



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



**MEMORANDUM FOR ALMR Executive Council**

**January 10, 2018**

**FROM: SOA Co-Chair**

**SUBJECT: January 18 Meeting Agenda**

**TO: See Distribution**

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1. **Call to Order.** Deputy Commissioner Bill Comer, State of Alaska (SOA) Co-Chair will call the meeting to order. The roll will be taken.
2. **Opening Statements and Other Announcements.**
3. **Approval of Previous Meeting Minutes.** (Deputy Commissioner Comer) Review of the draft minutes from the October 2017 Executive Council meeting. (Atch 1)

The following motion is offered to the council for their consideration.

**Motion: Approve October 19, 2017, Executive Council meeting minutes, as presented.**

4. **Old Business.**

a. Revenue Generation. At the October meeting, Mr. John Rockwell advised there was nothing new on this, although he had been briefed there had been discussion on license plate fees and a 9-1-1 surcharge, but nothing had stuck.

b. Telephone Interconnect for the Transportable Communications System. At the October meeting, Mr. Woodall stated the Cooperative Agreement formed basis for the Memorandum of Understanding (MOU) to cover this requirement, and he would have it done by the next meeting.

c. System Upgrade Assistance (SUA) and Equipment End of Life (EOL). At the October meeting, Mr. Woodall briefed the Department of Defense (DOD) would be contracting through the State of Alaska (SOA) for this and Mr. Stormo noted it had been penciled in for September of next year on the Motorola schedule, but that the State had not gotten the amendment done yet.

d. MotoBridge System. At the October meeting, Mr. Woodall advised the DOD had validated their assets with the services and concurred with the User Council (UC) recommendation letter to remove non-utilized assets.

Deputy Commissioner Comer stated his concern about not knowing the narrative on the MotoBridge® and that he was worried about some functionality being lost within ALMR. He needed to know how much it costs and who is using it.

Mr. Stormo stated when he returned he could get with Deputy Commissioner Comer and go over the assets.

e. FirstNet. At the October meeting, Mr. Woodall expressed concern regarding FirstNet and ALMR potentially converging in five to eight years and land mobile radio (LMR) going away, and the whether it was the State's intention is to move to FirstNet. He emphasized the DOD needed about five years of programming time to have the dollars together for the migration.

Deputy Commissioner Comer agreed it was prudent to put this on the radar now.

f. Cost Share. Mr. Bill Kaizer asked if there was any update on the fixed cost share amount proposal.

Mr. Stormo advised there was a reorganization occurring in the DOA Chief Information Officer (CIO) organization over the last month or so, and it was in the hands of those above him. He stated he would follow up and try to get a "yay/nay" the first week of November.

**5. User Council Update.** (Mr. John Rockwell)

- a. Annual Chair and Vice Chair election results
- b. User Council 2017 Annual Assessment on System Operations and Management Performance

**6. Operations Management Office.** (Mr. Del Smith)

- a. FY18 Membership agreements
- b. First quarter Master Site rollover
- c. Radio usage
- d. Zone 1 ALMR UPS/Batteries
- e. December System metrics (Atch 2)
- f. 2017 Business Case
- g. Operations Management Office 2017 Annual Information Assurance Audit Report of Findings

**7. New Business.**

**8. Next Meeting.** (Deputy Commissioner Comer) The next meeting is scheduled for April 19 1:30 p.m. at the Office of Information Technology Conference Room, 5900 E Tudor Road.

**9. Adjourn Meeting.** (Deputy Commissioner Comer)



Bill Comer, Deputy Commissioner  
Department of Public Safety  
ALMR Executive Council

**2 Attachments:**

1. Draft October Meeting Minutes
2. December 2107 System Metrics

**Distribution:**

SOA/DPS, Deputy Commissioner Bill Comer  
USNORTHCOM ALCOM J6, Colonel Timothy Maxwell  
FBI, ASAC Tony Jung  
AML, Ms. Linda Murphy  
MOA, Captain Dave Koch  
SOA OIT, Mr. Chris White  
SOA ETS, Mr. Scott Stormo  
ALCOM/J64, Mr. Timothy Woodall  
MOA, Mr. Trygve Erickson  
SOA DPS, Mr. John Rockwell  
OMO, Mr. Del Smith



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

**January XX, 2018**

**FROM: SOA Co-Chair**

**SUBJECT: October 19 Meeting Minutes**

**TO: See Distribution**

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**Executive Council Members Present:**

Deputy Commissioner Bill Comer	State of Alaska – Department of Public Safety
Colonel Timothy Maxwell	Department of Defense (DOD) – Alaskan Command (ALCOM)/J6
Mr. Bill Kaiser sitting in for ASAC Antony Jung	Alaska Federal Executive Association - Federal Bureau of Investigation (via teleconference)

**ALMR Support Team Members and Guests Present:**

Mr. Ocie Adams	User Council Chair (via teleconference)
Mr. Scott Stormo	SATS/ALMR Manager (via teleconference)
Mr. Del Smith	Operations Manager
Mr. Tim Woodall	DOD ALMR Program Manager
Mr. Jim Nicholl	Motorola Solutions
Mr. John Rockwell	Department of Public Safety
Ms. Sherry Shafer	Operations Management Office (via teleconference)

**1. Call to Order.** Deputy Commissioner Bill Comer, State of Alaska (SOA) Co-Chair called the meeting to order at 3:07 p.m. and the roll call was read. Maxwell.

**2. Opening Statements and Other Announcements.**

Colonel Timothy Maxwell thanked everyone for moving the meeting to accommodate his schedule conflict.

**3. Approval of Previous Meeting Minutes.** Deputy Commissioner Comer asked the if everyone had an opportunity to review the August meeting minutes and requested a motion for their approval, if there were no changes.

**Motion: Approve the August 17 Executive Council meeting minutes, as written.**

The motion was made by Colonel Timothy Maxwell, and seconded by Deputy Commissioner Comer. There were no objections. **The motion was carried and approved.**

**4. Old Business.**

a. Revenue Generation. Mr. John Rockwell advised there was nothing new on this. He briefed there had been discussion on license plate fees and a 9-1-1 surcharge but nothing had stuck.

Deputy Commissioner Comer stated he didn't believe anything had been thrown out at this point either.

Mr. Scott Stormo stated he had not heard anything new on this.

b. Cooperative Agreement Update. Mr. Timothy Woodall advised the document had been signed by Lieutenant General Wilsbach and had been given to Mr. Del Smith today.

Mr. Smith stated he would get it over to the Alaska Federal Executive Association (AFEA) to be signed.

Deputy Commissioner Comer stated this item could now be **CLOSED**.

c. Telephone Interconnect for the Transportable Communications System. Mr. Woodall stated the Cooperative Agreement formed basis for the Memorandum of Understanding (MOU) to cover this requirement, and he would have it done by the next meeting.

d. System Upgrade Assistance (SUA) and Equipment End of Life (EOL). Mr. Woodall briefed the Department of Defense (DOD) would be contracting through the State of Alaska (SOA) for this.

Mr. Stormo noted it had been penciled in for September of next year on the Motorola schedule, but that the State had not gotten the amendment done yet.

e. MotoBridge® System. Mr. Woodall advised the DOD had validated their assets with the services and concurred with the User Council (UC) recommendation letter. He

stated they identified what they did and did not want updated and had provided the list to Mr. Mike Hawkins at Motorola for a refresh.

Mr. Woodall briefed that he had a conversation with 673<sup>rd</sup> Contracting and the 673<sup>rd</sup> Financial Management folks trying to come up with a better solution to execute contracts because the Defense Finance and Accounting System (DFAS) is a slow, manual process. He stated they believed there is a process to pay the State all the dollars at the beginning of the State's fiscal year, then the State would provide them an invoice. Mr. Woodall stated they were looking at how this can be done and hoped this would work for the Wostmann/Operations Management Office (OMO) contract, as well. He noted the Legal Office would be looking at it with Contracting.

Mr. Jim Nicholl, Motorola Solutions, asked if the DOD was going to try to do this with the System upgrade and Mr. Woodall stated "yes."

Mr. Stormo advised the upgrade portion could affect the Federal receipt authority, so that may not work.

Mr. Woodall stated they would have to look at that but would get it figured out on the DOD side then pass it to the State to look at. He advised if they did a specific Memorandum of Agreement (MOA) that outlines that and identifies the amount and purpose of the funds, they might be able to do it.

Mr. Smith read the proposed motion regarding the User Council recommendation on the MotoBridge<sup>®</sup> system.

Deputy Commissioner Comer asked Mr. Ocie Adams to speak to the motion.

Mr. Adams stated the decision was based on the fact that some MotoBridge<sup>®</sup> components are not being used and some are being used other than originally attended. He noted those components being used should remain active and it was deemed a legitimate action to remove the others.

Deputy Commissioner Comer stated his concern about not knowing the narrative on the MotoBridge<sup>®</sup> and that he was worried about some functionality being lost within ALMR. He emphasized he needed the rest of the narrative on this issue.

Mr. Woodall explained the MotoBridge<sup>®</sup> ownership and how the system was connected to the State information technology (IT) network. He advised for the DOD, it was primarily used on the US Army-Alaska (USARAK) ranges and their Fire Department, at the Rescue Coordination Center (RCC) and in the transportables. Mr. Woodall noted that the DOD had locations around the State, as well, but at the majority of those the MotoBridge<sup>®</sup> was not used.

Colonel Maxwell asked how many components were they talking about and Mr. Woodall stated there were approximately 35 for the State and 15 for the DOD and the DOD was

reducing their number down to 12. Mr. Woodall explained that Mr. John Lynn, Enterprise Technology Services (ETS), was working on the State's portion.

He reiterated he needed the rest of the narrative on this issue – how much it costs and who is using it.

Mr. Smith stated there were a number of State components connected to Emergency Medical Service (EMS) repeaters.

Mr. Woodall explained the maintenance for it was already in the contract, but in order to obtain the cost to upgrade it, the details would have to be provided to Motorola so they could provide a cost estimate, and DOD had already provided their requirements. He noted the DOD would probably elect to update regardless of what the State does, and may have to move their portion of the MotoBridge® from the SOA network if the State does not update.

Mr. Stormo stated when he returned he could get with Deputy Commissioner Comer and go over the assets. He noted it was basically the computers that were going to be removed.

The motion was reintroduced at this time.

**Motion: Accept the User Council recommendation to remove workstation gateway units and/or radio gateway units that are not being utilized and update the remaining MotoBridge® components to current Motorola hardware and software releases.**

The motion was made by Colonel Maxwell, and seconded by Deputy Commissioner Comer. There were no objections. **The motion was carried and approved.**

## **5. User Council Update.**

Mr. Ocie Adams noted he had nothing further to add.

## **6. Operations Management Office.**

a. Annual User Council Election. Mr. Smith advised the nomination process for the annual User Council election of the Chair and Vice Chair was underway.

b. Fourth Quarter Master Site Rollover. Mr. Smith briefed the Zone 1, Zone 2, and Zone 4 quarterly rollover was scheduled for the week of October 23 – 27 and he had been sending out notices every week and it was also in the System Management Office (SMO) Daily Report. He stated the zones would be done on October 25 and 26 at approximately 5 a.m. and it should take about 35 seconds to complete and no issues were expected.

c. FY19 OMO/SMO Budget. Mr. Smith stated the budget was approved by Executive Council with the final vote via email on September 22 and then forwarded to Mr. Stormo to provide to the SOA Department of Administration (DOA) on September 25.

d. September System metrics. Mr. Smith advised there 1,047,225 group calls and within those calls were 1,940,083 push to talks. He stated busies were declining as anticipated and were down from 542 in August to 408 in September.

Deputy Commissioner Comer noted these types of metrics makes it so much easier to explain and it is the kind of data that you can talk to those people who are not radio proficient and they will understand and he appreciated it.

## **7. New Business.**

a. FirstNet. Mr. Woodall advised there is a lot of talk about FirstNet and ALMR potentially converging in five to eight years and land mobile radio (LMR) is going away. He stated FirstNet is not a system that is currently open to Federal agencies such as DOD, and from a partnership perspective, he asked that the Executive Council seriously consider looking at the FirstNet and ALMR lifecycle convergence timeline.

Mr. Woodall noted if the State's intention is to move to FirstNet, the DOD needs about five years of programming time to look for a new system capability and migration away from a shared system capability to an independent infrastructure and backbone from what we have now. He explained the DOD currently benefits from the State of Alaska Telecommunications System (SATS) and there is a lot of additional expense and engineering associated with that, and he wouldn't want to get down to a year or two away and have to inform his new boss that the DOD needs to build a new system. Mr. Woodall briefed programmatically, they need to start five years out and get funds lined up.

Mr. Woodall also queried was there an intention to include Federal agencies for a total level of interoperability like we have now. If there were a loss of interoperability with Federal agencies excluded from FirstNet, they could find themselves in a crisis and need to do the proper, prudent planning and projection.

Mr. Woodall asked this issue become part of the continuing business and put together subcommittees to speak to the experts and come up with a plan, so we can do the right future projection.

Deputy Commissioner Comer added within the last few days, he, Mr. John Rockwell and Mr. Leon Morgan had a couple conversations and had been spurred on by members of the public safety community to re-engage the State's administration on an executive order or possibly some Legislative action to go forward so before we form any committees, he would like it put on the January agenda for further discussion.

Mr. Smith stated, as he understood it FirstNet is a subscription and asked could a DOD agency subscribe to it, and Mr. Woodall stated he didn't know, from a programmatic standpoint, if DOD played in FirstNet at all.

Mr. Rockwell advised they do, but the part DOD was excluded from was the opt-in/opt-out question because Congress put the onus on the Governor to opt in or opt out for that state, although he could consult with their DOD partner. He pointed out DOD is not being excluded from Public Safety Band 14 and when they start rolling the licenses out, it will be offered to DOD.

Mr. Woodall briefed the DOD would still need to know that to have the dollars together for the migration and would still want that process to begin five years out. He felt the Executive Council, from a cooperative association, should still commission a group to work together to define the lifecycle and migration process.

Deputy Commissioner Comer agreed it was prudent to put this on the radar now and makes a lot of sense.

Mr. Rockwell added, for everyone's information, Governor Walker had signed the opt-in letter on August 24 and put out a press release on August 30. He stated this is a first step in the process. Additionally, he noted he had been working with Deputy Commissioner Comer and Mr. Morgan on the governance and planning process on the convergence technology. Mr. Rockwell advised that they had the opportunity, through the State and Local Implementation Grant (SLIG), Alaska has the opportunity to apply for up to half a million dollars, of which the application would include the planning activities to look at the migration from LMR to FirstNet – where it fits and where the gaps are, where operational parts and pieces match together.

Mr. Nicholl advised Motorola is a partner in FirstNet with AT&T and they don't see it as a replacement for LMR in the near future.

b. Cost Share. Mr. Bill Kaizer asked if there was any update on the fixed cost share amount proposal.

Mr. Stormo advised there was a reorganization occurring in the DOA Chief Information Officer (CIO) organization over the last month or so, and it was in the hands of those above him. He stated he would follow up and try to get a "yay/nay" the first week of November.

Mr. Kaizer reminded this would include the Drug Enforcement Agency (DEA), US Marshalls and Federal Bureau of Investigation (FBI).

Deputy Commissioner Comer also advised Mr. Stormo he had been asked some significant questions regarding the DOA budget request.

**8. Next Meeting.** Deputy Commissioner Comer advised the group that the next meeting is scheduled for January 18, 2018, 1:30 p.m. at the Enterprise Technology

Services Conference Room, 5900 E Tudor Road. He stated this was the opening day of the Legislative session and he may be in Juneau and would call in, otherwise he would attend as normal and go down the following week.

The motion to adjourn was made by Colonel Maxwell and seconded by Deputy Commission Comer. There were no objections. **The motion was carried and approved.**

The meeting adjourned at 4:00 p.m.

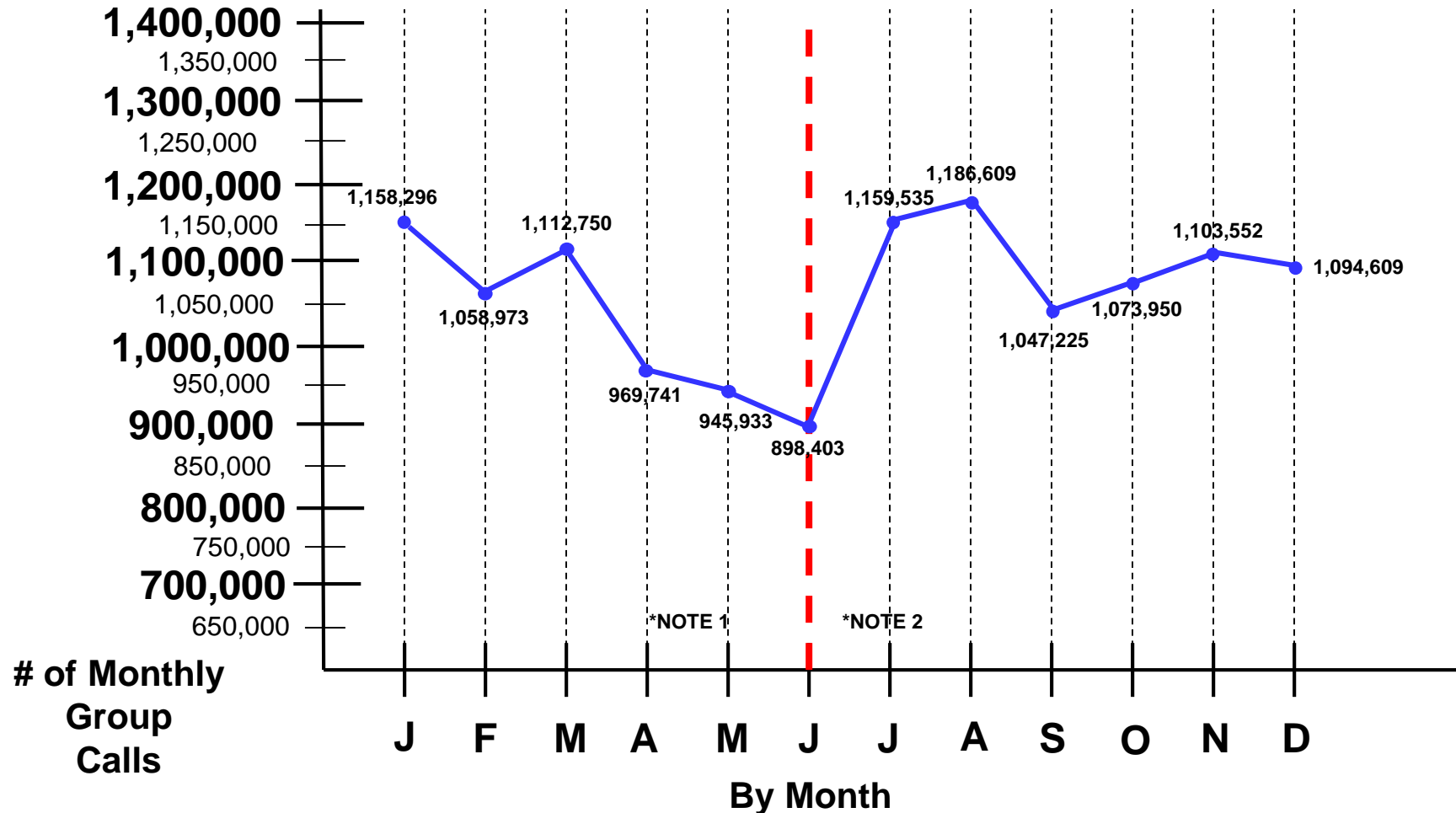
Bill Comer, Deputy Commissioner  
Department of Public Safety, State of Alaska  
ALMR Executive Council

**Distribution:**

SOA/DPS, Deputy Commissioner Bill Comer  
USNORTHCOM ALCOM J6, Colonel Timothy Maxwell  
FBI, ASAC Tony Jung  
MOA, Captain Dave Koch  
AML, Ms. Linda Murphy  
SOA DOA, Mr. Jim Steele  
SOA DOA, Mr. Scott Stormo  
ALCOM/J64, Mr. Timothy Woodall  
MOA, Mr. Trygve Erickson  
SOA DOT, Mr. Ocie Adams  
OMO, Mr. Del Smith

# 2017 System Performance

## Monthly Group Calls

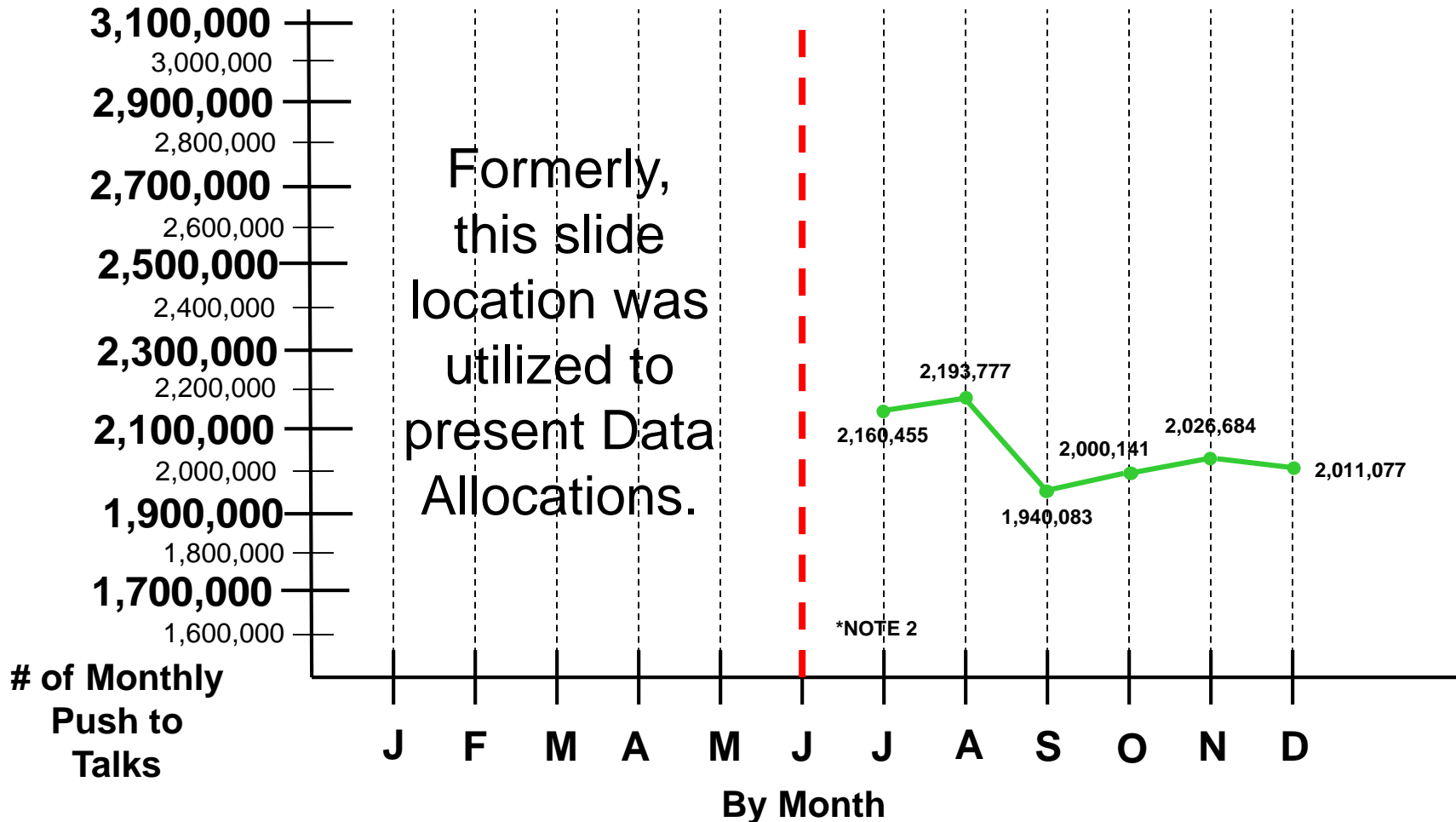


**NOTE 1 :** April has five days and May has one day of data collection missing for Zone 2 due to Genesis software update issue.

**NOTE 2:** Starting in July, data from Genesis will be utilized as it provides a more accurate calculation of actual group calls, push-to-talks and busies.

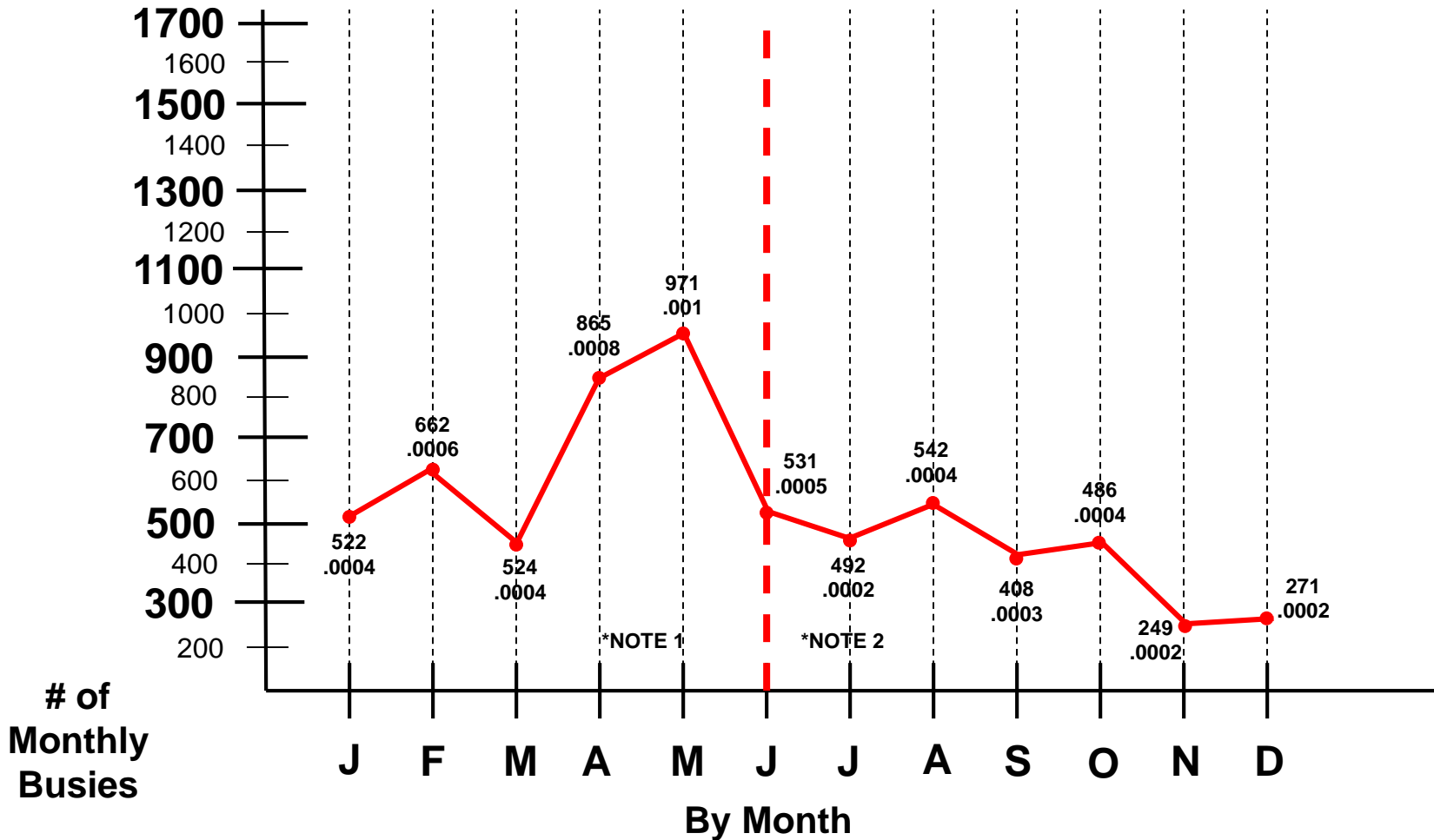
# 2017 System Performance

## Monthly Push-to-Talks



**NOTE 2:** Starting in July, data from Genesis will be utilized as it provides a more accurate calculation of actual group calls, push-to-talks and busies.

# 2017 System Performance Monthly Busies



**NOTE 1 :** April has five days and May has one day of data collection missing for Zone 2 due to Genesis software update issue.

**NOTE 2:** Starting in July, data from Genesis will be utilized as it provides a more accurate calculation of actual group calls, push-to-talks and busies.



# **Alaska Land Mobile Radio Communications System**

## **User Council 2017 Annual Assessment on System Operations and Management Performance**

**January 17, 2018**



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## **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 2017, there were 125 agencies operating on ALMR. At the end of the year, the total number of agencies was 127 with 21,731 subscriber units in service.

The newest member agencies to join in 2017 were Chickaloon Tribal Village Transportation Department, Lowell Point Volunteer Fire Department, Craig Police Department, Matanuska-Susitna Borough School District and the Kenaitze Indian Tribe Tribal Safety and Corrections.

The decision was made not to renew the Chitina Volunteer Fire Department or the City of Ouzinkie membership agreements, because they have been unable to locate their radios since 2015 and they are currently outside of the ALMR footprint.

The US Attorney's Office – Alaska District elected not to renew their agreement after the State of Alaska proposed to impose a \$1000 per agency/per year access fee.

## **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 that may indicate System deficiencies. To accomplish this, they employ the Operations Management Office (OMO) to provide periodic reports. The OMO presents ALMR System metrics at the monthly UC meeting and also at the Executive Council (EC) meetings, as scheduled.

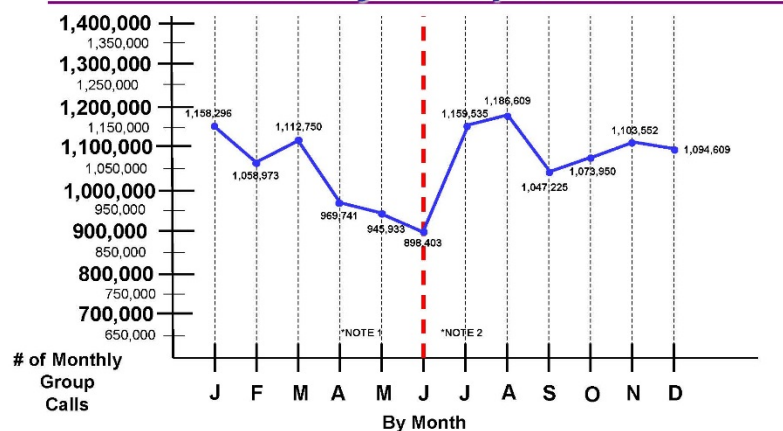
The UC has established a performance baseline standard, with respect to System busies, which identifies day-to-day and emergency operations data for individual sites by both the percentage and duration. When sites exceed established standards, the

Operations Manager reviews the applicable site report to determine whether they are related to State of Alaska (SOA) Telecommunications System (SATS) downtime, military exercises, weather-related events or a specific emergency response event.

The OMO provides monthly statistics to the UC to determine whether those sites exceeding the standard are experiencing excessive traffic due to normal seasonal shifts, or if there is simply insufficient channel capacity at the site to handle daily operations.

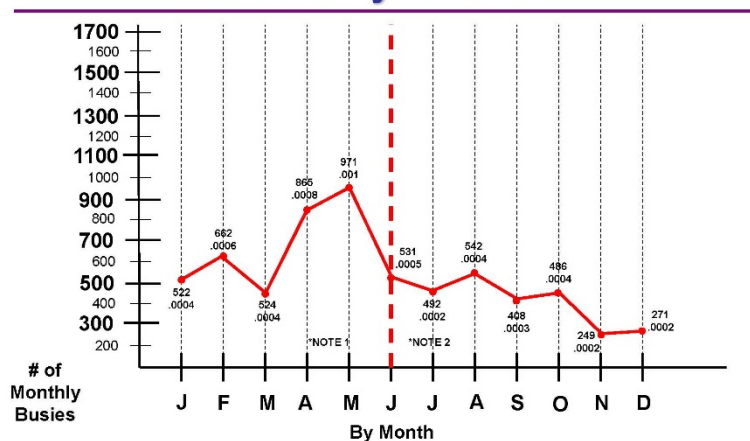
The following charts display the total numbers of System group calls and push to talks per month.

### 2017 System Performance Monthly Group Calls



NOTE 1 : April has five days and May has one day of data collection missing for Zone 2 due to Genesis software update issue.  
NOTE 2: Starting in July, data from Genesis will be utilized as it provides a more accurate calculation of actual group calls, push-to-talks and busies.

### 2017 System Performance Monthly Busies



NOTE 1 : April has five days and May has one day of data collection missing for Zone 2 due to Genesis software update issue.  
NOTE 2: Starting in July, data from Genesis will be utilized as it provides a more accurate calculation of actual group calls, push-to-talks and busies.

In 2017, the ALMR System supported a cumulative total of 12,809,576 group calls and System busies of 6,523 which equaled 5 one-hundredths of one percent of the group calls.

**NOTE:** Starting in July, data from Genesis was utilized as it provided a more accurate calculation of actual group calls, individual push-to-talks and System busies. With the previously used Motorola software, previously listed “voice calls” are the equivalent to the new “group calls.” Push-to-talk figures are not shown for calendar year 2017, as they were started in July and would be misrepresentative of an actual annual total.

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

The New Knik site had a frequency conflict with the Village of Tyonek, Providence Hospital and LifeMed Alaska. A letter of concurrence was received by the State of Alaska Enterprise Technology Services from Providence on April 24, from LifeMed on April 26 and from the Village of Tyonek on June 5.

#### **5.0 Build out**

The ALMR System was originally designed to support 105 sites. The Atwood 800MHz site was then added, as well as the two Transportable Communications Systems. The SOA also added a 700MHz site at Goose Creek Correctional Center in November 2011.

At the end of 2017, site equipment ownership was as follows (original design number versus current build-out status/ownership):

- US Army Alaska (USARAK) – 45/4<sup>(see note 1)</sup>
- Joint Base Elmendorf-Richardson – 1/1
- Eielson Air Force Base – 3/3
- Clear Air Force Station – 1/1<sup>(see note 3)</sup>
- Municipality of Anchorage (MOA) – 15/12
- SOA – 40/77<sup>(see notes 1, 2, 3 & 4)</sup>

There are currently 98 operational sites including the 12 MOA Anchorage Wide Area Radio Network (AWARN) sites; this total does not include the transportable systems. 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 free of charge. This accounts for the difference in the listed numbers for the planned site build out and the current number of owned sites.

**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. With the site added, this brings the total ALMR sites to 86.

**NOTE 3:** The Atwood 800MHz site was removed in May 2013 to utilize as a test bed for the 7.13 System software platform update. The decision was made during the February 5, 2014, User Council meeting not to reinstall the site. The System Change Request was approved by the Executive Council on February 26, 2014.

**NOTE 4:** The State added new sites at Delta Junction and New Knik in May 2017.

## 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 2016, 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 an ALMR repeater be installed 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.

**Update 2016:** At the August 3 User Council meeting, the decision was made that it was a DOT issue. The consensus was there were higher priorities and it was **TABLED** for the time being.

**Update 2017:** There was no change in the status of this item in 2017.

- **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 that when the agency programs 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 that could provide excellent coverage throughout the Houston area. However, it may take several years to add an additional radio site if/when funding is 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 installed several in their police vehicles and were reportedly satisfied with the improved reception capability.

**Update 2011:** The City of Houston deactivated the Police Department in 2011 and is no longer a member of the ALMR System.

**Update 2016:** At the August 3 User Council meeting, it was pointed out that at one time there had been discussion of taking some of the channels from Fire Station 12 to establish a site in the Houston/Knik Goose Bay area because it was growing so rapidly. The consensus of the council was for the potential site to stay on the list.

**Update 2017:** A site was installed at New Knik; however, an additional site is still being considered to resolve remaining communications issues in the area.

- **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.

**Update 2013:** The issue was re-opened at the May 1, 2013, User Council meeting when it was suggested coverage in the Delta area should be re-engaged as an existing coverage area that is underserved. Mr. Jordan Halden had met with a large group at Delta who stated although the mobile coverage was sufficient; the portable coverage was inadequate particularly over the ridge at Delta to Jack Warren Road. They felt they had much better coverage before the Delta Junction site was moved to Donnelly Dome.

Additionally, it was noted the Troopers could point out exactly on a map where they can't get coverage in the Delta area. The System Manager agreed there were areas where both mobiles and portables have issues. The User Council requested ETS look at the Delta area for enhancing coverage and were advised that Spring 2014 might be the soonest ETS could begin serious exploration.

**Update March 2014:** The System Manager at the time, Mr. Casey Borg, traveled to Delta Junction to talk to Mr. Ernie Wyrick, as well as representatives for AST, DOT and possibly Forestry, regarding coverage concerns in the area, and to find out what could be done to facilitate better coverage. The final coverage report was published September 9, 2014, and contained two recommendations: 1) complete subscriber periodic maintenance inspections; and 2) add another site to the area. **NOTE:** Funding for an additional site at this location is not currently available.

**Update 2016:** At the August 3 User Council meeting, it was mentioned that Delta Junction had a long history of the coverage deficiency in the Jack Warren

Road area and this was a major concern. The council voted to leave it on the list.

**Update 2017:** A new site was installed at the previous location in Delta Junction on May 26. The site was declared operational on June 26 after the 30-day burn in period.

This item is considered **CLOSED** and will be removed from future reports.

- **Chena Dome/Chena Hot Springs Road** (carried forward from 2013)  
At the May 1 User Council meeting, the council was briefed that Chief Jeff Tucker, North Star VFD, had mentioned Chena Hot Springs where there is no ALMR coverage, but only a conventional site where power is problematic.

Major Leveque briefed there is a conventional site AST has access to, but he had talked to his troopers who stated there is virtually no coverage there even on the conventional side.

DOT engineers were looking at how to bring down the cost to implement Chena Dome, but it would still be a significant cost regardless. ETS was requested to explore the Chena Hot Springs Road site and were advised that spring 2014 might be the soonest ETS could begin serious exploration.

The Stuart Creek 2 wildfire, in July, reached the Chena River and prompted an evacuation along Chena Hot Springs Road for residents between mileposts 18 and 34. This emphasized the need for expansion of ALMR into this area.

**Update 2016:** ETS put a SATS site up in calendar year 2014, which has conventional radios in it due to power limitations at the site. In order to put ALMR radios at the location, the power challenge would need to be solved.

At the August 3 User Council meeting, the members agreed there was definitely a need to get something out in this area. This item was **TABLED** until more information could be obtained.

**Update 2017:** There was no change in the status of this item in 2017.

- **Valdez** (carried forward from 2014)  
At the July 2, User Council meeting, Chief Bill Comer of Valdez Police Department briefed the council regarding coverage shortfalls at Rove River, Keystone Canyon, Alpine Woods and Thompson Pass in the Valdez area, which created an officer safety issue.

**Update 2015:** The Department of Transportation and Public Facilities advised they had installed a 120 foot communications tower at the DOT Valdez Weigh

Scales Inspection Station that could provide coverage to the area of concern to Chief Comer which is a housing area behind the airport.

**Update 2016:** This item was briefly discussed at the August 3 User Council meeting, but it was **TABLED** for the time being. A coverage study by Motorola® was reportedly performed, but the results had not been provided to the OMO at the close out of this year's report.

**Update 2017:** There was no change in the status of this item in 2017.

## **7.0 On-going Projects**

7.1 The following equipment upgrades or replacements took place in 2017.

- Channel capacity enhancements – the plan is to add capacity to all existing three-channel sites, as the need is identified and funding becomes available
- Gold Elite consoles were replaced with MCC7500 consoles at the following locations:
  - ❖ Six at Soldotna PSCC (7500); completed April 24 - 28
  - ❖ Two at Ketchikan AST (7500); completed May 22 – 26
  - ❖ One at DMVA EOC (7500); May 30 – June 2
  - ❖ Four at Goose Creek Correctional Center (7500); completed June 26 – 30
  - ❖ One at Tudor Road Master Site; completed March 8

## **8.0 Contractor Performance**

8.1 System Documentation. The OMO is responsible for auditing and control of the policies, plans and procedures, which provide for the accountability, compliance, performance and monitoring assessment of the ALMR System.

Documents are reviewed annually and updated, as necessary, to reflect changes to System performance parameters or operational mandates. The status of ALMR documentation for 2017 is:

- 83 total reviewed
- 74 reviewed/approved by the OMO
- 7 reviewed/approved by the UC
- 1 reviewed/approved by the Executive Council/Cooperative Partners
- 1 outstanding approval (2017 Annual Business Case)

## 8.2 System Recovery Plan

In accordance with System Recovery Procedure 400-1, the System Recovery Plan shall be tested annually and all results of the test shall be recorded. The Security Manager shall be responsible for overseeing the testing and verifying that the results have been recorded. Results of the testing will be presented to the User Council.

**NOTE:** Real-world occurrences of, and response to, System failures shall meet the annual test requirement.

- **Date of Incident:** March 2  
**Details:** 1638L hours, Juniper Firewall failed. (Motorola Case 25296870, ALMR WO 48094)  
**Findings:** On March 2, 2017 at 1638L hours, the Juniper Firewall that supports the CEN network of the ASTRO 25 system failed. This failure impacted the Over-the-Air-Rekeying (OTAR) system that supports the provision of encryption keys to customer radios in the field and also supports the Genesis data collection system.

This issue began when Mr. Mark Jenks, Northern Zone System Technologist, was working on the firewall to allow new MCC 7500 consoles to be added to Over-the-Ethernet-Keying (OTEK) encryption key system for automatic updates of encryption keys. While Mr. Jenks was making changes, a request to reboot the Juniper Firewall hardware was sent and the hardware rebooted, then failed while powering back up.

Catastrophic event planning began immediately. Initial planning took place as Mr. Jenks and Mr. Travis Conant, System Manager, discussed what actions needed to occur. As agreed upon, Mr. Conant proceeded to the ALMR parts warehouse to check if there were any spares on hand. No spare parts were found in storage. Mr. Jenks contacted Motorola for any assistance they could provide remotely. Motorola Technical Support was unable to provide any assistance to get the firewall to respond, but ordered an advanced replacement part to be expedited via air shipment.

Impact of the loss of OTAR, OTEK and the Genesis system did not impact the majority of the communications processes, just the encrypted portion. However, ALMR lost data for all the radio activity in the Genesis system while the firewall was being replaced.

The hardware failure was not the result of a cyberattack. No data breach occurred. In this event media disposal was not necessary and replaced equipment was sanitized before decommissioning IAW ALMR and DOD policies and procedures.

**Results:** The System Management Office is working on getting a spare for the Juniper firewalls.

**NOTE:** Results of System recovery efforts are also listed in the annual System Recovery Assessment and Backup-Recovery Report, dated December 7.

8.3 Subscriber Inventory. In February 2012, the State Legislative Budget and Audit Committee was requested by a member of the Legislature to perform an audit of the ALMR System. The audit took well over a year to complete and in December 2013, the Legislative Audit Final Summary was released with a single finding.

*Findings and Recommendations:*

*Recommendation No. 1*

*ALMR executive council should ensure user agencies conduct an annual inventory of ALMR equipment.*

To correct the discrepancy, the ALMR Executive Council appointed the OMO as their executive agent for the annual audit. Therefore, at the beginning of each calendar year, the OMO prepares and distributes an instruction letter to each user agency with an accompanying confirmation form to sign and return. The distribution of letters and confirmation forms to member agencies began on January 11 and was completed by January 19.

For calendar year 2017, 123 agencies performed an audit of their assigned subscribers, took the necessary actions to remove/disable/add subscribers, where required, and returned the completed confirmation form. The audit was completed on July 5, with the receipt of the final agency form.

**NOTE:** Agencies joining in 2017 and those who have valid membership agreements, but who have no subscribers on the System, are not required to complete and return the confirmation form. The applicable agencies in 2017 with no subscribers on the System were the City of Ouzinkie and Chitina Volunteer Fire and Rescue Department.

## **9.0 System Enhancements**

Two new five-channel RF sites were approved and installed in 2017. The first site is co-located in the Municipality of Anchorage shelter in Knik, which will cover gaps in the Knik area, as well as improve coverage in the Eklutna Lake area. The New Knik site was installed on May 26 and declared operational on June 26 after the 30-day burn in period.

The second site is located in the SOA shelter in Delta Junction. It replaced the previous site, which was relocated to Fort Greely in 2005 and is expected to cover the

surrounding Delta Junction area where coverage was previously lost. The Delta site was installed on May 26 and declared operational on June 26 after the 30-day burn in period.

## **11.0 Supported Events**

### **11.1 On-going Agency Training**

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, when funding is available.

During calendar 2017, there were no ALMR agencies who contacted the OMO or the training coordinator and requested training.

## **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 FY19 OMO/SMO Operating Budget was approved by the UC on August 2 for presentation to the EC, which occurred on August 29. The final EC vote of approval for the budget was received on September 22 and the document was finalized and forwarded to Enterprise Technology Services on September 25 by the Operations Manager to provide to the SOA Department of Administration (DOA) for inclusion into the SOA budget.

The SOA Governor's proposed FY19 budget was released on December 15.

## **13.0 Other Focus Areas**

Additional areas currently being tracked:

- **ETS**
  - ❖ Gold Elite consoles were replaced with MCC7500s at Fairbanks AST (4), Goose Creek Correctional Facility (4), Ketchikan AST (2), the Department of Military and Veteran Affairs EOC (1) and at Enterprise Technology Services (1).

- **Outstanding Maintenance**
  - ❖ Delays in addressing R56 grounding at some SOA sites continues to be a major concern, some now being over 13 years old.

**NOTE:** SOA maintenance and milestones are briefed at the monthly UC meeting.

## 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 met the expectations of the UC. The overall health of the ALMR System is currently good. The three-channel sites continue to be monitored and the channel capacity upgraded, as the need dictates and funding becomes available.

Issues of concern:

- The Gold Elite dispatch consoles have reached their end of life, but will continue to function normally until the 7.15 System software platform update (or beyond). Maintenance will no longer be supported at the depot level and replacement repair parts may become limited. Remaining consoles from 2016 that have been replaced or that have a contract in place to install MCC7100s/MCC7500s include:

Scheduled (tentatively):

- ❖ One at Valdez - Installation in Jan 2018
- ❖ Six at Wasilla (MATCOM) - Installation in March 2018
- ❖ Four at Fairbanks AST - Installation in May 2018

Other areas of concerns that will continue to be monitored by the OMO and SMO are: 1) continue to look for ways to secure permanent long-term funding at the State level for the System, upgrades and equipment end-of-life replacements, as well as sustainment of the day-to-day operations and maintenance of ALMR; and 2) capacity enhancements at remaining three-channel sites and opportunities for improving coverage where communication issues exist within the current ALMR footprint.



# **Alaska Land Mobile Radio Communications System**

## **2017 Annual Business Case Update**

**Version 10k**

**January 17, 2018**

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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. Accepted by the Executive Council on June 17.	3
Shafer, Sherry	10/20/2010	Annual review/update. Approved by the User Council - final.	4
Shafer, Sherry	10/14/2011	Annual review/update. Approved by the User Council - final.	5
Shafer, Sherry	2/13/2013	Annual review and update. Approved by the User Council - final.	6
Shafer, Sherry	2/19/2013	DOD correction to paragraph 3.7 verbiage	6
Shafer, Sherry	1/27/2104	Annual review/update. Approved by the User Council on December 16, 2013. Approved by the Executive Council on January 27, 2014, - final.	7
Shafer, Sherry	1/28/2015	Annual review/update. Approved by the User Council on January 12, 2015. Approved by the Executive Council on January 28, 2015, - final.	8
Shafer, Sherry	2/8/2016	Annual review/update. Approved by the User Council on January 6, 2016. Approved by the Executive Council on February 8, 2016 - final.	9
Shafer, Sherry	1/31/2017	Annual review. Approved by the User Council on January 10, 2017. Approved by the Executive Council on January 31, 2017 – final.	10
Shafer, Sherry	1/17/2018	Annual review. Approved by the User Council on January 17, 2018.	10a-k

## 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 and United States Northern 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, Federal Non-DOD 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 over 300,000. 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 and 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.

DRAFT

## 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
- 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
- Reduced costs for narrowband migration, particularly for the State of Alaska, through Federal funding/contribution of Department of Defense (DOD) assets for System development
- Negated 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 as a cooperative partnership, not just for narrowband migration, but also for improving public safety communications and interoperability<sup>1</sup> throughout Alaska. The partnership was, and still is, responsible for assessing, assembling and consolidating requirements; as well as 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.<sup>2</sup>

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<sup>1</sup> 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."

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

Although ALMR, as initially planned, is not fully implemented and may never be, its coverage includes all major highways and over at least 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 and natural disasters, as well as daily operations. The technology employed meets Federal mandates and provides greater capabilities than the previous legacy systems. At the end of calendar year 2017, the System supported 127 agencies utilizing 21,731 subscriber units. Additionally, ALMR supported 12,809,576 group calls and with an approximate .0005 (.05 one hundredths of one percent) System busy rate for the entire year.

Overall, ALMR has proven time after time through numerous studies 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 other agencies provide, via ALMR, benefit the citizens of the State.

ALMR is a very effective system that greatly enhances wide area interoperable communications. Some of the perceived shortcomings can be attributed to insufficient user training, poor subscriber equipment maintenance by user agencies, lack of coordination between stakeholders or a general lack of knowledge on how the System operates and the benefits it provides to the public safety community. There is even greater potential for ALMR as users become more familiar with the System and fully

utilize their radio's capabilities properly. Strengths and weaknesses of the System, as well as the need for additional ALMR training, have been addressed in past annual Business Case updates and also in the ALMR Strategic and Operational Plan. The need for continued funding to provide regular and agency-specific training is essential to solving these 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
- **Enhanced security** - the ability to encrypt communications, and shared cyber security across the system

The contributions of all parties involved in ALMR 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 stated the owner of the infrastructure equipment pays for the maintenance of that equipment in accordance with the requirements defined in the Service Level Agreement (SLA). The cost share method also stated the costs of the OMO and the System Management Office (SMO) would 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 U.S. Army-Alaska (USARAK) radio frequency (RF) equipment housed in 41 SOA-owned sites to the State, 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, whereas 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 costs. The SOA, DOD, 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 that would be difficult, if not impossible to achieve autonomously

In 2016, the cost share method language changed to specify that for Master Site maintenance, both the State of Alaska and DOD Alaska would each pay 50 percent, or in other words, each would pay 100 percent of their owned Master Site costs.

This Business Case update continues to validate the shared ALMR System 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 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/technology<sup>3</sup>, the cost to separate the System<sup>4</sup> and the many additional risks/costs produced by such a separation.

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

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

One such example of the benefit of the System would be the severe windstorms in September 2012, 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.

Other events demonstrate where a lack of System coverage also hinders first responders. In June 2013, an accidental fire caused by an artillery training exercise consumed some 85,018 acres west of Fairbanks. Evacuation of residents in the Chena River area was hampered because it is outside of the ALMR coverage footprint and conventional frequencies had to be utilized. The trunked ALMR System includes both regional and statewide incident command zones, allowing multiple agencies from multiple jurisdictions/disciplines to communicate utilizing assigned talkgroups, where they can coordinate their actions. Conventional radio operations don't have any such function. Limited communications such as this can hamper coordination of evacuations in an emergency situation such as this fast spreading fire, and put both citizens and first responders in danger.

In 2016, the use of ALMR during the McHugh Creek fire in July provided critical interoperability needed to coordinate both firefighting efforts and to evacuate citizens in danger zones. ALMR was also a key component for efforts during the Sunrise fire in May, the Tudor Road fire in May, the Tetlin fire in June and the Moose Creek fire in October, as well as a serious vehicle accident involving a tourist bus in the Copper River area in August.

In April of 2017, during the Seward Highway fire, sites at Hope and Portage carried the majority of the radio traffic with no busies.

Additionally, in June, a fire burning at milepost 308 of the Richardson highway threatened a subdivision 1/2 mile to the east, as well as structures 1/2 mile to the southwest. ALMR was essential to operations on the fire and was really the only radio system available in that area. The Canyon Creek site was heavily utilized by the Division of Forestry and by the Alaska State Troopers, who closed the road for most of the fire.

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

The State, as the primary infrastructure owner, continues to participate in critical discussions with leadership, stakeholders and participating agencies 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:<sup>5</sup>

- 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 Authorization Act of 1992, that the Federal Government foster the development of, and standards for, narrowband LMR systems operating in the 162 – 174 MHz band.<sup>6</sup>

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 800MHz.<sup>7</sup> 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.<sup>8</sup>

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;<sup>9</sup> 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.<sup>10</sup>

## 2.2 The Case for Interoperability

The safety of the general public is, and should always be, a high priority. Ultimately, the public expects their lives and property to be protected by all levels of government –

<sup>5</sup> Department of Homeland Security S&T Stakeholders Conference, June 2, 2008

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

<sup>7</sup> 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](http://www.fcc.gov/Bureaus/Wireless/News_Releases/1995/nrml5026.txt)

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

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

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

local, tribal, State, or Federal – without distinction as to who responds to their needs.<sup>11</sup> 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 also for improving public safety communications and interoperability<sup>12</sup> 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.”<sup>13</sup>

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.<sup>14</sup> 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.

Independent studies by the State of Alaska, over the past several years, have examined the ALMR System and validated its invaluable contributions to the public safety community in Alaska.

### 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

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

<sup>12</sup> 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.”

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

<sup>14</sup> 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.<sup>15</sup>

A successful strategy for improving interoperability must also be based on user needs.<sup>16</sup> 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 in Alaska now, nor may it ever be, but from both an interoperability and economics 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. The Operations Manager performs day-to-day management functions on behalf of the EC. The OMO provides guidance and oversight of the System in cooperation and coordination with the User Council (UC),<sup>17</sup> which is responsible for all operations and maintenance (O&M) decisions, and for fulfilling other duties and tasks as set out in the Cooperative Agreement.<sup>18</sup>

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

- 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 Alaska<sup>19</sup>
  - 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 EC<sup>20</sup>
- 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

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

<sup>16</sup> Department of Homeland Security S&T Stakeholders Conference, June 2, 2008

<sup>17</sup> ALMR Cooperative Agreement, Article 6, November 21, 2007

<sup>18</sup> ALMR Cooperative Agreement, Article 8, November 21, 2007

<sup>19</sup> Charter for the Alaska Land Mobile Radio Executive Council, January 28, 2008

<sup>20</sup> Alaska Land Mobile Radio Communications System User Council Charter, February 2, 2011

- stakeholders and with current and prospective ALMR users; and provides administrative support, reports, and recommendations to the UC and EC<sup>21</sup>
- System Management Office - 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 assurance<sup>22</sup>
  - 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.<sup>23</sup>
    - Circuit Usage - primarily SATS circuits, which are also utilized by ALMR
    - System Updates - expected to be released approximately every year through 2022, which is currently the projected System lifecycle. ALMR migrated to Motorola 7.13 software platform on August 6, 2013.

## 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 2<sup>24</sup>
  - Inconsistent encryption capabilities across different agencies (manual re-keying required additional dedicated equipment)
  - No data capabilities; paging available<sup>25</sup>
  - Limited redundancy; constrained by a single radio channel<sup>26</sup>
  - Inconsistent security applications/standards<sup>27</sup>
  - Constricted wide area coverage; when within range of a single repeater<sup>28</sup>
  - Non-compliant with federal mandates<sup>29</sup>

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<sup>21</sup> Operations Management Office (OMO) Customer Support Plan (CSP), August 12, 2016

<sup>22</sup> System Management Office (SMO) Customer Support Plan, December 17, 2015

<sup>23</sup> Service Level Agreement, November 19, 2015

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

<sup>25</sup> *ibid*

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

<sup>27</sup> *ibid*

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

<sup>29</sup> *ibid*

- ALMR System
  - Single system supporting interoperability at all levels
  - Complies with Homeland Security SAFECOM Continuum guidelines for Interoperability<sup>30</sup>
  - 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 state<sup>31</sup> 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 keys<sup>32</sup> (OTAR on existing trunk infrastructure)
  - Secure data with wide/personal/local area network capabilities<sup>33</sup>
  - Available redundancy; multiple communications channels exist<sup>34</sup>
  - Security certification for mission essential system carrying sensitive information whose degradation or loss is unacceptable
  - Availability of multiple equipment vendors<sup>35</sup>
  - Improved voice quality<sup>36</sup>
  - Enhanced functionality including data and other capabilities<sup>37</sup>

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.

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

<sup>31</sup> *ibid*

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

<sup>33</sup> *ibid*

<sup>34</sup> *ibid*

<sup>35</sup> P25 Systems Training Guide, Daniels Electronics, 2007

<sup>36</sup> *ibid*

<sup>37</sup> *ibid*

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 talkgroups.
- 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.<sup>38</sup>
- 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.

The System is tentatively schedule to receive an update to the current software platform, taking it from 7.13 to 7.17, sometime in the fall of 2018. Like any information technology (IT) system, the software and hardware updates for ALMR are critical to ensuring public safety first responders have the most current technology to perform their life-saving missions, as well as providing a solid security defense against the threats posed by malware, denial of service attacks and intrusion attempts that are so prevalent today.

## 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

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<sup>38</sup> 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

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 delays and the potential for injury or the loss of life. With ALMR, all 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 RF equipment. There are currently 83 ALMR sites, 12 Anchorage Wide Area Radio Network (AWARN) sites and 2 transportable communications systems, providing coverage to the population centers, major roadways and portions of the Marine Highway in Alaska. If the System had been completed, as originally planned, there would have been a total of 105 fixed ALMR sites, which includes 15 AWARN sites. Costs associated with the on-going support and maintenance of the System will continue to exist.

Currently, support and maintenance costs 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 Total Cost of Ownership (TCO) studies, an 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 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 and the interoperability provided 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.<sup>39</sup>

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.<sup>40</sup>

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.<sup>41</sup>

As previously noted, in CY2012/FY2013, with the divesture of RF equipment by USARAK, a Cost Share Working Group was formed made up of SOA, DOD, Federal Non-DOD and local representatives for the ALMR System. Led by the SOA Director of

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

<sup>40</sup> *ibid*

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

ETS, they were charged with coming up with an agreed upon method and approach for sharing costs of shared ALMR services. The decision of the group was that owners would continue to pay for the infrastructure they owned, and they would share common services based on the percentage of the infrastructure they own. Costs for shared services were split 88/12 with the SOA responsible for 88 percent based on the number of sites they owned and the DOD would be responsible for 12 percent. Non-infrastructure owners would pay based on negotiations with the SOA.<sup>42</sup>

The Executive Council was presented a briefing containing this information at their April 19, 2012, meeting and voted to move the approach and method forward to their respective represented agencies for consideration. At the November 29, 2012, meeting the approach and method were approved by the Executive Council for implementation starting in State FY14 and Federal FY13, effective beginning July 1, 2013.<sup>43</sup>

### 3.4 Economic Analysis

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.<sup>44</sup>

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.<sup>45</sup>

Comments from stakeholder interviews indicated:

- Building separate capabilities provided by ALMR would cost more and work much less effectively.<sup>46</sup>
- There are tremendous benefits with ALMR technology and the interoperability it affords them.<sup>47</sup>
- The system is better now and cheaper than the legacy system.<sup>48</sup>

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<sup>42</sup> Cost Share Working Group Closeout Briefing, given by Mr. Pat Shier, 4/19/2012.

<sup>43</sup> November 29, 2012 Executive Council Meeting Minutes, dated January 27, 2013.

<sup>44</sup> Tecolote ALMR Stakeholder Interview Letter, distributed by Mr. Del Smith via email, 10/8/2008 3:37 PM

<sup>45</sup> ALMR Economic Analysis participant stakeholder email, sent Wed 10/8/2008 3:37 PM

<sup>46</sup> ALMR Stakeholder Interview, USARAK G6, Colonel Darin Talkington, October 15, 2008

<sup>47</sup> ALMR Stakeholder Interview, 354 Communications Squadron, Eielson AFB, Major Amy Osterhout, October 16, 2008

- Interoperability levels achieved by the ALMR consortium model are not achievable with independent systems<sup>49</sup>.
- Independent systems could not be built or maintained with the same cost efficiencies generated by the consortium model<sup>50</sup>.
- 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 essential.<sup>51</sup>
- 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 type of equipment<sup>52</sup>.

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 obtained separately by any major stakeholder group when considering the estimated capital and sustainment costs.<sup>53</sup>

### 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.<sup>54</sup>

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.

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<sup>48</sup> 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)

<sup>49</sup> ALMR Stakeholder Interview, Alaska Department of Administration, Deputy Commissioner Rachael Petro with Commissioner Special Assistant Carol Beecher, November 13, 2008

<sup>50</sup> ALMR Stakeholder Interview, Alaska Department of Administration, Deputy Commissioner Rachael Petro with Commissioner Special Assistant Carol Beecher, November 13, 2008

<sup>51</sup> ALMR Stakeholder Interview, Traffic Department, Mr. Trygve Erickson, and Assistant City Manager, Ms. Heather Handyside, October 14, 2008

<sup>52</sup> ALMR Stakeholder Interview, Traffic Department, Mr. Trygve Erickson, and Assistant City Manager, Ms. Heather Handyside, October 14, 2008

<sup>53</sup> Alaska Land Mobile Radio (ALMR) Economic Analysis (EA) Executive Summary, 5 March 2009, Tecolote Research, Inc., Pages 7-8.

<sup>54</sup> Alaska Land Mobile Radio System Feasibility Analysis for DOD/SOA Separation, June 3, 2008

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 ALMR Feasibility Study

In 2011, the SOA Legislature requested an independent study<sup>55</sup> 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.<sup>56</sup>

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.<sup>57</sup>

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.

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

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<sup>55</sup> ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc.

<sup>56</sup> Ibid, page2

<sup>57</sup> Ibid, page 11

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 inoperable.<sup>58</sup>

### 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 collaborate and coordinate the build-out to be mutually beneficial for the infrastructure owners, while executing it in a fiscally and legally correct manner.

The DOD negotiated with the SOA to place DOD LMR infrastructure into SOA communications shelters and on towers on SOA real property, in exchange SOA 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 equipment while benefitting from the SOA 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 SOA, Federal and Municipal partners recognized the necessity for an interoperable communications system for all-hazard emergency response. The lack of interoperable communications had 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 ALMR 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 an LMR

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<sup>58</sup> ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc., page 13-18

infrastructure compliant with FCC narrowband requirements and is designed to enable the highest degree of interoperability as defined by the SAFECOM guidelines.<sup>59</sup>

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:
  - 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

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<sup>59</sup> ALMR Feasibility Study, State of Alaska, October 2011, World Wide Technology, Inc., page 2-3

- 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 capability<sup>60</sup>

## 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 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, talkgroup 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.

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<sup>60</sup> ALMR Self Assessment performed at <http://www.safecomprogram.gov/SAFECOM/selfassessment>, 12/2/2008

#### 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 complemented 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 the 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 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 have been encouraged to take advantage of the training previously funded by the SOA to train their personnel on subscriber use and protocols (changing channels, encryption, and 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/Political Risks

Separate studies were conducted in 2002<sup>61</sup> and 2004<sup>62</sup>, which identified critical risk factors. Although several of those factors have been mitigated, others still existed as was demonstrated by the 2012 divestiture of the USARAK LMR RF equipment.

The State Legislature has expressed their desire that local agencies participate in the ALMR shared costs to reduce the State's costs. It is important that the User Council and the Executive Council strive to communicate the benefits derived from interoperability between all agencies on ALMR to ensure the safety and security of the Alaskan public. If we are not successful with this endeavor, and local agencies are required to contribute at a level that is unacceptable to them, we risk losing their participation.

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<sup>61</sup> ALMR Communications Plan Overview, October 5, 2002

<sup>62</sup> ALMR Risk Assessment, 5 Star Team, December 2005

It is also imperative to maintain the ALMR partnership, not only with the infrastructure owners, but also with the local government and volunteer emergency services to ensure 24/7 continuity of operations during emergencies and day-to-day operations. We can only achieve this if there is adequate funding and an acceptable approach to a cost share.

Some examples of possible long-term funding solutions that would mitigate the impact on agencies participating in the cost share could be as simple as adding fees to driver's licenses, fines, fuel sales or phones, although these may present a minor political risk. However, these types of actions or similar measures are currently used by other states and merit consideration as the SOA Department of Administration and the Legislature seek to establish long-term funding strategies to support public safety communications in Alaska.

Currently, the shared contracted services of the Operations Management Office and the System Management Office are funded between the State and the DOD. For Master Site maintenance, 50 percent is funded by the State of Alaska and 50 percent is funded by DOD Alaska, or in other words, each is paying 100% of their owned Master Site Controller. Each is also responsible for developing a method to apportion the costs among the agencies they represent as ALMR Cooperative partners and for collecting funds to be applied to their respective portions of the contracts.

The State has a process in place by which funds from non-state agencies and organizations can be received and applied to ALMR shared costs.

It is critical that the ALMR partnering agencies maintain a long-term, adequately funded maintenance and operations strategy for ALMR. As previously experienced with the SATS, underfunding, poor maintenance practices and simple neglect could lead to degradation in the quality and level of performance of the System. This is not an acceptable risk to the Department of Defense and they have expressed their willingness to disband the partnership, if the System is not properly maintained. This would have disastrous consequences for all involved.

The State continues to look at possibilities for revenue generation that would directly support public safety and therefore ALMR, but has not implemented any at this time.

### **4.3 Technology Risks**

The expanded capabilities of technology like the ALMR system bring an increased cost. Radios that operate on a conventional system used to cost from \$500 to \$1,000, while radios on a trunked system could cost between \$2,000 and \$5,000. However, with the increase of the number of manufacturers offering P25-capable radios, costs for trunked radios have decreased. Currently, there are eight manufacturers who have completed an Acceptance Test Procedure (ATP) and have subscribers approved to operate on

ALMR, thus 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 five System software platforms.

In 2013, ALMR underwent a System software update and currently operates on the 7.13 platform. Currently, the DOD has requested their funding to move the System forward to the 7.17 platform in the fall of 2018 and the State funds have been appropriated by the legislature and Motorola has added the update to their schedule. The Municipality of Anchorage has included their funding request in the April 2018 bond.

Risks on the immediate horizon include the replacement of all Gold Elite consoles, which has already been addressed at several sites with the remaining sites due to be finished in the spring of 2018. Both the Quantars® and the XTS® and XTL® subscribers are now approaching their end of life and will also need to be replaced in the near term. A funding plan must be put in place now for the replacement of these units, before they are no longer supportable.

Long-term evolution (LTE), although originally touted as the “next best thing” has yet to be proven as the end all, be all for public safety first responders. The thought process at national levels, with regard to the use of LTE technology by first responders, now envisions it as augmenting LMR systems and not replacing them.

The 127 ALMR member agencies, like other first responder agencies nationwide currently use land mobile radio (LMR) networks for mission critical voice communications. ALMR public safety agencies see a future in which LMR systems and wireless broadband services will converge to complement each other, but they do not see the nationwide public safety broadband network (NPSBN), known as FirstNet, replacing their LMR systems. The agencies recognize LMR systems provide key mission-critical voice communications, which is currently not available through FirstNet and, at best, is years away from realization.

The NPSBN is expected to initially transmit data, video and other high-speed features, such as location information and streaming video, as well as non-mission critical voice. Public safety entities will continue to use LMR networks for their mission-critical voice needs. Along with video and data, FirstNet has plans to offer mission-critical voice services over the NPSBN, but only when voice over LTE functionalities meet or exceed first responders’ mission-critical needs. Unfortunately, FirstNet can’t predict the arrival of mission-critical voice, in part because the standards are still under development. The standards work will determine the functionality and performance requirements for

mission-critical Voice over Long-Term Evolution (VoLTE). FirstNet is actively involved in the standards-setting process and the industry, at large, is working to accelerate the development of this new worldwide standard.

ALMR members, such as the Department of Defense (DOD) and the Federal Non-DOD agencies, have indicated that LMR will remain their primary means of communication for the foreseeable future. Any plans to ultimately transition to FirstNet as their primary communications platform would require a minimum of five years planning on the part of the DOD. However, at this point in time, no decisions have been made to even utilize FirstNet to complement LMR communications.

ALMR, remains a critical requirement for Alaska public safety first responders.

#### 4.4 Other Risks

The lack of a long-term funding solution between the cooperative partners continues to be the greatest risk to the System and year after year, it has failed to be adequately addressed. Underfunding of the System in FY15 and again in FY16 severely hampered the ability to respond promptly to equipment failures. The IOMS contract re-negotiation in 2016 resolved some of the near-term maintenance cost issues, but the long-term outlook has not changed. The failure to adequately address future funding could cause the cooperative to fail, resulting in the dissolution of the ALMR System.

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 negatively impacting current interoperability between first responders.
  - Cost to implement and maintain separate communications systems
  - Loss of shared spectrum and lack of available spectrum to replace it
  - Loss of security monitoring
  - Inability to meet FCC mandate by some agencies.
  - Possible forfeiture of equipment purchased through federal grant funds
  - Loss of OEM certified system technologists and support for O&M
  - Lack of sufficient number of trained technicians for the State
  - Local communities expected to take the lead in any regionalized, large-scale event without the ability to immediately interoperate with responding SOA and Federal agencies
  - 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
- Loss of FirstNet/LTE infrastructure; failure to meet national directives
- 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
  - System reverts to break/fix status (**NOTE:** This has already occurred)
  - 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,<sup>63</sup> as well as lifecycle funding and maintenance of the systems required to meet those needs.

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

A viable long-term strategy for SOA funding of ALMR continues to be a major stumbling block. It is imperative the State address this issue and implement a solution with a solid funding stream tied directly to public safety communications. If the partnership were to dissolve, the cost of building a separate, comparable system would be far greater than the cost of sustained operations and maintenance funding of the current ALMR System.

The 2017 annual update of the Business Case validates previous decisions that the shared approach still remains the best solution to Alaska's public safety first responder interoperability needs. It also validates the operational and economic benefits for both agencies and stakeholders, and emphasizes the need for funding to fully sustain and maintain the ALMR System.

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<sup>63</sup> See <http://www.ncjrs.gov/pdffiles1/nij/211512.pdf>



# **Alaska Land Mobile Radio Communications System**

## **Operations Management Office 2017 Annual Information Assurance Audit Report of Findings**

January 17, 2018

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The Alaska Land Mobile Radio (ALMR) Communications System Operations Management Office (OMO) is tasked with day-to-day oversight of the operational System. As part of their responsibilities, they randomly audit the administration and controls of certain tasks required under the Information Assurance (IA) Program.

There are five areas of audit/inspection the OMO oversees:

- Physical Security – managed by State of Alaska (SOA) Enterprise Technology Services (ETS)
- System Management Media Backup Storage – managed by the System Management Office (SMO) and the ALMR Security Manager (SCM)
- System Log In Report – managed by the SMO and SCM
- Information Assurance Control Review – managed by the SCM
- System Vulnerability Assessment – managed by the SMO and SCM

## **1.0 Physical Security**

Physical security areas encompass the OMO, SMO, zone controller space and the routes to access any of these areas.

Physical security audits consist of unannounced penetration attempts by any visitor to bypass existing security policy/measures and gain access to a location with an opportunity to potentially cause harm to persons or property within the below described areas. The audit complies with established ALMR Facility Security Penetration Policy 200-2.

The OMO will conduct unannounced security penetration auditing at a minimum of once each calendar year at the SOA ETS facility located at 5900 E. Tudor Road, Anchorage, Alaska. Penetration attempts will focus on the ALMR OMO, SMO, and the Zone Controller areas of the facility, and the access routes to them.

**Date of Audit:** August 8

**Procedures:** Mr. Del Smith, Operations Manager, walked the perimeter of the of the ETS facility and tested all entry points seeking unannounced entry into the facility.

**Observations:** The South garage bay door was wide open with no one in sight. No apparent work activity was taking place at the time.

**Follow-up Actions:** Follow-up inspections will be performed over the next month with results reported.

**Date of Audit:** August 23

**Procedures:** Mr. Del Smith, Operations Manager, walked the perimeter of the of the ETS facility and tested all entry points seeking unannounced entry into the facility.

**Observations:** This was a follow-up to the August 8 failed inspection and observation/examination of all entry points found all to be secure.

**Follow-up Actions:** None

## **2.0 System Management Media Backup Storage**

Backups enable the rapid recovery of the ALMR System in the event of a disaster, either man-made or natural. Established controls and procedures minimize the impact to System users and ensure an expeditious return to operations. Backup media must be stored and protected in a manner which minimizes the risk of loss, damage, or destruction.

In accordance with ALMR policy, all backup media will be clearly labeled to ensure the media content can be quickly recognized. Back-up copies (or the original media) of the operating system and other critical software shall be stored in a fire-rated container and not located on site with the operational software. This material will be stored within a secure area that is restricted to authorized individuals only. Additionally, all backup media created from daily/weekly backup procedures will be stored in an offsite location.

All backup media for the South Zone Controller is stored at Department of Public Safety (DPS), 5700 E. Tudor Road, in Anchorage and for the North Zone Controller at the Fairbanks Police Department, 911 E. Cushman Street, in Fairbanks.

The OMO conducts unannounced, random monthly audits of the backup media storage facility. Due to travel funding issues, audits of the North Zone Controller backup storage are only conducted when OMO staff is in the Fairbanks area for other activities.

2.1 Monthly Backup. Results of the monthly audits for the System software/media backups are as follows:

- **Date of Audit:** January 23  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** January 19  
**Log Entry:** January 23  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** February 21  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** February 9  
**Log Entry:** February 17  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe

was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.

**Corrective Action:** None

- **Date of Audit:** March 22  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** March 17  
**Log Entry:** March 22  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** April 24  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** April 20  
**Log Entry:** April 21  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** May 17  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** May 11  
**Log Entry:** May 16  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** June 14  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** June 8  
**Log Entry:** June 14  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None

- **Date of Audit:** July 12  
**Location:** 5700 E Tudor Road  
**Weekly KMF backup CD:** July 6  
**Log Entry:** July 12  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** August 21  
**Location:** 5900 E Tudor Road  
**Weekly KMF backup CD:** August 17  
**Log Entry:** August 21  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** September 27  
**Location:** 5900 E Tudor Road  
**Weekly KMF backup CD:** September 14  
**Log Entry:** September 19  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** October 26  
**Location:** 5900 E Tudor Road  
**Weekly KMF backup CD:** October 19  
**Log Entry:** October 23  
**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.  
**Corrective Action:** None
- **Date of Audit:** November 28  
**Location:** 5900 E Tudor Road  
**Weekly KMF backup CD:** November 9

**Log Entry:** November 17

**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.

**Corrective Action:** None

- **Date of Audit:** December 21

**Location:** 5900 E. Tudor Road

**Weekly KMF backup CD:** December 14

**Log Entry:** December 19

**Findings:** No issues were raised with access to the Alaska State Troopers (AST) building; exterior door was secure upon arrival, access card worked, and the safe was in an accessible location. The storage container is located behind a gated/locked enclosure on the lower level.

**Corrective Action:** None

2.2 Annual Test. Per the System Backup and Recovery Procedure 400-5, paragraph 8, the procedures for the ALMR System backup and recovery shall be tested annually by the SMO, and all results of the test shall be recorded and provided to the Operations Manager.

**NOTE:** Real-world occurrences of, and SMO responses to, System failures shall meet the annual test requirement.

**Date of Incident:** March 2

**Details:** 1638L hours, Juniper Firewall failed. (Motorola Case 25296870, ALMR WO 48094)

**Findings:** On March 2, 2017 at 1638L hours, the Juniper Firewall that supports the CEN network of the ASTRO 25 system failed. This failure impacted the Over-the-Air-Rekeying (OTAR) system that supports the provision of encryption keys to customer radios in the field and also supports the Genesis data collection system.

This issue began when Mr. Mark Jenks, Northern Zone System Technologist, was working on the firewall to allow new MCC 7500 consoles to be added to Over-the-Ethernet-Keying (OTEK) encryption key system for automatic updates of encryption keys. While Mr. Jenks was making changes, a request to reboot the Juniper Firewall hardware was sent and the hardware rebooted, then failed while powering back up.

Catastrophic event planning began immediately. Initial planning took place as Mr. Jenks and Mr. Travis Conant, System Manager, discussed what actions needed to occur. As agreed upon, Mr. Conant proceeded to the ALMR parts warehouse to check if there were any spares on hand. No spare parts were found in storage. Mr. Jenks contacted Motorola for any assistance they could provide remotely. Motorola Technical Support was unable to provide any assistance to get the firewall to

respond, but ordered an advanced replacement part to be expedited via air shipment.

Impact of the loss of OTAR, OTEK and the Genesis system did not impact the majority of the communications processes, just the encrypted portion. However, ALMR lost data for all the radio activity in the Genesis system while the firewall was being replaced.

The hardware failure was not the result of a cyberattack. No data breach occurred. In this event media disposal was not necessary and replaced equipment was sanitized before decommissioning IAW ALMR and DOD policies and procedures.

**Results:** The System Management Office is working on getting a spare for the Juniper firewalls.

**NOTE:** The results are also listed in the annual System Recovery Assessment and Backup-Recovery Report dated December 7, 2017.

### **3.0 System Log In Report**

To ensure the SMO observes and reports on the established control for the Department of Defense Information Assurance Certification and Accreditation Process (DIACAP) Authority to Operate, the OMO performs unannounced, random monthly audit inspections of the System Login Report though out the calendar year.

Each user is permitted to attempt to log in three times prior to being locked out of the System. System user passwords are changed, at a minimum, every 90 days.

- **Date of Audit:** January 25  
**Inspection Period:** January 15 - 21  
**Findings:** There were four instances of failed login attempts during the period.
  - January 18: Zone 2, 12:43:31 and 12:43:26 p.m., astrait had two failed attempts
  - January 19: Zone 2, 5:47:38 p.m., 15:59-SOC case 25234450, tconant had two failed attempts**Corrective Action:** None; there were no issues resulting from the login attempts by astrait and tconant.
  
- **Date of Audit:** February 22  
**Inspection Period:** February 5 - 11  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
  
- **Date of Audit:** March 29  
**Inspection Period:** March 19 - 25  
**Findings:** There were no instances of failed login attempts during the period.

**Corrective Action:** None

- **Date of Audit:** April 25  
**Inspection Period:** April 16 - 22  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** May 22  
**Inspection Period:** May 14 - 20  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** June 22  
**Inspection Period:** June 11 - 17  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** July 25  
**Inspection Period:** July 2 - 8  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** August 24  
**Inspection Period:** August 13 - 19  
**Findings:** There were multiple instances of failed login attempts during the period.
  - August 16: Zone 2. 5:18 a.m., astrait - "Motorola" & "Q" accounts are not established in the system and failed user login. Individual explained that he thought he was making connection to a different device and entered the wrong user account. No issue.**Corrective Action:** None
- **Date of Audit:** September 27  
**Inspection Period:** September 10 - 16  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** October 26  
**Inspection Period:** October 15 - 21  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None
- **Date of Audit:** November 28  
**Inspection Period:** November 5 - 11  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None

- **Date of Audit:** December 21  
**Inspection Period:** December 10 - 16  
**Findings:** There were no instances of failed login attempts during the period.  
**Corrective Action:** None

#### **4.0 Security Control Reviews**

In accordance with the Security Control Review Procedure 200-6, a Department of Defense (DOD) Risk Management Framework (RMF) Annual Review shall be conducted which documents the findings of an assessment of a subset of implemented security controls reflective of the security categorization of the System and any threats to the System.

At the conclusion of Security Control Review activities, the Security Control Review team will provide an informal briefing of the results of the Security Control Review to the Operations Manager and the System Manager.

- **Date of Briefing:** December 20  
**Findings:** For 2016 and again today for 2017, a conference call was held to go over the annual security control reviews for ALMR. As discussed during the call, the phase out of DIACAP and the DOD implementation of RMF have significantly changed the processes for annual control reviews. During 2015 under RMF, all of the controls and all of the Initial Phase (IP) controls were assessed and associated Control Correlation Identifiers (CCIs) were reviewed. The results of those were uploaded into the ALMR RMF eMASS instance and resulted in the award of a one year Authorization to Operate (ATO) with Conditions. The conditions being assessed were the remaining Final Phase (FP) controls and CCIs during 2016 and then submitting for a full ATO.

During 2016, all of the IP controls and CCIs completed in 2015 were reviewed and all of the FP controls and CCIs were formally assessed. One hundred percent of those assessment results were validated within eMASS by Mr. Ranny Gaines (assigned by the government as the Security Control Validator for ALMR. Once the Authorizing Official and his Designated Representative (AODR) have assigned roles in eMASS, the request in eMASS for the full ATO will be formally submitted.

Moving forward, propose following the approach used by the Air Force implementation of RMF. Under that, the RMF process requires 100 percent of security controls reviewed on an annual basis and re-assessing 100 percent of the Category I (red) controls, 50 percent of the Category II (yellow) controls, and 25 percent of the Category III (white) controls. The color indicators come from the coloring used within eMASS to distinguish categorization and severity of resulting vulnerabilities. This review is typically conducted during the annual FISMA review which are normally completed near the end of the first quarter each year to facilitate upward DOD reporting. Each year the yellow and white control assessments will

rotate to ensure that over a three year period every control and CCI is re-assessed. Will work with the technical team to identify which controls/CCIs will be assessed each year. This is also part of the RMF continuous monitoring process.

**Follow up actions:** Security Manager will check to see if a FISMA review will be required for 2018 due to the recent ATO award. **NOTE:** On 1/17/2018, the Security Manager confirmed, based on the recent completion of the Authorization to Operate (ATO) for ALMR, it will not require a FISMA Review for 2018.

The annual FISMA review requires the process identified above as well as documenting the annual review and testing of the ALMR Contingency Plan. The testing can be a table top exercise or a summation of how the ALMR key personnel responded to a real world contingency. A memo signed by the PM documents that the plan was reviewed and tested and uploaded into eMASS as a supporting artifact.

## 5.0 System Vulnerability Assessment

In accordance with the System Vulnerability Management Procedure 400-6, a network Vulnerability Assessment shall be performed by the Security Manager at least quarterly. Assessment results must provide Information Assurance Vulnerability Alert (IAVA) compliant assessments.

- **Date of Audit:** April 5 (covers the period of January – March)  
**Finding 1:** There is no fire suppression system installed within the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008 POAM - Contract CRS0425.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.  
  
**Finding 2:** There is no humidity control system installed at the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008 POAM - Contract CRS0475.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.
- **Date of Audit:** July 10 (covers the period of April – June)  
**Finding 1:** There is no fire suppression system installed within the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008, POAM - Contract CRS0425.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.  
  
**Finding 2:** There is no humidity control system installed at the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008 POAM - Contract CRS0475.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.

- **Date of Audit:** October 3 (covers the period July – September)  
**Finding 1:** There is no fire suppression system installed within the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008, POAM - Contract CRS0425.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.

**Finding 2:** There is no humidity control system installed at the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008 POAM - Contract CRS0475.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.

- **Date of Audit:** (covers October – December)  
**Finding 1:** There is no fire suppression system installed within the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008, POAM - Contract CRS0425.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.

**Finding 2:** There is no humidity control system installed at the Tudor Road facility.  
**NOTE:** Initial request taken from 14 May 2008 POAM - Contract CRS0475.  
**Recommendation:** SOA waived as an acceptable risk due to cost. Item will remain in report for historical purposes.

## **6.0 Conclusion**

Based on each of the audit areas and corrective actions taken, the following determinations are made:

**Finding:** SOA ETS, in coordination with the Department of Transportation and Public Facilities, should plan and budget for the installation of a fire suppression system and a humidity control system within the Tudor Road facility. Loss of the Tudor Master Site would be catastrophic for ALMR.