



**ALASKA LAND MOBILE RADIO EXECUTIVE COUNCIL
(A Federal, State and Municipal Partnership)**



MEMORANDUM FOR ALMR Executive Council

February 15, 2013

FROM: DOD Executive Co-Chair

SUBJECT: February 21, 2013, ALMR Executive Council Meeting Agenda

TO: See Distribution

1. **Call to Order.** Colonel Scott Moser, Department of Defense (DOD) Co-Chair will call the meeting to order at 1:30 p.m. The roll will be taken. (5 min)
2. **Opening Statements and Other Announcements.** (5 min)
3. **Approval of Previous Meeting Minutes.** Review of the draft ALMR Executive Council minutes from the January meeting. (5 min) (Atch 1)

Motion: Approve January 17, 2013, Executive Council meeting minutes, as written.

4. Old Business. (30 Min)

a. State of Alaska (SOA) Tower at Donnelly Dome. Enterprise Technology Services (ETS) was correcting some coordination issues on the SOA package and reconciling the differences.

A tower structural analysis was required to show the tower would support the State microwave dish and also the receipt of the Federal Communications Commission (FCC) license in order for DOD to provide approval.

b. Clear Site Funding. A decision by US Space Command was required by the end of December regarding the funding for the Clear site for SOA CY2014.

c. MOA Migration Funding Status. Mr. Smith had advised the council at that the January meeting that the public hearing regarding the budget for the MOA System update funding occurred on December 18 and the funding had been approved. This issue is recommended for closure.

5. User Council Update. (Major Matt Leveque, Chair) (5 Min)

a. 2012 User Council Annual Assessment of System Operations and Management Performance (Atch 2). This is a snapshot presented by the User Council of the previous year's activities performed by the Operations Management and System Management Offices

b. The User Council has newly appointed representatives for the Eielson Air Force Base primary and alternate positions. The DOD Co-Chair has concurred with their appointment and their appointment is now presented for acceptance.

Proposed motion for consideration:

Motion: Accept the appointment of Mr. Chris Martin and Mr. David Jones as the primary and alternate DOD - Eielson Air Force Base representatives, respectively, to the ALMR User Council.

6. Operations Management Office. (Mr. Del Smith) (10 Min)

- a. January System metrics (Atch 3)
- b. 2012 Annual Business Case (Atch 4)
- c. 7.13 Migration status update

7. New Business. (15 Min)

FY14 Cost Share Agreement - initial coordination.

8. Next Meeting. The next meeting is scheduled for March 21, 2013, 1:30 p.m. at the Department of Public Safety Training/Conference Room, 5700 E Tudor Road. (5 Min)

9. Adjourn Meeting. (5 Min)



SCOTT E. MOSER, Colonel, ALCOM/J6
Department of Defense Alaska Co-Chair
ALMR Executive Council

4 Atch

- 1. January Meeting Minutes
- 2. January System Metrics
- 3. 2012 Annual Assessment of System Operations and Management Performance
- 4. Business Case Update

Distribution:

ALCOM/J60, Colonel Scott Moser
SOA DPS, Commissioner Joseph Masters
AFEA, ASAC Darrin Jones
AML, Chief Jeff Tucker
MOA, Lt Ken Spadafora
User Council, Major Matt Leveque
OMO, Mr. Del Smith
ALCOM/J64, Mr. Timothy Woodall
SOA ETS, Mr. Jim Kohler
SOA ETS, Mr. Adam Paulick
MOA, Mr. Trygve Erickson
MOA, Mr. Jason Beach



**ALASKA LAND MOBILE RADIO EXECUTIVE COUNCIL
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MEMORANDUM FOR ALMR Executive Council

February xx, 2013

FROM: DOD Executive Co-Chair

SUBJECT: January 17, 2013, ALMR Executive Council Meeting Minutes

TO: See Distribution

Executive Council Members Present:

Assistant Special Agent in Charge Darrin Jones	Alaska Federal Executive Association (AFEA) - Federal Bureau of Investigations
Lt Ken Spadafora	Municipality of Anchorage (MOA) Office of Emergency Management

ALMR Support Team Members and Guests Present:

Major Matt Leveque	User Council Chairman - Alaska State Troopers
Mr. Del Smith	Operations Manager
Mr. Jim Kohler	ETS Telecommunications Special Projects Administrator
Mr. Trygve Erickson	Municipality of Anchorage (via teleconference)
Mr. Pete Murphy	User Council Vice Chairman - Federal Bureau of Investigations
Mr. Max McGrath	Enterprise Technology Services
Ms. Sherry Shafer	Operations Management Office (via teleconference)
Ms. Sharon White	Enterprise Technology Services

1. Call to Order. Assistant Special Agent in Charge (ASAC) Darrin Jones, Alaska Federal Executive Association (AFEA) - Federal Bureau of Investigation Co-Chair called the meeting to order at 1:32 p.m.

2. Opening Statements and Other Announcements. Major Matt Leveque advised he was authorized to vote as the proxy for Commissioner Joe Masters, State of Alaska Co-Chair, on any motions.

3. Approval of Previous Meeting Minutes. ASAC Jones asked the Executive Council if they had reviewed the November meeting minutes and if they had any requested changes. There was no discussion or comments.

Motion: Approve November 29, 2012, Executive Council meeting minutes, as written.

The motion was made by Major Leveque, proxy for Commissioner Masters, and seconded by ASAC Jones. There were no objections. **The motion was carried and approved.**

4. Old Business.

a. SOA Tower at Donnelly Dome. There was no DOD representative present; therefore, Mr. Del Smith stated Mr. Tim Woodall was to get back to the State regarding the permit no later than January 15. Mr. Smith stated he was advised by Enterprise Technology Services (ETS) it would be probably one to two months until they would be able to address the issue once the permit was approved due to the difficulty in reaching the site because of winter weather conditions.

c. Clear Site Funding. Mr. Smith advised the Executive Council that Mr. Woodall recently stated the DOD had found some funds and the Clear site was funded through June 30. Additionally, Mr. Smith briefed that Mr. Woodall had explained that the DOD was advised AT&T only required a 30-day removal notices versus a 90-day notice.

Mr. Smith state once the site was shut down, the equipment could be removed and utilized elsewhere.

ASAC Jones confirmed that he had recently traded emails with Colonel Moser and this was what he was told, as well.

d. MOA Migration Funding Status. Mr. Trygve [Erickson](#) advised the council that the funding was in place and a contract had been let to Motorola, which included the Ethernet connection.

e. State of Alaska Legislative Audit. Mr. Smith advised the council that the report was turned into the Legislature on December 27, 2012, according to Ms. Carrie Strickland, Deputy Director ETS, and it was well received. Mr. Smith stated he was advised to stand by in case there were further questions.

5. User Council Update.

Mr. Pete Murphy advised the council that the annual elections for the Chair and Vice Chair positions were held in late November 2012. Mr. Murphy stated Major Leveque was re-elected as the Chair and that he was re-elected as the Vice Chair.

6. Operations Management Office.

a. System Metrics. Mr. Smith presented the December System metrics, as well as a six-year comparison, to the council.

He pointed out that many of the busies were still attributed to the Kenai and Kasilof sites and he had requested Mr. Jim Kohler check into the status of the equipment order after the meeting.

b. 2012 Annual Information Assurance Audit Report of Findings. Mr. Smith advised the council the report was a compilation of all the audits performed by the Operations Management Office (OMO) in their QA/QC role. He stated the report showed the dates, findings and corrective actions and was provided for the council's information only.

c. Annual Business Case update. Mr. Smith briefed the council that the Business Case was currently with the User Council for vote at their February meeting. It would then be presented to the Executive Council.

ASAC Jones asked if the Business Case outlined the future costs for the agencies.

Mr. Jim Kohler briefed that the purpose of the Business Case is to answer questions regarding what if there was no ALMR and why it is of value. He advised it did not get down to the agency level but was more an overall picture of its validity.

d. User Council Annual Assessment of System Operations and Management Performance. Mr. Smith advised the Executive Council the User Council would present this to them in February. He explained it was a report on how the User Council thought the Operations and System Management Offices were doing and on-going progress with System issues.

7. New Business.

a. ASAC Jones asked if there was a current formula for cost from the State yet.

Mr. Kohler stated there was one in place in the Governor's Budget, which included a revenue stream and a combined receipt authority of \$2M. Mr. Kohler stated he had a spreadsheet developed but chose not to provide it prior to the budget approval because he felt that the municipalities would not understand the language regarding the funding stream and he would end up doing a lot of fire fighting.

Mr. Kohler briefed that under the current proposal every user will be assessed a share of the cost based on the formula derived from System usage. He stated there is currently a line item in the budget that covers up to \$500K in receipt authority on behalf of the municipalities. Mr. Kohler explained the spreadsheet will show agency cost shares individually, but the actual payment will not come out of their pockets. He stated he would not know until April if the budget is approved, as such.

Mr. Kohler explained the DOD portion would be 12 percent of the shared costs, as infrastructure owners. He advised State agencies and Federal Non-DOD agencies would all be assessed their cost share base on System usages, the same as the municipalities. Mr. Kohler stated he would forward the spreadsheet after the meeting so the council members could see how it broke out for each agency and he would work with the OMO to get the information out to the System users as soon as the April budget was passed.

b. Mr. Kohler advised the council the Bethel LMR project was moving along. He briefed the Governor would submit an amended budget to the Legislature and optimistically it would include a line item for expansion into Bethel. He advised the design report should be available from Motorola® next month. Mr. Kohler stated that based on the initial design and cost, the site would be co-located at Bethel Public Safety. He briefed this design would offer a fully-trunked system in five of the villages where troopers live and work in the Yukon-Kuskokwim Delta, plus a number of conventional bases in some of the smaller areas.

Mr. Kohler stated that ETS would be going back to the Legislature again next year to add more villages. He advised this would be the template for the next several years to continue to continue to build out the System and eventually expand into the Northwest, as well.

c. Mr. Del Smith advised the council he had received a call from St Paul Island regarding the current software 7.13 update, so he provided them the point of contact at Motorola®.

Mr. Smith briefed St Paul was originally part of the Concept Demonstration and reach back to ALMR had been provided via satellite at that time. Mr. Smith advised the site equipment had been transferred to St Paul Public Safety and they had no reach back capability now. He explained that St Paul was looking at ways to re-establish reach back to the ALMR System.

Mr. Kohler suggested St Paul look at the Health Connect Fund, and could start applying in August. He explained the fund encourages healthcare industries and health networks needing bandwidth to enlist non-eligible users to assist in the purchase of bandwidth for use within the healthcare arena.

d. Mr. Kohler briefed the council members that ETS Director Pat Shier would be departing; he had accepted a position as the CIO at the University of Alaska-Anchorage. Mr Kohler advised there was no word on a replacement at this time.

8. Next Meeting. ASAC Jones briefed the next meeting is scheduled for February 21, 2012, 1:30 p.m. at the Department of Public Safety Training/Conference Room, 5700 E Tudor Road.

9. Adjourn Meeting. ASAC Jones asked if there were any other items for discussion. Hearing none, he made a motion to adjourn.

Motion: Adjourn the January monthly Executive Council meeting.

The motion was made by Major Leveque, proxy for Commissioner Masters, and seconded by ASAC Jones. There were no objections. **The motion was carried and approved.**

The meeting adjourned at 2:16 p.m.

DARRIN JONES, ASAC, FBI
Federal Non-DOD Co-Chair
ALMR Executive Council

Distribution:

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SOA DPS, Commissioner Joseph Masters
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SOA ETS, Mr. Adam Paulick
ALCOM/J64, Mr. Timothy Woodall
SOA ETS, Mr. Jim Kohler
MOA, Mr. Trygve Erickson



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.

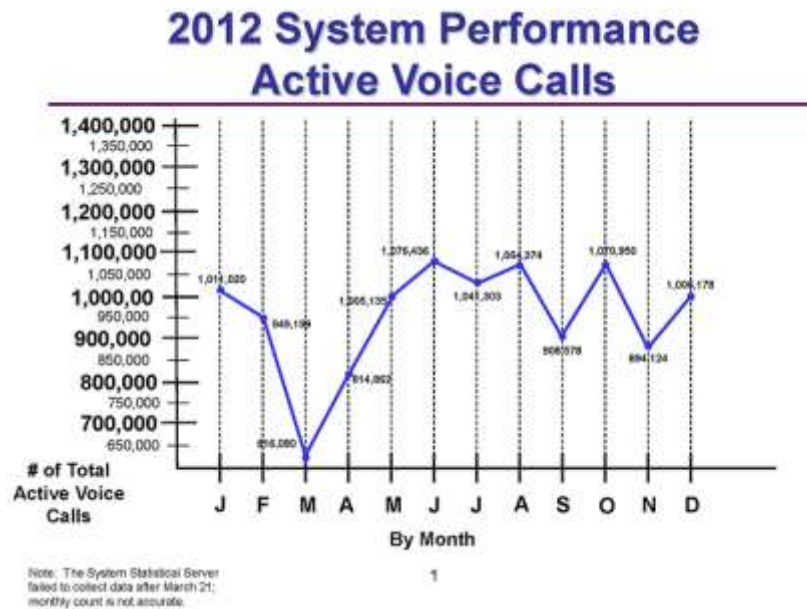
3.0 Metrics

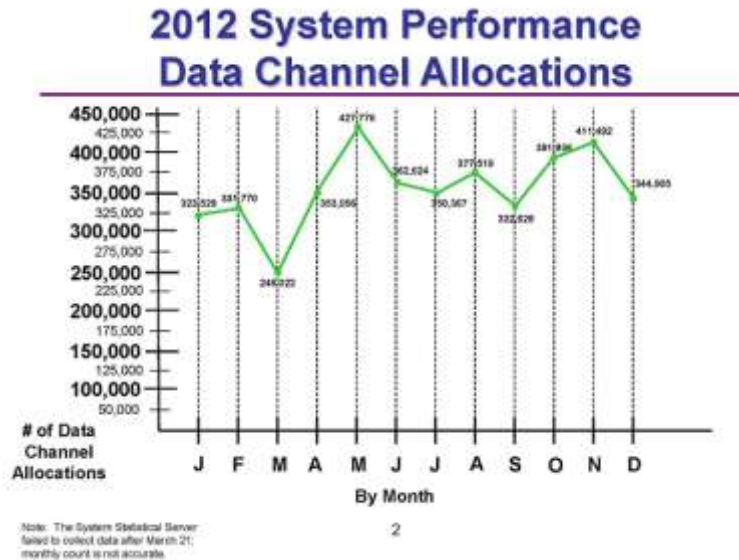
The UC is responsible for monitoring System performance and tracking various parameters including busies and voice calls per month in order to note any trends which may indicate System deficiencies. To accomplish this, we employ the Operations Management Office (OMO) to provide periodic reports. The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





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

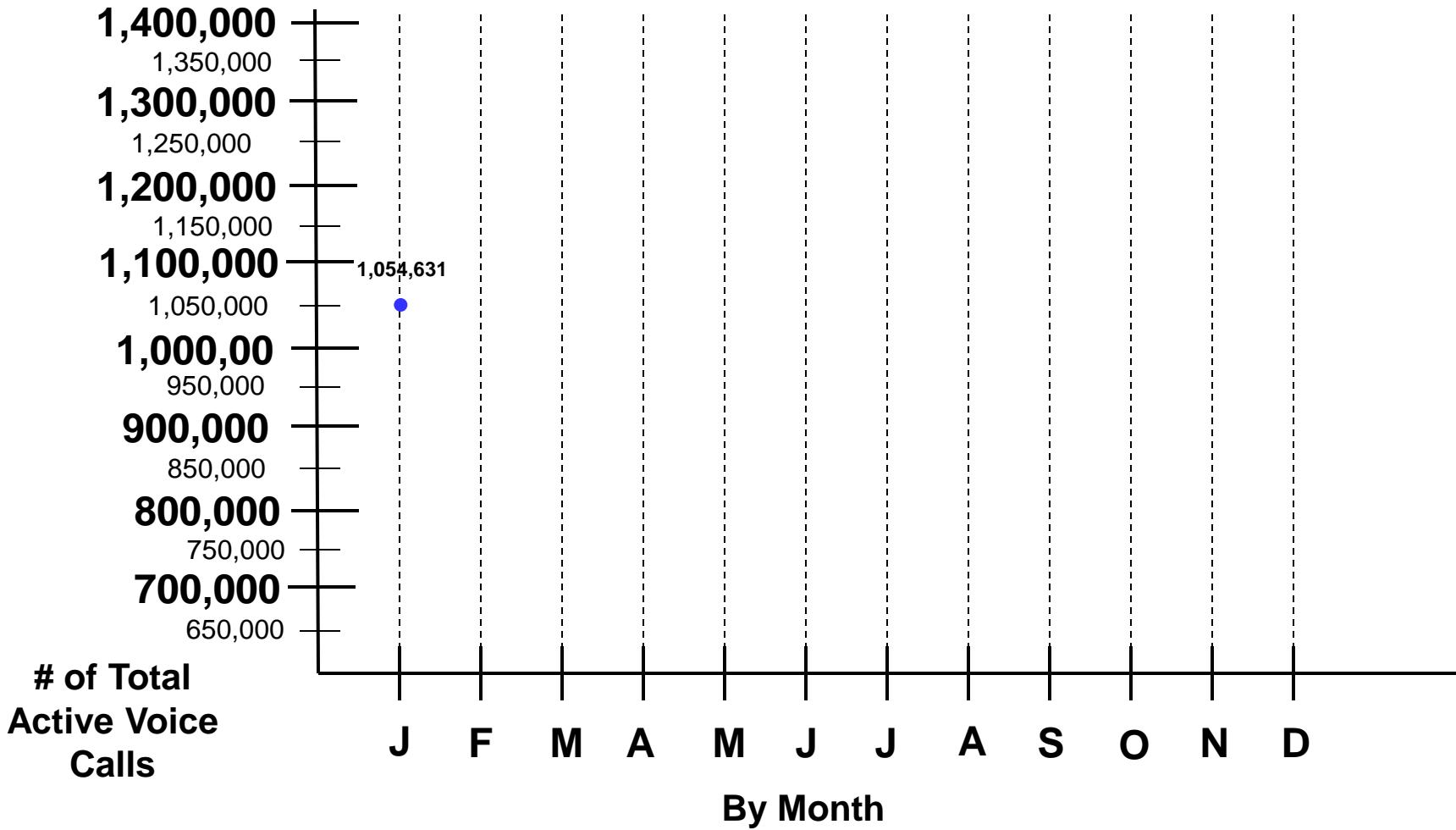
This report addresses the status of various issues regarding the operation and management of ALMR and outstanding items noted during this calendar year, or carried forward from previous years.

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

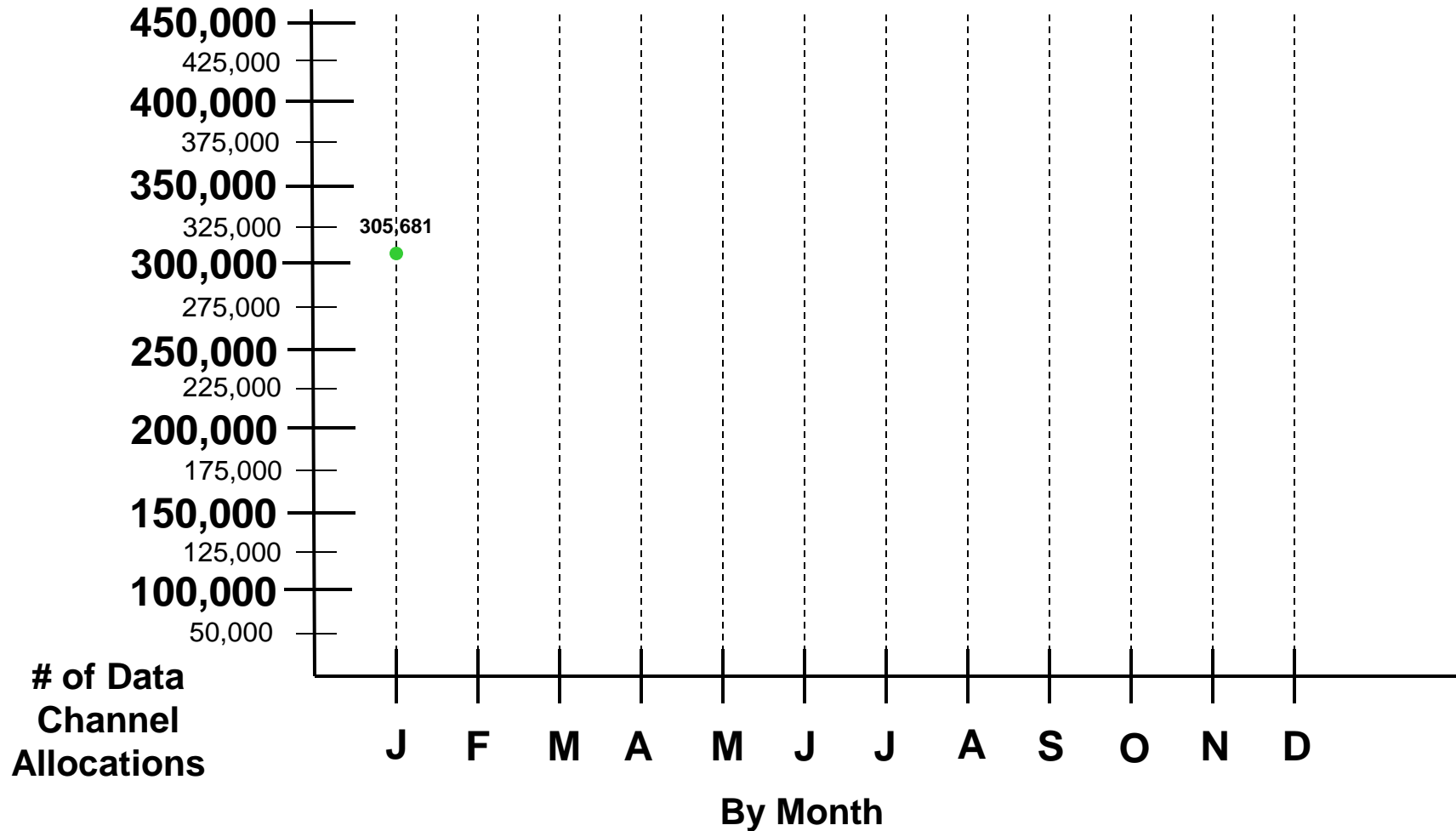
Concern, that continue to be monitored by the OMO, are: 1) a upgrading of SATS connectivity; 2) updating of the ALMR System to 7.13 software release; and 3) and implementation of a final Cost Share solution which addresses life-cycle funding for the System.

2013 System Performance

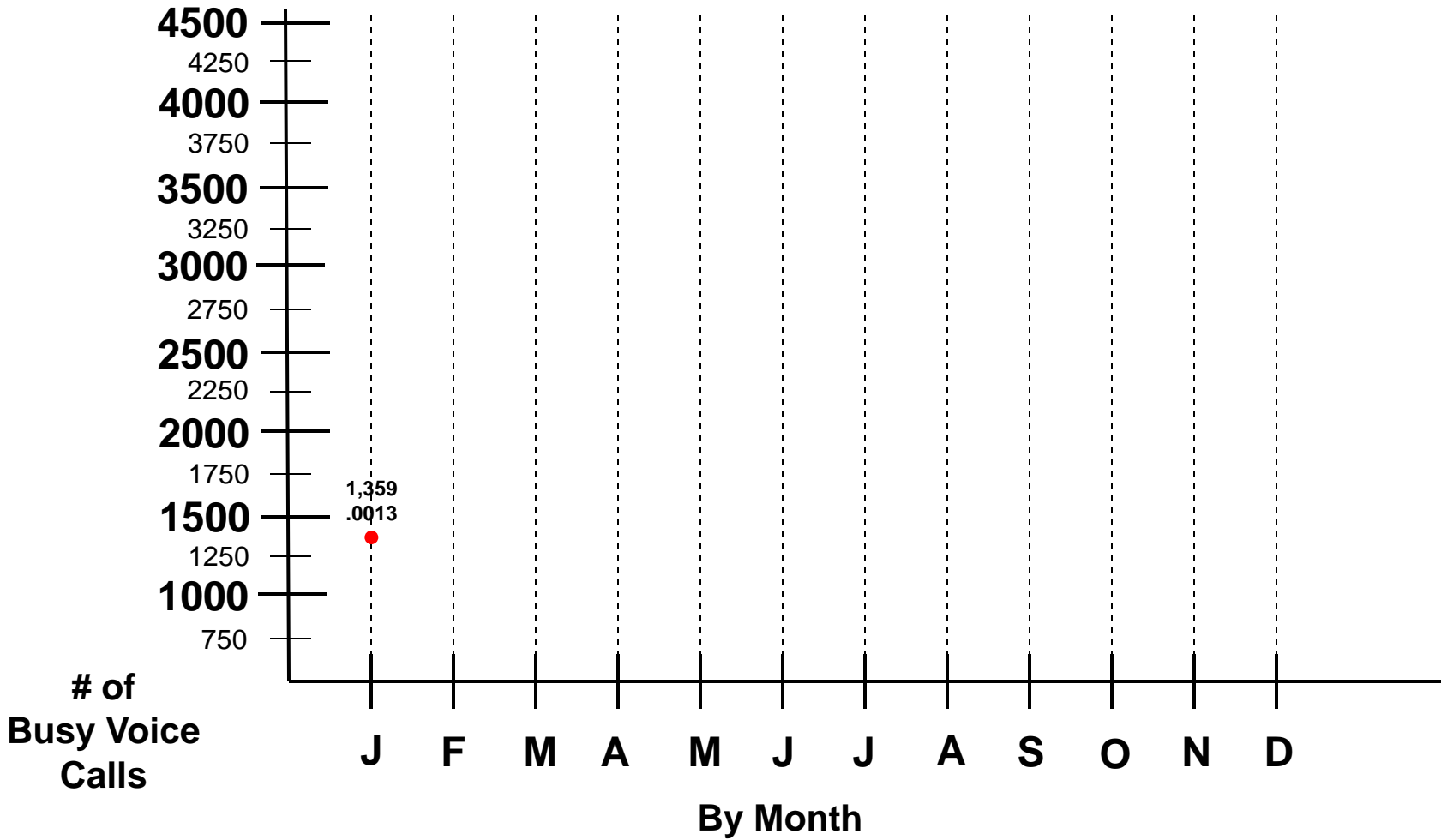
Active Voice Calls



2013 System Performance Data Channel Allocations



2013 System Performance Busy Voice Calls





A FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

Alaska Land Mobile Radio Communications System

2012 Business Case Update

Version 6

February 13, 2013

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Document Revision History

Name	Date	Reason for Changes	Version
Shafer, Sherry	5/11/2009	Approved by the User Council – Final; forwarded to the Executive Council for acceptance.	3
Shafer, Sherry	6/17/2009	Accepted by the Executive Council.	3
Shafer, Sherry	10/20/2010	Annual review/update. Approved by the User Council - final.	4
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Shafer, Sherry	2/19/2013	DOD correction to paragraph 3.7 verbiage	6

Acronyms and Definitions

Alaska Federal Executive Association (AFEA): federal government entities, agencies and organizations, other than the Department of Defense, that will operate on the shared ALMR system infrastructure.

Alaska Land Mobile Radio (ALMR) Communications System: the ALMR Communications System, which uses but is separate from the State of Alaska Telecommunications System (SATS), as established in the Cooperative Agreement.

Alaska Municipal League: a voluntary non-profit organization in Alaska that represents member local governments.

AST: Alaska State Troopers

Department of Administration (DOA): a State of Alaska (SOA) department that maintains the SOA Telecommunication System (SATS) and provides information technology (IT) and communications technical support to state agencies.

Department of Defense – Alaska: Alaskan Command, US Air Force and US Army component services operating under United States Pacific Command.

Executive Council: the ALMR Executive Council which is made up of three voting members and two associate members representing the original four constituency groups: the State of Alaska, the Department of Defense, Non-DOD Federal agencies (represented by the Alaska Federal Executive Association), and local municipal/government (represented by the Alaska Municipal League and the Municipality of Anchorage).

Federal Communications Commission (FCC): for the purposes of ALMR, the Federal level governing body that approves the use of commercial, maritime, state, local and other agencies that are not a part of the Department of Defense or other Federal agencies radio frequency spectrum through the issuance of radio station authorizations once coordination with all potentially affected agencies has been completed. The approvals will in most cases (exceptions might be waivers or special temporary authority) be for use of a particular portion of a frequency band that has been pre-authorized through the frequency band table of allocations. In addition, the FCC maintains the communications tower registration program.

Help Desk: where repair, maintenance and programming issues/problems are reported; under the ALMR System Management Office.

Local Governments: those Alaska political subdivisions defined as municipalities in AS 29.71.800(13).

Member: a public safety agency including, but not limited to, a general government agency (local, State or Federal), its authorized employees and personnel (paid or volunteer), and its service provider, participating in and using the System under a Membership Agreement.

Mobile Radio: a radio that is installed in a vehicle and has a medium to high power output.

Municipality of Anchorage (MOA): the MOA covers 1,951 square miles with a population of approximately 278,000. The MOA stretches from Portage, at the southern border, to the Knik River at the northern border, and encompasses the communities of Girdwood, Indian, Anchorage, Eagle River, Chugiak/Birchwood, and the native village of Eklutna.

Operations Management Office (OMO): develops recommendations for policies, procedures, and guidelines; identifies technologies and standards; and coordinates intergovernmental resources to facilitate communications interoperability with emphasis on improving public safety and emergency response communications.

Party/Parties: one or more Parties who have signed the Agreement. The Parties to the agreement are: Department of Defense - Alaska, the Alaska Federal Executive Association, the State of Alaska Department of Administration's commissioner or commissioner's designee, respectively or collectively.

Service Level Agreement: the Service Level Agreement (SLA) outlines the operations and maintenance services as required by the User Council membership for the sustainment and operation of the ALMR infrastructure. The performance metrics contained in the SLA describe the maintenance standards for the ALMR system infrastructure. ALMR cost share services are also outlined in the SLA.

State of Alaska (SOA): the primary maintainer of the SATS (the State microwave system), and shared owner of the System.

State of Alaska Telecommunications Systems (SATS): the State of Alaska statewide telecommunications system microwave network.

System: the ALMR Communications System, as established in the Cooperative Agreement, and any and all System Design/System Analysis (SD/SA) and System Design/System Implementation (SD/SI) documents.

System Management Office (SMO): the team of specialists responsible for management of maintenance and operations of the System.

User/Member: an agency, person, group, organization or other entity which has an existing written Membership Agreement to operate on ALMR with one of the Parties to



the Cooperative Agreement. The terms user and member are synonymous and interchangeable.

User Council: the User Council is responsible for recommending all operational and maintenance decisions affecting the System. Under the direction and supervision of the Executive Council, the User Council has the responsibility for management oversight and operation of the System. The User Council oversees the development of System operations plans, procedures and policies under the direction and guidance of the Executive Council.

1.0 Executive Summary

The Alaska Land Mobile Radio (ALMR) Communications System Operations Management Office (OMO) is required to conduct an annual review/update of the ALMR Business Case. The purpose of the Business Case is to examine the ALMR Cooperative Partnership and to validate its continued existence as the appropriate solution for Alaska's interoperability needs, and whether that partnership should continue as the provider of shared, interoperable, land mobile radio (LMR) service to Alaska's emergency first responders within its coverage area.

The ALMR System:

- Achieves the highest level of the U. S. Department of Homeland Security (DHS) SAFECOM Continuum guideline for interoperability and is in the top five percent of systems nationwide
- Equipment and system operational cost are justified by the robust infrastructure, services provided and system performance
- Achieves regulatory compliance of Project 25 (P25)/Telecommunications Industry Association (TIA) 102-A standards for narrowband migration and equipment for all member agencies
- Reduces costs for narrowband migration, particularly for the State of Alaska, through Federal funding/contribution of Department of Defense (DOD) assets for System development
- Negates the need to replace legacy equipment to meet narrowband standards for local agencies by providing a narrowband compliant infrastructure for use
- Promotes economy of scale/efficiency through the use of shared spectrum and infrastructure agreements between the DOD and the State of Alaska (SOA) resulting in reduced costs for user agencies
- Aligns State/local government agencies to be eligible to receive grant funding from DHS
- Meets user agency needs for day-to-day communications and interoperability in multi-agency, multi-jurisdiction responses

The Executive Council (EC), formally chartered in 1997, has operated this cooperative partnership, not just for narrowband migration, but also for improving public safety communications and interoperability¹ throughout Alaska. The partnership was, and still is, responsible for assessing, assembling, and consolidating requirements, drafting and submitting plans, agreements, budget actions, and procurement recommendations to provide a common interoperable and cost-effective LMR service that is compliant with Federal, State and local regulatory guidance and is responsive to the mission needs of all participating agencies in the State of Alaska.²

¹ Interoperability is defined by the FCC as "...an essential communication link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results."

² Charter for the Alaska-Wide Land Mobile Radio Executive Council, April 10, 2003

Although ALMR, as initially planned, is not fully implemented, its coverage includes all major highways and over 80 percent of the State's population. Additionally, the ALMR P25, trunked, digital, Voice-over-Internet Protocol (VoIP) technology provides the capability to also pass real-time data such as maps, profiles, telemetry data, and photographs, which surpasses traditional conventional systems that only allow transmission of voice.

Because ALMR is a shared system utilized by the DOD, all users enjoy the benefits of security requirements maintained at the highest level. It also provides users the ability to selectively encrypt communications, either manually or through over-the-air re-keying (OTAR). Prior to implementation, almost all law enforcement systems operated without encryption, potentially exposing sensitive transmissions to interception by non-law enforcement personnel.

ALMR has focused on developing a system that not only reflects the SAFECOM Continuum, but also provides Alaska's emergency first responders from the DOD, Federal Non-DOD agencies, SOA, tribal entities, and local agencies with a capability to talk day to day on the same radios they use during catastrophic events involving multi-agency, multi-jurisdictional responses.

This capability has been tested and proven through numerous joint exercises, as well day-to-day operations. The technology employed meets the Federal mandates and provides greater capabilities than the previous legacy system. At the end of calendar year 2012, the System supported 116 agencies utilizing 16,408 subscriber units. Additionally, supported voice and data transmissions were 11,458,239 and 4,253,624, respectively, with a less than two thousandths of a percent system busy rate.

Overall, ALMR has proven to be the logical solution to Alaska's interoperability needs from the perspective of its operational capabilities in meeting national standards, stakeholders' requirements, interoperability training opportunities, System coverage and security, and shared cost savings benefits.

To properly assess the value and benefit gained from becoming and continuing as an ALMR member, agency decision makers need to understand the benefits derived from being on the System. These same decision makers must also ensure their funding bodies understand that any costs that may be associated with membership are justified by the level of service and interoperability achieved with other agencies and that the services these agencies provide via ALMR benefit the citizens of the State.

ALMR is a very effective system that greatly enhances wide area interoperable communications. Many of its perceived shortcomings are due to insufficient user training and lack of coordination between stakeholders. There is even greater potential for ALMR once all users become familiar with the System's capabilities. Strengths and weaknesses of the System, as well as the need for additional ALMR training, were previously addressed in the 2011 Business Case Update and ALMR Strategic and Operational Plan.

Continued funding for the Operations Management Office to provide regular and agency-specific training is essential to solving those identified challenges.

The following critical, success factors validate the need for ALMR.

- **Interoperability** – the ability to seamlessly and effectively communicate both internally within the agency and externally to outside agencies on demand, in real time, when needed and as authorized
- **Efficiency of operations** – the ability to respond efficiently to day-to-day and emergency operations
- **Expanded coverage** – ability to provide communication coverage to areas not previously covered by the original legacy radio systems
- **Expanded capabilities** – the ability to provide better information through advanced technology
- **Reduced risk** – improved communications reduces the risk to the general populace and to public safety first responders
- **Shared cost savings** – the ability to reduce the costs associated with technology by sharing it with multiple agencies

The contributions of all parties involved deliver a system that is an economically sound solution, whose total benefit and capability could not be obtained separately by any major stakeholder group without considerable capital and sustainment costs. Contribution by any one of the stakeholders brings economic benefit to all others.

When the ALMR System transitioned to operational status on July 1, 2008, the ALMR Cost Share Cooperative Agreement established an approach and method for cost share by the parties. The cost share approach states the owner of the infrastructure equipment will pay for the maintenance of that equipment in accordance with the requirements defined in the SLA. That cost share method stated the costs of the Operations Management Office and the System Management Office will be shared 50/50 between the Federal government (meaning DOD and AFEA) and State/Local government (meaning SOA and the local governments that SOA represents).

In 2012, with the divestiture of the RF equipment from 41 U.S. Army-Alaska (USARAK) sites to the SOA, the EC directed the Federal agencies, as well as State and Local governments, to form a Cost Share Working Group and develop a new approach and method. The group reached consensus that the cost share should be apportioned according to infrastructure owned. The proposed method was deemed the 88/12 where as the SOA owns 88 percent of the infrastructure and the DOD owns 12 percent. As the majority infrastructure owner, SOA would have to decide whether or not they would seek to collect funds from non-infrastructure owners (NIOs) to offset some of their maintenance costs. At the time of this update, the SOA, DOD and the Federal Non-DOD and local agencies concurred with this approach and method.

Despite the on-going issue of cost share, the following factors remain constant:

- The cooperative partnership is a sound solution for Federal, State and local government agencies, both operationally and financially
 - ALMR is in compliance with national policy for LMR systems, which provides a robust product with notable benefits
 - Stakeholders, even those with areas of responsibility where a less robust system might be sufficient, recognize and appreciate the benefits and the perceived value as highly desirable
- The cost of separating is greater than the cost of maintaining ALMR
 - Economic analysis demonstrates that it is more valuable to all stakeholders, due to economies of scale, to retain the current ALMR cooperative partnership than to operate and maintain separate systems
 - Stakeholders derive great benefits, such as technical expertise, narrowband compliance, and greater levels of interoperability they could not achieve autonomously

This Business Case update continues to validate the shared ALMR System approach is still the best solution to meeting a majority of Alaska's public safety first responder interoperability needs, based on both the operational and economic benefits it provides to the users and the stakeholders, and should be sustained, maintained and fully funded throughout the System lifecycle.

2.0 Operational Benefits

The Business Case, and its annual update, addresses the operational and economic benefits of ALMR. It does this by analyzing the capabilities agencies had before, compared to what they have now, the cost to sustain the current level of performance/technology³, the cost to separate the System⁴, and the many additional risks/costs produced by such a separation.

One such example of the benefit of the System would be the severe windstorms in September this year, which disabled cell phone service and disrupted power for several days in the Anchorage and Matanuska-Susitna areas. During this weather event, ALMR remained online providing critical communications to first responders. If responders had to rely on their cell phones or their previous conventional systems, they could have been out of contact from several hours up to several days.

Events like this emphasize the continued need for reliable communications to maintain interoperability between Federal, State, tribal and local government public safety entities. National and State events will continue to create awareness at all levels of government that interoperability is not only required for day-to-day operations, but it is imperative to mutual aid, and emergency task force operating environments.

³ Alaska Land Mobile Radio Communications System Total Cost of Ownership Study, September 18, 2008.

⁴ SDID for Alaska Land Mobile Radio, July 1, 2008 and Appendix A, Alaska Land Mobile Radio System Feasibility Analysis for DOD/SOA Separation.

The State, as the primary infrastructure owner, has been participating in open, equitable discussions among leadership and stakeholders, and diligently working together with agencies and jurisdictions to ensure a modern, effective and efficient, shared interoperable LMR system is available.

2.1 National Standards

Members of the SAFECOM Emergency Response Council (ERC) have identified the need for interoperability nationally. Likewise, the Department of Homeland Security (DHS) Office for Interoperability and Compatibility (OIC) has stressed the importance of implementing and supporting an effective interoperable communications system which:⁵

- Saves and protects citizens
- Saves and protects emergency responder lives
- Increases emergency responder effectiveness and coordination
- Improves response times in multi-jurisdiction responses
- Reduces property loss

In the interest of nationwide interoperability and spectrum efficiency, Congress mandated in the National Telecommunications Authorizations Act of 1992, that the Federal Government foster the development of, and standards for, narrowband LMR systems operating in the 162 – 174 MHz band.⁶

In 1995, the Federal Communications Commission (FCC) adopted a regulatory strategy, and a narrowband channel transition plan, to promote more efficient use of the existing private land mobile radio (PLMR) spectrum allocations below 800MHz⁷ Only equipment capable of operating on a channel bandwidth of 12.5kHz or less, or equipment which operates on a channel bandwidth of up to 25kHz if certain narrowband efficiency standards are met, would be accepted.⁸

To facilitate mandated migration to narrowband radio technology, the DOD (through Alaskan Command) formed an Alaska-wide Federal LMR Executive Council in September 1995. Membership was initially only open to federal agencies in Alaska;⁹ however, in 1997, the Commander, Alaskan Command stated his intent to seek a partnership with State and local agencies in order for the DOD to more effectively perform one of its key missions: Defense Support of Civilian Authorities. Therefore, the Alaska-wide Federal LMR Executive Council expanded its membership to include the State of Alaska and the Alaska Municipal League.¹⁰

⁵ Department of Homeland Security S&T Stakeholders Conference, June 2, 2008

⁶ National Telecommunications Act of 1992, P.L. 102-538 (IRAC Doc. 29764)

⁷ NEWSReport No. DC 95 86, PR Docket 92-235, FCC 95-255, June 15, 1995, ¶ Para 1, 1-3 http://www.fcc.gov/Bureaus/Wireless/News_Releases/1995/nrml5026.txt

⁸ Report & Order and Further Notice of Proposed Rule Making (FCC 95-255), June 15, 1995

⁹ Charter for the Alaska-Wide Land Mobile Radio Executive Council, September 19, 1995

¹⁰ Memorandum of Understanding Between Department of Defense, Alaskan Command, State of Alaska, Federal Executive Association of Alaska, and Alaska League of Municipalities

2.2 The Case for Interoperability

The safety of the general public should always be high priority. Ultimately, the public expects their lives and property to be protected by all levels of government – local, tribal, State, or Federal – without distinction as to who responds to their needs.¹¹ A key element to successfully meeting that priority in responding to incidents at all levels is a solid interoperable communications infrastructure.

Since its formal chartering in 1997, Federal, State, tribal and local agencies have operated as a cooperative partnership, not just for narrowband migration, but for improving public safety communications and interoperability¹² throughout Alaska. The partners created a broad charter of duties and responsibilities, including:

“...assessing, assembling and consolidating requirements, drafting and submitting plans, agreements, budget actions, and procurement actions to provide a common interoperable and cost effective LMR service that is compliant with federal, state and local regulatory guidance and is responsive to mission needs of all participating agencies in the State of Alaska.”¹³

These key decisions were integral to the initial business case for building, operating, maintaining, and funding a cost-burden shared, standards-based, wide-area, trunked land mobile radio system.¹⁴ Interoperable communications allow emergency response agencies to communicate across disciplines and jurisdictions. Without interoperable communications, and the ability to exchange voice and/or data with one another on demand, in real time and when needed among the police, fire, emergency medical services (EMS), transportation and other needed emergency responders, the lives of citizens and practitioners are potentially at risk.

Maintaining the ALMR communications infrastructure requires the same level of commitment, support and funding from public leaders, as does the building and maintaining of roads or bridges. And just like State roads and bridges, sustainable interoperable communications infrastructure requires continual upkeep, maintenance and improvements. Funding bodies, especially at the State level, must realize the importance of interoperable communications and address these costs, as an inherent part of the annual budget.

2.3 Stakeholder Requirements

Interoperability requires a certain amount of shared management, control and policies and procedures. It requires policymakers across jurisdictions to work together for the

¹¹ See <http://www.ncjrs.gov/pdffiles1/nij/211512.pdf>

¹² Interoperability is defined by the FCC as “...an essential communication link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results.”

¹³ Charter for the Alaska-Wide Land Mobile Radio Executive Council, April 10, 2003

¹⁴ Alaska Land Mobile Radio Executive Council, “Interoperability Plan for the State of Alaska,” dated April 2003.

common good – to plan, fund, build, operate and maintain interoperable public safety communications systems.¹⁵

A successful strategy for improving interoperability must also be based on user needs.¹⁶ Therefore, continually identifying and validating stakeholder operational requirements for the ALMR System, is key to updating the Business Case. The critical success factors are essentially the same for each of the entities. However, they vary in importance from agency to agency. ALMR is not everything to every agency, but from an interoperability standpoint, and from an economical standpoint for the Alaska first responder community, it is the solution that meets stakeholder needs.

The Cooperative Agreement sets out the terms according to which the System will be governed, managed, operated, and modified. The ALMR System is managed as a consortium under authority and oversight of the EC. Day-to-day management functions are performed by the Operations Manager, on behalf of the EC. The OMO provides guidance and oversight of the System in cooperation and coordination with the User Council (UC),¹⁷ who is responsible for all operations and maintenance (O&M) decisions, and for fulfilling other duties and tasks as set out in the Cooperative Agreement.¹⁸

Stakeholder requirements are addressed through support provided by the governance bodies, operations and maintenance organizations, and infrastructure.

- Governance support includes:
 - Executive Council - chartered to define, develop and coordinate an implementation, migration, operations, maintenance and management plan to provide a cost shared LMR Project 25/TIA102-A standards based communications trunked and conventional infrastructure encompassing participating Federal, State, and local users within Alaska¹⁹
 - User Council - responsible for creating and maintaining a collaborative user-based management system to establish policy and operational procedures, and to operate and maintain the System under the oversight of the EC²⁰
- Operational support includes:
 - Operations Management Office - oversees day-to-day operations of the ALMR shared infrastructure; coordinates and performs a range of operational and administrative activities in direct support of delivering 24/7 ALMR services; develops and administers strategic and operating plans; develops and maintains relationships with program managers of the ALMR

¹⁵ See <http://www.ncjrs.gov/pdffiles1/nij/211512.pdf>

¹⁶ Department of Homeland Security S&T Stakeholders Conference, June 2, 2008

¹⁷ ALMR Cooperative Agreement, Article 6, November 21, 2007

¹⁸ ALMR Cooperative Agreement, Article 8, November 21, 2007

¹⁹ Charter for the Alaska Land Mobile Radio Executive Council, January 28, 2008

²⁰ Alaska Land Mobile Radio Communications System User Council Charter, December 29, 2006

- stakeholders and with current and prospective ALMR users; and provides administrative support, reports, and recommendations to the UC and EC²¹
- System Management Office (SMO) - provides the technical expertise to accomplish wide area system management, system maintenance and technical support, network operations and support, radio frequency spectrum management support, and security and information assurance²²
 - Technical support includes:
 - Equipment Maintenance - operations and maintenance services associated with the ALMR shared infrastructure were developed at a level to support a system that is operational at least 99.999% of the time.²³
 - Circuit Usage - primarily SATS circuits, which are also utilized by ALMR
 - System Updates - expected to be released approximately every year through 2022, which is the projected System lifecycle. ALMR is in the process of migrating to Motorola software version 7.13, which is the current version, in 2013. After which time, the System Upgrade Assistance (SUA) II will be in affect ensuring the System remains up to date, and this option can be exercised every two years.

2.4 Capabilities

Any system is only as good as the capabilities it offers. The following key points were provided in the initial Business Case and still apply today. They provide a comparison in functionality and features between the legacy conventional systems and the ALMR System.

- Legacy Conventional System
 - Different radios/frequencies/bands
 - Limited standards for technology/equipment
 - Limited funding/lack of available replacement parts
 - Limited/fragmented planning/cooperation among local, State and Federal agencies
 - Limited/fragmented radio spectrum available to public safety
 - SAFECOM Continuum Technology Level 1 or 2²⁴
 - Inconsistent encryption capabilities across different agencies (manual re-keying required additional dedicated equipment)
 - No data capabilities; paging available²⁵
 - Limited redundancy; constrained by a single radio channel²⁶
 - Inconsistent security applications/standards²⁷

²¹ Operations Management Office (OMO) Customer Support Plan (CSP), January 3, 2008

²² System Management Office (SMO) Customer Support Plan, February 6, 2008

²³ Service Level Agreement, February 26, 2008

²⁴ Alaska Land Mobile Radio Total Cost of Ownership Project, Market Strategy Group, LLC, February 2005

²⁵ *ibid*

²⁶ Alaska Land Mobile Radio Total Cost of Ownership Project, Market Strategy Group, LLC, February 2005

²⁷ *ibid*

- Constricted wide area coverage; when within range of a single repeater²⁸
- Non-compliant with federal mandates²⁹
- ALMR System
 - Single system supporting interoperability at all levels
 - Complies with Homeland Security SAFECOM Continuum guidelines for Interoperability³⁰
 - Oversight and management of Alaska's Public Safety radio spectrum asset
 - Regulatory compliance of P25/TIA 102-A standards for narrowband migration/equipment
 - Reduced cost for State and local governments for narrowband migration through federal funding/contribution of DOD assets
 - Provides for wide area coverage along major highways in the state³¹ at a significantly reduced cost over an independent approach
 - Provides Federal/State infrastructure for local government use
 - Promotes economy of scale/efficiency through shared spectrum/infrastructure between DOD and the State of Alaska; reduced capital/operating costs
 - Maximizes/optimizes management/use of PLMR spectrum; increased capability for interoperable communications
 - Standards-based P25 technology aligns state/local government agencies to receive grant funding from the DHS
 - Flexible, scalable, and adaptable communication infrastructure; incorporates/provides use of latest wireless digital solution
 - SAFECOM Continuum Technology Level 5
 - Advanced Encryption Standards (AES); able to utilize multiple encryption keys³² (OTAR on existing trunk infrastructure)
 - Secure data with wide/personal/local area network capabilities³³
 - Available redundancy; multiple communications channels exist³⁴
 - Security certification and accreditation provided at the DOD Mission Assurance Category II level (mission essential system carrying sensitive information whose degradation or loss is unacceptable)
 - Availability of multiple equipment vendors³⁵
 - Improved voice quality³⁶
 - Enhanced functionality including data and other capabilities³⁷

²⁸ Alaska Land Mobile Radio Total Cost of Ownership Project, Market Strategy Group, LLC, February 2005

²⁹ *ibid*

³⁰ See <http://www.safecomprogram.gov/NR/rdonlyres/65AA8ACF-5DE6-428B-BBD2-7EA4BF44FE3A/0/Continuum080106JR.pdf>

³¹ *ibid*

³² Alaska Land Mobile Radio Total Cost of Ownership Project, Market Strategy Group, LLC, February 2005

³³ *ibid*

³⁴ *ibid*

³⁵ P25 Systems Training Guide, Daniels Electronics, 2007

³⁶ *ibid*

³⁷ *ibid*

These benefits and functionality were not available to all public safety agencies with the previously existing conventional systems. The shared system approach makes these benefits available to all the participants in the ALMR partnership. Transition from many individual conventional systems to the ALMR shared system has had many positive impacts for agencies.

Additional capabilities include:

- Expanded Coverage - level of coverage provided by ALMR is possible through the use of the State's existing microwave infrastructure. This infrastructure is the State's network backbone for data communication and must be maintained and supported regardless of the ALMR System. The potential exists for the ALMR System to expand further into less populated areas of Alaska by adding additional sites to the network backbone.
- Expanded Capabilities - the ALMR System allows for data transmission (9600 baud rate) including maps, profiles, telemetry data, and photographs. This information expands the capability and efficiency by allowing emergency responders to react to new information as it becomes available.
- Consolidated Dispatch Centers - anyone can potentially be dispatched from any location. Due to this capability/cost of modern dispatch equipment, consolidation of smaller dispatch functions into more regional dispatch centers occurred. However, agencies still maintain their day-to-day talk groups.
- Standardized System O&M - universally adopted and, to a degree, centralized. The Cooperative Agreement calls for outsourced O&M independent of the stakeholders to prevent a conflict of interest, and to ensure equitable treatment of all agencies operating on ALMR. This is accomplished through the contracted OMO and SMO in accordance with the System requirements as stated in the SLA.³⁸
- Security Improvements - because ALMR is a shared system, the security requirements at the highest level must apply to all users. Anti-virus software and other safeguards must exist on all devices that attach to the ALMR network. ALMR also provides the ability to selectively encrypt communications, either manually or through OTAR.

3.0 Economic Feasibility

3.1 Efficiency of Operations

A seamless communication infrastructure between, and within, agencies provides real-time response capabilities not typically available with a conventional system. Inter-agency response activity on a conventional system could require multiple radios swapped between agencies, programming of shared channels, relaying information to responders on the ground by switching radios and re-transmitting, or relaying the information in person, any of which could result in the loss of life. With ALMR, all

³⁸ The ALMR Service Level Agreement was developed jointly by the User Council and the Project Team and was approved by the Executive Council on August 21, 2008

responders are able to share information in real time with the same radio they use on a day-to-day basis.

3.2 Shared Cost Savings

The majority of ALMR capital costs have already been paid. They include the network infrastructure, State of Alaska Telecommunications System (SATS) sites, and the trunked radio equipment. There are currently 84 sites and 2 transportable communications systems, providing coverage to the population centers, major roadways, and portions of the Marine Highway in Alaska. When completed, as planned, there will be 105 sites, which include 15 Anchorage Wide Area Radio Network (AWARN) sites. Costs associated with the on-going support and maintenance of the System will continue to exist. Currently, they include:

- Executive oversight and change control
- Operations and system maintenance management of network infrastructure
- Expanding coverage (capital costs)
- System security
- New technology research/testing
- Updating software/infrastructure equipment (funded through either O&M or capital costs)

3.3 Cost Benefit

This section utilizes data gathered from both the 2005 and 2008 TCO studies, and Economic Analysis conducted in 2008, and a Feasibility Study conducted in 2011. It compares the cost of continuing to operate and maintain the ALMR System versus dismantling the System and creating separate systems. It also provides a list of intangible System benefits that exist because of the shared system approach.

In the past, three cost benefit alternatives were previously identified:

- agencies fund, implement, operate, and maintain their own independent infrastructure, as in the past
- Federal, State, and local governments cooperate to share a standards-based fixed infrastructure
- agencies can purchase a few ALMR radios to use when required and continue to maintain their own in-house infrastructure

ALMR was chosen for the cost benefits identified in the second alternative. The following historical information from the listed studies confirms the rationale behind this decision.

3.3.1 2005 TCO Study

The first TCO Study was completed in February 2005, was completed by Market Strategy Group LLC, who interviewed more than 60 organizations and collected not only

quantitative data on these organization's current LMR costs, but also qualitative data regarding issues with the conventional network.³⁹

The aggregated unit cost per subscriber for the conventional LMR network for the organizations interviewed was \$40. The study found that the DOD had the lowest per unit costs due to their economies of scale in procurement and usage, the limited area their network covered, and a strict adherence to LMR policies and procedures. Trunked networks are typically more expensive on a per unit basis because these networks contain more modern technology and have enhanced feature functionality.⁴⁰

In addition to the costs for conventional systems already in place within Alaska, the 2005 study benchmarked 13 state trunked systems to gain a comparative baseline for O&M and subscriber unit costs. The associated fees were all based on trunked networks and many of the networks did not cover the subscriber unit O&M, as it is considered the responsibility of each individual agency. Additional fees were generated from activation and re-programming and extra charges for associated services such as: wide-area roaming, inter-connect, and direct inward dialing (DID), among others. These amounts exclude any data related charges.

3.3.2 2008 TCO Study

In July 2007, the Executive Council commissioned a second TCO with two primary objectives: 1) to document all costs associated with System build out, implementation, and cutover; and 2) to document the projected future O&M costs for the remaining lifecycle of the ALMR shared system infrastructure. The total build out cost was \$195 million

Based on the projected costs identified in the study, in August 2008 the EC agreed upon a cost share approach and method, wherein infrastructure owners pay to maintain their infrastructure and all other costs will be shared equally based on subscriber units registered on the System.⁴¹ This approach and method are still in effect today but will likely change as the balance of equipment ownership has changed.

3.4 Economic Analysis (EA)

The Alaska Land Mobile Radio (ALMR) DOD Project Manager contracted Tecolote Research, Inc., in 2008, to perform an Economic Analysis (EA) of the ALMR enterprise. The scope of the EA was to examine two ALMR alternatives: 1) keeping the cooperative intact, or 2) dividing it into separate entities. This was a non-advocate analysis to compare the benefits and disadvantages, cost and non-cost factors (both tangible and intangible) of these two alternatives. The analysis included positive and negative aspects of both alternatives from each major stakeholder's perspective.⁴²

³⁹ ALMR Total Cost of Ownership (TCO) Detailed Briefing Report, Market Strategy Group, March 2005

⁴⁰ *ibid*

⁴¹ Alaska Land Mobile Radio (ALMR) Cost Share Update briefing to the Executive Council, August 21, 2008

⁴² Tecolote ALMR Stakeholder Interview Letter, distributed by Mr. Del Smith via email, 10/8/2008 3:37 PM

Additionally, the survey was intended to gather information to be shared with the DHS, Office of Emergency Communications (OEC) to determine whether ALMR compliance with Presidential and DHS directives is, in fact, beneficial to agencies in responding to day-to-day and emergency situations, and to show the economic impact associated with that compliance.

An EA survey was distributed in October 2008 to key ALMR stakeholders in order to gather data on the value of ALMR to first responder agencies on the System and the potential for further enhancing its value to user agencies.⁴³

Comments from stakeholder interviews indicated:

- Building separate capabilities provided by ALMR would cost more and work much less effectively.⁴⁴
- There are tremendous benefits with ALMR technology and the interoperability it affords them.⁴⁵
- The system is better now and cheaper than the legacy system.⁴⁶
- Interoperability levels achieved by the ALMR consortium model are not achievable with independent systems⁴⁷.
- Independent systems could not be built or maintained with the same cost efficiencies generated by the consortium model⁴⁸.
- Splitting ALMR would eliminate or complicate interoperability between MOA and State law enforcement agencies and emergency response units which would be detrimental to public safety in fringe areas around Anchorage where cooperation is often essential⁴⁹
- Splitting ALMR will cause degradation to interoperability even for the MOA. It will be more of a challenge to provide training whereas now it's easier with everyone using the same equipment⁵⁰.

An Independent Validation for Cost Reasonableness (IVCR) was also conducted as part of the Economic Analysis and validated that the cost of ALMR was reasonable when compared to two other benchmark systems: Pacific Land Mobile Radio (PLMR), in Hawaii, and Fort Lewis Land Mobile Radio in Washington State. It concluded, "The robustness of the system, the services provided, and the cost performance ratios validate that ALMR costs are reasonable." The total benefit and capability could not be

⁴³ ALMR Economic Analysis participant stakeholder email, sent Wed 10/8/2008 3:37 PM

⁴⁴ ALMR Stakeholder Interview, USARAK G6, Colonel Darin Talkington, October 15, 2008

⁴⁵ ALMR Stakeholder Interview, 354 Communications Squadron, Eielson AFB, Major Amy Osterhout, October 16, 2008

⁴⁶ ALMR Stakeholder Interview, Drug Enforcement Agency, US Department of Justice, Mr. Fred Smith and Mr. Adrian DeLuna, October 20, 2008 and October 24, 2008 (respectively)

⁴⁷ ALMR Stakeholder Interview, Alaska Department of Administration, Deputy Commissioner Rachael Petro with Commissioner Special Assistant Carol Beecher, November 13, 2008

⁴⁸ ALMR Stakeholder Interview, Alaska Department of Administration, Deputy Commissioner Rachael Petro with Commissioner Special Assistant Carol Beecher, November 13, 2008

⁴⁹ ALMR Stakeholder Interview, Traffic Department, Mr. Trygve Erickson, and Assistant City Manager, Ms. Heather Handyside, October 14, 2008

⁵⁰ ALMR Stakeholder Interview, Traffic Department, Mr. Trygve Erickson, and Assistant City Manager, Ms. Heather Handyside, October 14, 2008

obtained separately by any major stakeholder group when considering the estimated capital and sustainment costs.⁵¹

3.5 Separation Study

In addition to the operational considerations, a rational decision of whether or not to continue a particular course of action also requires an examination of alternatives from a technical perspective. In this case, the two logical alternatives are either continuing with the ALMR System as currently implemented, or dissolving the partnership and returning to separate systems.

Motorola® was also tasked in 2008 with conducting an analysis that examined the pros and cons of these two alternatives and the costs associated with each.⁵²

The separation analysis discussed numerous options for each entity and provided a recommendation based on rating each alternative to determine the best possible solution considering both technical feasibility costs and operational criteria.

In the end, it was determined to separate ALMR would cost all stakeholders an additional \$120+ million in new equipment costs over the cost of the current investment, and more than double the annual cost of current O&M. The overarching recommendation was to retain the ALMR System as presently configured and operated.

3.6 World Wide Technologies, Inc. - ALMR Feasibility Study

In 2011, the SOA Legislature requested an independent study of ALMR to evaluate the operational and economic impact of the U.S. Army Alaska (USARAK) equipment divestiture. Additionally, an assessment of recent advances in technology was made to determine if feasible alternatives to ALMR exist. The evaluation also included an approximate cost/benefit analysis.⁵³

The study also noted that although the System is shared by numerous agencies which all have common public safety responsibilities, all agencies had communications systems prior to ALMR that met their daily operational needs.⁵⁴

Utilizing that information, agencies were asked how the use of ALMR for day-to-day operations, emergency response and law enforcement had affected their operations and what the effect would be should ALMR interoperability be lost. Responses resonated to the effectiveness and benefit of the interoperability, as well as the cost benefit for everyone involved by having a combined system approach.

⁵¹ Alaska Land Mobile Radio (ALMR) Economic Analysis (EA) Executive Summary, 5 March 2009, Tecolote Research, Inc., Pages 7-8.

⁵² Alaska Land Mobile Radio System Feasibility Analysis for DOD/SOA Separation, June 3, 2008

⁵³ ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc., page2

⁵⁴ Ibid, page 11

Comments included:

- ALMR has greatly increased the ability to interoperate. Continued funding for communications in that area must be secured as the legacy system has a very limited coverage area. This is a big public safety issue to the residents of Alaska
- ALMR is used together with alternative systems which provide extended coverage for remote regions in AK. Reducing the existing ALMR coverage area would create a severe safety issue for law enforcement personnel
- Because of the shared system infrastructure and shared spectrum approach, a separation of the system would require each agency to completely replace their entire portion of the system with an independent stand alone replacement. The loss of operational capability most important of which is interoperability is severe and significant. There is a cost for interoperability but not having the interoperability when it is needed has historically proven to be much more costly
- We recently investigated the operational and economic feasibility of using a conventional system in a similar fashion to ALMR (talkgroups for dispatch and tactical response). This would only be possible with a significant capital investment to purchase the new equipment and to reprogram the radios
- Our legacy system is not used anymore, but could possibly serve as a backup. However, the legacy system is not compliant with the FCC narrowband mandate and costly upgrades would have been necessary at some point. If ALMR became unavailable, a reduction in workforce would have to be considered in order to maintain basic communications
- Without ALMR, the capability for interoperations between the State of Alaska and our city would be diminished and the encryption capability would be lost
- ALMR provides critical interoperable and long distance communication ability. Without ALMR, the ability to reach airports and mass transit locations would be virtually eliminated when standard lines of communication are inoperable⁵⁵

3.7 Benefits of the Shared System Approach

The ALMR System build-out was funded by the infrastructure owners based upon their independent requirements. A Joint Project Team was established to coordinate and collaborate the build-out to be mutually beneficial for the infrastructure owners while executing in a fiscally and legally correct manner.

The Department of Defense negotiated with the State of Alaska to place DOD LMR infrastructure into State of Alaska communications shelters and towers on State of Alaska real property, in exchange the State of Alaska would operationally benefit from the DOD capital investment in infrastructure which would replace the State's infrastructure which was 30 years old and at its "end of life" and no longer supportable.

Aside from the significant increase in interoperability, the DOD gained coverage along major State roadways, at the cost of procuring, installing and maintaining LMR

⁵⁵ ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc., page 13-18

equipment while benefitting from the State of Alaska shelters, towers and microwave backbone and the State benefitted by not having to incur a large initial capital investment to replace the "end of life" equipment in 41 State owned sites, while also gaining operational improvements in communications capabilities, coverage and interoperability.

The State of Alaska, Federal and Municipal partners recognized the necessity for an interoperable communications system for all-hazard emergency response. The lack of interoperable communications has historically proven to be a major issue of any catastrophic event, hindering disaster response and relief efforts. Such a situation not only increases recovery costs, but also endangers the safety of first responders and citizens.

As a result of these considerations, the Alaska Land Mobile Radio Communications System was designed to facilitate the FCC-mandated migration to narrowband radio equipment and to improve public safety communications across all jurisdictions. Through the ALMR cooperative partnership, the State of Alaska was able to offset substantial capital expenses for necessary equipment upgrades. In its present form ALMR is based on a Land Mobile Radio infrastructure compliant with FCC narrowband requirements and is designed to enable the highest degree of interoperability as defined by the SAFECOM guidelines.⁵⁶

To properly judge the merits of the shared System, and to further validate the findings of the TCOs, the EA, the Separation Study and the Feasibility Study, tangible and intangible benefits can be considered.

- Tangible benefits include:
 - Shared frequencies/infrastructure
 - 24/7 operational availability/reliability
 - Remote monitoring
 - Seamless interoperability
 - Dedicated and priority talkgroups
 - Highly-reliable, redundant network
 - Newest technologies available to all users (when updated as prescribed)
 - Expanded coverage areas along the roadway; minimum dead zones
 - Agencies operate day-to-day as they would in an event/crisis
 - Compliance with national framework for interoperability
 - Centralized points of contact for System issues
 - Higher security levels than legacy conventional system
 - Fully-deployable site capability with the North and South Area Transportable units
 - Third party preventive maintenance

- Intangible benefits include:

⁵⁶ ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc., page 2-3

- Facilitates implementation of National Incident Management System (NIMS)
- Coordinated response through created talkgroups for specific incidents
- Denial of access for specific subscriber IDs; disable lost or stolen units
- End-to-end radio transmission encryption capability; secure statewide operation
- OTAR; rapidly provides secure operational keys to users in the field
- Compliance with federal interoperability/technology directions; positions users for eligibility of federal grant funding
- Backward compatible with legacy conventional systems; provides for a gradual transition to the full P25 digital, trunked, shared system
- Interoperability with disparate systems (inside/outside the ALMR footprint) through gateways
- Ability to evolve as technology advances through updates to system/subscriber unit software
- Positioned to increase communication capabilities with other jurisdictions as Inter-RF Sub-system Interface (ISSI) technology evolves
- Agencies have opportunity for input; System operated through the EC, UC, and third party O&M contractors
- Inability for typical off-the-shelf scanner to receive the ALMR digital signal; difficulty for monitoring by the general public (mitigates law enforcement concerns short of encryption)
- Interoperability across jurisdictional lines at all levels of government
- Meets SAFECOM Continuum Technology Level 5 standard for non-proprietary shared system
- Most robust/mature capability; top five percent of US in interoperability capability⁵⁷

4.0 Risks and Limiting Factors

4.1 Operational Risks

The inability to interoperate and have real-time communications between responders during an emergency increases the risk to emergency responders, the public, personal property, and natural resources. Therefore, risk reduction is a key factor for most agencies. Clearly, the more effectively emergency responders can communicate situational information and resource needs, the greater the ability to reduce the risk to all.

4.1.1 Loss of interoperability

Numerous after-action reports from major incidents throughout the history of emergency management in our Nation have cited communication difficulties among the many responding agencies as a major failing point and a continued challenge to policymakers. Congress and the Administration recognized a successful response to a future major

⁵⁷ ALMR Self Assessment performed at <http://www.safecomprogram.gov/SAFECOM/selfassessment>, 12/2/2008

incident, either a terrorist attack or natural disaster, requires a coordinated, interoperable response by both public and private safety, health, and emergency management agencies at Federal, State, tribal, territorial, regional, and local levels.

From the beginning, the ALMR partners recognized the benefits of interoperability and the cost efficiencies of a shared system.

The technology involved in ALMR, coupled with deliberative planning (i.e. development of a statewide ICS zone, six regional ICS zones, a statewide OP zone, talk group sharing agreements, and the implementation of NIMS) ensures a coordinated and efficient response, when properly used. ALMR technology and deliberative planning place powerful tools and resources at the disposal of the majority of Alaskan first responders in a crisis and in their day-to-day operations. A retreat from the current capability would severely hamper any multi-agency, multi-jurisdiction response to incidents in Alaska.

4.1.2 Failure to Meet the FCC Mandate

In December 2004, the FCC mandated that all private LMR users operating below 512 MHz move to 12.5 kHz narrowband voice channels and highly-efficient data channel operations by January 1, 2013. This migration complements the NTIA mandate for Federal agency migration to 12.5 kHz narrowband operation that went into effect January 1, 2008.

Although ALMR members are in compliance with the mandates, any public safety agency not on ALMR must aggressively develop a strategy to meet narrowband deadlines, if they have not already done so, to avoid cancellation of existing wideband FCC authorizations.

4.1.3 Training

With increased capability and capacity, comes the need for established processes, procedures, and training. The typical legacy radio is conventional, has 12-16 channels and is fairly simple to use. The subscriber units used on ALMR can contain and hundreds of talkgroups spread across multiple zones (make/model dependent). For these reasons, far more radio usage and operational training is required for each radio user. Failure to address this training has manifested itself repeatedly during joint exercise when new radio users try operating on the System.

Agencies at all levels of government should take advantage of the training currently being funded by the SOA to train their personnel on subscriber use and protocols (changing channels, encryption, locating regional and incident command zones) prior to issuing them an ALMR radio. A \$5K radio in the hands of someone who doesn't know how to properly use it is tantamount to handing them a brick and expecting them to call out on it.

4.2 Economic Risks

In 2002, during the implementation stage of the ALMR System, Market Solutions was contracted to identify economic challenges that could affect the ALMR cooperative strategy. The challenges, identified in their 2002 Communication Plan Overview⁵⁸ Executive Study, still exist today.

- There continues to be a lack of confidence among some users about the continued operation of the System due to support and funding issues from both the State and the DOD
- Some groups are critical of the State of Alaska's lack of adequate capital maintenance funding (referring to SATS) and expect that it also may not support the radio infrastructure (referring to ALMR)
- There remains a lack of understanding among some public officials about the need for ALMR⁵⁹

In 2004, a Risk Assessment⁶⁰ was also conducted on the ALMR System, including the cooperative partnership. Five critical risks were identified at that time, which related to governance and funding and posed a high risk to the cooperative partnership.

The identified risks included:

- Conflicting priorities of the different agencies
- Governmental agencies cannot establish and maintain cooperative consortium
- Sufficient funds cannot be approved for system implementation by government agencies that would benefit and wish to participate
- Sufficient funds are not available for ongoing O&M of the system
- Funds are allocated and then withdrawn for other priorities

Previous mitigating actions included the formation of the UC and the development of the cost share approach. However, these risks are still applicable today, as demonstrated by the divestiture of the USARAK LMR RF equipment. The State accepted the equipment and, therefore, the additional costs for infrastructure maintenance of these sites will also be borne by the State. The amount of those additional costs is dependent on the level of maintenance the State determines it is willing to fund.

Additionally, the contracted services of the Operations Management Office and the System Management Office are currently funded 50/50 between the State (meaning SOA and the Local governments) and the DOD (meaning ALCOM and the AFEA). Each is responsible for developing a method to apportion the costs among themselves for collecting funds to be applied to their respective portions of the contracts.

⁵⁸ ALMR Communication Plan Overview, October 5, 2002

⁵⁹ ALMR Communication Plan Overview, October 5, 2002

⁶⁰ ALMR Risk Assessment, 5 Star Team, December 2005

At this time, the State has not developed a final process by which funds can be received and applied. The DOD had experienced the same problem over the past several years. The resulting effect was the reduction to the timely accomplishment of System maintenance. Portions of the SLA were suspended when USARAK divested its site equipment. The State-owned sites were placed in a break/fix funded status and have remained as such.

Although the final plan for maintenance of these sites is unknown at this time, revision of the SLA and the Cooperative Agreement are likely. No action has been undertaken to accomplish the revisions at this time. As experienced with the SATS, poor maintenance practices could lead to possible degradation in the quality and level of performance of the System.

4.3 Political Risks

The State Legislature has continually stated their desire that local agencies participate in the ALMR shared costs to reduce the State's costs.

In response, some local agencies on ALMR have responded by indicating they will cancel their ALMR membership and leave the System. Many have little or no available operating funds to pay to be on the System. Additionally, they maintain that they are providing services that are the State's inherent responsibility. Key to a resolution of this disagreement between the State and local agencies over cost share remains in the recognition by the State that the value of the capabilities and interoperability provided by ALMR is critical to effectively serving the citizens of Alaska.

4.4 Technology Cost Risks

The expanded capabilities of technology like the ALMR system bring an increased cost. Radios that operate on a conventional system can cost from \$500 to \$1,000, while radios on a trunked system initially cost between \$3,500 and \$5,000. However, with the increase of the number of manufacturers offering P25-capable radios, costs for trunked radios are continuing to drop. Currently, there are six manufacturers who have completed an Acceptance Test Procedure (ATP) and are approved to operate on ALMR allowing agencies a wider variety of price ranges and manufacturers from which to choose.

Unfortunately, more sophisticated equipment in the field also potentially results in higher maintenance costs. Systems of this nature are expensive to build and expensive to maintain and would be particularly onerous for a single agency. This makes the continued ALMR shared partnership approach the logical option.

Like any information technology (IT) system, ALMR software requires periodic updates. Motorola® supports backwards compatibility and pre-tested software patches for up to three System updates. The ALMR System software in use is ten updates behind the current Motorola® version available. Failing to address this issue would have put the

System at risk of failure from incompatible patches/updates. In addition, many of the hardware components are no longer manufactured, and spares are increasingly hard to obtain.

An update of the entire ALMR and AWARN Systems to the current Motorola® software/hardware release and implementation of a life-cycle management strategy is currently in progress and will provide a structured approach for ensuring continuity of operations through regularly scheduled updates. This long-term approach prepares ALMR for future product and technology changes.

The DOD, SOA and MOA have all agreed to fund the system lifecycle update package.

4.5 Other Risks

Up to this point, lack of a long-term funding solution between the cooperative partners has been one of the greatest risks to the System. Although currently secure, the loss of future funding could cause the cooperative to fail, resulting in the split of ALMR.

Should this occur, the costs to regain the level of interoperability provided by ALMR and the risks associated with such a collapse remain very relevant.

Areas affected could include:

- State/Local level:
 - Volunteer agencies withdraw rather than pay fees and State must assume public safety responsibilities in all rural areas
 - Cost to implement and maintain separate communications systems
 - Loss of shared spectrum
 - Loss of security monitoring
 - Inability to meet FCC mandate
 - Possible forfeiture of equipment purchased through federal grant funds
 - Loss of OEM certified system technologists and support for O&M
Local communities expected to take the lead in any regionalized, large-scale event
 - Loss of established processes, procedures, and protocols
- National level:
 - Lack of available frequencies to support all users
 - Lack of centralized system/incident command structure for out-of-state agencies responding to multi-jurisdictional, multi-agency events
 - Failure to meet NIMS requirements; inability to interoperate
 - Federal agencies responsible for meeting NTIA mandate individually
- Cooperative partners/infrastructure owners:
 - Cost to travel to sites (includes high mountain sites) to remove equipment; technicians from all entities involved plus the contracted removal agency (assumed at the time to be Motorola®)

- Cost to inventory/store equipment
- Current equipment compatibility with older conventional systems
- Loss of funds expended on implementing ALMR
- Loss of central points of contact (POCs) for first responding agencies
- Systems revert to break/fix status (already occurring)
- No redundancy
- Loss of central POC for the public safety community, as a whole

5.0 Conclusions and Recommendation

Creating and maintaining interoperability requires the foresight of leadership at all levels through continuous discussions, planning, and the advancement of partnerships at the Federal, State, tribal and local levels. In order to effectively respond to emergencies, both government and industry must plan for, and continually reassess, interoperability requirements,⁶¹ as well as lifecycle funding and maintenance of the systems required to meet those needs.

The annual Business Case update examines the historical ALMR shared system approach both operationally and economically with respect to short- and long-term risks.

A viable long term strategy for funding ALMR continues to evolve at this time. . Long-term decisions for cost share and sustainment may change the current rules regarding governance and maintenance standards. How this could affect participation by those agencies currently utilizing the System remains unknown.

The 2012 annual update of the Business Case validates a shared approach remains the best solution to Alaska's public safety first responder interoperability needs. It validates operational and economic benefits for both agencies and stakeholders, and emphasizes the need for funding to fully sustain and maintain the ALMR System.

⁶¹ See <http://www.ncjrs.gov/pdffiles1/nij/211512.pdf>



FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

Alaska Land Mobile Radio

ALMR Program Change Request (CR) Form

Change Request ID # CR600-38TSSC

Change Request Current Status/Date 4/7/2011

Please read the Change Request Instruction prior to completing this form.

Section I - To be Completed by Originator

1. Change Request Title: Tower was replaced at the Ninilchik site (after the fact)

2. Originator Name:
Dean Strid

3. Originator Contact Phone/Email:
269-5764/dean.strid@alaska.gov

4. Response Requested By:
N/A

5. Approving Authority Executive Council User Council

Operations Manager Air Force AML Army DHS

DMVA DOA DOD SOA Vendor _____
(Check All Applicable Signature Blocks to be completed on Page 2) (Specify)

6. Approving Authority Rationale: The ALMR Executive Council must approve all System Changes

Section II - Technology/Site/System Change (TSSC)

7. Request Description: The tower was replaced at the Ninilchik site (after the fact)

8. Rationale for Change: The cliff above Cook Inlet had eroded to the point where guy wire anchors on old tower were exposed and about to fail.

9. Alternative Solutions: N/A

10. What is Needed to Implement this Change? Engineer, purchase and install new 300' self supporting tower; relocating on same site but away from eroding cliff. New tower documents and photos are attached

11. Impact:
Scope: N/A
Schedule: N/A
Cost: N/A
Quality: N/A
Security: N/A

12. Back Out Plan: N/A

13a. Evaluator Assigned:
(To be assigned by CCB Chair)

13b. Evaluator Recommendation and Comments:
(To be completed by CR Evaluator)

Section III - Documentation Change (DC)

14. Document Title and Version:

15. Other Documents Affected:

16. Paragraph and Page Number Affected (Attach Pertinent Pages When Possible):

17. Change Description (From/To):

18. Rationale for Change:

19. Impact:
Scope:
Schedule:
Cost:
Quality:
Security:

20a. Evaluator Assigned:
(To be assigned by CCB Chair)

20b. Evaluator Recommendation and Comments:
(To be completed by CR Evaluator)



ALMR Program Change Request (CR) Form

Change Request ID # CR600-38TSSC

Change Request Current Status/Date 4/7/2011

Alaska Land Mobile Radio

Section IV - Approval Signature Blocks	
ALMR DOD Manager Approval: (Name/Date/Title/Signature) Tim Woodall	Operations Manager Approval: (Name/Date/Title/Signature) Del Smith
ALMR SOA Manager Approval: (Name/Date/Title/Signature) Adam Paulick	Air Force Approval: (Name/Date/Title/Signature)
AML Approval: (Name/Date/Title/Signature)	Army Approval: (Name/Date/Title/Signature)
DHS Approval: (Name/Date/Title/Signature)	DMVA Approval: (Name/Date/Title/Signature)
DOA Approval: (Name/Date/Title/Signature)	DOD Approval: (Name/Date/Title/Signature)
MOA Approval: (Name/Date/Title/Signature)	Vendor Approval: (Name/Date/Title/Signature)
Chairman, Change Control Board	Chairman, User Council Approval
Chairman Approval: (Name/Date/Signature) Del Smith	Chairman Approval: (Name/Date/Signature) Major Matt Leveque
Executive Council Approval: (All Signatures Required)	
DOD Rep: (Name/Date/Title/Signature) Scott Moser, Colonel, ALCOM J6	Federal Non-DOD Rep: (Name/Date/Title/Signature) Darrin Jones, Assistant Special Agent in Charge, FBI
SOA Rep: (Name/Date/Title/Signature) Joseph Masters, Commissioner, Department of Public Safety	
Section V - CR Assignment/Recommendation/Comments	
21a. Modifier Assigned: (To be assigned by CCB Chair)	21b. Modifier Recommendation and Comments: (To be completed by CR Modifier)
22a. Verifier Assigned: (To be assigned by CCB Chair) To Change Status - Check Appropriate Box and Complete Info Requested	22b. Verifier Recommendation and Comments: (To be completed by CR Verifier)



A FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

Alaska Land Mobile Radio

ALMR Program Change Request (CR) Form

Change Request ID # CR600-38TSSC

Change Request Current Status/Date 4/7/2011

For internal Use Only	Section VI - CR Status/Assignment/Recommendation	
Status	Date of Change to Status	User Name/Notes
<input checked="" type="checkbox"/> Submitted	7Apr11	Sherry Shafer - WO13412 opened against SOA ETS; new tower discovered during PMI
<input checked="" type="checkbox"/> Tracked	7Apr11 21Feb13	Sherry Shafer - Fwd to Sharon White for completion Sharon White - Updates applied and re-submitted
<input checked="" type="checkbox"/> Evaluated	N/A	Sherry Shafer - after the fact CR
<input type="checkbox"/> Approved		
<input type="checkbox"/> Cancelled		
<input type="checkbox"/> Rejected		
<input type="checkbox"/> Change Made		
<input type="checkbox"/> Verified		
<input type="checkbox"/> Re-Approved		
<input type="checkbox"/> Closed		



ALMR Program Change Request (CR) Form

Change Request ID # CR600-38TSSC

Change Request Current Status/Date 4/7/2011

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UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
ANTENNA STRUCTURE REGISTRATION



OWNER: ALASKA, STATE OF

FCC Registration Number (FRN): 0001567247

Table with registration details including Antenna Structure Registration Number (1003111), Issue Date (10-13-2008), Location of Antenna Structure (W OF STERLING HWY AT MILE 138 NINILCHIK, AK), and Ground/Overall Elevation (71.9 meters / 91.5 meters).

This registration is effective upon completion of the described antenna structure and notification to the Commission. YOU MUST NOTIFY THE COMMISSION WITHIN 24 HOURS OF COMPLETION OF CONSTRUCTION OR CANCELLATION OF YOUR PROJECT, please file FCC Form 854. To file electronically, connect to the antenna structure registration system by pointing your web browser to http://wireless.fcc.gov/antenna. Electronic filing is recommended. You may also file manually by submitting a paper copy of FCC Form 854. Use purpose code "NT" for notification of completion of construction; use purpose code "CA" to cancel your registration.

The Antenna Structure Registration is not an authorization to construct radio facilities or transmit radio signals. It is necessary that all radio equipment on this structure be covered by a valid FCC license or construction permit.

You must immediately provide a copy of this Registration to all tenant licensees and permittees sited on the structure described on this Registration (although not required, you may want to use Certified Mail to obtain proof of receipt), and display your Registration Number at the site. See reverse for important information about the Commission's Antenna Structure Registration rules.



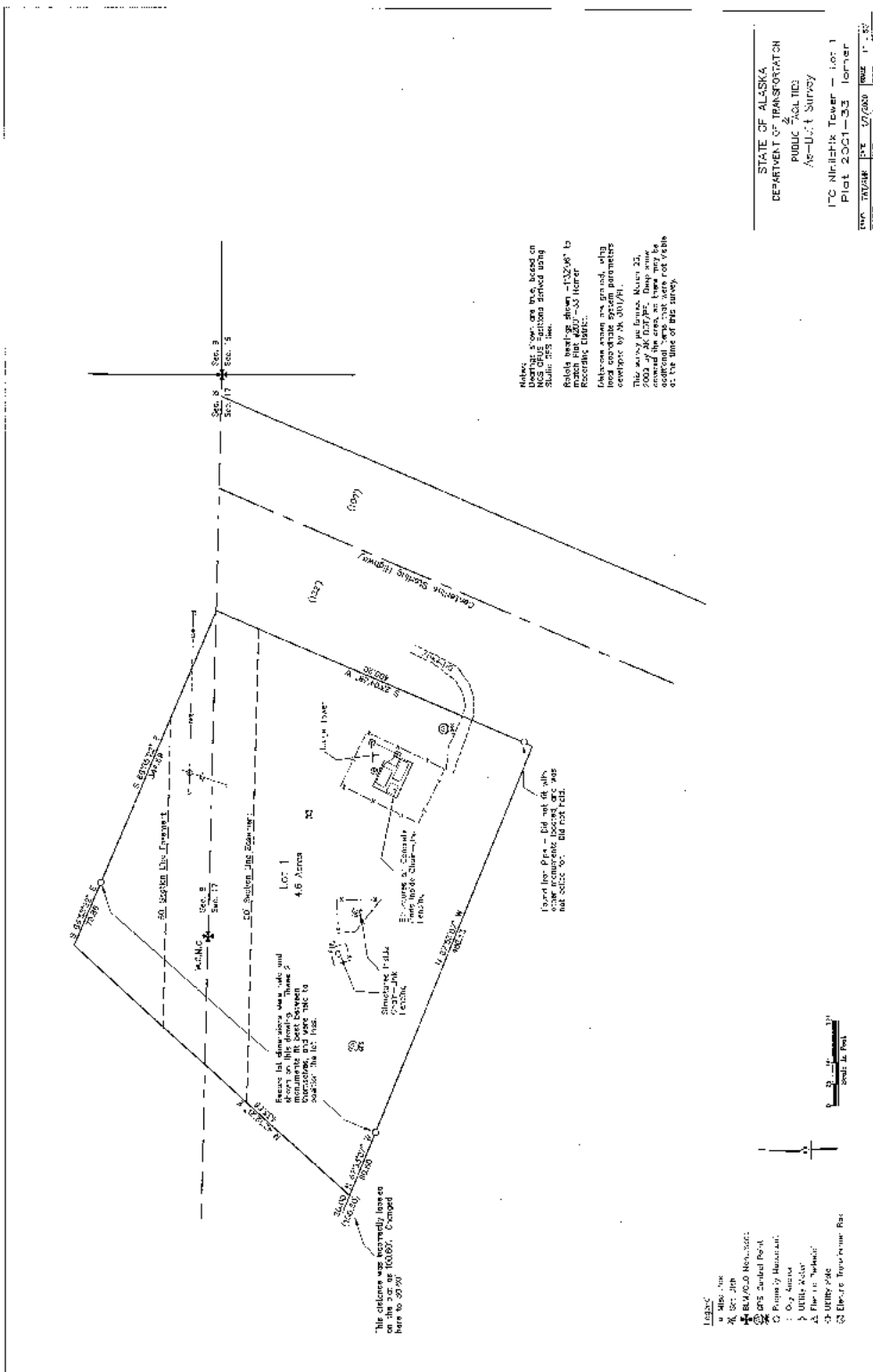
FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

Alaska Land Mobile Radio

ALMR Program Change Request (CR) Form

Change Request ID # CR600-38TSSC

Change Request Current Status/Date 4/7/2011



STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
 PUBLIC UTILITIES
 ALMR Tower - Lot 1
 Plat 2001-33 1st tier
 DATE: 10/2000
 SHEET: 1 OF 1



A FEDERAL, STATE AND MUNICIPAL PARTNERSHIP

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