



*Wyoming's Statewide Public-Safety Interoperable  
Radio Communications System*

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## Project Report

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From: Tom Mahon, WyoLink Project Manager

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WyoLink is Wyoming's statewide public-safety interoperable radio communications project. The project involves developing a 57 site, statewide, VHF, Project-25 digital, trunked radio system. When completed, this radio system will be capable of supporting all public safety users in Wyoming. WyoLink will enhance public safety by enabling first-responders to communicate effectively on a daily basis and during critical incidents.

This report provides current information on the state of the WyoLink project and answers questions that are of common interest.

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### **A. Pilot Phase Completed — May 16 Event**

On March 31 the Phase-Acceptance milestone certificate for the first phase of WyoLink was signed. Doing so documents that the Pilot Phase has been completed and is operational, having completed all installation, optimization, testing, and all punchlist items. The WyoLink Master-Site and five radio sites are on the air.

The Wyoming Public Safety Communications Commission has scheduled an event to commemorate this milestone. The event will take place at the Wyoming Department of Transportation Headquarters (5300 Bishop Blvd) in Cheyenne at 9 a.m. on Tuesday, May 16.

It is important to recognize the Pilot Phase as significantly more than 10% of the WyoLink project. The Pilot Phase includes the central control system that manages the entire trunked radio system. There have been delays related to the space and support systems for the master site, but those are now resolved and will not have to be revisited. The design for all radio sites flows from the work accomplished in this first phase of the project. The remaining radio sites will be identical to those constructed during the Pilot Phase, with only site-specific adjustments. The frequency acquisition process was revised when problems were recognized during the Pilot Phase. Those technical and process issues have been resolved; work is proceeding on schedule. The entire frequency planning and licensing process should be completed by year's end, which is ahead of the original plan. When one adds the recent allocation of final project funding by the Wyoming Legislature, the full magnitude of what has been accomplished in two years is extensive.

## **B. Project Schedule**

The WyoLink project is on track to achieve statewide operations by the end of 2007. Work scheduled for this year includes the development of 29 radio sites. This will extend mobile radio coverage to roughly two-thirds of the state.

Last week the Detailed Design documents for Phase-2 were reviewed and accepted. This will provide 18 radio sites stretching west to Uinta County and north to Niobrara, Converse, and Natrona Counties. To expedite the process these sites will be developed before the final frequency plan is completed. Therefore, the RF combining equipment will be ordered separately and installed in the fall. These sites should all be active by the end of the year.

The Detailed Design for Phase-3 is in process and should be completed shortly. This will provide 9 radio sites in northeast Wyoming, east of the Big Horn Mountains. In addition, 2 radio sites that are ready for installation out of sequence will be developed. One of these additional sites is in Lincoln County and the other in Park County. As with the Phase-2 sites, the frequency specific equipment will be ordered in the fall. These 11 radio sites should be active by the end of the year, barring access difficulties. However, the site in Park County will not provide wide area operation until microwave upgrades are completed in that area.

Planning for Phase-4 is underway. This phase targets 8 additional radio sites, in the central and western Wyoming, based on completion of site acquisition. More sites could be added to this phase, as access issues are resolved.

Work will continue on the remainder of the statewide system. Negotiations are in process to gain access to a number of radio sites on federal land. Some adjustments in radio site selection will be made based on availability and coverage requirements.

With this work lined up for 2006, the balance should be achievable in 2007.

## **C. Federal Agency Summit**

On April 27, the PSCC hosted a summit for federal agencies to discuss participation in the WyoLink project. This summit was well attended, with the participation of important agency decision-makers. The meeting provided an opportunity to clarify issues and concerns to be resolved in developing a radio communications partnership between WyoLink and federal agencies.

Considering the high percentage of federally controlled land and the range of federal agencies in Wyoming, federal agency participation in WyoLink would be a win-win situation. Direct radio communication between Wyoming agencies and federal agencies would be possible; WyoLink is designed to accomplish this type of interoperability. Likewise, a saving of taxpayer funds would be possible by sharing a single radio system rather than building separate radio systems for each agency.

This meeting was an important step forward in the process of creating partnerships that will benefit public safety and further WyoLink's goals. There is more to be done, and those in attendance indicated their willingness to build a partnership for public safety.

## **D. Coverage Testing**

The WyoLink contract with Motorola calls for coverage testing of the Pilot Phase radio sites. This testing measures actual mobile radio coverage performance. During contract negotiations it was decided that this testing would only be conducted on the 5 Pilot Phase radio sites. This testing will validate the coverage prediction model being used for the entire system. The negotiation team determined that the cost of full drive testing for the entire system was such that the required funds would be better expended to add radio sites, once the coverage prediction model had been validated.

Coverage testing, thus far, has validated the coverage prediction model at better than 98.7%. Last fall coverage testing of 85-South and Russell Hill was completed. For scheduling reasons, and due to winter driving, the balance of the coverage testing was moved to Phase-2. Testing of the remaining three radio sites is currently underway.

The WyoLink Project Team has purchased tools for conducting coverage analysis. Those tools will be employed to quantitatively evaluate coverage, identify deficiencies, and aid in the selection of appropriate remedies.

City of Cheyenne and Laramie County personnel, and a number of volunteers, conducted a preliminary test of portable radio performance in the Cheyenne area. Deficiencies in portable radio performance matched expectations, being evident in areas that the Project Team anticipated, as the design criteria was for mobile radio coverage. A review of the test results and the subjective methodology showed a need for improvements. As such, tests will be repeated before the final location of a Cheyenne low-level radio site is selected.

### **E. Subscriber Equipment Interoperability Testing**

An important WyoLink implementation goal is that the Project 25 infrastructure provided by Motorola supports the use of subscriber equipment from various manufacturers. This is a key objective of the Project-25 open standards, and one of the reasons this technology was chosen for WyoLink. Wyoming public safety agencies will benefit, as this creates a competitive environment for selecting WyoLink subscriber equipment.

In recent weeks representatives of three radio manufactures visited the WyoLink Pilot Phase area to test and demonstrate their VHF Project-25 trunked radio products: Tait Communications, M/A-Com Wireless, and EF Johnson. Also, engineers from the National Telecommunications & Information Administration's Institute for Telecommunications Sciences (Boulder, CO) visited and used the WyoLink Pilot Phase infrastructure to conduct a series of interoperability tests scripted from the Project-25 standards documents.

For the latest offerings known to the Public Safety Communications Commission, see the equipment page at the WyoLink web site — <http://wyolink.state.wy.us/equipment.asp>