



Alaska Land Mobile Radio Communications System

User Council 2011 Annual Assessment on System Operations and Management Performance

February 13, 2012

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 2011, there were 106 agencies operating on ALMR. At the end of the year, the total had increased to 110 agencies utilizing 15,030 subscriber units.

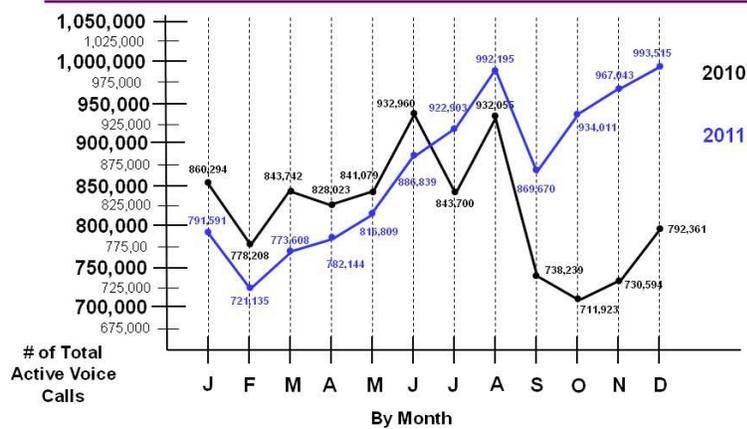
3.0 Metrics

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 and also at the Executive Council meetings, as scheduled.

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. Several sites exceeded established standards in 2011. SATS downtime has been responsible in some situations but others have involved multiple agencies responding to an incident where the radios affiliated with the only sites available, which were three-channel sites. 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.

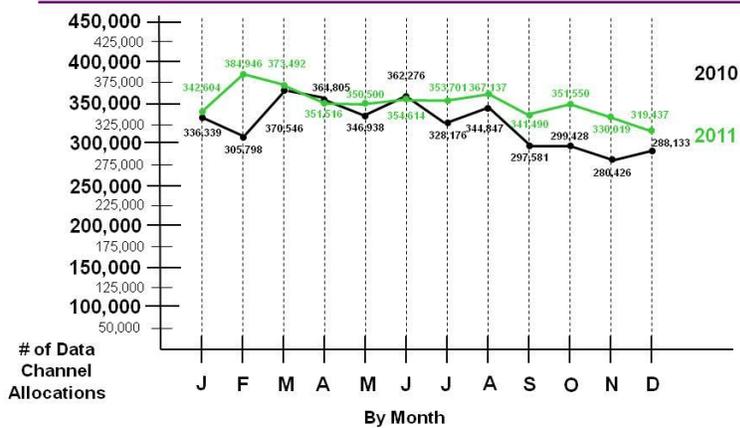
The following charts examine the total numbers of System voice calls and data allocations per month. A comparison of the 2011 data is made to the 2010 data.

2010 – 2011 Comparison System Performance - Voice



1

2010 – 2011 Comparison System Performance - Data



2

In 2011, the ALMR System supported a total of 10,451,463 voice calls and 4,221,006 data allocations.

4.0 Conflicts/De-conflicts

There is only one remaining site with conflicts due to continued utilization of conventional frequencies by the State of Alaska (SOA). The following provides the de-confliction accomplished during calendar year 2011, resolution to a long-standing interference issue and the remaining conflict.

- Conflicts
 - Site Summit Channel 6 (SOA) was turned off at the request of the Coast Guard due to suspected interference. The Coast Guard moved their equipment to Glen Alps in June and Channel 6 was turned back on. (Closed)
 - Frequency conflicts remain between Fire Station 12 Channel 10 (SOA) and the Municipality of Anchorage
- De-conflicts
 - The frequency conflict between Pillar Mountain Channel 3 (SOA) and the Marine Highway was resolved in November when the Alaska Marine Highway System was narrowbanded

5.0 Build out

The ALMR System was originally designed to support 105 sites. At the end of 2011, site equipment ownership was as follows (original design number and current build-out status/ownership):

- US Army Alaska (USARAK) – 45/45
- Joint Base Elmendorf-Richardson – 1/1
- Eielson Air Force Base – 3/3
- Clear Air Force Station – 1/1
- Municipality of Anchorage (MOA) – 15/6
- SOA – 40/34

There are currently 90 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.

NOTE: St Paul Island is not included in the above numbers due to the fact it has no reach back capability to the rest of the ALMR System. It is an ALMR VHF site, but operates in site trunking mode.

- In 2011, there were two unscheduled SOA sites completed
 - Mt Sunny Hay (aka Mt Sunny Hae)
 - Goose Creek Correctional Center 700MHz (not operational, not included in site count)
- There are no planned/funded SOA sites scheduled for completion in 2012, per Enterprise Technology Services (ETS)

The pending divestiture of U.S. Army radio frequency (RF) equipment at 41 SOA sites will affect the above numbers in 2012.

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 2011, several previously identified coverage issues continue to be tracked by the OMO.

- Skagway (carried forward from 2010)
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 ALMR coverage. However, Mine Mountain is remote and does not have power. The DOT&PF planning section offered to assist with funding, if a plan can be put together.

NOTE: There was no change to the status in 2011.

- Houston (carried forward from 2010)
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.

NOTE: Houston PD lost all law enforcement officers in 2011 and are no longer members of the ALMR System.

- 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

There were no on-going projects in 2011.

8.0 Contractor Performance

8.1 The OMO is responsible for auditing and control of the policies and procedures, which provide for accountability, compliance, monitoring, and performance assessment of the ALMR System. Therefore, documents are reviewed annually and updated, as necessary, to reflect changes to System performance parameters or operational mandates. The status of ALMR documentation for 2011 is:

- 68 reviewed/updated by OMO
- 62 approved by the UC
- 3 retired by the UC

8.2 The OMO performs third party Quality Assurance/Quality Control of Systems Management Office and general System oversight on behalf of the stakeholders/member agencies. Two of the areas of oversight are Key Variable Loader (KVL) and subscriber inventory audits.

The Technical Advisor began performing audits of the KVLs mid-year 2011. Audits will now be performed on a quarterly basis. The results are as follows:

- June 21 - All KVLs were located and identifying numbers verified.
- October 20 - All KVLs were located and identifying numbers verified.

The Technical Advisor performs subscriber unit audits on a quarterly basis. Agencies do not always respond at the same time, or at all. Dates listed are dates the reports were generated. The results of those requests are as follows:

- January 13 - a request for Nikiski Fire Department subscriber information was originally sent out on 6 October 2010. The Nikiski Fire Department responded that the units had no current ALMR programming.
- February 8 - requests for subscriber unit information from the Bureau of Alcohol, Tobacco, Firearms, and Explosives, Anderson Volunteer Fire and EMS, Cantwell Volunteer Fire Department, and the Federal Aviation Administration (FAA) Fairbanks Flight Standards District Office were sent out on 21 January, 2011. All agencies responded. There was a single discrepancy - the error in the FAA

Fairbanks Flight Standards District Office subscriber count was found to be the fault of the FAA for not requesting a new ID number for the base station.

- May 2 - requests for subscriber unit information from the Ester Volunteer Fire Department (VFD), City of Fairbanks, Alaska Railroad Corporation, and the State of Alaska Department of Homeland Security and Emergency Management was sent out on April 19. All agencies responded and all units were available and active. Fairbanks Fire Department was to deactivate one radio, per their response.
- August 3 - requests for subscriber unit information from the Bureau of Alcohol, Tobacco, Firearms, and Explosive, Civil Air Patrol, Copper River Native Association, Federal Aviation Administration Fairbanks Flight Standards District Office, North Pole Police Department, and Valdez Fire Department were sent out on July 15. All agencies, except Copper River Native Association, responded and all units were available and active.
- November 30 - requests for subscriber unit information from the Alaska Pioneer Homes Division, Alaska Professional Volunteers, Chitina Fire and Rescue Department, and the State of Alaska Enterprise Technology Services was sent out on October 20. Only the Alaska Pioneer Homes Division responded and all units were available and active.

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 should be inspected annually, and 100 percent must 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 31 PMIs, out of the 82 operational DOD/SOA sites, were QA/QC inspected in 2011.

10.0 System Enhancements

There were no System enhancements done in 2011.

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 Performance-Based Work Statement for the OMO allows the UC to utilize the OMO staff to contact member agencies, prospective member agencies, legislators, and other interested groups to disseminate information about ALMR. In 2009, the User Council elected to not to fund outreach efforts or agency training. This remained in effect throughout 2011. However, the quarterly newsletter was funded through the end of the calendar year under the SOA-funded User Council support CLIN.

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 proposed FY2013 Operating Budget was approved by the UC on June 1, 2011, for presentation to the Executive Council. The Executive Council approved the budget on July 21, 2011, and agreed it should be submitted into the SOA budget cycle for consideration of funding.

Many services by the OMO remain unfunded at this time and should re-addressed annually during the budget review process.

13.0 Other Issues

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

- Outstanding Maintenance
 - Delays in addressing R56 grounding at sites continue to be a major concern, some being over seven years old.
 - There were two major System outages in November
 - The first one occurred on November 3 when the Tudor Tower site went down for 20 minutes due to a power outage, which caused 19 sites in the South Zone to go into site trunking. The site went on battery back-up and there were no alarms to alert the ETS technicians to this fact.

- The second one occurred on November 19. The Sterling site lost commercial power and the generator had been disabled due to deferred maintenance. When the batteries failed, it disabled Soldotna Dispatch and put 16 sites on the Kenai Peninsula in site trunking for one and a half hours until a contractor could get to the site and bring it back up
- Unscheduled SOA outages caused by failures at SATS microwave sites continued to affect ALMR coverage throughout December, as well.
 - Both generators at Tsina failed on December 8 and the site shut down on December 12; this put three other sites in site trunking
 - Wolcott experienced power issues on December 13 putting Seward and Moose Pass in site trunking
 - The Hope generator ran out of fuel on December 19, which put Girdwood into site trunking
 - The Hope site went down again on December 30 due to the generator running out of fuel and the depletion of battery power
- Connectivity

SOA 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.
- USARAK Divestiture

On March 10, 2010, 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 divestiture of equipment at 13 sites was to be completed by July 1, 2011, and equipment at an additional 28 sites was planned for divestiture on July 1, 2012. The State of Alaska Department of Administration was not prepared to accept the initial 13 sites on July 1, 2011. Therefore USARAK agreed to continue to fund maintenance at a break/fix level through the end of the calendar year. The contract with the servicing maintenance organization was modified to support this action. The equipment at the remaining 28 site will be divested on July 1, 2012, as planned.
- 7.9 System Update

The User Council recommended to the Executive Council that the infrastructure owners should seek funding to update the System to the current Motorola 7.9 system software release, and also seek funding for the Motorola Software Update Assistance II (SUA II) to ensure the System remains current in future years. The Executive Council has expressed their support for the partners pursuing funding for the update and SUA II.

The Department of Defense partners, USARAK, and USAF advised they were seeking funding in Federal FY12 to support the update and SUA II. The State of Alaska advised the funds to support the update and SUA II will be requested in the State FY13 Governor's budget. The Municipality of Anchorage is currently conducting internal discussions with regard to the update and SUA II funding.

- **AFEA Funds transfer**

The 673rd Communications Squadron agreed to accept the funds from the Federal Non-DOD agency in late September. However, many agencies had already either obligated all their funds or returned them to the Treasury.

Continuing resolutions and no approved budget by Congress hampered availability of funds to apply to the OMO contract. As a result, some User Council support, the Insider Newsletter, web site support, and travel (beyond funds already received) ended on December 31, 2011.

- **Cost Share solution**

This is one of the greatest areas of concern. With the State becoming the primary infrastructure owner, it is highly probable that the current method and approach will change. A Cost Share Working Group was formed at the direction of the Executive Council and was made up of members from all of the cooperative partners. Members were appointed in December and discussions were to begin in January 2012.

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 areas of concern, that continue to be monitored by the OMO, are: 1) a long-term solution SATS maintenance; 2) updating of the ALMR System to 7.9 software release; and 3) a final Cost Share solution which addresses life-cycle funding for the System.