



Amy Beasley Cronin
Secretary, Standards Council

23 June 2010

To: Interested Parties

Subject:

Standards Council Decision (Final):	D#10-2
Standards Council Agenda Item:	SC#10-3-20
Date of Decision*:	3 March 2010
Action following Report of the Council Task Group on CSST	

Dear Interested Parties:

At its meeting of 2 March 2010, the Standards Council considered an appeal on the above referenced matter.

Attached is the final decision of the Standards Council on this matter.

Sincerely,

A handwritten signature in black ink that reads "Amy Beasley Cronin".

Amy Beasley Cronin
Secretary, NFPA Standards Council

- c: D. Berry, M. Brodoff, L. Fuller, M. Earley, D. Roux, T. Lemoff, J. Moreau-Correia, C. Henderson
Members, TC on Lightning Protection (LIG-AAA)
Members, TC on National Fuel Gas Code (NFG-AAA)
Members, NEC Code Making Panel 5 (NEC-P05)
Members, TCC on National Electrical Code (NEC-AAC)
Members, NFPA Standards Council (AAD-AAA)

*NOTE: Participants in NFPA's codes and standards making process should know that limited review of this decision may be sought from the NFPA Board of Directors. For the rules describing the available review and the method for petitioning the Board for review, please consult section 1-7 of the NFPA Regulations Governing Committee Projects (Regs.) and the NFPA Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council. Since this Council decision is not related to the issuance of a document as referenced in 1.7.2 of the Regs., notice of the intent to file such a petition must be submitted to the Clerk of the Board of Directors within a reasonable time period from the availability of this decision.



Standards Council Decision (Final):	D#10-2
Standards Council Agenda Item:	SC#10-3-20
Date of Decision*:	3 March 2010

Action following Report of the Council Task Group on CSST

This Standards Council decision sets forth the Standards Council's conclusions and directives following its receipt and consideration, at its March 2010 meeting, of a report submitted by a Council task group on issues concerning bonding and other lightning-related safety issues affecting corrugated stainless steel tubing (CSST) in gas piping systems.

Background

In August of 2009, the Standards Council considered a proposed TIA to the 2008 edition of NFPA 70[®], *National Electrical Code*[®] (NEC), to specify requirements concerning the bonding of corrugated stainless steel tubing (CSST) in gas piping systems. The TIA was proposed by the submitter as the appropriate means of protecting CSST against damage that could be caused if the system is energized due to a lightning strike. The submitter pointed out that a similar (though not identical) bonding provision had been added to the 2009 edition of NFPA 54, *National Fuel Gas Code* (NFPA 54), and he suggested that a TIA was necessary for correlation and consistency between NFPA 54 and the NEC. The Council declined to issue the TIA since the TIA had been soundly defeated in the balloting of the responsible panel. See Standards Council Decision #09-18 (Agenda Item SC#09-8-16[d], August 6, 2009). In doing so, however, the Council noted that the record before it revealed both jurisdictional and potential technical issues that called for further attention within the standards development process going forward.

First, as to the jurisdictional issue, the Council noted that questions had been raised regarding whether the issue addressed by the proposed TIA was properly within the scope of the NEC. Specifically, the Council noted:

In the balloting on the TIA and elsewhere in the record, it has been observed that the scope of the NEC is the practical safeguarding of persons and property from hazards arising "from the use of electricity," see NEC at 90.1(A), and it has been suggested that a provision, such as the proposed TIA, addressed to the hazards arising from lightning rather than from human use of electricity, is not within the scope of the NEC. (Decision #09-18 at p. 2)

Secondly, the Council noted that in addition to jurisdictional/scope concerns, the balloting on the TIA raised questions regarding whether the proposed bonding requirements for CSST had been adequately substantiated:

Whether or not the NEC has lightning protection within its scope, Panel 5 has expertise on issues of grounding and bonding. Concerns have been raised by some panel members in the balloting and elsewhere as to whether the bonding requirements proposed for the NEC in the TIA and which, in similar form, are currently contained in NFPA 54 have been adequately substantiated. Although the Technical Committee on Lightning Protection was consulted, it was also stated that no correlation or input from Panel 5 was sought by the Technical Committee responsible for NFPA 54 when it considered and accepted the proposal for bonding of CSST now contained in NFPA 54. (Decision #09-18 at p. 2)

The Council concluded that there ought to be a review and study of both the jurisdictional/scope issues and the technical questions concerning bonding or other lightning-related technical issues affecting CSST in gas piping systems:

The Council believes that these issues are deserving of study both for the purpose of assisting the Council in fulfilling its responsibilities to assign scopes and coordinate and oversee the activities of the various NFPA committee projects and also for the benefit of the technical committees that have or should play a role in reviewing the technical issues relating to CSST. (Decision #09-18 at p. 2)

To conduct this review, the Council designated Council Member Farr to appoint and chair a task group made up of members from NEC Panel 5, the technical committees responsible for NFPA 54 and NFPA 780, and any other relevant technical committees. This group is hereafter referred to as “the CSST Task Group”. The Council charged this task group as follows:

The CSST Task Group is requested to provide the Council with a review and analysis of the jurisdictional and technical issues relating to lightning and CSST in gas piping systems, to identify and discuss any technical issues that need to be addressed, to identify potential research or data needs, and to identify which technical committee or committees should play a role in addressing the technical issues and what that role should be. The CSST Task Group’s report should include its recommendations as to steps that should be taken so that any issues can be further addressed, if necessary, within the standards development process.

The CSST Task Group was subsequently formed and, after conducting its work, has now submitted its report to the Council.

Conclusions

The Council has now reviewed the report and, the CSST Task Group’s work now being complete, the Council has discharged the CSST Task Group with thanks. In the remainder of this decision, the Council sets forth and discusses its conclusions, based on the recommendations of the CSST Task Group and a review of the entire record.

Jurisdiction. On the jurisdictional issue, the CSST Task Group noted in its report that lightning protection was generally outside the scope of the NEC and that the Technical Committee on Lightning Protection addresses the installation of lightning protection

systems and deals with gas piping only as it may be part of a lightning protection system. The CSST Task Group, therefore, recommended that the jurisdiction of bonding for lightning protection of gas piping reside with the Technical Committee on the National Fuel Gas Code. NFPA 54, *National Fuel Gas Code*, is the document that addresses the safe installation of fuel gas piping systems and currently contains bonding requirements. The Council concludes that, based on the recommendation of the CSST Task Group, the Technical Committee on the National Fuel Gas Code should have the jurisdiction over requirements for the bonding of fuel gas piping systems, including CSST.

As discussed further below, CSST will need to receive further attention in the standards development process going forward. So as to ensure that the Technical Committee on the National Fuel Gas Code receives input and expertise concerning the lightning-related safety issues related to CSST from other relevant projects and sources, the Council directs the Technical Committee on the National Fuel Gas Code to create a task group to address the CSST issues (hereafter referred to as the NFPA 54 CSST Task Group), drawing on the expertise, as appropriate, of the members of NFPA 70, *National Electrical Code*®, NFPA 780, *Standard for the Installation of Lightning Protection Systems*, and from other appropriate organizations such as those that certify or develop product standards related to CSST. This new NFPA 54 CSST Task Group should be for the purpose of studying the issues and providing input to the Technical Committee on the National Fuel Gas Code and others on the safety and use of CSST. Without limitation, such input may include recommendations concerning the scope or content of any necessary research or testing, recommendations for revisions to NFPA 54, review and comment on any Proposals and Comments under consideration, and recommendations concerning relevant questions such as whether or to what extent listing requirements or product standards developers should play a role in addressing lightning-related safety of the CSST product.

Technical Substantiation. On the technical lightning safety issues surrounding CSST, the CSST Task Group reported that it had sought information on the research that supports the current CSST bonding requirements of NFPA 54, including any research performed by or on behalf of any manufacturers. The reports received were of limited value and as stated in the CSST Task Group report provided to the Council "did not provide enough information for the CSST Task Group to ascertain that the proposed bonding remedy will provide adequate protection from lightning induced surges." In addition, the CSST Task Group noted limited anecdotal reports concerning failures where the bonding of the installation may have complied with the current edition of NFPA 54. The CSST Task Group cautioned that the lack of detailed information or incident reports made assessment of these anecdotes impossible.

Concerned with the lack of technical substantiation, the CSST Task Group concluded that a research program was necessary to "identify safe methods for the installation of CSST to protect against lightning induced failure with consequent gas leakage." The CSST Task Group report identified, among the areas that should be addressed, the following:

- Validate whether or not bonding of CSST is an adequate solution to lightning exposure problem.

- If bonding is the solution, validate how bonding should be done.
- If bonding is the solution, validate the size of the bonding jumpers.
- Determine if bonding should be done at a location or locations other than where the gas pipe enters the building.
- Determine if alternate methods can be used for safe installation, i.e., separation from other equipment.

The CSST Task Group's conclusion that there is inadequate substantiation regarding the safe use of CSST echoes the previously expressed concerns that prompted the Council to form the task group in the first place. See Standards Council Decision #09-18 (Agenda Item SC#09-8-16[d], August 6, 2009). Because so little information was provided to the task group, it is unclear whether and to what extent a problem exists. The paucity of the submissions to the task group, however, confirms the Council's view that the concerns that have been raised about CSST should be addressed and resolved. After review of the CSST task group report and other information available to it, the Council agrees that further research must be produced to technically substantiate whether and, if so, how and in what conditions CSST can be safely used, with respect to lightning, in gas piping systems.

Over the next full revision currently scheduled to be in the Annual 2014 revision cycle, the industry or others advocating the continued use of CSST in gas piping systems shall validate the safe use of the product through independent third-party validated research and testing that can be reviewed and evaluated by standards developers in a timely way. Without prescribing who would be most appropriate to organize or conduct this independent research, the Council notes that the NFPA 54 CSST Task Group may be useful in providing input into the scope of research necessary to allow standards developers to establish adequate provisions concerning CSST. In addition, the Council's CSST Task Group noted that the Fire Protection Research Foundation is discussing the possibility of undertaking a research program related to CSST and lightning protection. The Research Foundation frequently can play a useful role in identifying research needs or in conducting research. The Standards Council, however, wishes to emphasize that it is primarily for the participants in the NFPA standards development process to fund and produce the technical substantiation necessary to support the technical content of codes and standards. See, e.g., Standards Council Decision #00-22 at p. 5 (SC#00-60, July 20, 2000); Standards Council Decision #00-30 (SC#00-60, October 6, 2000). Whether through the auspices of the Research Foundation or through other means, it is incumbent upon the manufacturers or others promoting the use of CSST in gas piping systems to provide independently validated and reliable technical substantiation demonstrating that CSST can be safely used. If such substantiation is not provided, the Technical Committee on the National Fuel Gas Code must consider prohibiting the use of CSST in NFPA 54, *National Fuel Gas Code*. In addition, should the issues not be reasonably addressed by the end of the next full revision cycle, Annual 2014, the Council may take action as it deems appropriate up to and including the prohibition of the use of CSST in NFPA 54.