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IDAS Radios Provide Short Line Railroads With a Bridge to Future Communications

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The Association of American Railroads' Wireless Communications Committee (WCC), which represents the Class One Railroads such as Union Pacific, BNSF, Norfolk Southern and CXS Transportation, has recommended that any railroad purchasing VHF tri-mode radios for use in the 160 MHz band specify NXDN™ common air interface compliance for 6.25 hHz very narrowband operation.

"This announcement is very important for the short lines because there are competing 6.25 kHz equivalent technologies out there," said Mike Utecht, Icom's Railroad Key Account Manager. "The WCC has recommended NXDN™ as the choice for the Class One Railroads and they are recommending that the short lines do the same."

The importance of having a standard to the railroad industry cannot be understated. With multiple railroads sharing the same track, communication between short lines and Class One Railroads becomes a safety of life and property issue.

Railroads Cope with Transition to Narrowband Technology

In the land mobile industry, all roads lead to narrowband wireless technology. It is no different in the railroad business. The challenge for railroads is maintaining interoperability during the transition, considering it has roughly 5,000 locomotives, 100,000 portables, 50,000 mobiles and dispatch base stations located every 20 to 30 miles along thousands of miles of the track.

The railroad industry has set a goal for all Class One Locomotives to be equipped with 12.5 kHz capability by 2010. Class Ones will purchase that radio equipment with an eye to the future when the FCC will require them to use 6.25 kHz channels.

"Class Ones want to make the best of their investment. Even though they will go 12.5 kHz first, they want to purchase tri-mode radios, so they can eventually make that switch to digital 6.25 kHz channels without purchasing another radio," said Utecht. "Even as you deploy digital equipment, you still need a communications link back to the analog world."

Icom's IDAS Radio Smoothes Narrowband Transition

Icom unveiled the Icom Digital Advanced System (IDAS) last February to serve as a bridge between legacy analog system and digital narrowband systems, using the industry standard NXDN™ common air interface. IDAS radios operate in multiple modes allowing the short line railroads to transition from legacy 25 kHz analog to 12.5 kHz analog and then to 6.25 kHz digital, while maintaining interoperability with the Class One lines.

The key to backward compatibility is digital/analog mixed-mode operation.

For example, the Icom IC-FR5000 series repeaters can receive both analog and digital signals on a single channel. Railroad users can partially introduce the IDAS system while using the existing analog radios in a system,

thus allowing them to scale migration to narrow band digital at their own pace and need.

As well as allowing for multimode operation, digital technology will improve the radio's performance. Microprocessors provide forward error correction, and the AMBE+2™ codec provides clear audio by filtering out noise from the wind and locomotive engines.

"In the digital 6.25 kHz mode, the radios work very well in the rail yard, which is a difficult communications environment because of all the steel and multipath conditions," Utecht said.

"Additionally, digital 6.25 kHz channel technology will allow the rail industry, which has just shy of 100 nationwide 25khz frequencies, to at least triple their channel capacity while at the same time losing old restrictions like geographic isolation." "Icom dealers have an opportunity to follow up with the short lines. It should be clear that this is the best path for them to 6.25 kHz," Utecht said. "A lot of the short lines need system design, service, installation — every thing that a local dealer can and should provide."