



SC #00-60  
D#00-22

**National Fire Protection Association**  
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*Casey C. Grant, P.E.  
Secretary, Standards Council*

31 August 2000

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Subject: Decision on Council Agenda Item 00-60  
Date of Decision: 20 July 2000

Dear Appellants:

At its 20 July 2000 meeting, the Standards Council considered the issuance of the 2000 edition of NFPA 780, *Standard for the Installation of Lightning Protection Systems*, together with related appeals.

The short form decision was transmitted to you on 27 July 2000. Attached is the final decision of the Standards Council on this matter. Also, enclosed is a notice which has been published, related to this decision, soliciting public comment no later than 18 September 2000.

Sincerely,

Casey C. Grant, P.E.  
Secretary, NFPA Standards Council

c: Members, TC on Lightning Protection  
Members, Standards Council  
M. Brodoff, J. Caloggero, A. Cote, L. Nisbet, M. Puchovsky, J. Shannon

Standards Council Decision (Long Form):	<b>D#00-22</b>
Standards Council Agenda Item:	<b>SC# 00-60</b>
Date of Decision:	20 July 2000
Subject: NFPA 780, <i>Standard for the Installation of Lightning Protection Systems</i>	

At its 20 July 2000 meeting, the Standards Council considered the issuance of the 2000 edition of NFPA 780, *Standard for the Installation of Lightning Protection Systems*, together with related appeals. The appeals are based on a motion to return the proposed 2000 edition of NFPA 780 to committee. Both the motion and appeals, however, have not just addressed deficiencies in the processing or content of the new edition but they have instead mounted a broader attack on the scientific and technological validity of the traditional lightning protection theory that forms the underlying basis for the entire project. As will be set forth in this decision, the Council has considered the broader questions raised by the appellants concerning the future of the lightning protection project, and with it the question whether NFPA 780 should be withdrawn as an NFPA document.

In order to understand the context in which this appeal takes place, some background is necessary. For many years, controversy has surrounded the question whether the NFPA should develop a standard for a new lightning protection technology known as Early Streamer Emission (ESE) lightning protection. (For the history of previous proceedings see Standards Council Decision #00-13, April 28, 2000, and the other decisions cited therein.). The proponents of that technology, primarily those associated with the Heary Brothers Lightning Protection Company, Inc., and related corporations (who will hereafter, for convenience, be referred to as the Hearys) have extolled the technology and, in particular, have claimed that ESE terminals offer a vastly increased zone of protection over that of traditional lightning rods. Those claims have been disputed and, most recently, a special panel created to consider information and to issue a report concerning ESE lightning protection technology to the Standards Council (Bryan Panel Report), firmly rebutted the claims of ESE proponents that the technology had been adequately validated, concluding, among other things, as follows:

The ESE lightning protection technology as currently developed in the installation of complete systems does not appear to be scientifically and technically sound in relation to the claimed areas of protection or the essentials of the grounding system (Bryan Panel Report at p. 26).

Accordingly, based on the Bryan Panel Report and the record before it, the Council, in its most recent consideration of the question whether to issue a standard for the ESE systems, concluded, as it had in the past, that there was no basis for the Council to issue a standard for ESE lightning protection systems, and that given the lack of validation of the primary claims made for the ESE technology, renewed standards development activities for ESE systems was not appropriate. (See Standards Council Decision No. 00-13, April 28, 2000.)

In the course of the continuing controversy over ESE lightning protection systems, criticism has been leveled, largely by proponents of the ESE technology or other alternative technologies or theories, at NFPA's document for traditional lightning protection systems, NFPA 780, *Standard for the Installation of Lightning Protection Systems*. (See Standards Council Decision # 95-25, July 18, 1995, and Decision of the Board of Directors on NFPA 780, dated December 7, 1995.) These criticisms generally have claimed that traditional lightning protection technology has been no better validated than the ESE technology.

More recently, however, criticisms concerning NFPA 780 were made in the Bryan Panel Report. The Council, in a published notice, scheduled a hearing at its April 2000 meeting to consider all issues raised in the report. Because of the concerns raised in the Report concerning NFPA 780, a great deal of the material presented at that hearing consisted of presentations by proponents of NFPA 780. Following that hearing, the Council, in its decision concerning the ESE issues (Standards Council Decision # 00-13, April 28, 2000) noted that NFPA 780 was currently completing a revision cycle and that a new edition was about to be presented for motions and debate during the Technical Session on May 17, 2000 at the NFPA World Fire Safety Congress. The Council stated that that process should be completed before considering any issues contained in the Bryan Panel Report concerning NFPA 780.

That May 17 Technical Session has now taken place and a motion to return NFPA 780 to committee, explicitly raising concerns with the validity of the document, was made on the floor for debate and discussion. The motion failed and appeals concerning the subject has now been filed with the Council by Richard Breit and a representative of the Hearys.

The appellants, both in their written submissions and at the presentations at the hearing, request various relief, some of which is not entirely clear or consistent. The Council, however, regards the fundamental issue raised by these appeals as being the underlying validity of NFPA 780. To the extent that any appeal seeks reconsideration of the Council's decision concerning the ESE question, the Council has found no basis to do so.

As a preliminary matter in considering the future status of NFPA 780, the Council notes that the Technical Session motion which raised the issue of NFPA 780's validity was a motion to return NFPA 780 to committee. Technically, the passage of such a motion would have resulted in a recommendation to the Council not to issue the proposed new edition of 780 but would not have affected the continuing existence of the earlier existing edition of that standard. Nevertheless, this motion was used at the May 17 Technical Session, at the express invitation of the Council (See Council Decision # 00-13, April 28, 2000), because no permissible floor motion existed to withdraw the NFPA 780 standard entirely. The thrust of the motion was clearly aimed at challenging the underlying validity of the NFPA 780 and raising the question whether it should any longer be issued as an NFPA standard. (See, e.g., Standard Council Decision # 95-25, July 18, 1995, on a complaint requesting withdrawal of NFPA 780, where the issue of withdrawal of NFPA 780 was also raised via a floor motion to return the document to committee.)

The motion to return NFPA 780 to Committee failed following a floor debate. The failure of that motion constitutes a recommendation to issue the new edition of NFPA 780, and more broadly, given the nature of the challenge to the validity of NFPA 780 raised by the motion and debated on the floor, a recommendation that NFPA 780 continue as an NFPA standard. As with any NFPA code or standard coming before the Council for issuance, the Standards Council will generally accept the recommendation yielded by the standards development process unless there is a substantial reason for not doing so. In this case, as will be further discussed in this decision, the Council has found that there is a substantial basis for rejecting that recommendation and for taking certain further action that will be set forth.

Before discussing the basis for the Standards Council's decision, the Council wishes first to emphasize one argument on which it has not based its decision. Specifically, it has been argued that Council rejection of the recommendation of the floor vote was required because of allegedly false and misleading statements that were made by supporters of NFPA 780 during the floor debate. The Council rejects this as any basis for action. Indeed the Council regarded the comments made during the floor motion as within the bounds of vigorous advocacy. The purpose of a floor debate is for the airing of points of view and opinions and, those who disagree are free, within that debate to answer or rebut any arguments they believe to be misleading or with which they disagree.

The rejection of the argument addressed to the fairness of the floor debate, however, does not resolve the questions before the Council. Although a principal obligation of the Council in issuing NFPA codes and standards is to determine whether a consensus of relevant interest has been achieved, the Council has rejected consensus recommendations where substantive technical questions have been raised concerning the substantiation on which those recommendations are based. (See e.g. Standards Council Decision 99-14, July 22, 1999). In this case, at least on the present state of the record before the Council, unanswered questions have been raised concerning the technical validity of the theories underlying NFPA 780.

Those questions come from the Bryan Panel. The primary charge of the Bryan Panel was to evaluate the Early Streamer Emission lightning protection technology, and in keeping with that charge it concluded that there was an inadequate basis for the claims that ESE technology afforded enhanced areas of protection with limited down conductors and grounding systems. In addition to addressing the ESE issue, however, the Panel made comments and recommendations concerning NFPA 780 as well. This was in keeping with its authority to address "any other issues it deems relevant." (See Standards Council Decision # 00-13.)

The Panel Report noted that detailed documentation of lightning protection system operations or failures is lacking for lightning protection systems of all types. It pointed to recent experiments questioning the effectiveness of the primary type of air terminal used on most NFPA 780 lightning protection systems (i.e., the traditional pointed tipped Franklin rod). The Report concluded as follows:

It appears to the Panel that the NFPA 780 document does not meet the NFPA criteria for a standard since the recommended lightning protection system has never been scientifically or technically validated and the Franklin rod air terminals have not been validated in field tests under thunder storm conditions (Bryan Panel Report at Page 28).

Although the Panel, as a result of this conclusion, recommended to the Council that NFPA 780 should be reformulated as a Guide or Recommended Practice rather than withdrawn entirely, Dr. Bryan informed the Council at the hearing on the present appeal that there was some sentiment within the Panel for complete withdrawal of NFPA 780. He also reiterated his view that he did not believe that the NFPA 780 systems had been adequately validated.

The Council does not regard the views of the Bryan Panel as conclusive. As the Council pointed out previously, the Panel was not specifically charged with addressing the validity of NFPA 780 and there was no reasonable opportunity for interested parties to submit information and views to the Panel specifically on that subject. (Council Decision #00-13, April 28, 2000.) The Panel, moreover, gave only limited analysis and discussion of its conclusions with regard to NFPA 780. Dr. Bryan, however, at the hearing, stressed that the Panel had received much information and background on the NFPA 780 document, which, in its view supported the Panel's conclusion. As he put it:

We couldn't see that it [NFPA 780] met the requirements . . . for a standard because of the lack of verification of the entire concept of the system as being scientifically verifiable or even effective under natural lightning conditions, anymore than ESE or any other system. (July 18, 2000, Standards Council Hearing Transcript at p. 246-247.)

The concerns of the Bryan Panel were, moreover, presaged by statements in a previous independent review of ESE lightning protection systems, which noted problems in evaluating the performance not only of ESE air terminals but also of conventional terminals. (See R. J. Van Brunt, Early Streamer Emission Lightning Protection Systems, Literature Survey and Technical Analysis, National Institute of Standards and Technology, January 31, 1995, especially. pp. 22-28).

The conclusions of the Bryan Panel Report, coming as they do from respected and neutral observers, while not definitive, cannot be overlooked. Nor does it resolve concerns over NFPA 780 to simply reconstitute NFPA 780 as a Recommended Practice, as the Bryan Panel suggested. NFPA 780 recast in nonmandatory language would have little utility for users seeking to specify lightning protection systems installation designs. More importantly, the Council believes that concerns and questions about the validity of NFPA 780 should be resolved before document development activities of whatever type continue within the NFPA codes and standards development system.

The issue of the validity of NFPA 780 has been clearly raised on the floor of the Technical Session. It has been debated both at the Council meeting in April and again at the hearing on this appeal. Although the proponents of NFPA 780 have been vigorous in their defense of the standard, that defense has, in the view of the Council, lacked a

systematic review and analysis of the technical basis for NFPA 780 that would address the Bryan Panel's criticism and provide a sound basis for further standards development in this area. Although proposals have been suggested from the Bryan Panel and from others whereby NFPA should take action itself to improve the development of NFPA 780 (as for example to create a panel of experts or to provide investigative and analysis services to the Lightning Protection Project), the Council rejects those suggestions. The NFPA's primary role in the standards development process is to administer that process. Although the NFPA, within its resources and priorities, develops and provides some technical information which contributes to the standards development process, it is primarily for the participants in the standards development process to provide the proposals and the technical substantiation for the standards they desire.

Accordingly, after a hearing and review and consideration all of the information available to it, the Council voted not to issue the 2000 edition of NFPA 780. In addition, the Council voted to announce its intent to withdraw the 1997 edition of NFPA 780 and terminate the Project on Lightning Protection. It intends to do so with the understanding that, should proponents wish to reinstate standards development activities in the future, they may petition the Council with adequate substantiation. Such substantiation should include, at a minimum, an independent literature review and analysis from a reliable source demonstrating the validity of the basic technology and science underlying traditional lightning protection systems.

As indicated above, the issue of the validity of NFPA 780 has already been raised and extensively debated. In order to allow any final input on the Council's intended course of action, the Council has directed that a notice of its intent to withdraw NFPA 780 and terminate the Project on Lightning Protection be published soliciting public comment. The Council will consider final action on the withdrawal of the 1997 edition of NFPA 780 and termination of the Project on Lightning Protection at its October 4-6, 2000 meeting. Consideration will be based on the written record, without a hearing.

Council members Hawkins and Talka recused themselves from deliberations and vote on this issue, and Council member Pauley abstained on the vote.

# NFPA NEWS

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## Reminder: NFPA News Is Going Electronic

As announced in the July/August 2000 issue of *NFPA News*, NFPA is proceeding to implement the electronic distribution of *NFPA News*. To receive automatic notification of the posting of new issues of *NFPA News*, simply access *NFPA News* at [www.nfpa.org](http://www.nfpa.org) and click on "NFPA News" and follow the directions from there. Notification of future newsletter postings will then automatically be sent to you. Anyone who wishes to continue to receive a print version of the newsletter should fill out the coupon that was in the July/August 2000 issue of *NFPA News* and repeated in this issue.

## Standards Council Intends to Withdraw NFPA 780

The Standards Council, at its meeting on July 18-20, considered appeals regarding the issuance of the proposed 2000 edition of NFPA 780, *Standard for the Installation of Lightning Protection Systems*, including appeals requesting that the document not be issued. The Council upheld the appeals and voted not to proceed with the issuance of the proposed 2000 edition of NFPA 780. (A copy of the full decision can be downloaded from the NFPA Web site, or a copy can be requested from Codes and Standards Administration.) In addition, the Council voted to announce its intent to withdraw the 1997 edition of NFPA 780 and terminate the project on Lightning Protection, and directed that a notice of this intent be published soliciting public comment. The Council will consider final action on the withdrawal of the 1997 edition of NFPA 780, and termination of the project on Lightning Protection at its October 4-6, 2000 meeting. Consideration will be based on the written record, and without a hearing.

Anyone wishing to comment on the Council's intent to withdraw NFPA 780 should submit comments to the Secretary of the Standards Council at NFPA Headquarters no later than September 18, 2000.

## Comments Sought

### Proposed Tentative Interim Amendment

The following Tentative Interim Amendment (TIA) has been proposed to the NFPA. It is being published for public review and comment. Comments should be filed with the Secretary, Standards Council, by the dates indicated below.

The proposed TIA has also been forwarded to the responsible technical committee for processing. Comments received by the dates indicated below will be considered by the technical committees before final action is taken on the proposed TIA. (Please identify the number of the TIA to which the comment is addressed.)

The Standards Council will then review the technical committee ballot results, the public comments, and any other information that has been submitted to determine whether to issue the TIA at its meeting on October 5-6, 2000. Anyone wishing to address the council should contact Codes and Standards Administration.

A TIA is tentative because it has not been processed through the entire codes- and standards-making procedures. It is interim because it is

effective only between editions of the document. A TIA automatically becomes a proposal of the proponent for the next edition of the document. As such, it then is subject to all of the procedures of the codes- and standards-making process.

### NFPA 1-2000

#### Fire Prevention Code

TIA Log No. 640

Reference: 16-10.3

Comment Closing Date: 10/20/2000

Submitter: Consumer Fireworks Task Group

1. Revise 16-10.3 to read as follows:

**16-10.3 Buildings.** The following provisions shall be applicable to buildings containing consumer fireworks retail sales.

**16-10.3.1** New buildings shall be 1-story in height.

**16-10.3.2** Buildings shall have a minimum of two (2) exits.

**16-10.3.3** Buildings shall not have loose or piled combustible material, weeds, and long grass within 10 ft (3 m).

**16-10.3.4** Buildings shall not be located within 100 ft (30 m) of any flammable and combustible liquid fuel dispensing or storage facility.

**16-10.3.5** All retail sales of consumer fireworks accessible to the public shall have covered fuses, or shall be contained within the manufacturer's prepackaged assortment without exposed fuses.

**16-10.3.6** In buildings that are not exclusively used for the retail sale of consumer fireworks, only those types of permissible consumer fireworks as approved by the AHJ shall be permitted.

2. Revise 16-10.4 to read as follows:

#### 16-10.4 Quantities.

**16-10.4.1** New buildings shall be permitted to contain the following maximum quantities of consumer fireworks for retail sales.

**16-10.4.1.1** Retail consumer fireworks indoor sales displays shall be limited to 50 lb (net) (22.7 kg) active ingredients or 200 lb (91 kg) gross weight, if the active ingredient weight is not known.

**16-10.4.1.2** Open-air mercantile buildings as defined in NFPA 101 shall be limited to 200 lb (net) (91 kg) active ingredients or 800 lb (363 kg) gross weight, if the active ingredient weight is not known.

**16-10.4.1.3** Buildings protected throughout by an approved automatic sprinkler system shall be limited to 100 lb (net) (45 kg) active ingredients or 400 lb (181 kg) gross weight if the active ingredient weight is not known.

**16-10.4.1.4** Quantities in excess of those permitted in 16-10.4.1.1 through 16-10.4.1.3 shall be permitted where the occupancy contents are classified as high hazard in accordance with NFPA 101, *Life Safety Code*, or public access to consumer fireworks is not permitted.

**16-10.4.2** Existing buildings used for retail sales of consumer fireworks shall comply with the following:

**16-10.4.2.1** The total height of retail display shall not exceed 5 ft (1.5 m) in height.