



A FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

Alaska Land Mobile Radio Communications System

User Council 2012 Annual Assessment on System Operations and Management Performance

February 11, 2013

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 2012, there were 110 agencies operating on ALMR. At the end of the year, the total had increased to 116 agencies utilizing 16,408 subscriber units. New member agencies joining in 2012 were the 168th Air Refueling Wing, Aleutian-Pribolof Island Association, Department of Homeland Security Immigration & Customs Enforcement (ICE) - Homeland Security Investigations, Kenai Peninsula Borough School District, US Attorney's Office - District Anchorage, and Whitestone Emergency Medical Services.

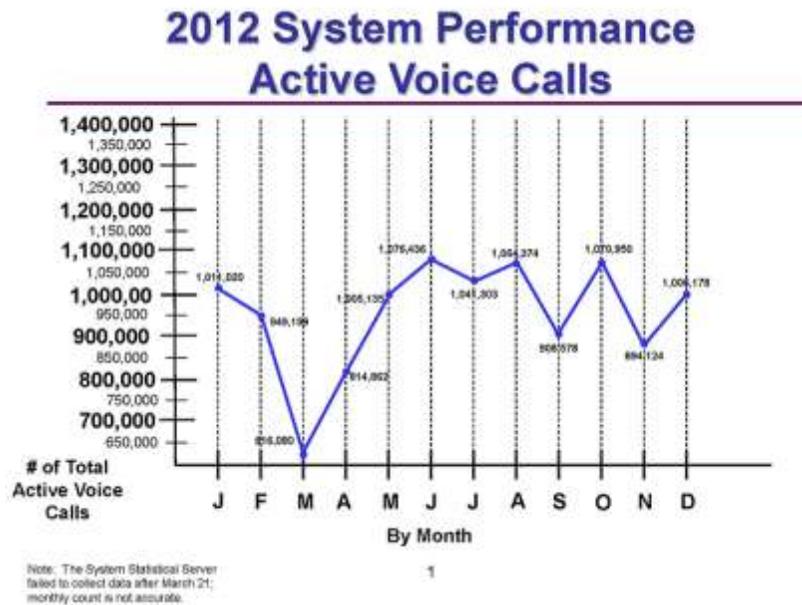
3.0 Metrics

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, we 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 (EC) meetings, as scheduled.

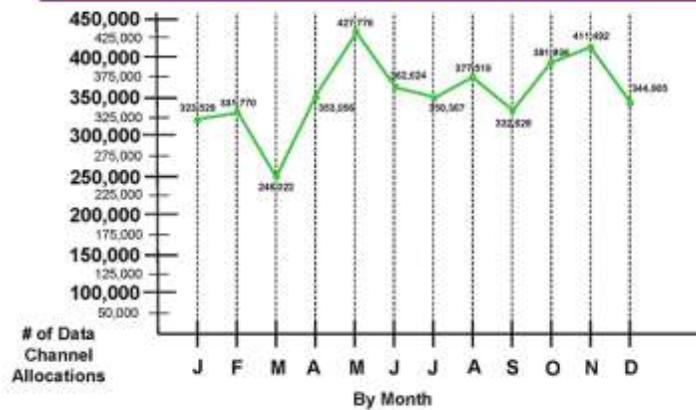
The UC has established a performance baseline standard, with respect to System busies, which identifies day-to-day and emergency operations data for individual sites by both the percentage and duration. Several sites exceeded established standards in 2012. Causes range from State of Alaska (SOA) Telecommunications System (SATS) downtime in some situations, as well as military exercises and weather-related events.

On the Kenai Peninsula, the increase in user agencies utilizing ALMR as their primary system, coupled with the limited-capacity three-channel sites, has also contributed to the exceeded standard. 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. In the case of the Kenai Peninsula, the Kenai and Kasilof sites were chosen for capacity upgrades. This process started in April and has not been completed although regulatory approval has been received and the required equipment is in the procurement process is the delay is due to the timing of the package submission to the Federal Communications Commission (FCC) and then a hold being placed on the approval by the FCC and subsequently the National Telecommunications and Information Administration (NTIA). Site data continues to be examined by the OMO on a monthly basis and 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.



2012 System Performance Data Channel Allocations



Note: The System Statistical Server failed to collect data after March 21; monthly count is not accurate.

2

In 2012, the ALMR System supported a total of 11,458,239 voice calls and 4,253,624 data allocations.

4.0 Conflicts/De-conflicts

There are currently no known frequency conflicts involving ALMR sites. The previously reported conflict involving the Fire Station 12 (FS12) ALMR site has been resolved according to the SOA Enterprise Technology Services (ETS). The Municipality of Anchorage (MOA) has allowed their license for the frequency that was in conflict with ALMR to lapse. According to ETS staff, the SOA will seek to license the frequency for use in the ALMR system.

- Conflicts
 - None remaining
- De-conflicts
 - FS12

5.0 Build out

The ALMR System was originally designed to support 105 sites. At the end of 2012, site equipment ownership was as follows (original design number and current build-out status/ownership):

- US Army Alaska (USARAK) – 45/4

- Joint Base Elmendorf-Richardson – 1/1
- Eielson Air Force Base – 3/3
- Clear Air Force Station – 1/1
- Municipality of Anchorage (MOA) – 15/12
- SOA – 40/74

There are currently 95 operational sites including the 12 MOA Anchorage Wide Area Radio Network (AWARN) sites. The Municipality brought six new 700 MHz sites on line in 2012. They included Anchorage Regional Landfill, Blueberry Hill, Hope, Girdwood, Latimer-Chugiak Volunteer Fire Department, and MatSu Borough Fire Station 62 (new Knik FS). All Department of Defense (DOD) sites have been completed and the State has completed the build out of all funded sites.

NOTE 1: In calendar year 2012, radio frequency (RF) equipment belonging to USARAK at 41 sites was transferred to the State of Alaska. This accounts for the dramatic change in the listed numbers between last year's report and this year's report.

NOTE 2: St Paul Island is not included in the above total operational site count due to the fact it has no reach back capability to the rest of the ALMR System and operates only in site trunking mode. However, it does have an assigned ALMR site number and is under control of St Paul Island Public Safety.

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 2012, 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 crews 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 2012.

- **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. There was no change in the status in 2012.

- **Palmer/Wasilla** (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 System Management Office (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.

NOTE: There was no change in the status in 2012.

- **North Pole** (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.

NOTE: Mr. Jim Kohler met with Chief Jeff Tucker, North Star Volunteer Fire Department, and they looked at possible places where the site could be co-located with existing infrastructure to save on costs of building a green site. At the end of 2012, the State was awaiting response from an organization regarding a co-location agreement and cost estimates.

- **Delta Junction** (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.

Update 2012: Follow up testing, which involved a change of the ALMR transmit antenna at the site did not resolve the coverage issues that have been experienced. Additionally, no specific interference source was identified that could be mitigated.

At this time, no further action is planned as the site, which is operating within specifications, as confirmed with previous testing. This issue is determined **closed**.

7.0 On-going Projects

- **7.13 System Software Update**

In 2011, 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 Upgrade Assistance II (SUA II) to ensure the System remains current in future years. The Executive Council expressed their support for the partners pursuing funding for the update and SUA II.

The Department of Defense partners, US Army - Alaska (USARAK), and US Air Force (USAF) sought and received funding in Federal Fiscal Year (FY) 12 to support the update and SUA II. The SOA also requested funds to support the update and SUA II, which was included in the State FY13 budget. The MOA was not successful in their request for funding from the SOA Legislature and subsequently faced being separated from the ALMR System. An extended timeline for ALMR implementation of the 7.13 migration has allowed time for funding to be included in the MOA FY13 budget for the update and SUA II funding.

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 2012 is:

- 65 reviewed/updated by OMO
- 56 approved by the UC
- 5 approved by the OMO
- 3 retired by the UC
 - Training Plan
 - Maintenance Plan
 - Quality Plan
- 1 outstanding - awaiting approval
 - 2012 Business Case

NOTE: At the November 7 User Council meeting, the council proposed a change to the approval process allowing the OMO to perform annual reviews and approve administrative changes to documents and to only send substantive changes on to the User Council for approval. The proposal was approved by a quorum of the council members and implemented.

8.2 The OMO performs third party Quality Assurance/Quality Control of Systems Management Office and general System oversight on behalf of the stakeholders and member agencies. Two of the areas of oversight are the key variable loader and subscriber inventory.

8.2.1 Key Variable Loader (KVL). The Technical Advisor performs audits of the KVLs on a quarterly basis. The results are as follows:

- **Date of Inspection:** January 23
Findings: All KVLs were located and identifying numbers verified.
- **Date of Inspection:** May 31
Findings: All KVLs were located and identifying numbers verified.
- **Date of Inspection:** September 13
Findings: The four KVLs assigned to the TAS were located within the warehouse facility lined up against the windowed wall, unsecured and open to anyone accessing the warehouse, along with the TAS spare portable radios. The System Manager was immediately notified to effect corrective measures.
- **Date of Inspection:** September 14
NOTE: This was a follow-up to the September 13 inspection to see if those discrepancies had been corrected.
Findings: Returned to the warehouse and found that the KVLs and portable radios were still unsecured. The Operations Manager contacted the System Manager and advised that the issue had not been resolved. Four hours after the System Manager was notified a second time, the four KVLs were brought to the ALMR Office and the portable radios were secured at the warehouse.
- **Date of Inspection:** September 26
Findings: All KVLs were located and identifying asset tag numbers verified.
- **Date of Inspection:** November 30
Findings: All KVLs were located and identifying numbers verified.

8.2.2 Subscriber Units. 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:

- **Date of Report:** February 9
Findings: Requests for subscriber unit information were sent to Department of Environmental Conservation, Bureau of Land Management, Anton Anderson Memorial Tunnel Fire Department -Transfield Services, Ester Volunteer Fire

Department, and Hope/Sunrise Fire Department on January 11, 2012. All agencies responded. There were two discrepancies, which were a missing subscriber unit belonging to Ester VFD and a different mobile number than what was on file. The ALMR Help Desk was notified and contacted Rob Borland at Ester VFD. He instructed her to inhibit the missing radio and delete the replaced mobile unit.

- **Date of Report:** May 2

Findings: Requests for subscriber unit information were sent to DNR Parks, Steese Fire, DEA, and City of Seward on April 30, 2012. All agencies responded. There were two DNR Parks' radios on loan to DNR Forestry (DNR 37927 and FOR CMD 02). It was agreed the units should be transferred to the DNR Forestry list per Superintendent Sinclair and Jordan Halden.

NOTE: Effective July 1, 2012, the Operations Management Office began a new contract year and the Quality Assurance/Quality Control (QA/QC) oversight of Asset Management was removed from the performance-based work statement.

9.0 Periodic Maintenance Inspections (PMIs)

Effective July 1, 2012, the OMO began a new contract year and the QA/QC oversight of SMO was modified in the performance-based work statement. Prior to that date the OMO was responsible for providing QA/QC oversight of periodic maintenance inspections (PMIs) conducted by the SMO on ALMR sites on behalf of the UC. This process provided third party assurance that 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.

For 2012, there were a total of nine PMIs, which were QA/QC inspected by the Technical Advisor or the Operations Manager. They were performed at the following sites:

- Ted Stevens Anchorage International Airport
- Chulitna
- Byers Creek
- Auke Lake
- Saddle Mountain
- Dimond Courthouse
- Lena Point
- Haines

- Skagway,
- Transportable Area North

10.0 System Enhancements

There were no System enhancements in 2012.

However, on September 5, Thales became the sixth manufacturer to have equipment approved to operate on the ALMR System with the approval of their Liberty Multiband portable.

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 SOA FY2012, the State allotted a \$200K contract for training. The administering office for the contract was the 5 Star Team coordinating through the Division of Homeland Security and Emergency Management. This contract focused on communications options for non-ALMR agencies, particularly those outside of the ALMR coverage area. This training was conducted from January through May 2012, at which time all the available funds were expended.

Beginning July 1, 2012, (SOA FY13) the State once again contracted with 5 Star Team, allotting another \$200K, to provide training, which focused on the specific needs of the individual agencies on ALMR. From July through December, 167 members from 19 agencies were provided training focusing on areas such as Radio Operations and Planning and Exercise.

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 EC. All proposed expenditures and activities of the System, as well as funding sources, shall be reflected in the proposed budget. The proposed FY2014 Operating Budget was approved by the UC on August 1, 2012, for

presentation to the EC. The EC approved the budget on August 16, 2012, and agreed it should be submitted into the SOA budget cycle for consideration of funding.

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
 - R56 grounding at sites continues to be a major concern,
- 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. Enterprise Technology Services (ETS) has been diligently working on improvements and upgrades this year. Accomplishments include:

 - Significantly increased DNR firefighting dispatch capabilities by installing new dispatch consoles and associated network infrastructure in Fairbanks, Tok and Delta Junction
 - Upgraded microwave network capacity, fault tolerance and alarm reporting in the following areas:
 - Fairbanks
 - Anchorage
 - Juneau
 - Fairbanks Regional Office Building
 - State Office Building
 - Prince William Sound/Valdez/Cordova
 - Dot Lake
 - Tok
 - Parks Highway
 - Sunset of aging statewide paging service
 - Performed FCC mandated narrow banding throughout the state for DPS, DNR, DEC, DOC, DHSS and DOT (including the ferry system and the Whittier Tunnel)
 - Installed major radio and console upgrades to correctional facilities
 - Resolved ongoing safety issue at Ernestine DOT camp by reengineering the exterior power distribution system and transformer
 - Resolved multi-year network connectivity issues at the Palmer State Office Building and Police Department

- Remediated equipment cooling issues at multiple SATS sites with redundant air conditioning systems, fans and passive louver systems
- Increased generator runtime capability at select sites that have lost commercial power for extended periods in the past

NOTE: SOA issues are briefed at the monthly UC meeting.

- AFEA Funds transfer
As of July 1, 2012, with the change of majority infrastructure ownership to the State, the DOD elected to no longer attempt to collect funds from the Federal Non-DOD agencies. The State took over the task and was able to collect funds from 4 of the 13 agencies by the end of calendar year 2012.
- Cost Share solution
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 able to come up with a solution that was agreed upon by all the stakeholders and was based upon percentages of the non-shared costs according to infrastructure owned.

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.

Concern, that continue to be monitored by the OMO, are: 1) a upgrading of SATS connectivity; 2) updating of the ALMR System to 7.13 software release; and 3) and implementation of a final Cost Share solution which addresses life-cycle funding for the System.