

Agency Name	Department of Safety
Audit Name	Statewide Radio Interoperability
Audit Period	November 2014
Status Report Date	5 April 2024

Summary of Audit Observations/Findings					
Number	Observation Title	Status [place X in status column]			
		Unresolved	Partially Resolved	Substantially Resolved	Fully Resolved
1	Improve Statewide Interoperability Governance				X
2	Establish a Statewide Interoperable Communications Strategic Plan				X
3	Improve Standard Operating Procedures				X
4	Develop a Statewide Interoperable Radio Network				X
5	Consolidate State Agency Radio Network Operations				X
6	Regularly Conduct Training				X
7	Regularly Plan, Execute, and Evaluate Interoperability Exercises				X
8	Improve Use of Existing Interoperable Communications Resources				X
9	Improve Management Control				X
10	Formalize Organizational Structure, Responsibility, and Authority				X
11	Consolidate Department Radio Networks, Maintenance, and Dispatch			X	
12	Adopt Incident Command System Administrative Rules and Institutionalize Related Policy and Procedure			X	
13	Improve Channel Matrix Management				X
14	Improve Radio Network Information Technology Controls				X

Summary of Audit Observations/Findings					
Number	Observation Title	Status [place X in status column]			
		Unresolved	Partially Resolved	Substantially Resolved	Fully Resolved
15	Improve Physical Security Controls		X		
16	Improve Maintenance Management				X
17	Improve Continuity of Operations Planning				X
18	Improve Performance Measurement and Evaluation				X
19	Improve Management of Communications Hardware				X
20	Improve Oversight of Interoperability-Related Committees and Their Compliance with State Laws				X

Observation 1: Improve Statewide Interoperability Governance

Summary of Finding: The State did not have a formal inter-agency governance structure responsible for establishing coordinated, efficient, and effective interoperable radio communications.

Current Status: The Statewide Interoperability Executive Committee (SIEC) was signed into law by Governor Hassan in 2015. RSA 21-P:48 outlines the authority of the SIEC as its membership is representative of State, County, and local; Police, Fire, and EMS; non-governmental organizations; the private sector; and the New Hampshire National Guard. HB 1545 increased the SIEC membership and was signed into law by Governor Sununu on June 18th, 2018. The SIEC is governed by an adopted and approved charter.

The SIEC continues to meet on a Quarterly basis with its three Working Groups, i.e. Data Communications, Operations, and Radio Frequency meeting monthly. Significant to the accomplishments of the SIEC, has been addressing the challenges of interoperability and offering solutions that have been recognized nationally. The SIEC monitors, maintains, and provides direction to the FirstNet infrastructure as it continues to expand and provide Public Safety enhanced capability to communicate with next generation technology. Pertinent to expanding interoperability has been the commitment made through Mutualink to share voice, text, and video among the 68 Major Public Safety Dispatch Centers, Colleges, Universities, Hospitals, Civil Air Patrol, the NH National Guard, and critical assets throughout the State.

In the fall of 2019 through CARES Act Funding the State embarked on a Mutualink Project that equipped the 68 major dispatch centers statewide, hospitals, colleges & universities, NH National Guard, Civil Air Patrol, and critical assets with the ability to interconnect regardless of their communications platform. Both LMR and LTE would communicate through this agnostic network and provide a true sense of interoperability statewide.

The SIEC continues to address interoperability statewide and has made a concerted effort along the international border with Canada to improve communications among Federal, State, County, and local first responders. Working with our Vermont partners along with creating the Northern Borders Interoperability Consortium, 2023 has experienced marked improvement in the North Country both as it pertains to Land Mobile Radio (LMR) and Long-Term Evolution (LTE – Cellular Devices). As part of our continued mission and the charter of the Statewide Interoperability Executive Committee, work will continue on this project with meetings that have been scheduled throughout the fall of 2023 and spring of 2024.

This observation has been fully resolved.

Observation 2: Establish a Statewide Interoperable Communications Strategic Plan

Summary of Finding: During the audit period, the State lacked a functional strategic plan guiding statewide interoperable communications decisions and investments.

Current Status: The Statewide Interoperability Executive Committee (SIEC) through the efforts of the US Department of Homeland Security, Cyber Infrastructure and Security Agency (CISA), Emergency Communications Division (ECD), Technical Assistance (TA) Program conducted workshops in both 2014 and 2018 that created and updated the New Hampshire Statewide Communications Interoperability Plan (SCIP) and has since been revised as of October 2022. The plan establishes goals and objectives, with expressed due dates, assigned to the SIEC's working groups to address statewide communications interoperability.

Through the SIEC's commitment to remain contemporaneous and advance interoperable communications by setting Goals & Objectives assigned to the SIEC Working Groups, a SCIP update Workshop was held on September 20th, 2022. Maintaining continuity and establishing those objectives that advance our ability to communicate across all spectrums continues to drive the SIEC and provide public safety with those advantages never before experienced.

The Division of Emergency Services and Communications also participated in a CISA directed format that describes twenty-five (25) Markers that each state should develop when projecting an interoperable statewide community. New Hampshire met, and, in most cases exceeded, these expectations setting New Hampshire as a model for many states to emulate.

Pertinent to maintaining and meeting the challenges presented statewide regarding interoperability, the State of New Hampshire through its association with CISA updates the Statewide Communications Interoperability Plan (SCIP) every 3-5 years. The SCIP Workshop was conducted in the fall of 2022 and the Plan was approved for distribution in January 2023. The SCIP defines Goal & Objectives for the Statewide Interoperability Executive Committee to assign responsibilities to meet the challenges presented regarding interoperability. Meeting those challenges are further defined and measured through 25 Markers that CISA has designed to describe the extent of interoperability statewide for each state throughout the country. New Hampshire meets and exceeds these markers which CISA has acknowledged is a model for states to draw upon throughout the country.

This observation has been fully resolved.

Observation 3: Improve Standard Operating Procedures

Summary of Finding: **The DOS lacked effective policies and procedures governing DOS-controlled interoperability resource use, management, and deployment.**

Current Status: The Division of Emergency Services and Communications (DESC) has developed a series of policies that include the following: Asset Management, Site Maintenance, Help Tickets, Deployable Assets, Site Security, Password Management, Financial Disclosure Statement Compliance, and Interoperability Exercises. Other policies are under development.

A formal process relative to the development of an asset control system has been completed as well. This included obtaining a current inventory of all assets including but not limited to trailers, radios, command vehicles, and interoperability radio systems (CradlePoints and trailers).

The process for requesting and vetting requests for communications deployable assets has also been created and is working. We have received preliminary information for RFID devices to be installed in our deployable equipment, much like a vehicle Automated Vehicle Location (AVL). This would be a monthly charge and should be properly budgeted. This is one solution we are considering; however, we remain cognizant of developing technologies to leverage that may provide similar coverages.

A statewide Radio Frequency Matrix that defines the Code Plug utilized statewide by Public Safety is maintained, updated, and reviewed monthly by the SIEC Radio Frequency Working Group in cooperation and collaboration with DESC personnel.

New in 2023 is the management of the statewide frequency matrix in a hosted web environment along with a new SEIC policy of providing quarterly notifications to New Hampshire Radio Shops to improve communication and awareness of any frequency changes. A designated deployable resource scheduling Microsoft Outlook calendar is utilized along with a specific deployable resource status documentation table inside the agency Microsoft Teams environment.

This observation has been fully resolved.

Observation 4: Develop a Statewide Interoperable Radio Network

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

Current Status: The DESC has installed new equipment and updated the LMR Network. Currently, the entire state has the current capability to be interoperable. However, training and practice will be needed to make it totally functional. The system is robust and redundant now that it is fully operational.

The process to update all the non-DOS stakeholders is a continuing component of integrating the statewide communications centers into our radio Core.

The installation of the new P25 equipment on the LMR Network is complete. Some new vulnerabilities surfaced particularly involving shared resources with DNCR, however, those issues have been identified and are being mitigated as the DNCR system continues to be built-out.

Since February 2020, there has been significant coordination with the Department of Natural and Cultural Resources (DNCR). DESC now monitors all DNCR generator operations to include weekly load tests, fuel levels, HVAC operation and preventative maintenance. We also monitor devices that can affect the P25 radio system.

DESC is also working with DNCR to absorb their radio infrastructure into the larger P25 radio system to improve interoperability at the dispatch level. Additionally, the same conversation has occurred with Hillsboro, Belknap, Grafton, and Cheshire counties. Five radio sites have had console radios installed, with the capability of monitoring, transmitting on, and patching local and county radio resources as requested by local responders. Once merged into our "MCore", local and county agencies will have access to these resources.

As of September 9, 2022, we are pleased to report that the Grafton County Sheriff's Department radio system is now part of the statewide radio system core infrastructure utilizing shared microwave paths. Additionally, the Department of Natural and Cultural Resources/Forest and Lands North and South Simulcast radio system is also integrated into the statewide radio system core. Each Agency provided the necessary capital resources to upgrade their equipment and licensing to connect to the state system. DESC provided the coordination and system integration activities with the agencies and their vendors. These successful integrations move this marker to fully resolved status, leaving the door open for additional agencies to connect to the state core if, and when they choose. These integrations still allow for an agency to autonomously manage their respective resources while providing interoperable solutions and back-up plans for continuity of operations planning and situations, allowing both state and local agencies the ability to leverage each other's system presence.

With the September 2023 update, we continue to plan and support the integration of additional county radio systems into the larger DOS radio system. Currently, Strafford County, Cheshire County, Belknap County, Hillsborough County, and Rockingham County are all in various stages of planning to or actively upgrading their radio systems to prepare for interconnection with the DOS system. We expect these agencies to continue planning for these integrations, dependent upon the agency's selected vendor timeline and supply chain considerations.

This observation has been fully resolved.

Observation 5: Consolidate State Agency Radio Network Operations

Summary of Finding: 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.

Current Status: The DESC has been working with other State Agencies that share infrastructure in the LMR arena to better coordinate functionality, reduce duplication and improve coordination. The primary agencies include DNCR and DOT along with DOS. We have identified areas of mutual concern to identify where cost savings are possible but more importantly to where we can “piggyback” and improve service and operational efficiency. Additionally, the DESC has started an LMR Advisory Group of all State LMR users. That includes Fish & Game, Liquor Enforcement, Department of Corrections (DOC), DOT, DNCR, Fire Safety, State Police, Homeland Security and Emergency Management (HSEM) and DESC. The goal is to improve the quality of service, identify areas of improvement and to share resources where possible. The group has already identified two areas: security and training that need immediate attention.

Previously, DESC has met with representatives of DNCR and the Department of Transportation (DOT) to discuss consolidation of LMR functions under the one authority DOS. The concept was embraced; however, the next step is to make a presentation to all the participating Commissioners and to establish a framework to move forward. This was planned for spring of 2020.

This was well underway prior to FY22/23 House Bill 2 (HB2) passage. HB2 includes provisions for the DESC radio team to support and manage all radio assets regardless of the agency using them. Upon the passage of in HB2, DESC has been meeting regularly with DNCR and DOT in the spirit of the language. The communication consolidation in HB2 did not include any financial or human resources to meet the obligation. DESC is working with DNCR to facilitate a capital budget request to upgrade their radio system infrastructure that leverages the investment in the statewide P25 radio system upgrade.

DESC AND DNCR worked together to leverage capital funding and DESC engineering expertise to upgrade the entire North and South Simulcast System without redundancies that were already available in the state core. DESC and DNCR work closely together for on-site management and maintenance issues to ensure maximum infrastructure up time and safety of remote site equipment to include requiring regular structural analysis for any proposed additions to tower loading. DESC continues to meet regularly with NHDOT to communicate about sites we are both collocated at and work together to find shared solutions to existing sites. NHDOT is also fully aware of the ability to join the state radio system core if it meets their operational needs as they plan for their next version of their statewide communications infrastructure.

In 2023 DOS began working closely with the Department of Corrections. DOC received funding in the FY24 capital budget to upgrade their communications system. DOS and DOC have been meeting to discuss their goals with their capital funding, providing advice and direction, and supporting them in ensuring their purchase is both interoperable with public safety, cost effective, and robust. Work with NHDOT continues as well as they plan to move their system forward.

This observation has been fully resolved; however, consolidation of communication functions will remain a core component of our ongoing communications mission.

Observation 6: **Regularly Conduct Training**

Summary of Finding: **The DOS lacked comprehensive, ongoing communications and radio training for responders statewide.**

Current Status: The Statewide Interoperability Coordinator, along with representatives from the SIEC have negotiated with both the Police Standards Training Council and the New Hampshire Fire Academy establishing a four-hour training curriculum on Interoperability Communications at the recruit level. Developed in concert with the recruit level training is a one-hour online Interoperability Communications training curriculum for *in-service* personnel specifically designed for Police, Fire, EMS, and dispatchers.

Our personnel in the Bureau of Interoperability coordinated with FSTEMS and PSTC to update the available on-line training. This training is mandatory for any agency who is expecting to receive funding for radio reprogramming of their radios to include the “H” Zone Interoperability Matrix.

In accordance with this initiative, we have also established a Technical Assistance platform through the US Department of Homeland Security, CISA, Emergency Communications Division (ECD) to provide Communications Leader (COML) training, Communications Technician (COMT) training, and Communication Unit Exercise (COMU) to test their individual knowledge.

In 2022, our Chief of Radio Operations began conducting in person 4-hour class at the Police Academy for each recruit class. This training includes hands on experience with portable radios to include how to navigate to interoperability channels in the statewide channel matrix. Additionally, DESC Communications staff have grown their capabilities of Com-L and Com-T certifications.

Utilizing a stable of Communications Leaders (COML’s) and Communications Technicians (COMT’s) statewide, we have incorporated their service and knowledge by assigning them to large planned and unplanned events, along with exercises throughout the State that has increased our capability to better communicate when the obvious need is to expand our footprint regarding interoperable communications.

Another important initiative to statewide interoperability is the Mutualink project. Mutualink is an agnostic communications network that can share voice, text, and video across all spectrums of LMR/LTE. Training is key to familiarity of the network and the State in 2023 not only provided individualized training for department and agencies statewide, but also introduced Regionalized Trainings as well developing what is known as, “Mutualink Exercise in a Box.” This exercise can be conducted and introduced throughout the state, providing opportunities to experience and explore the capability of the network.

This observation has been fully resolved, however, providing training opportunities will remain a core component of our ongoing communications mission.

Observation 7: **Regularly Plan, Execute, and Evaluate Interoperability Exercises**

Summary of Finding: **The DOS lacked a cohesive, systematic approach to planning, conducting, and evaluating communications interoperability exercises.**

Current Status: In February of 2018 DOS adopted a policy for Interoperability Exercises, DOS Policy: 18-001. The policy mandates the SWIC and the Director of the HSEM to conduct a minimum of two multi-disciplinary exercises with statewide or regional partners in addition to including all DOS users of the LMR system.

Additionally, the policy requires each DOS Director, whose Division utilizes the LMR system, to conduct two reviews of actual incidents or events that involved communications interoperability and to identify successes, failures and lessons learned.

In 2019, we conducted AAR's on the NASCAR race preparation and execution well as the response to the Bow Power Plant / Coal protests where not only our assets, but our personnel (Com-L and Com-T) were deployed to assist in communications support. We also conducted an exercise facilitated by the CISA through DHS to explain to the Directors at the Department of Safety their roles regarding Communications and Interoperability during major incidents.

During Covid-19 DESC provided interoperability communication plans and 150+ mobile radios to the National Guard to enable radio communication capabilities at all of the state operated vaccination sites. During SuperVax events at the NH Motor Speedway, substantial LMR radio resources and communication plans were deployed by the DESC throughout the duration of the events, which included the deployment of 50 cache radios each day for SuperVax events. Most recently, our communications plan development and equipment deployment at the Pease airshow provided effective interoperable radio communications between the state, local law enforcement and the National Guard.

The DESC continues to advance in this area facilitating the development of ICS-205 (Communications Plans) for exercises and planned events.

This observation has been fully resolved.

Observation 8: **Improve Use of Existing Interoperable Communications Resources**

Summary of Finding: **Use of DOS controlled interoperability resources was limited during SFY 2014.**

Current Status: The position of the SWIC has created the necessary groups within the SIEC to increase awareness and use of interoperability assets. The underlying need is for training at all levels and exercises that increase proficiency. They have made substantial progress. The use of Zone “H” (Interoperability zone) has also been a priority, but progress had been slow. Zone “H” requires both training and the addition of available repeaters to ensure it can be used over a larger area. DESC is making strides towards these improvements.

DESC maintains two caches of portable radios, one for Lawnet and the other for Fire/EMSnet. The caches are deployed with our Command Vehicles so that they are always available at an incident. Although they are available, most public safety users have their own P25 radio that has the required capabilities.

The Embassy switch has been replaced with what is called the MCORE by Motorola. It has dual capabilities and is redundant, by design. Currently it is only used by DOS, in Phase II of the P25 project the system will be available to all public safety dispatch centers. Training will accompany that implementation. It is an IP based system that will allow for easy deployment.

In June 2020, the “H” Bank radio frequencies were made available to all public safety agencies and their dispatch centers. The integration of DESC technical staff (Communication Unit Leaders COM-L’s) into event operational planning along with the statewide deployment of interoperability channels through all NHSP radios has improved the utilization of the H bank radio frequencies. The DESC has taken a lead role in recommending and supporting the use of these channels with State and Local public safety agencies. We have also repurposed fixed radio system equipment into deployable equipment in support of these efforts. For example, DESC communications staff has provided deployable interoperability equipment in many forms to support large multi-jurisdictional events with great success. NASCAR Races, Pease Air Show, Political Rallies in Manchester, Protest events in Concord as well as other large public gatherings around the state such as fairs and festivals. We have also worked collaboratively with SEIC partners and HSEM to create an interoperability channel usage board in WebEOC, the state’s emergency management software platform. This interface provides a current status of interoperability channel usage for planned and unplanned events and will ultimately provide channel usage history over time.

It has become increasingly common each year for the DESC to be involved in providing Interoperable communications resources to Public Safety entities throughout the state for planned and unplanned events. These resources and requests for assistance can range from developing interoperable communication plans (ICS-205’s), supplying specifically programmed portable radios, setting up temporary repeaters, mobile dispatch consoles and deploying Mutualink specific interoperable resources where applicable. In 2023, the DESC further extended availability of interoperable radio channels statewide to the New Hampshire Army National Guard Aviation Unit via the state radio network core.

This observation has been fully resolved, however, improving use of interoperable resources will remain a core component of our ongoing communications mission.

Observation 9: Improve Management Control

Summary of Finding: **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.**

Current Status: The existing management controls have been updated to ensure effective and efficient operations. . The consolidation of the communication maintenance function has significantly improved controls over asset management. It has allowed for better training of technicians, documentation of maintenance, monitoring of lifecycle and improved security at all sites. The introduction of the Communications Asset Manager (CAM) system puts needed information into the hands of those who need it. Once the Help Tickets are implemented it will provide better metrics to manage time and equipment.

Each vehicle/personal radio related service with DOS radio equipment is logged in the Radio Shop Bay Activity Database (BAD) by Agency and DOS Equipment Number. Remote site visits continue to be logged in CAM with notes and pictures pertinent to the site visit.

DESC Communications staff have implemented a number of remote monitoring tools to proactively monitor critical remote systems components across our 41 active radio system locations. We currently receive email notifications and alerts related to any communication link failures or degradation of service, weekly scheduled generator tests, notifications of high, in-building temperature alarms, building access notifications, generator fuel level monitoring by cellular communication and status of Smart UPS units (Uninterrupted Power Supply).

A significant effort was made in 2023 to migrate independent remote system sensors to a single monitoring platform maximizing the capabilities of the Motorola hardware and software. The monitoring system has been configured with intelligent filters for critical event notifications. The division also maintains an after-hours response program to further ensure effective and efficient radio network operations.

This observation has been fully resolved, however, improving radio management controls will remain a core component of our ongoing communications mission.

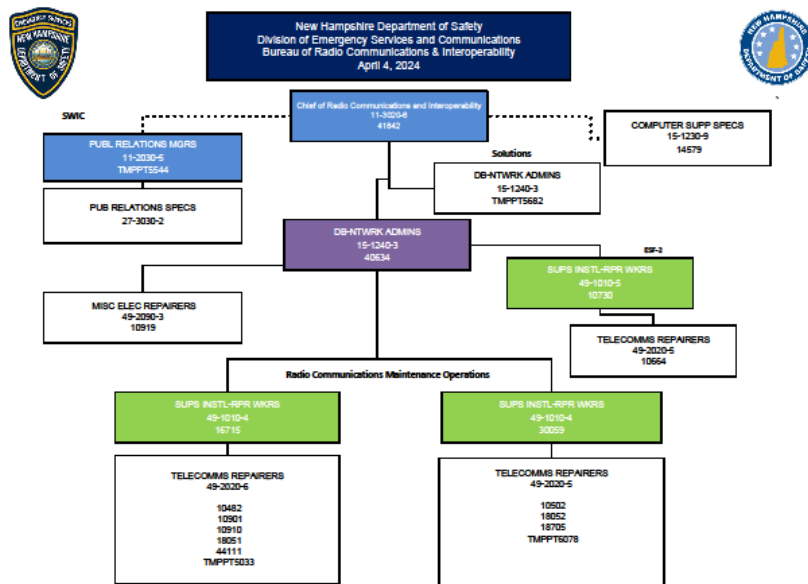
Observation 10: Formalize Organizational Structure, Responsibility, and Authority

Summary of Finding: **The DOS lacked a formal organizational structure, responsibilities, and delegations of authority to centrally manage and control internal radio operations and statewide interoperability functions.**

Current Status: The Division has recently made adjustments to the organizational structure to better manage internal network operations. Recently an Administrator II position was created to assist in the

operations management for the radio team. This position will serve as a backup to the department manager. Additionally, the person in this position is responsible for all technical decisions, directions, and system architecture.

Additionally, DESC recently added an Assistant Chief of Communications Maintenance. This role serves as the lead for the ESF 2 function. DESC also added a new Technical Support Specialist VI position that specifically focuses on the Radio network. DESC now has a formalized organizational structure with specific roles and responsibilities to manage and control radio operations. DESC’s COOP plan addresses specific delegation of authority responsibilities for radio operations as well as statewide interoperability functions.



This observation has been fully resolved.

Observation 11: Consolidate Department Radio Networks, Maintenance, and Dispatch

Summary of Finding: 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.

Current Status:

The LMR Advisory group, which consists of all state law enforcement, is developing policies to have improved management and accountability to the users of the state's LMR. Participants include Liquor Enforcement, Fire Safety, Fish and Game, Corrections, and State Police. The group meets at least semi-annually and has made progress in improving collaboration.

The DESC manages all physical/operational aspects of the NH Fish and Game radio resources except the purchasing of equipment. We provide the same services and level of support to DNCR. We also provide radio programming and reprogramming for state agencies when requested.

As part of the new radio system two geographically separate cores have been established. One is located at the IPOC and the other at the Laconia PSAP facility. State Police dispatch also has geographically separated dispatch facilities, with locations at the IPOC at Troop "F" in Twin Mountain, NH., and the capability to dispatch out of the Laconia PSAP, providing for redundancy for failures and for situations such as the COVID19 pandemic. The State Police can dispatch to all locations from any of the sites.

As part of the overall DOS communications consolidation effort, the DESC inherited the operation and maintenance of the statewide emergency alert system (EAS). The existing system was a home-grown patchwork of components which utilized separate networks of non-standard microwave equipment and non-public safety grade network equipment. We are pleased to report that the New Hampshire EAS is now compliant with the FCC Common Alerting Protocol (CAP) standards, with the Integration of the Federal IPAWS alerting system. Additionally, the Radio Frequency (RF) portion of the system has been redesigned with public safety grade equipment and is now integrated with the state microwave network that supports the statewide P-25 radio system. This integration not only provides compatible and consistent public safety grade equipment and operational standards but is now able to be monitored as unique elements in the P-25 radio network with all of its notification and alerting capabilities. The RF portion of the system operates via five mountain top locations which receive and broadcast the radio signals and messages over the air to the public broadcasting community who then rebroadcast the messages throughout their local broadcast area.

In 2023, NH State Police dispatch assumed full time dispatching responsibilities for the NH Fish and Game Department. The DESC has further requested funding to upgrade and consolidate the 2 remaining microwave networks into a single statewide public safety microwave network.

DESC is currently working on a three-phase project to replace and update the BTOP, PSIC and other microwave networks into a single cohesive, single-technology system. This project not only involved replacing radio and microwave equipment but also backhaul networking gear and equipment.

This observation is ongoing, however, at the conclusion of this project sometime in the next two years, all the networking components for DESC will have been consolidated.

Observation 12: Adopt Incident Command System Administrative Rules and Institutionalize Related Policy and Procedure

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

Current Status: The Department of Safety has developed a policy whereby exercises that involve Department of Safety personnel, equipment, or coordination, will, wherever practical, use the NIMS (National Incident Based Management System) and HSEEP (Homeland Security Exercise Evaluation Program) during planning, executing, and evaluating exercises relating to interoperability of both the Land Mobile Radio (LMR) system, Long-Term Evolution (LTE) cellular providers to include FirstNet, and the statewide Mutualink Platform. This will further reinforce the use of and familiarization of ICS/NIMS within our Department.

Rule Saf-C 3900 provides for response to “release of hazardous substances” and needs to be expanded for all related responses to threats / disasters, generally. Work will commence to address this in rulemaking. NIMS / ICS training for First Responders occurs as a function of recruit training for Police Officers and Firefighters, and will be part of joint DOS –involved exercises pursuant to our SOP.

Work is currently underway between the Department of Safety Legal Division as well as the Division of Homeland Security / Emergency Management & Fire Standards and Training regarding the revision of the rules relative to implementation of ICS for HazMat response – we are monitoring progress.

Wherever possible, DESC and NHSEM utilize the ICS system. For planned events, such as NASCAR, and Eclipse Planning 2024 requests from local agencies for assistance, the ICS is used. When the EOC is activated, the ICS is part of that process.

The National Incident Management System (NIMS) has been incorporated into all trainings stressing the importance of Incident Management starting at the recruit level of both the Police and Fire Academies, as well as being incorporated into the online training portals.

Incidental to the Incident Command Structure is having the ability to check all available resources from the field. Anticipated in the third quarter of 2024 will be the application use of the New Hampshire Field Operations Guide (E-FOG). The E-FOG will allow first responders to have the ability to search all available resources, i.e., Channel (Code Plug) Matrix, Emergency Support Functions (ESF), applicable laws and statutes, etc. while present at any scene.

This observation is ongoing and continues to remain a high priority.

Observation 13: Improve Channel Matrix Management

Summary of Finding: **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.**

Current Status: The Statewide Interoperability Executive Committee (SIEC) through its Radio Frequency Working Group has developed a standardized Matrix of Code Plugs approved by the SIEC. The New Hampshire Department of Safety through its Grant Managements Office and in collaboration with the SWIC's Office has established grant opportunities for every public safety agency in New Hampshire to have their radios reprogrammed (approximately 14,000 radios) to the statewide approved Radio Matrix. The reprogramming effort will take place over a two-year period beginning in October 2019.

Work was completed which provided the channel matrix via a web site so local officials and radio vendors can review it and make requests based on it. It has since been made available via the WebEOC application.

A statewide Radio Frequency Matrix that defines the Code Plugs utilized statewide by Public Safety is maintained, updated, and reviewed monthly by the SIEC Radio Frequency Working Group while being in cooperation and collaboration with DESC personnel. A change to the Code Plug is only accomplished through a deliberate and consistent method of cooperation which defines the accuracy of the Matrix. Radio reprogramming was concluded in August 2022 and all public safety disciplines statewide who expressed an interest in having their radios reprogrammed were accomplished through a grant managed by DOS Grants Management.

Radio Vendor issues prevailed throughout the pandemic regarding local public safety reprogramming efforts, however all prevailed who persisted. State Police, Marine Patrol, Fish & Game and DNCR radios operating in public safety roles were reprogrammed throughout this period by DESC Communications Staff. These efforts are now scheduled on an annual basis which also includes preventative maintenance on Mobile and Portable radios.

The statewide Radio (Code Plug) Matrix currently exists in "Box.com". That format has been created in Web-EOC. Public Safety agencies throughout the state can now avail themselves of Web-EOC to ascertain if any of the VTAC Channels are being used or make a request that certain channels are requested and being used for a specific event or response. Web-EOC has become, along with notifications from the SWIC's Office, a notification tool to alert first responders of specific channel usage and any given time and defining the duration of expected use.

This observation has been fully resolved.

Observation 14: Improve Radio Network Information Technology Controls

Summary of Finding: 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.

Current Status: Progress has been made in this area including enhancing physical security at our controlled sites. Additionally, we are identifying equipment that should require password protection and have an administrator oversee *it*. Of the 50 sites that the LMR utilizes, DOS is only in control of 20% of those sites and as a result any changes in security must be negotiated.

The P25 Radio System has an IT core which controls the LMR resources. It contains multiple layers of security and is protected by a Motorola system upgrade agreement (SUA) and a network intrusion detection system. The radio system is further monitored by DESC Communications Staff with the Motorola Unified Event Manager (UEM) for component level system health. The IT backhaul portion of the radio system is managed centrally by DESC through Ceragon radio monitoring equipment and other networked devices to monitor power outages, data packet loss, generator scheduled tests, shelter door entry and shelter temperature.

The Division deployed a Division-wide monitoring and alerting system. This system is intended to monitor and alert on all critical infrastructure across the Division. It includes all radio systems, IT systems, and remote dispatch sites. Completion of the system occurred in the fall of 2023.

DOS continues to participate in the Motorola SUA as noted above, and the system is continually monitored through the Motorola Unified Event Manager (UEM) for issues, outages, or other system trouble. UEM notifies staff via email of trouble for follow-up when required. Motorola also provides security monitoring as part of the SUA and provides real-time monitoring of any threats or security concerns, although none have been identified over the last year. DOS continues to work with our internal IT group to provide firmware updates to devices and replacements for devices that cannot be updated are in the plan to replace with newer, more secure devices.

This observation has been fully resolved, however, improving radio network controls will remain a core component of our ongoing communications mission.

Observation 15: Improve Physical Security Controls

Summary of Finding: The DOS lacked a formal approach to physical security of radio network assets.

Current Status: DOS received a Homeland grant to move toward digital locks at radio sites we control. The goal is to tie the system into the existing IPOC and PSAP locations as well as the Radio Maintenance facility.

This was completed in July 2021 for DESC owned communication sites. More work needs to be done with partner agencies where DESC has communication equipment.

In 2022, the Division applied for, and was granted additional funding to continue the installation of electronic locks in the remainder of the remote facilities. Work has already begun on completing the Environment Historic Preservation application process and the expectation is it will be completed by the fall of 2024.

On March 20, 2024, FEMA approved the materials submitted for the Environmental and Historic Preservation according to the National Environmental Policy Act (NEPA) of 1969, the National Historic Preservation Act (NHPA) and other EHP laws, regulations, and Executive Orders.

DESC will be putting the second phase of the electronics locks project out to BID in early April of 2024. The second phase of this project should be completed by the late spring of 2025.

Additionally, DESC has a formalized policy in place that addresses the physical security of radio network assets at its remote radio tower locations.

This observation is ongoing.

Observation 16: **Improve Maintenance Management**

Summary of Finding: **DOS controls over radio network maintenance lacked the necessary oversight, policies, procedures, and agreements to ensure its maintenance program was cohesive and efficient.**

Current Status: DOS has developed a comprehensive web application, CAM (Communications Asset Manager) to track all aspects of the communications infrastructure and maintenance. The database architecture provides specific data storage related to property, tower, antennas, buildings, radio equipment, generators, and fuel status to include many date-driven elements such as component installation, warranty expiration, other end of support/end of life dates as well as regular maintenance tracking with an automated mobile device inspection application. DOS personnel are currently migrating existing paper-based information into the system as well as inputting new site visit and maintenance activities as they occur. The application has been extended to other statewide communications stakeholders for improved statewide visibility of communication resource.

This system is in use and has been modified to store site lease agreement expiration and tower structural analysis documentation.

Over the past several years the Radio Maintenance Team (RMT) has made remarkable progress in proactively maintaining remote systems. They have developed a maintenance schedule for all sites and have established maintenance contracts for all remote generators and HVAC systems.

The shelters themselves have been the beneficiary of new roofs and, in some cases, new generators and HVAC systems. A biennial cadence has been established to replace aging generators. The towers and all installed communication equipment are inspected every year from top to bottom by tower climbing staff from the RMT. Regularly, and after severe weather events, the RMT inspects their remote sites as well as the accessibility of access roads and trails. We contracted an engineering firm to evaluate our towers for loading compliance with industry standards and we are taking action to remedy any issues identified by these reports. We further addressed identified structural issues with the concrete piers that anchor the towers to include the preventative concrete sealing of all DESC-owned tower piers. We established and now maintain a software upgrade agreement (SUA) with Motorola, encompassing monthly/quarterly patching, software upgrades, and hardware refreshing for our Astro 25 radio system. Lastly, a maintenance agreement for our installed door access control system has been put in place.

In summary, this observation has been completed. The towers, their associated shelters, the Astro 25 Radio system, the access control system, and all other associated equipment in use at these sites now receive routine preventative maintenance as required.

This observation has been fully resolved.

Observation 17: **Improve Continuity of Operations Planning**

Summary of Finding: **The DSP lacked operational continuity of operations plans (COOP) at the end of June 2014.**

Current Status: The New Hampshire Department of Safety, through the Division of Emergency Services and Communications, is currently in the process of rolling out its updated P25 Radio system. This system is replacing an aged, end-of-life radio system that had, by design, no redundancies, and relied upon existing maintenance to remain operational. The new Motorola system, is designed to have quadruple fail-over built into its core, meaning, that four separate internal systems would have to fail in the core before radio communications ceased on the DOS network. This system is designed around two (2) geo-diverse cores. One located in Concord at the IPOC and one located in Laconia at the DESC PSAP. Radio Communications for NHSP are being established at the dispatch center at the IPOC as well as at the Laconia PSAP. This design provides redundant backup of both the critical radio infrastructure (2 quadruple-redundant cores) and two separate locations where critical communications can be maintained for NHSP and other entities utilizing the radio system. The system has been tested and accepted, and specific training of dispatch personnel on the new consoles has been undertaken. Motorola-specific training for the radio technicians charged with maintaining the system is currently on-going. These training sessions are being conducted by Motorola trained technicians on the new system. Failover plans for COOP purposes have been developed as well.

The Motorola provided training has been completed. Testing of mobile dispatch consoles was done frequently during the quarantine and social distancing period of Covid-19. While the technical functions

of the mobile dispatch consoles has been repeated many times, formal concept of operations has been developed in concert with the NHSP Communications leadership.

DESC considers the COOP plan a living document. It is updated on a regular basis to adjust for new or retired technologies and changes in the organizations involved.

This observation is fully resolved; however, annual review of the COOP plan will continue as a part of the DOS mission.

Observation 18: **Improve Performance Measurement and Evaluation**

Summary of Finding: **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.**

Current Status: Loss of primary electrical power is the most frequent cause of communication outages, DOS has implemented semi-annual professional generator service maintenance and inspection for all 9 sites with backup generator ownership. Date tracking of expiring components such as batteries and database flags of components requiring repairs or follow up are being tracked through the CAM application described in Item 16. A generator site refueling plan has been implemented And additional data transmission and network monitoring systems have also been instituted to further improvements in this area.

Two of the nine sites, in addition to the two configured for monitoring and automatic delivery, have been up fitted with new gas piping and failover switch valves which has increased the available gas supply. Reserve propane tanks for remote access sites have been purchased and are filled in a ready reserve status. Proactive winter fuel maintenance has been coordinated on behalf our landlords to improve generator reliability at some of our most critical mountain top sites. Additional fuel supply stabilization and monitoring had been instituted in the spring/summer of 2020 under a new statewide refueling contract.

Nine sites are currently monitored via cellular modem and automatic delivery is in place where it is physically feasible. Proactive generator maintenance with DNCR owned sites and load testing has resulted in greater reliability and confidence of backup generator operation keeping systems online. A proactive and staggered battery replacement plan across all DC power plants such as UPS devices and microwave radios at communication shelters began in FY 2021 further improving power resiliency.

As of October 2022, we now have generator monitoring at 12 sites where we rely on emergency back-up generators during power outages. Generator batteries are now on a scheduled replacement plan and all our monitored generators, owned and operated by DESC and DNCR, are exercised weekly on an

automated schedule. The DESC has further worked to eliminate single points of failure in the state microwave network by installing secondary microwave paths to critical nodes of the system, leveraging existing microwave paths with public safety partners for additional redundancy and deploying additional fiber lines at strategic sites to further improve system uptime and maintain interoperability. Two existing radio sites now have emergency backup generators that previously did not have this capability. Other advancements in this area include planned microwave installations from Concord to Henniker and Peterborough to provide a redundant path to the southwestern part of the state. Coverage upgrades have been designed and funded to the LMR portion of the radio system in the southwest portion of the state and the northern portion of the state to achieve a substantial increase in transmit and receive capability in mobile radios with users on the state police radio channels in Troops “C” and “F”.

With this update, all items as previously noted are still in place and operational. The radio coverage upgrade to Troop C has been fully completed, resolving long-standing complaints of poor radio coverage and intelligible audio causing an officer safety issue; feedback from Troop C staff has been overwhelmingly positive. The design of the Troop F upgrade has been finalized and is being implemented this spring (2024). The Pat’s Peak (Henniker) radio project has also been completed, providing a tertiary path for Pack Monadnock (Troop B Prime Site) to communicate with the DOS radio core, and providing a failover for the single-point-of-failure microwave path from Mt. Kearsarge to Pitcher Mountain in Stoddard, NH. DOS also funded the installation of two E-Lines, one from Moose Mountain in Etna, NH to Claremont Police Department, and from Claremont Police Department to Troop “C” Barracks in Keene, NH. With the assistance of the Grafton County Sheriff’s Office, a fiber line on the UNH IBEAM system was leased through their budget, providing a redundant connection from Cannon Mountain to Mann’s Hill in Littleton, NH. These lines have eliminated four “dead ends” in the radio system network, allowing for outages and maintenance periods that do not affect the public safety radio system’s operation. Additional network hardening will continue over the next year to eliminate the few remaining “dead ends” of concern. New generators are currently being installed at Oak Hill, Moose Mountain, and Hyland Hill, while new HVAC units have been received and will be installed at Holden Hill, Whittier, and Oak Hill pending vendor scheduling.

This observation has been fully resolved.

Observation 19: **Improve Management of Communications Hardware**

Summary of Finding: 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.

Current Status: The Department of Safety, through the Division of Emergency Services and Communications, has conducted a comprehensive up-to-date inventory of related Communications equipment, owned by the Department of Safety. The purpose was to determine what equipment we could deploy to enhance communications and what equipment is no longer useful, given the roll out of

the upgraded P25 radio. As a result, we have undergone a complete assessment of our interoperable equipment including our IMV, Command Trailer, Interoperable Communications Deployable trailers, and Cradlepoint solutions. Much of the older, outdated equipment following the inventory has been removed from the inventory according to the recommendation and marked as surplus. A radio cache of reserve radios has also been created for ease of deployment if needed for an emergency. Much of the reserve equipment is stored in locked storage containers or in the radio shop. Some supplies that are used for maintenance purposes are stored locally for replacement to maintain emergency communications, while larger expenditures are bought per a plan outlining the need for long-term replacement.

Deployable assets and communications equipment, including, but not limited to inventory assessment and control; policy development; and determining future needs, has been developed through the Division's Bureau of Interoperability which involved both the SWIC and members of the Radio Communications Team. This is a high priority for the Division as we identify what capabilities we have as well as what the needs are for our public safety partners within and outside of State Government. The reserve radios have been fully serviced and updated with the latest radio channels for an increased level of interoperability readiness. Additional upfitting and servicing of existing equipment has continued, validating the grant funded purchases. This equipment has been deployed for training, exercises and actual events bridging communications between state, regional and local public safety agencies.

In March of 2023 the State of New Hampshire Department of Safety Division of Emergency Services and Communications took possession of two (2) Compact Response Deployables (CRD's). This resource provides the state with the opportunity to provide additional coverage in areas where LTE is limited, or non-existent. Should an event take place where coverage is lacking, a CRD can be deployed to increase the capability for first responders to communicate.

This observation is fully resolved; however, the Division remains cognizant of the various needs of our stakeholders and continues to work with them on their varying communications needs.

Observation 20: **Improve Oversight of Interoperability-Related Committees and Their Compliance With State Laws**

Summary of Finding: 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.

Current Status: It was widely recognized that New Hampshire benefitted for years from an assortment of committees that were engaged on issues surrounding interoperability communications. In 2015 when the Statewide Interoperability Executive Committee (SIEC) was created, it brought all these

various committees into a single committee with a single direction. Established by RSA 21-P:48 and under the direction of the Commissioner of Safety and coordinated by the Statewide Interoperability Coordinator (SWIC), who acts as an officio member of the SIEC, the SIEC addresses statewide issues as they relate to interoperable communications. In compliance with RSA 21-P:48, the SIEC has oversight responsibility to statewide interoperability, maintaining three Working Groups i.e. the Data Communications Working Group that has oversight on FirstNet activities statewide; the Operations Working Group which creates policy and procedure as it pertains to SIEC activities; and the Radio Frequency Working Group which has oversight and created the Statewide Radio Frequency Matrix. Each of these Working Groups has sub-committees assigned based on the subject matter being explored.

Sub-committees created advance the COML and COMT programs, the Applications Sub-committee that reviews and investigates certain applications which are recommended for public safety, and the newly created Statewide Hailing/Hot Button Committee that is currently exploring a unified challenge regarding emergent circumstances that unifies public safety communications.

Additionally, members of the SIEC are assigned to review applications submitted to NH DOS Grants Management to ensure that what is being requested falls under acceptable interoperability standards.

The SEIC maintains a committed posture to explore and react to next generation communications technology. Responsibilities align with the SCIP and promote creative solutions to interoperability challenges statewide. FirstNet, Mutualink, Interoperability Training, CISA's Technical Assistance Programs, CISA's 25 Marker Assessment, and COMU program among others, are all programs that have exceeded their expectations and have been recognized nationally for their accomplishments. Although much work has been accomplished, interoperability is an ever-changing environment and it's the SIEC's responsibility to maintain and explore all new innovations and be focused on next generation communications technology.

This observation has been fully resolved.