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Fire Sprinklers

A Global Perspective

International Use of NFPA Standards

Spreading Fire Safety on a Global Scale

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For years, the National Fire Protection Association (NFPA) has been recognized as the premier fire protection authority, but mostly, this has been strictly in the United States (U.S.) and Canada. Internationally, though, the use and application of NFPA codes and standards is gaining increasing ground. While much of the work is being done for U.S.-based companies, abroad, many international companies are recognizing NFPA as the global leader in fire protection.

In many countries, building and fire codes are either non-existent or not worth the paper they are printed on, and in many cases, not even enforced. This places the onus on the building owner to ensure a properly constructed and safe building. A growing number of building/property owners are turning to NFPA for direction on how to install fire and life safety systems, how to maintain those systems, and for safety direction.

Telgian Corporation is currently involved in a number of international projects, each requiring knowledge and understanding of NFPA standards. One such project is as a third-party reviewer and inspector on a significant construction project in the Middle East. The end user of the property requires that the installing contractor (fire protection) have all equipment and systems installed and certified by someone well versed in NFPA codes and standards. To that end, Telgian has made a number of visits to the project site to verify systems installation, hydrostatic testing, flushing, acceptance testing of equipment and commissioning. Over the course of each visit, it is necessary to "train" the contractor in the installation of fire protection systems, specifically as that installation conforms to NFPA requirements. The body of information NFPA covers is vast, and for a novice to wade through it can be a daunting task. Having a consultant on site who understands the nuances of NFPA standards has been instrumental in the project continuing on track and providing the owner a level of comfort and safety knowing that the building is adequately protected.

The top photo shows a diesel engine pump that is being operated manually. Notice the garden hose supplying the cooling water line and the plastic over the controller because of a roof leak. Bottom photo: Switchgear room that is protected by CO_2 that has an abort switch, which is no longer permissible by NFPA. Also, the enclosure itself is not sealed properly.

An example of this occurred with the settings for the fire pump that was being installed. The contractor and the pump representative had initially tested the pump establishing a churn pressure of 165 psi. They then set the start pressure of the fire pump to 165 psi and stop at 175 psi. The jockey pump was then set to start at 170 psi and stop at 180 psi. Based on the 1999 edition of NFPA 20, *Standard for the Installation of Fire Pumps for Fire Protection*, it is recommended that jockey pump start pressures be set at 10 psi less than the churn pressure of the fire pump, and the start pressure of the fire pump set at 5 psi less than the jockey pump, with each additional pump at 10 psi increments. Telgian directed the contractor to reset the start/stop points for the pump to be in line with NFPA guidelines. As a result, the hydrostatic pressure of the systems at the site could be reduced by 10 psi, making passing of the underground hydrostatic test possible as the allowable leakage loss was exceeded under the higher pressure.

Another project that Telgian is involved with is in Southeast Asia where we have been asked to provide engineering consulting and design services for a major geothermal power producer. The client is progressive in ensuring that each facility is up to NFPA standards and codes in both fire protection and electrical safety. The work has involved performances of fire protection audits at each facility to determine what fire protection is installed, to determine if what is installed is adequate for the intended application, what improvements would be required to meet current NFPA standards, as well as to identify areas of concern. Upon completion of each audit, a formal report was prepared outlining the findings. Specific NFPA standards that were referenced for each audit include NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems;* NFPA 13, *Standard for the Installation of Sprinkler Systems*; NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*; NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*; NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*; NFPA 70, *National Electric Code*; NFPA 72, *National Fire Alarm Code*; NFPA 2001, *Standard on Clean Agent Fire Extinguishing Systems*; and NFPA 850, *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*. Other standards and codes were referenced, but these nine were the primary focus of each audit.

In many cases, each plant utilized inappropriate fire protection for the respective hazards. One such example was the installation of total flooding CO_2 suppression systems in the master control rooms and switchgear rooms. In both instances, the rooms were not properly sealed and would not contain the CO_2 to the room of origin. In addition, the control rooms are occupied 24 hours per day. NFPA 12 does not permit the installation of total flooding CO_2 systems in normally occupied enclosures and NFPA 850 recommends that only smoke detection be provided for switchgear rooms.

The recommendations outlined in the audit were used as a basis in the preparation of design documents for upgrading the fire systems at each plant. The facilities have been designed with new updated fire pump layouts in conformance with NFPA 20 requirements, new early warning smoke and heat detection systems throughout the plants, upgrades to the fire suppression systems in the removal of the CO_2 systems from occupied areas and replacement with pre-action sprinkler systems, and a new site fire loop to supply the yard hydrants, monitor nozzles and new sprinkler risers.

These are just two cases where internationally, NFPA is not only being recognized as the authority in fire protection and life safety design, it is being implemented as well. The need for qualified consultants, designers, and construction supervisors who are versed in NFPA standards and codes is growing daily. Such personnel will be critical in the proper application of NFPA standards worldwide. ■

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