



Ossipee Radio Tower Failure

Adversely Affected Public Safety Communications in Southwestern Maine in December 2009

What Happened, and What the State Is Doing to Prevent Such Occurrences in the Future

WATERBORO, MAINE – Public safety communications over a large area in southwestern Maine failed during the night of Wednesday, December 16, 2009, adversely affecting communications for police, fire, and emergency medical services (EMS) at the local, county, and State levels (see table 1).

The radio tower on Ossipee Mountain went out of service sometime after midnight on Wednesday until about 5:00 a.m. on Thursday morning, when radio technicians from the State of Maine along with the Cornish Fire Department arrived on the site to restore service. Ossipee Mountain in Waterboro, Maine is an important radio communications site for both the State's existing radio system; and also for the new improved system being developed.

State radio tower sites such as Ossipee Mountain are part of the State of Maine's outdated radio communications network for law enforcement, public safety, and public service agencies. Local and county agencies often share mountain-top sites with the State of Maine to gain economic efficiencies. Physical security of such sites is lacking and not up to the standards and challenges of 21st century realities.

Maine State Government is actively taking steps to improve the State's radio communications infrastructure by consolidating its legacy, independent department radio networks; and developing a new modernized single system for State government users and others (see figure 3).

The Office of Information Technology (OIT) has a dedicated group to manage the State's radio upgrade – MScCommNet (Maine State Communications Network). The State's Chief Information Officer is responsible for the overall success of the State's effort to commission a new system by the fall of 2012.

The Ossipee problem was caused by someone tampering with a switch that shut off the electrical power to the site. This caused the emergency backup generator to start up and supply power to the radio equipment. Continuous power is normally supplied by the local electric utility.

Radio users, dispatchers, and technicians generally cannot determine which power source is being used without being on site. Shortly after midnight, undetected, the radio tower site had no power supply from either the main utility line or the backup generator. Technicians later determined that the backup generator had been running for about 300 hours (12 days), and consumed all of the propane in the 250 gallon tanks on location.

The State generally cannot currently monitor its existing remote radio communications infrastructure and was therefore days late in detecting the problem with the backup generator running. This will change in the future, with the modernization coming to the State through MScCommNet.



Figure 1: Ossipee Mountain Radio Site

Towns and State Agencies Adversely Affected by the Ossipee Tower Outage on the Night of December 16, 2009

Local Public Safety Agencies	Action, Alfred, Cornish, Hiram, Kezar Falls, Lebanon, Limerick, Limington, North Berwick, Newfield, Ross Corner, South Hiram, Sacopee, Shapleigh, and Waterboro
State of Maine Public Safety Agencies	<ul style="list-style-type: none"> State Police Troopers (DPS) Game Wardens (DIF&W) Office of State Fire Marshal (DPS) Forest Rangers (DOC) Department of Public Safety (DPS) Regional Communications Center (Gray) Maine Emergency Management Agency (MEMA) Department of Transportation (DOT)

Table 1: Affected Towns and Agencies

Vandalism and tampering are not isolated incidents at Maine’s radio tower sites. Ossipee and other sites are often subject to vandalism, which puts the public radio communications at risk. The Ossipee site was subject to vandalism the previous month. See OIT News article “*Break-in at Ossipee Mountain Radio Tower Site*” at www.maine.gov/mscommnet.

While State technicians took immediate action to restore service, and to prevent such an occurrence at Ossipee in the near term, the Maine State Communications Network (MSCommNet) project team is working to remedy such security and operational risks throughout the State in the long run.

Overall security at the Ossipee Mountain tower site and the other 40 primary sites in the new MSCommNet system will be substantively improved when the new system is commissioned in the fall of 2012. A new reliability feature will ensure that Ossipee and all MSCommNet towers are remotely monitored around the clock by the State of Maine Radio technicians (see table 2).

As it is now, the Ossipee tower site and others can only be repaired on site by technicians. In the new MSCommNet system, State technicians will have the option to conduct remote troubleshooting and limited repair through their remote connections.

Remote diagnosis will allow repair crews to arrive on site prepared to remedy a specific problem; rather than arriving to discover the problem, without the proper tools and parts to make immediate corrections.

As it is now, they often have to make an additional trip up and down the mountain to gather the appropriate tools and parts. All of this adds to the downtime of the radio system and the associated risks of the outage for the dependant radio system users.



Figure 2: Old radio shelters scheduled for replacement with MSCommNet project.

MSCommNet Feature Comparison to existing infrastructure

State Radio Tower Sites

Current
(Legacy)

MSCommNet
(Future)

Communications equipment shelters

Exterior doors	Vandal resistant	Some sites	✓
	Stainless steel lockset & deadbolt		✓
	Exterior padlock hasp, anti-pry plate & hinge pins		✓
	Automatic closing mechanism and wind check		✓
Remote Monitoring	Door closure intrusion alarm		✓
Partitioned interior	Fire-retardant materials, 1-hour minimum (separate rooms for communications equipment and generator)		✓
Lighting	Emergency lighting inside and outside		✓
Interior climate control (HVAC)	Remote alarm		✓
Heat/smoke/carbon monoxide alarm	Remote alarm – individual detection in each room		✓
Electric surge protection		Some sites	✓
Fire suppression	Wall mounted extinguisher	✓	✓
Perimeter physical security			
Chain link perimeter fence		Some sites	✓
Vandal resistant gate with integral padlock		Some sites	✓
Top-mounted security barrier (barbed wire)			✓
Warning signs on fences			✓
Remote monitoring of power systems - commercial power, solar, wind, battery, and backup generator			
Remote alarms battery charger/rectifier	Rectifier failure		✓
	AC (electrical) failure & fuse alarm		✓
	Low voltage disconnect		✓
Generator engine	Low oil pressure and oil level warning		✓
	Low fuel tank		✓
	High temperature monitoring and shutdown		✓
	Over-crank shutdown		✓
	Over-speed and under-speed shutdown		✓
	Low oil pressure and oil level shutdown		✓
Solar site power system	Battery charger/regulator remote monitor		✓
Engine remote control activation	Run/Stop switch		✓
	Fault reset		✓
Antennas on towers	Remote monitoring		✓
Base radios	Remote monitoring		✓
Repeaters	Remote monitoring		✓

Table 2: Comparison of security and monitoring features

Preliminary map of MCommNet radio tower sites
 (Current as of the preliminary design review in December 2009)

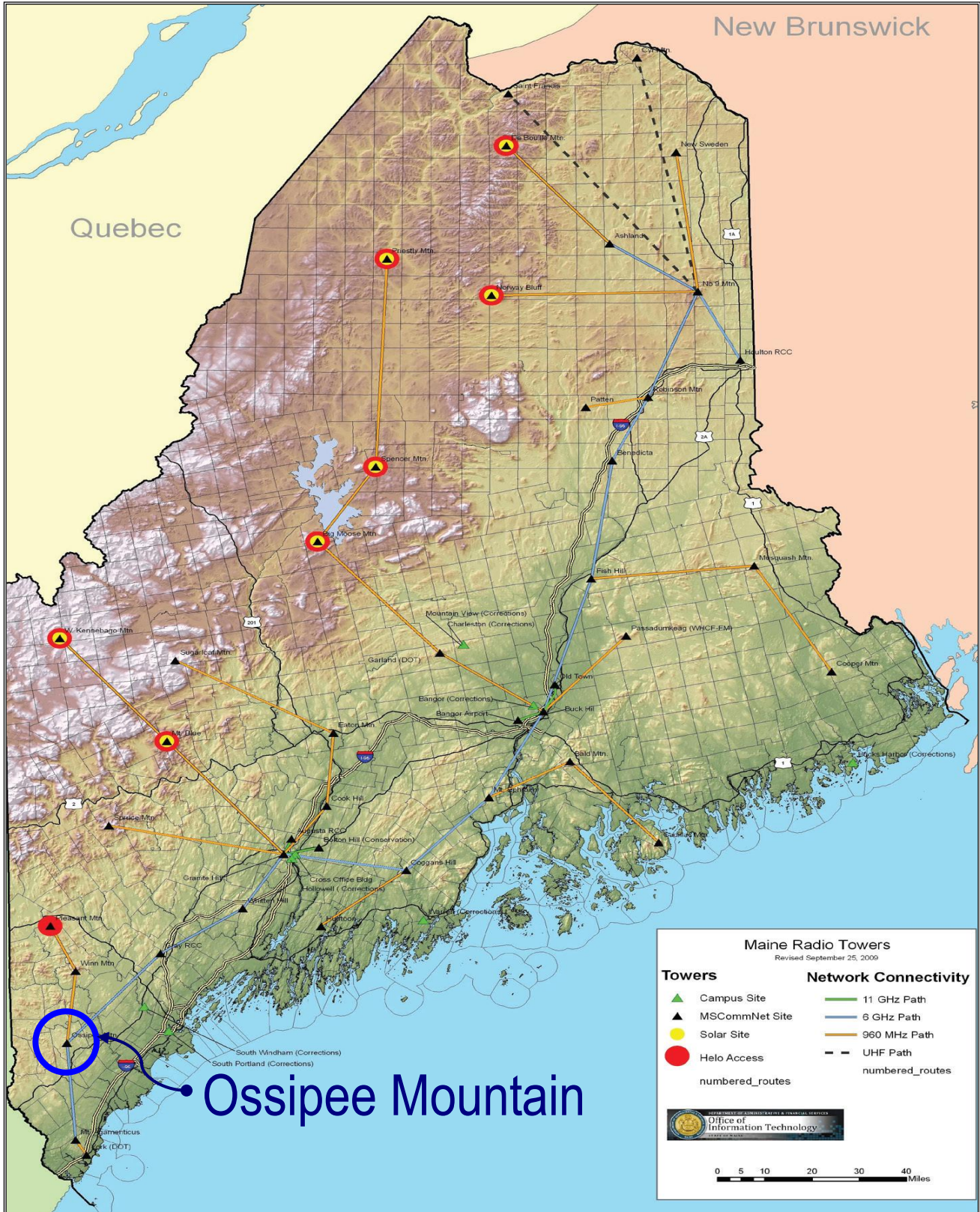


Figure 3: preliminary map of MCommNet radio tower sites (as of December 2009)