klondike Highway. This is the section that is most intensively maintained, and the area where whiteouts, blowing snow, and avalanches occur. When maintenance crew works are in these areas, they must use a conventional DOT frequency for communications, which is often interfered with by truckers using the highway.

DOT has suggested that a second repeater be activated on Mine Mountain. This would cover the portion of the highway that currently has no coverage. However, Mine Mountain is remote and does not have power. The DOT&PF planning section has offered to assist with funding, if a plan can be put together.

- Houston  
The Technical Advisor traveled to the Houston area to investigate an issue with poor portable coverage reported by Houston PD. One of the immediate problems noted was that the radios did not have a "most preferred" tower site programmed. During the coverage checks in the Houston area, the only tower sites that were accessible were Site Summit, Cottonwood, and Rabbit Creek. Of the three, Site Summit provides the best site coverage for the affected area. It

was suggested to the agency when they program their radios, they should consider making Site Summit the "most preferred" site.

The System Manager noted that there had been some discussion about a new tower site along the Knik Goose Bay Road in Wasilla. There is an existing tower in the area which could provide excellent coverage throughout the Houston area. However, it may take several years to add an additional radio site if/when funding was approved.

Subsequently, the only option available at this time, which could improve Houston PD portable radio coverage in the near future, would be for them to acquire/install in-vehicle repeaters. It was suggested they contact Soldotna PD, who had recently installed several in their police vehicles and were reportedly satisfied with the improved reception capability.

- Palmer/Wasilla update (carried forward from 2009)  
In September 2009, the OMO conducted coverage tests in the Wasilla area as a follow-up to reported issues from the Wasilla PD. At that time, there were limited areas where coverage issues were experienced.

One item of particular attention was that the Cottonwood site was not being affiliated to by the agency as much as it should have been. Given that the site is in the middle of Wasilla, it should be most preferred 90 percent of the time. The issue was passed on to the SMO and they did identify some areas that had a high bit error rate on the Parks Highway on the south side of Wasilla.

In order to improve coverage, the ALMR technician worked with ETS personnel to relocate the antennas to another side of the Cottonwood tower. Subsequently, this action did improve the coverage along the Parks Highway. The SMO contacted Wasilla PD to see if this resolved the issue. The SMO was advised there were still other outstanding issues.

The technician then worked with Wasilla PD to update their firmware version, which provided for a stronger signal roaming capability. At this time, Wasilla PD hasn't completed the firmware upgrades in all their subscriber units. The SMO will continue to periodically check the situation for final resolution.

- North Pole update (carried forward from 2008)  
Previously, a System Design/System Analysis was completed at the request of Fairbanks North Star Borough and local public safety agencies regarding the

potential for an additional site in the North Pole area. The report was published in March 2008.

At the time of the original ALMR System design, it was determined that a site was not required in the North Pole area as the projected coverage met the design requirements for mobile subscriber units. Funding options for a North Pole site continue to be explored.

- Delta Junction update (carried forward from 2008)  
Delta area agencies advised the OMO in 2008 that ALMR coverage was no longer satisfactory and had degraded over the course of time. At that time, the OMO requested Motorola determine if the initial projected coverage in the area had been detrimentally affected by the relocation of the former Delta Junction site to Donnelly Dome, concurrent with the relocation of the former Donnelly Dome site to Ft Greely, and/or finally by the addition of a cellular antenna array to the Ft Greely tower.

Motorola performed a thorough preventative maintenance inspection of the ALMR transmission/receiver equipment and a sweep of all lines/antennas and determined that all equipment was working within specifications. Additionally, Motorola determined there was a strong possibility that the Ft Greely tower cellular antennas, and additional lines, were causing an RF shading/obstruction condition to occur in the direction of Delta Junction.

Motorola documented they believe an interference condition does exist in the area and is causing the observed radio behaviors and changes to the over-the-air signal levels. The source of this interference is a combination of tower obstruction/shading, land clutter (foliage), multi-path, and potentially outside RF interference.

USARAK advised the UC at the Annual Training Conference in September 2009 that they would work with AT&T and the SMO to isolate the antenna on the tower in order to determine if the modifications by AT&T were causing degradation. Testing by the SMO indicated that there was no RF interference. USARAK is continuing to work the issue from their end.

## **7.0 On-going Projects**

Since declaration of sustained Operations & Maintenance (O&M), the need for certain System modifications/updates has been noted. Some of these modifications were

requested by agencies on the System, some were in response to the need for increased coverage/capacity, and others were required to comply with deficiencies noted during the Department of Defense Information Assurance and Accreditation Process (DIACAP). The following list summarizes modifications/updates for 2010.

- **DIACAP review/System recertification**  
The current Authority to Operate (ATO) for the ALMR system will expire on May 28, 2011. The ALMR Security Manager and contractors from the Taurean company have been working on the DIACAP re-certification of ALMR. The majority of this work has been done and the expected completion date is February 15, 2011
- **Alaska Interoperability Network (AIN) - MotoBridge® Gateway System installation status**
  - As of December 31, 2010, equipment installation has been completed at all of the designated sites. Connectivity and transport remains to be completed in Kodiak, Delta and Tok by the State and to Quarry Hill by the Air Force.
  - All MOUs have been completed and technical training was completed at all locations except the locations identified above that are awaiting connectivity as well as Valdez, Juneau, Soldotna AST, Glennallen Forestry, and the wide area training for Range Control at Fort Wainwright and Fort Greely.

## **8.0 Contractor Performance**

The UC is responsible for reviewing and approving OMO auditing and control policies and procedures, which provide for accountability, compliance, monitoring and performance assessment of the ALMR System. Prior to the declared System O&M, the OMO completed development of all required critical operational documents (policies, procedures, plans, processes, and protocols), which address management, security, protection, and physical safety of the System, including its personnel and assets.

Documents are reviewed annually and updated, as necessary, to reflect changes to System performance parameters or operational mandates. The status of ALMR documentation for 2010 is:

- 54 reviewed/updated
- 54 approved by the UC

## **9.0 Periodic Maintenance Inspections (PMIs)**

The OMO provides Quality Assurance/Quality Control (QA/QC) oversight of periodic maintenance inspections (PMIs) conducted by the SMO on ALMR sites on behalf of the UC. This process ensures the sites are maintained to a standard in accordance with the Service Level Agreement (SLA) and identifies outstanding discrepancies that could potentially affect site operations.

Per the OMO Performance-Based Work Statement (PWS), 25 percent of the total infrastructure sites will be inspected annually, and 100 percent will be inspected within a four-year period. The SMO, in coordination with SOA, provides the OMO with the annual PMI inspection schedule. A total of 23 site PMIs, out of the 80 operational DOD/SOA sites, were QA/QC inspected in 2010.

### **10.0 System Enhancements**

- Genesis Air Traffic Interface Application (ATIA) (carried forward from 2009)  
The Genesis ATIA was installed for BETA testing on the Tudor Road Network Management Terminal (NMT) in December 2009. Genesis consists of a hardware and software platform that provides the ability to track system-usage time by individual agency and individual user. The formal technical and security review was completed in December. The final change request documentation is still pending approval subsequent to appointment of the new State of Alaska representative to the Executive Council.
- A new Mitel® phone switch was added to Transportable Area South. The firmware has the capacity to support 40 analog phones, 2 IP-based wireless phones, and 8 digital phones. Additionally, the Wireless Access point will provide wireless phone coverage at deployment sites.

### **11.0 Supported Events**

Many opportunities exist to allow the UC to further interoperability throughout the State, and remain up to date on current national standards. The UC utilizes the OMO staff to contact member agencies, prospective member agencies, legislators, and other interested groups to disseminate information about ALMR. However, in 2010, the User Council continued to elect to not fund any outreach efforts or agency training.

- Exercises/Transportable Deployments
  - Arctic SAREX/Arctic Edge/Vigilant Shield 2010, April 21 – May 5
    - Forward Operating Base Sparta (TAS deployed)
    - Valdez (TAN deployed)
- Outreach
  - *Insider* newsletter – produced quarterly (funded by the cooperative partners)

- Training
  - Annual User Council Training Conference (funded through grant monies),  
Oct 18 - 19

## **12.0 Finance/Budget**

In accordance with the Cooperative Agreement, the UC will establish a budget process and each year develop a proposed budget for the next fiscal year to meet the operating, maintenance and capital replacement needs of the System and shall submit the proposed next year's budget to the Executive Council. All proposed expenditures and activities of the System, as well as funding sources, shall be reflected in the proposed budget. The UC approved the FY2011 Operating Budget on March 3 and presented it to the EC, who approved it on May 20. The FY2012 Operating Budget was approved by the UC on August 4 and the EC on August 19, and submitted into the SOA budget cycle for consideration of funding. Many services provided by the OMO remain unfunded at this time and will be readdressed annually during the budget review process.

## **13.0 Other Issues**

Not all areas requiring oversight were previously identified in this report. Additional areas not covered, but currently being monitored:

- Outstanding Maintenance

This continues to be an on-going issue and delays in addressing R56 grounding at sites continue to be a major concern, some being over six years old. Outstanding maintenance issues have been briefed to the monthly UC meeting.
- Connectivity

The SOA is continues to work on a long-term solution to the SOA Telecommunications System (SATS) connectivity issues caused by previously deferred maintenance and aging infrastructure. SOA issues are briefed at the monthly UC meeting.
- OMO/SMO Audit

Per the OMO Performance-base Work Statement (PWS) Section 3.5.2, the contractor shall "develop and administer auditing controls for ensuring stakeholders are receiving appropriate services for their contribution." In previous years, funding for this requirement had not been provided in the contract by either the DOD or SOA. In FY2011, the SOA fully funded the audit.

The audit consisted of a line-by-line review of both the OMO and SMO functions to ensure all tasks outlined in each office's respective PWS and customer support plan are being completed. The review of both contracts began on October 22. As of the end of the year, the auditor was drafting the report. Completion of the final report, along with any recommended corrective actions, is expected to be completed no later than January 31, 2011.

- **USARAK Divesture**

On March 10, General Atkins, Commander Alaskan Command, advised the SOA, that USARAK intended to divest itself of the majority of its land mobile radio equipment located at SOA sites. The initial planned divesture at 13 sites is to be completed by July 1, 2011, and an additional 28 sites are planned between July 1, 2012 and June 30, 2013. USARAK is currently in discussions with SOA regarding the possible transfer of the equipment to the State at no cost, or the decommissioning/removal of the equipment. Discussions between USARAK and SOA are on-going. Regardless of the outcome, USARAK wishes to remain a partner in ALMR.

#### **14.0 Conclusion**

This report addresses the status of various issues regarding the operation and management of ALMR and outstanding items noted during this calendar year, or carried forward from previous years.

The efficiency and effectiveness of the OMO and SMO in performance of their contract functions meet the expectations of the UC.

The greatest area of concern, that continues to be monitored by the OMO, is a final Cost Share solution which addresses life-cycle funding for the System.