STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

PERFORMANCE AUDIT REPORT
NOVEMBER 2014

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To The Fiscal Committee Of The General Court:

We conducted a performance audit of statewide radio interoperability to address the recommendation made to you by the joint Legislative Performance Audit and Oversight Committee. We conducted the audit in accordance with generally accepted government auditing standards. Those standards require we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions. The evidence we obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The purpose of the audit was to determine how efficient and effective the Department of Safety was in achieving radio interoperability among New Hampshire's public safety agencies, including local and county governments, as of State fiscal year 2014.

Office of Legislative Budget Assistant

November 2014

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ABBREVIATIONS AND GLOSSARY OF TERMS

2010 Audit	The LBA's October 2010 Division Of State Police Field Operations Bureau Performance Audit
ACEPS	Advisory Council On Emergency Preparedness And Security
Base Station	Also referred to as a console; a radio transceiver installed in a fixed facility (e.g., building)
BEM	Bureau Of Emergency Management
CMU	Communications Maintenance Unit
COML	Communications Unit Leader
COOP	Continuity Of Operations Plan
DESC	Division Of Emergency Services And Communications
DOS	Department Of Safety
DSP	Division Of State Police
EMS	Emergency Medical Services
EMSNet	Emergency Medical Services Network
FireNet	Fire Service Network
FirstNet	First Responder Network Authority
ICS	Incident Command System
IPOC	Incident Planning And Operations Center
IT	Information Technology
LawNet	Law Enforcement Network
Microwave	Electromagnetic radiation with frequencies between 300 Megahertz and 300 Gigahertz – used to relay radio signals and data
Mobile Radio	Also referred to as mobile subscriber unit, mobile device, or mobile unit: a

	radio transceiver installed in a vehicle
NHH	New Hampshire Hospital
NIMS	National Incident Management System
NPSBN	National Public Safety Broadband Network
Plan	The Statewide Fire And All Hazards Mobilization Plan
Portable Radio	A hand-held radio transceiver
Responder	Personnel, such as fire, law enforcement, and emergency medical services personnel, deploying to events and incidents
RIC	First Responder Radio Interoperability Committee
SCIP	The Statewide Communications Interoperability Plan
SFY	State Fiscal Year
SIEAC	Statewide Interoperability Executive Advisory Committee
SIEC	Statewide Interoperability Executive Committee
SJD	Supplemental Job Description
SOP	Standard Operating Procedure
Strategy	The New Hampshire 2014-2016 State Homeland Security Strategy
SWIC	Statewide Interoperability Coordinator
UHF	Ultra-High Frequency
VHF	Very-High Frequency

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EXECUTIVE SUMMARY

The State lacked a cohesive radio interoperability program to support responses to routine events and disasters. Responders, such as fire, law enforcement, and emergency medical services personnel, must be able to communicate across disciplines and jurisdictions to effectively protect the public. Interoperable communications underpin the State homeland security strategy and an effective incident command system. The State, primarily through the Department of Safety (DOS), undertook several interoperability projects that have largely concluded, and their effects are beginning to devolve. Since 1996, the State invested over $65 million in interoperability, almost $48 million of which were federal grants with the remainder being State funds. Governance, technology, standard operating procedures, training and exercises, and usage have never matured to create a viable statewide interoperable communications system. As of June 2014, the State demonstrated early or intermediate implementation for each of the five elements of the interoperability continuum as we depict in Table 1.

Table 1

Interoperability Continuum And Maturity Model

		Minimal Level	Interoperability Continuum				Optimal Level
Element	**Measure**		**Early Implementation**	**Intermediate Implementation**	**Established Implementation**	**Advanced Implementation**	
Governance	**The formality and level of participation in statewide governance to address common interoperability interests.**	**Limited leadership, planning, and collaboration among areas with minimal investment in the sustainability of systems and documentation**	**-Individual agencies working independently -No strategic plan to guide goals and funding**	-Informal coordination between agencies -Strategic planning and budgeting beginning	-Key multi-discipline staff collaboration on a regular basis -Formal agreements on role of governance body -Strategic plan agreed upon -Sustainable funding	-Statewide committee working within a statewide communications interoperability plan framework -Governance body expanding membership -Strategic plan regularly updated	**High degree of leadership, planning, and collaboration among areas with commitment to and investment in sustainability of systems and documentation**
Standard Operating Procedure (SOP)	**The level of adequacy, participation in developing, and consistency of formalized SOPs to address common interoperability interests.**		**-Individual agency SOPs, not shared -Elements of National Incident Management System (NIMS) Incident Command System (ICS) included -No area-wide SOPs**	-Joint SOPs for planned events, steps to implement -Joint SOPs for emergencies -Fully NIMS ICS compliant	-Regional set of NIMS ICS-compliant communications SOPs -Multi-disciplinary, multi-agency, multi-hazard -Qualified use during exercises or responses	-NIMS ICS-compliant integrated statewide SOPs -Regular review -Successful use during responses and exercises	
Technology	**Technology standards and equipment are utilized to effectively provide interoperable communications statewide.**		**-Swap radios -Cache of shared, standby radios -Interconnect via gateways**	**Shared channels**	Proprietary shared system	Standards-based shared system	
Training and Exercises	**Availability and regularity of communications interoperability training and exercise programs statewide.**		**-General, initial orientation on equipment -No formal training and exercise program**	**-Single agency and discipline tabletop exercises -Single agency training -Irregular schedule**	-Multi-agency, multi-discipline table top exercises, key field and support staff -Multi-agency training -Equipment and SOPs -Regular schedule	-Comprehensive statewide training and exercises -Multi-agency, multi-discipline -Equipment and SOPs -Regular schedule	
Usage	**Ease and regularity of using interagency communications technologies and procedures for all types of events, including day-to-day, task force, and mutual aid operations.**		**-Planned events only -Seldom used -Difficulties encountered when used**	-Localized emergency incidents -Intra-jurisdictional -Limited use, few difficulties when used	-Regional incident management -Multi-jurisdictional, multi-discipline -Routinely, easily used	-Statewide, multi-agency, multi-discipline -Seamless, regular day-to-day and out-of-the-ordinary event use -On demand, real time -As authorized	

Source: LBA analysis.

The State did not have a viable, integrated strategic radio interoperability plan to provide clear goals and objectives defining the desired end-state for interoperability and how the State would

achieve those goals and objectives. While leading past radio interoperability projects, in 2010 the DOS surrendered this role and others, including county sheriff's offices, fire mutual aid districts, and local agencies, took the lead in addressing radio interoperability within their jurisdictions. Many have achieved a sufficient degree of interoperability to meet their specific needs. This increasing decentralization of radio interoperability efforts has contributed to the devolution of interoperability statewide. In 1997, responders were reportedly unable to talk unit-to-unit between jurisdictions during incidents. In 2014, responders were more likely to have the hardware to permit unit-to-unit communications between jurisdictions and disciplines, but might lack the standard operating procedures, awareness, training, and experience to communicate effectively. Further, as many as 70 percent of responders may need to replace 50 percent or more of their mobile and portable radios in the next five years. Without concerted effort and consensus technical standards, technological interoperability may devolve as responder agencies make independent choices on replacement hardware.

The DOS recently undertook efforts to reinvigorate statewide radio interoperability planning, hiring a part-time Statewide Interoperability Coordinator (SWIC) in November 2013 to focus on improving and coordinating interoperable communications. However, the DOS was inhibited in a number of areas, such as the loss of key staff, limits on statutory authority to form needed governance structures, and inconsistent funding.

Priority setting also inhibited interoperability. In our October 2010 *Division of State Police, Field Operations Bureau* performance audit (*2010 Audit*), we found issues with interoperability and concluded the lack of a plan made it unclear what priority interoperability received. We recommended establishing standards, assigning an interoperability coordinator, and working with the Legislature to statutorily establish the interoperability function within the DOS. The Division of State Police concurred, but the DOS never sought legislative changes or established related standards. Instead, the DOS planned to use $2 million in State capital funds to improve internal radio system operability, having little to no effect on statewide interoperability. The DOS also pursued the development of a proposed federal wireless broadband data system that would ultimately cost the State a significant amount of money to build and maintain, may not be implemented for at least another decade, and for which there was no clearly defined need. Additionally, since May 2013, statute provided the DOS authority to regulate State agency radio operations, an important element of statewide interoperability because at least nine State agencies operated 17 distinct, independent, and largely unintegrated radio networks, and maintained 20 full- and part-time dispatch centers statewide during State fiscal year 2014. The DOS had not acted on its authority through June 2014.

Finally, the DOS lacked sufficient management controls over its internal radio operations and elements of interoperability for which it had authority or responsibility. The DOS had no internal radio program or organizational structure to support interoperability planning statewide or control internal radio assets. We found weak or nonexistent controls related to delegation of authority and responsibility, information technology systems underpinning radio operations, maintenance management, property accountability, and physical security. We also found statutory noncompliance in several areas and several *2010 Audit* recommendations related to radio interoperability and supporting functions were not fully resolved.

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RECOMMENDATION SUMMARY

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
1	15	Yes	The Legislature and Governor consider creating a statewide communications interoperability governance structure by creating an inter-jurisdictional, inter-disciplinary governance body and providing it with appropriate oversight responsibilities and authority. Department of Safety (DOS) management coordinate with the Office of Governor and the Advisory Council on Emergency Preparedness and Security to discontinue interoperability-related committees when the statewide interoperability governance body is established. Should a governance body not be formed, we recommend the Legislature consider providing the DOS oversight responsibilities and necessary authority.	Concur In Part
2	20	No	The statewide communications interoperability governance body, or DOS management should a body not be formed, create a strategic statewide interoperable communications plan with specific goals, a vision, performance measures, and an evaluation of the need for a permanent funding mechanism. The statewide communications interoperability governance body, or DOS management should a body not be formed, evaluate whether the State should pursue development of the National Public Safety Broadband Network and report on its conclusions and recommendations to the Legislature for its consideration. DOS management reconsider its approach to expending the $2 million in capital funds allocated to improve Division of State Police (DSP) radio *operability* and consider how these funds could be used to improve statewide *interoperability*.	Concur In Part

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
3	26	No	DOS management ensure statewide incident command system administrative rules include interoperable communications requirements, develop policy and procedure to ensure interagency agreements are updated regularly, and ensure communications procedures are National Incident Management System (NIMS) compliant.	Concur
4	30	Yes	The Legislature consider amending statute to require the DOS to report the results of its analysis of radio interoperability capabilities and assets, provide a specific date by when the analysis must be complete, and require the statewide communications interoperability governance body, or DOS management should a body not be formed, seek legislative approval for a statewide strategy. DOS management comply with State law and ascertain what means exists for rapid and efficient public safety communications, consider supplementing or integrating these communications resources, and evaluate the possibility of a multi-purpose system for general government use. DOS management formalize recommendations regarding such communications systems and provide its report to the statewide communications interoperability governance body, or the appropriate Legislative oversight committee should a governance body not be formed, by May 2015. The statewide communications interoperability governance body, or DOS management should a body not be formed, establish a clear vision for the development and integration of networks in New Hampshire, obtain consensus from the responder community, and seek legislative approval to pursue the agreed upon vision and strategy.	Concur
5	35	Yes	DOS management comply with State law and adopt comprehensive and uniform processes governing State agency radio services, develop a strategic plan, formalize a governance body, ensure the State agency radio network is compatible with the statewide interoperable infrastructure, consolidate	Do Not Concur

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
5 (Continued)	35	Yes	State radio networks and supporting functions, and routinely report to the Legislature progress on consolidation. If clarification does not leave the DOS with authority to regulate State agency telecommunications, we recommend the Legislature consider assigning a State agency the responsibility for consolidating State agency radio operations.	Do Not Concur
6	39	No	DOS management improve interoperability training by developing a regular training program focused on radio interoperability and use of DOS-supplied hardware; cooperating with Police Standards and Training Council to include radio and interoperable communications training in the Police Academy curriculum; training communications unit leaders statewide; and publicizing available training statewide. DSP management develop, conduct, and document regular training for State Troopers on use of radio equipment and interoperable communications.	Concur
7	42	No	DOS management develop a cohesive exercise system; regularly schedule interoperability exercises; increase coordination with local and regional entities; maintain a statewide exercise calendar; expand participation in exercises; include interoperable equipment and SOPs in exercises; and develop and institute policy and procedure to help ensure after action reviews are conducted for multi-jurisdictional, multi-disciplinary exercises or events.	Concur
8	46	No	DOS management improve statewide usage of interoperability assets by providing training on internal interoperability policies and procedures; providing training to other State, local, and regional agencies on the use of interoperability assets; monitoring and evaluating use and usefulness of interoperability resources; ensuring responders statewide are aware of available resources, and the procedures for requesting them; and exploring opportunities to provide interoperable radio	Concur

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
8 (Continued)		No	resources which allow for interoperability over distances greater than those currently available.	Concur
9	51	No	DOS management comply with statute and create and maintain a comprehensive records management program; develop a strategic plan; develop a strategic human resources management plan and written succession plan; conduct an enterprise-wide risk assessment and implement a risk management plan; establish an information security policy; establish a system of controls to promptly resolve prior audit findings; and establish fee-for-service agreements with supported agencies. DOS management propose legislation to establish a reliable funding mechanism.	Concur In Part
10	58	No	DOS management comply with statute and propose legislation to the General Court, and seek Governor and Council approval, for organizational changes; promulgate administrative rules; formally delegate authority; update, clarify, and formalize supplemental job descriptions; consolidate responsibilities; simplify organizational structures; and ensure external stakeholders are aware of the assignment responsibilities and point-of-contact.	Concur In Part
11	62	No	DOS management assign a single existing division responsibility for operating and maintaining a consolidated radio network; formalize a governance body; provide the responsible division necessary authority to consolidate radio assets, networks, maintenance operations, and dispatch centers; divest the State of unnecessary infrastructure; and require routine progress reporting.	Concur In Part
12	65	No	DOS management comply with State law and promulgate administrative rules for a statewide incident command system (ICS) to be used in responding to any natural or man-made cause that requires emergency management by multiple agencies or departments. DSP management implement NIMS-compliant ICS policies and procedures and train regularly.	Concur

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
13	67	No	DOS management create policies and procedures governing statewide channel matrices; adopt related administrative rules; systematically collect information regarding changes in radio infrastructure statewide; and inform public safety agencies of programming decisions.	Concur
14	69	No	DOS management formalize information technology (IT) controls to protect the DSP radio network, conduct a comprehensive risk assessment, create a complete topology and inventory of all network devices, develop comprehensive IT policies and procedures, include the DSP radio network's IT systems within the Department-wide IT control structure, and scan the DSP radio network with DSP-owned software to detect malware and install anti-virus software. DOS management fully resolve prior audit findings related to information technology and information security controls.	Concur
15	72	No	DOS management improve physical security of radio network infrastructure by identifying all radio network infrastructure and assets, conducting a comprehensive risk assessment, developing a plan to improve security and control access, monitoring and protecting all sites supporting the radio network from physical security threats, and coordinating with partners to upgrade security at non-DOS owned sites.	Concur
16	74	No	DOS management establish a cohesive and efficient maintenance program by developing preventative maintenance policies, procedures, and schedules; conducting preventative maintenance site visits; documenting prioritized tasks, checklists, and maintenance work undertaken; establishing record retention requirements; developing procedures and training to extract and analyze fault data; inventorying all radio network assets; establishing a life-cycle program for radio equipment and infrastructure; and formalizing interagency agreements with all supported and supporting agencies.	Concur

Observation Number	Page	Legislative Action Required?	Recommendation	Agency Response
17	77	No	DOS management finalize continuity of operations plans (COOP), including COOPs for radio networks; regularly training staff; periodically testing COOPs; evaluating test results to identify deficiencies; and revising COOPs as needed.	Concur
18	78	No	DOS management improve performance measurement and evaluation by developing a formal strategic plan that includes division, bureau, and unit missions, goals, and objectives; ensuring subdivisions develop comprehensive operational plans detailing how they plan to meet goals and objectives; implementing a performance measurement system; monitoring performance and change strategies, plans, and practices to reflect actual performance; and incorporating internal radio operations and interoperability efforts throughout.	Concur
19	79	No	DOS management strengthen controls to better account for and deploy radio communications hardware by establishing written policies and procedures for tracking and issuing hardware, conducting an internal audit to inventory hardware, establishing protocols to define business needs prior to purchasing radio communications hardware, centralizing storage functions to a single location, issuing functional devices and disposing of surplus inoperative inventory, and better securing storage areas containing physical assets.	Concur
20	81	No	DOS management ensure interoperability-related committees comply with statutory requirements, including those related to statements of financial interest, the Right-to-Know law, and appointment by the Governor; formalize each committee's purpose, roles, and membership; and rebalance State and political subdivision representation to reflect the responder community.	Concur

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Radio interoperability permits public safety officials, such as fire, law enforcement, and emergency medical responders, to communicate easily across disciplines, across jurisdictions, and as needed during routine operations or emergencies. Natural and man-made disasters pose significant risks to the citizens of New Hampshire and since emergencies and disasters do not respect municipal, state, or national borders, a functional interoperable radio communications system is important to allow public safety officials to seamlessly communicate. The safety of the public and responders can be compromised when public safety officials cannot communicate with one another.

Though the State does not define interoperability, a federally-promulgated interoperability continuum includes five elements essential for achieving effective interoperable communications: 1) governance, 2) standard operating procedures (SOP), 3) technology, 4) training and exercises, and 5) usage. Continuum elements, with sub-elements and brief descriptions to facilitate interoperability capability assessment are depicted in Table 2.

Table 2

Interoperability Capability Assessment Framework

Continuum Elements	Sub-elements	Descriptions
Governance	Leadership	Level of government leaders' awareness, support, and advocacy
	Decision-making Groups	Presence and scope of inter-agency partnerships
	Agreements	Range of formal and informal interoperable communications agreements and scope of agencies involved
	Funding	Level of funding available and degree funding is dedicated
	Strategic Planning	Presence and scope of strategic planning processes
SOPs	Policies, Practices, and Procedures	Range of formal and informal interoperable communications policies, practices, and procedures, (e.g., National Incident Management System (NIMS))
Technology	System Functionality	Range of fixed, mobile, and deployable systems and equipment, and associated voice, video, and data capabilities
	System Performance	Levels of system performance, including availability (e.g., coverage, capacity), reliability (e.g., quality of service), and scalability
	Interoperability	Range of ad hoc to permanent interoperable communications solutions
	Continuity of Communications	Range of primary and backup infrastructure, systems, and facilities, and associated levels of survivability, security, and redundancy
Training and Exercises	Training	Scope and frequency of training and availability of sufficiently trained personnel
	Exercises	Scope and frequency of exercises
Usage	Frequency of Use and Familiarity	Level of familiarity, proficiency, and frequency with which interoperable communications solutions are activated and used

Source: LBA analysis of U.S. Department of Homeland Security Assessment Framework.

The continuum is intended to help public safety practitioners and policymakers plan for interoperable communications. Continuum elements underpin the definition of an interoperable communications system. An effective interoperable communications system is more than just a radio or a radio network. Effectiveness depends not only upon hardware, but also upon often-ignored management controls that help ensure hardware is compatible, the network is reliable and maintained, operators know how to use the technology provided, and use is limited to authorized personnel and circumstances. Effective interoperable communications are integral to a functional NIMS Incident Command System (ICS) and effectively implementing the *New Hampshire 2014–2016 State Homeland Security Strategy* (*Strategy*). Preparedness activities, including radio interoperability, should be coordinated among all appropriate agencies and organizations statewide and preparedness can be achieved and maintained through a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action.

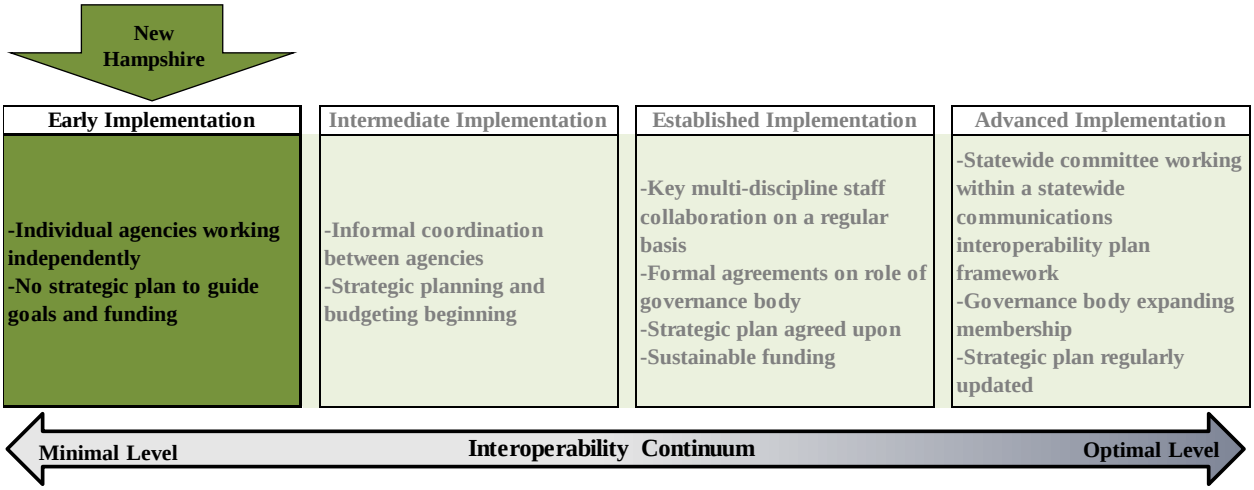
GOVERNANCE

Statewide governance is a system that can help decision makers communicate with stakeholders, meet stakeholder requirements, make informed decisions, obtain consensus, plan, and coordinate efforts, policies, and procedures. Collaborative governance in a multi-jurisdictional environment is essential for advancing interoperability statewide. Coordinated statewide governance is not synonymous with State governance, as the State cannot control political subdivisions, it can only coordinate with them to achieve common ends.

We found statewide interoperability governance was at a level of early implementation as of SFY 2014.

Table 3

Statewide Governance Assessment



Source: LBA analysis.

Governance Body

A formalized governance body provides responders a single venue to coordinate and make decisions affecting statewide interoperability. Statewide interoperability problems cannot be solved by a single county, municipality, department, discipline, or State agency. Such a body can provide a forum for stakeholders from all levels of government and non-governmental agencies with a role as a responder to collaborate, voice concerns, and exchange information openly and transparently to address interoperability issues. A governance body can also help establish SOPs and technology standards, organize regional and statewide training, facilitate exercises, and formalize working relationships with other states, federal agencies, and neighboring countries.

Observation No. 1

Improve Statewide Interoperability Governance

The State lacked a coherent means for responders to communicate seamlessly across agencies and disciplines. While the State operated a centralized Enhanced 911 system to provide emergency calls entry into the response system, radio networks used by responders were decentralized and fragmented. The State did not have a formal inter-agency governance structure responsible for establishing coordinated, efficient, and effective interoperable radio communications. No formal authority charged the Department of Safety (DOS) or any other entity with coordinating or developing a formal governance system to ensure responders can seamlessly communicate with each other when needed and authorized. The DOS assumed a leadership role over interoperable efforts but was unsuccessful in establishing a governance structure to comprehensively address interoperability statewide. Efforts were ad-hoc, inconsistent, and did not produce a system providing leadership or direction to, or fostering cooperation among, the State's responder communities. Consequently, there was a patchwork of formal, informal, and quid pro quo agreements, as well as uncoordinated interoperability governance bodies, consortia, and voluntary associations among some responders. In effect, interoperability was solved or was being solved in several jurisdictions, but only for those jurisdictions.

A formalized governance system can help ensure interoperable communications systems are operational and well-maintained, and provide reliable inter-disciplinary, inter-agency communications, even in the event of an emergency or large-scale disaster. A key component of a formal governance system is a statewide governing body responsible for guiding interoperability efforts and making major policy decisions affecting responder radio communications and operations. This body must be transparent and inclusive, respect the input of all stakeholders, and operate in a collaborative manner. A top-down or discipline-centric approach favoring a particular responder group can be counterproductive.

The statewide governing body should have a charter clearly defining its purpose and scope of work and be endorsed by the Legislature and the Governor. Bylaws should specify how the body will function, make decisions, vote, and assign roles and responsibilities to members. Further, the body should meet regularly and have the authority to establish sub-committees, develop SOPs, create training standards, and facilitate multi-discipline, multi-jurisdictional exercises to help

ensure SOPs function as intended. Finally, the body should establish and disseminate technology standards for communications equipment to ensure different radio networks and radios are compatible with one another.

The State did not have any formal committees sufficiently empowered to effect statewide interoperability. During the early- and mid-2000s, the DOS informally established at least three committees to address interoperability issues: 1) the Homeland Security Grant Review Committee, 2) the First Responder Radio Interoperability Committee, and 3) the Statewide Interoperability Executive Advisory Committee. The need for these committees to continue was recognized by Executive Order in 2011. However, they lacked charters defining their purposes, meeting minutes detailing their activities, and formal, stable membership. Over time, the committees prioritized federal grant expenditures, conducted needs determinations, chose vendors, selected equipment, established equipment allocations, appointed the DOS to lead procurement, developed technical and operational guidelines, and maintained State channel matrices. The committees included between ten and 24 members, consisting of representatives of State agencies, local and regional fire and rescue agencies, and county and local law enforcement in varying proportions depending on the iteration of the committee. The committees appeared to continue to meet on an as-needed basis.

The DOS assumed a central leadership role for statewide interoperability in the early 2000s. Many initiatives identified by the DOS in 2007 remained incomplete at the end of State fiscal year (SFY) 2014 including:

- actively monitor the *Statewide Communications Interoperability Plan* (SCIP),
- formalize a governance structure with explicit membership roles and responsibilities,
- establish training standards,
- conduct routine exercises,
- ensure radios statewide had standard statewide channel matrices, and
- ensure continued equipment training occurred.

In our October 2010 *Division of State Police, Field Operations Bureau* performance audit report (*2010 Audit*), we recommended the DOS work with the Legislature to consider developing statutory and regulatory language to codify the interoperability function within the DOS and provide it with statewide authority, goals, and objectives. The DOS agreed with the recommendation and indicated it would do so, but no changes had occurred by SFY 2014. In the *Strategy*, the DOS reported it would expand interoperable communications, enhance the State's governance structure, and streamline policies and procedures to eliminate conflicts and duplication, all by 2017, ten years after it originally indicated its plan to devise a codified governance structure.

In 2014, the DOS developed a charter for a Statewide Interoperability Executive Committee (SIEC) "to create a centralized interoperable communications planning and implementation capacity for the State…." However, there was no apparent legal authority to establish this committee or grant the committee any authority to coordinate or regulate statewide interoperable communications, and the three previously formed committees remained. Further, the first meeting of the SIEC, in July 2014, did not include all stakeholders and primarily focused on

developing a statewide responder data network similar to existing private cell phone networks. Only limited discussions addressed: 1) a formal governance structure in law, 2) SOPs, 3) training standards, 4) statewide exercises, 5) technology standards, or 6) current interoperability issues.

An important element to the success of statewide interoperability is cooperative action by the Legislative and Executive branches. For this reason, it may be beneficial for Legislative and Executive Branch leadership to clearly communicate their intent to ensure and support efforts and infrastructure in New Hampshire to achieve real and consistent interoperability for the State's responders. Most of the leaders in the responder community reported they would like to have more input into decision-making related to interoperable communications, and were willing to take part in governance if given the opportunity. A successful committee should include input from all groups across the responder spectrum. Since interoperability was being addressed, and at times solved, at the local, multi-jurisdictional, and county levels, and the preponderance of responders resided at those levels, those agencies should be afforded commensurate input.

Recommendations:

We recommend the Legislature and Governor consider establishing a statewide communications interoperability governance structure by:

- **creating a statewide, inter-jurisdictional, inter-disciplinary governance body composed of key stakeholders, including each county sheriff's office; each fire mutual aid district; police, fire, and emergency medical services associations; dispatch associations; and one federal and one State agency representative; and**
- **providing the governance body appropriate oversight responsibilities and authority to create subcommittees, absorb current interoperability-related committees' responsibilities, and adopt statewide SOPs, training standards, exercise schedules, and technology standards.**

We further recommend DOS management coordinate with the Office of the Governor and the Advisory Council on Emergency Preparedness and Security to discontinue the SIEC and other interoperability-related committees when the statewide interoperability governance body is established.

Should a governance body not be formed, we recommend the Legislature consider providing the DOS oversight responsibilities and necessary authority to achieve the desired outcomes, such as authority to adopt SOPs and technical and training standards.

We requested, but did not receive, a response from the Office of the Governor.

Department of Safety Response:

We concur in part.

Such a governance body is important and we believe that one option currently is in existence that can accomplish this. The Statewide Interoperability Executive Committee (SIEC) was created and approved on May 30, 2014. The membership of this multi-functional, multi-disciplinary group includes police, fire, emergency medical services; federal, state, county, and local governmental agencies; non-governmental organizations; the private sector, and the NH National Guard. The SIEC exists to address the challenges facing interdisciplinary communications across multiple jurisdictions and levels of government. Specific to its purpose and authority is to address and manage the challenge of interoperable communications planning and implementation for the State of New Hampshire. The SEIC as it currently exists will focus on a cooperative and collaborative environment which will become a central matrix where specific interoperable committees will roll up under its purview.

The SIEC has currently also identified three individual Working Groups with specific tasks. An Interoperability/Frequency Working Group will address interoperable standardization of frequencies throughout New Hampshire while providing guidance that all future purchases of communications equipment should observe to ensure the state remains interoperable. An Operations/Policy and Program Working Group will explore and create model policy that will insure interoperable communication statewide while providing the SIEC an oversight role over the interoperable communications landscape throughout the state including training, maintenance of current equipment, analysis and functionality of tower locations, and improvement of the overall system. A FirstNet/Broadband Working Group will precisely work with FirstNet as it begins to develop here in the state, while making recommendations to improve broadband throughout New Hampshire.

The SIEC obtains its authority to make decisions through the Governor's Advisory Council on Emergency Preparedness and Security (ACEPS) as provided in RSA 21-P: 48. If the Legislature wishes to go in this direction and feels additional, specific legislation may be required we will assist in its drafting if they wish.

Operating as part of the ACEPS ensures cooperative action by the Executive and Legislative branches. RSA 21-P: 48, II, requires the ACEPS to "periodically and as otherwise necessary report to the Governor, the Senate President, and the Speaker of the House of Representatives on any recommendations of the Council that pertain to the State's preparedness and ability to respond to natural and human-caused disasters and acts of terrorism."

Any standards the SIEC develops which impact the cost of equipment purchased with local funds may raise Article 28-a State Constitution issues. Any recommendations of the SIEC that involve capital or operating budget funding beyond that which is provided in current budgets, and no doubt there will be some, are going to involve the State Budget, which is a joint Executive and Legislative endeavor. The success of the SIEC will depend in large measure on dwindling federal grant availability and limited State fiscal resources.

We will propose legislation for the 2015 session of the legislature to explicitly include radio interoperability among the duties of the ACEPS through the SIEC in order to clear up any confusion with regard to its legal status. This will also give the Legislature an opportunity to review the structure and make any changes that it wishes.

LBA Rejoinder:

The ACEPS may be the logical location for a statewide interoperability governance body. However, we do not see where the ACEPS has explicit authority to form the SIEC. We requested, but the DOS did not have, legal analysis of the authority cited. The ACEPS may form subcommittees for the purposes of serving as 1) the State emergency response commission and 2) the Centers for Disease Control's State public health emergency preparedness committee. Inferentially, The ACEPS may form a review body for legislative proposals, regulations, problems, emergency response action team plans, and training and instructional materials on the transportation of hazardous materials. Additionally, the SIEC lacks formal membership and formal procedures for conducting business, and may not adequately represent responder agencies statewide. This informality and limited representation characterizes interoperability governance to date, and underpins the limited results attained.

Strategic Planning

Planning is an integral element of a system designed to achieve and maintain preparedness. A strategic planning process can be used to help develop a long-term strategy that includes a vision, a mission, goals, objectives, and milestones. Planning should be ongoing, provide for updates and enhancements to existing plans, and be multi-disciplinary and multi-jurisdictional. Strategic plans and periodic updates can provide continuity in moving the State towards greater statewide interoperability and provide better program results. A strategic plan should be underpinned by supporting, project- and initiative-specific, regionally-focused, and other plans.

Features of a State interoperability strategy resided in an assortment of DOS-generated grant applications, memoranda to the user communities, emergency response plans, and the *Strategy*. In our *2010 Audit*, we recommended DOS management consider a strategy to integrate communications systems statewide, establish interoperability standards, assign an interoperability coordinator, and work with the Legislature to develop statutory and regulatory language to codify the interoperability function within DOS and provide it statewide authority, goals, and objectives. Management concurred, noting voice interoperability was under review. The DOS released a request for proposal in February 2014, to obtain an in-depth study of the Division of State Police's (DSP) radio network, focusing on overall functionality, coverage capabilities, and points-of-weakness. The resulting report was to propose improvements and identify options to meet or exceed a 95 percent coverage standard with 95 percent reliability for the DSP network throughout the State, the standard the original 1990s network was to achieve.

The *Strategy* included a goal to enhance communications interoperability, especially in response to a large-scale event or disaster, and an objective to enhance progress along the five elements of the federally-promulgated interoperability continuum. The *Strategy* indicated by 2017, the 2007 SCIP would be revised; a plan to expand interoperable communications would be developed; a plan to replace outdated mobile, portable, and base station radios would be drafted; and a plan to maintain interoperability in an emergency involving damaged infrastructure would be created.

In addition to a governance body, each state should designate a Statewide Interoperability Coordinator (SWIC) to oversee and coordinate the daily operations of statewide interoperability efforts. To limit potential bias, it is recommended the individual work within a governor's office. The SWIC acts as a liaison between the interoperability committee, neighboring states, the federal government, and other entities. The DOS hired a part-time SWIC in November 2013, the last state to do so, and located the incumbent in a non-existent organizational structure called the office of interoperability.

Observation No. 2

Establish A Statewide Interoperable Communications Strategic Plan

During the audit period, the State lacked a functional strategic plan guiding statewide interoperable communications decisions and investments. There was neither reliable funding nor a formalized system in place to prioritize how limited resources were used to support responder interoperable communications. Some responders suggested there was a risk interoperability could devolve to the same level it was at ten years prior, before the investment of almost $48 million in federal grants to the State and its political subdivisions from federal fiscal years 2003 through 2013.

No Strategic Plan

A strategic plan should include a clearly articulated vision, goals linked directly to the vision, strategies describing how the goals will be achieved, and quantifiable performance measures to track and assess performance towards achieving the defined goals. We identified one document resembling a strategic interoperable communications plan - the SCIP. The DOS wrote the SCIP in 2007, with input from self-selected members of the statewide responder community, to meet a federal grant requirement. The SCIP underwent one minor revision in 2008 and has not guided statewide interoperability investments or planning since. The SCIP was designed to "[f]inalize the completion of the integration of the fractured, fragmented, and non-redundant voice information sharing system." Goals included codifying a governance structure, improving coverage to achieve 95 percent coverage of the State with 95 percent reliability within three years for the DSP radio network, and adding public safety wireless broadband-related strategic goals. We assessed 26 goals pertaining to statewide interoperable communications included in the SCIP and found only one was achieved. During our interviews, no one representing county sheriff's offices, and very few representatives of the 12 fire mutual aid districts we met with, could clearly articulate the contents or functional role of the SCIP. Further, 89 percent of our responder survey respondents reported being either unfamiliar or only somewhat familiar with the SCIP.

Inconsistent Funding

Stable and secure funding is an essential element of sustaining interoperability. However, the State lacked consistent funding to support investments in interoperable communications, including hardware, maintenance, training, exercises, and policy development. Instead,

responder agencies relied on a mix of federal grants and State, county, and local funds to support communications interoperability solutions locally and regionally, often in isolation from neighboring jurisdictions and State agencies. During the early- to mid-2000s, the State reported distributing about 7,700 radios and other hardware to law enforcement, fire, emergency medical services (EMS), and other public safety agencies purchased with federal grants. By SFY 2014, many of these radios were reaching the end of their life cycle and were no longer supported by their manufacturers. No recapitalization system was ever established, and failing hardware will require replacement as repair parts become unavailable. Many of the responders we interviewed and surveyed were concerned because there did not appear to be any plans to fund replacement hardware. The original interoperable mobile and portable radios, distributed to localities by the State through the fire service network (FireNet), EMS network (EMSNet), and law enforcement network (LawNet) projects, cost about $3,800 and $3,000, respectively. Agencies have purchased cheaper, less capable replacement radios, risking the devolution of interoperability. Further, county sheriff's offices have replaced other hardware, eliminating inter-agency connections and incrementally dissolving interoperability.

Questioned Priorities

Proposed Use Of Capital Funds

The State allocated capital funds to support independent State agency radio networks with no plan to merge or consolidate them. In 2013, the Legislature appropriated capital funds totaling almost $3.5 million to support three *different* State agency radio networks: $2 million to the DOS for "Radio Interoperability Infrastructure," which is the DSP radio network; $1.24 million to the Department of Transportation for "Statewide Radio Communication Replacement;" and $233,000 to the Department of Resources and Economic Development for "Radio Systems." This suggests continued piecemeal investments in State agency radio networks.

The DOS appears to have spent part of, and intends to spend the remainder of, $2 million in State capital funds appropriated for "Radio Interoperability Infrastructure" and designated for statewide interoperability efforts, to support DSP mission-centric radio operations by improving DSP radio coverage. This will enhance the DSP's radio network's *operability*, but will not directly improve statewide *interoperability*. The DSP asserted the expansion of DSP communications infrastructure would "benefit all federal, county, and local public safety agencies, by increasing radio coverage on both mobile and portable radios" and "would dramatically improve interoperability statewide." However, the DSP radio network was not a statewide interoperable network used by responders. Without a strategic plan and established goals, it is not clear how expansion of the DSP radio network could provide more than a limited improvement to statewide interoperability.

National Public Safety Broadband Network (NPSBN)

The DOS has participated in the development of a federally-sponsored, and only partially funded, multi-billion dollar project to develop the NPSBN exclusively for responder wireless data exchange. The project is headed by the federal First Responder Network Authority (FirstNet), will not be operational for at least eight to ten years, was still in the planning phases

in SFY 2014, and would initially only provide for wireless data exchange and not replace existing responder voice communications solutions. Since the federally-committed funds are less than projected costs, State participation in the NPSBN would likely require additional, as yet unknown, State funds for the lifecycle of the project; through the initial construction phase and ongoing maintenance. The project is still in its initial stages, and neither formal commitments nor formal requests for authority from the Legislature appear to have been made to obligate the State to a long-term commitment in the project. Further, it is not clear whether New Hampshire has a clear business need for the NPSBN and how, or whether, the NPSBN might fit into a long-term statewide interoperable communications strategy.

Statewide Interoperability Executive Committee

The DOS hired a part-time SWIC in November 2013 to develop a governance structure for statewide interoperability, coordinate stakeholder interests, develop long-term funding strategies, and develop policies and procedures for administering statewide communications interoperability programs. The resulting governance structure, the SIEC, was primarily focused by the SWIC on developing the NPSBN. Many of the responders we spoke to reported they hoped the newly-hired SWIC would help address the State's outstanding interoperability problems, citing a past lack of governance and poor coordination. However, with the SWIC focusing the SIEC primarily on the NPSBN, existing interoperability challenges and potential solutions remain a local or regional issue, potentially leading to further deterioration of statewide interoperability.

Recommendations:

We recommend the statewide communications interoperability governance body, or DOS management should a body not be formed, create a strategic statewide interoperable communications plan detailing how statewide interoperability will be achieved, and include:

- **specific goals tied to the statewide communications interoperability vision;**
- **the means by which each goal, and the overall end state, will be achieved;**
- **quantifiable performance measures for each goal, and tracking performance over time;**
- **routine management reporting on performance and progress in achieving goals;**
- **methods to prioritize interoperable projects and limited funds;**
- **periodic updates to ensure the plan remains viable and relevant; and**
- **an evaluation of the need for a permanent funding mechanism to support statewide interoperable communications.**

We also recommend the statewide communications interoperability governance body, or DOS management should a body not be formed, evaluate whether the State should pursue developing the NPSBN and report on its conclusions and recommendations to the Legislature for its consideration.

We recommend DOS management reconsider its approach to expending the $2 million in capital funds allocated to improve DSP radio *operability* and consider how these funds could be used to improve statewide *interoperability*.

Department of Safety Response:

We concur in part.

We concur a statewide interoperable plan should be developed. As indicated in our response to observation #1 above, this will be the responsibility of the SIEC or an alternative body if created by the Legislature. It is an excellent concept to develop a way forward and keep an ongoing state-level focus on the issue. However, as we did on Observation #1, we note that the expectations for this group and the goals and performance measures they propose must take into account the means by which they can be achieved with the local, state, and federal resources that may be available now and in the future, and where these projects fall within the context of overall priorities set by state and local governments. Chief among these considerations will be how to adopt the recommended permanent funding mechanism.

We concur it will be helpful for the SIEC or other governance group to evaluate the National Public Safety Broadband Network and the extent to which the State of New Hampshire should participate. The NPSBN was created by Congress to address the ever-increasing demand in the private sector for an additional share of the already limited broadcast spectrum brought about by the ongoing march of technology and developments such as 3-D television and wireless data exchange, and a recognition that a portion of the spectrum should be reserved for police, fire and other first responders sufficient to support their operations in light of new technology such as Next-Generation 911 and other developments. In order for New Hampshire to participate at any level in this program or receive any federal funds that may become available now or in the future some initial steps, such as hiring a SWIC (Statewide Interoperability Coordinator) were necessary. In order to hold New Hampshire's place in line, the Department stepped forward and employed a part-time SWIC among whose duties is monitoring the NPSBN developments and keeping abreast of them. Monitoring and evaluating the NPSBN as it goes forward, to see exactly how it would or would not benefit the State is an important duty of any interoperability governance body. The Governor is tasked by federal law with deciding whether the state will participate in FirstNet.

We do not concur that the Department of Safety should reconsider its approach to expending its $2 million capital project to improve State Police radio operability and consider how these funds could be used to improve statewide radio interoperability.

These funds were requested and appropriated primarily to address important State Police officer safety concerns, including numerous areas of the state where there are "dead spots" in the radio system that prevent Troopers who are calling in to headquarters or troop stations from being heard, and prevent Troopers from receiving broadcasts from headquarters, troop stations, or other Troopers.

There was no intent with this limited amount of money to solve statewide interoperability among thousands of state, county and local first responders, although improvement of the system will have an indirect benefit to interoperability statewide. This amount of money would not make a dent in that task. The capital appropriation referred to applies only to the first phase of a two-phase proposal. The second phase, if ultimately approved, will provide additional resources, some of which will benefit local agencies as well. Given the state's legitimate concerns over the size of the capital budget and its effect on bond ratings and other impacts, we were fortunate to receive what we did to help resolve officer safety and public safety concerns for our own Department. It now appears that this amount will be insufficient to carry out the first phase.

The first step in implementing the capital appropriation was to request bids for a propagation study. Motorola Corp. was the low bidder and conducted the study. The study's definition of "operability" for was based on achieving 95% coverage across 95% of the state. The results of the study were that three geographical troops have operability ratings ranging from 67.5% to 89% and are thus greatly deficient in coverage for mobile radios alone. Figures for portables are even worse. The three other geographical Troops did better, ranging from 94% to 96.4% for mobiles, but portables were lower. As much as 60-70% of the equipment transmitting and receiving State Police signals is at end of life and no longer supported by its manufacturers.

A common complaint from our Troopers is that during tense or evolving situations, our broadcasts may "stutter" and be impossible to understand. The cause has been identified as the simulcast system, which is now obsolete and contributes heavily to these "holes" in coverage. The solution is to adopt newer, linear simulcast technology which is estimated to result in as much as a two-fold improvement in coverage in some of the worst "dead spots." Coupled with recommended upgrades to transmitting equipment on several mountaintops and adding several additional transmission sites we would meet the target goal of 95/95. However the cost of this is now estimated at approximately $12 million for Phase I including replacement of the embassy switch; considerably in excess of the $2 million capital appropriation.

It is not accurate to assume that local and county responders would not receive at least limited benefit from this project to improve State Police operability. There are more than 200 digital public safety channels licensed to the State Police which are also available to local vehicles, portables and base stations in an emergency where there is a coverage problem, and if State Police achieves 95/95 coverage it will benefit local agencies whenever the use them.

We concur it will be the responsibility of the SIEC or any alternative body should one be created by the Legislature, and the SWIC will provide leadership and staff support for the effort.

LBA Rejoinder:

While federal law may designate a governor as the responsible agent to inform the federal government of a state's intention to take part in the NPSBN, committing the State to such an undertaking, including substantially increased State interoperability expenditures, should likely be a decision for the Legislature as it will need to appropriate funds for the project.

We question the extent benefits will accrue to the responder community outside the DSP as a result of the DSP's project to improve radio network operability. The project was presented in March 2013 to the House Public Works and Highways Committee as a request for a $5 million Highway Fund appropriation for Radio Interoperability Infrastructure Upgrade. The House reduced the request to $1.7 million Highway Funds and $300,000 General Funds. When heard by the Senate Finance Committee the following month, the Department was still referring to the request as being for the purpose of interoperability. Additionally, most of the "200 channels" cited do not rely on the infrastructure being improved (e.g., Zone H), and those that do rely on the infrastructure being improved are *not* universally available to the statewide responder community. This is also isolated from other recommendations we make in this report, including the consolidation of DOS and State agency radio assets, which might fit within a unified state radio system and solve DSP operability issues without multi-million dollar investments in a single division's network as is currently being pursued.

STANDARD OPERATING PROCEDURES

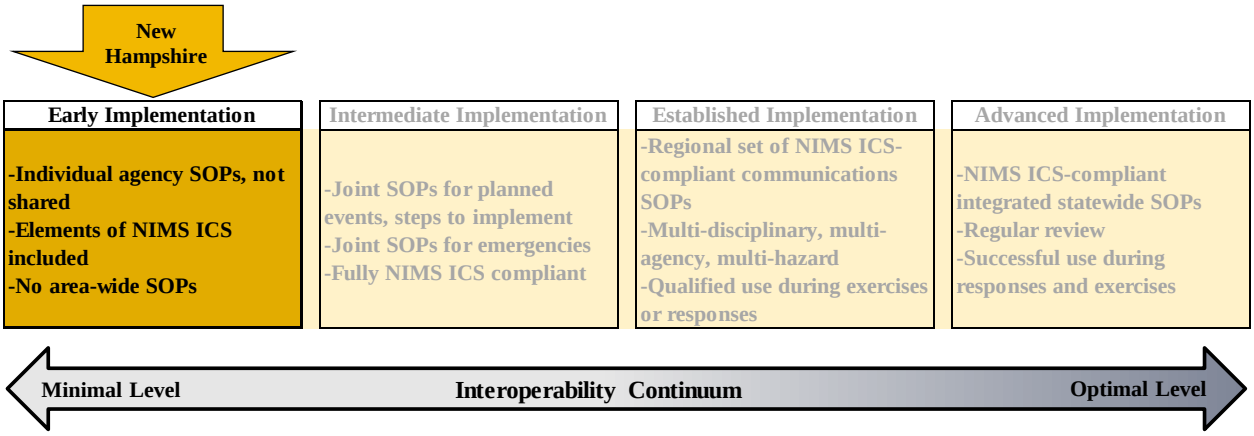
Preparedness activities should be coordinated among all appropriate agencies and organizations within a jurisdiction, as well as across jurisdictions. Effective preparedness depends upon SOPs to follow before, during, and after an incident. SOPs are written, specific operational and technical instructions or guidelines, and are critical in achieving interoperability by coordinating procedures and technical standards.

Since 1999, the DSP managed and coordinated channels and frequencies for public safety agencies. The DSP developed the LawNet, FireNet, and EMSNet statewide channel matrices, sets of channels designed to be programmed into all responder radios statewide, for each discipline. The matrices included Zone H, the State's set of 16 channels for localized interoperable communications. These sets of channels were reported to be technically accessible by most federal, State, county, and local government responder agencies. The State Fire Marshal maintained the *Statewide Fire And All Hazards Mobilization Plan* (*Plan*) to provide for the systematic mobilization, deployment, organization, and management of resources during major fires, disasters, or other major emergencies. The *Plan* provided for the use of other jurisdictions' radio frequencies and specified primary communications were to be conducted on the statewide fire frequency included within Zone H to help achieve interoperability.

We found statewide interoperability SOPs remained at a level of early implementation as of SFY 2014.

Table 4

Statewide Standard Operating Procedure Assessment



Source: LBA analysis.

Observation No. 3

Improve Standard Operating Procedures

The DOS lacked effective policies and procedures governing DOS-controlled interoperability resource use, management, and deployment. Established, clear, written SOPs are essential for effective development and deployment of interoperable communications systems, define testing and training procedures, and help ensure interoperating agencies communicate efficiently and effectively. SOPs should be: 1) adopted and approved by a body of relevant stakeholders, 2) understandable and tested to help ensure desired outcomes, 3) reviewed and updated regularly, and 4) engrained in responder agency operations. Interoperable communications and supporting SOPs are essential elements of a functional NIMS-compliant ICS and underpin the *Strategy*.

The DOS is required to adopt administrative rules implementing a NIMS-compliant ICS for emergency responders statewide. Interoperability forms the basis for communications within a NIMS-compliant ICS. The DOS must also promulgate rules governing EMS responder communications and can assist in planning and coordinating fire department responses at major events through the *Plan* under the auspices of the State Fire Marshal.

Statewide Use Of Interoperability Channels

The DOS lacked effective SOPs governing the use of channels in the statewide channel matrices, including Zone H. Most law enforcement responders inconsistently used Zone H, and fire department personnel reported differing levels of awareness and use of Zone H. Reportedly, lack of SOPs defining Zone H use adversely affected emergency responses. Additionally, the DOS lacked written SOPs or policies and procedures related to updating statewide channel matrices

and stakeholder reporting of needed changes to the statewide channel matrices, resulting in outdated channel matrices and diminished interoperability.

The State Fire Marshal maintained the *Plan*, which included procedures for communications with the DSP and other law enforcement agencies, required NIMS-compliant communications, facilitated frequency assignments, and required use of a Zone H frequency. However, the *Plan* lacked specific procedures for Zone H channels and only applied to a specific set of circumstances, not daily interoperable communications. Further, it was not binding on law enforcement agencies and other responders, as fire mutual aid districts were the only parties to the *Plan*.

The DOS lacked SOPs related to using the DSP radio network, which DOS management described as providing interoperable communications between responder agencies throughout the State. The lack of SOPs caused confusion and differing perceptions as to when, or whether, other agencies were permitted to use the DSP radio network for interoperable communications. Further, SOPs for use of the Bureau of Emergency Management (BEM) low-band very-high frequency (VHF) network by the emergency management community were reportedly not updated or widely distributed.

Statewide Deployment And Use Of Interoperable Hardware

The DOS did not create written SOPs governing the deployment and use of interoperable radio hardware, including:

- a VHF portable radio cache intended to aid communications at events or incidents;
- incident management or communications vehicles and repeater trailers intended to provide local communications at event or incidents;
- the Embassy Switch, which connected some county sheriff's offices to the State Police dispatch center in the Incident Planning and Operations Center (IPOC) with a dedicated communications link; and
- gateway devices, which could be used to connect radio and other communications networks.

Internal Management Of Interagency Agreements And Authority Over Radios

The DOS lacked policy and procedures for periodically reviewing and ensuring compliance with interoperability-related interagency agreements, and the DOS did not produce SOPs as agreed to in frequency sharing agreements. The standard DOS agreement for frequency-sharing specified shared channel use would be for official, mutual aid, interoperable communications only. Use was to comply with standards established by the DOS. Another interagency agreement indicated the DSP would determine dispatch and management procedures for shared channels. We found no evidence these standards were ever developed or published. Also, agreements accompanying the programming of grant-funded radios with statewide channel matrices, including Zone H, expired by SFY 2014 or were due to expire in mid-SFY 2015, dissolving requirements responder agencies use the State-provided statewide channel matrices and risking deterioration of statewide

interoperability. Other agreements between the DSP and external agencies lacked standardized language and terms, resulting in some inefficiencies regarding frequency use permissions.

Internal Interoperable Channel Use

The DSP lacked effective field guidance for staff use of interoperable radio resources and continuity of radio operations. The DSP maintained a 2002 voice communications policy for State Troopers. However, its procedures were not NIMS compliant and did not require use of interoperability resources when responding to multi-agency incidents, or for communications across disciplines or jurisdictions. Responders reported inconsistent DSP use of interoperable resources, ranging from common DSP use of local agency radio networks to communicating with DSP solely through dispatch centers via telephone, limiting efficient and effective on-scene communications. While policy and procedure directed Troopers to non-DSP channels and interoperable channels should the DSP radio network fail, these channels may have been of limited use, and the policy lacked procedures for operating on the non-DSP channels, potentially creating confusion on these other channels.

Recommendations:

We recommend DOS management ensure statewide NIMS-compliant ICS administrative rules include interoperable communications requirements, such as:

- **requiring responder agencies use NIMS-compliant interoperable communications at events and incidents, and**
- **SOPs on using and maintaining the statewide channel matrix and Zone H, using DOS radio networks, using the Embassy Switch, and deploying and using radio caches, communications vehicles and trailers, and gateways.**

We further recommend DOS management develop internal policy and procedure to ensure compliance with interagency agreements, agreements are updated regularly, and communications procedures are NIMS compliant.

Department of Safety Response:

We concur.

RSA 21-P: 14, II (z) grants rulemaking authority to the Commissioner of Safety to establish training criteria for hazardous materials incident responders and for the implementation of a statewide hazardous material command system, to be adopted after consultation with the Fire Standards and Training Commission. RSA 21-P: 52 requires a statewide incident command system based on the incident command system of the National Interagency Incident Management System, and authorizes the Commissioner of Safety to adopt rules pursuant to RSA 541-A to implement the statewide incident command system. "The statewide incident command system shall be used in responding to any natural or man-made cause that requires emergency management by multiple agencies or departments within state and local government." The Commissioner has adopted the ICS via Saf-C 3900 in the Code of Administrative Rules. We

believe there is sufficient authority in RSA 21-P: 52 to implement the recommendation if the legal staff at the Joint Legislative Committee on Administrative Rules agrees. We will task our legal staff with rulemaking to ensure that it is clear that our administrative rules are fully NIMS compliant and apply to any natural or man-made cause that requires emergency management by multiple agencies or departments,

In consideration of establishing the training curriculum pertaining to interoperable communications, discussions have already taken place between the SWIC and the Division of Fire Standards and Training and Emergency Medical Services, which operates the NH Fire Academy, and with the Police Standards and Training Council. The Fire Academy already has an established interoperability training program at the recruit level, along with a suggested voluntary in-service practicum, and the two academies are working together to develop and offer a radio interoperability training curriculum for both the NH Police Recruit Academy and in-service training programs. Discussions continue to develop a contemporaneous interoperability communications curriculum to be made available to all first responders by the end of 2015. We will issue formal procedures applicable to departmental responders regarding the use of ICS/NIMS that are consistent with the training, and make model policies available for adoption by other agencies. These policies will include communications protocols.

LBA Comment:

The State lacks a statewide ICS for employment at a multi-jurisdictional, multi-discipline, or multi-state event or incident. Since 2004, RSA 21-P:52, has both required and provided authority to the Commissioner to adopt rules to implement a statewide ICS. Saf-C 3900 rules are explicitly limited to releases of, or substantial threats of releases of, hazardous substances and related training requirements, and do not accomplish the objectives of RSA 21-P:52.

TECHNOLOGY

Technology encompasses the systems and equipment that enable emergency responders to communicate efficiently and effectively. Communications systems need to be: 1) interoperable, able to communicate within and across agencies and jurisdictions; 2) reliable, able to function in any context; 3) portable, using standard technology, protocols, and frequencies; 4) scalable, useable at small or large incidents; 5) resilient, able to perform despite infrastructure damage; and 6) redundant, having available alternate communications methods.

The DOS undertook three major radio hardware projects:

- The Astro Radio Project, which occurred from 1992 through 1996 and involved the construction of the Project 25-compliant DSP radio network and the fielding of production equipment starting in 1997. This network formed the framework of the current DSP network and set the de facto statewide technical standard.
- LawNet, which fielded infrastructure, radios, and other hardware intended to support State, county, and local law enforcement agency interoperability from 1996 through

2003. This project distributed interoperable mobile and portable radios to select law enforcement agencies statewide and made incremental improvements thereafter.

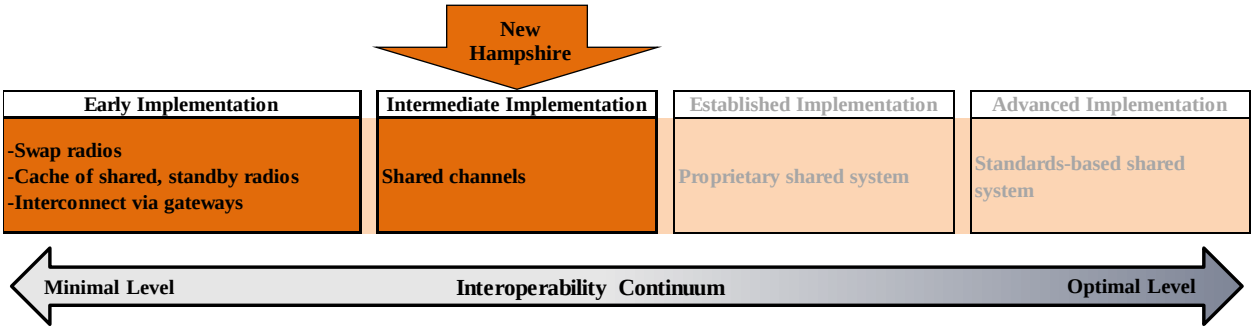
- FireNet and EMSNet, which fielded Project 25-compliant interoperable radio hardware to select fire, emergency medical, hazardous materials, and other public safety agencies statewide; to select non-government responders and hospitals; multi-jurisdictional mutual aid agencies; and other states' localities from 2003 through 2006.

County, regional, and local agencies also undertook initiatives to enhance radio interoperability within their jurisdictions. Three county sheriff's offices upgraded or were upgrading their radio systems during SFY 2014, and three others were actively seeking funds for upgrades. Of the 12 fire mutual aid organizations we met with, two completed upgrades during SFY 2014, and four were coordinating with counties and localities to perform upgrades. Several localities also reported performing or considering their own system upgrades. Further, 70 percent of the respondents to our 2014 survey of fire, law enforcement, EMS, and emergency management agencies statewide reported a need to replace 50 percent or more of their mobile and portable radios in the next five years, with 38 percent reporting a need to replace 90 or more percent of their radios in the same period. Without concerted effort and consensus technical standards, technological interoperability may devolve as responder agencies make independent choices on replacement hardware.

We found statewide technology interoperability had matured to a level of intermediate implementation as of SFY 2014.

Table 5

Statewide Technology Assessment



Source: LBA analysis.

Observation No. 4

Develop A Statewide Interoperable Radio Network

The State lacked a statewide interoperable radio network or a unified system of local and regional radio networks to achieve seamless interoperable communications statewide. There

were no formal statewide plans or vision for developing or integrating radio networks in New Hampshire. The lack of a strategy caused public safety agencies to continue developing localized and regional radio interoperability solutions. Consequently, a patchwork of overlapping, unintegrated and, at times, redundant and incompatible, State, regional, and local radio networks and dispatch centers evolved.

Since 2002, the Division of Emergency Services and Communications (DESC) within the DOS has been required to "ascertain what means exist for rapid and efficient communications" and to "consider the desirability of supplementing these communications resources or of integrating them into a comprehensive…communications system which may be established for purposes of emergency management." Further, the DESC must "evaluate the possibility of the multi-purpose use of such a system for general state and local government purposes…[and] make recommendations regarding such communications systems to the assistant commissioner as appropriate." (RSA 21-P:38) The DOS never conducted this evaluation.

Radio Networks Statewide

We identified 17 State agency-owned and operated radio networks, eight of which provided coverage across the State, including the DSP network. These networks operated on different frequencies, were usually dispatched independently, and shared some tower sites and hardware. While the DOS portrayed the DSP radio network as being a statewide interoperable radio system benefitting the public safety community, the DSP network primarily supported the DSP's daily operations and mission. A majority of the responders we spoke to and surveyed reported they never or rarely used the DSP's radio network frequencies because:

- there was never a need,
- they were not allowed to,
- the frequencies were not programmed in their radios, or
- the DSP used local-agency frequencies for interoperable communications.

Although some jurisdictions had radio hardware collocated on DSP tower sites, a recent federally-funded microwave data communication project expanding the DSP's microwave infrastructure and supplementing the legacy DSP microwave network was only available to four State agencies and one non-profit telecommunications entity. While provided for in the memorandum of agreement regulating the microwave infrastructure, county sheriff's offices and fire mutual aid associations, as well as local agencies dispatched by them, did not have access to the new microwave portion of the DSP's network.

Five county sheriff's offices and two fire mutual aid districts used single, DSP-provided, legacy microwave links to connect to their agencies' radio transmission tower sites. Reportedly, the DSP already removed and was planning to move other county sheriff's offices off the legacy microwave links connecting them to DSP's network. Further, some county sheriff's offices and fire mutual aid districts indicated when legacy DSP microwave links failed, it could take days to get them up and running, negatively affecting regional public safety communications. They perceived the DSP took so long to restore the links because county or regional communications were not a DSP priority. Further, the Embassy Switch on the DSP network, a device intended to

allow county dispatch centers to communicate with the IPOC and other similarly connected dispatch centers, reportedly never operated as planned. Through SFY 2014, the Embassy Switch provided limited value since:

- four counties disconnected from it to modernize their own networks, two counties planned to disconnect in the near future, and two were never connected, leaving only two counties to remain connected;
- there was never an operational need for it;
- neither a protocol defining its use, purpose, or function ever issued nor was training on its use ever provided; and
- it was no longer supported by the manufacturer.

In addition to State owned and operated radio networks, there was an indeterminate number of non-State, local and regional public safety radio networks across the State, many with overlapping coverage areas. Nine of the ten (90 percent) county sheriff's offices owned and operated regional radio networks. Similarly, six of the 12 (50 percent) fire mutual aid districts we met with owned and operated radio networks in their jurisdictions. Operating within areas covered by State, county, and fire mutual aid radio networks were at least 72 municipally owned and operated radio networks. The fire mutual aid districts, county sheriff's offices, and municipalities that did not own radio networks relied on other agencies for radio communications. Table 6 enumerates the number of radio networks and associated dispatch centers we identified operating within the State.

Table 6

Radio Networks, Coverage Areas, And Dispatch Centers, As Of August 2014

	Networks And Coverage Areas[1]			Dispatch Centers	
	Statewide	Regional	Local	24 Hour	Part-time
State Agency[2]	8	0	9	6	14
County Sheriff	0	9	0	8	0
Fire Mutual Aid District	0	6	0	3	0
Local Police And Fire	0	5	2	7	0
Local Police Department	0	0	53	43	9
Local Fire Department	0	0	12	11	1
Subtotals	8	20	76	78	24
Grand Total	**104**			**102**	

Notes:
[1] Additional local radio networks and dispatch centers may exist.
[2] We examined nine State agencies' radio operations; other agencies may also operate radio networks.

Source: LBA analysis.

Consolidating radio operations into a shared architecture can contribute to improved efficiency, standardization, and service quality and can simplify maintenance, training, and interoperability. Some representatives of public safety organizations reported it did not make economic or

operational sense to have numerous dispatch centers and networks. For example, six counties reportedly had between three and 12 separate 24-hour dispatch centers operating in addition to the county sheriff's office dispatch center. County sheriff's offices and localities reportedly tried to centralize dispatch center operations but personalities, territorialism, and friction between the law enforcement and fire communities had at times inhibited the successful merging of resources.

Developing A Statewide Radio System

The design of an interoperable statewide radio network must adequately address the needs and concerns of the agencies involved. Some responders reported a concern that State management systems insufficiently addressed their operational needs. A desire to maintain local control and a divide between responder disciplines were additional factors impeding interoperability efforts and would need to be addressed. To develop a statewide radio system, there are many options available to the State, three of which include:

- Taking no action and allowing the status quo to continue. It does not appear that any statewide or centralized plans exist to change the current situation of duplicative and redundant radio networks and dispatch centers.
- Connecting the existing regional and State networks to establish a unified statewide radio communications system, and divesting of extraneous infrastructure. This could be done through a confederated approach keeping decision making at the regional and local levels with State-level coordination.
- Constructing a single, State-owned and operated statewide radio network available to all responders, without imposing an unfunded State mandate upon political subdivisions.

Recommendations:

We recommend the Legislature consider amending RSA 21-P:38 to:

- **require the DOS to report the results of its analysis of radio interoperability capabilities and assets to the statewide communications interoperability governance body and appropriate Legislative oversight committee,**
- **provide a specific date by when the analysis must be complete,**
- **require the report be made public, and**
- **require the statewide communications interoperability governance body, or DOS management should a body not be formed, seek Legislative approval for a statewide strategy.**

We recommend DOS management comply with State law and:

- **ascertain what means exist for rapid and efficient public safety communications,**

- **consider the desirability of supplementing these communications resources or integrating them into a comprehensive communications system which may be established for purposes of emergency management, and**
- **evaluate the possibility of the multi-purpose use of such a system for general state and local government purposes.**

We further recommend DOS management formalize recommendations regarding such communications systems and provide its report to the statewide communications interoperability governance body, or the appropriate Legislative oversight committee should a governance body not be formed, by May 2015.

We recommend the statewide communications interoperability governance body establish, or DOS management should a body not be formed, a clear vision for the development and integration of radio networks in New Hampshire by:

- **reviewing the product of DOS efforts to evaluate what opportunities exist for supplementing or integrating existing communications systems;**
- **analyzing the current mix of State, regional, and local radio networks and dispatch centers to identify opportunities for integration, consolidation, centralization, and cost savings;**
- **obtaining input and consensus from the responder community to develop and finalize a vision and strategy for the State; and**
- **seeking legislative approval to pursue the agreed upon vision and strategy.**

Department of Safety Response:

We concur.

The SIEC/SWIC structure under the ACEPS, organized according to RSA 21-P:48, already provides for periodic reporting to the Governor and the Legislative leadership. If additional oversight is desired one method would be to amend RSA 21-P:38 as recommended.

Since RSA 21-P:48 already requires that the governance body report on the status of radio interoperability capabilities and assets, amending it to require a specific date for reporting and requiring legislative approval for the statewide strategy could be part of such an amendment, if the Legislature chooses to do so.

Conducting a through and expert analysis of all the radio interoperability capabilities and assets – state, county, and local – for the entire state is an incredibly complex task. Given that we had to employ a consultant to conduct this analysis for State Police alone as a prelude to implementing the aforesaid capital budget project, it is reasonable to conclude that outside assistance will be required for such an expanded analysis, particularly if a relatively tight time frame is desired. This may require an appropriation if the cost is in excess of what we can fund under our operating budget at the time.

We concur that we should comply with the provisions of RSA 21-P:38 that require identifying current means of rapid and efficient public safety communications; evaluate and recommend whether these resources should be supplemented or integrated into a comprehensive communications system, and the possibility of multi-purpose use of such a system for general state and local government purposes, formalize these recommendations and report them to the statewide interoperable communications governance body.

This a complex task as it involves much more than just the Department of Safety. If the previously mentioned committee chaired by the SWIC and reporting to the ACEPS Committee suffices as such a statewide body, it will be the logical group to lead the task. However, the likelihood of developing its findings and recommendations in a period of 5 months with limited resources is unlikely, and would benefit from the outside assistance described our response to the immediately previous recommendation.

If the Legislature chooses to create a different governance group it is unlikely that it could be created and in operation as early as April 2015.

The Division of Emergency Services and Communications is the responsible party named in RSA 21-P:38 for this task. This Division principally operates the Enhanced 911 system. This study will require input and participation from three divisions – Homeland Security, Emergency Communications and Services, and State Police, and will need to be coordinated by the SWIC. The Commissioner, through the efforts of the SWIC, can organize such a multi-division effort, and use any available funds including federal funds to support the effort, with a target reporting date of the end of 2015, to allow time for any necessary legislation.

We concur the governance body should explore the feasibility of integration of networks and establish a clear vision for their future development, work toward responder consensus, and seek legislative approval if needed to pursue the vision and strategy. This will depend on what the governing body concludes as a result of its study and the degree to which it is able to achieve responder community consensus. We will propose legislation for the 2015 Legislative session to clarify the references to the Division of Emergency Services and Communications and the Division of Homeland Security and Emergency Management relative to their responsibilities.

Observation No. 5

Consolidate State Agency Radio Network Operations

State agencies lacked a cohesive, strategic approach to radio network operations. This has led to the proliferation of radio networks in State government, and resulted in duplicative networks, functions, and, potentially, costs. RSA 21-P:4, XV, requires the DOS Commissioner to adopt comprehensive and uniform standards, practices, procedures, instructions, and funding processes relative to statewide telecommunications services applicable to all state agencies. Telecommunications is generally defined to include all modern means of communications, including radio.

Radio Networks

As many as 13 State agencies, including at least one entity in each branch of State government, licensed at least one radio network of varying scales. We examined the radio operations of nine Executive Branch agencies and found they operated 17 distinct radio networks, eight (47 percent) of which approximated statewide coverage and nine (53 percent) of which had regional or local coverage. Seven of nine agencies (78 percent) were able to provide data on the value of their networks and the estimated unaudited value of these seven agencies' radio networks was over $16.6 million, which understates the State agency-wide value as the two non-reporting agencies operated two statewide and two local networks. Eight of nine agencies (89 percent) were public safety-oriented. The networks were generally not interoperable as they were built for agency-specific purposes. Some sharing was noted, however.

Dispatch Functions

Seven of nine agencies (78 percent) operated 20 dispatch centers, six of 20 centers (30 percent) were full-time and 14 of 20 centers (70 percent) were part-time. One agency equipped two additional dispatch centers but did not staff them, and another agency regularly staffed five part-time centers on a full-time basis to handle increased workload. Also, four full-time and one part-time State agency dispatch centers provided dispatch services for as many as 16 other State agencies, as well as county and local public safety agencies, without charge.

Maintenance Functions

Seven of nine agencies (78 percent) reported eight in-house maintenance operations supported their radio networks. Seven agencies reported contracting for maintenance services, with five (56 percent) reporting both in-house maintenance functions and contracting for maintenance services. Six (67 percent) State agencies were able to provide estimates on annual maintenance expenditures, and reported spending over $520,000 annually on their networks. This appeared to exclude personnel-related costs, which for one agency with a sizeable in-house maintenance organization exceeded $970,000 in SFY 2014.

Consolidating radio operations into a shared architecture can contribute to improved efficiency, standardization, and service quality and can simplify maintenance, training, and interoperability. We examined the nature of radio operations in six states, finding each consolidated radio networks for state public safety agencies. Risks can exist with unified radio networks, but the main obstacle reportedly was individual agency unwillingness to surrender exclusive control. This was evident in our analysis of State agencies. When we asked about participating in a statewide radio network, three of nine agencies (33 percent) expressed no desire to participate, five agencies (56 percent) were willing, and one agency (11 percent) did not respond.

Interpretation Of Authority

RSA 21-P:4, XV, appears to provide the DOS with the authority to regulate telecommunications among State agencies and, while telecommunications is not defined in statute, its plain meaning includes radio among other means of communications. The DOS reported never interpreting this

to provide authority over anything other than telephone communications. The DOS indicated legislation passed in 2013, which added "telecommunications" to statute, corrected a 2011 omission and transferred the responsibility necessary to operate a telephone system from the Department of Administrative Services, to the DOS.

Recommendations:

We recommend DOS management:

- **comply with State law and adopt comprehensive and uniform standards, practices, procedures, instructions, and funding processes governing State agency radio services;**
- **develop a time-phased, strategic plan to consolidate State radio network assets into a single State agency radio network;**
- **formalize a governance body for the State agency radio network;**
- **ensure the State agency radio network is compatible with the statewide interoperable radio infrastructure;**
- **consolidate supporting functions, such as dispatch and maintenance functions, to support the State agency radio network;**
- **routinely report to the Legislature progress on consolidation of State agency radio assets; and**
- **seek any needed clarification from the Legislature regarding its authority over State agency telecommunications.**

If clarification of RSA 21-P:4, XV, does not leave the DOS with authority to regulate State agency telecommunications, including radio, we recommend the Legislature consider assigning such responsibility to a State agency to achieve consolidation of State agency radio operations.

Department of Safety Response:

We do not concur.

This recommendation exceeds our authority to implement. This authority does not exist. RSA 21-P: 4, XV, was neither enacted nor intended for this purpose. The genesis of this legislation was a decision by the Governor and the Legislature to transfer the duty of operating and maintaining the telephone service for State agencies from the Department of Administrative Services to the Department of Safety, in 2011. This was not a responsibility that the Department sought, but one which we were required to assume.

The original legislation making the transfer was enacted as Chapter 224, sections 332 through 335, laws of 2011. It transferred the responsibility for the State agency telephone system in 224:332 and amended RSA 21-P: 38 and RSA 21-P: 48-a, II, for the same purpose.

In 2013 the Legislature enacted HB 372 as Chapter 30, laws of 2013 and codified it as RSA 21-P: 4, XV. That law simply corrected an omission in the 2011 legislation and transferred from the

Department of Administrative Services to the Department of Safety the responsibility necessary to operate the telephone system that had been transferred to it from Administrative Services, to "adopt comprehensive and uniform standards, practices, procedures, instructions, and funding processes relative to statewide telecommunications services applicable to all state agencies," and stated that the comprehensive and uniform requirements be in the form of a manual that was subject to the approval of the Governor and Council, but not subject to the rulemaking requirements of RSA 541-A. It also amended RSA 541-A: 21, I (gg), the exceptions to rulemaking, to exempt the manual described in RSA 21-P: 4, XV, from rulemaking. The Department has recently completed that manual, which is essentially an update of the existing one from DAS.

As testimony before the relevant legislative committee will indicate, the use of the word "telecommunication" as it had existed for years as a duty of the Department of Administrative Services, meant State agency telephony and did not encompass the broad meaning that it has in current vernacular. The duties of DAS that it referred to consisted of operating the telephone system for State agencies, which at the time was a Centrex system and more recently is in the process of migrating to a more modern VoIP (Voice over Internet Protocol) system. It had nothing to do with radio communications or even wireless cellular telephones. It was, and is, simply the desk telephones in State offices. The Legislature was simply transferring that responsibility from DAS over to our department, along with the appropriations and personnel that operated the system. There was no legislative intent to give us any broader authority than to assume the tasks that were previously performed by DAS. Therefore, if we adopt "comprehensive and uniform standards for practices, procedures, instructions, and funding processes" relative to radio communications services applicable to all State agencies we believe we would be going way beyond legislative intent, nor are we in a position to dictate funding processes for other state agencies and their radio equipment and networks. The reference to "funding processes in RSA 21-P: XV" simply allows us to bill each State agency for their telephones, in the same manner as DAS did when they had this responsibility. Therefore, we have no authority to carry out the recommended actions contained in the 7 bullet points in this recommendation.

If this statute was amended to grant the Department such authority it would require a substantial appropriation of funds, commitment of staffing, and a funding mechanism to carry it out, and probably would involve consultant fees, equipment purchases and infrastructure.

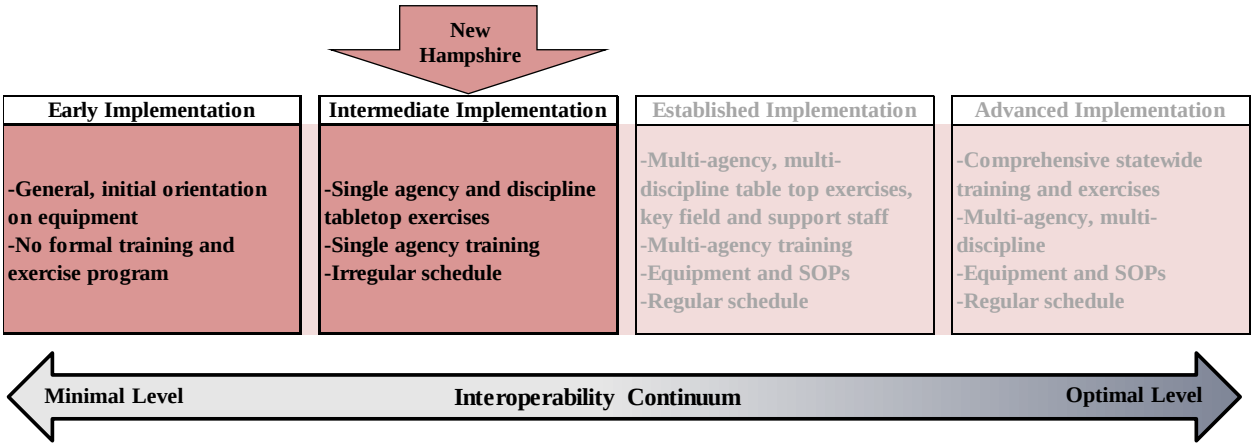
TRAINING AND EXERCISES

Preparedness is achieved and maintained, in part, through a continuous cycle of training, exercises, evaluations, and taking corrective actions. Preparedness activities should be coordinated among all appropriate agencies and organizations within the jurisdiction, as well as across jurisdictions.

We found statewide interoperability training and exercises had matured to a level of intermediate implementation as of SFY 2014.

Table 7

Statewide Training And Exercises Assessment



Source: LBA analysis.

Training

Responders should be trained on interoperable assets, SOPs, and roles. Training facilitates responder use of interoperable assets in exercises, planned events, and actual incidents. Equipment and SOPs are useless without responders trained in their use. The optimal training program includes orientation, tabletop, functional, and routine comprehensive regional events.

We found statewide interoperability training had matured to an intermediate implementation level as of SFY 2014, which was equal to or less mature than levels of implementation for training and exercises reported in 2011, and less advanced than planned in 2008.

Observation No. 6

Regularly Conduct Training

The DOS lacked comprehensive, ongoing communications and radio training for responders statewide. Training is essential to help ensure personnel employ communications resources efficiently and effectively, perform necessary duties, and understand the limitations of communications plans and technology. Training should be documented, ongoing, and cyclical. The Homeland Security and Emergency Management Director, under the supervision of the Commissioner, is responsible for overseeing the State-level planning and preparation for responding to threats, incidents, and disasters. Training is integral to preparedness.

Availability And Frequency

The State provided initial basic radio use training to fire departments after distributing mobile radios between 2003 and 2006, and the State Fire Academy reportedly began initial radio training for students in SFY 2013. Several local agencies and regional fire mutual aid districts reported conducting ongoing training independently of the State.

However, responder personnel statewide were not provided adequate training opportunities.

- The Police Academy did not provide initial radio training to law enforcement officers, although DOS management reported efforts to change this situation were underway in SFY 2015.
- The DOS did not have an ongoing radio in-service training schedule.
- Nine of ten (90 percent) county sheriff's offices reported concerns regarding the sufficiency and the frequency of radio communications training.
- Ten of 12 (83 percent) fire mutual aid organizations interviewed reported concerns regarding the sufficiency and the frequency of radio communications training.
- Over 76 percent of the responders we surveyed reported inadequate opportunities for their agencies to take part in radio interoperability training.
- Nearly 60 percent of survey respondents reported they would like more opportunities to participate in training.

Additionally, the DOS reportedly did not provide external agencies with training for use of deployable State interoperable radio hardware. The DOS VHF radio cache and communications and command vehicles were reportedly deployed in emergency situations to agencies without personnel trained to use the equipment, and county sheriff's offices were not trained to use the Embassy Switch.

Internal Training

While State Trooper recruits reportedly received some training from the Communications Maintenance Unit, the DSP did not have a regular, in-service radio training schedule for State Troopers until June 2014. In-service training was limited to short presentations and fielding questions during annual meetings. Troopers could reportedly benefit from additional training in using their radios, including Zone H, and were not trained to use deployable gateway devices. In June 2014, the DOS began working with law enforcement, fire, and EMS entities to develop a training curriculum for all first responders to address areas of concern with coordination and deployment of resources, including NIMS-compliant ICS for DSP staff.

Communications Unit Training Program

A communications unit training program can help ensure incident commanders have trained and experienced communications management and technical support. Trained Communications Unit Leaders (COML) help ensure personnel can effectively interoperate at large incidents. Radio equipment without trained personnel has limited use, and ongoing training can maintain and increase the ability of end users to effectively interoperate. Required training for the COML

position and other support positions was readily available and targeted response professionals and support personnel at any level of government. Initial COML training was reportedly provided through the federal government and required records maintained, but required ongoing, sustainment training and record keeping was a State responsibility. Twenty-six responder personnel were reportedly trained as COMLs in the State, but the State abandoned the program, resulting in no maintenance of COML certifications and lost opportunities to have in-state COML instructors. The State signed an agreement with a volunteer group to provide COML-like communications assistance at incidents, and the group is considered a support agency in State emergency communications planning.

Recommendations:

We recommend DOS management improve interoperability training. This should include:

- **developing a regular training program focused on radio use and interoperability for in-service responders statewide;**
- **developing a regular training program focused on the use of DOS-supplied hardware, including communications vehicles and cached radios;**
- **cooperating with the Police Standards and Training Council to include radio and interoperable communications training in the Police Academy curriculum;**
- **incorporating a communications unit training program into the State's training plan and seek to train communications unit leaders statewide; and**
- **publicizing available training statewide to facilitate in-service responder access.**

We further recommend DSP management develop, conduct, and document regular training for State Troopers on use of radio equipment and interoperable communications.

Department of Safety Response:

We concur.

Discussions have already taken place with the Division of Fire Standards and Training and Emergency Medical Service personnel at the Fire Academy. The Fire Academy has an established interoperability training recruit-level program, along with a voluntary in-service practicum. The Fire Academy and officials from the Police Standards and Training Council, which is an independent State agency, are discussing adaptation of these programs for use by the Police Academy as part of its mandatory recruit training curriculum and as an option to satisfy part of its annual in-service training requirement. They continue to explore the opportunity to develop a contemporaneous interoperability communications curriculum to be made available for all first responders sometime in 2015.

As the Police Academy implements radio communications training as part of its recruit curriculum in SFY 2016 if approved by the Police Standards and Training Council, all new State Troopers will be exposed to it. The State Police Training and Recruitment Unit is already working on additional and more formalized ICS training, and will develop an in-service training

component in radio communications and make it available to all currently serving Troopers that have never received it, most likely through an online program.

The Division also offers a DHS-accredited course entitled, "Critical Scene Response for Supervisors and Managers." Instructors are experienced police officers from outside the state, who have managed critical scenes such as the Unabomber attack.

Exercises

Exercises are used to practice interoperable communications knowledge and skills, reinforce training, and build competency. Exercises test communications resources and SOPs in a realistic multi-disciplinary, multi-jurisdictional environment; involve diverse participants; and include all disciplines. Exercises are a means to evaluate the state of preparedness and improve the future performance of the responder community and public safety agencies through after action reviews, gap identification, and lessons learned. Exercises are a critical element for achieving interoperability and should include deploying and using interoperable communications assets.

We found statewide interoperability exercises remained at early implementation as of SFY 2014, which was less mature than the intermediate levels of implementation for training and exercises the State reportedly attained in SFY 2011 and appears less advanced than planned in 2008.

Observation No. 7

Regularly Plan, Execute, And Evaluate Interoperability Exercises

The DOS lacked a cohesive, systematic approach to planning, conducting, and evaluating communications interoperability exercises. The Homeland Security and Emergency Management Director, under the supervision of the Commissioner, is responsible for overseeing the State-level planning, preparation, exercise, response to, and mitigation of threats, incidents, and disasters. Communications is an integral component.

Exercise Planning And Frequency

The DOS did not conduct regular multi-jurisdictional, multi-discipline interoperability exercises. Organizing radio interoperability exercises, or exercises with interoperability components, relied primarily on leadership and resources from local or regional agencies during SFY 2014. DOS involvement in planning exercises was limited to monitoring and lending material support, usually federal grant monies, to some exercises. However, neither the DOS nor local or regional agencies coordinated to develop regularly-scheduled, regional or statewide interdisciplinary exercises involving interoperable radio communications.

In SFY 2014, the DOS lacked an updated exercise calendar for at least eight months, relied on federal grants to fund exercises, and effectively lacked an exercise coordinator until May 2014. The DSP did not have an exercise schedule and DSP personnel reportedly had limited

participation in exercises. The DOS did begin, however, planning a limited-scope regional exercise in June 2014, which it expected to eventually use as a model for exercises statewide.

Statewide exercises of primary and back-up interoperable communications systems should be conducted several times per year and include multiple agencies. Agencies should also conduct their own exercises regardless of participation in interagency exercises. Infrequent or no exercises for public safety personnel may result in less familiarity, underutilization, and confusion when using interoperable radio communications resources, increasing the risk of errors and delays.

After Action Reviews And Reports

The DOS lacked a formal lessons-learned system. Personnel and agency performance during exercises and real-world events should be evaluated using after action reviews that generate written reports, and corrective actions should be taken based on those reviews. Only one draft after action report addressing radio communications from the last two years was available for us to review, and DOS personnel we interviewed reported not being aware if after action reports were produced by localities, counties, or other State agencies. Events during the audit period involving multi-jurisdiction and multi-disciplinary responses, including DOS field staff, reportedly revealed inter-jurisdictional and inter-disciplinary issues with interoperable communications, but lacked documentation of lessons learned and after action reports to inform subsequent corrective actions and help improve future responses.

Recommendations:

We recommend DOS management:

- **develop a cohesive exercise system consisting of regularly scheduled, multi-jurisdictional, multi-disciplinary, regional or statewide exercises with substantial radio interoperability components;**
- **increase coordination with local and regional entities to facilitate updating and maintaining a comprehensive statewide exercise calendar;**
- **address interoperable equipment and SOPs in exercise plans to evaluate and improve user skills and organizational capabilities;**
- **expand participation in local and regional exercises by DOS public safety responders; and**
- **develop and institute policy and procedure to help ensure after action reviews are conducted for multi-jurisdictional, multi-disciplinary exercises and events, and a written report is created, distributed, and archived to facilitate learning and improvement.**

Department of Safety Response:

We concur.

Our Division of Homeland Security and Emergency Management have already undertaken this task and will continue working on it.

The Division of Homeland Security and Emergency Management, for more than a year has been presenting in locations around the state, a Drill and Exercise Program funded through federal Homeland Security grant funds, for law enforcement officers and non-law enforcement first responders – fire departments, emergency medical personnel and school districts, managed by the Division's Planning Section. To date, we have held 7 APCO School Shooter Incident drills for public safety personnel, with a total attendance of 188 students from 65 communities or agencies; 4 APCO Crisis Negotiation schools with 120 students from 45 communities or agencies; one APCO Public Safety Telecommunicator school specifically for communications dispatchers attended by 34 students from 25 communities or agencies; 2 APCO "Surviving Stress" seminars attended by 49 students from 24 communities or agencies; APCO classes on "Customer Service in Today's Public Safety Communications" classes attended by 39 students from 21 communities or agencies; and 3 APCO "Disaster Operations and the Communications Center" seminars attended by 99 students from 38 communities or agencies. (APCO is the Association of Public Safety Communications.)

This statewide training effort is now in the process of maturing into a more comprehensive program which will be offered in 2015. The program is expected to run through August of that year. There are four major components to the exercise program – workshops, tabletops, functional, and full-scale exercises.

The workshops will train attendees to establish baselines, develop policies and procedures, and provide a foundation for the tabletop exercises to come, and can be conducted in a number of fashions and is considered a "walkthrough" of the next phases. It is designed to accommodate either a seminar or small group concept. It is intended to be a steppingstone to a subsequent drill or exercise. Incident Command System training will be part of this, and ICS will be used throughout the succeeding phases of the training.

The next phase, a tabletop exercise, is based on a scenario, generally an incident at a school. It is a discussion-based session, relatively informal in nature, where a trained facilitator guides the participants. Scenarios start small and get progressively more complex. This is a very cost-effective exercise.

The succeeding step, a functional exercise, consists of a simulated event scenario. It allows participants to validate their emergency plans and is designed to exercise all aspects of the scenario. Participants exercise procedures, communications, equipment setup, and specific team assignments. An after-action review is held after the functional exercise to ensure everyone is ready for the full scale exercise. Throughout this process the incident command system and unified command are emphasized and there is heavy use of interoperable communications equipment.

Finally, the full scale exercise is designed to be as close to the real thing as possible. It is lengthy, takes place "on location," combines as many actual resources as possible, and is a multi-agency event. It includes an active shooter or an officer down scenario designed to be as

challenging as possible. Participants are critiqued and evaluated and this process constitutes the "final exam." If the participating agencies can handle the most challenging scenario effectively, they can handle the rest.

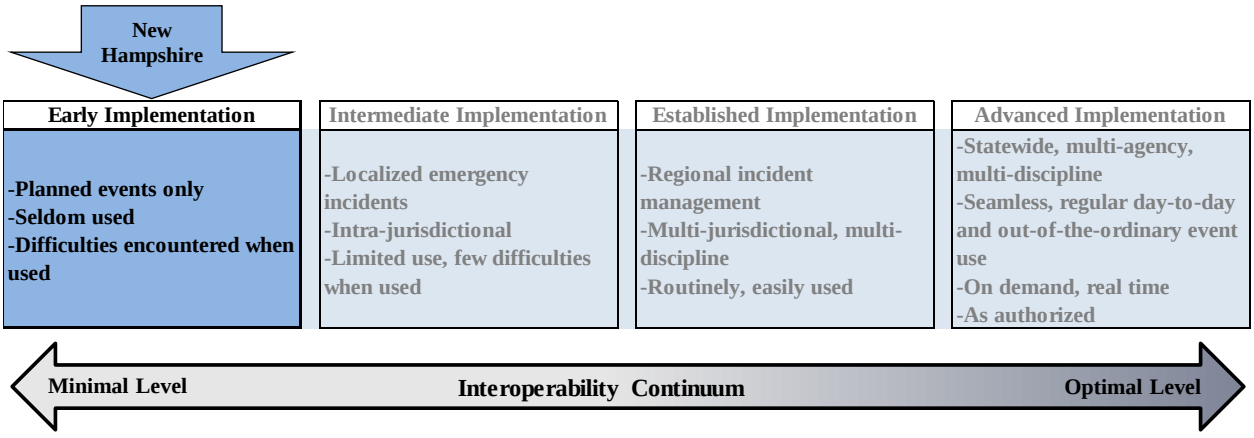
These drills and exercises are the best way to be prepared. They address unified command, the incident command system, large scene management, personnel accountability, interoperable communications, and scene control. The objectives are to reduce chaos, maximize resources, establish and understand a clear chain of command, expand the use of an Incident Management Assistance Team (IMAT) and manage the problem of "self-deployment." Self-deployment occurs when large numbers of responders congregate at a scene even though they were not called or deployed, eager to help but without specific assignments or knowing whom to report to or how, resulting in scene chaos. This has been a problem in several recent actual critical incidents in the state.

USAGE

Use builds the capacity of responders and public safety agencies to protect the public. Continued use improves the knowledge, familiarity, capabilities, and proficiency of responders to establish and maintain interoperable communications. Responders should regularly use interoperable communications assets, including technology and SOPs, in training, during exercises, and at incidents. Use also permits evaluation of performance and generation of after-action reports to inform a lessons learned process to improve training, exercises, and SOPs for future use. We found statewide usage of interoperability resources remained at a level of early implementation.

Table 8

Statewide Usage Assessment



Source: LBA analysis.

Observation No. 8

Improve Use Of Existing Interoperable Communications Resources

Use of DOS-controlled interoperability resources was limited during SFY 2014. Using interoperable resources is necessary to achieve radio interoperability, and resource use should be incorporated into regular activities to build end-user familiarity and capacity. Lack of end-user experience can lead to technology resources becoming burdens instead of assets at events and during incidents. The DOS maintained at least seven distinct, identifiable sets of interoperable resources, but lacked effective plans, SOPs, guidance, and rules defining when interoperable resources could or should be used by responders.

Zone H

The DOS did not provide SOPs, uniform guidance, or written rules for the use of Zone H. Misunderstandings regarding appropriate use of Zone H channels limited the effectiveness of response efforts. Although State Troopers often used other law enforcement radio networks in the State, they rarely used Zone H to interoperate and did not incorporate Zone H use into their standard procedures. Law enforcement personnel from other agencies reported only limited and inconsistent awareness of Zone H and rarely used it for interoperable communications. Fire and EMS personnel reported more regular use of Zone H, which was also acknowledged by several law enforcement personnel. However, use and knowledge of Zone H was inconsistent among fire departments and EMS. Law enforcement and firefighting agencies reported situations in which Zone H use would have improved coordination, but responders lacked the requisite knowledge and experience.

Additionally, Zone H is a local, tactical interoperability resource and did not provide reliable long-distance communications. Law enforcement users of Zone H considered the range limitation problematic. Fire departments also expressed concern about the number of channels available to users, suggesting large events may require additional channels if departments rely on Zone H for interoperable communications. Additionally, with the exception of the DSP which reportedly monitored two of the 16 channels (13 percent), Zone H was not consistently used or monitored by dispatch centers.

DSP Radio Network

Despite providing some agencies with the technical capabilities to use the network, the DOS did not provide these agencies guidance on appropriate use of the DSP radio network, limiting the utility of an interoperable communications resource. The DSP radio network was described by DOS management as usable by all State government agencies and for communications with counties, municipalities, and other states' law enforcement agencies. However, the DSP radio network was not regularly used by other law enforcement agencies for interoperable communications, and reportedly could not be used by non-law enforcement responder agencies. Two county sheriff's offices reported rarely using the DSP radio network and four reported never using the Troop frequencies. Eleven of 12 (92 percent) fire mutual aid districts reported never

using the DSP radio frequencies for interoperation, with the other one (eight percent) reporting it used DSP frequencies rarely. Six fire mutual aid districts (50 percent) reported not being permitted to use DSP frequencies, and two additional fire mutual aid districts (17 percent) reported DSP preferred fire departments stay off the DSP radio network. Fire mutual aid districts were inconsistent or uncertain in their understandings of whether fire department radios were programmed to transmit on DSP frequencies.

BEM Network

The BEM utilized a low-band VHF radio network, which was maintained and operated by DESC personnel and purported to serve as a backup for the DSP radio network during an emergency. However, compatible radios were reportedly installed only in emergency management vehicles and at 31 base stations around the State's nuclear power plant-based emergency planning zones. DSP vehicles were not outfitted with low-band VHF radios, limiting the usefulness of this network as an effective statewide interoperable network, or as a back-up to the DSP high-band VHF radio network.

The Embassy Switch

The Embassy Switch connected certain county sheriff's offices to the State Police dispatch center in the IPOC with a dedicated communications link. The Embassy Switch never effectively provided improvements in statewide radio interoperability and was rarely used due to both technical issues and a lack of guidance. The manufacturer stopped supporting the device, and it was reportedly connected in four counties during SFY 2014. Four of ten (40 percent) county sheriff's offices reported the Embassy Switch was never used, and two (20 percent) additional sheriff's offices reported the device did not work.

Portable Radio Cache

The DOS ineffectively managed a portable radio cache, a set of 50 centrally controlled and stored portable radios intended for use at events or incidents where responders lacked adequate hardware. The SCIP identified two portable VHF radio caches available for deployment and use at incident sites – we were able to verify the existence of one. The general procedures for requesting, deploying, and programming these radios, cited in the SCIP, were unavailable when we requested them in 2014. The radios were reportedly maintained and deployed ineffectively, and were unusable. Familiarity and training with the radios and any governing procedures was reportedly limited. Since the DOS maintained no records on the use of the radio cache, we were unable to verify the use of, maintenance status, or training on the cache.

Gateway Devices

The DSP purchased 24 gateway devices to enhance interoperability, but had not deployed 12 (50 percent) of them through SFY 2014. Gateways provide interoperable communications by connecting radio transmissions across radio, telephone, or data networks. At least one gateway was an interconnect gateway, which permitted incident command sites to link directly into existing radio networks and repeat their radio traffic over the DSP network. The DOS apparently

purchased these gateways prior to determining how they would be used, and had not developed formal guidance or policies to ensure effective deployment.

Communications Vehicles

The DOS lacked SOPs to govern the use of vehicles designed to facilitate interoperable communications at scenes. The DOS reportedly had three incident management or communications vehicles and four repeater trailers available to provide to local communities in the event of emergencies. However, the DOS could not reliably supply both a vehicle and trained personnel to regions or localities during an incident, or supply localities with adequate training for using vehicle hardware prior to an incident. Regional entities purchased their own vehicles so they could have control over the availability of the hardware and expertise.

Monitoring Usage Of Resources

The DOS lacked data on the use of key interoperable resources. Monitoring and recording of activity on Zone H and the DSP radio network was inconsistent. DSP personnel were not fully aware of the loss of interoperability with four county sheriff's offices after the counties upgraded hardware. Interoperable resource usage should be monitored and evaluated to help ensure efficient and effective use of public assets and responder skills are sufficient to successfully fulfill their duties. DOS management should also measure and compare actual use to planned or expected interoperability usage.

Recommendations:

We recommend DOS management comply with statute and adopt in administrative rules policies and procedures governing other agency use of DOS interoperability assets.

We also recommend DOS management improve statewide usage of interoperability assets. This should include:

- **creating, distributing, and providing training policies and procedures governing other State, local, and regional agency use of all DOS interoperability assets, including Zone H and other zones, DOS frequencies, DOS radio networks, the Embassy Switch, and hardware caches and stockpiles;**
- **monitoring and evaluating use and usefulness of all DOS interoperability resources, including reviews of the purposes and divestment value of equipment;**
- **ensuring responders statewide are aware of available interoperability resources and the procedures for requesting use of these assets; and**
- **exploring opportunities to provide interoperable radio resources which allow for interoperability over distances greater than those typically available when using Zone H.**

Finally, we recommend DOS management improve internal usage of interoperability assets, in part, by creating, distributing, and providing training on internal policies and

procedures governing the use of Zone H and other zones and channels; the various DOS radio networks; and the various DOS hardware caches and stockpiles.

Department of Safety Response:

We concur.

Initially with the deployment of the radio system the Division of Fire Standards and Training and Emergency Medical Services developed and presented training programs for fire and EMS users and made these programs and lesson plans available to the police as well. Given the turnover of personnel in the emergency response community it makes sense to make this training available on an ongoing basis and to ensure that it is updated as technology changes.

In response to this recommendation we will task the Division of Fire Standards and Training and Emergency Medical Services with offering communication unit leader training to the entire responder community. The recent acquisition of resources to present online training should allow us to make these programs available at less cost and avoid time and travel expenses for the departments that enroll their personnel. Once the training is available it will be publicized on the DOS website and notification will be given to the NH Association of Fire Chief and the NH Association of Chiefs of Police who can notify their member agencies.

As mentioned in our response to Observation #6 above, user training in the radio system is already a part of the Fire Academy curriculum and also available to in-service students; and meetings have already ensued with the Police Standards and Training Council, a separate State agency, to develop a cooperative training initiative specific to radio use and interoperable communications both at the recruit level and for in-service training.

The communications vehicles are supplied by the Division of Emergency Services and Communications and because this is very expensive equipment the Division normally provides personnel trained in operating it when it is dispatched to emergencies. We will task that Division with ensuring that they have an adequate number of trained and available personnel, either from their own staffs or from other agencies.

The State Police Recruitment and Training Unit will be tasked with offering regular training to State Troopers on the use of their radio equipment and interoperable capabilities, once the new curriculum is in place. This training can also be delivered online.

As part of our concurrence, we remind the reader that our authority to impose binding communications policies on other state, local and regional entities is limited. To the extent that the Commissioner's rulemaking authority regarding the ICS system will allow the Plan coordinated through the Fire Marshal, and the licensing authority of the Bureau of Emergency Medical Services, we will comply with the recommendation. In some areas our authority may be limited to developing and circulating model policies to the state, local and regional entities and recommend that they adopt or adapt them for their use.

We will explore means to keep the responder community aware of available interoperability assets including radio caches and stockpiles, and the procedures for acquiring them in time of need. This may include posting information on our website as well as including it in the annual statewide Emergency Management Seminar and developing a schedule for reissuance of the information periodically to account for turnover of statewide police, fire and emergency medical responder management and local emergency management directors. It is always a challenge to maintain an informed stakeholder community because key personnel change so often.

Our Radio Maintenance personnel maintain an awareness of new and emerging radio resources and if they discover a better solution that will provide greater interoperability over longer distances that is affordable they will alert us, and whether we will be able to adopt it will depend on the availability of funding.

Our Radio Maintenance personnel also maintain an awareness of the use and usefulness of all our radio resources and its divestment value, and also of the federal regulations that regulate and control the divestment of any equipment purchased with federal funds.

LBA Comment:

The DOS has substantial statutory authority to regulate the EMS responder community through administrative rules, significant authority to coordinate the fire service when responding under the *Plan*, and authority to establish statewide ICS rules for use in responding to any natural or man-made cause that requires emergency management by multiple agencies or departments within State and local government.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

DEPARTMENT OF SAFETY MANAGEMENT CONTROL

Management control: 1) includes the plans, policies, methods, and procedures adopted by management to meet its missions, goals, and objectives; 2) includes processes for planning, organizing, directing, and controlling program operations; 3) encompasses the systems for measuring, reporting, and monitoring program performance; 4) serves as a defense in safeguarding assets; and 5) helps prevent and detect errors, fraud, abuse, and noncompliance with provisions of laws, regulations, contracts, or grant agreements. Management controls over radio communications help ensure supporting systems are interoperable, reliable, scalable, resilient, and redundant.

Observation No. 9

Improve Management Control

The Department of Safety (DOS) lacked management controls sufficient to ensure effective and efficient radio network operations and related to interoperability functions for which it was responsible.

Departmental Strategic Planning

The DOS lacked a formal, cohesive strategic plan to govern its internal radio operations. Strategic plans formalize and integrate strategies and objectives, resource allocation, and risk management, and form the basis for program measurement by establishing clear, consistent goals and objectives at both the entity level and program or mission level. While the DOS generated several documents with strategic plan-like features for statewide interoperability, no plan guided the development of radio networks within the DOS, resulting in multiple DOS-owned and operated very-high frequency (VHF) networks, and maintenance and dispatch functions. Additionally, in May 2014, the DOS proposed creating a new ultra-high frequency (UHF) digital radio network for use by law enforcement and fire and emergency medical services in the southern 40 percent of the State. This plan included constructing a new radio network and fielding 750 new mobile and portable radios to DOS personnel alone. Funding relied upon $2 million in capital appropriations provided to the DOS in the State fiscal year (SFY) 2013-2014 biennium. However, these funds were also allocated to the expansion of the Division of State Police (DSP) VHF network project, itself reported to be a $7 million or more undertaking. In essence, the DOS double-allocated the same funds to build duplicate capabilities. Further, in our October 2010 *Division of State Police, Field Operations Bureau* performance audit report (*2010 Audit*), we recommended the DSP develop a strategic plan. Although the DSP concurred with the recommendation and reported it expected to complete the plan by April 1, 2012, this had not occurred by the end of SFY 2014.

Personnel Management

The DOS lacked a comprehensive, formalized system to manage personnel responsible for its radio networks. An integral element of strategic planning is a coherent approach to personnel management. The personnel strategy should include current and future personnel needs. In our *2010 Audit*, we recommended the DSP establish span of control guidelines and reassess responsibilities. The DSP concurred, indicating a review to improve organizational efficiency and effectiveness was ongoing. Duties determined to be repetitive or redundant and not directly involved in public safety were to be minimized or eliminated. The DSP reported the review was to be completed by January 1, 2011. The results of the review were never formalized.

We identified five sworn personnel performing administrative functions related to radio operations that could be performed by civilians including: 1) information security; 2) supervision and management of the DSP's radio network and maintenance operations; 3) supervision of dispatch operations; 4) technology management; and 5) contracting and purchasing. Further, sworn personnel can have higher salaries, often change positions quicker, and retire earlier than their civilian counterparts, all of which can impair efficiency and organizational effectiveness. Sworn personnel may not possess the technical training or education to effectively perform technical duties. Personnel need to possess and maintain a level of competence that allows them to accomplish their assigned duties, however, neither Supplemental Job Descriptions (SJD) nor class specifications for the five aforementioned positions provided for any technical education, experience, or certifications.

The DOS lacked formal succession planning and attributed many of the current weaknesses in its management control structure related to internal radio operations and statewide interoperability, to the past loss of key staff without adequate succession planning. A strategic approach to human capital management includes succession planning as part of a risk mitigation strategy to help ensure continuity of needed knowledge, skills, and abilities. DSP staff suggested an organizational chart sufficed; however, reliance on an organizational chart is replacement planning, not succession planning. Internal radio operations and statewide interoperability can be negatively impacted as key employees depart State service via retirement in the next few years. We identified at least five individuals with key roles in radio network operations that were or would be soon eligible to retire. Additionally, radio network operations were increasingly similar to computer network operations, skills not specifically required by the SJDs of maintenance personnel. Without a succession plan in place, risk to internal radio operations and statewide interoperability may be increased.

Risk Management

The DOS lacked a formalized method to regularly identify and evaluate risks. In our *2010 Audit*, we found risk management controls at the DSP needed improvement, and recommended an enterprise-wide risk assessment be completed. The DSP concurred, indicating a DOS-wide assessment would be completed by the end of SFY 2011. No such assessment had been completed, but a long-term goal of completing and implementing an enterprise-wide risk management plan remained. Further, no assessment had been completed to identify the risks affecting the DSP's mission-critical radio network. Without a risk assessment, management

cannot formulate a risk management approach or develop the controls necessary to mitigate risks.

Information Management

The DOS lacked a coherent records management program. The DOS was required by statute to maintain a records management program and document its organization, function, policies, decision, procedures and essential transactions. We found weak controls over record keeping and documenting of radio network maintenance activities, deploying hardware and inventories, radio networks topologies, authorized users, and agreements with other agencies.

Also, in our *2010 Audit*, we recommended developing a comprehensive information security plan. The DSP concurred, stating related policies and plans would be updated by late SFY 2012. However, as of June 2014, the DOS had not developed a policy for handling sensitive and confidential information or documents.

Fiscal Management

The DOS lacked a coordinated funding mechanism to support radio network operations. Instead the DOS employed an opportunistic approach to fund the construction and maintenance of the DSP's radio network. For example, the DSP primarily relied on federal grants to construct and replace portions of its radio network during the past decade. However, DOS managers and staff reported there was inadequate funding to maintain the existing DSP radio network. To sustain operations they used operating funds, cannibalized retired equipment for parts, transferred hardware from less-than-critical sites to more critical sites, and stockpiled replacement parts purchased with federal grants when available; all-the-while planning to field an expanded DSP VHF radio network and a new UHF digital radio network.

The DOS did not clearly track or manage radio network-related expenses. The DOS could neither provide financial information showing investments made by the State into DOS radio networks during the previous five fiscal years nor could it provide an estimated value of the DSP's radio network. Additionally, the Communications Maintenance Unit (CMU) provided free maintenance and support services to three other State departments and maintained microwave connections for nine counties and at least two fire mutual aid districts. The total value of this support was indeterminate as there was no mechanism to track support provided other agencies. However, DOS management reported that it intended to no longer operate informally and in the future would formalize interagency agreements.

Resolving Prior Audit Findings Timely

In our *2010 Audit*, we issued 21 observations. We reexamined issues related to nine observations during our 2014 audit and found two (22 percent) observations remained unresolved, six (67 percent) were partially resolved, and one (11 percent) was no longer applicable. We are reissuing elements of seven prior audit observations separately. The DSP originally agreed to implement six of the recommendations by SFY 2011, one by SFY 2012, and did not specify a completion

date for the remaining two. Timely resolution of prior audit findings is a key element of good management control.

Recommendations:

We recommend DOS management comply with statute and create and maintain a comprehensive records management program.

We further recommend DOS management improve management control, in part, by:

- **developing a strategic plan encompassing radio operations and a strategic human resources management plan which formalizes span-of-control guidelines and assigning administrative responsibilities, such as operating radio networks, to technically trained and qualified civilian employees, freeing sworn members to work on direct law enforcement functions;**
- **formalizing a written succession plan designed to ensure an adequate supply of qualified personnel is available to fill key positions;**
- **conducting an enterprise-wide risk assessment and implementing a risk management plan;**
- **establishing fee-for-service agreements with supported agencies;**
- **creating a written information security policy; and**
- **developing a system of controls to promptly resolve prior audit findings.**

Finally, we recommend DOS management propose legislation to establish a reliable funding mechanism for State agency radio operations should it remain responsible for the management of State agency radio operations.

Department of Safety Response:

We concur in part.

We concur DOS management should comply with statute and create and maintain a comprehensive records management program. RSA Chapter 5 spells out the requirements for State agency recordkeeping and dates back to 1987, with amendments in 2006 to accommodate video recording, and established the landscape for departmental records. Our Business Office and Warehouse comply with recordkeeping requirements as spelled out in the Manual of Procedures. However, the Department of Safety, along with much of State government, needs more robust and less labor-intensive records systems, especially for some of our smaller units.

The State of New Hampshire is currently involved in a multi-year process with the computerized Lawson recordkeeping system which they purchased, the State and has already implemented various phases including financial reporting, personnel and payroll modules. It has yet to implement the inventory module, and we eagerly await this development and expect that it will provide a clear path forward for us to improve all of our records management efforts.

Our Division of Administration, which is in overall control of our business management functions, is assisting all of our divisions, in collaboration with the Department of Administrative Services, in the implementation of the Lawson system, as it rolls out, piece by piece. We are committed to the development of better recordkeeping in the area of radio communications, and in addition to whatever the Lawson system may provide, we will consult with other agencies to determine if additional software packages are available and affordable that might help us to fill in any gaps that Lawson leaves. Our ability to implement this recommendation will depend on the speed at which the statewide implementation of the Lawson system proceeds. Meanwhile, the staff of the Equipment Control Unit and the Warehouse have been in touch with the Director of State Police to offer their assistance to improve current practices.

We concur in part that DOS management should develop a strategic human resources plan which formalizes span-of-control guidelines and assign administrative responsibilities, such as operating radio networks, to technically trained and qualified civilian employees, freeing sworn members to work on direct law enforcement functions. We wish we had the resources to operate a textbook operation, but we do not. We will task our two-person Human Resources unit which has oversight of personnel policies applicable to nearly 1,800 full and part-time employees, with consulting with other State agencies as well as conducting research into the components and amount of time and effort that would go into the development of a strategic human resources plan, and whether there are existing plans in other agencies that we could adapt to our needs, short of employing a consultant to develop one.

One of the duties of the SWIC will be to assist in the development of a strategic plan encompassing radio operations. The Strategic Plan will be developed by the SIEC through its working groups, for approval by the Commissioner.

We agree with the concept of civilianizing any operations that do not require sworn personnel, and are attempting to move in that direction. Our current, technically trained and qualified civilian employees are principally engaged in hands-on operations that are essential to the day-to-day operation and maintenance of the communications system. Department – wide, we have in recent years inherited many operations and responsibilities, often due to the passage of new laws, in most cases without any accompanying personnel or funding.

The State Police Communications Maintenance Unit in FY 96 consisted of 13 civilian technical employees, and today we only have 12. In the interim the system has grown from 14 microwave links to 57, from maintaining 44 base stations to 89, from 6 radio consoles to 31, from 89 antenna systems to 140, from 4 emergency generators to 21, from one recording system to 10, from the calibration of 850 traffic radar units to 1,133, and we still maintain 18 statewide microwave system towers. These jobs now require technical ability in internet protocol technology as well as radio technology.

The Commissioner has as one of his goals, a department-wide self-examination to determine how we can reorganize for greater efficiency and effectiveness, and the extent to which this can be accomplished within his current statutory authority under RSA Chapter 21-G: 9, II (e) and V and identify areas where he will need to propose legislative changes. As in our responses to many of the recommendations, we caution that the Department of Safety is but one spoke in the wheel of

State Government; and the Governor and the Legislature have a difficult balancing act within available resources, to keep the entire wheel turning as effectively as possible. Any changes require additional resources or funding will rise or fall on the condition of the economy and of our revenue sources balanced against the needs of all other State agencies and operations.

We concur in part DOS management should develop a written succession plan designed to ensure an adequate supply of qualified personnel is available to fill key positions. It is difficult in the existing State system to implement written succession plans. A combination of statutes, State personnel rules and labor agreements, along with limited funding, has resulted in a situation where it is not possible to accompany each job with an understudy, and a position cannot be filled until it becomes vacant, which means there is no way to assign another individual to work alongside the person who is leaving, in order to learn the job from the incumbent. That individual already has another job that demands, or should demand, his or her time and attention or otherwise there would be no need for the job to exist, and second, because the personnel system is set up to ensure fairness in the selection process, we cannot predetermine who will be the successor to a particular position until such time as the position becomes vacant and people are eligible to apply for it.

Succession planning must take into account not only resignations and retirements, but what happens when someone in a key position experiences an illness or injury that causes them to use extended sick leave or worker's compensation. Where we are short staffed in some of our operations, the only way to cover an absence such as this is to put more work on some existing staff member who may already be working beyond capacity, and result in missed deadlines or less than ideal work product.

A statewide audit focused on succession planning several years ago identified this need but has never been acted upon. We respectfully suggest that this is a statewide problem that applies to all agencies, and no one agency can resolve it.

There are some steps that we can take toward succession planning, and we will do so. Examples are producing manuals for key positions that describe in more detail than a supplemental job description can, the specific duties and responsibilities, the methods of carrying them out, important deadlines, laws and regulations that apply to the position, etc. We will contact other State agencies to determine how they are approaching succession planning and whether there are ideas we can borrow from them to give us a head start in the process and proceed from there as time and resources permit.

We concur with the need to conduct an enterprise-wide risk assessment and implement a risk management plan. An enterprise-wide risk assessment for an organization this size and with this many disparate operations and responsibilities is a daunting task. Our Legal Unit contacted the State Risk Management Unit and was informed that contracting with a qualified individual or organization to perform such an assessment could cost as much as $250,000. The prospects of an appropriation of this magnitude would be unlikely. It might be more appropriate for the State to increase the capability of the state's Risk Management Unit and provide it with the capacity to offer this service to all State agencies. We do not question the need and will contact other State

agencies for ideas and develop a plan to do as much as we can do with existing human and financial resources.

We concur in part with a need to establish a reliable funding mechanism to support radio network operations, including fee-for-service agreements with supported agencies. The Department is not empowered to establish funding mechanisms. This is dependent on the State budgeting process and legislative action. Currently the State Police budget has been insufficient to completely fund their communications operations and some E-911 funding is used for this purpose, a practice that unless very carefully implemented runs the risk of violating federal regulations regarding the use of telephone surcharge funds. We have an agreement with partners in the Broadband Technology Opportunities Program to share in the expenses of maintaining broadcast towers and the SWIC will explore the possibility of agreements with other agencies that use our radio network resources.

There no question of the need for a consistent and reliable source of revenue to support statewide radio communications. Along with this, the Legislature must address the policy matter of whether and to what extent the State should accept responsibility for replacement of end of life equipment owned by political subdivisions. Once that is determined, only the Legislature can determine sources or revenue and funding mechanisms.

We concur with establishing an information security policy. The Department of Information Technology, a sister State agency responsible for providing IT services to all State agencies, has various information security policies that we are required to comply with. In addition, the Division of State Police has recently assigned a Trooper with some advanced knowledge of the IT field, to monitor information security and with the advice and assistance of the Department of Information Technology he will be looking for weak points in our current information systems and developing policies to address them, on an ad hoc basis. He will also examine the information security policies of other State Police organizations for ideas. There is a limit to what we can do within existing personnel and fiscal resources.

We are fortunate that unlike the total State radio network the State Police network is a closed network with limited outside access. This makes it somewhat more difficult to hack into. The State Police information security officer operates some scanning software but it may not be sufficient for the type of full-scale monitoring that the recommendation envisions. Early estimates suggest that a full-time process of monitoring the radio network for intrusion would involve the purchase of software costing as much as $100,000 and the addition of full-time personnel to monitor it, and if so, will depend on our ability to obtain the necessary funding.

We are committed to doing the best that we can within the resources that we have or are given, to improve security of the radio system.

We concur we should establish a system of controls to promptly resolve prior audit findings. The Governor recently issued an Executive Order to all State agencies to develop formal policies to address audit findings. We have written such a policy and it is undergoing internal review with the Divisions. We anticipate adopting it in final form by December 1, 2014.

LBA Rejoinder:

The DOS has organizational responsibility to develop an adequate management control structure. Risk management and formalized plans, such as human resource management plans and succession plans, underpin a sufficient management control system. The DOS should assess and manage risk proactively and formally. We note the DOS already has undertaken some level of risk assessment to inform their draft continuity of operations plans. The DOS should also undertake "textbook" planning to help ensure human resources can meet the organization's operational needs and manage risk proactively. The DOS should undertake these activities irrespective of what other State agencies are capable of undertaking. DOS management may want to seek additional funding, or a transfer of funds, if the cost estimates cited are considered beyond the Department's current means.

Further, the DOS response at once claims it cannot establish funding mechanisms, and describes how it has established a funding mechanism related to the Broadband Technology Opportunities Program. Additionally, in our recommendations in Observations No. 5, 9, 11, 16, and 19, we recommend several means by which the DOS can to some degree control its fiscal future.

Finally, the DSP radio network had external exposures and was not the isolated, closed system the DOS suggests.

Observation No. 10

Formalize Organizational Structure, Responsibility, And Authority

The DOS lacked a formal organizational structure, responsibilities, and delegations of authority to centrally manage and control internal radio operations and statewide interoperability functions. In our *2010 Audit*, we recommended span of control guidelines be established, command staff responsibilities be reassessed, and organizational rules be updated. The DOS concurred and set deadlines in SFY 2011 for addressing the recommendations, but changes had not occurred through SFY 2014.

Without adequate structural controls, duplication of effort and other inefficiencies can result. Untimely rule promulgation constitutes statutory noncompliance and inaccurate administrative rules can mislead the public on the DOS's organization and roles. We found the lack of formal delegations and organizational structure, and convoluted relationships created internal management difficulties and confusion, and confusion among external stakeholders about responsibility.

No Formalized Structure

An agency's organizational structure: 1) establishes a framework for planning, directing, and controlling operations; 2) should clearly define authority and responsibility; and 3) should establish appropriate lines of reporting. An organizational chart showing key areas of

responsibility should be accurate, updated, and available. Statute requires the DOS promulgate administrative rules describing its organizational structure. In our *2010 Audit*, we found the DOS lacked rules reflecting its then-current organizational structure for the DSP, and recommended rulemaking be undertaken. Though the DOS concurred and asserted rulemaking would commence by April 1, 2011, as of June 2014, the DOS still lacked these rules. Statute provided the DOS 90 days to commence rulemaking resulting from organizational structure changes. Further, the DOS must propose legislation to the General Court and seek Governor and Council approval to accomplish reorganizations, but no efforts to formalize the DOS's office of interoperability, conceptualized in late SFY 2014, were evident.

Distributed Responsibilities

Responsibilities for radio operations, including aspects of statewide interoperability, were spread among at least three divisions, three units, and one office within the DOS, often with no formal reporting relationship:

- The Statewide Interoperability Coordinator (SWIC) position was to address statewide interoperability, coordinate communications systems, and act as the State's liaison to other states and federal agencies. The SWIC position was funded from the Division of Emergency Services and Communications (DESC) budget and appeared on DESC organizational charts, but also was reportedly assigned either to the Office of the Commissioner or to the conceptual office of interoperability.
- The DSP had responsibility for overseeing the operation and maintenance of its radio network, and some related budgeting. This included the operational employment of the Communications Unit and the CMU. The DSP was also responsible for statewide channel matrix management, a portable radio cache, and gateways for field use.
- The Division of Homeland Security and Emergency Management had responsibility for exercise planning, contained a communications section with some interoperability responsibilities, and coordinated with the DESC for the Bureau of Emergency Management (BEM) network and the deployment of mobile interoperable communications equipment.
- The DESC was the lead for emergency communications; contained a telecommunications section; had budget authority over the SWIC, the CMU, and the Communications Unit; was responsible for mobile interoperable communications equipment; and operated and maintained the BEM network, employing its own radio technician. It also had part of the budget for maintenance of the DSP network.
- The Communications Unit was a budgetary component of the DESC but operationally responsible to the DSP for dispatch communications.
- The CMU was a budgetary component of the DESC but operationally responsible to the DSP for DSP radio network operability, which included installing, programming, and servicing DSP network equipment, and equipment owned or operated by some other components of the DOS, several other State agencies, and some non-State public safety agencies.
- The Grants Management Unit, a component of the Office of the Commissioner, had a role in receiving and issuing hardware, technical analysis of the statewide microwave

system, and managing interoperability-related grants and plans. The prior SWIC was a member of this unit.

Delegations

The DOS must formally delegate authority in writing. Delegations should cover all operating activities and reporting relationships, clearly assign authority and responsibility, and clearly link authority and responsibility to decision-making. However, no formal delegations of authority related to radio operations or interoperability existed, and staff relied upon informal means to infer authority.

A review of six radio operations-related class specifications provided no clear delegation of authority related to radio operations or interoperability. SJDs for staff, reportedly assigned key roles in radio operations, provided generalized oversight responsibilities related to radio operations to three positions, while one also had generalized authority to direct radio-related operations. There was no SJD for the SWIC through June 2014 and all existing SJDs lacked authority and responsibility for interoperability. SJDs should clearly indicate the degree of authority delegated to each position and the responsibilities assigned.

Recommendations:

We recommend DOS management comply with statute and:

- **propose legislation to the General Court, and seek Governor and Council approval, for organizational changes creating an office of interoperability;**
- **promulgate administrative rules reflecting the DOS's current organizational structure, starting the process within 90 days; and**
- **formally delegate authority related to internal radio operations and statewide interoperability.**

We further recommend DOS management:

- **update, clarify, and formalize SJDs related to internal radio operations and statewide interoperability;**
- **consolidate responsibilities related to internal radio operations and statewide interoperability, and simplify related organizational structures; and**
- **ensure external stakeholders are aware of the assignment responsibilities to limit their confusion about points-of-contact, particularly as they relate to statewide interoperability issues.**

Department of Safety Response:

We concur in part.

The statutes that form the basis for this recommendation are RSA 21-G:9, II and V, and RSA 21-P:15, which give the Commissioner authority to accomplish internal reorganizations. As

discussed in our response to observation #9 above, the Commissioner is committed to reviewing the entire Department and looking for opportunities to simplify, eliminate duplication, and improve customer service.

A formal Office of Interoperability may be the best solution but we prefer to wait until the SWIC position has matured, see if it should be more than a part-time position and if so, how it might be funded, whether other human resources such as a secretarial position will be required, where within the organizational structure such an Office should be located, and how the governance group is working out in practice.

We concur the DOS should promulgate administrative rules reflecting its current organization structure, starting the process within 90 days. The audit team is absolutely correct. In checking our administrative rule section Saf-C 100, it becomes apparent that it is woefully out of date. It refers to two divisions in the Department that no longer exist and does not refer to two divisions that have been created in the meantime, does not list the Chief of Policy and Planning, and refers to the Assistant Commissioner as having authority over the operation and administration of any division of the Department except the Division of State Police, a restriction that has not existed since 2002. Although updated organization charts are presented as part of each biennial budget process and the State's budget structure reflects these changes, section Saf-C 100 has not been kept up to date and we will redraft this rule and our Legal staff will begin the administrative rulemaking process before the end of the year.

We concur DOS management should formally delegate authority related to internal radio operations and statewide interoperability, and simplify related organizational structures; update, clarify, and formalize supplemental job descriptions; consolidate responsibilities; and ensure external stakeholders are aware of the assignment responsibilities and point-of-contact.

When the decision was made to create a SWIC position, the only available source of funding was in the Division of Emergency Services and Communications. The only available office space was in the Grants Management Unit, which reports to the Office of the Commissioner. We will determine the most effective reporting relationship for the position as we go forward, and will ensure that there is a formal delegation of authority and that it is reflected in the Supplemental Job Description.

Within the Department of Safety the radio system currently involves three different divisions – State Police, Emergency Services and Communications, and Homeland Security and Emergency Management. This may not be the ideal solution, but it is a child of necessity. The State Police has a business need to communicate with the Troopers in the field and with other law enforcement agencies, and the ability to maintain its network of towers, broadcast equipment, and mobile and portable radios. The Enhanced 911 system; because of the small size of the state, is a single statewide operation, rather than being fragmented as it is in many other states. This is one reason we have been able to keep the 911 surcharge one of the lowest in the nation and still provide excellent service. That Division also recently inherited the task of operating and maintaining the regular telephone system in all State agencies. Because some of DESC's technical positions have sufficient internet protocol knowledge, that division is able to assist the Division of Homeland Security and Emergency Management with mobile interoperable

communications equipment and assist it with maintenance of the relatively small Bureau of Emergency Management radio network that connects that Bureau with local Emergency Management Directors statewide. DESC also recently was given by the Legislature the creation and operation of the statewide emergency alerting system.

DESC also funds part of the budget of the State Police Communications Maintenance Unit, a decision made by the Governor and the Legislature in the last budget for lack of a sufficient funding stream and because of the tie-in with how the E-911 system passes its critical call information to responders statewide.

Although this reporting relationship looks complicated on paper it works in practice and was born out of necessity due to State finances, but there is no doubt it could be simplified and improved. It is our hope that the SWIC will be able as a part of his duties, to serve as the primary point of contact with external stakeholders regarding interoperability issues, and to work with the three involved divisions and our Human Resources office to memorialize in writing clear lines of responsibility and accountability for the various tasks, and through the Commissioner's Office, require updates to supplemental job descriptions for positions having duties related to internal radio operations and interoperability.

LBA Rejoinder:

The evidence obtained during the audit demonstrated the convoluted organizational structure and reporting chains did not work "in practice."

Observation No. 11

Consolidate Department Radio Networks, Maintenance, And Dispatch

The DOS operated at least three radio networks, two supporting maintenance functions, two full-time and six part-time or intermittent dispatch functions, and retained infrastructure for two additional dispatch facilities as of June 2014. Consolidating networks and dispatch functions can increase efficiency, improve emergency communications, standardize procedures, and simplify maintenance and training.

The only statutory guidance provided to the DOS related to radio network operation required it provide communications and dispatch services to the New Hampshire Hospital (NHH) Security Unit. While a group of DOS managers was formed to address internal radio operations, it focused on DSP network operability issues, and other DOS radio operations developed not from a statutory mandate or a strategic plan, but from operational needs formulated at the operating unit-level. The DOS operated the DSP network, which primarily served Troop-level radio communications needs; the BEM network, which primarily served local emergency management directors in the southeastern and southwestern margins of the State; and a campus-wide network serving NHH Security Unit communications needs. The networks were not integrated, fully operable statewide, or interoperable with other State agencies or the statewide responder community. Additionally, a plan was proposed for fielding a new, separate UHF network at the

same time network-wide improvements to the DSP VHF network were under consideration, and using the same funding source. This would result in a third statewide DOS radio network being constructed and operating in parallel to the existing BEM and DSP networks, and requiring management, maintenance, and dispatching to support its operation. Given the technology involved, this would require additional tower sites to achieve comparable coverage.

The CMU provided management and maintenance for the DSP and NHH networks, while a single DESC employee managed and maintained the BEM network. Similarly, each of the DOS networks had independent dispatch functions The DSP's Communications Unit dispatched for the DSP network with two full-time and three part-time dispatch centers; the Marine Patrol, which utilized the DSP network for radio communications, independently dispatched from the Incident Planning and Operations Center (IPOC) under the supervision of the Communications Unit; and the NHH network operated a dedicated on-site dispatch. The DESC operated the BEM network on an as-needed basis. The DSP also equipped, but did not staff, two additional dispatch centers. Since 2010, the DOS has reported planning to centralize dispatch at the IPOC, plans which were unrealized as of June 2014.

Recommendations:

We recommend DOS management:

- **restructure radio operations DOS-wide by assigning responsibility for operating and maintaining a consolidated radio network to a single, existing division;**
- **formalize an intra-departmental body consisting of all relevant stakeholders, and make it responsible for governance of the consolidated radio network;**
- **provide the responsible division necessary authority to consolidate DOS radio assets into a single network, including a means to charge users appropriate fees;**
- **require the responsible division develop a migration plan for consolidating DOS radio assets into a single, coherent system;**
- **consolidate disparate radio networks into a single primary radio network for all DOS users and divest the State of unnecessary infrastructure;**
- **merge DOS dispatch centers and functions in a single unit and divest the State of unnecessary infrastructure;**
- **combine DOS radio maintenance operations in a single unit; and**
- **require the responsible division routinely report its progress in consolidating the DOS's radio assets into a single coherent system and divesting the State of unnecessary infrastructure.**

Department of Safety Response:

We concur in part.

A formal intra-departmental body of all relevant stakeholders made responsible for governance of the consolidated Department of Safety radio network may not be necessary or appropriate. Currently, all Department personnel with mobile or portable radios are dispatched by State Police personnel.

The Directors of the other Department of Safety divisions, including the Director of State Police meet together with the Commissioner, Assistant Commissioner and the Chief of Policy and Planning twice a month, and have ample formal and informal opportunities to address any problems they have encountered with the radio system, to the limited extent that any of their personnel are issued radios. Creating yet another committee and giving them actual governance over the Department's radio network might be a case of overkill, simplify nothing and add confusion.

Charging users of the system appropriate fees for the use of the system is an idea in need of exploring but should only be considered if, after a careful study, it is determined to not cost more in terms of implementation and oversight than it would contribute.

As mentioned in our response to Observation #9, the Department currently has under consideration charging local and county agencies for any maintenance we perform on their electronic equipment and evaluating the extent to which it would be less costly to farm out some of our electronic equipment maintenance to the private sector, allowing our communications maintenance personnel to focus more on maintaining the towers and repeater system.

We now have the capability of performing all dispatch duties from Concord and eliminating the need to dispatch from the Troop stations. In fact, with the exception of Troops C, E, and F, this is done after normal daytime business hours. The public expects Troop Stations to be staffed, at least during normal daytime business hours, and the civilian staffs at these locations answer the phones and dispatch Troopers assigned to that particular Troop while they are simultaneously performing receptionist and secretarial duties that are similar to how small police departments operate. Efforts to close these Troop stations have been met with considerable resistance from the public, many of whom resent being confronted with a locked door and vacant building if they come to the Troop Station for assistance in what may be an urgent matter. Troopers also complain that a dispatcher who resides in the Concord area will often be unfamiliar with the landscape in the geographical troops, and therefore less capable of serving as the "lifeline" for the Troopers in the field. We continue to work toward an eventual situation where more and more of the dispatching will be done from Concord but this can best be described as a work in progress.

It is also useful that in case of a catastrophic failure in Concord, equipment in a regional Troop enables it to remotely answer the phone and dispatch the radio for Headquarters from a Troop station. There is little unnecessary infrastructure that the Department would be able to divest itself of by consolidating dispatch operations; and as far as other operations such as Fish and Game they would probably want to continue to have the ability for business reasons to communicate directly with their personnel during their normal business hours.

Departmental radio maintenance operations could conceivably be consolidated into a single unit, but this would only involve moving several employees in HSEM and DESC who perform other duties in addition to radio maintenance at their jobsites.

Observation No. 12

Adopt Incident Command System Administrative Rules And Institutionalize Related Policy And Procedure

The DOS has not established a statewide Incident Command System (ICS) and the DSP has not operationalized ICS.

Statewide Administrative Rules

Since 2004, statute has required the DOS to adopt administrative rules to implement an ICS for use when incidents require the response of multiple agencies or departments within state and local government. ICS is a standardized all-hazards approach to incident management that can be employed during single agency responses or large-scale events involving multiple agencies and disciplines. As a command and control system, ICS provides for a flexible and coordinated response, ensures reliable interoperable communications across disciplines, provides for common procedures, and allows for the efficient integration of resources from different agencies. Properly employed, ICS can help ensure communications are effective and operations are planned and executed according to clear objectives. A poorly managed incident response can undermine safety. A statewide, all-responder ICS is critical in helping eliminate on-scene confusion and ensuring operations involving multiple responders are effective and efficient. Effective incident management relies on strict adherence to ICS, and ICS is integral to the *New Hampshire 2012-2014 State Homeland Security Strategy* (*Strategy*). No relevant rules were adopted through SFY 2014.

Internal DSP Policy And Procedure

In our *2010 Audit*, we recommended the DSP develop, test, and implement a standardized ICS to aid in responding to incidents. The DSP agreed and reported it needed to develop a standard on how and when to employ ICS. As of June 2014, the DSP has not developed, tested, and implemented ICS. The DSP last trained its sworn personnel in ICS in 2004 and continued to use coded language for radio communications instead of the plain language specified for a National Incident Management System (NIMS)-compliant ICS.

The lack of a statewide ICS and the DSP not internalizing ICS has reportedly contributed to confusion and inefficiency at incidents. State Troopers have statewide police authority but are often not the lead agency in many jurisdictions, including larger municipalities, and at incidents led by other disciplines. Since effective incident management relies on strict adherence to ICS, it is critical for all responders, including the DSP, to train on ICS so they can effectively support lead agencies. Responders reported it was common for different agencies not to know how to communicate via radio with each other during incidents. Some agencies continue to use coded language which can be difficult for others to understand. Responders reported several incidents involving the DSP, other State agencies, counties, and local fire and police agencies, which potentially demonstrated the effects of not having a statewide ICS.

Recommendations:

We recommend DOS management comply with State law and promulgate administrative rules for a statewide ICS to be used in responding to any natural or man-made cause that requires emergency management by multiple agencies or departments.

We recommend DSP management implement NIMS-compliant policies and procedures, including the use of plain language for radio communications, and require regular ICS training of all personnel.

Department of Safety Response:

We concur.

The recommendation regarding the promulgation of administrative rules for a statewide Incident Command System was responded to as a result of the similar recommendation made under Observation #3 above. We will task our legal staff with rulemaking to ensure that it is clear that our administrative rules are fully NIMS compliant and apply to any natural or man-made cause that requires emergency management by multiple agencies or departments,

The use of plain language in everyday radio communications, although a federal recommendation, is not universally endorsed by the first responder community. For example in cases where a dispatcher is hired that has a regional accent foreign to the area where he or she is working, the use of codes instead of plain language may actually result in greater clarity of messaging.

We agree that in dealing with incidents that involve multiple disciplines and jurisdictions, plain language should be used and that we will incorporate it in future revisions of the ICS policy, rules and training.

We have extensively commented on this recommendation under Observation #3, pointing out that we do have ICS administrative rules (Saf-C 3900), and discussing statewide training initiatives under Observation #6 and exercise programs under Observation #7.

Also, many State Police command staff members and first line supervisors have completed applicable phases of the federal Department of Homeland Security online NIMS/ICS training courses and will continue to do so in the future. Additional command staff members and supervisors completed NIMS/ICS courses this fall.

LBA Comment:

Saf-C 3900 rules do not implement a statewide ICS to be used in responding to any natural or man-made cause that requires emergency management by multiple agencies or departments within state and local government. Saf-C 3900 rules establish a uniform ICS for use during releases of, or substantial threats of releases of, hazardous substances and related training requirements for hazardous materials incident responders.

Observation No. 13

Improve Channel Matrix Management

The DOS did not establish controls over, or provide guidance to, stakeholders on managing statewide channel matrices. Additionally, the DOS did not ensure federal guidance or local input were considered when creating and updating statewide channel matrices. Agencies should: 1) rely on defined methods and procedures to achieve efficient and effective use of public resources, 2) effectively communicate with stakeholders, 3) adopt rules of practice detailing formal and informal procedures, 4) and collect relevant information which help inform agency decision-making.

The statewide channel matrices, also known as "code-plugs," were sets of common channels designed to be programmed into responder radios statewide to enable interoperable communications. The matrices included Zone H, the State's set of 16 direct, local-only, radio-to-radio interoperable channels intended for on-scene communications. The matrices were allocated to agencies by discipline and included different channel sets or zones.

Management

The matrices were informally managed. The DOS assumed management responsibility for the matrices in 2006 and relied on the Statewide Interoperability Executive Advisory Committee (SIEAC) to develop technical and operational guidelines and create and maintain the channel matrices. The SIEAC lacked: 1) a membership policy governing potential members, attendees, or geographic diversity; 2) a policy for collecting questions or information from stakeholders, including radio infrastructure changes; 3) a mechanism to inform stakeholders in a timely manner of the SIEAC's meetings and pertinent information regarding interoperability; and 4) enforcement authority. As the enforcement mechanism, the DOS had to rely on the threat of denial of future grant awards to require installation of the statewide channel matrices. These agreements began to expire in 2006, with the remaining ones due to expire in Fall 2014. Monitoring adherence to statewide channel matrices and proper use was reportedly minimal.

Inefficiencies

The statewide channel matrices inefficiently used channels. The EMS matrices included the same channel four times and a fifth channel had the same frequency, but a different tone setting. Mismatched tone settings can create communication barriers because two radios using the same frequency with different tone settings can fail to hear each other's transmissions and unknowingly interfere with each other's communications. Responders reported tone mismatches hindered communications during at least two separate incidents. The assigned channel names also lacked clarity or explanatory information that could have reduced the likelihood of this confusion.

Zone H included two frequencies commonly used for operational or interoperable communications by law enforcement and fire departments, respectively. However, responder

agencies programmed these frequencies with different tone settings into other channels in their radios. Additionally, a State-to-local police frequency required different tone settings in different parts of the State, but those settings were not included in the statewide channel matrices. Despite requiring agencies to supply their local channel plans for inclusion in the statewide matrices, no State guidance was systematically offered to agencies regarding local agency channel selections to avoid this type of interference.

There were many different versions of channel matrices for DSP radios. The typical channel matrix inefficiently used available channels, as one channel was repeated 14 times in the typical channel matrix, another channel was repeated eight times in the typical channel matrix, and in seven instances the same frequency was repeated with differing tone settings in three of the channels in the typical channel matrix. Channel space used for repeated frequencies could have been allocated to channels currently excluded from the matrices, potentially aiding interoperable communications.

Excluded Channels

The DSP and statewide channel matrices lacked:

- channels the DSP agreed to use for interoperable communications with a federal agency,
- recommended interoperable channels to be used in interactions with the federal government,
- recommended channels for marine search and rescue operations, and
- an interoperable channel for deploying a portable radio repeater to increase coverage at an incident, as Zone H channels had limited reliable ranges.

Recommendations:

We recommend DOS management:

- **create policies and procedures governing statewide channel matrix changes, including coordinating with agencies to determine when statewide channel matrix updates are required;**
- **adopt rules defining the role of the statewide channel matrix and its maintenance relative to regional and local agencies;**
- **systematically collect information regarding changes in radio infrastructure statewide;**
- **timely provide information and guidance, including guidance on programming decisions, to public safety agencies; and**
- **create policies and procedures governing management of the channel matrices used by the DSP.**

Department of Safety Response:

We concur.

We endorse this recommendation and will implement it as soon as possible. The creation of policies governing statewide channel matrix changes, coordinating with agencies to determine when statewide channel matrix updates are required, adopting rules defining the role of the statewide channel matrix and its maintenance relative to local and regional agencies, the collection of information regarding changes in statewide radio infrastructure, provision of pertinent information to appropriate public safety agencies, providing guidance to municipalities regarding radio programming decisions, and creating policies and procedure governing management of the channel matrices that we use, are all excellent suggestions that we will endeavor to carry out. Many of them will involve voluntary cooperation by stakeholders. Some of them we may be legally able to adopt as part of the Incident Command System, others will either require legislation or voluntary compliance. A few are things that we already do and have done for years, such as providing guidance to municipalities regarding radio programming decisions. The SWIC will be tasked with monitoring this effort and utilizing in-house subject matter experts to carry it out.

Observation No. 14

Improve Radio Network Information Technology Controls

The DSP's mission-critical radio network lacked formalized information technology (IT) controls to help deter, prevent, and detect intrusion. A robust IT control system helps ensure a network is safe and secure; weaknesses and risks are identified and mitigated; intrusions are detected and resolved in a timely manner; and the data contained therein are reliable. In our *2010 Audit* we recommended the DSP improve IT controls over disaster recovery planning, log and audit management, training, and segregation of duties. We also recommended the DSP improve information security management controls by assigning an information security officer, conducting an agency-wide risk assessment, implementing comprehensive agency-wide information security related policies and procedures, and conducting IT security training. While the DSP did assign an information security officer, we found the DSP only partially resolved many problems we previously identified, and did not take steps to address the IT control weaknesses affecting the radio network which has had underlying IT components since 1997.

Lack Of Risk Management

The DSP did not conduct a risk assessment to identify the risks threatening the DSP's radio network. Risk should be regularly identified, evaluated, and mitigated based on the severity of the threat posed. The DSP never formally appointed an individual responsible for radio network security nor were those with IT security-related responsibilities ever assigned responsibility for the radio's IT system security. Additionally, neither the DSP's information security officer nor the Department of Information Technology were involved with the radio system's IT network. Instead, the CMU informally assumed responsibility over network security and administration,

without ensuring the technical knowledge and tools to adequately protect the radio network against intrusion were available. Additionally, the DSP had no disaster recovery plan in place in the event the radio network failed. While the DSP had a continuity of operations plan for the CMU, it did not include any procedures that could be followed in the event of a loss of systems supporting the DSP radio network.

No Formal IT Control System

The DSP had no IT policies or procedures for the radio network. At a minimum, policies and procedures should specify how an agency manages user names and passwords, conducts program changes, backs up data and applications, responds to network intrusions, and manages risk. There was a general lack of documentation concerning the DSP radio network. No comprehensive topology of its system or complete inventory of hardware residing on its network existed, and no system was in place to ensure routers, switches, and other hardware on the network received firmware updates or patches. Further, two shared user names and passwords were used to gain access to an application that gives a user the ability to turn on and off or reset radios, routers, generators, air conditioning units, ports, and heating units residing on the radio network.

Insufficient Network Protection

The DSP lacked sufficient controls to protect the radio network's IT system from intrusion, malware, and other threats. The DSP reportedly used a specialized application to scan other IT networks to detect malware or intrusions. However, it did not use the application to scan the radio network's IT system, potentially leaving it vulnerable. Further, the DSP's radio network had no virus detection software or firewall protecting it and there was no monitoring of user logs to detect illicit activity on the network. DSP staff reported they have tried to make the DSP a private network to avoid an outside connection to the internet. However, multiple avenues potentially allowing intrusion into the network existed. Further, without sufficient protections an increasingly internet protocol-based DSP radio network will have additional exposures in the future.

Recommendations:

We recommend DOS management develop a formalized system of IT controls to protect the DSP radio network by:

- **conducting a comprehensive risk assessment;**
- **creating a complete topology and inventory of all devices residing on the network;**
- **developing comprehensive IT policies and procedures requiring 1) the review of activity logs, 2) program change controls, 3) backup procedures for data and applications, 4) robust usernames and passwords, 5) software and firmware updates, and 6) intrusion detection and response procedures;**
- **assigning network administrator duties and responsibilities to qualified personnel;**

- **including the DSP radio network's IT systems within the Department-wide IT control structure; and**
- **scanning the DSP radio network with DSP-owned software to detect malware and installing anti-virus software.**

We further recommend the DOS fully resolve the prior audit findings from the *2010 Audit* related to IT and information security controls.

Department of Safety Response:

We concur.

We strongly endorse the need for this recommendation. No RSA change will be necessary, but our budget requires legislative action and implementation of this recommendation will rise or fall on the availability of sufficient funding to carry it out.

As radio systems have become more digitally based, the issue of security and intrusion has rapidly gained importance and as in all information technology operations becomes more challenging with each day. The development of a formalized system of IT controls over the State Police radio network will require close collaboration with and use of the expertise of, the Department of Information Technology. The skill sets within DoIT are extensive but do not necessarily include digital radio communications. The skill sets in the State Police Radio Communications Unit include a good level of competence in digital radio communications but not necessarily expertise in information security.

This recommendation is extremely important. Although the State Police information security officer has some scanning software that he currently uses to monitor the network, our early assessment of the recommendation concludes that full implementation may involve the acquisition of new and expanded scanning software, which could cost $100,000 or more and involve additional annual service contracts, and if it exceeds the expertise or available time of in-house personnel, could require the services of an outside consultant. Once appropriate software is acquired and installed, it will require some additional human monitoring. Thus, ultimately it may affect the size of the Department of Safety's radio maintenance budget, and our ability to implement the recommendation will depend on our ability to require the necessary funding. We will turn first to any available federal funding source but those prospects are increasingly bleak.

The supervisor of the State Police Radio Maintenance Unit will work to identify current risks to the radio system and to provide a complete topology and inventory of all devices residing on the network.

We will seek the money to enhance our software packages to provide expanded capability for regular scanning of the radio network to detect the presence of malware, and will seek to purchase and install appropriate antivirus software to protect the network and adopt policies regarding its use. This will have to be an ongoing effort and not a one-time thing, as the capabilities of digital hackers and intruders is ever-increasing. One requirement we will have for

a good software package is the availability of regular updates, to combat new and different malware as it comes along.

We will assign formal network administrator duties and ensure that the radio network is recognized as part of the Department's IT control system, and the network administrator will be tasked with developing comprehensive IT policies and procedures for the review of logs, program change controls, backup procedures, robust usernames and passwords, updates to the software and firmware, and intrusion detection and response procedures. A brief examination of this recommendation indicates that it may require more time and effort than anyone in the Radio Maintenance Unit has available and if it requires the hiring of an additional employee at an appropriate skill level that, too, will depend on our ability and that of the Legislature to fund the position.

We concur DOS management should fully resolve prior audit findings related to information technology and information security controls. We will revisit those findings. Once again, our ability to fully implement them may require funding, or funding over a period of time.

Observation No. 15

Improve Physical Security Controls

The DOS lacked a formal approach to physical security of radio network assets. During our *2010 Audit*, we issued a confidential finding that cited several physical security issues within State Police facilities. Management reported addressing some, and considering how to address other, physical security issues during SFY 2011. We recommended DSP management conduct an enterprise-wide risk assessment to identify opportunities to improve controls, efficiency, and effectiveness in its operations. Management concurred, but had not conducted a risk assessment or developed a formalized approach to risk mitigation, including physical security, by SFY 2014.

Physical security helps safeguard personnel, property, and information from injury, damage, or loss. Physical security should have multiple layers and segregate sensitive and public areas. Limited levels of physical security at radio network sites increased the risk of damage, vandalism, and theft, resulting in unanticipated costly repairs, equipment replacement, and potentially unexpected system failures. State, county, and local officials reported concerns regarding the lack of fencing, cameras, alarms, and restricted access to the sites.

Other than a single interagency agreement governing part of its microwave infrastructure, DOS management lacked formal interagency agreements with partners for shared sites, including responsibilities for physical security. The DSP had equipment residing at 53 locations statewide, including DOS-owned sites, and at sites shared with other State agencies, government agencies from other states, local government agencies, and commercial entities. Several officials stated some sites had restrictions on the installation of fences. We found physical security of DSP radio network infrastructure varied location-to-location; with some locations exposed and unprotected. Entryway alarms were reportedly used at several sites and remotely monitored; however, effectiveness and monitoring capabilities were limited. Consequently, multiple sites were either

vandalized, susceptible to pest damage, or prone to copper theft, which served as protective grounding for the towers. Unrestricted access by non-DOS personnel at shared sites and lack of interagency agreements provided additional opportunities for theft, damage, or loss.

Recommendations:

We recommend DOS management improve physical security of radio network infrastructure, in part, by:

- **identifying all radio network infrastructure and assets,**
- **conducting a comprehensive risk assessment,**
- **developing and implementing a plan to improve security and control access,**
- **monitoring all sites supporting the radio network,**
- **protecting sites from emerging physical security threats, and**
- **coordinating with partners to upgrade security at non-DOS owned sites.**

Department of Safety Response:

We concur.

We concur in that we will implement the recommendation as far as we can go with available funding.

It is equally as important as protecting the IT aspects of the radio network, to provide physical security. We will task the Communications Maintenance unit with maintaining a list of all radio network infrastructure and assets and identifying risks to the best of their ability. We will task the staff of the Information and Analysis Center, personnel within which have training and expertise in physical security, with assisting the CMU in developing and implementing a plan to improve security and control access, monitoring the sites supporting the radio network, protecting them from emerging physical security threats, and coordinating with partners at non-DOS owned sites to upgrade security wherever feasible. Until such a risk assessment is completed we will not know the cost of implementing this recommendation and the extent to which it will depend on the availability of adequate funding. It may involve acquiring and monitoring of alarm systems for numerous sites, either by in-house personnel or the services of a private sector alarm company. It may require fencing in some cases and in others will require changes to access such as more secure doors and locking mechanisms, etc.

There are some sites that are under the control of the Department of Resources and Economic Development, and in some of those sites fencing is not allowed because the rules and regulations governing the use of the sites prohibit preventing public access to the area.

An initial estimate of the cost of improving the physical security of these sites is $299,500.

LBA Comments:

We understand improving physical security will have a cost associated and such improvements should likely be programmed over time to lessen the fiscal impact. Such time-phasing should be risk-based to address the most severe risks first.

We also understand fencing in some cases might not be permissible. However, security should be layered and other layers of security can improve the security of those locations where fencing cannot be employed.

Observation No. 16

Improve Maintenance Management

DOS controls over radio network maintenance lacked the necessary oversight, policies, procedures, and agreements to ensure its maintenance program was cohesive and efficient. Management controls include the policies, procedures, techniques, and mechanisms that enforce management's directives, and are integral parts of accountability. Control activities include events and transactions, and the creation and maintenance of related records to ensure transactions are completely and accurately recorded. An effective maintenance program incorporates control activities to safeguard assets and provide effective stewardship of public resources. The CMU was responsible for maintaining DSP network infrastructure, such as towers and radio equipment, as well as the infrastructure of several other non-DOS entities.

Management Oversight And Maintenance Of Infrastructure

The DOS lacked mechanisms to monitor and review maintenance operations. Oversight of maintenance was distributed among several organizations, often with no formal reporting relationship and without formal agreements. DSP radio network hardware resided on 53 sites statewide. Land and infrastructure ownership at the sites varied between the DOS, other State agencies, counties, and others. Records did not detail when maintenance site visits took place, all the users of the system, total system assets or assets by location, or historical maintenance activity data. There were no policies requiring the CMU report to management, or to other owners of equipment maintained by the DSP, on the status of critical infrastructure. The CMU also lacked information on the condition of the third-party towers containing DSP hardware.

Without system monitoring, there were no data for conducting longitudinal analyses of faulty equipment or conditions, which would assist anticipating failures and risk assessments. Without a risk assessment, management cannot formulate a risk management approach or develop the controls necessary to mitigate the risks.

Scheduling And Preventative Maintenance

Scheduling preventative maintenance was limited, ad hoc, and subordinated to other priorities. We found documented annual inspections for only 11 of 53 (21 percent) towers with installed

DSP equipment. Most system failures can be prevented through regular cleaning, inspection, and observation. Preventative maintenance was to be conducted by the CMU semiannually, but evidence did not demonstrate this was practiced. Additionally, there was no record of any towers receiving two inspections within a year, required for certain DSP-owned towers.

Life Cycle Management

Life-cycle planning helps ensure radio equipment maintains value and utility. The DOS lacked a reliable inventory of radio network equipment and did not manage equipment based on lifecycles, instead employing a break-fix approach to equipment replacement, which reportedly led to unanticipated costly replacement of equipment. We found many of the radios in use, as well as the legacy microwave system, transceivers, and many repeaters, were no longer supported by the manufacturer and replacement parts had to be obtained from the secondary market. The practice of relying on hardware beyond its expected useful life, and without readily available replacement parts, posed a risk to the continued reliable operation of the DSP radio network.

Documentation

Maintenance records should completely describe all activities required to keep the system in operational condition. The CMU lacked policies and procedures which conformed to tower industry standards for inspections and which required adequate documentation of maintenance performed. Documentation provided could not assure services were fulfilled. CMU maintenance documentation had several insufficiencies:

- Checklists were not utilized to efficiently document routine maintenance.
- Comprehensive on-site radio communications maintenance logbooks were lacking.
- Maintenance shop logbooks were inconsistently completed and entries insufficiently described maintenance performed.
- There were no record retention requirements for prior period logbooks.
- Technicians relied on supervisor discretion to perform maintenance tasks, rather than utilizing documented pending repair lists to address issues.
- Documentation of services performed for non-DOS entities did not exist.

Interagency Agreements

The CMU provided at least 14 State and non-State agencies with radio communications maintenance services. The DOS had a single interagency agreement governing part of its microwave infrastructure. Other elements of its radio networks lacked formal, documented governing interagency agreements requiring financial compensation, considerations in lieu of compensation, or cost sharing, for services rendered and establishing interagency reporting requirements. Maintenance resources may have been inefficiently employed beyond the scope of the CMU's authority. Additionally, DOS management risked the viability of its radio network infrastructure by absorbing potentially unnecessary, external maintenance responsibilities.

Recommendations:

We recommend DOS management establish a cohesive and efficient maintenance program by:

- **developing preventative maintenance policies and procedures,**
- **establishing and enforcing site visit schedules and conducting preventative maintenance,**
- **formalizing a deferred maintenance list to prioritize tasks and checklists for routine inspections according to industry standards,**
- **formally and comprehensively documenting all maintenance work undertaken and establishing record retention requirements,**
- **developing procedures and training to extract and analyze fault data,**
- **inventorying all radio network assets by site and establishing a life-cycle program for radio equipment and infrastructure, and**
- **formalizing interagency agreements with all supported and supporting agencies, and establish maintenance schedules, required services, compensation or cost sharing for services, and documentation requirements.**

Department of Safety Response:

We concur.

We agree that it is in fact the best way to run the operation, but as pointed out elsewhere in our responses, we are operating with one less person in the Communications Maintenance Unit than we had several years ago, and the jobs have become more complex and involved than they were then. Thus, we cannot set a specific deadline when all of this can be accomplished, but rather, we look at it as an ideal to work toward. Much of it is already done on a less formal basis and in a reactive manner rather than the proactive manner we would like to see, largely because of personnel constraints.

We will have the Commander of the State Police Support Services Bureau task the Communications Maintenance Supervisor with presenting a plan, for approval of the Colonel, for preventative maintenance policies and procedures, establishing and conducting site visit schedules and preventative maintenance, formalizing a deferred maintenance list to prioritize tasks and checklists for routine maintenance inspections, documenting all maintenance work and establishing record retention requirements, developing procedures and training to extract and analyze fault data, inventorying all radio assets at each remote site and establishing a life cycle program for radio equipment and infrastructure, mindful that any such program will rise or fall on the availability of capital improvement and operational budget funding.

The Support Services Captain will be tasked, in collaboration with the Commissioner's Office and the Division of Administration, with attempting to negotiate interagency agreements with supported and supporting agencies that share responsibility for the radio network in establishing maintenance schedules, required services, compensation or cost sharing for services, and

documentation requirements. Much of this is already subsumed into the existing MoMA agreement, which can serve as a guide for further agreements.

Observation No. 17

Improve Continuity Of Operations Planning

The DSP lacked operational continuity of operations plans (COOP) at the end of June 2014. COOPs help ensure an agency's mission essential functions and services remain intact and can continue in the event normal operations are disrupted. Such plans provide management with clear and defined procedures to implement when normal operations are disrupted either by man-made or natural incidents or events. Agencies should regularly test COOPs, train employees on essential procedures, evaluate the results of tests, and correct identified deficiencies to ensure COOPs operate as intended.

In our *2010 Audit*, we recommended the DSP, and the DSP agreed to, complete, validate, revise, and implement COOPs agency-wide. The plans were to be implemented during SFY 2011. The 2014 draft COOPs, covering each Troop, the IPOC, and CMU operations were almost identical to the draft COOPs provided during our 2010 audit, contained few changes from earlier drafts, and contained no significant differences between each troop, and the IPOC and the CMU which have distinctly different mission essential functions. None appeared to be operational. Additionally, no COOPs covered radio operations for the DSP, BEM, or NHH radio networks.

Recommendations:

We recommend DOS management improve continuity of operations planning by:

- **finalizing COOPs for all agency operations, including each radio network it operates;**
- **regularly training staff in COOP procedures;**
- **periodically testing COOPs and evaluating test results to identify deficiencies; and**
- **revising COOPs based on the results of periodic testing and evaluation.**

Department of Safety Response:

We concur.

The Department's COOP plan is a living document and a work in progress. From what we have seen it is one of the more complete ones in the state. We currently have a part-time employee working with the Divisions to make it even more comprehensive. He will be told to ensure the radio network is prominently reflected in the COOP plan along with a requirement for its periodic testing and revision. Although revisions to the COOP will be a never-ending task, we anticipate that the current iteration will be finished sometime in the spring of 2015.

Observation No. 18

Improve Performance Measurement And Evaluation

The DOS lacked agency-wide and subdivision-specific strategic and operational plans related to radio operations or interoperability. The DSP lacked performance metrics related to its radio network, such as up time and user satisfaction. The DSP network contained known problems and coverage issues for extended periods, despite a series of external evaluations detailing the extent of the problems and an assessment of interoperability issues. In our *2010 Audit*, we found the DSP lacked a strategic plan, a performance measurement system, did not establish formal agency-wide goals and objectives, did not measure outcomes, and did not use outcome statistics to aid in personnel deployment. We recommended management develop a formal strategic plan identifying missions, goals, and objectives; output- and outcome-based performance measures; and job performance measures. The DSP concurred, noting a strategic plan would be completed by April 1, 2012. The 2010 finding remains unresolved. While we found in early SFY 2015 the DSP appeared to have begun developing a series of measures and collected output data, completion of activities intended to resolve the finding were deferred to the future and there was no clear connection between the draft measures and data, and strategic goals and objectives or outcomes. Nor were radio operations or interoperability included in any measure.

Performance measurement focuses on whether a program has achieved its objectives. A performance measurement system facilitates comparing actual performance levels to pre-established targets to determine whether program results are achieved. Performance measurement can demonstrate accountability to the public and identify areas of possible improvement. Performance measurement systems align with strategic and organizational goals through a strategic plan. Performance goals should represent targeted levels of performance and be relevant to the mission of the program. Measuring the performance of mission-critical radio communications and interoperability efforts are integral to developing a statewide interoperable communications system to support a functioning ICS, and effectuating the *Strategy* and can help ensure effective and efficient internal operations.

Recommendations:

We recommend DOS management improve performance measurement and evaluation by:

- **developing a formal strategic plan that includes division, bureau, and unit missions, goals, and objectives;**
- **ensuring subdivisions develop comprehensive operational plans that identify output- and outcome-based performance measures detailing how they plan to meet their identified goals and objectives;**
- **implementing a performance measurement system;**
- **monitoring performance over time and change strategies, plans, and practices to reflect actual performance;**
- **deriving job performance measures from missions, goals, and objectives; and**

- **incorporating internal radio operations and interoperability efforts throughout.**

Department of Safety Response:

We concur.

This is an ideal to work towards. Unfortunately in the world we live in there is never enough time or resources to meet the ideal, but it is certainly something we will strive for.

The Legislature, by RSA 9:4 and HB 657 which is now Chapter 168, laws of 2014, has mandated that as a part of the budget process by 2017, all State agencies conduct their budgeting activities in the context of a strategic planning process that includes an output and outcome based performance measurement system that relates to missions, goals and objectives. Internal radio operations and interoperability efforts will be a part of that effort, which we must performs or if not, the Commissioner of Administrative Services is authorized to accomplish and impose on any agency that does not comply. We believe the implementation of this budgeting system will accomplish a large share if not all of this task and will ensure that it is revisited and updated at least biennially.

Observation No. 19

Improve Management Of Communications Hardware

The DOS spent federal grant money on at least 97 radio communications-related devices valued at almost $682,000, with no defined purpose or plan, and they remained unused for between seven and 16 years. We also identified problems with inventory controls inhibiting the DOS's ability to account for and adequately protect physical assets from misappropriation. Agencies should have internal controls to systematically track and account for all fixed assets and provide for effective and efficient operations. Further, procedures should be in place to prevent loss from theft, ensure physical inventories are taken annually, and establish proper segregation of duties.

- We identified 52 mobile and portable radios, purchased between 2004 and 2006 with federal grants, that remained in storage at three different locations: the DOS warehouse, DSP storage, and reportedly, the grants management office. These radios were originally intended to support local interoperable communications needs. DOS personnel did not respond to our inquiries about whether additional radios purchased in the early to mid-2000s had been deployed or issued to localities during SFYs 2013 through 2015, because the DOS reportedly did not track such information. Consequently, additional radios purchased for local interoperability needs may have been inefficiently distributed or remain in the DOS inventory.
- Twelve of 24 (50 percent) gateway devices purchased in 2005, and valued at almost $472,000, were not deployed through SFY 2014.
- Replacement parts, valued at more than $70,000, were purchased for the DSP network without a clear business need.

The DOS could not account for and track radio communications hardware or consumable inventory, and could not detect the removal or misappropriation of physical assets from the storage area. State identification tags should be used to track physical assets owned by the State and when items do not have tags it increases the risk they could be unaccounted for or be misappropriated. We found power supplies, with a combined purchase price of almost $9,000 with no identification tags, and two State property identification tags intended for two devices valued at $5,000, but which were unaccounted for since 2009. Additionally, the DOS spent over two weeks attempting to locate two gateway devices, originally purchased for almost $40,000 in 2005, before finding one had been deployed to a mountaintop and another was in an unmarked box in DSP storage. We also observed an unregulated and unsecured DSP storage area that contained a significant amount of valuable communications hardware.

Recommendations:

We recommend DOS management strengthen controls to better account for and deploy radio communications hardware by:

- **establishing formal, written policies and procedures for tracking and issuing radio communications hardware;**
- **conducting an internal audit to inventory all radio communications hardware;**
- **issuing functional devices to jurisdictions in need of them;**
- **disposing of surplus and inoperative inventory;**
- **centralizing storage functions for all unissued radio communications hardware to a single location;**
- **establishing protocols to clearly define business needs prior to purchasing radio communications hardware and repair parts; and**
- **better securing storage areas containing physical assets.**

Department of Safety Response:

We concur.

A department of this size should have an internal auditing component. The Department is in need of at least one Internal Auditor with department-wide responsibilities who could oversee efforts such as this and ensure they are carried through to fruition. We once had such a position but it was eliminated decades ago when the job became vacant and fell victim to budget cuts. Given the current fiscal climate and funding possibilities, it is unlikely such a position can be reestablished in the near future.

As time and staffing permit, under the direction of the Chief of Policy and Planning, a set of formal written policies and procedures for tracking and issuing communications hardware, auditing the inventory more effectively, disposing of surplus and inoperative inventory, centralizing storage of all unissued communications hardware, guidelines for defining business needs prior to purchasing such hardware, and better securing storage areas containing these physical assets, will commence in the spring of 2015.

Observation No. 20

Improve Oversight Of Interoperability-Related Committees And Their Compliance With State Laws

During the audit period, the State lacked a formal committee sufficiently empowered to effect statewide interoperability. The DOS formed several variously-named committees to address aspects of decision-making related to interoperability. Their creation was neither legislatively mandated nor chartered or sanctioned by executive action, until 2011 when legislation obligated the Governor to recognize three of them formally to continue their existence. The resulting Executive Order recognized the Homeland Security Grant Review Committee, the First Responder Radio Interoperability Committee (RIC), and the SIEAC. We found a number of compliance-related issues with these three committees.

Right-to-Know

Compliance with the Right-to-Know law was problematic. The committees and their members must: 1) meet publically, or when authorized, they may meet non-publically; 2) meet with a quorum; 3) avoid ex parte communications; 4) provide notice of meetings; 5) vote publicly; and 6) create, maintain, and make available meeting minutes and other public records. We found no notice for committee meetings were published, and interested parties were not consistently informed of committee meetings. The DOS was able to provide two sets of meeting minutes for one committee, dated in 2006. Otherwise, no minutes were available and other aspects of record keeping were also inadequate.

Financial Interest Statements

None of the committees appeared in the index filed with Secretary of State enumerating entities whose members must complete statements of financial interest, and we found no evidence members filed statements of financial interest as a result of their membership on these committees. Statements of financial interest are intended to disclose potential conflicts of interest for those serving the public.

Charters

The committees lacked charters specifying their purpose. The role of the Grant Review Committee appeared to be limited to conducting needs determinations and reviewing certain federal grant applications, which totaled over $31 million in direct interoperable investments since 2003. The SIEAC appeared to be responsible for advising the DSP on technical and operational interoperability guidelines, statewide channel matrix management, and selecting hardware for statewide fielding using federal grants. The RIC was cited as being responsible for overseeing *Statewide Communications Interoperability Plan* (SCIP) and Public Safety Interoperable Communications grant goals, and building-out voice communications for the fire and EMS communities. Some responsibilities reportedly overlapped.

Membership

Committee membership varied and was not formalized or fixed, as the committees appeared to set their own membership. The SIEAC included between 12 and 24 members; the RIC, between 15 and 24; and the Grant Review Committee between seven and 25. Fluid membership may create problems with meeting quorum requirements. Membership included representatives of State agencies, local and regional fire and rescue agencies, county and local law enforcement, non-profit associations and interest groups, and federal agencies in varying proportions depending on the iteration of the committee. Over time, the DOS became heavily represented on the SIEAC, expanding from three members of a 15-member committee (20 percent) to 10 members of a 28-member committee (36 percent) in eight years. At one point, State agencies accounted for over 46 percent of SIEAC membership. Similarly, the RIC in one iteration was composed of 15 members, eight (53 percent) were representatives of State agencies and seven (47 percent) belonged to all other categories of responders from all other levels of government. State agency overrepresentation on committees ostensibly dealing with statewide interoperability may be counterproductive. Additionally, membership of the SIEAC included personnel no longer serving in the public service roles that justified their appointments.

Statewide Interoperability Executive Committee (SIEC)

The DOS formed a fourth committee in 2014, the SIEC. The SIEC was to advise the Commissioner on issues related to interoperability and centralize planning, implementation, and oversight. While the Commissioner may create advisory committees, the Governor must approve the formation of the committee, and appoint its members. We found no formalization of the SIEC by the Governor. Further, department-created advisory committees are to advise the department creating them, not advise on a statewide function or set policy for the State, and department-created committees have a three-year lifespan and can be continued thereafter by legislative action. The SIEC executive management committee, responsible for governance of the SIEC, also continued a trend of State agency and DOS overrepresentation; of the 18 members, 11 (61 percent) were State agency members, including four DOS members (22 percent), while four (22 percent) were explicitly from non-State, government entities. The DOS creating the time-limited SIEC with heavy State agency representation as a departmental advisory committee may not facilitate long-term planning and governance of statewide interoperability.

Recommendations:

We recommend DOS management ensure interoperability-related committees comply with statutory requirements, including those related to statements of financial interest, the Right-to-Know law, and appointment by the Governor.

We further recommend DOS management formalize each committee's purpose, roles, and membership and rebalance State and political subdivision representation to reflect the responder community.

Department of Safety Response:

We concur.

We will task our Legal staff to work with the entities to which interoperability related committees are attached, to develop formal policies that ensure that the members of these committees, to the extent that they have a statutory requirement to do so, file statements of financial interest and are appointed by the Governor. Most already comply with regulations relative to public notice of meetings and keeping of formal minutes. Where a committee lacks a formal purpose, role, and membership structure the body to which they are attached will be sensitive in reviewing their structure to ensure there is a proper balance in representation to reflect the responder community. As the legal staff identifies a committee or group that needs to be reflected in an RSA, we will propose corrective legislation. Given the impending filing deadline for 2015 bills, these may need to wait the 2016 legislative session.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

APPENDIX A
OBJECTIVES, SCOPE, AND METHODOLOGY

Objectives And Scope

In January 2014, the Fiscal Committee of the General Court adopted a joint Legislative Performance Audit and Oversight Committee recommendation to conduct a performance audit of the Department of Safety's (DOS) radio interoperability efforts. We held an entrance conference with DOS management in March 2014.

Our audit was designed to answer the following question:

How efficient and effective has the Department of Safety been in achieving radio interoperability among New Hampshire's public safety agencies, including local and county governments, as of State fiscal year 2014?

This audit had two primary foci: 1) the efficiency and effectiveness of DOS in achieving interoperability and the system of systems assembled to support interoperability statewide, and 2) the efficiency and effectiveness of the State's overall strategy to achieving statewide interoperability. The audit encompassed the following objectives related to the DOS:

- How closely had the DOS's efforts approximated the federally-defined elements of interoperability?
- How closely had DOS conformed to applicable legal requirements?
- How closely had the DOS conformed to the principles of management control, including efficiency, effectiveness, and economy?
- How operable were DOS systems?
- How interoperable were DOS systems with other DOS systems?
- How interoperable were DOS systems with non-DOS systems?

The audit encompassed the following objectives external to the DOS:

- What was the nature and role of non-DOS entities operating radio networks?
- How many independent systems existed?
- How efficient was the State's approach to radio interoperability?
- How effective was the State's approach to radio interoperability?
- What features of State law affected the nature of the State's approach to radio interoperability?
- What aspects of operability and interoperability affected statewide interoperability?

Methodology

To address all of our objectives, we:

- reviewed relevant State laws and administrative rules and prior LBA audits;
- conducted research on other states' interoperable communications systems;
- reviewed reports of similar audits conducted by other jurisdictions from other states and the federal government;
- relevant industry standards;
- conducted a literature review of public safety communications and radio interoperability;
- reviewed meeting minutes of State and federal committees dealing with interoperable communications issues;
- attended meetings of State and federal committees dealing with interoperable communications issues ;
- reviewed State plans for an ultra-high frequency radio network, enhancing statewide very-high frequency radio network coverage, and governance for interoperability; and
- completed National Incident Management System, continuity of operations, and Incident Command System training courses.

To address objectives related to the DOS, we:

- reviewed and analyzed DOS organization charts, plans, policy documents, data, class specifications, supplemental job descriptions, websites, forms, radio network infrastructure documents and maintenance data, and interagency agreements;
- interviewed DOS management and employees;
- interviewed Department of Information Technology personnel familiar with DOS information technology architecture;
- attended meetings between DOS personnel and contractors examining the condition of DSP's radio network;
- conducted site visits of DOS radio network and storage facilities and physical inventories of DOS radio equipment; and
- reviewed State property accountability policy and procedures.

To address our objectives related to other State agencies, we:

- interviewed personnel familiar with State agency interoperability from the Department of Transportation, Department of Resources and Economic Development, and the Fish and Game Department; and
- identified State agencies with licensed radio frequencies and surveyed nine of them through an electronic questionnaire to obtain information and schematics on their respective radio networks.

To address our objectives related to county and local agencies, and multiple jurisdiction entities, we:

- attended meetings of the Fire Chiefs' Association and County Sheriff's Association and

- interviewed representatives of 12 of the State's 13 (92 percent) fire mutual aid districts, all ten county sheriffs, and other federal, State, and local officials reported to be familiar or involved with interoperability.

We also surveyed the State's fire and police chiefs, and the emergency management director and the emergency medical services communities. The survey was targeted at local agencies and designed to collect information on interoperability in the State, characteristics of interactions between local and State agencies, and the level of use and understanding of interoperability resources by end users. We distributed the survey to 171 police chiefs and law enforcement personnel, 301 fire and emergency medical services chiefs in combined and separate service departments, and 234 emergency management directors. It was distributed electronically with the exception of 18 departments lacking email addresses, which were mailed paper notifications. We distributed 706 surveys, and received 317 partial or complete responses representing 377 different positions. The response rate was 45 percent.

We conducted this performance audit from March through September 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. The evidence we obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

APPENDIX B
DEPARTMENT OF SAFETY RESPONSE TO AUDIT

State of New Hampshire
DEPARTMENT OF SAFETY
JAMES H. HAYES BLDG. 33 HAZEN DR.
CONCORD, N.H. 03305
603/271-2559

JOHN J. BARTHELMES
COMMISSIONER OF SAFETY

EARL M. SWEENEY
ASSISTANT COMMISSIONER

October 17, 2014

Stephen P. Fox
Performance Audit Supervisor
LBA Audit Division
107 North Main Street
Concord, NH 03301-4906

Re: Performance Audit for NH Department of Safety – Statewide Radio Interoperability

Dear Mr. Fox:

Thank you for the opportunity to comment on the above audit conducted by your staff.

As a heavily involved component of the first responder and emergency services community, the Department of Safety appreciates the work that the LBA Audit Division has put into this report. Their efforts have highlighted in understandable terms the importance of radio interoperability and they have identified a number of important issues that the State of New Hampshire must come to grips with, some in the near future and others long-term. These issues are beyond the ken of a single State agency to resolve. Resolving them will require both legislation and a substantial funding commitment.

Over the years the Department of Safety has been able to take advantage of various federal grant programs to update its radio systems and that has been the primary focus of our efforts. Recognizing the vital role that county and local first responders play in keeping our citizens safe, we have whenever possible shared the fruits of these federally funded programs with local agencies, recognizing the vital need for all first responders to be able to communicate across disciplines and jurisdictions in an emergency. While this was a massive undertaking, we believe New Hampshire is far ahead of many states in our interoperability efforts.

The entire landscape of emergency communications changed after the September 11, 2001 terrorist attacks, forever to be remembered as "9/11." Congress created the federal Department of Homeland Security and appropriated hundreds of millions of dollars to fund grants to state and local governments throughout the nation to improve their ability to prevent and respond to acts of terrorism. Each State and federal Territory, in order to be eligible for these funds, had to designate an agency to act as the SAA

(State Administrative Agency) to receive and manage their state's allocation, 80% of which by federal law must be awarded to local and county first responder agencies, and 20% to State agencies with first responder duties.

Governors since then have all designated the Department of Safety as the SAA to receive the money and disburse it to eligible state and local agencies in accordance with strict federal guidelines As a result of this effort millions of dollars in grants were awarded to local police, fire, and emergency medical responders, primarily to purchase equipment. Prominent on the federal list of eligible equipment was radio communications devices that would meet interoperability guidelines. Communities recognized this need and embraced it in their grant requests. Specifications were developed and bulk purchases made in order to take advantage of the best pricing and to ensure that the equipment purchased would be interoperable. The result is that today, as was dramatically demonstrated in the massive floods that hit the western part of the state several years ago, a fire truck from one part of the state can be dispatched to assist a fire department in a distant community and can with the press of a button, communicate with the department they were sent to help, on the recipient department's frequency. This technology also applies to police departments and emergency medical personnel and is used somewhere in the state

Technology continues to advance, sometimes at a blinding pace, and as the audit so eloquently points out, as many as 50% of first responder radios in 70% of the responder community are approaching end of life and will be in need of replacement. There are also state and local government agencies that do not meet the federal Homeland Security definition of "First Responders," and therefore are not eligible to apply for Homeland Security grants to purchase interoperable radios, but where there is a need for police and fire agencies to communicate with these other agencies by radio in emergencies.

The Department of Safety appreciates all of the effort that went into this audit, and we concur that it has raised many important questions and highlighted many vitally important issues. We are committed to working within the resources that we have, to address as many of them as possible. The price tag to implement a number of the recommendations will be a hefty one. Only the Governor and the Legislature can determine where, in the extensive list of pressing State problems and given the current economy, radio interoperability falls, and how and to what extent to fund it, both in the immediate future and long-term.

Respectfully submitted,

JBarthelmes

John J. Barthelmes
Commissioner of Safety

JJB:cb

STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

APPENDIX C
RESPONDER AND EMERGENCY MANAGER
SURVEY RESULTS

We surveyed all fire department chiefs, emergency medical services chiefs, and emergency management directors, and all the police chiefs for whom we could obtain contact information, in New Hampshire, including chiefs of non-municipal departments. Survey respondents were contacted using available email addresses maintained by several entities, with some departments lacking email addresses being contacted by mail. We sent out 706 surveys and received 317 responses, for a 45 percent response rate. We combined and simplified similar answers to open-ended questions and present them in topic categories; multi-part responses are counted in multiple categories where applicable. Some totals in the following tables may not add up to 100 percent due to rounding or where respondents could respond multiple times to the same question.

Q1. Which title(s) best describes you? (Check all which apply.)		
Answer Options	**Response Count**	**Response Percent**
Municipal fire department chief	120	38
Municipal police department chief	82	26
Municipal emergency management director	61	19
Municipal emergency medical services department chief	30	10
Non-municipal emergency medical services department chief	19	6
Non-municipal fire department chief	8	3
Other (please specify)	52	16
answered question	**317**	
skipped question	**0**	
total positions represented	**377**	

Q1 Comments. Other (please specify):	
Communications personnel	13
Administrative personnel	2
Public works personnel	2
Other fire department	13
Other law enforcement	11
Other emergency management	9
Other emergency medical services	7
answered question	**52**
total positions represented	**57**

Q2. What is the state of radio interoperability in New Hampshire?		
Answer Options	**Response Count**	**Response Percent**
Adequate	167	54
Inadequate	111	36
Other (please specify)	34	11
answered question	**312**	
skipped question	**5**	

Q2 Comments. Other (please specify):	
Have not had to test it statewide yet/do not know	8
Radios are obsolete or reaching end-of-life	6
Improved but still flawed	5
Adequate a majority of the time	4
Inadequate, barriers to communication experienced	4
Adequate locally, inadequate statewide or at large incidents	3
Adequate within, inadequate between disciplines	2
Lack of funding	1
Lack of information from the State	1
Needs to be simplified	1
Radio coverage limited by terrain	1
Should be an easier way to communicate	1
Poor cell phone coverage hinders ability to call other agencies	1
answered question	**34**

Q3. Why is radio interoperability in New Hampshire not adequate? (Check all which apply.)		
Answer Options	**Response Count**	**Response Percent**
Lack of funding	99	68
Aging radio hardware and lack of available interoperable replacements	99	68
Lack of adequate radio coverage	91	63
Lack of training and exercises	57	39
Lack of leadership and management of interoperability initiatives	44	30
Other (please specify)	32	22
answered question	**145**	
skipped question	**172**	

Q3 Comments. Other (please specify)	
Issues with technical compatibility and cooperation between disciplines	6
Municipal, other state radio systems not compatible with each other	5
Radios are at end-of-life, inadequate, or expensive	4
Lack of planning, coordinating, or awareness of plans at State level	4
Coverage issues (including narrowbanding, cell phone coverage)	4
Issues with channel tones on the fireground and Zone H frequencies	2
Should have common tactical, unit-to-unit channels	2
Still using 10-codes	1
Operations on "restricted frequencies" unavailable to assisting agencies	1
Public works should be included	1
Limited frequency availability, especially on high-band, very-high frequency	1
Portable reception allowed by building codes requiring repeaters	1
Do not know whether it is inadequate or not	1
answered question	**33**

Q4. How important is radio interoperability?		
Answer Options	**Response Count**	**Response Percent**
Extremely important	221	71
Very important	74	24
Moderately important	14	5
Slightly important	2	1
Not important	0	0
answered question	**311**	
skipped question	**6**	

Q5. What is the nature of governance of statewide radio interoperability?		
Answer Options	**Response Count**	**Response Percent**
Formal	87	28
Informal	81	26
Inconsistent	121	39
Other (please specify)	21	7
answered question	**310**	
skipped question	**7**	

Q5 Comments. Other (please specify)	
Do not know	15
No governance or enforcement	2
Based on general understanding or "folklore"	2
Governance was absent until recently	1
Declined to answer	1
answered question	**21**

Q6. How familiar or involved are you with these statewide interoperability initiatives?					
Answer Options	**Unfamiliar**	**Somewhat familiar**	**Involved in initiative**	**Direct beneficiary of initiative**	**Total Response Count**
Law Enforcement Network (LawNet)	176 (60%)	97 (33%)	8 (3%)	11 (4%)	292
Fire Service Network (FireNet)	154 (53%)	91 (31%)	17 (6%)	28 (10%)	290
Emergency Medical Services Network (EMSNet)	176 (63%)	83 (30%)	10 (4%)	12 (4%)	281
The Statewide Communications Interoperability Plan (SCIP)	95 (33%)	160 (56%)	14 (5%)	18 (6%)	287
The Statewide Interoperability Coordinator (SWIC)	188 (65%)	90 (31%)	5 (2%)	6 (2%)	289
The Statewide Interoperability Executive Advisory Committee	196 (69%)	75 (26%)	12 (4%)	2 (1%)	285
The Federal Communication Commission Region 19 700 Megahertz and 800 Megahertz Planning Committees	209 (73%)	73 (25%)	3 (1%)	2 (1%)	287
Zone H	129 (45%)	109 (38%)	12 (4%)	34 (12%)	284
Other Initiative (please specify)					2
				answered question	**298**
				skipped question	**19**

Q6 Comments. Other Initiative (please specify)	
North Country needs to have access to the meetings on updates/initiatives	1
Coos and Grafton Counties have started meeting on public safety topics	1
answered question	**2**

Q7. Which role do you believe the following organizations should have in statewide radio interoperability efforts?

System Governance					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Response Count**
The State's Department of Safety (DOS)	144 (62%)	76 (32%)	5 (2%)	9 (4%)	234
Within the DOS, the Division of State Police	18 (8%)	162 (71%)	30 (13%)	17 (7%)	227
Within the DOS, the Division of Homeland Security and Emergency Management	90 (39%)	127 (56%)	5 (2%)	6 (3%)	228
Within the DOS, the Division of Emergency Services and Communications	76 (33%)	127 (56%)	18 (8%)	7 (3%)	228
County Sheriff's Offices	16 (7%)	165 (72%)	34 (15%)	15 (7%)	230
Regional fire mutual aid associations	35 (15%)	162 (71%)	23 (10%)	9 (4%)	229
Police chiefs and individual departments	11 (5%)	177 (78%)	32 (14%)	8 (4%)	228
Fire chiefs and individual departments	16 (7%)	179 (78%)	28 (12%)	7 (3%)	230

Operating Procedures					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	100 (44%)	112 (49%)	5 (2%)	10 (4%)	227
Within the DOS, the Division of State Police	17 (8%)	163 (74%)	23 (10%)	18 (8%)	221
Within the DOS, the Division of Homeland Security and Emergency Management	83 (37%)	129 (58%)	5 (2%)	6 (3%)	223
Within the DOS, the Division of Emergency Services and Communications	67 (30%)	137 (61%)	12 (5%)	7 (3%)	223
County Sheriff's Offices	24 (11%)	154 (69%)	28 (13%)	17 (8%)	223
Regional fire mutual aid associations	42 (19%)	150 (68%)	19 (9%)	11 (5%)	222
Police chiefs and individual departments	24. (11%)	165 (75%)	20 (9%)	12 (5%)	221
Fire chiefs and individual departments	31 (14%)	165 (74%)	17 (8%)	10 (4%)	223

Tower Infrastructure					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	113 (50%)	91 (40%)	9 (4%)	15 (7%)	228
Within the DOS, the Division of State Police	14 (6%)	135 (61%)	47 (21%)	25 (11%)	221
Within the DOS, the Division of Homeland Security and Emergency Management	67 (30%)	124 (56%)	18 (8%)	13 (6%)	222
Within the DOS, the Division of Emergency Services and Communications	78 (35%)	113 (51%)	22 (10%)	10 (4%)	223
County Sheriff's Offices	19 (9%)	132 (59%)	51 (23%)	20 (9%)	222
Regional fire mutual aid associations	32 (14%)	135 (61%)	40 (18%)	14 (6%)	221
Police chiefs and individual departments	8 (4%)	137 (62%)	59 (27%)	16 (7%)	220
Fire chiefs and individual departments	10 (5%)	141 (64%)	58 (26%)	13 (6%)	222

Support and Repair					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	94 (41%)	114 (50%)	9 (4%)	10 (4%)	227
Within the DOS, the Division of State Police	13 (6%)	145 (66%)	42 (19%)	19 (9%)	219
Within the DOS, the Division of Homeland Security and Emergency Management	51 (23%)	134 (61%)	25 (11%)	10 (5%)	220
Within the DOS, the Division of Emergency Services and Communications	67 (30%)	117 (53%)	23 (10%)	13 (6%)	220
County Sheriff's Offices	16 (7%)	138 (63%)	51 (23%)	15 (7%)	220
Regional fire mutual aid associations	25 (12%)	140 (65%)	38 (18%)	13 (6%)	216
Police chiefs and individual departments	12 (6%)	134 (62%)	55 (25%)	16 (7%)	217
Fire chiefs and individual departments	14 (6%)	141 (64%)	50 (23%)	14 (6%)	219

Frequency Management					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	99 (44%)	100 (44%)	17 (7%)	11 (5%)	227
Within the DOS, the Division of State Police	12 (6%)	133 (61%)	55 (25%)	18 (8%)	218
Within the DOS, the Division of Homeland Security and Emergency Management	63 (29%)	123 (56%)	27 (12%)	7 (3%)	220
Within the DOS, the Division of Emergency Services and Communications	69 (32%)	122 (56%)	20 (9%)	8 (4%)	219
County Sheriff's Offices	17 (8%)	133 (61%)	52 (24%)	15 (7%)	217
Regional fire mutual aid associations	37 (17%)	132 (61%)	36 (17%)	12 (6%)	217
Police chiefs and individual departments	12 (6%)	144 (66%)	49 (23%)	12 (6%)	217
Fire chiefs and individual departments	14 (6%)	155 (70%)	42 (19%)	9 (4%)	220

Financial Support					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	137 (60%)	70 (31%)	7 (3%)	14 (6%)	228
Within the DOS, the Division of State Police	11 (5%)	124 (57%)	61 (28%)	22 (10%)	218
Within the DOS, the Division of Homeland Security and Emergency Management	94 (43%)	97 (44%)	18 (8%)	9 (4%)	218
Within the DOS, the Division of Emergency Services and Communications	53 (24%)	123 (56%)	28 (13%)	15 (7%)	219
County Sheriff's Offices	13 (6%)	123 (57%)	56 (26%)	25 (12%)	217
Regional fire mutual aid associations	10 (5%)	125 (58%)	64 (30%)	16 (7%)	215
Police chiefs and individual departments	8 (4%)	118 (55%)	70 (33%)	19 (9%)	215
Fire chiefs and individual departments	9 (4%)	124 (57%)	67 (31%)	17 (8%)	217

Training and Exercises					
Answer Options	**Lead**	**Support**	**None**	**Do not know**	**Total Response Count**
The DOS	109 (48%)	105 (46%)	4 (2%)	10 (4%)	228
Within the DOS, the Division of State Police	16 (7%)	156 (72%)	28 (13%)	18 (8%)	218
Within the DOS, the Division of Homeland Security and Emergency Management	97 (45%)	106 (49%)	9 (4%)	5 (2%)	217
Within the DOS, the Division of Emergency Services and Communications	63 (29%)	134 (61%)	13 (6%)	8 (4%)	218
County Sheriff's Offices	22 (10%)	148 (69%)	26 (12%)	19 (9%)	215
Regional fire mutual aid associations	40 (19%)	151 (70%)	16 (7%)	9 (4%)	216
Police chiefs and individual departments	22 (10%)	166 (76%)	18 (8%)	11 (5%)	217
Fire chiefs and individual departments	29 (13%)	166 (76%)	15 (7%)	9 (4%)	219
				answered question #7	**245**
				skipped question #7	**72**

Q7 Comments. Other organization or role (please specify)	
State academies and DOS for training	4
Other State agencies (Department of Resources and Economic Development, Fish and Game Department, Department of Transportation)	2
One group should govern or publish best practices	2
Regional hazardous materials and police associations	2
Governor's Office	1
Should be more coordination with border states	1
answered question	**12**

Q8. Are you familiar with the radio network, or networks, your organization uses to achieve radio interoperability?		
Answer Options	**Response Count**	**Response Percent**
Yes	240	91
No	23	9
answered question	**263**	
skipped question	**54**	

Q9. Which system(s) does your agency use to achieve radio interoperability? (Check all which apply.)		
Answer Options	**Response Count**	**Response Percent**
Your agency's own frequencies and radio network (please describe briefly below)	146	62
Other municipal agency's radio network and frequencies	128	54
The Division of State Police radio network	50	21
Another State agency's radio network (please describe briefly below)	16	7
County sheriff radio networks	86	36
Fire mutual aid organization radio networks	172	73
Other radio network or networks (please describe briefly below)	11	5
answered question	**237**	
skipped question	**80**	

Q9 Comments. If a description was prompted by your selection above, describe here:	
Town or agency has local, direct unit-to-unit channel or channels	20
Local or regional dispatch center network	16
Fire mutual aid channels	9
Agency repeater or repeaters	9
Zone H	6
Zones A, B, and C locally programmed frequencies	6
Statewide channel matrix zones	2
Issues communicating with police	2
Other	8
answered question	**66**

Q10. Why does your agency not rely on the Division of State Police radio network for radio interoperability?		
Answer Options	**Response Count**	**Response Percent**
Never been a need	51	28
Division of State Police frequencies are not in our radios	22	12
We are not permitted by the Division of State Police to use their system	51	28
The Division of State Police uses our system or another local system to communicate with us	31	17
Other (please specify)	29	16
answered question		**184**
skipped question		**133**

Q10 Comments. Other (please specify)	
Do not know/unfamiliar with network	7
Never been offered or denied access	5
State Police use our channels to talk to us when needed	3
We communicate through our dispatch centers	3
No need or interaction with State Police	3
Use direct unit-to-unit channels	2
Radios not capable of transmitting on State Police channels	2
Poor coverage	2
Police department has more access than fire department	1
All of the above	1
County has historically dispatched for agency	1
Fire mutual aid dispatches and partnering town in different mutual aid	1
answered question	**29**

Q11. Do you have written agreements and standard operating procedures governing your agency's use of radio channels and systems?

Answer Options	**Response Count**	**Response Percent**
Yes	152	64
No	59	25
Not applicable	7	3
Do not know	19	8
answered question	**237**	
skipped question	**80**	

Q11 Comments. For those individuals with more than one responsibility (e.g., fire chief and emergency management director), please differentiate between roles and jurisdictions, if necessary:	
Fire mutual aid system has standard operating procedures (SOP) or policies	4
Local department has SOPs but no agreements	2
Other	3
answered question	**8**

Q12. Please describe your hardware's lifecycle stage and your agency's replacement needs. If you represent multiple agencies for the purpose of this survey, please combine the figures from each agency when responding below.

How old is your equipment?						
Answer Options	**New or nearly so**	**About halfway through the lifecycle**	**Nearing end of life**	**At or past end of life**	**Do not know**	**Total Response Count**
Portable	53 (23%)	70 (31%)	79 (35%)	20 (9%)	4 (2%)	226
Mobile	36 (16%)	66 (30%)	72 (33%)	42 (19%)	5 (2%)	221
Repeater	33 (20%)	46 (28%)	24 (14%)	12 (7%)	52 (31%)	167
Base station	36 (17%)	67 (32%)	56 (27%)	36 (17%)	16 (8%)	211
Dispatch console	28 (20%)	22 (16%)	24 (17%)	22 (16%)	45 (32%)	141

How many devices does your agency own?							
Answer Options	**Less than three**	**Three to ten**	**11 to 20**	**21 to 30**	**31 to 50**	**More than 50**	**Total Response Count**
Portable	10 (4%)	35 (15%)	54 (24%)	55 (24%)	47 (21%)	26 (11%)	227
Mobile	20 (9%)	90 (41%)	83 (38%)	17 (8%)	5 (2%)	6 (3%)	221
Repeater	108 (68%)	46 (29%)	4 (3%)	0 (0%)	1 (1%)	0 (0%)	159
Base station	148 (72%)	56 (27%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	205
Dispatch console	102 (76%)	31 (23%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	134

What percentage of your devices will need replacement in the next five years?						
Answer Options	**10% or less**	**25%**	**50%**	**75%**	**90% or more**	**Total Response Count**
Portable	41 (18%)	24 (11%)	55 (25%)	18 (8%)	86 (38%)	224
Mobile	42 (20%)	25 (12%)	40 (19%)	28 (13%)	80 (37%)	215
Repeater	59 (40%)	13 (9%)	19 (13%)	7 (5%)	48 (33%)	146
Base station	58 (29%)	13 (7%)	31 (16%)	17 (9%)	79 (40%)	198
Dispatch console	54 (45%)	3 (2%)	17 (14%)	4 (3%)	43 (36%)	121
					answered question #12	**228**
					skipped question #12	**89**

Q12 Comments. Other (please specify)	
Not all applicable or do not know	7
Radios from initial round of grant funding	2
Radio equipment at end-of-life	2
Recently replaced, looking to replace, or currently replacing equipment	2
Answers apply to municipal fire department and fire compact	1
Various ages depending on radio purpose	1
Looking to replace equipment in five to ten years	1
Will keep radios as long as they are supported by the manufacturer	1
Non-profit ambulance service not eligible for enough grant radios	1
Law enforcement received new radios while fire received training	1
answered question	**19**

Q13. Are you aware of any short-term or long-term plans for changes or improvements to statewide radio communications?		
Answer Options	**Response Count**	**Response Percent**
No	237	92
Yes (please describe below)	21	8
answered question	**258**	
skipped question	**59**	

Q13 Comments. Yes (please describe below)	
Regional improvements by non-State entities	9
First Responder Network Authority (FirstNet)	4
New tower sites at State level to improve coverage	3
Other	5
answered question	**21**

Q14. On average, describe how frequently members of your agency interoperate via radio with:

On Your Channels							
Answer Options	**Daily**	**Weekly**	**Monthly**	**Annually**	**Never**	**Do not know**	**Total Response Count**
State Police Troopers or dispatch	14 (6%)	25 (11%)	15 (6%)	20 (9%)	145 (62%)	14 (6%)	233
County Sheriffs' Deputies or dispatch	44 (19%)	17 (7%)	21 (9%)	17 (7%)	115 (49%)	19 (8%)	233
Local law enforcement officials or dispatch	86 (37%)	43 (18%)	34 (15%)	17 (7%)	43 (18%)	11 (5%)	234
Fire mutual aid dispatch	95 (40%)	44 (19%)	25 (11%)	13 (5%)	51 (22%)	9 (4%)	237
Local fire officials or dispatch	133 (56%)	41 (17%)	27 (11%)	5 (2%)	21 (9%)	10 (4%)	237
Other emergency responders	68 (31%)	47 (21%)	33 (15%)	13 (6%)	32 (14%)	28 (13%)	221
Other agencies	30 (15%)	28 (14%)	41 (20%)	20 (10%)	42 (21%)	40 (20%)	201

On Their Channels							
Answer Options	**Daily**	**Weekly**	**Monthly**	**Annually**	**Never**	**Do not know**	**Total Response Count**
State Police Troopers or dispatch	7 (3%)	12 (5%)	11 (5%)	10 (4%)	167 (74%)	18 (8%)	225
County Sheriffs' Deputies or dispatch	48 (22%)	12 (5%)	27 (12%)	14 (6%)	107 (48%)	15 (7%)	223
Local law enforcement officials or dispatch	56 (25%)	42 (19%)	39 (17%)	17 (8%)	57 (25%)	13 (6%)	224
Fire mutual aid dispatch	86 (38%)	43 (19%)	37 (16%)	14 (6%)	35 (15%)	13 (6%)	228
Local fire officials or dispatch	110 (48%)	48 (21%)	31 (14%)	5 (2%)	23 (10%)	11 (5%)	228
Other emergency responders	49 (23%)	48 (23%)	35 (16%)	15 (7%)	34 (16%)	32 (15%)	213
Other agencies	26 (13%)	22 (11%)	36 (19%)	21 (11%)	42 (22%)	46 (24%)	193

On Third-Party Channels							
Answer Options	**Daily**	**Weekly**	**Monthly**	**Annually**	**Never**	**Do not know**	**Total Response Count**
State Police Troopers or dispatch	3 (1%)	5 (2%)	10 (5%)	12 (6%)	142 (67%)	41 (19%)	213
County Sheriffs' Deputies or dispatch	7 (3%)	4 (2%)	7 (3%)	8 (4%)	145 (69%)	40 (19%)	211
Local law enforcement officials or dispatch	13 (6%)	13 (6%)	17 (8%)	9 (4%)	119 (57%)	39 (19%)	210
Fire mutual aid dispatch	13 (6%)	12 (6%)	12 (6%)	11 (5%)	122 (58%)	41 (19%)	211
Local fire officials or dispatch	24 (11%)	11 (5%)	18 (9%)	10 (5%)	107 (51%)	39 (19%)	209
Other emergency responders	11 (6%)	11 (6%)	18 (9%)	13 (7%)	97 (49%)	48 (24%)	198
Other agencies	8 (4%)	8 (4%)	10 (5%)	17 (9%)	94 (50%)	50 (27%)	187

On Zone H							
Answer Options	**Daily**	**Weekly**	**Monthly**	**Annually**	**Never**	**Do not know**	**Total Response Count**
State Police Troopers or dispatch	0 (0%)	1 (0%)	2 (1%)	10 (5%)	142 (67%)	57 (27%)	212
County Sheriffs' Deputies or dispatch	2 (1%)	1 (0%)	2 (1%)	10 (5%)	140 (67%)	55 (26%)	210
Local law enforcement officials or dispatch	1 (0%)	2 (1%)	3 (1%)	15 (7%)	133 (63%)	56 (27%)	210
Fire mutual aid dispatch	3 (1%)	6 (3%)	11 (5%)	17 (8%)	118 (55%)	58 (27%)	213
Local fire officials or dispatch	9 (4%)	4 (2%)	12 (6%)	20 (9%)	109 (51%)	58 (27%)	212
Other emergency responders	5 (2%)	4 (2%)	12 (6%)	28 (14%)	95 (47%)	59 (29%)	203
Other agencies	1 (1%)	4 (2%)	8 (4%)	25 (13%)	97 (51%)	56 (29%)	191
						answered question #14	**247**
						skipped question #14	**70**

Q14 Comments. For those individuals with more than one responsibility (e.g., fire chief and emergency management director), please differentiate between roles and jurisdictions, if necessary:	
Police and fire use different frequencies, networks, modes	4
Zone H used for helicopter medical evacuations	4
No changes between roles	2
Emergency medical services role has "Never" for all entries	1
Other	5
answered question	**16**

Q15. Is there adequate opportunity for your agency(s) to take part in radio interoperability exercises and training?		
Answer Option	**Response Count**	**Response Percent**
Yes	61	24
No, and we would like more opportunities to participate in trainings	152	60
No, but we do not have the resources available to participate in additional trainings	42	16
answered question	**255**	
skipped question	**62**	

Q15 Comments. For those individuals with more than one responsibility (e.g., fire chief and emergency management director), please differentiate between roles and jurisdictions, if necessary:	
No knowledge of existing opportunities	3
Identification of applicable roles	2
Training offered locally	1
Lack of training on radio contents and use	1
answered question	**7**

Q16. Is there anything else you would like to share with us related to statewide radio interoperability?	
Need more funding for local agencies to support interoperability	22
Need more training or information about training	20
Radios are nearing end-of-life or obsolete	11
State should install more radio infrastructure to improve coverage	10
Nothing to add	9
More coordination, SOPs, or standardization needed	7
Not enough information from State on sub-State agency channel changes	6
Issues communicating with State Police or from fire to law enforcement	5
System should be simplified for users	3
Narrowbanding concerns	3
Preferential treatment of agencies or disciplines	3
Public works departments excluded from interoperability projects too often	3
North Country suffers from poor communications capabilities	2
No communication from the State on this topic and no visible movement	2
Other	14
answered question	**90**
skipped question	**227**

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
STATEWIDE RADIO INTEROPERABILITY

APPENDIX D
STATUS OF PRIOR AUDIT FINDINGS

The following is a summary of the status of observations applicable to this performance audit found in our October 2010 performance audit report entitled *Division Of State Police, Field Operations Bureau*. As part of our 2014 audit, we reviewed the status of nine of the 21 observations (43 percent) we issued in 2010. A copy of the prior report can be accessed on-line at:
http://www.gencourt.state.nh.us/LBA/AuditReports/PerformanceReports/FOB_2010p_fullS.pdf.

Status	Key	Count
Fully Resolved	● ● ●	0
Substantially Resolved	● ● ○	0
Partially Resolved	● ○ ○	6
Unresolved	○ ○ ○	2
Not Applicable	NA	1

No.	Title	Status
1.	Improve Organization Efficiency And Effectiveness	● ○ ○
5.	Improve Risk Management Controls	○ ○ ○
15.	Improve Continuity Of Operations Planning	○ ○ ○
16.	Improve Information Technology Management Controls	● ○ ○
17.	Improve Information Security-Related Management Controls	● ○ ○
18.	Improve State Police Online Telecommunication System Management Controls	● ○ ○
19.	Develop Project 54 Management Controls	N/A[1]
20.	Improve Information Management And Communication	● ○ ○
21.	Establish And Monitor Outcomes Linked To Formal Division-Wide Goals And Objectives	● ○ ○

Note:
[1] The Department of Safety terminated Project 54.

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