NPSTC is a federation of organizations whose mission is to improve public safety communications and interoperability through collaborative leadership.

Intrinsically Safe Issues Still Unresolved

Background: *In September 2010, NPSTC learned a new version of the intrinsically safe standard affecting Land Mobile Radio (LMR) was to go into effect January 1, 2012. The standards for intrinsically safe electrical equipment apply to equipment used in hazardous locations, including LMR. A standards certification organization, FM Approvals intends to replace their current, still safe standard, FM 3610:1988, with the new FM 3610:2010.*

The energy constraints imposed by meeting the new FM standard will result in limiting the transmit power capabilities of LMR products. The actual power reduction may vary by manufacturer because different design considerations are employed. But there is no question that power will be reduced if traditional product size, weight, and duty cycle requirements are retained. The impact of the changes will affect more than basic product design of portable radio equipment. Significant system infrastructure expansion might be necessary to maintain current geographic and in-building coverage.

Reaction and Actions

NPSTC created a Working Group, issued a position paper, initiated discussion with FM Approvals, and participated in meetings with the International Society of Automation (ISA). NPSTC has met with the Telecommunications Industry Association (TIA), Occupational Safety & Health Administration (OSHA), Land Mobile Communications Council (LMCC), and many public safety groups to discuss this issue.

Throughout the spring, NPSTC proceeded along various fronts to resolve this issue. NPSTC representatives presented a proposal at the ISA meeting in March that is being circulated for discussion at ISA's September meeting. TIA convened an Engineering Subcommittee to potentially create a new LMR-specific standard for intrinsic safety. Shortly after TIA announced its intentions, a representative of FM Approvals stated that FM would be developing a new LMR-specific standard. In early June, FM announced they were taking initial steps to create a new standard designed to address the LMR industry's concern with proposed changes to the IS

standard. However, FM said, if the new FM Approvals standard is adopted, radios meeting the standard would not be considered intrinsically safe, but would instead be deemed safe for use in the most hazardous environments under "other protection techniques."

NPSTC Writes to FM Approvals

On June 24, 2011, NPSTC's Chair wrote to the General Manager of FM Approvals to ask them to state their intentions regarding the IS standard for LMR in writing, stating, "NPSTC believes it is time to clarify public safety requirement in our land mobile radios to ensure that all of these groups understand our needs as defined by the public safety users themselves."

NPSTC is concerned with the press reports stating that FM Approvals has embarked on a new standards development process where the radios may not be called "intrinsically safe." The letter states, "... this is a concern because we do not understand this comment. We also understand that TIA is developing an ANSI LMR standard and wonder if FM Approvals will test to a standard developed by TIA, or is FM Approvals developing a 'new not intrinsically safe standard' to certify to exclusively? Should these new standards conflict with one another, what would the impact be?" the letter says, adding that public safety needs to understand the impact of new standards on public safety insurance coverage and the reaction of the unions who support public safety. If the long-range plan is to move public safety certification from Division 1 to Division 2, what would that mean to public safety?

The American National Standards Institute (ANSI), International Society of Automation (ISA), and Underwriters Laboratories (UL) are organizations that develop consensus standards through the participation of manufacturers, regulators, and consultants as well as standards certification organizations like FM Approvals.

NPSTC requested that FM Approvals provide some idea of their direction, in writing, so NPSTC can plan how to support that effort with the best result for public safety users.

FM's Response

The reply from FM Approvals explained the several methods used to certify a product for use in Class I Division 1-classified hazardous locations. There are a number of protection techniques that can be used including Intrinsically Safe. An alternative technique is referred to as "Other Protection," which includes a combination of techniques for products like LMRs used in Class I, Division 1 hazardous classified locations. FM Approvals is using the Other Protection technique in the development of its new LMR standard. They state, "....we believe by following this new approach we can test and certify a new LMR for use in Class I Division 1 hazardous locations that will provide the same level of performance characteristics as currently available for LMR."

Going Forward

Several initiatives remain underway to provide both short-term and long-term solutions to the issue. FM has agreed to continue recognition of products manufactured after January 1, 2012, provided that the product was certified to FM 3610-1988 prior to January 1, 2012, and that no substantive hardware changes that would impact intrinsic safety considerations have been made by the manufacturer to such products. Additionally, the intrinsic safe subcommittee of

TIA, TR-8.21 continues to work on the development of appropriate standards with the help of UL.

UL Proposes Extension of Review of 913 Standards for Intrinsically Safe

In the meantime, on June 30, UL issued a release proposing to extend the review period of new and revised requirements for Intrinsically Safe products in Class I, II, and III, Division 1 from July 31, 2012, to July 31, 2016. UL stated, "Recently a revision-cycle was completed with UL 60079-11 *(based upon the same international standard as is the new FM 3610-2010)*, upon which the majority of the requirements for UL913 Revision 7 are based. UL is proposing the effective date extension to provide a revised time frame that would satisfy the industry and UL's concerns with respect to the time and resources needed to review all products."

Simultaneously, UL has extended the withdrawal of its UL913, Version 5 to 2016. UL offered its UL913 Version 5 publication to TIA for TR-8.21's consideration as an alternative to an independent TIA standard. Early indications are that designing and testing to UL913, Version 5 will allow the LMR industry to offer the user community with the traditional performance attributes they require (such as size, weight, and transmit power), while simultaneously offering the ability to operate in hazardous locations while providing historic Intrinsically Safe performance. Evaluation efforts are underway.

"In effect, UL has done what public safety and industry have been asking FM Approvals to do, *extend the date of current Intrinsically Safe requirements*. This is excellent news for public safety, however there will be other questions arising if UL takes this action," says NPSTC's Executive Director Marilyn Ward. "For example, manufacturers have traditionally used FM Approvals to certify their equipment. Manufacturers need to know if FM will also extend the FM 3610-1988 effective date and/or will FM certify to UL913, Version 5, or will manufacturers have to change who they use as a certification entity? NPSTC will continue to monitor the situation to ensure public safety's voice and needs are known as it evolves. In the past 10 months great strides have been made, but we are not out of the woods yet! More to follow."

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