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

NPSTC Position Paper on Proposed Changes to Intrinsically Safe Standard

Background: The American National Standards Institute (ANSI), International Society of Automation (ISA), and Underwriters Laboratories (UL) are organizations that publish consensus standards that are developed through the participation of manufacturers, regulators, and consultants as well as standards certification organizations such as FM Approvals. The ANSI/ISA 60079 series for intrinsically safe electrical equipment applies to equipment used in hazardous locations, including Land Mobile Radio (LMR). FM Approvals intends to adopt the revised ANSI/ISA 60079-11 standard in January 2012 in their FM 3610 series of standards. The revised standard appears to be driven not by any concern that the existing standard is unsafe, but rather to harmonize the U.S. standard with international standards.

Issue: The National Public Safety Telecommunications Council (NPSTC) is very concerned about the potential implementation of FM Approvals Standard 3610-2010 [*FM's standards numbering classification for the standard to be revised, ANSI/ISA 60079-11*] due to the negative technical and financial impact on public safety users of LMR that require the intrinsically safe certification. The impact of the changes identified in this approval standard will extend far beyond basic product design considerations on portable radio equipment. Also impacted will be product interchangeability and compatibility, along with increased user training requirements. Furthermore, significant system infrastructure expansion may be necessitated to maintain current geographic and in-building coverage, if funds and additional Federal Communication's Commission (FCC) channels/spectrum are even available.

As a federation of public safety organizations whose mission is to improve public safety communications and interoperability through collaborative leadership and a representative of public safety users, NPSTC feels it necessary to develop this position paper defining NPSTC's concerns, providing recommended solutions, and stating NPSTC's position if these recommendations are not implemented.

Technical Issues

Concern: NPSTC is unclear as to whether the impact to LMR intrinsically safe operations was considered by ISA 12 Standards Committee when it adopted the updated/harmonized version of

60079-11 and/or whether any consideration was ever given to the appropriateness of including LMR equipment in the general "electrical automation equipment" category, particularly in light of the fact that LMR equipment has seemingly not caused any problems operating in hazardous locations under the previous/existing certifications. NPSTC asks why changes are being made to a standard when there has been no safety issues identified with the current standard.

Most importantly these new standards would affect the safety of public safety first responders. As presently designed, two-way portable radios tested to the current standard, FM 3610-1988, will not meet the new FM Approvals testing standard. To meet the new FM Approvals standards, portable radios will have to be redesigned. Industry experts anticipate significant transmit power reduction will result. This power reduction will reduce the range of portable-to-portable communications within building or at hazardous incident sites. Many departments are being forced to reduce staff levels because of the economic conditions and thus would not have the additional personnel to put inside buildings to monitor the crews.

Reduced portable radio power levels will also impact system infrastructure design, potentially requiring additional tower sites, land acquisition, civil engineering, etc. In some cases, system changes may require additional radio channels, which in many cases simply will not be available from the FCC.

NPSTC is further concerned that if public safety agencies are forced to buy new radios, previous investments in spare batteries, chargers, and accessories will be rendered useless, as such equipment will not be compatible with new radio designs. There is also the risk that operating mixed systems with “old-standard certified” and “new-standard certified” radios may not meet the same group ratings.

NPSTC has had several discussions with FM Approvals, which intends to implement the standard and sent a letter to the Chairman of ISA 12 Standards Committee, Electrical Equipment for Hazardous Locations, Ted Schnaare. In his reply, Mr. Schnaare said there is a difference between the designations used by the standards-setting organizations—Zones for ANSI/ISA, and Divisions for UL—that is related to the differences in international and U.S. organizations. Mr. Schnaare wrote that the “concerns mentioned in [NPSTC’s] letter are for the most part outside of ISA’s power to address. Further it is our opinion that the most effective way to resolve the problem is to work directly with FM and UL, who are the owners of the U.S. requirements for Division-rated intrinsically safe electrical equipment.”

Recommended Solutions

1. FM Approvals should re-affirm in writing its assurance that there are no safety issues with the current FM 3610-1988 standard and that products approved to the 3610-1988 standard can be safely used after 2011 in the atmospheres for which they were originally approved, provided that there have been no design changes requiring re-certification.

2. In recognition of Recommendation 1 and the unique requirements of Private LMR users whose normal activities require operations in *Immediately Dangerous to Life or Health* (IDLH) environments, ISA should revise, with FM Approvals' support, the ANSI/ISA 60079 standard to include the Division-rating system, the 1.5 safety factor on energy, and other key criteria in the FM 3610-1988 standard. Alternatively, FM should adopt a two-tier standard which would include the new ANSI/ISA 60079 Zone-oriented standard for products requiring a global, harmonized approval applicable in North America and Europe, and the FM 3610-1988 Division-oriented standard (or equivalent) for products requiring a North America-only application.
3. FM Approvals agrees to support the proposal in Recommendation 2 and to maintain the existing FM 3610-1988 intrinsically safe standard even if the ISA does not make the changes proposed in Recommendation 2.

Financial Issues

Concern: NPSTC is very concerned about the financial impact to local government should FM Approvals implement the revised standard. As an illustration of the potential costs to public safety and the public at large, NPSTC asked Pinellas County, Florida, to do a system review to illustrate one county's financial burden as a result of this revised standard. Pinellas County operates on a 53-Channel Smartzone/Project 25 700/800 MHz Motorola Trunked Simulcast Radio System. The system currently provides countywide coverage and is a 10-site multi-zone system. Countywide there are over 10,500+ users from 24 municipalities that operate on the system for the daily operations; of those users over 7,500 are public safety. The system is currently undergoing reconfiguration for rebanding and the migration to P25 technology.

The results of the coverage analysis indicated that the number of sites in the system would increase by 7 to 10 sites, changing the infrastructure design to one resembling cellular technology. The new sites were based on "virtual sites" and do not take into account land acquisition and zoning limitations, which would add additional costs. The costs of the new sites include the tower construction and all infrastructure costs for the sites. Modifications to the existing sites and system parameters were not included in this analysis. Approximately 3,000 radios operating on the system would have to be replaced as part of the standards modification.

Reconfiguration Cost Impact

- The cost is estimated to be $3 million dollars per site. Using the worst case scenario of 10 additional sites at $3 million dollars, the estimated cost for reconfiguration would be $30 million.
- Using the best case scenario of 7 additional sites at $3 million dollars, the estimated cost for reconfiguration would be $21 million.
- The estimated cost to replace the 3,000 radios at $5,000 each is $15 million.

Therefore, the minimum overall cost would is estimated at **$36 million, but could perhaps be as high as $45 million.** This is an outrageous unfunded mandate that taxpayers will have to absorb to accommodate a standard ***that does nothing*** to improve public safety communications.

Every state in the country has invested millions of dollars in improving their communications for public safety. If these new standards are adopted, it would not only make most of these systems

outdated but also put the states in a position of operating equipment below the standards because the majority would not have the funds to meet these new standards.

Recommended Solutions

1. Postpone the revision to FM 3610-2010 until full resolution of the proposal for ISA to adopt either the changes to the ANSI/ISA 60079-11 or an additional standard as proposed in Recommendation 2 to recognize the needs of the PLMR users.
2. If the revisions as proposed in Recommendation 2 are not adopted by ISA, FM Approvals agrees to postpone the implementation date of FM 3610-2010 (ANSI/ISA 60079), with no expiration of FM 3610-1988 until at a minimum January 1, 2017, or until a time mutually agreed upon by users, manufacturers, and FM Approvals. This recommended date is significant for two reasons. First, it marks a major transition point for systems operating in the 700 MHz band, as FCC operating rules change significantly. Second, this time frame provides industry time to develop new products and the energy systems required to meet the new standard.
3. If the revisions as proposed in Recommendation 2 are not adopted by ISA, and if FM Approvals declines to postpone the implementation date of ANSI/ISA 60079, FM Approval agrees that all accessories, including batteries, linked to products originally approved to the FM 3610-1988 standard can continue to be manufactured and sold as replacement parts for those originally approved products for the life of those products without invalidating their FM intrinsically safe approval, provided that there have been no design changes requiring re-certification.
1. Indefinitely postpone the implementation of *FM Approval Standard for Electric Equipment for use in Hazardous (Classified) Locations General Requirements, Class Number 3610,* until such time that the unanticipated consequences of this action can be thoroughly analyzed and that any negative impacts likewise be understood and addressed.

If none of the above recommendations are possible, NPSTC believes public safety radios should be excluded from this new standard and that a category should be developed specifically addressing public safety requirements. NPSTC understands that more than radios used by first responders are affected by this standard and that SCADA (*Supervisory control and data acquisition*) and other equipment used by local government public works, transportation, etc. are also impacted. NPSTC also understands that this would be a complicated task since other uses of LMR equipment mirror government uses. However, if NPSTC cannot find a resolution to these public safety issues, NPSTC will propose that a category for public safety be created immediately to remove public safety from implementation of the new standard.

NPSTC Position

NPSTC resolves that the updated/harmonized version of 60079-11, FM 3610-2010 should not be implemented on January 1, 2012, as planned by FM Approvals without full agreement of the public safety community and the manufacturers to ensure that public safety needs are met. NPSTC further resolves that FM Approvals continue to use the present standard (FM 3610-1988) for U.S. radios until a solution is reached.