Report of the Committee on Telecommunications

Ralph E. Transue, Chair
The RJ/A Group, Inc., IL [SE]

Mark A. Pillow, Secretary
Anssl Inc./Tyco, IN [M]

Donald D. Anderson, Fire-Lite Alarms Inc./Notifier, CT [M]
Rep. National Electrical Manufacturers Association

Alden K. Breinholt, GTE Network Services, TX [U]

Philip M. Caron, Industrial Risk Insurers, CT [I]

Jon S. Casier, Fire Corp., MO [M]
Rep. Fire Suppression Systems Association

Marvin Charney, Kidde-Fenwal Inc./Williams Holdings, CA [M]

Brandon Cordts, 3M Fire Protection Products, MN [M]

Richard L. P. Custer, Custer Powell, Inc., MA [SE]

Philip M. Caron, Notifier, MA [I]

Paul H. Dobson, FM Global, MA [I]
Rep. The Alliance of American Insurers

Bruce A. Edwards, LMG Property, MA [I]

R. Bruce Fraser, Simplex Time Recorder Co., MA [M]

Gary P. Jones, Technology Concepts, Limited, IL [SE]

Thomas J. Klem, T. J. Klem and Associates, MA [SE]
Rep. International Association of Arson Investigators Inc.

Henry Lai, TELUS, BC, Canada [U]

Michael J. Madden, Gage-Babcock & Associates, CA [SE]

Gregg Marafelias, Aon Risk Services of NJ, NJ [I]

Ronald Mats, Telcordia Technologies, Inc., NJ [U]

Lawrence A. McKenna, Jr., Hughes Associates Inc., MD [SE]

William P. Michna, Automatic Fire Control, IL [IM]

Jennifer L. Nelson, AT&T - EH&S, NY [U]

Richard L. Niemann, Modular Protection Corp., KS [M]

Daniel J. O’Connor, Schirmer Engineering Corp., IL [SE]

Ronald D. Ouimette, Vision Systems Inc., MA [M]

Larry M. Romine, Carter & Burgess, Inc., TX [IM]

Walter Schachtschneider, Bell Canada, ON, Canada [U]

John A. Sileo, Marsh Risk Consulting, TX [I]

Charles A. Yaunches, Bell Atlantic, PA [U]

Alternate

Leonard Belleiveau, Jr., Simplex Time Recorder Co., MA [M]
(Alt. to R. B. Fraser)

Jeffrey Albert Betz, AT&T Corp., NJ [U]
(Alt. to J. L. Nelson)

Kevin T. Callery, The RJ/A Group, Inc., MA [SE]
(Alt. to R. E. Transue)

Randall S. Chaney, LMG Property Engineering, CA [I]
(Alt. to B. A. Edwards)

Chrysanthos Chrysanthou, Telcordia Technologies, Inc., NJ [U]
(Alt. to R. Marts)

Richard A. Craig, Bell Atlantic Mobile, NJ [U]
(Alt. to C. A. Yauncches)

Sheila C. DeMand, Marsh USA, Inc., MO [I]
(Alt. to J. A. Sileo)

Robert G. Dittrich, Honeywell, Inc., IL [M]
(Alt. to D. D. Anderson)

(Alt. to M. J. Madden)

Charles Hill, McDaniel Fire Systems, IN [IM]
(Voting Alt. to NFSA Rep.)

Kirk W. Humbrecht, Phoenix Fire Systems, Inc., IL [M]
(Alt to J. S. Casler)

Jonathan W. King, Industrial Risk Insurers, CT [I]
(Alt. to P. M. Caron)

Steve L. Lehenbauer, Schirmer Engineering Corp., IL [SE]
(Alt. to D. J. O’Connor)

Howard A. Marshall, FM Global, MA [I]
(Alt. to P. H. Dobson)

Donald A. Murray, Anssl Inc./Tyco, ON, Canada [M]
(Alt. to M. A. Pillow)

Andrew M. Shapiro, Quest Corp., CO [U]
(Voting Alt. to US West Rep.)

Thomas Lee Simms, Technology Concepts, Ltd., IL [SE]
(Alt. to G. P. Jones)

Ronald A. Stein, Aon Risk Services, MO [I]
(Alt. to G. Marafelias)

John Valuilius, FM Global, MA [I]
(Alt. to P. H. Dobson)

Nonvoting

Robert G. Backstrom, Underwriters Laboratories Inc., IL [RT]

Thomas G. Cleary, National Institute of Standards and Technology (DOE), MD [RT]

Shmuel Netanel, Eidan Safety Engineers Group, Israel [SE]

Staff Liaison: Mark T. Conroy

Committee Scope: This Committee shall have primary responsibility for documents on fire protection for telecommunication networks.

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of this book.

The Report of the Technical Committee on Telecommunications is presented for adoption.

This Report was prepared by the Technical Committee on Telecommunications, and proposes for adoption, a new document to NFPA 76, Recommended Practice for the Fire Protection of Telecommunications Facilities, 2002 edition.

This Report has been submitted to letter ballot of the Technical Committee on Telecommunications, which consists of 30 voting members; of whom 26 voted affirmatively, 1 negatively after circulation of negative ballots (Dobson), 1 abstained (Jones), and 2 ballots were not returned (Hill, Ouimette).

Mr. Dobson voted negatively stating:
“1. There have been seven major fire incidents in telecommunications facilities. A brief description of each incident should be provided. This to verify that the recommendations contained in this recommended practice would have prevented the loss and limited the damage.

2. The basis for not recommending fixed fire protection is the fire retardance of the equipment.

a. The method used to determine fire retardance for one type of equipment is specified by an ANSI test. The ANSI test does not contain pass/fail criteria. Telcordia (Bellcore) has provided pass/fail criteria. ANSI members in charge of developing test standards for this equipment do not seem to believe there is a good basis for the Telcordia pass/fail criteria.

b. There are other types of equipment such as servers and routers that make up a substantial part of the equipment in a telecommunications facility which presently does not have a fire test method.
c. Equipment is not labeled or listed by a nationally recognized testing laboratory. It would be difficult if not impossible for a third party to determine whether equipment has passed a fire test.

3. The only guidance on fire protection of large telecommunications facilities is that contained in 4.1.1 which specifies “manual intervention strategies as the primary means to prevent major network failure due to fire”. Facilities may be unmanned a substantial part of the time (nights and weekends). Where manual response is not practical other methods should be specified such as those contained in Sections 6.6 (Fire Extinguishing Systems) and 6.7 (Smoke Management)."

Mr. Jones abstained with the following comment:
"It is our understanding that the original committee charter is based on a "Standard" and not a "Recommended Practice".

76-1 - (Title): Accept in Principle
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Change the title of the document to read: "Standard for the Fire Protection of Telecommunications Facilities".
SUBSTANTIATION: To have a better linkage between the Title and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either "physical" or "electrical" protection both of which are outside the realm of NFPA 76.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-2 - (Title): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Change the title of the document to read: "Standard for the Fire Protection of Telecommunications Facilities".
SUBSTANTIATION: To have a better linkage between the Title and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either "physical" or "electrical" protection both of which are outside the realm of NFPA.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-3 - (Origin and Development): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: For the ROP, delete the sentences that begin “The draft standard is still under development...,” “The NFPA form...,” “The deadline...,” and add “Chapter 10” to the last sentence.
SUBSTANTIATION: Update for moving beyond the preliminary draft to the ROP stage.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The Origin and Development will not appear in the ROP draft recommended practice.

76-4 - (1-1): Accept in Principle
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read: “This standard includes fire protection of telecommunications service, property protection, and life safety for people in telecommunications facilities.”
SUBSTANTIATION: Add “fire” in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either “physical” or “electrical” protection.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The
SUBSTANTIATION: support areas, administrative areas, and building services and support spaces, main distribution frames, standby engine areas, technical equipment spaces, cable entrance facilities, power areas and battery Telecommunications facilities include telecommunications cellular, internet, and video services are rendered. specifically excludes telecommunications facilities with both performance based and prescriptive options. This standard protection of telecommunications service, property protection, and life safety for people in telecommunications facilities. It provides for both performance based and prescriptive options. This standard specifically excludes telecommunications facilities with less than 900 sq ft of telecommunications equipment space.

SUBSTANTIATION: a) Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: After discussing the sizes of small existing facilities, the committee feels that 500 sq ft is a reasonable cut-off.

76-7 - (1-1): Reject
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows: 1-1 Scope. This standard provides minimum requirements for fire protection of telecommunications facilities, where telephone, data, cellular, internet, and video services are rendered. Telecommunications facilities include telecommunications equipment spaces, cable entrance facilities, power areas and battery spaces, main distribution frames, standby engine areas, technical support areas, administrative areas, and building services and support areas within both large and small facilities. This standard specifically excludes telecommunications facilities of less than 500 sq ft.

SUBSTANTIATION: Reference to “battery spaces” should be deleted because they are a subset of power equipment “spaces”, and may or may not be located in their own space. The standard should
make specific distinctions between "spaces" and "areas within spaces" if and when it is appropriate for the stated purpose of the standard given in 1-2.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** The recommended practice addresses reasonable fire protection criteria for battery spaces which are sometimes separate spaces.

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76-9a - (1-1.1; 4.1; 5.1; A.5.5.1): Accept in Principle

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** 1-1 Replace the last sentence with the following:

This standard specifically excludes telecommunications facilities with less than 500 sq ft of equipment space.

2. 1-5 Replace the definition of central office with the following: Central Office (CO). Telecommunications equipment facility which houses primary control functions for telecommunications networks.

3. Revise 4.1 to read as follows:

4.1* General. A large telecommunications facility includes operations such as switching, transmission, and routing of voice, data and/or video signals within an enclosed area of greater than 2500 sq ft of equipment space. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply.

4. Revise 5.1 to read as follows:

5.1* General. A small telecommunications facility includes operations such as switching, transmission, and routing of voice, data or video signals within an enclosed area of 500-2500 sq ft of equipment space. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply.

5. Revise A.5.5.1 to read as follows:

Many small telecommunications facilities have only one room. Some of these buildings may have separate rooms for the cable entrance facility and for the standby engine.

6. NOTE: Change all references to the 500 and 2500 sq ft space cut-offs to refer to telecommunications equipment areas.

**SUBSTANTIATION:** Clarification.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-10a - (1-1.1; 1.2; A.1.1.1): Accept in Principle

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Revise 1.1.1, 1.2 and A.1.1.1 as follows:

1.1.1* Multiple Tenant Building. Telecommunications facilities in multiple tenant buildings not controlled by the telecommunications service provider shall be in one of the following:

- a) A building constructed in accordance with NFPA 220, Standard on Types of Building Construction, Type I (443) or (332), or Type II (222) or (111).
- b) A building provided with an automatic suppression system.
- c) A single-story building constructed in accordance with NFPA 220, Standard on Types of Building Construction, Type II (000).

The telecommunications facility shall be separated from the remainder of the building by 2-hour fire resisting rated walls.

Within the building selected, the balance of this standard shall only apply to the telecommunications facility.

1.2 Purpose. The purpose of this standard is to establish minimum requirements to provide a reasonable degree of fire protection in telecommunications facilities. These minimum requirements are intended to provide a reasonable degree of life safety for the occupants and to protect the telecommunications equipment and service continuity.

A.1.1.1 The objective in multiple tenant buildings not controlled by the telecommunications service providers is to ensure that the telecommunications facility is located in a building that has a low probability of a catastrophic fire loss. As such, care must be taken in selecting the host structure to house the telecommunications facility both from a fire protection and risk considerations (see chapter 2).

**SUBSTANTIATION:** Provided appropriate minimum construction requirements and fire separations to prevent the spread fire.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-11 - (1-2): Accept in Principle

**SUBMITTER:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

**RECOMMENDATION:** Revise text to read:

"The purpose of this standard is to establish minimum requirements to provide a reasonable degree of fire protection for telecommunications facilities, telecommunications equipment and the associated telecommunications network from fire and to provide a reasonable degree of life safety for the occupants of the telecommunications facilities."

**SUBSTANTIATION:** Add “fire” in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either “physical” or “electrical” protection.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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SUBSTANTIATION: Add “fire” in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either “physical” or “electrical” protection.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: The term “level” better describes the end result of applying the requirements of this document.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The proposal suggests an editorial change. The committee prefers the word “degree”.

76-15 - (1-2.2): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text to read as follows:
“1-2.2 The telecommunications industry has achieved a remarkably good fire safety record over many years, with the exception of a few highly visible exceptions which do not diminish the overall performance record. This standard provides a means by which the industry’s accepted fire safety methods can be applied to continue the historically good fire safety record of these facilities into the future.”

SUBSTANTIATION: The proposed wording improves the statement grammatically.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-16 - (1-2.2): Accept in Principle
SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.
RECOMMENDATION: Revise text as follows:
“1-2.2 The telecommunications industry has achieved a remarkably good fire safety record over many years, with a few highly visible exceptions which do not diminish the overall performance record. There have been about five (?) large fire losses over a sixty (?) year period. This standard...future.”

SUBSTANTIATION: Clarification—Identifies what is meant by “highly visible exceptions” and quantifies what the committee considers to be a “few.”

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-18 - (1-3): Reject

SUBMITTER: Guy R. Franks, Pacific Bell

RECOMMENDATION: Revise text to read as follows:

"This standard provides a means by which the industry’s fire safety
equipment, structures, or installations that were existing or approved
record into the future. The provisions of this standard are
matters are to be applied to continue the historically good fire safety
considered necessary to provide a reasonable level of protection from
The Fire protection design
The Fire protection design
loss of life and property from fire and explosion. They reflect
approach taken.

The provisions of this standard shall not be applied to facilities,
existing facilities shall not diminish the level of protection below those
alterations or new installations in

existing facilities shall not diminish the level of protection below those

requirements of this standard. Alterations or new installations in
any alteration of existing

any alteration of existing

situation as the first sentence here where the statement will be more

The revised definition parallels the implied
distinct hazard to life or adjacent property. Any alteration of existing

appropriate technically applicable.

Delete last sentence because it is not relevant whether a standard’s

Contents are appropriate.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This does not improve the existing text.

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76-19 - (1-4.1): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Revise text to read as follows:

1-4.1 Available Options. This standard provides both performance-
approach of Chapter 3, or the prescriptive (Chapters 4 and 5).
approach of Chapters 4 and 5. Either approach or both shall be
permits to be used selectively by hazard area.

Chapters 1, 6, 7, 8, and 9 shall apply to all telecommunications

SUBSTANTIATION: The proposed wording clarifies the intent of

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the

where cables from the outside enter the equipment space and are

SUBSTANTIATION: Provides a more appropriate description of a
cable entrance facility.

COMMITTEE ACTION: Accept.

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76-20 - (1-5 Authority Having Jurisdiction): Reject

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise the definition to read:

Authority Having Jurisdiction. The organization, office, or

individual responsible for making interpretations of the rules and for
deciding on the approval of any equipment and materials.

SUBSTANTIATION: Inadvertently removed.

COMMITTEE STATEMENT: Authority Having Jurisdiction is an

official NFPA definition.

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76-21 - (1-5 Cable Entrance Facility): Accept

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Revise the definition to read as follows:

Cable Entrance Facility. The area of a telecommunications facility

where cables from the outside enter the equipment space and are

spliced to cables that extend to termination points.

SUBSTANTIATION: Provides a more appropriate description of a
cable entrance facility.

COMMITTEE ACTION: Accept.

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76-22 - (1-5 Cable Entrance Facility (CEF)): Accept in Principle

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise the definition to read:

Cable Entrance Facility (CEF). The area of a central office (usually

below grade) where large service providing outside plant cables enter

the central office and are spliced to smaller cables that run extend up
to the main distribution frame.

SUBSTANTIATION: The revised definition provides a more accurate
description of the function of the CEF or cable vault.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Proposal 76-21 (Log

#CP20).

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76-23 - (1-5 Cell): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI
Technical Subcommittee TIE1

RECOMMENDATION: Delete the following definition:

Cell. The basic geographic unit of a cellular system.

SUBSTANTIATION: The word “cell” does not seem to be used
within the standard as defined. A-6-5.2.1 uses photoelectric cell. A-
2-2 under Battery Area also uses the word cell. Suggest deleting since

the word cell has many meanings within the standard (or define all

uses).

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The telecommunications equipment space is a minimum of connection to other subscriber lines, both locally and long distance.

SUBMITTER: Jennifer L. Nelson, AT&T

RECOMMENDATION: Propose deleting the following definitions: Cell; Co-Location; Competitive Exchange Carrier (CLEC); Incumbent Local Exchange Carrier (ILEC); Industry Standard Compliant Telecommunications Equipment (ISCTE); Inter-Exchange Carrier; Local Exchange Carrier; Switching Equipment, Switching Facility; and Switch Room.

SUBSTITUTION: This is proposed because of the lack of the use of the terms in the document, limited applicability, and only common use by some companies. Some examples are: Cell is only used in other contexts (i.e., photoelectric and flooded); Co-location is not used at all; CLEC is only used in other definitions or with limited applicability; ISCTE is more of a description and this definition does nothing more than the name; Inter and Local Exchange Carriers have limited use (primarily in other definitions) and don’t warrant definitions; and Switching Equipment, Switching Facility and Switch Room are outdated because the switch technology is no longer the dominant one and the buildings and rooms no longer hold just switches of the type described here.

COMMITTEE ACTION: Accept.

SUBSTANTIATION: a) Telecommunications is the more all-inclusive term. These buildings/companies are no longer just telephone companies.

b) This pinpoints a more meaningful measurable space. If we go by building space, this could include a building that is 500 sq ft made up of 400 sq ft of administrative and building support and only 100 sq ft of telecommunications equipment space, which I believe was not the intention of the committee. This change will focus on the equipment which should be the driver for higher levels of detection.

c) Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-28 (Log #311).

76-27 - (1-5 Central Office (CO)): Accept in Principle

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

Central Office (CO). Telecommunications phone company facility which housed primary control functions for telecommunications networks, are subscriber’s lines are joined to switching equipment for connection to other subscriber lines, both locally and long distance. The telecommunications equipment space is typically Most of these facilities are over 500 sq ft.

SUBSTANTIATION: a) Telecommunications is the more all-inclusive term. These buildings/companies are no longer just telephone companies.

b) Change definition to the one used in the Section 9, Chapter 27, Fire Protection for Telecommunications Central Offices, of the NFPA Handbook, Edition 18. The previous definition excluded certain types of telecommunications facilities.

c) This pinpoints a more meaningful measurable space. If we go by building space, this could include a building that is 500 sq ft made up of 400 sq ft of administrative and building support and only 100 sq ft of telecommunications equipment space, which I believe was not the intention of the committee. This change will focus on the equipment which should be the driver for higher levels of detection.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-28 (Log #311).

76-28 - (1-5 Central Office (CO)): Accept

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

Central Office (CO). Telecommunications phone company facility which houses primary control functions for telecommunications networks, where subscriber’s lines are joined to switching equipment for connection to other subscriber lines, both locally and long distance. Most of these facilities are over 500 sq ft.

SUBSTANTIATION: a) Telecommunications is the more all-inclusive term. These buildings/companies are no longer just telephone companies.

b) Change definition to the one used in the Section 9, Chapter 27, Fire Protection for Telecommunications Central Offices, of the NFPA Handbook, Edition 18. The previous definition excluded certain types of telecommunications facilities.

c) Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network.

COMMITTEE ACTION: Accept.
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76-29 - (1-5 Central Office (CO)): Accept in Part
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
Central Office (CO).  Telecommunications equipment facility where subscriber’s lines are joined to switching equipment for connection to other subscriber lines, both locally and long distance.
Most of these facilities are over 500 sq ft.
SUBSTANTIATION: a) Telecommunications is the more all-inclusive term. These buildings/companies are no longer just telephone companies.
b) Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network.
COMMITTEE ACTION: Accept in Part.
Accept only the first sentence. Size is addressed elsewhere in Chapter 1.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-28 (Log #311).

76-30 - (1-5 Central Office (CO)): Accept in Principle
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
Central Office (CO). Telecommunications equipment facility which houses primary control functions for telecommunications networks, where subscriber’s lines are joined to switching equipment for connection to other subscriber lines, both locally and long distance. Most of these facilities are over 500 sq ft.
SUBSTANTIATION: Change definition to the one used in the Section 9, Chapter 27, Fire Protection for Telecommunications Central Offices, of the NFPA Handbook, Edition 18. The previous definition excluded certain types of telecommunications facilities.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-28 (Log #311).

76-31 - (1-5 Central Office (CO)): Accept in Principle
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text as follows:
Central Office (CO). A Telephone company facility where subscriber’s lines are joined to switching equipment for connection to other subscriber lines, both locally and long distance. Most of these facilities are over 500 sq ft.
SUBSTANTIATION: Change “Telephone company” to “A” so the definition complements the generic definition given in I-1, Scope. Delete “switching” in the second sentence to avoid confusion with cross-connect and other technologies.
Delete reference to 500 sq ft because size is addressed within the body of the text.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-28 (Log #311).

76-32 - (1-5 Co-Located Telecommunications Equipment (New)): Accept
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Add text to read as follows:
Co-Located Telecommunications Equipment. Telecommunications equipment that is owned or leased, and operated by other service providers, (i.e., competitive local or long distance telephone service providers, internet service providers, cable service providers) that is
placed in a telecommunications equipment facility owned by a different telecommunications company.
SUBSTANTIATION: This is the term that is used in the document. The definition is the wording taken from 4-1.1 with slight clarification.
COMMITTEE ACTION: Accept.

76-33 - (1-5 Co-Location): Accept in Principle
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Delete the following text:
Co-Location. The action of a competitive local exchange carrier locating its equipment within the central office of an incumbent local exchange carrier.
SUBSTANTIATION: The term is not used in the document.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-24 (Log #450).

76-34 - (1-5 Co-Location): Accept in Principle
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text as follows:
Co-location. The action of a competitive local exchange carrier locating its equipment within the central office of an incumbent local exchange carrier. The presence of equipment owned by two or more companies within the same equipment space or building.
SUBSTANTIATION: Colocation is independent of the competitive nature of the tenants.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-24 (Log #450).

76-35 - (1-5 Competitive Local Exchange Carrier (CLEC)): Reject
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text as follows:
Competitive Local Exchange Carrier (CLEC). A term used to identify unregulated competitive telecommunications service providers. The companies are start up companies that offer primarily local service, but also long distance.
SUBSTANTIATION: Delete “competitive” from definition because it’s included in the term being defined.
Delete the second sentence because it generally isn’t true any more.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Not used in the document. Also see Committee Action on Proposal 76-24 (Log #450).

76-36 - (1-5 Equipment Space (New)): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Add a new definition to read as follows:
Equipment Space. A space within a telecommunications facility that houses the network equipment including the following hazards areas: a telecommunications equipment space; a cable entrance facility (CEF); power area (including batteries); main distribution frame (MDF); standby engine area; and technical support areas contiguous to the above hazard areas.
SUBSTANTIATION: Added a definition for terms used in the standard.
COMMITTEE ACTION: Accept.
RECOMMENDATION
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text as follows:
Fire Stop Material, an approved material for sealing openings and
through penetrations in fire rated wall, floor, deck, or floor deck
assemblies to preserve, maintain, and restore the fire resistance rating
and prohibit the passage of cold smoke, hot and cold gases.
Individual products used to seal through-penetrations in fire rated
building constructions.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-38 (Log
#CP29).

RECOMMENDATION
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Delete the definition of Fire Stop Material.
SUBSTANTIATION: Common terminology, no need for definition.
COMMITTEE ACTION: Accept.

COMMITTEE ACTION: Accept.

RECOMMENDATION
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Add a new definition to read as follows:
Hazard Area. An area with specific, established fuel loads and fire
hazard characteristics.
SUBSTANTIATION: Added a definition for terms used in the
recommended practice.
COMMITTEE ACTION: Accept.

COMMITTEE ACTION: Accept.

RECOMMENDATION
Alliance of American Insurers
RECOMMENDATION: Delete the definitions of Incumbent Local
Exchange Carrier (IEC) and Local Exchange Carrier from this
section.
SUBSTANTIATION: These terms are not used in the standard.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-
24 (Log #450).

RECOMMENDATION
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: In the definition for Incumbent Local
Exchange Carrier, change “who” to “that.”
SUBSTANTIATION: Grammar.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-
24 (Log #450).

RECOMMENDATION
Alliance of American Insurers
RECOMMENDATION: Revise definition to read:
Industry Standard Compliant Telecommunications Equipment.
Telecommunications Equipment that has been tested evaluated
against standards on addressing combustibility, flame spread, and
smoke generation for telecommunications equipment fire and safety
issues appropriate for the type of equipment involved and acceptable
the authority having jurisdiction. The standards used typically are
the same as applied by approved organizations for listing equipment.
SUBSTANTIATION: To more accurately reflect the differences in
standards used for different types of equipment and wires/cables.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log
#CP30).

RECOMMENDATION
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise definition to read:
Industry Standard Compliant Telecommunications Equipment.
Telecommunications Equipment that has been tested evaluated
against standards on addressing combustibility, flame spread, and
smoke generation for telecommunications equipment fire and safety
issues appropriate for the type of equipment involved and acceptable
to the authority having jurisdiction. The standards used typically are
the same as applied by approved organizations for listing equipment.
SUBSTANTIATION: To more accurately reflect the differences in
standards used for different types of equipment and wires/cables.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log
#CP30).

RECOMMENDATION
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Change the defined term “Industry Standard
Compliant Telecommunications Equipment” to “Network Standards
Compliance for Fire Characteristics.”
SUBSTANTIATION: Clarifies the committee’s intent to the more
narrow focus on network standards rather than standards of other
industries.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log
#CP30).

RECOMMENDATION
Alliance of American Insurers
RECOMMENDATION: Revise text as follows:
Industry Standard Compliant Telecommunications Equipment.
Telecommunications equipment that has been tested against and
meets recognized standards on combustibility, flame spread, and
smoke generation for telecommunications equipment.
SUBSTANTIATION: Previous wording only requires that equipment
be tested against, but not have to meet recognized industry testing
standards.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log
#CP30).
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log #CP30).

76- 46 - (1-5 Industry Standard Compliant Telecommunications Equipment): Accept
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text as follows: Industry Standard Compliant Telecommunications Equipment. Telecommunications equipment that has been tested against standards on combustibility, flame spread, and smoke generation. See Committee Proposal 76-47 (Log #CP30).
SUBSTANTIATION: Redundant wording.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-47 (Log #CP30).

76- 47 - (1-5 Industry Standard Compliant Telecommunications Equipment): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Delete the definition of Industry Standard Compliant Telecommunications Equipment.
SUBSTANTIATION: Covered in 6-8.3.
COMMITTEE ACTION: Accept.

76- 49 - (1-5 Inverter): Accept
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise definition to read: Inverter. A device which converts direct current electricity to alternating current electricity, often used to power AC power drives in a battery powered location.
SUBSTANTIATION: Editorial - second part of sentence is not necessary.
COMMITTEE ACTION: Accept.

76- 50 - (1-5 Inverter): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise definition to read: Inverter. A device which converts direct current electricity to alternating current electricity, often used to power AC power drives in a battery powered location.
SUBSTANTIATION: The second part of the sentence is not necessary and should be deleted.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-49 (Log #28).

76- 51 - (1-5 Large Central Office): Reject
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows: Large Central Office. A central office that has at least 2500 sq ft of telecommunications equipment space or larger.
SUBSTANTIATION: This pinpoints a more meaningful measurable space. If we go by building space, this could include a building that is 500 sq ft made up of 400 sq ft of administrative and building support and only 100 sq ft of telecommunications equipment space, which I believe was not the intention of the committee. This change will focus on the equipment which should be the driver for higher levels of detection.

The telecommunications equipment space is the area of concern and not the size of the total building. Present and future installations are more and more going into facilities of mixed use and not being dedicated to telecommunications equipment, so this space being identified is more significant.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-53 (Log #CP31).

76- 52 - (1-5 Large Central Office): Reject
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Change wording in definition of Large Central Office to read as follows: “A central office that is greater than 2500 sq ft or larger.”
SUBSTANTIATION: For clarity.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-53 (Log #CP31).

76- 53 - (1-5 Large Central Office, Small Central Office): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Delete definitions for Large Central Office and Small Central Office.
SUBSTANTIATION: Size restrictions are not appropriate in definitions.
COMMITTEE ACTION: Accept.

76- 54 - (1-5 Main Distribution Frame): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: In the definition of Main Distribution Frame, change “vault” to “entrance facility.”
SUBSTANTIATION: Consistent use of terms with other sections.
COMMITTEE ACTION: Accept.

76- 55 - (1-5 Multiple Power Sources): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete the definition “Multiple Power Sources” or move it to an Appendix.
SUBSTANTIATION: It is informative, but not a part of any requirement.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Move to the appendix.

76- 56 - (1-5 Multiple Power Sources): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete the definition “Multiple Power Sources” or move it to an Appendix.
SUBSTANTIATION: It is informative, but not a part of any requirement.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The committee agrees with the submitter’s substantiation.
76-56 - (1-5 Multiple Power Sources): Reject
SUBMITTER: Michael C. Sullivan, Power Conversion Products, LLC
RECOMMENDATION: Revise text as follows:
- Multiple Power Sources. Any combination of independent sources such as commercial power feeds, standby generators, and batteries may power a site. Expect voltages of 120 (L-N), 208 (L-L), and 240 (L-N), 277 (L-N), and 480 (L-L) volts AC and possibly 600 volts AC. The DC power commonly used is 48, 24 volts DC and even lower for other cables.

SUBSTANTIATION: The original definition made no reference to the kind or number of power sources, only their voltages. Add 277 volts because it is a common value. The (L-N) and (L-L) are added to clarify how the voltages are measured.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-55 (Log #95).

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-60 (Log #412).

76-57 - (1-5 Multiple Power Sources): Reject
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Delete the following text:
- Multiple Power Sources. Expect voltages of 120, 208 and 240 volts AC and possibly 600 volts AC. The DC power commonly used is 48, 24 volts DC and even lower for other cables.

SUBSTANTIATION: This wording is not a definition. This information is better provided as appendix material discussing power supply sources.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-55 (Log #95).

76-58 - (1-5 Non-equipment Space (New)): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Add a new definition to read as follows:
- Non-equipment Space. A space within a telecommunications facility that are not defined as equipment space including the following hazard areas: administrative areas and building service and support areas.

SUBSTANTIATION: Added a definition for terms used in the recommended practice.

COMMITTEE ACTION: Accept.

76-59 - (1-5 Port): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Within the definition of Port, change “computer” to “calculation method or” and add the word “potentially” before “smoke laden.”

SUBSTANTIATION: Broader text and clearer intent.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-60 (Log #412).

76-60 - (1-5 Port): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text to read as follows:
- Sampling Port. An orifice, sized by a computer program, in smooth bore pipe through which (smoke laden) air is drawn by an aspirating device to a very early warning detector.

SUBSTANTIATION: The revised wording clarifies the definition.

COMMITTEE ACTION: Accept in Principle.

76-61 - (1-5 Port): Accept in Principle
SUBMITTER: Michael C. Sullivan, Arlington Heights, IL
RECOMMENDATION: Revise text as follows:
- Port. A port is an orifice, sized by a computer program of a specific size, in a smooth bore pipe through which (smoke laden) air is drawn by an aspirating device to a very early warning detector.

SUBSTANTIATION: The orifice could be sized by a skilled person, as well as a computer program.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action and Statement on Proposal 76-60 (Log #412).

76-62 - (1-5 Power Area/Room): Accept
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
- Power Area/Room. The area/room of a central office that houses the electrical equipment required to power the switching equipment. Examples of this electrical equipment usually found in a power area/room includes rectifiers, inverters, and batteries.

SUBSTANTIATION: Power area is the typical term used and arrangement of the batteries found in telecommunications facilities. This definition fits reality better. Correlates with the Performance-based Design Section 3.4.8.3 and the Prescriptive Section, 4.7 that identify Power Areas.

COMMITTEE ACTION: Accept.

76-63 - (1-5 Rated (New)): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add a new definition to read as follows:
- Rated. A description of performance derived from testing or evaluation which guides appropriate selection, installation, and use of equipment that is not listed.

SUBSTANTIATION: A useful term found in other proposals by the same author.

COMMITTEE ACTION: Accept.

76-64 - (1-5 Small Central Office): Reject
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
- Small Central Office. A central office that is has 500 to 2500 sq ft of telecommunications equipment space.

SUBSTANTIATION: Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network. This pinpoints a more meaningful measurable space. If we go by building space, this could include a building that is 500 sq ft made up of 400 sq ft of administrative and building support and only 100 sq ft of telecommunications equipment space, which I believe was not the...
intention of the committee. This change will focus on the equipment which should be the driver for higher levels of detection.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-53 (Log #CP31).

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76-65 - (1-5 Small Central Office): Reject

**SUBMITTER:** Jennifer L. Nelson, Jeffrey A. Betz, AT&T

**RECOMMENDATION:** Revise text to read as follows:

- Small Central Office. A central office that has 500 to 2500 sq ft of telecommunications equipment space.

**SUBSTANTIATION:** Review of telecommunications facilities requiring a higher degree of protection due to criticality within the network indicates that a facility of less than 900 sq ft does not pose a serious threat to the network.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-53 (Log #CP31).

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76-66 - (1-5 Small Central Office): Reject

**SUBMITTER:** Michael C. Sullivan, Power Conversion Products, LLC

**RECOMMENDATION:** Revise text as follows:

- Small Central Office. A central office that is 900 to 2500 sq ft.

**SUBSTANTIATION:** This pinpoints a more meaningful measurable space. If we go by building space, this could include a building that is 500 sq ft made up of 400 sq ft of administrative and building support and only 100 sq ft of telecommunications equipment space, which I believe was not the intention of the committee. This change will focus on the equipment which should be the driver for higher levels of detection.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-53 (Log #CP31).

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76-67 - (1-5 Small Central Office): Reject

**SUBMITTER:** Michael J. Madden, Gage-Babcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

- Small Central Office. A central office that is equal to or greater than 500 sq ft, but less than 2500 sq ft in area.

**SUBSTANTIATION:** Additional wording provides clarification.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-53 (Log #CP31).

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76-69 - (1-5 Smoke Control): Accept in Principle

**SUBMITTER:** Michael J. Madden, Gage-Babcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

- Smoke Control System. An engineered system that uses mechanical fans to produce airflow and pressure differences across barriers to limit and direct smoke movement.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** Editorial.

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76-70 - (1-5 Switch Room): Reject

**SUBMITTER:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

**RECOMMENDATION:** Revise definition to read:

- Switch Room. The term used to define the area of the switching equipment in either a central office or a MTSO.

**SUBSTANTIATION:** The term MTSO is not defined therefore it should be deleted.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** Not used.

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76-71 - (1-5 Switch Room): Reject

**SUBMITTER:** Percy E. Pool, GTE

**RECOMMENDATION:** Revise definition to read:

- Switch Room. The term used to define the area of the switching equipment in either a central office or a MTSO.

**SUBSTANTIATION:** The term MTSO is not defined therefore it should be deleted.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** Not used.

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76-72 - (1-5 Technical Support Areas): Accept

**SUBMITTER:** Ralph E. Transue, Rolf Jensen & Assoc., Inc.

**RECOMMENDATION:** In the definition Technical Support Areas, change the last sentence to read as follows:

- “These areas are not occupied on a full time basis.”

**SUBSTANTIATION:** Clarity. Deletion of the word “sporadically.”

**COMMITTEE ACTION:** Accept.
operations the switching equipment. These areas are occupied sporadically and not on a full time basis.

**SUBSTANTIATION:** This definition more realistically represents the area. These workstation areas are necessary for the operations of the telecommunications equipment.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Action on Proposal 76-72 (Log #98).

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76-74 - (1-5 Telecommunications): Accept in Principle

**SUBMITTER:** Michael C. Sullivan, Power Conversion Products, LLC

**RECOMMENDATION:** Revise text to read as follows:

Telecommunications. The art and science of transmitting, receiving, switching, and management of signals, such as electrical, optical, or electromagnetic by wire, fiber, or through the air utilizing the public switched network or FM frequency spectrum. And electromagnetic signals are not limited to FM radio, either.

**SUBSTANTIATION:** Telecommunications can occur without the public switched network. And electromagnetic signals are not limited to FM radio, either.

**COMMITTEE ACTION:** Accept in Principle.

Text will now read as follows:

Telecommunications. The transmission, receiving, switching, and management of signals, such as electrical, optical, or electromagnetic by wire, fiber, or through the air.

**COMMITTEE STATEMENT:** Clarification.

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76-75 - (1-5 Telecommunications): Accept in Principle

**SUBMITTER:** Michael J. Madden, Gage-Babcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

Telecommunications. The art and science of transmitting, receiving, switching, and management of signals, such as electrical, optical, or electromagnetic, by wire, fiber, or through air utilizing the public switched network or FM frequency spectrum.

**SUBSTANTIATION:** The stricken wording is not germane to the definition.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** See Committee Action and Statement on Proposal 76-74 (Log #373).

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76-76 - (1-5 Telecommunications Equipment): Accept

**SUBMITTER:** Jennifer L. Nelson, Jeffrey A. Betz, AT&T

**RECOMMENDATION:** Revise text to read as follows:

Telecommunications Equipment. The electronic equipment which performs the telecommunications operations for the transmission of audio, video, and data, functions of establishing and releasing electrical connections on a per call basis between two or more circuits, services, or communications systems. This equipment typically includes, but is not limited to electronic switches, servers, routers, computers, and cable television TV equipment that establishes any form of one or two-way communications. This equipment is generally owned or leased by a telecommunications company, phone company, offering wired telephone, cellular phone company, cable television TV company, or internet service provider, in order to offer a particular service for a profit.

**SUBSTANTIATION:** Current definition does not include all of the equipment that should be included with specific reference to one type of equipment and technology.

**COMMITTEE ACTION:** Accept.

---

76-77 - (1-5 Telecommunications Equipment Space): Reject

**SUBMITTER:** Jennifer L. Nelson, Jeffrey A. Betz, AT&T

**RECOMMENDATION:** Revise text to read as follows:

Telecommunications Equipment Space. The area in a telecommunications facility where telecommunications equipment and associated electrical distribution equipment and batteries are located.

**SUBSTANTIATION:** Improves the definition to be more realistic and bring it in line with what is published in the Model Building/Fire Codes that address Telecommunications Equipment Spaces.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Action on Proposal 76-74 (Log #373).

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76-78 - (1-5 Telecommunications Facility): Accept

**SUBMITTER:** Jennifer L. Nelson, Jeffrey A. Betz, AT&T

**RECOMMENDATION:** Add text to read as follows:

Telecommunications Facility. Building or portion of a building that includes telecommunications equipment space and support areas.

**SUBSTANTIATION:** This term is used throughout the document and yet it was never defined.

**COMMITTEE ACTION:** Accept.

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76-79 - (1-5 Uninterruptable Power Systems, UPS): Reject

**SUBMITTER:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

**RECOMMENDATION:** Revise definition to read:

Uninterruptable Uninterruptible Power System, UPS, an assembly of rectifiers and inverters along with storage batteries which condition and store power to ensure it’s continuous supply to AC powered equipment.

**SUBSTANTIATION:** Clarification to identify difference between the AC back-up system and the DC system. There is a specific UL standard for UPS equipment and both UL standard for DC power and distribution equipment used to power telecommunications equipment.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** Not used. See Committee Proposal 76-81 (Log #CP46).

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76-80 - (1-5 Uninterruptable Power Systems, UPS): Reject

**SUBMITTER:** Percy E. Pool, GTE

**RECOMMENDATION:** Revise definition to read:

Uninterruptable Uninterruptible Power System, UPS, an assembly of rectifiers and inverters along with storage batteries which condition and store power to ensure it’s continuous supply to AC powered equipment.

**SUBSTANTIATION:** To identify differences between the AC back-up system and the DC system. There is a specific UL standard for UPS equipment and a different UL standard for DC power and distribution equipment used to power telecommunications equipment.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** Not used. See Committee Proposal 76-81 (Log #CP46).
76-81 - (1-5 Uninterruptible Power Supply): Accept

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Delete definition for Uninterruptible Power Supply.

**SUBSTANTIATION:** Not used.

**COMMITTEE ACTION:** Accept.

76-82 - (2-1): Accept in Principle

**SUBMITTER:** Michael J. Maddon, Gage-Babcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

2-1* Risk Factors. Fire protection programs for telecommunications facilities shall be determined based on an evaluation of the risks and hazards associated with public safety, life safety of facility employees, continuity of service, types of services provided, redundancy of facilities, property protection, and the communities served. The following factors shall be considered when determining the fire risk and protection strategies for the network, occupants, equipment, communications function, and data transmission:

(a) Public safety aspects of the service including emergency communications (such as 911), national defense communications requirements, mission critical operations, and other vital data;

(b) Exposure threat of the installation to occupants or exposed property by from a fire occurring at, or within, the facility;

(c) Potential economic losses resulting from a loss of communications;

(d) The presence, or lack of, redundant facilities;

(e) Potential economic losses due to equipment damage, equipment replacement costs, and the availability of replacement equipment; and

(f) Extent of the service disruption beyond the facility in question.

**SUBSTANTIATION:** The revised wording provides additional clarification of the risk concepts discussed in this section.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-83 - (2-3): Accept in Principle

**SUBMITTER:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1

**RECOMMENDATION:** Revise text to read:

“The fire protection features provided for the exposing adjacent tenant/occupancy shall at a minimum be consistent with that required for building service and support areas that are normally found in telecommunication facilities. Fire protection shall be provided commensurate with the risk factors.”

**SUBSTANTIATION:** Add “fire” in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since “protection” could imply either “physical” or “electrical” protection.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
be identified and evaluated with respect to the consequences that may result from a fire or explosion exposure to the telecommunications equipment space. The fire protection features provided for the exposing adjacent tenant/occupancy shall at a minimum be consistent with that required for building service and support areas that are normally found in telecommunications facilities. Fire protection provided shall be commensurate with the risk factors.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: The proposed standard was changed to a recommended practice, see committee proposal 76-540. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The committee’s intent to include a worst credible design fire in the performance design process.

COMMITTEE ACTION: Accept.
SUBSTANTIATION: It’s impossible to guarantee that a fire within a compartment will not affect the equipment in that same space. Any network outage is an unacceptable one.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-92 (Log #CP1).

76-96 - (3-3.1): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise Section 3-3.1 as follows:
3-3.1.1 The fire protection and life safety design of the facility shall provide for tenable survivable conditions along egress paths for the time required to evacuate occupants to a safe area using:
(a) NFPA 101, Life Safety Code, performance based section, or
(b) NFPA 101, Life Safety Code, prescriptive sections. for Administrative Office Areas and common egress paths, and prescriptive sections for special purpose industrial occupancies sections for telecommunications equipment areas, including technical support areas.
3-3.1.2 For purposes of application of NFPA 101 prescriptive requirements, telecommunications equipment spaces, including technical support areas, shall be considered special purpose industrial occupancies.
3-3.1.3 When the NFPA 101 prescriptive performance based methodology is utilized to assess the level of life safety provided in the facility, the fire scenarios specified in this document shall also be considered along with the scenarios provided in NFPA 101.

SUBSTANTIATION: The wording changes in Section 3-3.1.1 provide additional clarification. The deleted wording in item (b) is better addressed in a separate subsection, as provided in new Section 3-3.1.2.

By referencing the (proposed) performance based provisions of NFPA 101, this standard will require that the telecommunications equipment spaces be assessed against the fire scenarios provided in NFPA 101. Since this Committee has identified specific scenarios applicable to telecommunications facilities, these scenarios should also be addressed in the life safety analysis.

The Technical Committee should keep in mind that some of the NFPA 101 scenarios are more severe than one would expect to encounter within telecommunications equipment spaces, which could result in having to provide additional protection in these facilities. In these cases, where scenarios are considered to be inappropriate for the building use and conditions, appropriate documentation will need to be developed in each case to justify not addressing the required scenarios.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-97 - (3-3.1(b)): Accept in Part
RECOMMENDATION: Revise text as follows:
(b) NFPA®, Life Safety Code®, prescriptive sections for administrative office areas and common egress paths, and prescriptive sections for special purpose industrial sections for telecommunications equipment areas, including technical support areas.

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Part.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-96 (Log #660).

76-98 - (3-3.2.1): Reject
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Delete the following text:
3-3.2.1* The temperature of telecommunications equipment (including switches, transmission systems, computers, MDF, power systems, and cables) when exposed to a credible fire scenario shall not exceed the maximum operating temperature of that equipment.

SUBSTANTIATION: The standard has provisions and guidance for both HVAC design and procedures for minimizing smoke and fire spread, including the turning-off of ventilation systems in the event that fire sensors are energized. Whenever the ventilation and cooling of a telecommunications equipment room is secured, ambient temperatures will most probably exceed the maximum normal limits due to the inherent self-heating of the telecommunications equipment. Therefore, the requirements of 3-3.2.1 is an unrealistic requirement.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-101 (Log #CP2).

76-99 - (3-3.2.1): Reject
RECOMMENDATION: Revise text as follows:
“The temperature of telecommunications equipment (including switches, transmission systems, computers, MDF, power systems, and cables) when exposed to a credible fire scenario shall not exceed the maximum operating temperature of the equipment.”

SUBSTANTIATION: The temperature telecommunications equipment is exposed to should not exceed its maximum operating temperature regardless of fire size or intensity.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-101 (Log #CP2).

76-100 - (3-3.2.1): Reject
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Delete the following text:
“The temperature of telecommunications equipment (including switches, transmission systems, computers, MDF, power systems, and cables) when exposed to a credible fire scenario shall not exceed the maximum operating temperature of that equipment.”

SUBSTANTIATION: If we indeed have a credible fire situation at hand, the least of our concerns should be that the equipment operate at normal temperatures. With an office fire going on, the room
temperatures will be elevated to some unpredictable number, water will change room humidity levels, smoke may plug equipment air filters, so it will be very difficult to maintain normal operating temperatures. A more practical approach would be to describe a desired outcome such as equipment operating for 2 hours or 4 hours under such conditions.

COMMITTEE STATEMENT: Reject.

COMMITTEE ACTION: See Committee Proposal 76-101 (Log #CP2).

76-101 - (3-3.2.1): Accept in Principle

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Revise text to read as follows:

3-3.2.1 When telecommunications equipment is exposed to a worst credible fire scenario, the facility design shall limit temperatures in a manner that protects against unacceptable network failure.

SUBSTANTIATION: Clarification of original intent.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-102 - (3-3.2.2): Accept in Principle

SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex

RECOMMENDATION: Correct spelling.

"...including switches, transmission...".

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-103 (Log #CP3).

76-103 - (3-3.2.2): Accept in Principle

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Revise text to read as follows:

3-3.2.2 When telecommunications equipment is exposed to a worst credible fire scenario, the facility design shall limit the effects of products of pyrolysis or combustion in a manner that protects against unacceptable network failure.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-104 - (3-4.1.3): Accept in Principle

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: 3-4.1.3 Data Sources. Revise text to read: "The sources of data used in analyses shall be documented."

SUBSTANTIATION: Clarity of intent. Does not deal with assumptions - does deal with data.

COMMITTEE ACTION: Accept in Principle.
76-108 - (3-4.5): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...the design basis characteristics for fire..."

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-113 - (3-4.8.3): Reject

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1
RECOMMENDATION: Revise text to read:
"It is assumed that a fire in the equipment will be contained within the equipment area."

SUBSTANTIATION: For editorial clarification.
COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The suggestion is not editorial and the existing wording provides the committee's intent. Also see Committee Proposal 76-119 (Log #CP6).

76-114 - (3-4.8.3): Reject

SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"It is assumed that a fire in the equipment area will be contained within the equipment."

SUBSTANTIATION: For editorial clarification.
COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The suggestion is not editorial and the existing wording provides the committee's intent. Also see Committee Proposal 76-119 (Log #CP6).

76-115 - (3-4.8.3): Accept in Principle

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete the last sentence.

SUBSTANTIATION: Repetitive.
COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-116 - (3-4.8.3): Accept in Principle

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
3-4.8.3 Power Areas. These areas typically include the batteries, rectifiers, inverters, and related bus bars and cables. It is assumed that a fire in the equipment will be contained within the equipment. Fires in battery casings and cables are a concern due to the corrosivity of the smoke that is generated. Occupants are assumed to be trained, alert, and capable of self rescue. The occupancy load is relatively low from an egress standpoint. The fire loading of the area is low. Batteries can generate hydrogen during charging that could be an explosion hazard. It is assumed that the possibility of thermal runaway has been mitigated through battery management. Additionally, the hydrogen explosion hazard should be mitigated with adequate ventilation of the area. The occupancy load is low from an egress standpoint.

SUBSTANTIATION: Need to add in this consideration to the assumption.
COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:
3-4.8.3 Power Areas. These areas typically include the batteries, rectifiers, inverters, and related bus bars and cables. It is assumed that a fire in the equipment will be contained within the equipment. Fires in battery casings and cables are a concern due to the corrosivity of the smoke that is generated. Occupants are assumed to be trained,
alert, and capable of self rescue. The occupancy load is relatively low from an egress standpoint. The fire loading of the area is low. Batteries can generate hydrogen during charging that could be an explosion hazard. It is assumed that the possibility of thermal runaway has been mitigated through battery management. Additionally, it is assumed that the hydrogen explosion hazard will be mitigated and localized by adequate ventilation of the area.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76- 117 - (3-4.8.3): Reject

SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.
RECOMMENDATION: Revise text as follows:
“3-4.8.3 Power Areas. These areas typically include the batteries, rectifiers, inverters, and related bus bars and cable. It is assumed that a fire in the equipment will be contained within the equipment. Fires in...an explosion hazard. It is assumed that the possibility of thermal runaway has been mitigated through battery management. The occupancy load...standpoint.”

SUBSTANTIATION: It is the responsibility of the designer or the telco to demonstrate the above will not happen.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The purpose of the section is to state assumptions.

76- 118 - (3-4.8.3): Reject

SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text to read as follows:
“These areas typically include the batteries, rectifiers, inverters, and related bus bars and cable. It is assumed that a fire in the equipment will be contained within the equipment. Fires in battery casings and cables are a concern due to the corrosivity of the smoke that is generated. Occupants are assumed to be trained, alert, and capable of self rescue. The occupancy load is relatively low from an egress standpoint. The fire loading of the area is low. Batteries can generate hydrogen during charging that could be an explosion hazard. It is assumed that the possibility of thermal runaway has been mitigated through battery management.

The occupancy load is low from an egress standpoint.”

SUBSTANTIATION: It appears that the committee has battery technologies confused when discussion in this paragraph addresses “thermal runaway”. This phenomenon is typically related to valve regulated battery technology when they are overcharged. Valve regulated batteries are most commonly used in outside plant installations due to their limitations on size and capacity. Flooded batteries are more commonly used in central offices, especially in larger offices that this document states it attempts to focus on, are not known to have “thermal runaway” characteristics.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The purpose of the section is to state assumptions.

76- 119 - (3-4.8.3): Accept

SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise second sentence as follows:
“It is assumed that the thermal effects of a fire in the equipment will be contained within the equipment.”

SUBSTANTIATION: Clarification.

COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-132 - (3-7.8): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"Retained Any prescriptive requirements used shall be
documented."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the
submitter. Where appropriate the committee has changed the
wording in committee proposal 76-540 to be more representative of a
recommended practice.

76-133 - (3-8 (New) ): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add a new Section 3-8 to read as follows:
Acceptance. Acceptance testing, evaluation, and approval by the
authority having jurisdiction shall be documented.
SUBSTANTIATION: Provides a permanent record of acceptance of
the performance-based design, solution, or installation.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the
submitter. Where appropriate the committee has changed the
wording in committee proposal 76-540 to be more representative of a
recommended practice.

76-134 - (4-1): Reject
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI
Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read:
"The fire protection recommended is based on noncombustible
construction, fire testing of major systems installed in the
telecommunications areas, compartmentation of fire areas, high
sensitivity fire detection systems, and effective response of trained
individuals."
SUBSTANTIATION: Add "fire" in order to have a better match
between the text and the Scope (Section 1-1) and to reduce the
possibility of misunderstanding since "protection" could imply either
"physical" or "electrical" protection.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See the Committee Action on
Proposal 76-141 (Log #407).

76-135 - (4-1): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add the following text:
"The proposed fire protection recommended in is based on non-combustible
construction, fire testing evaluations of major systems installed in the
telecommunications areas, compartmentation of fire areas, high
sensitivity fire detection systems, and effective response of trained
individuals."
SUBSTANTIATION: Grammar and use of the term rating, a
proposed defined term, in lieu of testing.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-
141 (Log #407).

76-136 - (4-1): Reject
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"The fire protection recommended in is based on non-combustible
construction, fire testing evaluations of major systems installed in the
telecommunications areas, compartmentation of fire areas, high
sensitivity fire detection systems, and effective response of trained
individuals."
SUBSTANTIATION: Add "fire" in order to have a better match
between the text and the Scope (Section 1-1) and to reduce the
possibility of misunderstanding since "protection" could imply either
"physical" or "electrical" protection. Also to clarify that not all
equipment assemblies are fire "tested". Some standards use
construction methods and suitable material ratings that are
individually tested or evaluated.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-
141 (Log #407).

76-137 - (4-1): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Rewrite the second sentence to read:
"The protection recommended in is based on noncombustible
construction, fire rating of major systems installed... ."
SUBSTANTIATION: Combines the ANSI T1E1 proposal and another
proposal by the author.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-
141 (Log #407).

76-138 - (4-1): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Revise second sentence as follows:
"The protection recommended in is based on non-combustible
construction, fire testing of major systems installed in the
telecommunications areas, compartmentation of fire areas, high
sensitivity fire detection systems, and effective response of trained
individuals."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-141 (Log #407).
Committee Action: Large facilities are defined as 2500 sq ft or larger in area. The protection recommended is based on non-combustible construction, fire testing of major systems installed in the telecommunications areas, compartmentation of fire areas, high-sensitivity fire detection systems, and effective response of trained individuals. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply.

Substantiation: Clarification.

Committee Action: Accept in Principle.

Committee Statement: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

Recommendation: Revise text to read as follows:

4-1.1 General. A large telecommunications facility includes operations such as switching, transmission, and routing of voice, data and/or video signals within an enclosed area greater than or equal to 2500 sq ft in area. The protection recommended is based on non-combustible construction, fire testing of major systems installed in the telecommunications areas, compartmentation of fire areas, high-sensitivity fire detection systems, and effective response of trained individuals. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply.

Add appendix material as follows:

A-1 The fire protection recommended is based on non-combustible construction, fire ratings of major systems installed in the telecommunications areas, compartmentation of fire areas, early warning and very early warning fire detection systems, and effective response of trained individuals.

Committee Statement: The added wording clarifies that large facilities are defined as 2500 sq ft or larger in area. Advisory material was moved to the appendix.

Recommendation: Technical Committee on Telecommunications

4-1 General. A large telecommunications facility includes operations such as switching, transmission, and routing of voice data and or video signals within an enclosed area of greater than 2500 sq ft of equipment space.

2. Revise 4.1.1 to read as follows:

4-1.1 Prescriptive Approach. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply. The prescriptive approach consists of elements including fire resistant major equipment systems, cable, and wire; compartmentation; fire detection; alarm processing; and manual intervention strategies as the primary means to prevent major network failure due to fire.

3. Add a new 4.1.2 to read as follows:

4.1.2 Co-located Telecommunications Equipment. Major co-located telecommunications equipment installation, operation, and maintenance shall meet the requirements of this chapter.

4. Add the following exception to 4.5.5.3

Exception: Where major equipment, wire, or cable do not comply with the fire safety requirements of 6.8 then automatic fire suppression shall be provided.

5. Revise 5.1.1 to read as follows:

5.1.1 Prescriptive Approach. Where the performance-based approach of Chapter 3 is not used, the prescriptive requirements of this chapter shall apply. The prescriptive approach consists of elements including fire resistant major equipment systems, cable, and wire; compartmentation; fire detection; alarm processing; and manual intervention strategies as the primary means to prevent major network failure due to fire.

6. Add new paragraphs 5.1.2 and 5.1.3 to read as follows:

5.1.2 Co-located Telecommunications Equipment. Major co-located telecommunications equipment installation, operation, and maintenance shall meet the requirements of this chapter.

5.1.3 Where the prescriptive approach elements of chapter 5 are not provided, automatic fire suppression shall be provided.

Committee Action: Accept in Principle.

Committee Statement: Elements necessary for fire protection.
EMC Committee on Telecommunications

RECOMMENDATION
SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change to read as follows:

"Building construction shall be in accordance with Section 6.2. Construction. Building Construction shall be in accordance with NFPA 220, Standard on Types of Building Construction."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.
operation of HVAC systems, fire ratings of walls, etc. Although minimizing the spread of fire amongst telecommunications equipment is desirable and often an industry objective, limiting fire spread within a densely populated telecommunications room may be extremely difficult. More importantly is that facilities be designed so that fire within telecommunications equipment will be contained within the equipment spaces in which the fire originates. The fire should not spread to adjacent spaces within the time limit for which the construction is rated.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee feels that the existing text provides a higher level of protection of the network.

76-148 - (4-5.1): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows: “and related non-thermal equipment damage...”.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
Revise text to read as follows:
4-5.1 General. Telecommunications equipment spaces shall be arranged to provide protection against fires in adjacent spaces; to provide protection against fire spread to adjacent equipment; to provide protection from fire, smoke, and related thermal and non-thermal equipment damage; and to increase the survivability of the equipment for continuity of service.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-150 - (4-5.2): Accept in Principle
SUBMITTER: Victor LaSala, James Leonard Engineers, P.C.
RECOMMENDATION: Revise text as follows: “...ceiling assemblies over telecommunications equipment spaces shall be constructed to minimize the penetration of water...”.
SUBSTANTIATION: It is impractical or impossible to “prevent” water penetration from an occupied floor above except in a new building constructed specifically for this reason.

COMMITTEE ACTION: Accept in Principle.
Revise text to read as follows:
4-5.2 Construction. Partitions shall be of non-combustible or limited combustible construction as defined by NFPA 220, Standard on Types of Building Construction. Floor/ceiling assemblies over telecommunications equipment spaces shall be constructed to protect against the penetration of water from the roof or occupied spaces above.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-151 - (4-5.2.1.5): Reject
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1
RECOMMENDATION: Revise text to read:
“Where practical, abandoned cables and cables not identified for future use shall be removed from the under floor space.”
SUBSTANTIATION: The revised text parallels that of Section A-7-10. The removal of cables is usually not practical, especially in a congested area, since there is a high probability to cause service interruptions during removal operations.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: All abandoned cables and cables not identified for future use should be removed.

76-152 - (4-5.2.1.5): Reject
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
“Where practical, abandoned cables and cables not identified for future use shall be removed from the floor space.”
SUBSTANTIATION: The revised text parallels that of Section A-7-10. The removal of cables is usually not practical, especially in a congested area, since there is a high probability to cause service interruptions during removal operations.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: All abandoned cables and cables not identified for future use should be removed.

76-153 - (4-5.3): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Insert the word “nontelecommunications” after the word “adjacent,” remove the double comma, add the word “separating” before the word “wall,” and add the words “or floor/ceiling assembly” after the word “wall.”
SUBSTANTIATION: More complete description of the requirement.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-156 (Log #406).

(Log #228)

76-154 - (4-5.3): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...separated from adjacent equipment and non-equipment spaces, in accordance with 6-3. All penetrations shall be closed firestopped with a listed...".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-156 (Log #406).

(Log #229)

76-158 - (4-5.4.1): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"Where an air conditioning HVAC system...".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.

(Log #230)

76-159 - (4-5.4.1(a)): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
(a) It shall be an HVAC system that is dedicated to the telecommunications equipment use and shall be separately conditioned.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The editorial corrections recommended by the submitter are no longer appropriate.

(Log #231)

76-160 - (4-5.4.1(b)): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"(b) If it is an HVAC system that serves other hazard areas it shall be...provided with appropriate automatic smoke and...".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The editorial corrections recommended by the submitter are no longer appropriate.

(Log #471)

76-161 - (4-5.4.2): Accept in Principle
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text to read as follows:
"Dampers in HVAC systems serving partitioned telecommunications equipment spaces shall operate upon activation of smoke detectors, unless the HVAC system is part of the smoke management system (see Section 6-7)."
SUBSTANTIATION: Automatic dampers in the HVAC systems are not commonly used in the equipment areas and it is not clear whether dampers would be effective for the wide open equipment areas that are in central offices. The dampers were meant to prevent smoke spread between partitioned spaces. In wide open switch, transport and MDF areas, these dampers would not prevent smoke spread since the smoke spreads across room away from the ventilation systems. The majority of equipment areas in telecommunications areas are not separated by walls.
COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:
"Dampers in HVAC systems serving compartmented telecommunications equipment spaces shall operate upon activation of smoke detectors, unless the HVAC system is part of the smoke management system (see Section 6-7)."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76- 162 - (4-5.4.3): Reject

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:
"...hazard areas shall either not pass through the telecommunications equipment rooms, or combination smoke/fire dampers shall be provided in ducts where they penetrate fire resistance rated walls. Smoke dampers are required in ducts where ducts penetrate non-rated walls...shall be activated by automatic smoke detectors installed in the duct at each penetration".

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The suggested change is not editorial and the substantive change is not provided with a substantiation.

76- - 163 - (4-5.4.3): Accept in Principle

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:
4-5.4.3 Air ducts serving other building/hazard areas shall either not pass through the telecommunications equipment spaces if fire dampers are installed or fire dampers shall be provided in the ducts. Dampers shall be activated by automatic smoke detectors.

SUBSTANTIATION: The requirement is rewritten in the positive.

COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:
4-5.4.3 HVAC ducts and air transfer openings serving non-telecommunications equipment areas should have smoke dampers or combination fire/smoke dampers installed in the ducts or air transfer openings where they penetrate the wall to the telecommunications equipment area. The dampers should be installed in accordance with NFPA 90A.
A-4-5.4.3 It is preferable to install HVAC ducts serving non-telecommunications equipment areas so that they do not pass through telecommunications equipment areas.

COMMITTEE STATEMENT: Smoke dampers are appropriate for this application and fire dampers are needed for a rated separation.

76- 164 - (4-5.4.3, A-5.4.3 (New)): Reject


RECOMMENDATION: Revise text to read as follows:
4-5.4.3* Air ducts serving other building/hazard areas shall have listed fire dampers installed at the wall penetrations. Dampers shall be activated by automatic smoke detectors installed on both sides of the wall.
A-4-5.4.3 It is preferable to install air ducts serving other building/hazard areas so that they do not pass through telecommunications equipment spaces.

SUBSTANTIATION: Reword the paragraph to address only situations where air ducts serving other building/hazard areas pass through telecommunications equipment spaces since these air ducts arrangements are not allowed.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-163 (Log #297).
76-167 - (4-5.5.1): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI
Technical Subcommittee TIE1

RECOMMENDATION: Revise text to read:
"All cables and telecommunications equipment installed after
January 1, 2001, whether owned or co-located, shall meet the igni-
tion and fire resistance requirements in Section 6-8 of this standard
as appropriate for the type of device."

SUBSTANTIATION: Clarification. Not all equipment assemblies are
fire “tested”. Some standards use construction methods and suitable
material ratings (that are individually tested).

COMMITTEE ACTION: Accept in Principle.
Revise text to read:
"All cables and telecommunications equipment installed after
January 1, 2001, whether owned or co-located, shall meet the igni-
tion and fire resistance requirements in Section 6-8 of this standard
as appropriate for the type of cable or telecommunications equipment."

COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of
the submitter. Where appropriate the committee has changed the
wording in committee proposal 76-540 to be more representative of a
recommended practice.

76-168 - (4-5.5.1): Accept in Principle

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise text to read:
"All cables and telecommunications equipment installed after
January 1, 2001, whether owned or co-located, shall meet the igni-
tion and fire resistance requirements in Section 6-8 of this standard
as appropriate for the type of device."

SUBSTANTIATION: Not all equipment assemblies are ignited or
“fire tested”. Some standards allow construction methods and
suitable material ratings that are individually tested.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of
the submitter. Where appropriate the committee has changed the
wording in committee proposal 76-540 to be more representative of a
recommended practice.

76-169 - (4-5.5.1): Reject

SUBMITTER: Guy R. Franks, Pacific Bell

RECOMMENDATION: Revise text as follows:
"All cables and telecommunications equipment installed after
January 1, 2001, whether owned or co-located, shall be purchased to
specifications in conformance to the ignition and fire resistance
requirements in Section 6-8 of this Standard."

SUBSTANTIATION: This appears to be a business issue between the
building owners and possible tenants. It is the building owner’s
responsibility to assure that the building is protected and in
conformance to applicable code requirements. It does not seem
appropriate that a code document should be involved with the use of
the building, especially since the use described here is mandated by
the Federal Communications Commission. Cables and equipment
are not manufactured by building owners, but purchased, and
therefore owners must tell manufacturers to follow specific design
requirements.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: From a fire protection stand point, it
does not matter whether it is owned or co-located.

76-169a - (4-5.5.1; 4.6.5; 4.7.5; 4.8.5; 5.5.4.1): Accept

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Change date to January 2003.

COMMITTEE ACTION: Accept.

76-170 - (4-5.5.2): Reject

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise text to read:
"Telecommunications equipment shall be industry standard [i.e.,
NEBS] compliant and shall be installed and used in configurations
and uses for which it has been tested."

SUBSTANTIATION: A specific industry standard, or standards,
should be included otherwise the requirement is vague and
meaningless.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Committee’s use of industry standard
is more appropriate and includes NEBS.

76-171 - (4-5.5.2): Reject

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: Change “industry standard compliant” to
“Network Standard Compliant for Fire Characteristics” and change
"testing" to “rated by testing or evaluation.”

SUBSTANTIATION: Improved text. Makes use of separately
proposed definition change and addition by the same author.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Current language is clear.

76-172 - (4-5.5.3): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI
Technical Subcommittee TIE1

RECOMMENDATION: Revise text to read:
"Cables and equipment that do not comply with the fire
performance criteria standards of Section 6-8 shall be separated from
the remainder of the telecommunications equipment in space by:"

SUBSTANTIATION: Clarification to reflect the different methods in
the various standards used for different types of devices (electrical
equipment assemblies, wires/cables, etc.).

COMMITTEE ACTION: Accept in Principle.
Revise text to read:
"Cables and equipment which do not comply with the fire
performance criteria standards of Section 6-8 shall be separated from
the remainder of the telecommunications equipment in space by:"

COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of
the submitter. Where appropriate the committee has changed the
wording in committee proposal 76-540 to be more representative of a
recommended practice.

76-173 - (4-5.6.1): Accept

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:
"provided with a very early warning fire detection... ."

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.
76-174: (4-5.6.1): Reject

RECOMMENDATION: Revise text as follows:

"...shall be provided with very early warning smoke detection system ...

COMMITTEE STATEMENT:

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The committee believes that very early warning smoke detection is appropriate because of extensive testing.

76-175: (4-5.6.1): Reject

RECOMMENDATION: Revise text as follows:

4-5.6.1 General. Telecommunications equipment spaces including subfloor spaces shall be provided with very early warning smoke detection system in accordance with Chapter 6 requirements for detection and alarm processing.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-177 (Log #CP16).

76-176: (4-5.6.1): Reject

RECOMMENDATION: Revise text to read as follows:

“Telecommunications equipment spaces shall be provided with very early warning smoke detection system in accordance with Chapter 6 requirements for detection and alarm processing.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The committee feels that very early warning smoke detection is needed to reduce the potential for a major loss. This is based on testing.

76-177: (4-5.6.1.1 and 4-8.6.1.1): Accept

RECOMMENDATION: Committee Proposal for 4-5.6.1.1 and 4-8.6.1.1

Add the following to the existing material:

“Raised floor areas that do not have a common air flow with the above floor area and contain combustibles should be provided with EWFD. Where raised floor areas share common air flow with the above floor area the VEWFD provided above should be considered adequate to protect the area below the raised floor.

COMMITTEE ACTION: Accept.

76-178: (4-5.7, 4-6.7, 4-7.7, 4-8.7, and 4-9.7): Accept in Principle

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-179: (4-5.7.1): Accept in Principle

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-180: (4-5.7.1): Reject

COMMITTEE STATEMENT: See Committee Action on Proposal 76-178 (Log #114).

76-181: (4-5.7.1 Note, 4-8.7.1 Note): Accept

COMMITTEE STATEMENT: Insert the words “and corrosive liquid” after the word “chemical.”

COMMITTEE ACTION: Accept.

76-182: (4-5.7.2): Accept

COMMITTEE ACTION: Accept.

76-183: (4-5.7.3): Accept

COMMITTEE ACTION: Accept.
COMMITTEE ACTION:

76-183 - (4-5.7.2): Reject

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

"...is used in telecommunications equipment spaces... When a telecommunications equipment space is used for other than network operations..."

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-182 (Log #115).

76-184 - (4-5.7.2): Reject

SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.

RECOMMENDATION: Add the following text:

“General. Telecommunications spaces shall be provided with automatic fire extinguishing or suppression systems.”

SUBSTANTIATION: Where a building is required to be fully sprinklered, most municipalities will require sprinkler or clean agent suppression.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The committee does not disagree with the submitter’s substantiation, but does not feel that there is good justification to support the recommendation.

76-185 - (4-5.7.2): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Revise text to read as follows:

4-5.7.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided, they shall be in accordance with the requirements of Section 6-6. Careful consideration must be made to recognize the impact the agent may have on the energized telecommunications equipment.

SUBSTANTIATION: The added wording provides the necessary reference to Section 6-6.

COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:

4-5.7.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided, they shall be in accordance with the requirements of Section 6-6. Careful consideration must be made to recognize the impact the agent may have on the energized telecommunications equipment.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-186 - (4-5.7.2): Reject

SUBMITTER: Guy R. Franks, Pacific Bell

RECOMMENDATION: Revise text to read as follows:

“Automatic Fire Suppression. When automatic suppression is used, careful consideration must be made to recognize the impact the agent may have on the energized telecommunications equipment. See Section 6-6.2. The use of water as a fire protection medium in power rooms is not recommended.

When telecommunications equipment space is used for uses other than network operations, (i.e., administrative space for employees who do not support the network equipment), protection shall be provided based upon the hazard(s) presented.”

SUBSTANTIATION: The use of water around power room equipment elements can cause additional hazards related to personal and environmental safety. For example, water around energized DC bus bars can increase the risk of electrical shock. Also, the use of water as a form of suppression around flooded batteries can easily increase the spread and exposure of the battery acid, in the event of a spill.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Advisory in nature. Referencing the wrong hazard.

76-187 - (4-5.7.2): Reject


RECOMMENDATION: Revise text to read as follows:

“Automatic fire suppression shall be provided in these areas. Careful consideration must be made to...” (continue with existing text).

SUBSTANTIATION: Fire history has clearly shown without automatic fire suppression significant fires are possible in large telecommunication facilities. The effects of these fires while infrequent are catastrophic in terms of business/mision/production interruption. These effects will exponentially increase with the growing dependence on telecommunications connectivity.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The recommended practice does not exclude the use of automatic fire suppression systems. Telecommunications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This high record of reliability has been achieved mostly without the use of automatic extinguishing systems. In its 100 plus year history, the industry has had only 7 major fire incidents in their 20,000 buildings with no fatalities due to fire or smoke. The industry’s record is acknowledged by automatic suppression exemptions in NFPA 13 and in all model building and fire codes. Post-event analysis of their industry’s major incidents suggests that automatic suppression would not have effectively suppressed those fires.

76-188 - (4-5.8): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

RECOMMENDATION: Revise text to read:

4-5.8 Limitation of Combustibles. Telecommunications equipment spaces shall not be utilized for the storage of combustible materials, or other equipment unrelated to the switching, transmission, or video signals, and associated power systems.

SUBSTANTIATION: Clarification – the original text implied that power is not a part of the telecommunication system.

COMMITTEE ACTION: Accept in Principle.

Text will now read as follows:

4-5.8 Limitation of Combustibles. Telecommunications equipment spaces shall not be used for the storage of combustible materials or other equipment unrelated to the switching, transmission of voice, data, and video signals, and associated power systems.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-189 - (4-5.8): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows: "...shall not be utilized for the storage..."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submittor. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-190 - (4-5.8.1): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add to the end of the sentence, "...of installation or maintenance.”
SUBSTANTIATION: More complete.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-192 (Log #CP8).

76-191 - (4-5.8.1): Reject
SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.
RECOMMENDATION: Revise text as follows: 4-5.8.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment shall be limited to the quantities needed for 7 days for areas that are provided with fire suppression systems and one day for areas that are not provided with fixed suppression.
SUBSTANTIATION: The benefit gained by insisting that equipment pass rigorous fire tests is lost by exposing it to in process storage equivalent to 7 days worth of cardboard boxes and plastic insulation.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-192 (Log #CP8).

76-192 - (4-5.8.1): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise text as follows: 4-5.8.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment shall be limited in accordance with 7-4.
SUBSTANTIATION: The committee recognizes the value of controlling combustibles. The committee feels that this topic should be addressed in Chapter 7.
COMMITTEE ACTION: Accept.

76-193 - (4-5.8.2): Reject
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read: "Small work spaces, directly related to the support of the telecommunications equipment, shall be permitted within the equipment area if furnishings meet California Technical Bulletin 133 — State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 133 — Flammability Test Procedures for Seating Furniture for Use in Public Occupancies dated June, 1990 or UL 1056, Fire Tests of Upholstered Furniture, 28 June 1995 (2nd edition), and noncombustible containers are provided for combustible materials.
SUBSTANTIATION: The California Technical Bulletin 133 is not a nationally recognized standard and the NRTL cannot be used for the test items for compliance. UL 1056 is a nationally recognized standard and should suffice. These documents are not listed in Chapter 10 with other normative references.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action and Statement on Proposal 76-193 (Log #18).

76-194 - (4-5.8.2): Reject
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"Small work spaces, directly related to the support of the telecommunications equipment, shall be permitted within the equipment area if furnishings meet California Technical Bulletin 133 — State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 133 — Flammability Test Procedures for Seating Furniture for Use in Public Occupancies dated June, 1990 or UL 1056, Fire Tests of Upholstered Furniture, 28 June 1995 (2nd edition), and noncombustible containers are provided for combustible materials.
SUBSTANTIATION: The California Technical Bulletin 133 is not a nationally recognized standard and the NRTL cannot be used for the test items for compliance. UL 1056 is a nationally recognized standard and should suffice. These documents are not listed in Chapter 10 with other normative references.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action and Statement on Proposal 76-193 (Log #18).

76-195 - (4-5.9): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows: "...equipment spaces except..."
SUBSTANTIATION: More complete.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-196 (Log #CP15).

76-196 - (4-5.9): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise text to read: 4-5.9 Special Hazards. Hazardous operations (such as cutting and welding, electronic repairs, maintenance, hot work, etc.) should not be conducted in small facilities except for specific jobs with conducted without special permits. Heat producing appliances not related to the support of telecommunications equipment shall not be permitted within the space.
SUBSTANTIATION: Soldering irons are in support of telecommunications equipment.
COMMITTEE ACTION: Accept.
76-197 - (4-5.10): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows: "...management systems are used, they shall...".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee decided that the word "provided" is more appropriate. (See committee proposal 76-540)
(Log #CP37)

76-198 - (4-5.10): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text to read as follows: 4-5.10 Smoke Management Systems. Where smoke management systems are provided, they shall comply with Section 6-7. Smoke exhaust shall discharge shall discharge to the outside of the building, away from fresh air intakes and building openings. The mechanical exhaust ventilation system shall be arranged to provide automatic activation, or manual activation from a location outside of the space.
SUBSTANTIATION: The delete wording is more appropriately covered in the referenced Section 6-7.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-199 - (4-6.1): Accept in Principle
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1
RECOMMENDATION: Revise text to read:
"Cable entrance facilities shall be arranged to minimize the intrusion of gas into the building; limit the fuel load; prevent the spread of fire and smoke to other areas; and prevent the intrusion of unwanted electrical sheath currents."
SUBSTANTIATION: The requirements to protect against unwanted currents is outside the scope of this document. There are several standards, including NFPA 70, that deal with this issue already. The techniques used fall under "electrical protection" rather than "fire protection."
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The committee believes that the electrical sheath currents are a fire safety issue which are addressed in NFPA 70.

76-200 - (4-6.1): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"Cable entrance facilities shall be arranged to minimize the intrusion of gas into the building; limit the fuel load; prevent the spread of fire and smoke to other areas; and prevent the intrusion of unwanted electrical sheath currents."
SUBSTANTIATION: The requirements to protect against unwanted currents is outside the scope of this document. There are several standards, including NFPA 70, that deal with this issue already. The techniques used fall under "electrical protection" rather than "fire protection."
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-201 - (4-6.2): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows: "Partitions in cable entrance facilities shall be non-combustible...",
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-202 - (4-6.3): Accept in Principle in Part
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: 4-6.3 Compartmentation. Cable entrance facilities shall be separated from adjacent equipment and non-equpment spaces by a minimum of 2-hour resistive construction in accordance with Section 6-3.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
minimum of 2-hour fire resistance rated construction in accordance with Section 6-3.

Exception No. 2: Compartmentation is not required when the cable entrance terminates directly within the main distribution frame area.

No other changes to the Exceptions.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-203 - (4-6.5): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI

RECOMMENDATION: Revise text to read:

“All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire resistance requirements in Section 6-8 of this standard as appropriate for the type of device.”

SUBSTANTIATION: Clarification. Not all equipment assemblies are fire “tested”. Some standards use construction methods and suitable material ratings (that are individually tested).

COMMITTEE ACTION: Accept in Principle.

Text will now read as follows:

“All cables and equipment that extend from the cable entrance facility to other spaces within the building installed in cable entrance facilities after January 1, 2001, whether owned or co-located, shall meet the requirements in Section 6-8 of this standard as appropriate for the type of cable or equipment.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-203 - (4-6.5): Accept in Principle

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise text to read:

“All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire resistance requirements in Section 6-8 of this standard as appropriate for the type of device.”

SUBSTANTIATION: Not all equipment assemblies are fire “tested”. Some standards allow construction methods and suitable material ratings that are individually tested.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-203 - (4-6.5): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“...equipment installed in cable entrance facilities after January 1, 2001...”

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-209 - (4-6.6.1): Reject
SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.
RECOMMENDATION: Revise text as follows:
"...shall be provided with early warning fire detection a smoke detection system..."
SUBSTANTIATION: The value of VEWS/D over standard smoke detection has not yet been determined.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee believes that early warning smoke detection is appropriate because of extensive testing.

76-210 - (4-6.7): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"Cable entrance facilities shall be provided with Listed... equipment shall be provided in accordance..."
SUBSTANTIATION: Editorial - consistency with other section language.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-211 - (4-6.7.1): Reject
RECOMMENDATION: Move this subparagraph out of 4-6.7 and renumber as 4-6.x, Portable Fire Extinguishers.
SUBSTANTIATION: The subparagraph 4-6.7.1, Portable Fire Extinguishers, is included under the heading of 4-6.7, Fire Extinguishing Systems. Portable fire extinguishers are not systems. This configuration presents the appearance that there is some equivalence between automatic fire suppression systems and portable fire extinguishers.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee placed this item under the heading Fire Suppression. (See Committee Action on Proposal 76-540 (Log #CP57)).

76-212 - (4-6.7.2): Reject
RECOMMENDATION: Revise text as follows:
"Fire Cable entrance facilities that are protected by fire suppression systems activation of the fire suppression system shall transmit an alarm to a constantly attended location upon activation of the fire suppression system."
SUBSTANTIATION: Revised to be a more direct statement.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The section has been rewritten as recommended in Proposal 76-214 (Log #402). The committee agrees with the substantiation in Proposal 76-214 (Log #402). See final wording in proposal 76-540 (Log #CP57).

76-213 - (4-6.7.2): Reject
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text to read as follows:
"...shall transmit an alarm to a constantly attended location cause operation as required by 6-4.2.2."
SUBSTANTIATION: For consistency in the standard and more accurately reflect the desired operations.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The section has been rewritten as recommended in Proposal 76-214 (Log #402). The committee agrees with the substantiation in Proposal 76-214 (Log #402). See final wording in proposal 76-540 (Log #CP57).
76-216 - (4-6.8): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

"...shall not be utilized..."

COMMITTEE STATEMENT: The section has been rewritten as recommended in Proposal 76-214 (Log #402). The committee agrees with the substantiation in Proposal 76-214 (Log #402). See final wording in proposal 76-540

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(Revise text to read as follows:)

76-217 - (4-7.1): Reject

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

4-7.1 General. Power areas shall be arranged to provide protection against fire and smoke in adjacent spaces; to provide protection against fire and smoke spread to adjacent equipment and to provide the capability to disconnect power from telecommunications equipment to facilitate emergency intervention.

SUBSTANTIATION: The intention of this document is not to require depowering of telecommunications equipment.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: A means of disconnect is necessary for fire fighting purposes.

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(Revise text to read:

76-218 - (4-7.1): Reject

SUBMITTER: Guy R. Franks, Pacific Bell

RECOMMENDATION: Revise text as follows:

“General. Power areas shall be arranged to provide protection against fire and smoke in adjacent spaces; to provide protection against fire and smoke spread to adjacent equipment and to provide power distribution equipment capable of providing disconnection of the for the capability to disconnect power from telecommunications equipment to facilitate emergency intervention.”

SUBSTANTIATION: Current designs of telecommunications DC power systems incorporate power distribution equipment that provides for the disconnection of telecommunications equipment through fuses and circuit breakers. This proposed wording accomplishes the goal of the original wording and better defines the equipment used to accomplish the removal of power when necessary.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The proposed change would require purchasing additional equipment to accomplish disconnecting and the committee feels this is unnecessary to accomplish disconnecting.

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(Revise text to read:

76-219 - (4-7.2): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“Partitions in power areas shall.”

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-220 - (4-7.3): Reject

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

4-7.3 Compartmentation. Power areas shall be separated from adjacent non-telecommunications equipment spaces in accordance with section 6-3.

SUBSTANTIATION: Believe it was the intention of the committee to allow battery areas that support telecommunications equipment to be collocated with the equipment.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-222 (Log #401).

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(Revise text to read:

76-221 - (4-7.3): Reject

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

4-7.3 Compartmentation. Power areas shall be separated from adjacent non-equipment spaces in accordance with Section 6-3.

SUBSTANTIATION: Section 6-3 does not specify fire resistant construction in accordance with Section 6-3.

COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:

4-7.3 Compartmentation. Power areas should be separated from adjacent non-equipment spaces by a minimum of 1-hour fire resistance rated construction in accordance with Section 6-3.

COMMITTEE STATEMENT: Editorial.

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(Revise text to read:

76-222 - (4-7.3): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Revise text to read as follows:

4-7.3 Compartmentation. Power areas shall be separated from adjacent non-equipment spaces by a minimum of 1-hour fire resistance rated construction in accordance with Section 6-3.

SUBSTANTIATION: Section 6-3 does not specify fire resistant ratings for this compartmentation, therefore it needs to be specified here.

COMMITTEE ACTION: Accept in Principle.

Revise text to read as follows:

4-7.3 Compartmentation. Power areas should be separated from adjacent non-equipment spaces by a minimum of 1-hour fire resistance rated construction in accordance with Section 6-3.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-222 (Log #401).

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(Revise text to read:

76-223 - (4-7.5): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

RECOMMENDATION: Revise text to read:

“All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire resistance requirements in Section 6-8 of this standard as appropriate for the type of device.”

SUBSTANTIATION: Clarification. Not all equipment assemblies are fire “tested”. Some standards use construction methods and suitable material ratings (that are individually tested).

COMMITTEE ACTION: Accept in Principle.

Text will now read as follows:

“All cables and equipment installed in power areas after January 1, 2001, whether owned or co-located, shall meet the requirements in Section 6-8 of this standard as appropriate for the type of cables and equipment.”

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

... 76-224 - (4-7.5): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire-resistance requirements in Section 6-8 of this standard as appropriate for the type of device."
SUBSTANTIATION: Not all equipment assemblies are ignited or "fire tested". Some standards allow construction methods and suitable material ratings that are individually tested.
COMMITTEE STATEMENT: Accept in Principle.
COMMITTEE ACTION: Accept in Principle.

76-225 - (4-7.5): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...equipment installed in power areas after..."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-226 - (4-7.6.1): Accept
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...an early warning smoke fire detection system..."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

76-227 - (4-7.6.1): Accept in Principle
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text as follows:
"...early warning smoke fire detection..."
SUBSTANTIATION: For consistency in the standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-226 (Log #245).

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee believes that early warning smoke detection is appropriate because of extensive testing.

76-229 - (4-7.7): Reject
RECOMMENDATION: Move this subparagraph out of 4-7.7 and renumber as 4-7.x. Portable Fire Extinguishers.
SUBSTANTIATION: The subparagraph 4-7.7.1, Portable Fire Extinguishers, is included under the heading of 4-7.7, Fire Extinguishing Systems. Portable fire extinguishers are not systems. This configuration presents the appearance that there is some equivalence between automatic fire suppression systems and portable fire extinguishers.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee placed this item under the heading Fire Suppression. (See Committee Action on Proposal 76-540, Log #CP37).

76-230 - (4-7.7.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"Power areas shall be provided with listed portable...equipment shall be provided in accordance with..."
SUBSTANTIATION: Editorial - consistency.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-231 - (4-7.7.2): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...suppression is used in power areas. Careful..."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-232 - (4-7.7.2): Accept in Principle
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text to read as follows:
"4-7.7.2 Automatic Fire Suppression."
SUBSTANTIATION: For consistency in the standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
RECOMMENDATION 76-233 - (4-7.7.2): Reject in Chapter 6.

COMMITTEE STATEMENT: Victor LaSala, James & Leonard Engineers, P.C.

SUBSTANTIATION: The recommended practice does not exclude the use of automatic fire suppression systems. Telecommunications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This record of reliability has been achieved mostly without the use of automatic extinguishing systems. In its 100 plus year history, the industry has had only 7 major fire incidents in their 20,000 buildings with no fatalities due to fire or smoke. The industry’s record is acknowledged by automatic suppression exemptions in NFPA 13 and in all model building and fire codes. Post-event analysis of their industry’s major incidents suggests that automatic suppression would not have effectively suppressed those fires.

76-234 - (4-7.7.2): Accept in Principle

COMMITTEE STATEMENT: Michael J. Madden, Gage-Babcock & Assoc.

COMMITTEE ACTION: The proposed standard was changed to state an alternative method to a requirement.

COMMITTEE STATEMENT: The submitter’s concern is addressed in Chapter 6.

76-235 - (4-7.7.2): Reject

COMMITTEE STATEMENT: The submitter’s concern is addressed in Chapter 6.

76-236 - (4-7.7.2): Reject

SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.

RECOMMENDATION: Add the following text:

"Automatic Fire Suppression. When automatic fire suppression systems are provided in power areas they shall be in accordance with the requirements of Section 6-6. Careful consideration must be made to recognize the impact the agent may have on the energized telecommunications equipment. See Section 6-6.2"

SUBSTANTIATION: The added wording provides the necessary reference to Section 6-6.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The submitter believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-237 - (4-7.8): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

"...shall not be used for the storage...".

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-238 - (4-7.8.1): Reject


RECOMMENDATION: Revise text as follows:

"An allowance shall be made for temporary staging areas of construction and maintenance materials for current work that directly supports telecommunications equipment."

SUBSTANTIATION: Revise to use "shall be" to state an alternative method to a requirement.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-240 (Log #CP9).

76-239 - (4-7.8.1): Reject


RECOMMENDATION: Add the following text:

"Combustible construction and maintenance materials for work that directly supports the Power Area shall be limited to the quantities needed for 7 days."
SUBSTANTIATION: Offers the same requirements set forth in Section 4-5.8.1 for Telecommunications Equipment Spaces.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The committee recognizes the value of controlling combustibles. The committee feels that this topic should be addressed in chapter 7.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-246 - (4-8.1): Accept in Principle

**Submitter:** Kevin T. Callery, Rolf Jensen & Assoc.

**Recommendation:** Revise text to read as follows:

"Main distribution frame installations shall be...".

**Substantiation:** Editorial.

**Committee Action:** Accept in Principle.

**Committee Statement:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-247 - (4-8.1): Accept in Principle in Part

**Submitter:** Guy R. Franks, Pacific Bell

**Recommendation:** Revise text as follows:

"The installation of the main distribution frame for termination of equipment and outside plant cables, when possible, shall be arranged to provide protection against fires in adjacent spaces; protect against fire spread to adjacent equipment; to provide protection from smoke and related non-thermal damage; and to increase the survivability of the main distribution frame."

**Substantiation:** A Main Distributing Frame is located in central offices where outside plant cables are brought into the building. Main Distributing Frames also have cables routed from network equipment inside the building. The MDF arrangement will be dictated by access to these cable runs and limiting cable run lengths from both inside and outside. If frames are arranged specifically for fire protection, this may increase cable run lengths thereby increasing fuel load in the building and may have negative impact to network operation.

**Committee Action:** Accept in Principle in Part.

**Committee Statement:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-248 - (4-8.2): Accept in Principle

**Submitter:** Kevin T. Callery, Rolf Jensen & Assoc.

**Recommendation:** Revise text to read as follows:

"Partitions in main distribution frame spaces shall be of..."

**Substantiation:** Editorial.

**Committee Action:** Accept in Principle.

**Committee Statement:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-249 - (4-8.3): Accept in Principle

**Submitter:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

**Recommendation:** Revise text to read:

"Main distribution frames consisting of components which do not meet the fire performance criteria of Network Industry Standards (i.e., NEBS) shall be separated from other telecommunications equipment spaces by 1hr fire resistive construction..."

**Substantiation:** Clarification – Section 6-8 which list the standards should be referenced as done in the other sections.

**Committee Action:** Accept in Principle.

**Committee Statement:** Clarification – Section 6-8 which list the standards should be referenced as done in the other sections.

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76-250 - (4-8.3): Accept

**Submitter:** Ralph E. Transue, Rolf Jensen & Assoc., Inc.

**Recommendation:** Extend the second sentence by adding, "...or floor/ceiling assembly."

**Substantiation:** More complete description of intent.

**Committee Action:** Accept.

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76-251 - (4-8.3): Reject

**Submitter:** Ralph E. Transue, Rolf Jensen & Assoc., Inc.

**Recommendation:** Revise the third sentence to read:

"Main distribution frames consisting of components which do not meet Network Standards Compliance for Fire Characteristics shall be separated..."

**Substantiation:** Uses definition proposed by same author.

**Committee Action:** Reject.

**Committee Statement:** See Committee Action on Proposal 76-249 (Log #41).

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76-252 - (4-8.3): Accept in Principle

**Submitter:** Bruce A. Edwards, Wausau Insurance Cos./Rep. Alliance of American Insurers

**Recommendation:** Revise second sentence as follows:

"Main distribution frames consisting of components which do not meet the fire performance criteria of Network Industry Standards (i.e., NEBS) are not network industry compliant shall be separated from other telecommunications equipment spaces by 1-hour fire resistive construction, or the area shall be protected throughout by an automatic fire suppression system."

**Substantiation:** Removal of the reference to NEBS.

**Committee Action:** Accept in Principle.

**Committee Statement:** See Committee Action on Proposal 76-249 (Log #41).
76-253 - (4-8.3): Accept in Principle

**SUBMITTER:** Kevin T. Gallery, Rolf Jensen & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

> "...spaces by 1-hour fire resistant resistance rated construction...".

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** See Committee Action on Proposal 76-249 (Log #41).

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76-254 - (4-8.3): Accept in Principle

**SUBMITTER:** Michael J. Madden, Gage-Bahcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows:

4-8.3 Compartmentation. Main distribution frames shall be separated from non-equipment spaces by a minimum of 1-hour fire resistive construction in accordance with Section 6-3. Penetrations shall be closed with a listed material or assembly with a fire resistance rating equivalent to the wall. Main distribution frames consisting of components which do not meet the fire performance criteria of Network Industry Standards (i.e., NEBS) shall be separated from other telecommunications equipment spaces by 1-hour fire resistive construction, or the area shall be protected throughout by an automatic fire suppression system.

**SUBSTANTIATION:** Section 6-3 does not specify fire resistive ratings for this compartmentation, therefore it needs to be specified here. The deleted wording is already covered in referenced Section 6-3.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** Also see Committee Action on Proposal 76-249 (Log #41). This also correlates with the action taken on Proposal 76-222 (Log #401).

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76-255 - (4-8.3): Reject

**SUBMITTER:** Paul H. Dobson, Factory Mutual Research Corp.

**RECOMMENDATION:** Revise text as follows:

"4-8.3* Compartmentation. Main distribution frames shall be separated from non-equipment spaces in accordance with Section 6-3. Penetrations shall be closed with a listed material or assembly with a fire resistance rating equivalent to the wall. Main distribution frames consisting of components which do not meet the fire performance criteria of Section 6-8 Network Industry Standards (i.e., NEBS) shall be separated from other...fire suppression system."

**SUBSTANTIATION:** Clarification-Fire test references are contained in Section 6-8.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Action on Proposal 76-249 (Log #41).

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76-256 - (4-8.3): Reject

**SUBMITTER:** Roy R. Franks, Pacific Bell

**RECOMMENDATION:** Delete the following text:

> "Compartmentation. Main distribution frames shall be separated from non-equipment spaces in accordance with Section 6-3. Penetrations shall be closed with a listed material or assembly with a fire resistance rating equivalent to the wall. Main distribution frames consisting of components which do not meet the fire performance criteria of Network Industry Standards (i.e., NEBS) shall be separated from other telecommunications equipment spaces by 1-hour fire resistant construction, or the area shall be protected throughout by an automatic fire suppression system."

**SUBSTANTIATION:** Partitioning walls will add additional lengths to all cable runs thereby increasing fuel loads in the building and degrading telecommunications service. The added cable lengths are result of having to route cables through limited number of wall openings. Cables must now be routed around openings rather than straight to the MDF. The partitioning walls also pose risks to network service and personnel since walls have been found to be a hazard in high seismic risk locations. Walls have fallen over onto equipment and disrupted service. Construction of partitioning walls in a central office environment cannot be designed adequately due to high ceilings and long wall length. A MDF may run over several hundred feet in length with ceiling height of 15 feet. Overhead ironwork used to support cableracks do not permit walls to reach the ceiling. Therefore walls are constructed to 10 feet height and braces from the ceiling support top of walls without adequate leverage to secure the wall for earthquake loads. The very long run of wall becomes very unstable and have collapsed under earthquake conditions. The telephone companies view these walls as a liability to personnel safety and network service.

The paragraph also does not address how to handle growth to existing MDFs. If the original MDF had non-conforming cables previously installed but going forward all cables are conforming, would partitioning be required when the MDF is grown with new additions?

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** The committee feels that fuel load of the MDF necessitates fire protection.

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76-257 - (4-8.3): Accept

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Delete the following from 4-8.3:

> "Penetrations shall be closed with a listed material or assembly with a fire resistance rating equivalent to the wall or floor/ceiling assembly."

**SUBSTANTIATION:** This is covered in Section 6-3.

**COMMITTEE ACTION:** Accept.

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76-258 - (4-8.5.1): Accept in Principle

**SUBMITTER:** Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

**RECOMMENDATION:** Revise text to read:

"All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire resistance requirements in Section 6-8 of this standard as appropriate for the type of device."

**SUBSTANTIATION:** Clarification. Not all equipment assemblies are fire “tested”. Some standards use construction methods and suitable material ratings (that are individually tested).

**COMMITTEE ACTION:** Accept in Principle.

Revise text to read:

"All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the ignition and fire resistance requirements in Section 6-8 of this standard as appropriate for the type of cables and equipment."

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-259 - (4-8.5.1): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:

"All cables and equipment installed after January 1, 2001, whether owned or co-located, shall meet the requirements in Section 6-8 of this standard as appropriate for the type of device."

SUBSTANTIATION: Not all equipment assemblies are ignited or "fire tested". Some standards allow construction methods and suitable material ratings that are individually tested.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-260 - (4-8.6.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:

"...an early warning smoke fire detection system...".

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-261 - (4-8.6.1): Accept in Principle
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text to read as follows:

"...shall be provided with an early warning smoke fire detection system...".

SUBSTANTIATION: 1. To agree with action taken in Albuquerque that was not reflected in this draft proposal.
2. For consistency within this standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-262 - (4-8.6.1): Reject
SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.
RECOMMENDATION: Revise text as follows:

"...shall be provided with an early warning smoke detection system...".

SUBSTANTIATION: The value of VEWS Systems over standard smoke detection has not been determined.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee feels that very early warning fire detection is more appropriate.

76-263 - (4-8.6.1): Reject
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise text as follows:

"4-8.6.1 General. Main distribution frame spaces, including subfloor spaces, shall be provided with a very early warning smoke detection system in accordance with Chapter 6 requirements for detection and alarm processing.

SUBSTANTIATION: These areas often have raised floors with cables, but NFPA 76 does not explicitly call for smoke detection in the subfloor. Also, these areas typically have very early warning smoke detection installed.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-177 (Log #CP16).

76-264 - (4-8.7.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:

"Main distribution frame spaces shall be provided with listed portable...on electronic equipment shall be provided in accordance with Section 6-6."

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-265 - (4-8.7.1): Accept in Principle
RECOMMENDATION: Move this subparagraph out of 4-8.7 and renumber as 4-8.x, Portable Fire Extinguishers.
SUBSTANTIATION: The subparagraph 4-8.7.1, Portable Fire Extinguishers, is included under the heading of 4-8.7, Fire Extinguishing Systems. Portable fire extinguishers are not systems. This configuration presents the appearance that there is some equivalence between automatic fire suppression systems and portable fire extinguishers.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee placed this item under the heading Fire Suppression. (See Committee Action on Proposal 76-540, Log #CP37).

76-266 - (4-8.7.2): Reject
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:

"When automatic suppression is used in main distribution frame spaces, careful consideration..."

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-269 (Log #CP11).
76-267 - (4-8.7.2): Reject

**SUBMITTER:** R. Bruce Fraser, Len Belliveau, Simplex

**RECOMMENDATION:** Revise text to read as follows:

“4-8.7.2 Automatic Fire Suppression.”

**SUBSTANTIATION:** For consistency within the standard.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-269 (Log #CP11).

76-268 - (4-8.7.2): Reject

**SUBMITTER:** Fred K. Walker, US Air Force

**RECOMMENDATION:** Revise text to read as follows:

“Automatic fire suppression shall be provided in these areas.

Activation of the fire suppression...” (continue with existing text).

**SUBSTANTIATION:** Fire history has clearly shown without automatic fire suppression significant fires are possible in large telecommunication facilities. The effects of these fires while infrequent are catastrophic in terms of business/mission/production interruption. These effects will exponentially increase with the growing dependence on telecommunications connectivity.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** The recommended practice does not exclude the use of automatic fire suppression systems. Telecommunications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This high record of reliability has been achieved mostly without the use of automatic extinguishing systems. In its 100 plus year history, the industry has had only 7 major fire incidents in their 20,000 buildings with no fatalities due to fire or smoke. The industry’s record is acknowledged by automatic suppression exemptions in NFPA 13 and in all model building and fire codes. Post-event analysis of their industry’s major incidents suggests that automatic suppression would not have effectively suppressed those fires.

76-269 - (4-8.7.2): Accept

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Revise text to read as follows: 4-8.7.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided for combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited to that needed for 7 days if fixed suppression has been provided or for one day if area is not provided by fixed suppression.

**SUBSTANTIATION:** Exposure of a main distribution frame to a fire involving 7 days of storage of combustible containers and plastic packaging will ignite wiring on the frame and result in a fire which will involve the entire frame.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** See Committee Proposal 76-272 (Log #CP10).

76-270 - (4-8.8): Accept

**SUBMITTER:** Kevin T. Callery, Rolf Jensen & Assoc.

**RECOMMENDATION:** Revise text to read as follows: Where smoke management systems are provided, they shall comply with Section 6-7. Smoke exhaust shall discharge to the outside of the building away from fresh air intakes and building openings. The mechanical exhaust ventilation system shall be arranged for automatic activation or manual activation from a location outside of the space.

**SUBSTANTIATION:** Editorial.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** The committee felt the word “provided” was more appropriate.

76-271 - (4-8.8.1): Reject

**SUBMITTER:** Paul H. Dobson, Factory Mutual Research Corp.

**RECOMMENDATION:** Revise text as follows: 4-8.8.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited in accordance with 7-4.

**SUBSTANTIATION:** The committee recognizes the value of controlling combustibles. The committee feels that this topic should be addressed in Chapter 7.

**COMMITTEE ACTION:** Accept.

76-272 - (4-8.10): Reject

**SUBMITTER:** Kevin T. Callery, Rolf Jensen & Assoc.

**RECOMMENDATION:** Revise text to read as follows: U.S. Code for Combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited in accordance with 7-4.

**SUBSTANTIATION:** The committee felt the word “provided” was more appropriate.

76-273 - (4-8.10): Accept

**SUBMITTER:** Michael J. Madden, Gage-Babcock & Assoc.

**RECOMMENDATION:** Revise text to read as follows: 4-8.10 Smoke Management Systems. Where smoke management systems are provided, they shall comply with Section 6-7. Smoke exhaust shall discharge to the outside of the building away from fresh air intakes and building openings. The mechanical exhaust ventilation system shall be arranged for automatic activation or manual activation from a location outside of the space.

**SUBSTANTIATION:** The deleted wording is more appropriately covered in the referenced Section 6-7.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** The committee felt the word “provided” was more appropriately covered in the referenced Section 6-7. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-275 - (4-9.2): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
“Partitions in standby engine areas shall be...”.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-276 - (4-9.3.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
“...minimum of 2-hour fire resistance rated construction,...”.

COMMITTEE STATEMENT: Editorial.

COMMITTEE ACTION: Accept in Principle.

76-277 - (4-9.3.2): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
“...fuel supplies to standby engines shall be controlled”.

COMMITTEE STATEMENT: Editorial.

COMMITTEE ACTION: Accept in Principle.

76-278 - (4-9.6.1): Reject
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise as follows:
4-9.6.1 Standby engine installations shall be provided with an early warning flame detection system, in accordance with Chapter 6 requirements for detection and alarm processing.

COMMITTEE STATEMENT: The committee feels that heat or flame detection systems are the only type of systems that would be appropriate for this type of application.

76-279 - (4-9.7): Reject
RECOMMENDATION: Move this subparagraph out of 4-9.7 and renumber as 4-9.x, Portable Fire Extinguishers.

COMMITTEE STATEMENT: The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-280 - (4-9.7.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
“Standby engine spaces shall be provided with listed portable extinguishers...liquid fuel fires shall be provided in accordance with Section 6.6.”

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-281 - (4-9.7.2): Accept in Principle
RECOMMENDATION: Revise text as follows:
4-9.7.2* Automatic Suppression Systems. Where automatic suppression systems are provided, they shall be in accordance with the requirements of Section 6.6. Careful consideration must be made to recognize the impact the agent may have on the energized telecommunications equipment. (See 6.6.2.)

COMMITTEE STATEMENT: Move requirement for automatic suppression to the beginning of the paragraph.

COMMITTEE ACTION: Accept in Principle.

76-282 - (4-9.7): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
“...are used to protect standby engine installations...”.

COMMITTEE STATEMENT: The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-281 (Log #173).

76-283 - (4-9.7.2): Reject
RECOMMENDATION: Revise text to read as follows:
"4-9.7.2* Automatic Fire Suppression Systems: ...Where automatic fire suppression systems...
SUBSTANTIATION: Automatic fuel cut-offs are not required by any code; not by NFPA 37 or NFPA 72.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-281 (Log #173).

76-285 - (4-9.7.2): Reject
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text to read as follows:
"4-9.7.2* Automatic Fire Suppression Systems: ...Where automatic fire suppression systems...
SUBSTANTIATION: 1. For consistency within the standard.
2. Editorial.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-281 (Log #173).

76-287 - (4-9.8.1): Accept
SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.
RECOMMENDATION: Add the following text:
"General. Standby generator areas shall be provided with automatic extinguishing or suppression systems."
SUBSTANTIATION: The use of automatic extinguishing in fuel storage and use areas is warranted where generators are installed inside.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The recommendation would remove the option for compartmentation in lieu of a fire extinguishing system. Also see Committee Action on Proposal 76-281 (Log #173).

76-288 - (4-9.8.1): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise text as follows:
"4-9.8.1 Combustible construction and maintenance materials for work that directly supports the Standby Engine Area shall be limited in accordance with 7-4.
SUBSTANTIATION: The committee recognizes the value of controlling combustibles. The committee feels that this topic should be addressed in Chapter 7.
COMMITTEE ACTION: Accept.

76-290 - (4-9.10): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:
"...management systems are used in standby engine areas utilized, they shall comply...
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-291 - (4-10.1): Accept in Principle
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read:
"Office furniture supporting these operations shall comply with California Technical Bulletin 133 — State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 133 — Flammability Test Procedure for
76-292 - (4-10.1): Reject
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:

SUBSTANTIATION: The California Technical Bulletin 133 is not a nationally recognized standard and should suffice. These documents are not listed in Chapter 10 with other normative references.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-291 (Log #19).

76-293 - (4-10.1): Accept in Principle
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
4-10.1 General. Technical support areas shall be arranged to protect against fire spread to adjacent equipment areas. Binders and other paperwork associated with the support of telecommunications equipment shall be kept to a minimum and shall be stored in non-combustible fireproof cabinets. Office furniture supporting these operations shall comply with California Technical Bulletin 133 — State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 133 — Flammability Test Procedure for Seating Furniture for Use in Public Occupancies dated June, 1990 or UL 1056, Fire Tests of Upholstered Furniture, 28 June 1995 (2nd edition). Cooking and portable heating equipment shall not be allowed in these areas.

SUBSTANTIATION: Aligns with requirements of Chapter 7 Fire Prevention 7-1.1. This requirement achieves the objective at a reasonable cost and availability.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-295 - (4-10.1): Reject
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Revise text to read as follows:
"General. Technical support areas shall be arranged to protect against fire spread to adjacent equipment areas. Binders and other paperwork associated with the support of telecommunications equipment shall be kept to a minimum and shall be stored in fireproof cabinets. Office furniture supporting these operations shall comply with California Technical Bulletin 133 — State of California Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 133 — Flammability Test Procedure for Seating Furniture for Use in Public Occupancies dated June, 1990 or UL 1056, Fire Tests of Upholstered Furniture, 28 June 1995 (2nd edition). Cooking and portable heating equipment shall not be allowed in these areas."

SUBSTANTIATION: The requirement to store binders and other paper work in fire proof cabinets is not supported. Existing storage practices have not been shown to be inadequate. In fact, in Paragraph 1-2.2 of this standard praises the industry’s remarkably good fire safety record. This requirement, without further support, is not justified.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee feels that it is appropriate to store binders and other paper work in a noncombustible cabinet.

76-296 - (4-10.2): Accept in Principle
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise text as follows:
4-10.2 General Fire Protection Measures. Technical support areas shall be protected with standard fire detection systems, in accordance with Chapter 6 requirements for detection and alarm processing, and portable fire extinguishers appropriate for the expected fuel load.

SUBSTANTIATION: For consistency with the rest of Chapter 4.

COMMITTEE ACTION: Accept in Principle.

76-297 - (4-10.2): Accept in Principle
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text as follows:
4-10.2 General Fire Protection Measures. Technical support areas shall be protected with standard fire detection systems when separate from telecommunications space and VEWFD when within the...
telecommunications space, in accordance with Chapter 6 requirements for detection and alarm processing, and portable fire extinguishers appropriate for the expected fuel load.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

**RECOMMENDATION:** 76-297 - (4-10.3 (New): Reject wording in committee proposal 76-540 to be more representative of a submitter. Where appropriate the committee has changed the committee believes that accepting in principle meets the intent of the to a recommended practice, see committee proposal 76-540. The

**COMMITTEE STATEMENT:**

**COMMITTEE ACTION:** Reject.

**SUBSTANTIATION:** Fire history has clearly shown without automatic fire suppression significant fires are possible in large telecommunications facilities. The effects of these fires while infrequent are catastrophic in terms of business/mission/production interruption. These effects will exponentially increase with the growing dependence on telecommunications connectivity. Fire in adjacent areas have been shown to extend into critical areas of telecommunications facilities quite easily.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** The recommended practice does not exclude the use of automatic fire suppression systems. Telecommunications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This high record of reliability has been achieved mostly without the use of automatic extinguishing systems. In its 100 plus year history, the industry has had only 7 major fire incidents in their 20,000 buildings with no fatalities due to fire or smoke. The industry’s record is acknowledged by automatic suppression exemptions in NFPA 13 and in all model building and fire codes. Post-event analysis of industry’s major incidents suggests that automatic suppression would not have effectively suppressed these fires.

76-297 - (4-10.3 (New): Reject.

**SUBMITTER:** Fred K. Walker, US Air Force

**RECOMMENDATION:** Add the following text:

4-10.3 Automatic Suppression. Automatic fire suppression shall be provided in these areas.

**SUBSTANTIATION:**

4-10.3 Automatic Suppression. Automatic fire suppression shall be provided in these areas.

**COMMITTEE ACTION:** 4-10.3 Automatic Suppression. Automatic fire suppression shall be provided in these areas.

**COMMITTEE STATEMENT:** The recommended practice does not exclude the use of automatic fire suppression systems. Telecommunications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This high record of reliability has been achieved mostly without the use of automatic extinguishing systems. In its 100 plus year history, the industry has had only 7 major fire incidents in their 20,000 buildings with no fatalities due to fire or smoke. The industry’s record is acknowledged by automatic suppression exemptions in NFPA 13 and in all model building and fire codes. Post-event analysis of industry’s major incidents suggests that automatic suppression would not have effectively suppressed these fires.

**SUBSTANTIATION:**

4-11.4.2.2 Automatic Fire Suppression. Where automatic suppression systems are provided in administrative areas, they shall be in accordance with the requirements of Section 6-6. Careful consideration must be made to recognize the impact the agent may have on energized equipment.

4-11.5 Cooking Areas. Cooking areas shall be protected in accordance with NFPA 96, Ventilation Control and Fire Protection of Commercial Cooking Operations.

4-12 Building Service and Support Areas

4-12.1 General. Building service and support areas shall be arranged to prevent the spread of fire and products of combustion to adjacent equipment areas.

4-12.2 Construction. [Delete first sentence.] Sound-proofing, if used, shall be of non-combustible or limited combustible materials. Floor assemblies over equipment spaces shall be constructed to protect against the penetration of water.

4-12.3 Compartmentation Building service and support areas shall be separated from adjacent equipment spaces by a minimum of 2-hour fire resistance rated construction or a minimum of 1-hour fire resistance rated construction where automatic fire suppression is provided within the building service and support compartment(s). Building service and support areas shall be separated from adjacent non-equipment spaces by a minimum of 1-hour fire resistance rated construction. All construction in accordance with Section 6-3.

4-12.4 Fire Protection The building service and support areas shall be protected by either a standard fire detection system or an automatic fire suppression system.

4-12.4.1 Fire Detection Where a fire detection system is provided, it shall be in accordance with Chapter 6 requirements for detection and alarm processing.

4-12.4.1.1 Installation. All fire alarm, detection, and alarm notification equipment shall be installed and maintained in accordance with NFPA 72, National Fire Alarm Code.

4-12.4.2 Fire Suppression

4-12.4.2.1 Portable Fire Extinguishers. Building service and support areas shall be provided with listed portable extinguishers suitable for use in accordance with Section 6-6. The selection, placement, and maintenance shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4-11.4.2.2 Automatic Fire Suppression. Where automatic suppression systems are provided in building service and support areas, they shall be in accordance with the requirements of Section 6-6. Careful consideration must be made to recognize the impact the agent may have on energized equipment.

4-12.5 HVAC Systems. HVAC system(s) shall be installed in accordance with NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

4-12.6 Electrical. Non-telecommunications power circuits shall be installed in accordance with NFPA 70, National Electrical Code.

4-12.7 Lightning/Surge Protection. Lightning and surge protection, where provided, shall be installed in accordance with NFPA 780, Standard for the Installation of Lightning Protection Systems, NFPA 70, National Electrical Code, respectively.

4-12.8 Special Hazards. Flammable and combustible liquids and aerosols shall be stored in listed fire-rated storage cabinets.

**COMMITTEE STATEMENT:** The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-297 - (4-11, 4-12): Accept in Principle

**COMMITTEE ACTION:** Accept in Principle.

**SUBJECT:** Technical Committee on Telecommunications

**RECOMMENDATION:** Revise Sections 4-11 and 4-12 as follows:

4-11 Administrative Areas.

4-11.1 General. Administrative areas shall be arranged to prevent the spread of fire to adjacent equipment areas.

4-11.2 Construction. [Delete first sentence.] Sound-proofing, if used, shall be of non-combustible or limited combustible materials. Floor assemblies over equipment spaces shall be constructed to protect against the penetration of water.

4-11.3 Compartmentation Administrative areas shall be separated from adjacent equipment spaces by a minimum of 1-hour fire resistance rated construction and in accordance with Section 6-3.

4-11.4 Fire Protection. The administrative area shall be protected by either a standard fire detection or an automatic fire suppression system.

4-11.4.1 Fire Detection Where a fire detection system is provided, it shall be in accordance with Chapter 6 requirements for detection and alarm processing.

4-11.4.1.1 Installation. All fire alarm, detection, and alarm notification equipment shall be installed and maintained in accordance with NFPA 72, National Fire Alarm Code.

4-11.4.2 Fire Suppression

4-11.4.2.1 Portable Fire Extinguishers. Administrative areas shall be provided with listed portable extinguishers suitable for use in accordance with Section 6-6. The selection, placement, and maintenance shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.
76-298 - (4-11.2): Accept in Principle

Alliance of American Insurers

RECOMMENDATION: Delete existing 4-11.2 and replace with the following:

4-11.2 Fire Protection. Administrative areas shall be protected by either an automatic fire suppression system or standard fire detection.

4-11.2.1 Automatic Fire Suppression. Where automatic fire suppression is provided, the administrative area protected by the automatic fire suppression system shall be separated from all telecommunications equipment areas by 1-hour fire resistive construction.

4-11.2.2 Automatic Fire Detection. Where standard fire detection is provided, the administrative area protected shall be separated from telecommunications equipment areas by 2-hour fire resistive construction.

4-11.2.3 Portable Fire Extinguishers. Listed portable fire extinguishers shall be provided in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4-11.2.4 Cooking Areas. Cooking areas shall be protected in accordance with NFPA 96, Ventilation Control and Fire Protection of Commercial Cooking Operations.

SUBSTANTIATION: Separate out the multiple requirements included in the existing paragraph.

COMMITTEE ACTION: Accept in Principle.

Delete existing 4-11.2 and replace with the following:

4-11.2 General Fire Protection Measures. Administrative areas shall be equipped with either a fire detection system or an automatic fire suppression system, and shall be separated from all equipment areas with 1-hour fire resistive construction. Portable fire extinguishers shall be selected for the expected fire load. Cooking and equipment areas shall be protected in accordance with NFPA 96. Cooking equipment shall be protected in accordance with NFPA 86.

COMMITTEE STATEMENT: The 2 hour change was unjustified. The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-299 - (4-11.2): Accept in Principle

SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.

RECOMMENDATION: Revise text as follows:

“4-11.2 General Fire Protection Measures. Administrative areas shall be equipped with either a standard fire detection system, in accordance with Chapter 6 requirements for detection and alarm processing, or an automatic fire suppression system, and shall be separated from all equipment areas with 1-hour fire resistive construction. Portable fire extinguishers shall be selected for the expected fire load. Cooking...”.

SUBSTANTIATION: For consistency with the rest of Chapter 4.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-300 - (4-11.2): Reject


RECOMMENDATION: Delete first sentence and add a new paragraph 4-11.x, Automatic Suppression, to read as follows.

“Automatic fire suppression shall be provided in these areas.”

SUBSTANTIATION: Fire history has clearly shown without automatic fire suppression significant fires are possible in large telecommunication facilities. The effects of these fires while infrequent are catastrophic in terms of business/mission/production interruption. These effects will exponentially increase with the growing dependence on telecommunications connectivity. Fires in adjacent areas have been shown to breach 1-hour walls in 15 minutes or less. Such fires have been shown to extend into technical areas quite readily.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The committee intends to provide the choice of two options.

76-301 - (4-12.2): Accept in Principle

Alliance of American Insurers

RECOMMENDATION: Delete existing 4-12.2 and replace with the following:

4-12.2 Fire Protection. Building service and support areas that are separated from other hazard areas shall be protected by either an automatic fire suppression system or standard fire detection.

4-12.2.1 Automatic Fire Suppression. Where automatic fire suppression is provided, the building service and support area protected by the automatic fire suppression system shall be separated from all other building areas by 1-hour fire resistive construction.

4-12.2.2 Automatic Fire Detection. Where standard fire detection is provided, the building service and support area protected shall be separated from telecommunications equipment areas by 2-hour fire resistive construction and separated from non-telecommunications equipment areas by 1-hour fire resistive construction.

4-12.2.3 Portable Fire Extinguishers. Listed portable fire extinguishers shall be provided in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

SUBSTANTIATION: Separate out the multiple requirements included in the existing paragraph.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-302 - (4-12.2): Accept in Principle

SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.

RECOMMENDATION: Revise text as follows:

4-12.2 Fire Protection. When building service and support areas are in separate rooms, those rooms shall be equipped with either a standard fire detection system, in accordance with Chapter 6 requirements for detection and alarm processing, or an automatic fire suppression system. Portable fire extinguishers shall be selected for the expected fire load. The room shall be separated from telecommunications equipment space by 2-hour fire resistive construction.

SUBSTANTIATION: For consistency with the rest of Chapter 4.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-306 - (5-1.1): Accept in Principle
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Revise text to read as follows:
5-1.1 Collocated Telecommunications Equipment. Collocated telecommunications equipment that is owned or leased and operated by other service providers, such as Competitive Local Exchange Carriers or Internet Service Providers, shall meet the requirements of this Standard.

SUBSTANTIATION: This is mostly providing information/definition. The definition portion should be moved to the definition section and this section should concentrate on the requirement.

COMMITTEE ACTION: Accept in Principle.
Revise text to read as follows:
5-1.1 Collocated Telecommunications Equipment. Collocated telecommunications equipment, installation, operation, and maintenance that is owned or leased and operated by other service providers, such as Competitive Local Exchange Carriers or Internet Service Providers, shall meet the requirements of this Standard.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-307 - (5-4.1) (New): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Add a new Section 5-4.1 as follows:
5-4.1 For purposes of application of NFPA 101 requirements, telecommunications equipment spaces, including technical support areas, shall be considered special purpose industrial occupancies.

SUBSTANTIATION: Additional guidance needs to be provided to users of this document as to what occupancy classification should be assigned to telecommunications equipment spaces for application of Life Safety Code requirements.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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76-308 - (5-5.3): Accept in Principle
RECOMMENDATION: Revise text as follows:
5-6 Where administrative, building service and support, and standby generator areas are provided in small telecommunications facilities, they shall be separated from telecommunications equipment spaces with by 1-hour fire resistive construction.

SUBSTANTIATION: Editorial and separation of multiple requirements into separate paragraphs.

COMMITTEE ACTION: Accept in Principle.
Revise text as follows:
5-6 Where administrative, building service and support, and standby generator areas are provided in small telecommunications facilities, they shall be separated from telecommunications equipment spaces with by 1-hour fire resistive construction.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the
RECOMMENDATION

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Delete the following text:
5-5.3 Compartmentation. Compartmentation shall not be required in small facilities.

SUBSTANTIATION: This paragraph is not necessary, and is in fact contradicted by requirements for “compartmentation” in Sections 5-5.3, and 5-6.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-310 (Log #CP14).


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: The level of detection is commensurate with the risk.

RECOMMENDATION: Accept in Principle.


COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: The committee feels that the level of detection is commensurate with the risk.

RECOMMENDATION: Accept in Principle.

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Electronic repairs (soldering, cable splicing, etc.) are standard procedures in telecommunications facilities. Hot work indeed requires special precautions.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-322 - (5-5.10): Reject
RECOMMENDATION: Delete Section 5-5.10 in its entirety.
SUBSTANTIATION: Smoke management systems are not required in small telecommunications facilities, and this paragraph could be confusing.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Where smoke control systems are used, they should be used in accordance with Chapter 6.

76-323 - (5-5.10): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text to read as follows:
5-5.10 Smoke Management. Smoke management systems shall be provided in accordance with Section 6-7. Smoke exhaust shall discharge to the outside of the building, away from fresh air intakes and building openings. The mechanical exhaust ventilation system shall be arranged for automatic activation, or manual activation from a location outside of the space.
SUBSTANTIATION: The deleted wording is more appropriately covered in the referenced Section 6-7.
COMMITTEE ACTION: Accept in Principle.
Revise text to read as follows:
5-5.10 Smoke Management. Where smoke management systems are used they shall comply in accordance with Chapter 6. Smoke exhaust shall discharge to the outside of the building, away from fresh air intakes and building openings. The mechanical exhaust ventilation system shall be arranged for automatic activation, or manual activation from a location outside of the space.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-324 - (5-5.10): Accept in Principle
SUBMITTER: John T. Myers, Allied Signal Avionics
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Where fire alarm systems are used, they should be used in accordance with NFPA 72.

76-325 - (5-6): Accept in Principle
SUBMITTER: Alden K. Breinholt, GTE
RECOMMENDATION: Revise text as follows:
A-6-3 Compartmentation is accomplished by the use of separation between floors and of hazard/occupancy areas within a floor such as telecommunications equipment spaces from administrative areas, and building support and service areas. The use of noncombustible construction is essential in restricting the spread of fire. Smoke tight construction is essential in restricting the spread of smoke.
6-3 Fire Resistance Rated Construction.
6-3.1 Fire Resistance Rated Construction. Where required, fire resistance rated construction (wall and floor/ceiling assemblies) shall be provided around designated spaces to prevent the spread of fire.
6-3.1.1 Fire Resistance Rated Construction. Where required, fire resistance rated construction (wall and floor/ceiling assemblies) shall be provided around designated spaces to prevent the spread of fire. The fire resistance rating of the assembly shall correspond to the highest rating required for the separated spaces. A fire resistance rated wall shall extend from the foundation or floor below to the underside of the roof or floor deck above with to provide a complete separation.
6-3.2 Protection of Fire Resistance Rated Construction Openings.
6-3.2.1 Doors. Doors shall be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows. The fire rating of the door assemblies shall correspond to the fire rating of the wall assemblies, as follows: 1-hour wall 1-hour fire resistance rated door assembly.
2-hour wall 1-1/2 hour fire resistance rated door assembly
3-hour wall 3-hour fire resistance rated door assembly
Doors shall be self-closing or automatic closing upon appropriate alarm signal activation.

6-3.2.2 Glazing Materials In Doors. Glazing materials in doors shall be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows.

6-3.2.3 Glazing Materials In Fire Resistance Rated Construction.
Glazing materials in fire resistance rated walls shall have an equal fire resistance rating as the wall or be protected with an automatic fire resistance rated shutter in accordance with NFPA 80, Standard for Fire Doors and Fire Windows. The fire resistance rating glazing material shall be fire tested to NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies. The fire resistance rated glazing material shall be listed and labeled.

6-3.2.4 Construction Joints. Joints in or between walls and floor/ceiling assemblies of fire resistance rated construction shall be fire tested in accordance with ASTM E 1996, Standard Test Method for Fire Resistant Joint Systems. The fire resistance rated joint systems shall be listed.

6-3.3 Penetrations in Fire Resistance Rated Construction.
6-3.3.1 Pipes, Conduits, Cables, and Cable Trays. Pipes, conduits, cables, and cable trays that penetrate fire resistance rated construction (walls or floor/ceiling assemblies) shall be protected with assemblies tested in accordance with ASTM E 814, Standard Test Method for Fire Test of Through-Penetration Fire Stops or NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials. The penetration fire stop systems shall be listed.

6-3.3.2 Heating, Ventilating, and Air Conditioning (HVAC) Systems. Fire dampers, smoke dampers, or combination fire/smoke dampers shall be used to protect penetrations of fire resistance rated walls, floor/ceiling assemblies, and smoke barriers created by HVAC system elements in accordance with NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems. Combination fire/smoke dampers in the affected area shall be automatically activated by automatic fire detection or a smoke management system.

The annular space around the HVAC system ductwork through fire resistance rated construction (e.g., walls, floor/ceiling assemblies) and smoke barriers shall be protected with a listed fire stop system in accordance with ASTM E 814, Standard Test Method for Fire Test of Through-Penetration Fire Stops or NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials. A-6-3.3.2 Automatic sprinklers and fusible links are a form of automatic fire detection.

SUBSTANTIATION: The changes proposed are intended to clarify the requirements for fire rated construction that is used to "compartment" the telecommunications facility. Proposed changes to Chapters 4 and 5 specified required fire resistive ratings for the construction of fire separations between spaces. Section 6-3 is intended to provide the details as to how this is to be accomplished.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial. Exterior buildings would be exposed. NFPA 220 uses the term limited combustible, not limited combustible assembly, in its definitions.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee feels the concern is exposure fires outside the building.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principal meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-333 - (6-3): Accept in Principle

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows: 6-3*. Compartmentation. Compartmentation is employed to reduce the likelihood of serious spread of fire within a telecommunications equipment building. It is accomplished by the use of separation of between floors and the separation of spaces with incompatible uses such as telecommunications equipment spaces from administrative areas and building support spaces including storerooms, and boiler rooms, standby engine rooms, power rooms, etc.

SUBSTANTIATION: Standby engine rooms and power rooms may be collocated with telecommunications equipment, therefore compartmentation should not be required.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-334 - (6-3): Accept in Principle

SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex

RECOMMENDATION: Delete second sentence to read as follows: "...by the use of separation of between floors..." power rooms, etc.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-335 - (6-3): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Revise Section 6-3 as follows: 6-3* Compartmentation. Compartmentation is employed to reduce the likelihood of serious spread of fire within a telecommunications equipment building. It is accomplished by the use of separation of between floors and the separation of spaces with incompatible uses such as telecommunications equipment spaces from administrative areas and building support spaces including storerooms, boiler rooms, standby engine rooms, power rooms, etc. Where required by other sections of this standard, telecommunications facilities shall be provided with compartmentation consisting of fire resistant rated walls, floor, and ceiling construction, with protected openings, in accordance with the following requirements:

6-3.1 Walls. 6-3.1.1 Fire Walls. Where required, fire walls shall be designed and constructed to remain stable after the collapse due to fire of the structure on either side of the wall. Fire walls shall meet the requirements of NFPA 721, Standard for Fire Walls and Fire Barriers Walls.

6-3.1.2 Fire Rated Construction Barrier Walls. Where required, fire rated walls, floor, and ceiling assemblies barrier walls shall be provided around designated spaces to prevent the spread of fire. The fire resistance rating of the assembly shall correspond to the highest rating required for the spaces so separated, with the level of fire resistance required by the hazards in the spaces or the contents being protected. A fire barrier wall shall extend from the foundation or floor below to the underside of the roof or floor deck above to provide a complete separation, with an allowance for the termination at a structural member that has a fire resistance rating of not less than that of the fire barrier wall.

6-3.2 Protection of Wall Openings. 6-3.2.1 Doors. Doors shall be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows, that are required to complete the fire resistance rating of the fire barrier wall or fire wall. The fire door should be listed and labeled with an independent test laboratory. The fire rating of the door assemblies shall correspond to the fire rating of the wall assemblies, as follows:

1-hour wall 1-hour fire rated door assembly
2-hour wall 1-1/2 hour fire rated door assembly
3-hour wall 3-hour fire rated door assembly

Doors shall be self-closing, or automatic closing upon smoke detection system activation.

6-3.2.2 Glazing Windows In Doors. Glazing windows in doors shall be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows.

6-3.2.3 Windows In Walls. Windows in fire resistant rated wall assemblies barrier walls and fire walls shall be of equal fire rating as the wall or protected with an automatic fire rated shutter in accordance with NFPA 80, Standard for Fire Doors and Fire Windows. The fire rated glass shall be fire tested to NFPA 257, Standard on Fire Tests for Window and Glass Block Assemblies. The fire rated window should be listed and labeled with an independent testing laboratory.

6-3.2.4 Construction Joints. Joints in or between fire barrier walls and fire walls shall be fire tested to ASTM E 1966, Standard Test Method for Fire Resistant Joint Systems. The fire rated joint system should be listed and labeled with an independent test laboratory.

6-3.3 Penetrations.

6-3.3.1 Pipes, Conduits, and Cables. Pipes, conduits, cables, and cable trays that penetrate fire walls or fire barrier walls shall be provided with protection in accordance with ASTM E 814, Standard Test Method for Fire Test of Through-Penetration Fire Stops. The penetration protection shall be listed with an independent laboratory.

6-3.3.2* Heating, Ventilating, and Air Conditioning (HVAC) Systems. Combination fire/smoke dampers shall be used to protect penetrations of fire-rated walls, fire barriers, floor/ceiling assemblies, and smoke barriers by creating the penetration of HVAC system duct work and air transfer openings elements in accordance with NFPA 91A, Standard for the Installation of Air Conditioning and Ventilating Systems. The penetration of the HVAC system elements through all fire rated walls, fire barrier walls, floor, ceiling assemblies, and smoke barriers shall be sealed with a listed fire stop system in accordance with ASTM E 814, Standard Test Method for Fire Test of Through-Penetration Fire Stops. Combination fire/smoke dampers in the affected area shall be automatically activated upon activation of the by the alarm signal of fire detection system.

6-3.4 Exterior Protection.

6-3.4.1 Parapets. Fire walls shall be finished with parapets in accordance with NFPA 221, Standard for Fire Walls and Fire Barrier Walls.
6.3.4.2 Roof Surface Protection. The roof surface shall be protected in accordance with NFPA 221, Standard for Fire Walls and Fire Barrier Walls.

6.3.4.3 Roof-Mounted Structures. Combustible roof mounted structures of equipment shall meet the distance requirements from fire walls and fire barrier walls, and fire resistance ratings in accordance with NFPA 221, Standard for Fire Walls and Fire Barrier Walls.

6.3.4.4 Roof Penetrations. Heat and smoke vents, skylights and unprotected roof penetrations for air handling equipment or smoke control systems shall meet the distance requirements from fire walls and fire barrier walls and fire resistance ratings in accordance with NFPA 221, Standard for Fire Walls and Fire Barrier Walls.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-338 - (6-3.1.2): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“...Where required, fire barrier walls shall be provided around designated spaces to prevent the spread of fire with the level of fire resistance required by the hazards in the spaces or the contents being protected. A fire barrier wall...”.

COMMITTEE ACTION: To agree with action taken in Albuquerque and not reflected in this draft proposal.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-339 - (6-3.2.1): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“NFPA 80, Standard for Fire Doors and Fire Windows, that are required to complete the fire resistance rating of the fire barrier wall or firewall.”

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-340 - (6-3.2.3): Accept in Principle in Part

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“Windows in fire barrier walls and fire walls shall be of equal fire resistance rating as the wall or be protected with an automatic fire resistance rated shutter... The fire resistance rated glass shall be...

The fire resistance rated window shall be... The fire resistance rated window shall be... with an independent testing laboratory. Windows shall not be permitted in fire walls.”

SUBSTANTIATION: Editorial. I don’t think we want to allow windows in fire walls.

COMMITTEE ACTION: Accept in Principle in Part.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-341 - (6-3.2.4): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

“...the fire resistance rated joint system... with an independent testing laboratory.”

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.
RECOMMENDATION
Alliance of American Insurers


RECOMMENDATION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: "Utilization of very early warning fire detection methods systems with an alert (pre-alarm) condition allows for an initial response by authorized personnel to an alert (pre-alarm) condition to be made."

COMMITTEE ACTION: Accept in Principle.

76-345 - (6-4.1.3): Accept in Principle

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows:

"...transmission to an approved Supervising Station."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

76-346 - (6-4.2): Accept in Principle


RECOMMENDATION: Revise text to read as follows:

"...transmission to an approved Supervising Station."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

76-347 - (6-4.2): Accept in Principle

SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex

RECOMMENDATION: Revise text to read as follows:

"...transmission to an approved Supervising Station."

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.
Fire alarm initiating devices, where designated as such (duct smoke detectors, etc.)
-
Sprinkler valve supervisory switches (off normal position)
-
Fire pump off-normal conditions, etc.
-
Other safety systems

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Clarification – telecommunication equipment alarms were mentioned before this clause. Therefore, this statement should identify that the requirement only applies to the fire alarms.

COMMITTEE ACTION: Accept in Principle.

RECOMMENDATION: Revise text to read:
6-4.2.3.1 Disposition of fire alarm system trouble signals shall conform to the requirements of NFPA 72, National Fire Alarm Code.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial. Makes the paragraph more direct.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial. The proposed standard was changed limited to,...

COMMITTEE ACTION: Accept in Principle in Part

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle in Part

SUBSTANTIATION: Where required, notification of the local fire department shall be provided. Where monitoring systems provide the supervising station with detailed trouble information which allows determination of the degree of system impairment (such as critical failure, loss of primary power, or dirty smoke detector), response is permitted to be delayed until the next working day where it is determined that the
6-4.3.2 and 6.4.3.3. In section 6.4.3.3 also change Chapter 4 to 5.

COMMITTEE ACTION: Accept in Principle in Part.
Revise text to read as follows:

6-4.2.3.4 Where required, notification of trouble conditions to the local fire department shall be provided. Where monitoring systems provide the supervising station with detailed trouble information which allows determination of the degree of system impairment (such as critical failure, loss of primary power, or dirty smoke detector), response is permitted to be delayed until the next working day where it is determined that the trouble does not affect the ability to detect and report a fire condition.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-357 - (6-4.3 Exception (b)): Reject
SUBMITTER: Alden K. Breinholt, GTE
RECOMMENDATION: Revise text as follows:

"Where the distance between the fire control panel and the telephone equipment, which process the signal to be sent to the supervising station is no more than 3 feet, are verified semi-annually."

SUBSTANTIATION: Verification of the signal on a semi-annual basis provides reasonable verification of the signal’s integrity. Most telecommunication equipment requires ground to generate a signal. This change allows continued methods of signaling to remain within the industry. There is no fire history within the industry that is a result of signaling integrity.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Consistent with the requirement found in NFPA 72, National Fire Alarm Code, for monitoring systems.

76-357a - (6.4.5.1; 6.4.3.2; 6.4.3.3): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: The word “exception” is missing in 6.4.3.1, 6.4.3.2 and 6.4.3.3. In section 6.4.3.3 also change Chapter 4 to 5.
SUBSTANTIATION: Clarity.
COMMITTEE ACTION: Accept.

76-358 - (6-5.1): Accept in Principle
RECOMMENDATION: Revise text as follows:

6-5.1* General. For telecommunications facilities, fire detection systems shall be designed, installed, and maintained to provide one of three levels of protection as required in Chapters 4 and 5. The levels of protection are:

1. Very early warning fire detection (EWFD),
2. Early warning fire detection (EWFD),
3. Standard fire detection (SFD).

This section establishes requirements for each level of protection and provides suggested design and installation requirements for meeting the objectives of this Standard.

SUBSTANTIATION: Remove redundant wording from the paragraph.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-359 - (6-5.2.1): Accept in Principle
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
RECOMMENDATION: Revise text to read as follows:

"...shall utilize one sensors or ports."

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-360 - (6-5.3.1): Reject
SUBMITTER: Lawrence A. McKenna, Jr., Hughes Assoc., Inc.
RECOMMENDATION: Revise installation criteria for VEWF systems based on research results.
SUBSTANTIATION: An in-situ study of smoke detector activation has recently been completed. The data collected during this study is still being analyzed, and will be made available to the full committee at the September meeting. Preliminary analysis of the results shows that there is need to revise this section of the document. The report of this study will be presented to the committee at the September committee meeting, along with specific proposals for revised text based on the experimental results.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: No submitted text.

76-361 - (6-5.3.1.2): Reject
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise text as follows:

6-5.3.1.2* Every sensor or port installed in a space shall be limited to a maximum coverage area of 200 sq ft; spacing at 14 ft by 14 ft.

Exception: When two or more levels (high and low) of ports or sensors are provided, each level shall be limited to a maximum coverage of 400 sq ft or less per port or sensor. Typically the coverage limitation between high and low levels shall be limited to 200 sq ft for staggered ports or sensors are staggered arrangements between each level.

Exception: If the facility is constructed of 20 ft x 20 ft bays, no more than two sensors or ports shall be required per bay.
SUBSTANTIATION: By specifying 200 sq ft max per sensor/port, this creates a problem in most central offices with 20 x 20 bays, since the spacing guidelines in NFPA 72 require that no point be more than 0.7 x the max spacing away from the detector. Therefore, sensor/port spacing would have to be 14 ft max. It would require 7 ft.
spacings from walls. It would be impossible to overlay this spacing on a grid of 20 x 20 bays in any way that makes sense. This would not allow 2 sensors/ports in deep 20 x 20 bays, rather 4 would be required to be in compliance with both NFPA 72 and NFPA 76. Several other changes suggested for consistency.

COMMITTEE STATEMENT: Smoke detector spaces listed at 30 ft spacing are permitted to be 21 ft from any point. The 20 ft X 20 ft requirement is more restrictive but complies with the requirements of NFPA 72.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The deleted wording is more appropriate in an appendix, not in the charging paragraph of this section. The deleted wording is more appropriate in an appendix, not in the charging paragraph of this section.

COMMITTEE ACTION: Accept in Part.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: For clarity and consistency with 6-5.3.1.4.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Accept "no greater than".

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
COMMITTEE ACTION: Accept in Principle.

Text will now read as follows:
6-6.1* General. Where provided, fire suppression systems shall comply with the requirements of this section.

A-6-6.1 This section provides for the use of automatic or manual fire suppression equipment as tools available to be used as fire safety elements in a fire protection plan for a telecommunications facility.

COMMITTEE STATEMENT: Fire suppression systems in these spaces, whether required or not, should comply with the NFPA installation standards due to the nature of these facilities.

The deleted wording is more appropriate in an appendix.

The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-369 - (6-6.2.1.1): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.

RECOMMENDATION: Revise text as follows:
6-6.2.1.1 Automatic fire suppression systems provided in telecommunications facilities shall be selected with due consideration given to the hazards being protected and the impact of the agent on energized telecommunications equipment. Carefully designed, installed, and maintained facilities shall be protected from accidental discharge of extinguishing agents to prevent damage to equipment or danger to personnel. Facilities shall be protected from accidental discharge of the systems due to false alarms, mechanical damage, and leakage.

SUBSTANTIATION: The proposed wording more effectively conveys the intent of this section.

COMMITTEE ACTION: Accept in Principle.

Revise text as follows:
6-6.2.1.1 Automatic fire suppression systems provided in telecommunications facilities shall be selected with due consideration given to the hazards being protected and the impact of the agent on energized telecommunications equipment. Carefully designed, installed, and maintained facilities shall be protected from accidental discharge of extinguishing agents to prevent damage to equipment or danger to personnel. Facilities shall be protected from accidental discharge of the systems due to false alarms, mechanical damage, and leakage.

COMMITTEE STATEMENT: Recommendation should apply to all energized equipment.

The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-373 - (6-6.2.2.4): Reject  
SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.  
RECOMMENDATION: Revise text as follows:  
"...the floor above telecommunications space shall be waterproofed and penetrations through the floor shall be sealed to prevent water damage. Precautions shall be taken to minimize penetration of water from the floor above."

SUBSTANTIATION: This requirement is virtually impossible in occupied, multi-tenant buildings.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Inappropriate in a fire protection standard. (See 76-375, Log #CP38).

76-374 - (6-6.2.2.4): Reject  
SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.  
RECOMMENDATION: Revise text as follows:  
6-6.2.2.4* Where telecommunications facilities are installed in multi floor buildings containing automatic sprinkler systems the floor above the telecommunications space shall be waterproofed and penetrations through the floor shall be sealed to prevent water damage to the telecommunications equipment.

SUBSTANTIATION: If equipment needs to be protected from water on the floor above, it should be protected from all sources of water including leaks in plumbing systems. There was a large boiler explosion at a Kansas City utility which was in part believed to be due to wetting down the burner management system. A toilet backed up in the control room. The waste water flowed through openings in the floor to the computer room and through openings in the control room floor to the burner management system. Workers were cleaning the burner management system when the gas shutoff valve opened introducing gas into the boiler.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Inappropriate in a fire protection standard. (See 76-375, Log #CP38).

76-375 - (6-6.2.2.4): Accept  
SUBMITTER: Technical Committee on Telecommunications
| RECOMMENDATION: Delete 6-6.2.2.4.
| SUBSTANTIATION: Inappropriate in a fire protection standard.
| COMMITTEE ACTION: Accept.

76-376 - (6-6.2.2.5 (New)): Reject  
SUBMITTER: Walter Schachtschneider, Bell Canada  
RECOMMENDATION: Add the following text:  
6-6.2.2.5 Where fire sprinkler systems are provided above or on adjacent floor space to main AC or DC power rooms, those rooms shall be provided with floor drains and curbs.
6-6.2.2.5A Floor drains will allow for rapid removal of water following sprinkler discharge which will expedite the restoration process.

SUBSTANTIATION: None given.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Environmental concerns.

76-377 - (6-6.2.3.1): Reject  
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
| RECOMMENDATION: Revise text to read as follows:  
"Where required, clean agent extinguishing..."
| SUBSTANTIATION: Editorial - The standard doesn’t require suppression.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Clean agent systems may be appropriate for certain telecommunications applications.

76-378 - (6-6.2.3.1): Accept in Principle  
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
| RECOMMENDATION: Revise text as follows:  
6-6.2.3.1* Where provided required, clean agent extinguishing systems shall be designed, installed, and maintained in accordance with the requirements of NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems.

SUBSTANTIATION: Fire suppression systems in these spaces, whether required or not, should comply with the NFPA installation standards due to the nature of these facilities.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-379 - (6-6.2.3.1): Reject  
SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.
| RECOMMENDATION: Revise text to read as follows:  
"Where required, Halon systems..."
| SUBSTANTIATION: Editorial - suppression not required by the standard.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Clean agent systems may be appropriate for certain telecommunications applications.

76-380 - (6-6.2.4.1): Accept in Principle  
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
| RECOMMENDATION: Revise text as follows:  
6-6.2.4.1* Where provided required, Halon Systems shall be designed, installed, and maintained in accordance with NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems.

SUBSTANTIATION: Fire suppression systems in these spaces, whether required or not, should comply with the NFPA installation standards due to the nature of these facilities.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-380a - (6-6.2.4.1): Accept  
SUBMITTER: Technical Committee on Telecommunications
| RECOMMENDATION: In the first line, change the word "required" to "provided."
| SUBSTANTIATION: Intent. Halon systems are never required in any hazard areas.

COMMITTEE ACTION: Accept.
76- 381 - (6-2.5.1): Reject

SUBMITTER: Kevin T. Callery, Rolf Jensen & Assoc.

RECOMMENDATION: Revise text to read as follows: “Where acquired, all water must fire...”.

SUBSTANTIATION: Editorial - suppression not required.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Water mist systems may be appropriate for certain telecommunications applications.

76- 382 - (6-2.5.1): Accept in Principle

SUBMITTER: Michael J. Madden, Gage-Bahcock & Assoc.

RECOMMENDATION: Revise text as follows:

6-2.5.1 Where provided required, all water mist fire protection systems shall be installed in accordance with the requirements of NFPA 750, Standard on Water Mist Fire Protection Systems.

SUBSTANTIATION: Fire suppression systems in these spaces, whether required or not, should comply with the NFPA installation standards due to the nature of these facilities.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76- 383 - (6-2.5.2): Accept in Principle

SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.

RECOMMENDATION: Revise text as follows:

6-2.5.2 Water mist fire protection systems shall be designed and installed for the specific hazards and protection objectives specified in the listing, listed for use with the equipment they are designed for protection.

SUBSTANTIATION: Clarification.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76- 384 - (6-3.1.3 (New) ): Reject

SUBMITTER: Walter Schachtschneider, Bell Canada

RECOMMENDATION: Add the following text:

6-3.1.3 Minimum number of portable fire extinguishers in a facility shall be the maximum number required in the testing standard used in Section 6-8.3.

6-3.1.3A Some testing standards require that an equipment bay fire be extinguished with the use of 3 10BC extinguishers. If this standard is used for all the equipment in the facility, then 3 10BC extinguishers shall be the minimum in that facility.

SUBSTANTIATION: There should be a coordination between equipment standards and fire protection requirements.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The standard referenced has been withdrawn.

76- 384a - (6-7.1): Accept

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: In the last 2 lines, change “power control and distribution areas” to “Main Distribution Frame and Power Areas” and move last sentence to annex.

SUBSTANTIATION: Clarity. Other terms are not used in standard.

COMMITTEE ACTION: Accept.

76- 385 - (6-7.2.1): Accept in Principle


RECOMMENDATION: Revise text as follows:

“Operation of the smoke management system installed in the telecommunications equipment space, power area, main distribution frame space, or standby engine area shall be automatically activated or manually activated from a location outside of the space. outside...”

SUBSTANTIATION: Editorial, to align the section with the requirements of 4-5.10, 4-7.10, 4-8.10, and 4-9.10.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76- 386 - (6-7.2.2): Accept in Principle

SUBMITTER: Lawrence A. McKenna, Jr., Hughes Assoc., Inc.

RECOMMENDATION: Revise text as follows:

6-7.2.2 Where mechanical exhaust systems are installed, a source of laminar flow make-up air shall be provided. Make-up air shall be introduced as close to floor level as possible. Make-up air inlets shall be designed so that the velocity of the supplied air does not exceed 200 fpm, and to take maximum use of the mixing and dilution effects created. Where outside air is used, consideration shall be given to conditioning the outside air to provide an environment that would be similar during regular operations to avoid temperature shocks to electronic equipment.

SUBSTANTIATION: (1) Laminar flow is unnecessarily expensive and adds little benefit in a smoke control system. The issue of greatest concern is the potential for the incoming air to bend or deflect the rising smoke plume. If the plume is deflected by fresh air supply, the quantity of smoke produced will be exponentially greater than a smoke exhaust system designed to handle an undeflected plume.

(2) The location of the make-up air inlets and the exhaust outlets is a matter best decided on a case-by-case basis, based on an engineering analysis, and not by this document.

(3) There is no basis for requiring all outside air to be conditioned. This decision should be left to the owner, based on weather and other related data.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
76-390 - (6-8.1): Accept in Principle

SUBMITTER: Technical Committee on Telecommunications

RECOMMENDATION: Combine 6-8.1 General with 6-8.1.1 so it will read: 6-8.1 General. Where required by a performance design in accordance with Chapter 3 or to meet the requirements of Chapters 4 or 5 of this standard, the equipment, ables, wiring, and associated components shall comply with the provisions of this section. This section discusses the procedures and test methods used to quantify ignition and fire resistance in equipment.

The Appendix 6-8.1.1 should be renumbered as 6-8.1.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-391 - (6-8.1.1): Accept in Principle

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: Insert the words “a performance design in accordance with Chapter 3 or to meet the requirements of” before the words “Chapters 4 or 5.”

SUBSTANTIATION: Permits a user of Chapter 3 to require the fire characteristics of equipment and cables as described in Section 6-8. It is permissive.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.
COMMITTEE ACTION: Accept. 8.2.3 and include in Paragraph 6-8.2.3 as items (a), (b), and (c).

SUBSTANTIATION: Move done for editorial reasons.

COMMITTEE ACTION: Accept.

76-398 - (6-8.2.3): Accept in Principle
SUBMITTER: Elaine Thompson, Allied Tube & Conduit
RECOMMENDATION: Revise text: “Nonmetallic conduit and trays used for optical fiber cable shall comply with the following:”

SUBSTANTIATION: Metal conduit and tray may be used for this purpose but testing is not required because metal conduit and tray is considered noncombustible. The recommended change will clarify that only nonmetallic conduit and tray needs to comply with 6-8.2.3.1, 6-8.2.3.2, and 6-8.2.3.3.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-396 (Log #CP24).

76-399 - (6-8.2.3.1): Accept in Principle
SUBMITTER: Elaine Thompson, Allied Tube & Conduit
RECOMMENDATION: Revise text: “Nonmetallic trays shall meet the requirements for Limited Smoke (OFNG) as specified in UL 1685, state name, and the vertical tray test (OFN) specified in UL 1581, state name.”

SUBSTANTIATION: Metal tray may be used for this purpose but testing is not required because metal tray is considered noncombustible. The recommended change will clarify that only nonmetallic tray needs to comply with 6-8.2.3.1, 6-8.2.3.2, and 6-8.2.3.3.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-396 (Log #CP24).

76-400 - (6-8.2.3.2): Accept in Principle
SUBMITTER: Elaine Thompson, Allied Tube & Conduit
RECOMMENDATION: Revise text: “Nonmetallic conduit for optical fiber installed in plenums shall comply with UL 910 (OFNP), state name.”

SUBSTANTIATION: Metal conduit may be used for this purpose but testing is not required because metal conduit is considered noncombustible. The recommended change will clarify that only nonmetallic conduit needs to comply with 6-8.2.3.1, 6-8.2.3.2, and 6-8.2.3.3.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-396 (Log #CP24).

76- 401 - (6-8.3.1): Accept in Principle
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read:
6-8.3.1* Major telecommunications equipment shall meet the fire resistance criteria specified in ANSI T1.307-1997, Fire Resistance Criteria – Ignitability Requirement for Equipment Assemblies and Fire Spread Requirements for Wire and Cable, systems, including switching systems, transmission systems, multiplexers, fiber optic equipment, Network Control Points (NCP’s), and similar equipment not otherwise discussed in Section 6.3 of this standard. Switching and transmission equipment shall be tested for fire propagation hazard using the methodology of standard. The pass/fail criteria for this requirement shall be... using the methodology of standard. The pass/fail criteria for this requirement shall be... Other equipment may be evaluated using pertinent standards referenced in Appendix C.
SUBSTANTIATION: ANSI T1.307 summarizes requirements for materials used in all telecommunications equipment and wires/cables. This is the base standard referencing various industry standards for fire testing of materials.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-405 (Log #CP45).

76- 402 - (6-8.3.1): Reject
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Delete the following text:
"The pass/fail criteria for this requirement shall be..."
SUBSTANTIATION: Sentence is incomplete and should be removed.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-405 (Log #CP45).

76- 403 - (6-8.3.1): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Change the word “discussed” to “described” and add at the end to complete the sentence, "...the Frame Level Fire Resistance Criteria and Shelf Level Fire Resistance Criteria stated in Bellcore GR-63-CORE Issue 1, October 1995."
SUBSTANTIATION: Completes the requirement.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-405 (Log #CP45).

76- 404 - (6-8.3.1): Accept
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Add wording to complete sentence.
"...requirement shall be as referenced in ANSI T1.319(1995)"
SUBSTANTIATION: To complete missing part of paragraph.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-405 (Log #CP45).

76- 405 - (6-8.3.1): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise text to read as follows:
SUBSTANTIATION: The changes proposed are intended to clarify the requirements for fire rated construction that is used to "compartment" the telecommunications facility. Proposed changes to Chapters 4 and 5 specified required fire resistive ratings for the construction of fire separations between spaces. Section 6.3 is intended to provide the details as to how this is to be accomplished.
COMMITTEE ACTION: Accept.

76- 406 - (6-8.3.1.1 (New)): Reject
SUBMITTER: Christopher Saleem, Cisco Systems, Inc.
RECOMMENDATION: Add the following text:
6-8.3.1.1 Shelf Type Equipment. Shelf type equipment with power consumption less than 250 VA installed as part of the telecommunications network shall meet the requirements of UL 1950 (or the newly proposed CSA, UL 60950), Safety of Information Technology Equipment, and the requirements of ANSI T1.307-1997.
SUBSTANTIATION: The fire test specified in ANSI T1.319-1995 is intended to evaluate the fire propagation and smoke contamination properties of large equipment employing vertically mounted line cards. This test method is not appropriate for small equipment with horizontally mounted PCBs since the fuel load represented by the burner exceeds the available fuel load in the equipment, and the orientation of the PCBs is inconsistent with the test configuration of ANSI T1.319-1995.
By combining the requirements of UL 1950 with those of ANSI T1.307-1997, likelihood of propagation of fire and smoke contamination will be minimized, as UL 1950 compliance will ensure an adequate fire enclosure and ANSI T1.307-1997 will address ignitability requirements of the materials used.
The power consumption level of 250 VA was chosen based on current power supply technology which can yield a power density of about 2.5W per cubic inch. Thus, the size of the equipment which the requirement applies is constrained by spatial limitations which results from (1) the ten cubic inches required for the power supply, (2) the shelf size limitation of the typical 19 in. rack, and (3) the power limitation of 250 VA.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: All equipment types are addressed in Committee Proposal 76-405 (Log #CP45).

76- 407 - (6-8.3.2): Accept
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Delete the following text:
6-8.3.2* Major equipment systems, including switching systems, transmission systems, multiplexers, fiber optic equipment, Network Control Points (NCP’s), and similar equipment not otherwise discussed in Section 6.3 of this standard shall comply with the electrical safety requirements contained in Bellcore Standard GR
76-410 - (6-8.4): Accept

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1

RECOMMENDATION: Delete the following text:

6-8.4 Direct Current (DC) Power Systems: DC power systems shall comply with the requirements of ANSI T1.311-1991, DC Power Systems - Telecommunications Environment Protection.

SUBSTANTIATION: All equipment in telecommunications spaces covered by new proposed wording of 6-8.3.1. List of referenced standards are in Appendix C.

COMMITTEE ACTION: Accept.

76-411 - (6-8.5): Accept

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee TIE1

RECOMMENDATION: Delete the following text:

6-8.5 Computer Systems: Computer systems installed as a part of the telecommunications network shall meet the requirements of UL 1950, Safety of Information Technology Equipment, Including Electrical Business Equipment, and UL 1459, Telephone Equipment.

SUBSTANTIATION: All equipment in telecommunications spaces covered by new proposed wording of 6-8.3.1. List of referenced standards are in Appendix C.

COMMITTEE ACTION: Accept.

76-412 - (6-8.5): Reject

SUBMITTER: Charles A. Yaunches, Bell Atlantic Corp.

RECOMMENDATION: Revise text as follows:

6-8.5 Computer Systems. Computer systems installed as a part of the telecommunications network shall meet the (SAME) requirements as the telecommunications equipment specified in 6-8.3.1) of UL 1050, Safety of Information Technology Equipment, Including Electrical Business Equipment, and UL 1459, Telephone Equipment.

SUBSTANTIATION: All equipment in telecommunication’s areas should be required to meet the same requirements as the equipment.

COMMITTEE ACTION: Reject.

76-413 - (7-1): Accept in Principle


RECOMMENDATION: Revise text as follows:

“7-1 Fire Prevention. Telecommunications equipment buildings facilities shall implement an acceptable level of fire prevention measures and shall be...”

SUBSTANTIATION: Scope of the document addresses telecommunications facilities. Telecommunications equipment buildings could refer to a storage building for telecommunications equipment. No quantification of acceptable level and to whom the level must be acceptable to.

COMMITTEE ACTION: Accept in Principle.

76-414 - (7-1.1): Accept

SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T

RECOMMENDATION: Revise text to read as follows:

“7-1.1 Housekeeping. All combustibles shall be kept to a minimum. They shall be removed daily or, when necessary, be stored appropriately in properly protected storage rooms, or metal non-combustible storage cabinets, storage bins, or listed refuse containers.

SUBSTANTIATION: Aligns with requirements of Chapter 7, Fire Prevention, 7-1.1. This requirement achieves the objective at a reasonable cost and availability. Allows small quantities of storage as long as they are kept in non-combustible cabinets. This controls and reduces the exposures.

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COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Improved text for clarity.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

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SUBSTANTIATION: Improved text for clarity.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

SUBSTANTIATION: Improved text for clarity.
COMMITTEE ACTION: Accept in Principle.

76-423 - (7-1.8): Accept


RECOMMENDATION: Delete the second sentence of the second paragraph.

“(For use and guidance of flammable/combustible liquids within telecommunications spaces see NFPA 30, Flammable and Combustible Liquids Code.)”

SUBSTANTIATION: Repeats requirement stated in the first paragraph.

COMMITTEE ACTION: Accept.

76-424 - (7-1.10): Accept in Principle

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: Change “must” to “shall” and change ; delete the period (.) after the word “provided,” and change the word “Reference” to “in accordance with.”

SUBSTANTIATION: Better text for the standard requirement.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-425 - (7-1.11): Accept in Principle


RECOMMENDATION: Revise text as follows:

“The owned portions of exterior land of ground telecommunications buildings shall be maintained free of combustible vegetations (brush, weeds) and combustible products.”

Exception: Where local ordinances require certain landscaping that is part of a “beautification initiative,” or in common alleys where the telecommunications company has no authority over its neighbors.

SUBSTANTIATION: This change allows for situations that may be out of the telecommunications company’s control.

COMMITTEE ACTION: Accept in Principle.

76-428 - (7-2): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

RECOMMENDATION: Revise text to read:

“Listed electrical fittings, materials and equipment shall be used. As a minimum, the installation and maintenance of electrical equipment and wiring, etc., shall be in accordance with applicable requirements of NFPA 70, National Electrical Code such as the use of listed electrical fittings, materials and equipment.”

SUBSTANTIATION: Text has been rearranged and combined into a single sentence to make it easy to read and understand. The requirements for “Listed electrical fittings, materials and equipment” are included in NFPA 70. The two sentences were redundant.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-427 - (7-2): Accept in Principle

SUBMITTER: Percy E. Pool, GTE

RECOMMENDATION: Revise text to read:

“Listed electrical fittings, materials and equipment shall be used. As a minimum, the installation and maintenance of electrical equipment and wiring, etc., shall be in accordance with applicable requirements of NFPA 70, National Electrical Code such as the use of listed electrical fittings, materials and equipment.”

SUBSTANTIATION: Text has been rearranged and combined into a single sentence to make it easy to read and understand. The requirements for “Listed electrical fittings, materials and equipment” are included in NFPA 70. The two sentences were redundant.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-428 - (7-2): Accept in Principle

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: Delete “etc.” and add the words “for nontelecommunications electrical equipment” in the first sentence after the word “used” and in the second sentence to replace the word “etc.”

SUBSTANTIATION: More clearly describes the requirement.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The
committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-432 - (7-4): Accept in Principle
RECOMMENDATION: Revise text as follows:
7-4* Construction and Alterations. All construction and alteration projects, operations shall comply with NFPA 241. Standard for Safeguarding Construction, Alteration, and Demolition Operations. All projects shall be carefully reviewed by management to ensure conformance with all codes, regulations, and company standards.
A-7-4 Construction and alteration projects may pose an additional risk exposure to a telecommunications site facility.
SUBSTANTIATION: Last sentence of existing paragraph is information, not a requirement.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-433 - (7-5): Accept in Principle
RECOMMENDATION: Revise text to read as follows:
7-5 Education and Training. All employees shall receive education information regarding fire prevention policies, procedures, and fire hazards. In accordance with OSHA requirements, in circumstances regarding specially assigned tasks, additional education and training shall be provided.
SUBSTANTIATION: The original requirement was overly restrictive. This change aligns the requirements for telecommunications with any other occupancy.
COMMITTEE ACTION: Accept in Principle.

76-434 - (7-7): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete the section and renumber the following sections.
SUBSTANTIATION: The requirement is redundant with the requirements or objectives of other chapters and the “rules” are not included in the text.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Means of egress should comply with NFPA 101 and it does not appear to be redundant.
76-435 - (7-7): Accept in Principle
SUBMITTER: Ronald Marts, Telcordia Technologies, Inc.
RECOMMENDATION: Revise text to read as follows:
7-7* Means of Egress. All facilities or portions thereof, whether owned or leased, shall comply with the following general rules of egress should be followed: applicable provisions of NFPA 101, the Life Safety Code. Delete Appendix A-7-7.
SUBSTANTIATION: Clarification and simplification of otherwise awkward wording.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a submitter. The committee believes that accepting in principle meets the intent of the submitter. See committee proposal 76-540.

76-436 - (7-7): Accept in Principle
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text as follows:
7-7* Means of Egress. All means of egress facilities or portions thereof, whether owned or leased, shall be maintained in accordance with the requirements of NFPA 101, Life Safety Code. Comply with the following general rules of egress:
SUBSTANTIATION: The proposed wording clarifies the intent of this section.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540. The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-437 - (7-8.3): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete “UL.”
SUBSTANTIATION: The term Listed stands alone.
COMMITTEE ACTION: Accept.

76-437a - (7-9): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Exception No. 1. In third line after “shall be” insert “permitted and shall be.”
SUBSTANTIATION: Clarity and intent.
COMMITTEE ACTION: Accept.

76-438 - (7-9.1): Accept
RECOMMENDATION: Delete entire 7-9.1.
SUBSTANTIATION: This repeats what the exception to 7-9 addresses.
COMMITTEE ACTION: Accept.

76-439 - (7-9.1): Accept in Principle
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Delete entire 7-9.1.
SUBSTANTIATION: To eliminate redundancy. Also appears in 7-9 Exception No. 1.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-438 (Log #190).

76-440 - (7-10): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Continue the sentence “or hazard area.”
SUBSTANTIATION: More complete statement of intent.
COMMITTEE ACTION: Accept.

76-441 - (7-10.1): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete the word “horns” or clarify what they are.
SUBSTANTIATION: The sentence does not make sense to someone not familiar with metal horns.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: It is well known in the industry, what horns are.

76-441a - (Chapter 8): Accept in Principle
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise Chapter 8 to read as follows: Chapter 8 Pre-Fire Planning, Damage Control, and Emergency Recovery
8.1* General. Management of each facility shall develop and implement a written Pre-Fire Plan. This plan shall be reviewed and updated annually or where necessary because of personnel changes, management structure realignment, or facility changes. All employees of the facility shall be provided with appropriate information regarding their emergency assignments, relocation, or evacuation during an emergency. This plan shall identify authority responsibilities and actions of employees to ensure the safety of themselves and all occupants of the facility. Based upon local management conditions and required compliance with local, state and federal regulations, all required documentation shall be in writing and approved by the management of the facility.
An effective pre-fire plan shall include the following:
(a) Identification of an emergency contact and telephone number.
(b) Life safety issues of the occupants of the facility.
(c) Life safety of the responding firefighters to the facility.
(d) Life safety issues of the community provided by the telecommunications facility through this normal operation and its continuity during fire emergencies, (i.e., 911 type services)
For large facilities, the plan shall include an annual exercise to ensure that management and staff can implement and work with the plan and incorporate lessons learned from the exercise into an updated plan.
8.2 Fire Safety Manager. Management shall appoint a fire safety manager who is responsible for the protection of the facility from fire. The fire safety manager’s duties shall include the following: pre-fire planning, life safety systems, fire prevention programs, fire inspections, periodic property surveys, proper operation of fire suppression and detection equipment and portable fire extinguishers. Other duties shall include, where requested, the familiarization of the local fire department personnel with the unique
aspects of telecommunications buildings and the switching facilities contained therein.

8.3* Life Safety of Occupants of the Facility. As part of the pre-fire plan, a building evacuation procedure shall be developed and exercised to ensure the safe evacuation for facility occupants in cooperation with the local fire department and other applicable authorities and updated annually. All employees shall receive adequate education orientation regarding the building evacuation procedure. In circumstances regarding specially assigned tasks, education orientation shall be provided to ensure the safety of the employees and occupants of the facility during an emergency incident. Additional orientation shall be provided when required. Fire drills shall be conducted annually at the facility for all employees (see NFPA 101, Life Safety Code, for exemptions for number of occupants). Records shall be maintained for these activities.

8.4* Fire Safety of Firefighters. Where requested by the local fire department, the following shall be provided:
(a) A general description of the equipment within the building and how it’s powered.
(b) An up-to-date drawing of all vital equipment and equipment areas.
(c) Recommended actions to be taken concerning ventilation and contamination of areas not affected by the fire.

8.4.1* Fire Service Education, Orientation and Information. When requested by the local fire department, orientation and information shall be provided to the fire personnel by the company management as follows:
(a) A general description of the facilities and all the equipment.
(b) An orientation walk through of the facility will shall address all the education orientation and training information issues to insure life safety and service continuity is upheld.
(c) The strategy and tactics to confine, suppress, and limit an incident’s impact in the telecommunications equipment area.

A.8.4.1 The telecommunications company should actively try to involve the local fire department in their fire protection program. This may include the review of the equipment placement, the de-powering issues and how to perform them and strategy and tactics to confine, suppress, and limit an incident’s impact in the telecommunications equipment area.

8.5* Damage Control Procedure. A damage control procedure shall be developed for each telecommunications facility.

8.6* Emergency Recovery Procedures for Continued Operations. A recovery procedure shall be developed for each telecommunications facility.

ANNEX
A.8.1 Pre-fire planning for telecommunication facilities covered by this standard is an essential component for life safety considerations of its occupants and for the firefighters providing protection for the facility. Telecommunications facilities vary both in size and complexity of operation. Further, the critical nature of the communications service provided by the facility may not be reflected by the variables of size and complexity of operation as cited above. In any event, achieving the requirement of this section, pre-fire plans would be expected to vary significantly in details from those for a small facility and those for a large facility, as described within this standard. The plan may incorporate actions including investigation, evaluation and mitigation of the incident, fire suppression activities, evacuation/relocation guidelines and assignments.

A fundamental concept of effective fire protection of a telecommunication facility is the recognition that there must be a good relationship or interaction or both between the telecommunications industry provider and the emergency services provider (normally the local fire department). Telecommunications facilities are unique occupancies that provide (normally provide) in addition to routine communication services expected of their customers, vital links for the community for emergency services through 911 – type communications links and other vital government type circuits.

It is recognized that sensitivity to this and other unique services provided to the community by the facility are brought to the awareness level of the emergency services provider through pre-fire planning. Pre-fire planning for the facility by the fire officials along with the necessary interface with representatives of the facility can ensure that objectives during actual fire emergencies are accomplished effectively and efficiently with as little interruption in to the service as possible.

It is recognized that as the magnitude of a fire within a facility increases, issues of de-powering parts of the facility become more of a concern to fire suppression officers.

Decisions regarding de-powering a facility should be carefully weighed, having been considered during pre-fire planning and given full consideration to the loss of the vital community communication links. When it is deemed necessary to de-power a facility or a part of a facility, the pre-fire planning done for the facility will help ensure the safe and efficient accomplishment of this objective with the minimum amount of service interruption the facility as is possible.

The Pre-Fire Plan may also include the following:
(a) Location of all pre-fire plan documents.
(b) Location of facilities alarm panel.
(c) Completed building fact sheet including a list of emergency contacts.
(d) Specific responsibilities assigned to designated personnel including the use of a guard service (where provided), the telecommunications management should ensure that guards are knowledgeable of fire emergency systems in the facility and the pre-fire plan.
(e) Specific responsibilities assigned to designated personnel including the use of a guard service (where provided), the telecommunications management should ensure that guards are knowledgeable of fire emergency systems in the facility and the pre-fire plan.
(f) Depowering procedures to enable continuity of service in a fire situation by identifying the locations of electrical de-powering devices. This procedure should include the following:

• Coded floor prints located in the pre-plan document and facility signage to direct fire personnel to de-powering locations.
• The method of turning off power to:
  ➢ AC power board (This is the primary source of electrical power for a telecommunications office and is supplied by the local power company)
  ➢ Standby power generator (This unit, usually a turbine or diesel generator, provides stand-by AC power that is transferred manually or automatically whenever a loss of AC power is experienced)
  ➢ DC primary disconnect fuse box (This unit distributes DC power to the secondary fuse panels throughout the Central Office. The secondary fuse panels feed all the operating voltages to the Central Office branch circuits).
  ➢ Uninterruptible Power Supply (UPS).

(b) The HVAC systems serving the area.
A.8.3 The telecommunications company should ensure that employees receive periodic and regular orientation pertinent to their assigned responsibilities involving the following:
(a) Facility evacuation
(b) Facility fire prevention measures.
(c) Facility fire detection systems
(d) Alarm processing
(e) Fire suppression or response to fire incidents.

A.8.4 For large facilities, a written pre-fire plan shall be developed for systematic achievement of fire safety goals and updated annually. The pre-fire plan should include:
(a) Location of all pre-fire plan documents.
(b) Location of facilities alarm panel.
(c) Completed building fact sheet including a list of emergency contacts.
(d) Specific responsibilities assigned to designated personnel including the use of a guard service (where provided), the telecommunications management should ensure that guards are knowledgeable of fire emergency systems in the facility and the pre-fire plan.
(e) Specific responsibilities assigned to designated personnel including the use of a guard service (where provided), the telecommunications management should ensure that guards are knowledgeable of fire emergency systems in the facility and the pre-fire plan.

Figure A.8.4 Example pre-fire plan drawing.

A.8.4.1 This may include the review of the equipment placement, the de-powering issues and how to perform them.

A.9.3 The purpose of this procedure (which can be a subset of the pre-fire plan) is to address methods by which damage to the telecommunications equipment can be minimized and timely restored to operation. A damage control procedure should provide a means for the following:
(a) Preventing or minimizing damage to operations and equipment.
(b) A list of operations, including staff to deal with the press, fire authorities, police, and authorities that can restrict entry following a fire of suspicious origin.
(c) A current contact list of telecommunications disaster recovery specialists.
(d) A list of salvage equipment suppliers, vendors and trades people.
(e) A list of internal and external people or agencies assigned to assist with recovery.
(f) A means for preventing water damage to electronic equipment.

A.9.2 The proper method of doing this will vary according to the individual equipment design. Consideration should be given to the provision of waterproof covers, which should be stored in easily accessible locations.

A.9.3.5 The purpose for the procedure is to ensure that if a major fire loss occurs within a telecommunications facility that affects its service that provisions have been addressed. This procedure should be updated annually.

The procedure should include the following:
(a) Procedures to identify and prioritize types and levels of service affected.
(b) A list of salvaged equipment suppliers, vendors and trades people.
(c) A current contact list of telecommunications disaster recovery specialists.
(d) A list of internal and external people or agencies assigned to assist with recovery.
(e) Operations, including staff to deal with the press, fire authorities, police, and authorities that can restrict entry following a fire of suspicious origin.

(f) Measures to maintain up-to-date copies of important documents in a secure off site location. Examples of such records include but are not limited to the following: essential business records, insurance records, building plans and system documentation.
(g) Procedures to identify and handle hazardous materials, that can cause a health hazard or contaminate the structure, equipment or contents.

SUBSTANTIATION: 1. This change combines 8 and 9 into one chapter, and retitles it since reactive and proactive planning go hand
in hand. Additionally, both chapters deal with “training, orientation,” and the “giving of information” to both firefighters and employees.

2. Added a few “when requested” remarks. The fire services do not always have the time to spend with each business. However, if they request something, they should be in a position to get it. This aligns with other similar language in the standard.

3. Requested employees to receive “orientation and training” and not “education.” Education infers a more formal setting than employers are apt to give.

4. Requested fire fighters to receive “orientation and information” and not “education and training,” for the same reasons as above.

5. Created Sections 8.5 and 8.6 (formerly 9.1 and 9.2).

6. Relocated Appendix A.8.4 to A.8.1 at the end. It did not belong in 8.4, as it does not reference life safety of firefighters. In section 8.2.4, I removed 2 requirements – general employees should not be accountable for depowering and facility recovery. These are actions that should be taken by specially trained individuals.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see Committee Proposal 76-540 (Log #CP37). The committee believes that accepting in principle meets the intent of the submitter. Where appropriate the committee has changed the wording in committee proposal 76-540 to be more representative of a recommended practice.

76-445 - (8-1): Reject
RECOMMENDATION: Revise text as follows: 8.1* General. For each large central office (those over 2,500 square feet), Management of each facility shall develop and implement a written Pre-Fire Plan. (Remainder of text to remain unchanged.)
SUBSTANTIATION: The requirements for small central offices (those under 2,500 square feet) are much less restrictive. This change more closely aligns the degree of requirements for the 2 sizes.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Proposal 76-448 (Log #CP4).

76-446 - (8-1): Accept in Principle
RECOMMENDATION: Relocate the sixth sentence to the appendix.
SUBSTANTIATION: This is not a requirement and should be in the appendix as supporting information.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Proposal 76-448 (Log #CP4).
and federal regulations, all documentation should be in writing and approved by the management of the facility.

An effective pre-fire plan should include the following:
(a) Identification of an emergency contact and telephone number.
(b) Life safety issues of the occupants of the facility.
(c) Life safety of the responding firefighters to the facility.
(d) Life safety issues of the community provided by the telecommunications facility through this normal operation and its continuity during fire emergencies, (e.g., 911 type services).

For large facilities, the plan should include an annual exercise to ensure that management and staff can implement and work with the plan and incorporate lessons learned from the exercise into an updated plan.

Add the following at the beginning of A-8-1:
A.8.1 Pre-fire planning for telecommunication facilities covered by this recommended practice is an essential component for life safety considerations of its occupants and for the firefighters providing protection for the facility. Telecommunications facilities vary both in size and complexity of operation. Further, the critical nature of the communications service provided by the facility might not be reflected by the variables of size and complexity of operation as cited above. In any event, achieving the objective of this section, pre-fire plans would be expected to vary significantly from those for a small facility and those for a large facility, as described within this recommended practice. The plan can incorporate actions including investigation, evaluation and mitigation of the incident, fire suppression activities, evacuation/relocation guidelines and assignments.

SUBSTANTIATION: Clarified the points that the pre-fire plan must include and added explanatory material to the appendix.

COMMITTEE ACTION: Accept.
76- 455 - (10-1.1): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add all standards referenced in the document.
COMMITTEE STATEMENT: The list is not complete.
COMMITTEE ACTION: Accept.

76- 456 - (10-1.2): Accept
SUBMITTER: Jennifer L. Nelson, Jeffrey A. Betz, AT&T
RECOMMENDATION: Delete in its entirety.
COMMITTEE STATEMENT: The section is confusing and repetitious. The section is labeled “Fire Service Drills” (discussed in Section 8-3) yet discusses training material and depowering (discussed in previous sections).
COMMITTEE ACTION: Accept.

76- 457 - (10-1.1): Accept in Principle
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Add additional referenced publications.
COMMITTEE STATEMENT: These publications are also referred to in the draft standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).

76- 458 - (10-1.2): Accept
RECOMMENDATION: Delete in its entirety.
COMMITTEE STATEMENT: The reference does not appear in the body of the standard (appears in A-3-5.2.2). The reference is not a nationally recognized telecommunications industry standard. It should not be referenced as a mandatory requirement, nor considered part of the requirements of the standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).

76- 459 - (10-1.2.1): Accept in Principle
SUBMITTER: Guv R. Franks, Pacific Bell
RECOMMENDATION: Delete the following text:
CSA Publication, Canadian Standards Association, 178 Readlake Blvd., Rexdale, Ontario, Canada M9W 1R5.
SUBSTANTIATION: We are not aware of the requirements of the CSA document referenced and how it would apply to telecommunications equipment in the United States. Does this document address fire prevention of a central office? And why would this apply to buildings in the United States?
COMMITTEE ACTION: Accept in Principle.

76- 460 - (10-1.2.2): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Delete the following text:
10-1.2.2 DOE Publication: U.S. Dept. of Energy, EH-34, Washington, DC 20545.
SUBSTANTIATION: The reference does not appear in the body of the standard. The reference is not a nationally recognized telecommunications industry standard. It should not be referenced as a mandatory requirement, nor considered part of the requirements of the standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).
telecommunications areas are designed. The data environment uses floor system as air plenums for data equipment cooling as well as routing cables under the floor. This document also addresses equipment specific to equipment owned by the DOE which does not apply to telecommunications equipment owned and operated by companies other than the DOE. The DOE also appears to have a problem with water suppression systems because they apparently need a document to counter the affects of water damage.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).

76-463 - (10-1.2.4): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI

TECHNICAL SUBCOMMITTEE T1E1

RECOMMENDATION: Delete the following text:

10-1.2.4  FMRC Specification Test Standard for Cable Insulation
Class No. 3972, July 1989.

SUBSTANTIATION: The reference does not appear in the body of the standard (appears in A-3-5.2.2). The reference is not a nationally recognized telecommunications industry standard. It should not be referenced as a mandatory requirement, nor considered part of the requirements of the standard.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).

76-464 - (10-1.2.4): Accept in Principle

SUBMITTER: Percy E. Pool, GTE

TECHNICAL SUBCOMMITTEE T1E1

RECOMMENDATION: Delete the following text:

10-1.2.4  FMRC Specification Test Standard for Cable Insulation
Class No. 3972, July 1989.

SUBSTANTIATION: The reference does not appear in the body of the standard. The reference is not a nationally recognized telecommunications industry standard. It should not be referenced as a mandatory requirement, nor considered part of the requirements of the standard.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-458 (Log #137).

76-465 - (10-1.2.4): Reject

SUBMITTER: Paul H. Dobson, Factory Mutual Research Corp.

TECHNICAL SUBCOMMITTEE T1E1

RECOMMENDATION: Revise text as follows:

10-1.2.4  FMRC Specification Test Standard for Cable Insulation
Class No. 3972, July 1989 Clean Room Materials Flammability Test

SUBSTANTIATION: Nonthermal damage is responsible for 95 percent of the property damage in a fire. Wire and cable seem to be the major components involved. A method is needed to determine the potential for a material to result in nonthermal damage. This test protocol describes testing that can be conducted to determine flammability and nonthermal damage of materials. The nonthermal damage characteristics are determined as a function of the material. Cable can remain energized for a substantial period of time after a fire is discovered.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Test standard is not fully developed.
Remainder of page...

COMMITTEE STATEMENT: A detailed peer review of incidents is needed in order to accurately reflect specific incidents and therefore an alternative is provided to guide document users to alternative sources if information on the loss incidents.

76-468 - (A-1-3 through A-1-3.3.1): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Add new text to read as follows:
A-1-3 Applicability.
A-1-3.2 This standard contains both performance and prescriptive requirements for new buildings and installations.
A-1-3.3 Existing buildings and installations were designed prescriptive features are difficult to summarize into one comprehensive set of prescriptive standards. Existing buildings may require evaluation from a performance perspective. The performance of the varying prescriptive standards in existing buildings has been validated over time. No retrofitting is required by this standard except under those cases where it has been determined by the authority having jurisdiction that the existing situation involves a distinct hazard to life or adjacent property.
A-1-3.3.1 Care must be taken when this standard is applied in existing buildings as the new prescriptive requirements may vary from the existing standard.
SUBSTANTIATION: Added explanatory material to provide guidance on the prescriptive criteria and performance based requirements of the standard.
COMMITTEE ACTION: Accept.

76-469 - (A-1-4.1): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add * to 1-4.1.
Add new Section A-1-4.1 to read as follows:
"Users of this standard outside of the USA and Canada, should be aware that telecommunications equipment and cables used in the USA and Canada have fire resistance properties that limit flame spread and fire growth."
SUBSTANTIATION: It can be anticipated that international users will rely upon NFPA 76 and they should be informed about the equipment fire resistance qualities of materials contemplated by NFPA 76 writers.
COMMITTEE ACTION: Accept.

76-470 - (A-2-1): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Change “Listed below is a listing” to “The following is a list...”
SUBSTANTIATION: Eliminate redundancy.
COMMITTEE ACTION: Accept.

76-471 - (A-2-1): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Edit the headers.
SUBSTANTIATION: Headers are not consistent.
COMMITTEE ACTION: Accept.
SUBSTANTIATION: commonly used is 48, 24 volts DC and even lower for some applications. In power areas higher voltage sources for AC and DC power are possible.

COMMITTEE ACTION: measured.

The (L-N) and (L-L) are added to clarify how the voltages are measured.

SUBSTANTIATION: You can expect voltages of 120(L-N), 208(L-L), and 240(L-N). 277 (L-N), and 480 (L-L) volts ac and possibly 600 volts ac. The DC power commonly used is 48, 24 volts DC and even lower for some applications.

SUBSTANTIATION: Add 277 volts because it is a common value. The (L-N) and (L-L) are added to clarify how the voltages are measured.

COMMITTEE ACTION: Accept.

76-472 - (A-2-1): Accept
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise text to read as follows:
"Battery areas require proper ventilation, while VRLA batteries minimize acid spill potential since the electrolyte is immobilized."

COMMITTEE STATEMENT: Editorial.
COMMITTEE ACTION: Accept.

76-473 - (A-2-2): Accept in Principle
SUBMITTER: Michael C. Sullivan, Power Conversion Products, LLC
RECOMMENDATION: Revise text as follows:
"The AC power commonly used is 120 up to 600 volts AC and some even higher. The DC power commonly used is 48, 24 volts DC and even lower for some applications."

SUBSTANTIATION: Add 277 volts because it is a common value. The (L-N) and (L-L) are added to clarify how the voltages are measured.

COMMITTEE ACTION: Accept in Principle.

76-474 - (A-3-1.1): Accept
SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1
RECOMMENDATION: Revise text to read:
"Fire Protection Objectives. The objectives of this standard are to:
(a) Provide fire protection measures so that the risk of injury or death due to fire in a telecommunications facility comparable to the levels of risk abatement for similar business type uses,
(b) Provide fire protection measures so that telecommunications equipment is not damaged due to a fire to a point that the damage will have an unacceptable impact on network operation,
(c) Provide fire protection measures so that property is not damaged due to a fire to a point that the damage will have an unacceptable impact on property.

SUBSTANTIATION: Add "fire" in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since "protection" could imply either "physical" or "electrical" protection.

COMMITTEE ACTION: Accept.

76-475 - (A-3-1.1): Accept in Principle
SUBMITTER: Percy E. Pool, GTE
RECOMMENDATION: Revise text to read:
"Fire Protection Objectives. The objectives of this standard are to:
(a) Provide fire protection measures so that the risk of injury or death due to fire in a telecommunications facility comparable to the levels of risk abatement for similar business type uses,
(b) Provide fire protection measures so that telecommunications equipment is not damaged due to a fire to a point that the damage will have an unacceptable impact on network operation,
(c) Provide fire protection measures so that property is not damaged due to a fire to a point that the damage will have an unacceptable impact on property."

SUBSTANTIATION: Add "fire" in order to have a better match between the text and the Scope (Section 1-1) and to reduce the possibility of misunderstanding since "protection" could imply either "physical" or "electrical" protection.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-474 (Log #12).

76-476 - (A-3-1.3): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add the words "or approved" after the word "chosen."

SUBSTANTIATION: Broader guidance.
COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The choice of a reviewer is not solely the decision of the authority having jurisdiction.

76-477 - (A-3-1.5): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add the following sentence at the end of the section:
"Significant changes in any of these factors should result in a review of the performance plan."

SUBSTANTIATION: More complete guidance.
COMMITTEE ACTION: Accept.

76-478 - (A-3-1.6): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add the words "or calculation method" after the word "software."

SUBSTANTIATION: Not all methods having limitations are in software.
COMMITTEE ACTION: Accept.

76-479 - (A-3-1.6): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Continue the second sentence with "and implementation plan."

SUBSTANTIATION: Performance results from implementation, not from design alone.
COMMITTEE ACTION: Accept.

76-480 - (A-3-1.6): Accept
RECOMMENDATION: Add a second sentence to read:
"Exposure fires include fires starting in areas or floors occupied by other tenants of a multi-tenanted building."

SUBSTANTIATION: Multi-tenanted buildings are not expressly included in existing wording.
COMMITTEE ACTION: Accept.
RECOMMENDATION: Technical Subcommittee T1E1

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

RECOMMENDATION: Delete the following text: A-3-3.2.1 - Equipment that has been tested in accordance with ANSI blank has demonstrated that it will remain functional when exposed to temperatures up to 125°F, or when subjected to a temperature rate of change not exceeding 54° F per hour.

SUBSTANTIATION: Per previous proposal to delete 3-3.2.1.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Proposal 76-483 (Log #CP41).

76-481 - A-3-3.2.1: Reject

SUBMITTER: Mark L. Robin, Great Lakes Chemical Corp.

RECOMMENDATION: Add the following text to Section A-3-3.2.2 (text that is currently accepted in NFPA 2001):

With regard to the potential threat to life or assets associated with a fire event, it is essential that the end user understand that both the products of combustion and decomposition products formed from the suppression agent contribute to the total threat. Essentially all fires will produce carbon monoxide and carbon dioxide, and the contribution of these products to the toxic threat posed by the fire event is well known. In the case of large fires, the high temperatures encountered can by themselves lead to life and asset threatening conditions. In addition, most fires produce smoke, and it is well documented that damage to sensitive assets can occur at very low levels of smoke. Depending upon the particular fuel involved, numerous toxic products of combustion can be produced in a fire event, for example, HCl, HBr, HF, HCN, CO and other toxic products.

The halogenated hydrocarbon fire extinguishing agents described in this standard will break down into their decomposition products as they are exposed to a fire. It is essential that the end user understand this process as the selection of the discharge time, and other design factors, will be impacted by the amount of decomposition products the protected hazard can tolerate.

The concentration of thermal decomposition products produced from a halogenated fire suppression agent is dependent upon several factors. The size of the fire at the time of system activation and the discharge time of the suppression agent play major roles in determining the amount of decomposition products formed. The smaller the fire, the less energy (heat) is available to cause thermal decomposition of the suppression agent, and hence the lower the concentration of thermal decomposition products. The size of the fire at the time of system activation is dependent upon the fire growth rate, the detector sensitivity, and the system discharge delay time. The first factor is primarily a function of the fuel type and geometry, whereas the latter two are adjustable characteristics of the fire protection system. The discharge time affects the production of thermal decomposition products, as it determines the exposure time to the fire of sub-extinguishing concentrations of the fire suppression agent. Suppression systems have traditionally employed a combination of rapid detection and rapid discharge to limit both the production of thermal decomposition products and damage to assets by providing rapid flame extinguishment.

The enclosure volume also affects the concentration of thermal decomposition products produced, since larger volumes, i.e., smaller fire size to room volume ratios, will lead to dilution of decomposition products. Additional factors affecting the concentration of thermal decomposition products include vaporization and mixing of the agent, the preburn time, the presence of hot surfaces or deep-seated fires, and the suppression agent concentration.

This decomposition issue is not unique to the new clean halogenated agents. The thermal decomposition products resulting from the extinguishment of fires with Halon 1301 have been investigated by numerous authors [1-2], and it is well established that the most important Halon 1301 thermal decomposition products from the standpoint of potential toxicity to humans or potential corrosion of electronic equipment are the halogen acids HF and HBr. Concentrations of acid halides produced from Halon 1301 ranging from a few ppm to over 7000 ppm HF and HBr have been reported, depending upon the exact nature of the fire scenario [3]. Smaller amounts of additional decomposition products can be produced, depending upon the particular conditions of the fire. Under certain conditions, thermal decomposition of Halon 1301 in a fire event has been reported to produce small amounts of carbonyl fluoride (COF), carbonyl bromide (COBr), and bromine (Br) in addition to relatively large amounts of HF and HBr. Note that all of these products are subject to relatively rapid hydrolysis to form the acid halides HF and HBr, and hence these acids constitute the product of primary concern from the standpoint of potential toxicity or corrosion.

As was the case for Halon 1301, the thermal decomposition products of primary concern for the halogenated agents described in this standard are the associated halogen acids, HF in the case of HFCs and PFCs, HF and HCl in the case of HCFC agents, and HF and HI in the case of I-containing agents. As was the case for Halon 1301, smaller amounts of other decomposition products can be produced, depending upon the particular conditions of the fire. In a fire event, HFC or PFC agents can potentially produce small amounts of (COF), HCFC agents can potentially produce carbonyl fluoride (COF), carbonyl chloride (COCl), and elemental chlorine (Cl), and I-containing compounds can potentially produce carbonyl fluoride...
(COF₂) and elemental iodine (I₂). All of these products are subject to relatively rapid hydrolysis [11] to produce the associated halogen acid (HF or HCl or HI), and hence, as indicated above, from the standpoint of potential toxicity to humans or potential corrosion of electronic equipment, the halogen acids are the decomposition products of concern.

The dependence of decomposition product formation on the discharge time and fire size has been extensively evaluated (Sheinson et al 1994, Brockway 1994, Moore et al 1993, Back et al 1994, Forsell and DiNenno 1995, DiNenno et al 1993, Purser 1998, Dierdorf et al 1994, Brockway 1994, Moore et al 1993, Back et al 1994, Forsell et al 1994, DiNenno et al 1993, Purser 1998, Dierdorf et al 1994). Figure A-3-8.1.2(a) is a plot of peak HF concentration as a function of the fire size to room volume ratio. The data encompass room scales of 1.2 m³ to 972 m³. The 526 m³ results are from USCG testing; the 972 m³ results are based on NRL testing. These fires include diesel and heptane pool and spray fires. The design concentration in all cases except HCFC blend A (at 8.6 percent) are at least 20 percent above the cup burner value. For fires where the extinguishment times were greater than 17 seconds, the extinguishment time is noted in brackets. Note that excessively high extinguishment times (>60 seconds), generally an indication of inadequate agent concentrations, yield qualitatively high HF concentrations. In addition, Halon 1301 will yield bromine and hydrogen bromide in addition to HF.

The quantity of HF formed in the tests is approximately three to eight times higher for all of the halocarbon agents tested relative to Halon 1301 (which also forms bromine and hydrogen bromide). It is important to note that as pointed out by Peatross and Forsell [4], in many of these large fire scenarios the levels of combustion products (e.g., CO) and the high temperatures involved make it unlikely that a person could survive large fires such as these, irrespective of the HF exposure. The iodine-containing agent CF₃I was not tested in the USCG or NRL studies, but other data available on CF₃I indicate that its production of HF is comparable to that of Halon 1301; in addition, elemental iodine (I₂) is formed from CF₃I.

There may be differences between the various HFC/HCFC compounds tested, but it is not clear from these data whether such differences occur. In all the data reported, the fire sources, heptane or diesel pans of varying sizes, were baffled to prevent direct interaction with the agent.

While the above results are based upon Class B fuels, fires involving some Class A combustibles produce lower HF concentrations. For example, hazards such as those in electronic data processing and telecommunication facilities often result in fire sizes of less that 10 kW at detection [5]; in many cases in the telecommunication industry, detection at fire sizes of 1 kW is desired [6]. Skaggs and Moore [7] have pointed out that for typical computer rooms and office spaces, the analysis of DiNenno et al [8] employing fire growth models and test data indicate that thermal decomposition product concentrations from the halogenated agents would be comparable to that from Halon 1301.

Tests by Hughes Associates, Inc. [9] evaluated the thermal decomposition products resulting from the extinguishment of Class A fires typical of those encountered in telecommunication and electronic data processing (EDP) facilities by HFC-227ea. The test fuels included shredded paper, PC boards, PVC coated wire cables, and magnetic tape, representing the most common fuel sources expected to burn in a computer room environment. All fires were extinguished with the minimum design concentrations of 7 percent HFC-227ea. Figure 2 [4] shows the HF concentration resulting from these tests. Also shown in Figure 2 is the approximate mammalian LC₅₀ and the Dangerous Toxic Load (DTL) for humans based upon the analysis of Meldrum [10]. As seen in Figure 2, the HF levels produced in the computer room were below both the estimated mammalian LC₅₀ and DTL curves. Peatross and Forsell [4] in their analysis of the test results, concluded that “from an examination of the HF exposures, it is evident that this type of fire does not pose a toxic threat.” Also shown in Figure 2 are HF levels produced upon extinguishment of Class B fires of various sizes. In the case of these large Class B fires, HF levels in some cases can be seen to exceed the human DTL. It is important to note that as pointed out by Peatross and Forsell [4], in many of these large fire scenarios the levels of combustion products (e.g., CO) and the high temperatures involved make it unlikely that a person could survive large fires such as these, irrespective of the HF exposure.
Figure 2 Hazard assessment of HF concentrations.

References:

SUBSTANTIATION: Topic of decomposition products from halogenated fire suppression agents often misunderstood. Suggested text is that accepted in NFPA 2001 and provides useful information.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems, provides very detailed information on all clean agents.

76-486 - (A-3-4.3.2): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Change "might" to "may."
SUBSTANTIATION: May sounds better to me.
COMMITTEE ACTION: Accept in Principle.
| Delete the word "might". |
COMMITTEE STATEMENT: Editorial.

76-487 - (A-3-4.8.5): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Insert "liquid fuel" after "Class B" and insert "Class C" before "electrical."
SUBSTANTIATION: Consistent sentence structure.
COMMITTEE ACTION: Accept.

76-488 - (A-3-5.1): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete "etc." and change "needs to" to "should."
SUBSTANTIATION: Better word usage for clarity.
COMMITTEE ACTION: Accept.

76-489 - (A-3-5.2): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete "etc." and add "(e) references.
SUBSTANTIATION: Clarity.
COMMITTEE ACTION: Accept in Principle.

76-490 - (A-3-5.2.1): Accept in Principle
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Add at the end of the sentence: "Two useful benchmarks in considering switching equipment fires are a fully involved printed circuit board fire may release 5 kW and a fully involved frame may release 150 kW heat release rate as observed in testing to Belcore GR-63-CORE."
SUBSTANTIATION: It is wise for the Committee to share useful data with which the Committee has been provided so that users of the
standard have a better understanding of the Committee’s base of knowledge and intent.

**COMMITTEE ACTION:** Accept in Principle.

Add at the end of the sentence, “Two useful benchmarks in considering switching equipment fires are a fully involved printed circuit board fire which can release 5kW and a fully involved frame which can release 150kW heat release rate as observed in testing to Telcordia document GR-63-CORE (formerly Bellcore).”

**COMMITTEE STATEMENT:** Updated reference.

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76- 493 - (A-3-6.6): Reject

**SUBMITTER:** Lawrence A. McKenna, Jr., Hughes Assoc., Inc.

**RECOMMENDATION:** Revise testing criteria for fire detection systems based on research results.

**SUBSTANTIATION:** An in-situ study of smoke detector activation has recently been completed. This study included the use of the BSI 6266 tests cited in the draft document. Based on a preliminary analysis of the results of that study, changes in this section of the draft are clearly warranted. At the present time, the analysis of the data is not sufficiently complete to permit drafting of proper verbiage. The report of this study will be presented to the committee at the September committee meeting, along with specific proposals for revised text based on the results of the study.

**COMMITTEE ACTION:** Reject.

**COMMITTEE STATEMENT:** No text submitted.

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76- 492 - (A-3-6.6): Accept

**SUBMITTER:** Ralph E. Transue, Rolf Jensen & Assoc., Inc.

**RECOMMENDATION:** Revise testing criteria for fire detection systems based on research results.

**SUBSTANTIATION:** Completeness of understanding.

**COMMITTEE ACTION:** Accept.

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76- 496 - (A-3-6.6 and Appendix B): Accept

**SUBMITTER:** Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.

**RECOMMENDATION:** Add A-3.6.6 and a new Appendix B to read as follows:

**A-3.6.6 Detection System.** Where a fire detection system is used in a performance-based approach, system performance shall be verified by test. VEWFD systems should be designed, installed, and maintained to detect the products of combustion from the “Overheated Wire” tests described in Appendix B. EWFD systems should be designed, installed, and maintained to detect the products of combustion from the “Lactose-Potassium Chlorate” test described in Appendix B.

It must be recognized that there are potential fire scenarios in most telecommunications facilities that can grow to the point where a major service interruption can occur before an effective response can be mounted by facility personnel. Examples of such scenarios include fires of incendiary origin and arcing short circuits in battery plants or other primary power systems or cables. Since fires involving these scenarios are rare, the performance requirements and design approaches in this document have been developed to provide protection against more frequently occurring scenarios.

The performance criteria in this section are based in part on the criteria in BS 6206:1992, Code of Practice for Fire Protection for Electronic Data Processing Installations. The criteria define test fires for the VEWFD and EWFD levels of fire detection discussed in this document. The appropriate test fire is used to properly demonstrate fire detection system operation at initial acceptance and subsequent periodic system testing.

Fire detection systems should be designed, installed, and maintained to detect the test fires referenced in this section when the HVAC system serving the space is operating at normal air exchange rates, and also when the HVAC system is shut off. They should also be designed, installed, and maintained to detect the test fires when equipment in the space is fully operational.

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76- 496 - (A-3-6.6 and Appendix B): Accept

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Add A-3.6.6 and a new Appendix B to read as follows:

**A-3.6.6 Detection System.** Where a fire detection system is used in a performance-based approach, system performance shall be verified by test. VEWFD systems should be designed, installed, and maintained to detect the products of combustion from the “Overheated Wire” tests described in Appendix B. EWFD systems should be designed, installed, and maintained to detect the products of combustion from the “Lactose-Potassium Chlorate” test described in Appendix B.

It must be recognized that there are potential fire scenarios in most telecommunications facilities that can grow to the point where a major service interruption can occur before an effective response can be mounted by facility personnel. Examples of such scenarios include fires of incendiary origin and arcing short circuits in battery plants or other primary power systems or cables. Since fires involving these scenarios are rare, the performance requirements and design approaches in this document have been developed to provide protection against more frequently occurring scenarios.

The performance criteria in this section are based in part on the criteria in BS 6206:1992, Code of Practice for Fire Protection for Electronic Data Processing Installations. The criteria define test fires for the VEWFD and EWFD levels of fire detection discussed in this document. The appropriate test fire is used to properly demonstrate fire detection system operation at initial acceptance and subsequent periodic system testing.

Fire detection systems should be designed, installed, and maintained to detect the test fires referenced in this section when the HVAC system serving the space is operating at normal air exchange rates, and also when the HVAC system is shut off. They should also be designed, installed, and maintained to detect the test fires when equipment in the space is fully operational.
It is common practice in some companies for some rooms to have minimal HVAC for energy conservation purposes. This is typical in colder regions where mechanical cooling is not necessary to relieve the heat gain from equipment with high energy density. Fan cycling is also a typical condition for equipment with lower energy density that does not produce as much heat (e.g., frame rooms, many transmission systems). Since a fire of a given size can cause the same damage irrespective of air-flow in the area, it is essential that the fire detection system be able to function in any foreseeable condition. This requirement can also ensure adequate fire detection in the event of fan failure.

**Appendix B Performance Test Procedures for Very Early Warning and Early Warning Automatic Fire Detection Systems**

**B-1 Introduction.**

The purpose of these test procedures is to prove the performance of very early warning and early warning fire detection systems in a smoldering fire scenario of much less than 1 kW in heat release rate and early warning fire detection systems.

**B-1.1 Scope.** These tests are intended to simulate the small amounts of smoke that would be created in the early stages of a fire in an equipment space. If an actual fire were to produce the amounts of smoke produced by these tests, telecommunications companies would want to be alerted by the fire alarm system.

**B-1.1.1** These tests are intended to simulate the small amounts of smoke that would be created in the early stages of a fire in an equipment space. If an actual fire were to produce the amounts of smoke produced by these tests, telecommunications companies would want to be alerted by the fire alarm system.

**B-1.1.2** The tests represent a good balance between the desire to use smoke sources that are representative of the types of fires that have occurred in equipment spaces, and the desire to minimize the introduction of smoke that may cause damage to operating equipment in the space.

**B-1.2 Objectives.** These tests are also intended to meet the following general objectives:

- **B-1.2.1** They are intended to be repeatable, in that a consistent quantity, temperature, and color of smoke is produced each time the test is performed.
- **B-1.2.2** They are intended to use test equipment that can be quickly set up in actual telecommunications facilities (i.e., in situ).
- **B-1.2.3** They are intended to prevent or minimize the potential for smoke damage to the equipment in the room under test. They should create little or no corrosive products of combustion.
- **B-1.2.4** They are intended to avoid the creation of large amounts of smoke and gas that could pose a health threat to personnel in the test area.

**B-2 Heated Wire Test.**

**B-2.1** This test uses an electrically overloaded PVC-coated wire to simulate the early stages of a fire. Although a PVC wire is used, hydrogen chloride vapor is unlikely to be produced, in quantities significant enough to be of concern, if the test procedures herein are followed, due to the relatively low temperatures reached. If the current is applied for a longer time, or if the wire sample is shorter than stated, small quantities of HCl may be generated. In either event, a clearly perceptible odor that should dissipate in short time is produced by the test.

The tests are based on the test specified in section A.3 of British Standard BS 6266: 1992, Fire Protection for Electronic Data Processing Installations. The principal differences for some tests include the use of a regulated DC power supply and different wire, electrical load, and wire length.

Users are directed to Table B-1 to select the parameters to be used during the test.

The test parameters to be used should be selected based on the detection system performance levels dictated by the performance based analysis.

**B-2.2 Test Apparatus.** The test apparatus consists of the following items:

- **B-2.2.1 Wire.** Table B-1 lists four options for wire selection and test parameters that users should select from.
- **B-2.2.1.1 Sample Preparation.** Test wire should be cut cleanly to the length specified in Table B-1.

**B-2.2.2 Wire Mounting.** The wire should be arranged by placing it on a non-combustible, non-conductive board, or suspended on a non-combustible, non-conductive support. The wire should be arranged so that there are no kinks or crossovers where localized higher temperature heating can occur.

**B-2.2.3 Power Supply and Leads.** A regulated DC power supply capable of supplying a current of 0-30 Amperes at 0-18 VDC (i.e., Kenwood Model XL524E-D). The lead wires between the power supply and the test wire(s) should be #10 awg wire, 10.66 ft (3.25 m) long to avoid unacceptable voltage drop.

**B-2.2.4 Stop Watch.** A stop watch or clock accurate to 1 second.

**B-2.3 Test Procedure:**

**B-2.3.1** The test should be performed in the room in which the detection system is installed, with all normal ventilation fans (e.g., fans internal to equipment, room ventilation fans) operating. Testing should also be performed with the fans turned off to simulate the potential for fan cycling and/or a power failure. This does not preclude testing required by NFPA 72, National Fire Alarm Code.

**B-2.3.2 Detector Programming.** The detector alarm sensitivity settings (i.e., pre-alarm or alarm) used during the test should be identical to those used during normal operation of the system. Alarm verification or time delay features should be disabled during the test to permit the detector response to be annunciated immediately upon activation.

**NOTE:** This testing is intended to verify that the detectors will "see" smoke in sufficient concentrations to reach the specified alarm levels. Since the test produces a small amount of smoke for a brief period of time (i.e., a puff of smoke), the use of the alarm verification or time delay features would likely result in the detector not reaching the specified alarm levels. In a "real-world" fire, the smoke would continue to be produced as the fire grows, permitting the detector to reach alarm. If these features are disabled during the testing, they should be enabled at the conclusion of the testing before leaving the room.

**B-2.3.3 Test Locations.** Select test locations by considering the airflow patterns in the room, and choosing challenging locations for the tests (i.e., both low air flow and high air flow may be challenging). If possible, vary the locations and elevations of the test apparatus to simulate the range of possible fire locations in the room. Avoid locations where the smoke will be drawn directly into the equipment cooling ports or fans. Locations where the smoke will be entrained into the air exhausting from an equipment cabinet are acceptable.

**B-2.3.4 Position the test apparatus at the test location, and secure the test equipment to prevent damage.**

**B-2.3.5** Prepare the test wire by carefully removing not more than 12 mm (1/2 in.) of the insulation from each end of the sample so that the conductor(s) is not nicked.

**B-2.3.6** Mount the wire on the insulating material so that there are no kinks or crossovers in the wire.

**B-2.3.7** Set the power supply to supply either a constant voltage or constant current as shown in Table B-2.

**B-2.3.8** Connect the ends of the test wire(s) to the power supply leads.

**B-2.3.9** When all other preparations are complete, switch the power supply on for a period shown in Table B-2. After the appropriate current application time, turn the power supply off, and observe and record the test results.

**NOTE:** To avoid burns, do not touch the wire during the test, or for three minutes after turning the power supply off. If the wire is located close to HVAC registers or equipment exhaust ports, the air flow may cool the wire, and result in inadequate production of smoke. In this event, either reposition the apparatus, or shield the wire from the air flow.

**B-2.3.10 Test Sequence.** Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus.
## Table B-1. Heated Wire Test Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BS 6266 (1992)</th>
<th>Modified BS 6266 Test</th>
<th>North American Wire Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2 m Wire Test</strong></td>
<td><strong>1 m Wire Test</strong></td>
<td><strong>2, 1-m Wires in Parallel</strong></td>
<td><strong>North American Wire</strong></td>
</tr>
<tr>
<td><strong>Wire Specs</strong></td>
<td>10 strands of 0.1 mm diameter tinned copper wire. Total cross-sectional area of conductor is 0.078 mm$^2$. Insulated with PVC to a radial thickness of 0.3 mm. Wire is very flexible due to stranded construction and highly plasticized insulation.</td>
<td>A single strand of 24 awg copper wire, insulated with PVC to a radial thickness of 0.043 in. (1.1 mm). This wire is stiffer than the BSI wire due to the single-strand construction and the minimally plasticized PVC insulation.</td>
<td></td>
</tr>
<tr>
<td><strong>Smoke Characterization</strong></td>
<td>Smoke is very light (barely visible). HCl vapor is unlikely to be produced due to the low temperature achieved in the wire. The primary constituent of the smoke is plasticizer.</td>
<td>More visible smoke than the 2 m test, but still very light smoke. Due to the higher temperature in the wire, a very small amount of HCl vapor will be produced.</td>
<td>More visible smoke than the 2 m test or the single wire 1-m test, but still very light smoke. Due to the higher temperature in the wires, a small amount of HCl vapor will be produced.</td>
</tr>
<tr>
<td><strong>Test Period</strong></td>
<td>180 seconds</td>
<td>60 seconds</td>
<td>60 seconds</td>
</tr>
<tr>
<td><strong>Electrical Load</strong></td>
<td>Constant voltage - 6.0 VDC, current varies from 0 – 15 A, during the test due to changing resistance in the wire.</td>
<td>Constant voltage - 6.0 VDC, current varies from 0 – 15 A, during the test due to changing resistance in the wire.</td>
<td>Constant voltage - 6.0 VDC, current varies from 0 – 30 A during the test due to changing resistance in the wire.</td>
</tr>
<tr>
<td><strong>Pass/Fail Criteria</strong></td>
<td>Fire detection system shall “respond” within 120 sec of the end of the test period.</td>
<td>“Alert” or “Pre-Alarm” signal within 120 seconds of the end of the test period.</td>
<td></td>
</tr>
</tbody>
</table>
B-3.3.2 Test Locations. Select test locations by considering the airflow patterns in the room, and choosing challenging locations for the tests (i.e., both low air flow and high air flow may be challenging). If possible, vary the locations and elevations of the test apparatus to simulate the range of possible fire locations in the room. Avoid locations where the smoke will be drawn directly into the equipment cooling ports or fans. Locations where the smoke will be entrained into the air exhausting from an equipment cabinet are acceptable.

B-3.3.3 Weigh the required mass of lactose and potassium chlorate into a mixing container, and mix it well by shaking or stirring to break up all lumps or clumps. Seal the mixing container tightly until ready to conduct the test.

B-3.3.4 Place the crucible on the support in the test location.

B-3.3.5 When all other test preparations are complete, pour the required amount of mixture into the crucible, keeping it in a compact mound (without packing it down), and ignite the mixture when ignited, it burns vigorously like a match (and smells the same). Note: This mixture is essentially the formula for a match head. When ignited, it burns vigorously like a match (and smells the same). Be sure to use a long lighter to avoid being burned when the mixture ignites.

B-3.4 Test Sequence. Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus.

B-3.5 Pass/Fail Criteria. The EWFD system shall produce an “Alert” or “Pre-Alarm” signal within 120 seconds of the cessation of ignition.

SUBSTANTIATION: Added performance test procedures for VEWD systems and EWFD systems.

COMMITTEE ACTION: Accept.

(Log #431)
76- 498 - (A-3-6.D.1): Reject
SUBMITTER: Mark L. Robin, Great Lakes Chemical Corp.
RECOMMENDATION: Add text indicating approximate fire size (in kW) which an early warning fire detection (EWFD) system is designed to detect.
SUBSTANTIATION: In A-3-6.D.2 it is indicated that a VEWFD system should detect a fire of less than 1 kW; suggested text would be useful guidance material.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Providing a value is not consistent with a performance based approach.

76- 499 - (Table A-4-1): Accept
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise Table A-4-1 as follows:
<table>
<thead>
<tr>
<th>Hazard Area</th>
<th>Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Distribution Frame</td>
<td>VEWFD</td>
</tr>
</tbody>
</table>

SUBSTANTIATION: To agree with action taken in Albuquerque that was not reflected in this draft proposal.
COMMITTEE ACTION: Accept.

76- 500 - (Table A-4-1): Accept
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Revise Table A-4-1 as follows:

SUBSTANTIATION: Changes reflect text in document.
COMMITTEE ACTION: Accept.

76- 501 - (Table A-4-1): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Revise Table A.4.1 to appear as shown on the following page:

SUBSTANTIATION: Changes reflect text in document.
COMMITTEE ACTION: Accept.

76- 501a - (A-4-1): Accept

76- 501b - (A-4-7.5): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Add the following:
A.4.7.5 Batteries meeting the fire resistance requirements might not be available at the time this document is published.

SUBSTANTIATION: Paragraph 4.7.5 references 6.8. Batteries meeting the requirement of 6.8.3.1 may not be available at the time of printing of the first edition of NFPA 76.
COMMITTEE ACTION: Accept.

76- 502 - (A-4-9.3.2): Accept
SUBMITTER: Michael J. Madden, Gage-Babcock & Assoc.
RECOMMENDATION: Revise text as follows:
4-9.3.2 Fuel Control. Drainage and/or secondary containment systems should be provided to prevent fuel spills or leaks effluent from contaminating soils or public drainage systems.

SUBSTANTIATION: The proposed wording provides additional clarification.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: Editorial.

76- 503 - (A-6-4.1.3): Accept
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: After the word "owner" insert "or operator."

SUBSTANTIATION: Breadth of guidance to responsible operators.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Accept recommendation and change "shall" to "should."

76- 504 - (A-6-5.1.1): Accept
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Delete entire paragraph.

SUBSTANTIATION: There is no 6-5.1.1.
COMMITTEE ACTION: Accept.

76- 505 - (A-6-5.2.1): Accept
SUBMITTER: Michael C. Sullivan, Arlington Heights, IL
RECOMMENDATION: Revise text as follows:
"Port. A port is an orifice, sized by a computer program of a specific size, in a smooth bore pipe through which (smoke laden) air is drawn by an aspirating device to a very early warning detector. A sensor is a device, such as a photoelectric cell, that receives and responds to a signal or stimulus."

SUBSTANTIATION: The orifice could be sized by a skilled person, as well as a computer program. The sensor definition does not belong with the port definition; it should have its own.
COMMITTEE ACTION: Accept in Principle.
Revise text to read as follows:
A-6-5.2.1 Ports and Sensors in EWFD and VEWFD Systems.
(a) A port is an orifice, sized by a computer program of a specific size, in a smooth bore pipe through which (smoke laden) air is drawn by an air sampling smoke detector.
(b) A sensor is a device, such as a photoelectric cell, that receives and responds to a signal or stimulus.

COMMITTEE ACTION: Accept in Principle.

76- 506 - (A-6-5.2.1): Reject
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise text as follows:
A-6-5.2.1 A port is an orifice, sized by a computer program, in smooth bore pipe through which (smoke laden) air is drawn by air-sampling smoke detector to aspirating device to a very early warning detector. A sensor is a spot-type smoke detector. Refer to NFPA 72, National Fire Alarm Code, device, such as a photoelectric cell, that receives and responds to a signal or stimulus.
<table>
<thead>
<tr>
<th>COMMON AREA CONTAINING SOME OR ALL OF THE FOLLOWING: TELECOMMUNICATION EQUIPMENT, POWER, MDF AND CONTIGUOUS TECHNICAL SUPPORT AREA</th>
<th>EQUIPMENT SPACE</th>
<th>NON EQUIPMENT SPACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER AREA INCLUDING CONTIGUOUS TECHNICAL SUPPORT AREA</td>
<td>TABLE A - 4-1 LARGE TELECOMMUNICATIONS FACILITIES SUMMARY OF REQUIREMENTS FOR DETECTION, SUPPRESSION, SMOKE MANAGEMENT AND COMpartMENTATION OF HAZARD AREA (RATING OF COMPARTMENT FIRE WALLS</td>
<td>BUILDING SERVICE AND SUPPORT AREA</td>
</tr>
<tr>
<td>BUILDING SERVICE AND SUPPORT AREA</td>
<td>ADMINISTRATION AREA</td>
<td>SPACE OCCUPIED BY THIRD PARTIES</td>
</tr>
</tbody>
</table>

### Table A - 4-1: Large Telecommunications Facilities Summary of Requirements for Detection, Suppression, Smoke Management and Compartmentation of Hazard Area (Rating of Compartment Fire Walls)

<table>
<thead>
<tr>
<th>DETECTION</th>
<th>AUTOMATIC SUPPRESSION</th>
<th>SMOKE MANAGEMENT SYSTEM</th>
<th>EQUIPMENT CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

#### Automatic Suppression

- **Receptacle**
- **Smith**
- **Smoke detection**
- **Combustible gas detection**

#### Smoke Management System

- **Receptacle**
- **Smith**
- **Combustible gas detection**

#### Equipment Characteristics

- **Receptacle**
- **Smith**
- **Combustible gas detection**

### Note

1. Rating in table refer to minimum floor, ceiling and wall separation requirements only. Additional separation may be required for structural elements due to building type.
2. Additional requirements may be required as per 4.1.2 in multiple tenant buildings not controlled by telecommunication operator.
3. NR: No Requirement
4. SABC: Refer to applicable building code.
SUBSTANTIATION: NFPA 76 should use standard descriptions. “Port” should reference the “air-sampling” smoke detector defined in NFPA 72. “Sensor” should reference the spot-type smoke detector defined in NFPA 72.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Committee Action on Proposal 76-505 (Log #147).

76-507 - (A-6-5.3.1.2): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: Delete “drawing.” What drawing?
SUBSTANTIATION: ROP document must include any applicable drawings.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-508 (Log #430).

76-508 - (A-6-5.3.1.2): Accept
SUBMITTER: Ronald D. Ounette, Vision Systems Inc.
RECOMMENDATION: Add the following diagram for Example 1. Back into the section A-6-5.3.1.2.

High-level sample ports/sensors

![Diagram for Example 1.]

Low-level sample ports/sensors

Diagram for Example 1.

SUBSTANTIATION: Due to electronic document format problems the original draft inadvertently omitted the diagram for Example 1 of Section A-6-5.3.1.2 and only transferred the words as presently shown. Add the diagram (Example 1) back in the Draft as originally intended for clarification purposes.

COMMITTEE ACTION: Accept.

76-509 - (A-6-5.3.1.2): Accept in Principle
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Revise text as follows:
A-6-5.3.1.2 In general, two (2) sensors or ports per building bay are recommended (20 ft x 20 ft bays are typical but not universal in many traditional central offices). Installation of sensors and ports should be determined on a case-by-case basis for buildings and enclosures that are different from the typical building bay design. Where stratification may be a concern, two (2) levels of detection should be provided. Refer to NFPA 72, National Fire Alarm Code, 5-1.4.5. See example 1 (drawing) below for clarification.

Example 1.
Port or sensor
High Level 400 sq ft (20 ft max) between ports or sensors
Low Level 400 sq ft (20 ft max)

SUBSTANTIATION: You can have 400 sq ft max (20 ft spacing) for high and low sensor/ports, but this does not translate into 200 sq ft max (14 ft spacing) between high and low. You would still need 4 sensors/ports for each 20 x 20 bay to meet this as originally written. Guidance should be provided on the requirement for high and low sensors or ports. Several other changes suggested for consistency.

COMMITTEE ACTION: Accept in Principle.

Revise text as follows:
A-6-5.3.1.2 In general, two (2) sensors or ports per building bay are recommended (20 ft x 20 ft bays are typical but not universal in many traditional central offices). Installation of sensors and ports should be determined on a case-by-case basis for buildings and enclosures that are different from the typical building bay design. Where stratification may be a concern, two (2) levels of detection should be provided. Refer to NFPA 72, National Fire Alarm Code, 5-1.4.5. See example 1 (drawing) below for clarification.

Example 1.
Port or sensor
High Level 400 sq ft (20 ft max) between ports or sensors
Low Level 400 sq ft (20 ft max)

SUBSTANTIATION: Clarity of information for the reader.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-511 (Log #192).

76-510 - (A-6-5.3.1.6): Reject
SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.
RECOMMENDATION: In the second sentence after the words “at a port” insert “required for alarm.”
SUBSTANTIATION: Clarity of information for the reader.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Committee Action on Proposal 76-511 (Log #192).

76-511 - (A-6-5.3.1.6): Accept in Principle
SUBMITTER: Vincent J. Piccirilli, Jr., Kidde-Fenwal, Inc.
RECOMMENDATION: Replace A-6-5.3.1.6 in its entirety with the following:
A-6-5.3.1.6 Because the listed sensitivity for an air sampling smoke detection system is that measured at the detector rather than that at each individual sampling port on its piping network, the entire piping network must be evaluated to determine the effective sensitivity at a sampling port. Sampling ports that draw in clean air will dilute smoke laden air being drawn in by other ports. The accumulative
The affect of clean air being drawn through some ports causes dilution which reduces the effective sensitivity of other ports on the same pipe network.

The effective sensitivity of a sampling port is a function of the total number of ports on a piping network and the percentage of those sampling smoke laden air. As the number of ports sampling clean air increases, the effective sensitivity at individual ports on an air sampling smoke detection system is reduced to less than the listed sensitivity of the detector. The following two examples show a best case and a worst case scenario.

Assuming all sampling ports will sample smoke laden air, with all the ports in one common interior area with the smoke being uniformly mixed through the space by an HVAC system, then the effective sensitivity of each sampling port is equal to the listed sensitivity of the detector.

Assuming that only one sampling port will sample smoke laden air, and assuming a balanced piping network design where there is equal airflow, and thus equal sensitivity, at each sampling port, then the effective sensitivity of each sampling port is the listed sensitivity of the detector multiplied by the total number of sampling ports.

SUBSTANTIATION: Nowhere is the term “effective sensitivity” which is used in 6.5.3.1.6 defined. Guidance should also be provided on how to calculate this number, and what factors affect it.

COMMITTEE ACTION: Accept in Principle. Revise text to read as follows:

A-6.5.3.1.6 Because the listed sensitivity for an air sampling smoke detection system is that measured at the detector rather than that at each individual sampling port on its piping network, the entire piping network must be evaluated to determine the effective sensitivity at a sampling port.

Sampling ports that draw in clean air will dilute smoke laden air being drawn in by other ports. The accumulative affect of clean air being drawn through some ports causes dilution which reduces the effective sensitivity of other ports on the same pipe network. Conversely, the accumulative affect of smoke being drawn into multiple sample ports causes the overall effective sensitivity of the air sampling system to increase beyond the sensitivity expected at a single sampling port.

The effective sensitivity of an sampling port is a function of the total number of ports on a piping network and the percentage of those sampling smoke laden air. As the number of ports sampling clean air increases, the effective sensitivity at individual ports on an air sampling smoke detection system is reduced to less than the listed sensitivity of the detector unit.

The following two examples show a best and a worst case scenario:

1. Assuming all sampling ports will sample smoke laden air, with all the ports in one common interior area with the smoke being uniformly mixed throughout the space by an HVAC system, then the effective sensitivity of each sampling port is approximately equal to the listed sensitivity of the detector unit.

2. Assuming that only one sampling port will sample smoke laden air, and assuming a balanced piping network design where there is equal airflow, and thus equal sensitivity, at each sampling port, then the effective sensitivity of each sampling port is the listed sensitivity of the detector multiplied by the total number of sampling ports.

COMMITTEE STATEMENT: Reason for the change: Nowhere is the term “effective sensitivity” defined, which is used in 6.5.3.1.6.

76-515 - (A-6-8.3.1): Accept

SUBMITTER: Ralph E. Transue, Rolf Jensen & Assoc., Inc.

RECOMMENDATION: Change “might” to “may.”

SUBSTANTIATION: May sound better to me.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: Outside the scope of the standard.

76-514 - (A-6-8.3.2.1): Reject

SUBMITTER: Victor LaSala, James & Leonard Engineers, P.C.

RECOMMENDATION: Delete the first sentence and replace with the following:

“Piping other than fire sprinkler which pass over telecommunications equipment shall be provided with drip pans, and monitored by the use of strategically placed water detectors.”

SUBSTANTIATION: Not all piping can be monitored for “water flow.” Piping for house risers, condenser water or chilled water is required to be flowing.

COMMITTEE ACTION: Reject.

76-515 - (A-6-8.2.3): Accept

SUBMITTER: Elaine Thompson, Allied Tube & Conduit

RECOMMENDATION: Revise text:

“Nonmetallic conduit and trays should be permanently marked or labeled to indicate the successful completion of the tests.”

SUBSTANTIATION: Metal conduit and trays may be used for this purpose but testing is not required because metal conduit and tray is considered noncombustible. The recommended change will clarify that only nonmetallic conduit and tray needs to comply with 6-8.2.3.1, 6-8.2.3.2, and 6-8.2.3.3.

COMMITTEE ACTION: Accept.

76-516 - (A-6-8.3.1): Accept in Principle

SUBMITTER: Edward J. Eckert, Nortel Networks/Rep. ANSI Technical Subcommittee T1E1

RECOMMENDATION: Revise text to read:

A-6-8.3.1 The intent of this requirement is that all of the fire and flammability tests contained in ANSI 11.319 be applied to each major equipment system. While 100 percent compliance with some type of assembly level fire tests are highly desirable, it is recognized that such a level of compliance testing is not generally achievable for most electrical equipment assemblies, and that non-compliant peripheral equipment, components, and sub-systems are frequently installed in the same room or frame in a compliant equipment. By requiring industry standard compliant equipment, 100% compliance of the major system, the committee feels that an acceptable level of fire safety is achieved. Where large non-compliant sub-systems are installed, it is recommended that users consider placing non-
compliant equipment in a separate fire compartment to prevent a fire initiating in the non-compliant equipment from spreading to the major system, or provide a gaseous agent fire suppression system in the non-compliant equipment areas.

**SUBSTANTIATION:** The test method of ANSI T1.319 was not designed to be applied to all types of products or to be the sole indicator of fire performance. This test method only provides an indicator of fire spread within equipment consisting of multiple rows of printed wiring boards. Other fire and safety considerations should still be applied.

**COMMITTEE ACTION:** Accept in Principle.

**COMMITTEE STATEMENT:** See Committee Proposal 76-405 (Log #CP45).

---

**76- 516a - (A-6.8.3.2; A.6.8.5): Accept**

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Delete A.6.8.3.2 and A.6.8.5

**SUBSTANTIATION:** There are no such sections in the standard.

**COMMITTEE ACTION:** Accept.

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**76- 517 - (A-7-7): Accept**

**SUBMITTER:** Ralph E. Transue, Rolf Jensen & Assoc., Inc.

**RECOMMENDATION:** Delete.

**SUBSTANTIATION:** Section 7-7 is redundant and does not speak to the intent.

**COMMITTEE ACTION:** Accept.

---

**76- 518 - (A-8-4): Accept**

**SUBMITTER:** Victor LaSala, James & Leonard Engineers, P.C.

**RECOMMENDATION:** Revise text as follows: “Standby power generator...provides stand-by AC...”.

**SUBSTANTIATION:** Typographical error? Generators generate AC power.

**COMMITTEE ACTION:** Accept.

---

**76- 519 - (Figure A-8-4): Accept in Principle**

**SUBMITTER:** Guy R. Franks, Pacific Bell

**RECOMMENDATION:** Figure A-8-4. Show MDF without administrative areas between other equipment.

**SUBSTANTIATION:** The figure used for the pre-fire plan shows the MDF completely isolated from equipment area separated by not only partitioning walls but administrative space. This arrangement is not very typical and may not be found in any usual Bell Operating Company equipment areas. MDFs are located more immediate to other equipment in the room to limit cable run lengths and reduce fuel loads.

**COMMITTEE ACTION:** Accept in Principle.

**Modify to delete administrative space.**

Redesignate A-8-4 to A-8-1 and Figure and modify to read: “For large facilities a written pre-fire plan...”.

**COMMITTEE STATEMENT:** The committee agrees with the submitter’s substantiation.

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**76- 520 - (Figure A-8-4): Accept**

**SUBMITTER:** Technical Committee on Telecommunications

**RECOMMENDATION:** Add the following sketch to A-8-4:

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**76-521 - (A-9-2): Accept**

**SUBMITTER:** R. Bruce Fraser, Len Belliveau, Simplex

**RECOMMENDATION:** Revise the last sentence of the first paragraph as follows: 

“...This procedure should be updated...”.

**SUBSTANTIATION:** Appendix material.

**COMMITTEE ACTION:** Accept.
RECOMMENDATION
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Change “24 AWG” to “22 AWG” and change
“0.045 in.” to “0.041 in.”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

76-522 - (Appendix C): Reject
SUBMITTER: R. Bruce Fraser, Len Belliveau, Simplex
RECOMMENDATION: Move all material to Chapter 10 and correlate.
SUBSTANTIATION: These are referenced publications.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Inappropriate.

76-523 - (Entire Document): Accept in Principle
SUBMITTER: Lawrence A. McKenna, Jr., Hughes Assoc., Inc.
RECOMMENDATION: Revise entire document to change it from a
“Standard” to a “Recommended Practice.”
SUBSTANTIATION: This is a new document, and the impact on the
industry has not been determined. Limited examples of the potential
impact include:
1. Section 1-1 mentions video services, and from that it could be
inferred that cable TV providers would be subjected to regulation by the
document. With the blending of cable and telephone services, this is
a highly likely occurrence. Few of these companies are aware of the
NFPA and the potential impact that this document may have on their
operation. Committee members are not well versed in the
operational needs and practices of cable providers.
2. There are more than 1,000 small telecommunications providers
in North America. These companies have not been well represented
on the technical committee, and the potential impact of this
document has not been adequately assessed by the committee. The
imposition of big-company risk management measures to small-
company operations may impose burdens that could be represented
as anticompetitive.
3. The development of this draft has been largely an exercise in the
adoption of the fire risk management practices of the former Bell
System, with selected exceptions, and modifications to create a
performance-based option. While most of the techniques adopted
are valuable tools, they are based on an underlying set of assumptions
that do not necessarily apply to the wider audience of
telecommunications providers.
4. The inclusion of the performance-based options in the document
is a valuable, yet unproven and untested, addition. There is a
considerable lack of experience in promulgating and using
performance-based documents. In light of this, it is not likely that the
committee has been able to foresee the negative consequences that
may arise.
Given the large degree of uncertainty associated with the proposed
document, it would be better to issue it as a Recommended Practice.
After a few years of feedback from telecommunications companies
regarding their experiences in applying the precepts of the
document it may be appropriate to modify the document and issue it
as a Standard.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed
to a recommended practice, see committee proposal 76-540.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540.

Regional Bell Operating Co.

RECOMMENDATION: Revise entire document to change it from a “Standard” to a “Recommended Practice.”

SUBSTANTIATION: This is a new document, and the impact on the industry has not been determined. Limited examples of the potential impact include:

1. Section 1-1 mentions video services, and from that it could be inferred that cable TV providers will be subjected to regulation by the document. With the blending of cable and telephone services, this is a highly likely occurrence. Few of these companies are aware of the NFPA and the potential impact that this document may have on their operation. The committee did not have adequate representation from the cable service industry. Committee members are not well versed in the operational needs and practices of cable service providers.

2. There remains questions as to which standards and tests are to be used for telecommunications equipment to qualify as “industry standard compliant.”

3. The draft predominantly represents the fire protection practices of the larger U.S. telecommunications companies and not necessarily the practices of the many smaller telecommunications companies or international telecommunications companies, whom were not represented on the committee. While these practices are valuable and have been proven successful, the impact of this standard on the smaller companies and for international application has not been adequately considered by the committee. The lack of representation and/or input from the smaller companies may be considered as anticompetitive.

4. The inclusion of the performance-based options in the document is a valuable, yet unproven and untested addition. There is a considerable lack of experience in promulgating and using performance-based documents. In light of this, it is not likely that the committee has foreseen the negative consequences that may arise. Most AHJs and telecommunications companies will opt for the prescriptive approach due to its ease in understanding and the likely cost considerations associated with hiring a design company to develop a performance-based approach.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540.

76-527 - (Entire Document): Accept in Principle

SUBMITTER: Joseph R. Galaska, US West Inc.

RECOMMENDATION: Return the document to Committee.

SUBSTANTIATION: The performance based approach that has been outlined does not contain requirements for the periodic validation of the original design objectives and assumptions. Administrative requirements (controls) to maintain the design basis will be needed to ensure continued validity.

Controls are not required to be established that ensure each of the assumption parameters continues to be in place. The parameters that form an assumption are not required to be documented. Assumptions are required to be identified but the details making up the assumption are not required to be documented. Implementation of a performance based design necessitates that the design objectives and assumption parameters be identified and appropriate controls.
established to ensure future compliance. These parameters, once identified as part of the approved design basis, need to be contained within a properly implemented control set.

The control set should be part of the required documentation that is subject to review and approval by the Authority Having Jurisdiction. Simple modifications to the occupancy or layout of the facility can adversely impact the effectiveness of the original design basis. While a requirement exists to have safety factors included in the design method there are no requirements to periodically check that safety factors continue to be valid for the current conditions.

Coordination between Chapter 7 and Chapter 3 is necessary to ensure that transient combustibles associated with one day’s worth of work activity do not exceed the limits outlined by the control set. Presently this coordination does not exist.

For the reasons stated above the document should be returned to Committee for revision and enhancement of the performance based approach to include requirements for a control set.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540.

76-532 - (Entire Document): Reject

SUBMITTER: Charles A. Yaunches, Bell Atlantic Corp.

RECOMMENDATION: Return the document to Committee.

SUBSTANTIATION: The document doesn’t address the full breadth of telephone facilities as defined in the document. It does not touch wireless, data transmission and cable type facilities.

The performance based approach to the code does not provide enough guidance to a building/fire official, enabling them to consider various viable design alternatives. What type of fire model could be built around all of the assumptions that are shown? Also, there is need for better coordination between Chapters 3 and 7. There are a number of areas that don’t track with each other.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The committee decided to publish theROP for comment. The submitter should review the ROP and submit specific comments that the committee can act on at the next stage in the process.

76-533 - (Entire Document): Accept in Principle

SUBMITTER: Charles A. Yaunches, Bell Atlantic Corp.

RECOMMENDATION: NFPA 76 should be changed to a Recommended Practice.

SUBSTANTIATION: NFPA 76 should be changed to a Recommended Practice since the essence of the document is derived from Telecom Industry Best Practices which are not necessarily the minimum level of protection necessary to ensure safety. As a Standard, NFPA 76 would establish the minimum consensus requirements, but the basis for the requirements is founded in Best-in-Class. For this reason the document should be revised to be a Recommended Practice rather than a Standard.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540.

76-534 - (Entire Document): Accept in Principle

SUBMITTER: Walter Schachtschneider, Bell Canada

RECOMMENDATION: Revise entire document to change it from a “Standard” to a “Recommended Practice.”

SUBSTANTIATION: The Internet is a significant part of the communications. No input was received from that industry other than perhaps from telephone companies with ISP interests. Typical ISP companies are housed in non-traditional multi-tenant facilities, office buildings, strip malls, etc. Greater protection should be required for such facilities to protect these facilities from external exposures.

Further to this point, most of the activity at Bell Canada is taking place in third party buildings. More explicit guidelines are required for existing facilities.

There are no guidelines for existing facilities. By excluding these facilities other codes could now apply to these existing facilities. These codes could create detrimental impacts for these large and very important facilities. Suggest a section to address existing buildings.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The proposed standard was changed to a recommended practice, see committee proposal 76-540.
76-535 - ( Entire Document): Reject
SUBMITTER: Guy R. Franks, Pacific Bell
RECOMMENDATION: Throughout the document, the term “space” should be used to define the interior occupancies of the building.
SUBSTANTIATION: The standard should use the word “space” to reference the nature of occupancy within a building to minimize the potential for interpretational issues after the standard is released.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Space and area are clarified throughout the document.

76-536 - ( Entire Document): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Change “worst case” to “worst credible” throughout document where appropriate.

SUBSTANTIATION: More appropriate terminology.
COMMITTEE ACTION: Accept.

76-537 - ( Entire Document): Accept
SUBMITTER: Technical Committee on Telecommunications
RECOMMENDATION: Change “standby generator” to “standby engine” throughout the entire document.

SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
NFPA 76
Recommended Practice for the Fire Protection of Telecommunications Facilities
2002 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A. Information on referenced publications can be found in Chapter 9 and Annex C.

Chapter 1 Administration

1.1 Scope. This recommended practice provides recommendations for fire protection of telecommunications facilities where telephone, data, cellular, internet, and video services are rendered. Telecommunications facilities include telecommunications equipment spaces, cable entrance facilities, power areas and battery spaces, main distribution frames, standby engine areas, technical support areas, administrative areas, and building services and support areas within both large and small facilities. This recommended practice includes fire protection of telecommunications service, property protection, and life safety for people in telecommunications facilities. It provides for both performance-based and prescriptive options. This recommended practice specifically excludes telecommunications facilities with less than 46.5 m² (500 ft²) of telecommunications equipment space.

1.1.1 Multiple Tenant Buildings. Telecommunications facilities in multiple tenant buildings not controlled by the telecommunications service provider should be in one of the following:

(1) A building constructed in accordance with NFPA 220, Standard on Types of Building Construction, Type I (443) or (332), or Type II (222) or (111)
(2) A building provided with an automatic suppression system
(3) A single-story building constructed in accordance with NFPA 220, Standard on Types of Building Construction, Type II (000)

The telecommunications facility should be separated from the remainder of the building by 2-hour fire-resistant-rated walls. Within the building selected, the balance of this recommended practice should only apply to the telecommunications facility.

1.2 Purpose. The purpose of this recommended practice is to establish recommendations to provide a reasonable degree of fire protection in telecommunications facilities. These recommendations are intended to provide a reasonable degree of life safety for the occupants and to protect the telecommunications equipment and service continuity.

1.2.1 This recommended practice intends to avoid recommendations that could involve unnecessary complications for or interference with the normal use, occupancy, and operations of telecommunications facilities and equipment.

1.2.2* The telecommunications industry has achieved a remarkably good fire safety record over many years with the exception of a few highly visible incidents, which do not diminish the overall performance record. This recommended practice provides a means by which the industry’s accepted fire safety methods can be applied to continue the historically good fire safety record of these facilities.

1.3* Application. The provisions of this recommended practice are considered necessary to provide a reasonable level of protection from loss of life and property from fire and explosion. The provisions reflect situations and the state-of-the-art at the time the recommended practice was issued.

1.3.1 The provisions of this recommended practice should not be applied to facilities, equipment, structures, or installations that were existing or approved for construction or installation prior to the effective date of the recommended practice, except in those cases where it is determined by the authority having jurisdiction that the existing situation involves a distinct hazard to life or adjacent property.

1.3.2 Any alteration of existing buildings or any installation of new equipment in existing buildings should be accomplished as nearly as practical in conformance with the recommendations of this document. Alterations or new installations in existing facilities should not diminish the level of protection below that which existed prior to the alteration except that protection features in excess of those recommended in this document are not intended to be maintained.

1.4 Design Options.

1.4.1* Available Options. This recommended practice provides both performance-based and prescriptive design options. Fire protection for the individual hazard areas identified in the recommended practice should be based on the performance-based approach of Chapter 3 or the prescriptive approach of Chapters 4 and 5. Either approach should be used selectively by hazard area. Chapters 1, 2, 7, 8, and 9 should apply to all telecommunications facilities within the scope of this recommended practice, regardless of the design approach taken.

1.4.2 Equivalency. Nothing in this recommended practice is intended to prevent the use of calculation methods, test methods, systems, methods, or devices of superior quality, strength, fire resistance, effectiveness, durability, and safety as alternatives to those recommended by this document, provided technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency, and the system, method, or device is approved for the intended purpose.

1.5 Definitions.

1.5.1 Areas.

1.5.1.1 Administrative Area. These areas typically include general offices (i.e., administrative, accounting, engineering), mail rooms, cafeterias, and customer service operation center types of working environments.

1.5.1.2 Building Services and Support Areas. These areas typically include utility spaces, mechanical equipment spaces, maintenance shops, loading docks, and associated storage areas.

1.5.1.3 Hazard Area. An area with specific, established fuel loads and fire hazard characteristics.

1.5.1.4* Power Area/Room. The area/room of a central office that houses the electrical equipment required to power the switching equipment.

1.5.1.5* Technical Support Areas. Areas or spaces within a telecommunications facility that do not classify as telecommunications equipment space but directly support the equipment.
1.5.2* Approved. Acceptable to the authority having jurisdiction.

1.5.3* Authority Having Jurisdiction. The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

1.5.4 Equipment.

1.5.4.1 Building Services Equipment. Building mechanical, electrical, lighting, and power systems not related to telecommunications equipment operations.

1.5.4.2 Co-Located Telecommunications Equipment. Telecommunications equipment that is owned or leased and operated by other service providers (i.e., competitive local or long distance telephone service providers, internet service providers, or cable service providers) that is placed in a telecommunications equipment facility owned by a different telecommunications company.

1.5.4.3 Switching Equipment. Telecommunications equipment that switches calls or data.

1.5.4.4* Telecommunications Equipment. The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data.

1.5.5 Cable Entrance Facility. The area of a telecommunications facility where cables from the outside enter the equipment space and are spliced to cables that extend to termination points.

1.5.6 Cable TV. One- and two-way communications service provided over a video network, generally through co-axial cable.

1.5.7 Cable Vault. Another term for a cable entrance facility.

1.5.8 Central Office (CO). Telecommunications equipment facility that houses primary control functions for telecommunications networks.

1.5.9 Contractor. One who provides a service or product to a telecommunications company.

1.5.10 Detection Systems.

1.5.10.1 Early Warning Fire Detection (EWFD) Systems. Systems that use smoke, heat, or flame detectors to detect fires before high heat conditions seriously threaten human life or cause significant damage to telecommunications service.

1.5.10.2 Standard Fire Detection (SFD) Systems. Systems that use fire detection—initiating devices to achieve certain life safety and property protection in accordance with applicable NFPA standards.

1.5.10.3 Very Early Warning Fire Detection (VEWFD) Systems. Systems that detect low-energy fires before the fire conditions seriously threaten telecommunications service.

1.5.11 Equipment Space. A space within a telecommunications facility that houses the network equipment including hazards areas such as a telecommunications equipment space; a cable entrance facility (CEF); power area (including batteries); main distribution frame (MDF); standby engine area; and technical support areas contiguous to the above hazard areas.

1.5.12 Firestop System. An approved method, utilizing a combination of materials and/or devices, which could include the penetrating items, required to form a complete firestop.

1.5.13 Inverter. A device that converts direct current electricity to alternating current electricity.

1.5.14* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

1.5.15 Main Distribution Frame (MDF). The area of a central office where a wiring arrangement connects the telephone lines coming from the cable entrance facility to the internal telephone lines that run to the switching equipment. A main distribution frame could also carry protective devices as well as function as a central testing point.

1.5.16 Non-Equipment Space. A space within a telecommunications facility that is not defined as equipment space including hazard areas such as administrative areas and building service and support areas.

1.5.17 Port. An orifice, sized by a computer program, in smooth bore pipe through which (smoke laden) air is drawn by an aspirating device to a very early warning detector.

1.5.17.1 Sampling Port. An orifice, in smooth bore pipe through which air is drawn by an aspiration device to a very early warning detection system.

1.5.18 Rated. A description of performance derived from testing or evaluation that guides appropriate selection, installation, and use of equipment that is not listed.

1.5.19* Rectifier. A device that converts alternating current into direct current.

1.5.20 Sensor. A device, such as a photoelectric cell, that receives and responds to stimulus.

1.5.21 Smoke Control. The control of smoke movement to areas beyond the compartment where it is being generated by creating a pressure gradient (high pressure on the side being protected) or an airflow barrier (through opening or down corridor in the direction of source of smoke).

1.5.22 Smoke Management System. An engineered system that uses mechanical fans to produce airflows and pressure differences across barriers to limit and direct smoke movement.

1.5.23 Smoke Removal. The control of smoke accumulation in the space where it is being generated by providing appropriate supply and exhaust to purge the smoke and prevent smoke movement to adjoining spaces.

1.5.24* Standby Engine Room. The area of a central office where the standby power system resides.

1.5.25 Telecommunications. The transmission, receiving, switching, and management of signals, such as electrical, optical, or electromagnetic by wire, fiber, or through the air.
Chapter 2 Risk Considerations

2.1* Risk Factors. Fire protection programs for telecommunications facilities should be determined based on an evaluation of the risks and hazards associated with public safety, life safety of facility employees, continuity of service, types of services provided, redundancy of facilities, property protection, and the communities served.

2.1.1 The following factors should be considered when determining the fire risk and protection strategies for the network, occupants, equipment, communications function, and data transmission:

(1) Public safety aspects of the service including emergency communications (such as 911), national defense communications requirements, video transmission of critical medical operations, and other vital data

(2) Exposure threat to occupants or exposed property from a fire occurring at, or within, the facility

(3) Potential economic losses resulting from a loss of communications

(4) The presence, or lack of, redundant facilities

(5) Potential economic losses due to equipment damage, equipment replacement costs, and the availability of replacement equipment

(6) Extent of the service disruption beyond the facility in question

2.2 Communications Risks. In assessing and evaluating the damage and interruption potential of the loss of communication operations, attention should be given to the impact of the loss of data, voice, and video communications links. The complexity and scope of switching equipment operations can make it necessary to provide internal redundancy, alternative routing, and in some cases dual access terminal in order to prevent communication outages.

2.3 Multiple-Tenant Building Risks. Telecommunications equipment space located in a structure or building housing multiple tenants or occupancies that are or are not associated with the telecommunications equipment space should include additional risk analysis.

2.3.1 The hazard of adjacent tenants/occupancies should be identified and evaluated with respect to the consequences that could result from a fire or explosion exposure to the telecommunications equipment space.

2.3.2 The fire protection features provided for any adjacent tenant/occupancy should at a minimum be consistent with that recommended for building service and support areas that are normally found in telecommunications facilities.

2.3.3 Space is normally found in telecommunications facilities.

2.3.1* Extent of the service disruption beyond the facility in question

2.3.2* The presence, or lack of, redundant facilities

2.3.3* Fire that starts remote from the area being protected but grows to expose that which is being protected.

2.3.4* Fire Model. Structured approach to predicting one or more effects of a fire.

2.3.5* Fire Scenario. Specification of fire conditions under which a proposed design is expected to meet the fire safety goals.

2.3.6* Fuel Load. The total quantity of combustible contents of a building, space, or fire area.

2.3.7* Incapacitation. Conditions where humans do not function adequately and become unable to escape the untenable conditions.

2.3.8* Occupant Characteristics. Abilities or behaviors of people before and during a fire.

2.3.9* Proposed Design. Design developed by a design team and submitted to the authority having jurisdiction for approval.

2.3.10* Safe Location. Location remote or separated from the effects of a fire such that those effects presently do not pose a threat.

2.3.11* Safety Factor. Factor applied to a predicted value to ensure that a sufficient safety margin is maintained.

2.3.12* Safety Margin. Difference between a predicted value and the actual value when a fault condition is expected.
3.1.6.12 Sensitivity Analysis. Analysis performed to determine the degree to which a predicted output will change given a specified change in an input parameter, usually in relation to models.

3.1.6.13 Uncertainty Analysis. Procedure undertaken to determine the degree to which a predicted value could vary.

3.1.6.14 Verification Method. Procedure or process used to indicate that the proposed design and installation can meet the specified criteria.

3.2 Performance Objectives.

3.2.1 Life Safety Objectives. The facility design should provide occupants of the telecommunications facility adequate time to exit the building or to reach a safe area of refuge without being exposed to untenable conditions.

3.2.2 Network Objectives.

3.2.2.1 The facility design should limit the effects of a worst credible design fire in a nontechnologies equipment space from causing an unacceptable network failure.

3.2.2.2 The facility design should limit the effects of a worst credible design fire in a telecommunications equipment space from causing an unacceptable network failure.

3.3 Performance Criteria.

3.3.1 Life Safety Performance Criteria.

3.3.1.1 The fire protection and life safety design of the facility should provide for tenable conditions along egress paths for the time required to evacuate occupants to a safe area using either of the following options:

(1) NFPA 101®, Life Safety Code®, performance-based section

(2) NFPA 101, Life Safety Code, prescriptive sections

3.3.1.2 For purposes of application of NFPA 101, Life Safety Code, prescriptive requirements, telecommunications equipment spaces, including technical support areas, should be considered special purpose industrial occupancies.

3.3.1.3 When the NFPA 101, Life Safety Code, performance-based methodology is utilized to assess the level of life safety provided in the facility, the fire scenarios specified in this document should be considered along with the scenarios provided in NFPA 101.

3.3.2 Network Performance Criteria.

3.3.2.1 When telecommunications equipment is exposed to a worst credible fire scenario, the facility design should limit temperatures in a manner that protects against unacceptable network failure.

3.3.2.2 When telecommunications equipment is exposed to a worst credible fire scenario, the facility design should limit the effects of products of pyrolysis or combustion in a manner that protects against unacceptable network failure.

3.4 Design Assumptions.

3.4.1 General. The design should include documentation on the clear statement, data sources, and topics outlined in 3.4.1.1 through 3.4.1.3.

3.4.1.1 Clear Statement. Assumptions used in the performance-based design should be clearly stated.

3.4.1.2 Data Sources. The sources of data used in analyses should be documented.

3.4.1.3 Topics. Assumptions should include, but not be limited to, the topics addressed in 3.4.2 through 3.4.5.

3.4.2 Assumptions Regarding Facility Characteristics.

3.4.2.1 Assumptions about the building dimensions, construction materials, furnishings, spatial geometry, number and size of openings, and other details that are input into calculations or models should be explicitly identified and should be consistent with the facility construction and content.

3.4.2.2 Assumptions regarding characteristics of the building or its contents, equipment, or operations not inherent in the design specifications but that affect occupant behavior or the rate of hazard development should be explicitly identified.

3.4.3 Assumptions Regarding Operational Status and Effectiveness of Building Features and Systems.

3.4.3.1 All fire protection systems and features of the building should comply with applicable NFPA standards for those systems and features and, based on compliance with such standards, should be assumed to be fully operational and reliable.

3.4.3.2 The assumption of full operability and reliability should not apply to those systems or features for which a scenario is specifically and explicitly defined to involve the impairment of that system or features.

3.4.3.3 Assumptions about the performance of fire protection systems and building features should be limited to the documented performance of the components of those systems or features.

3.4.4 Assumptions Regarding Emergency Response Personnel.

3.4.4.1 Assumptions regarding the availability, speed of response, effectiveness, roles, and other characteristics of emergency response personnel should be explicitly identified.

3.4.5 Assumptions Regarding Off-Site Conditions.

3.4.5.1 Assumptions regarding resources or conditions outside the property being designed that affect the ability of the building to meet the stated goals and objectives should be explicitly identified.

3.4.6 Consistency of Assumptions. The design should not include mutually inconsistent assumptions.

3.4.7 Assumptions Applicable to Specific Facility Hazard Areas. Assumptions are intended to provide the design basis for fire scenarios involving telecommunications facilities. To facilitate design, analysis, and review, these assumptions are presented for those hazard areas expected in telecommunications facilities.

3.4.8 Special Provisions. Additional provisions not covered by Section 3.4 assumptions but that are necessary for the design to comply with the performance objectives should be documented.

3.4.8.1 Telecommunications Equipment Spaces. A telecommunications equipment space is the space, in which the telecommunications equipment is located, extending to fire safe compartmentation (either fire-rated walls or exterior walls of the
Telecommunications equipment spaces could contain associated power, main distribution frame, communications cables, and related support equipment. Telecommunications equipment spaces, if occupied, are normally only occupied by employees directly supporting the equipment. The occupants are assumed to be trained, alert, and capable of self-rescue. The occupancy load is assumed to be low from an egress standpoint. These spaces have a low probability of fire ignition and sustainability because of the limited quantity of combustible products. If a fire does start, the items in the space that could burn include cables that when burning will produce highly corrosive products of combustion.

3.4.8.2 Cable Entrance Facilities. A cable entrance facility is the interface point between the outside plant cabling and the telecommunications equipment. These spaces are normally unoccupied. When these spaces are occupied, it is assumed that the occupants within these spaces are trained, alert, and capable of self-rescue. The occupancy load is assumed to be low from an egress standpoint. These facilities are assumed to contain communications cables as defined in NFPA 70, National Electrical Code®. These spaces have the potential for accumulating combustible gases, such as methane, that enter the facility through underground cable openings. Fires within cable entrance facilities, whether of high or low heat release rate, are a concern due to the corrosivity of the products of combustion. Combustion products generally contain acid gases and solid particulates. Effects on the reliability of electronic equipment range from degradation of performance and reduction in the expected service life to complete failure of the equipment. Recovery methods such as reduced levels of relative humidity within the space and cleaning of the equipment have been shown to minimize the detrimental effects of exposure to combustion products.

3.4.8.3 Power Areas. These areas typically include the batteries, rectifiers, inverters, and related bus bars and cables. It is assumed that the thermal effects of a fire in the equipment will be contained within the equipment. Fires in battery casings and cables are a concern due to the corrosivity of the smoke that is generated. Occupants are assumed to be trained, alert, and capable of self-rescue. The occupancy load is relatively low from an egress standpoint. The fire loading of the area is low. Batteries can generate hydrogen during charging that could be an explosion hazard. It is assumed that the possibility of thermal runaway has been mitigated through battery management. Additionally, it is assumed that the hydrogen explosion hazard will be mitigated and localized by adequate ventilation of the area.

3.4.8.4 Main Distribution Frame. The main distribution frame is a wiring frame through which customer’s phone lines are physically connected to telecommunications switching equipment or where cable connections between switching equipment are made. Replacement of a frame damaged as a result of a fire is extremely labor intensive. Occupants in this area are assumed to be trained, alert, and capable of self-rescue. The occupancy load is relatively low from an egress standpoint. This area typically includes large amounts of low voltage communication wire. Fires within main distribution frame areas, whether of high or low heat release rate, are a concern due to the corrosivity of the products of combustion. Combustion products generally contain acid gases and solid particulates. Effects on the reliability of electronic equipment range from degradation of performance and reduction in the expected service life to complete failure of the equipment. Recovery methods such as reduced levels of relative humidity within the space and cleaning of the equipment have been shown to minimize the detrimental effects of exposure to combustion products.

3.4.8.5 Standby Engine Areas. These areas typically include internal combustion engines, generators, combustible liquids (day tank) or flammable gas, and starting batteries. It is assumed that a fire in the area is a Class B fire or a Class C fire. Occupants are trained, alert, and capable of self-rescue. The occupancy load is low from an egress standpoint.

3.4.8.6 Technical Support Areas and Ancillary Areas. The technical support and vendor staging areas that directly support telecommunications equipment are a part of the telecommunications spaces or areas. The occupancy load is low from an egress standpoint.

3.4.8.7 Administrative Areas. These areas typically include offices (i.e., administrative, accounting, engineering), mail rooms, cafeterias, and customer service operation center types of working environments. The fire loading of these areas varies from low for customer service center to medium for accounting and engineering offices. The occupancy load is medium from an egress standpoint.

3.4.8.8 Building Services and Support Areas. These areas typically include utility spaces, mechanical equipment spaces, the various maintenance shops, loading docks, and associated storage areas. The fire loading of these areas varies from medium for maintenance shops to high for storage areas. It is assumed that combustibles will be in accordance with 7.1.1.

3.5 Fire Scenarios.

3.5.1 Design Fires. A performance-based design should be based on the evaluation of safety design alternatives against design fires considered in the fire scenarios in 3.5.2.1 through 3.5.2.7.

3.5.1.1 Design fires should be developed for each scenario using a method acceptable to the authority having jurisdiction and appropriate for the conditions.

3.5.1.2 The scenario specifications should be as challenging as could realistically occur in the space.

3.5.1.3 The proposed design should meet the goals and objectives if it achieves the performance criteria for each scenario.

3.5.2 Design Fires.

3.5.2.1 Specified Scenarios. The following scenarios should describe ignition sources, general types of fuels involved in a fire, and spread factors expected in telecommunications facilities. The evaluation of alternative designs against the scenario should consider the actual or intended construction and geometry of confining boundaries, if any, and the size, configuration, and location of ventilation openings. Other scenarios should be developed as needed to meet specific design situations. Although life safety might not be a factor in all scenarios, the potential of occupant exposure to fire should be considered in scenario development.

3.5.2.1.1 Electrical Component or Systems Fires. These scenarios should be representative of an electrical fire ignited by an electrical overload or component failure in an electrical component or system that is supported in a rack or cabinet and located in a room dedicated to telecommunications operations that directly support network service.
3.5.2.1.1 The design fire developed for these scenarios should address the following:

(1) The early stages in the fire development when the major damage mechanism is exposure of equipment and circuits in proximity to the failed components in the rack or cabinet to corrosive and conductive products of combustion.

(2) Fire spread to other racks in a cabinet or cabinet-to-cabinet spread if the materials of construction and configuration facilitate such fire growth.

3.5.2.1.2* Communication Cable or Power Cable Fires. These scenarios should be representative of a fire in cables or wires installed in or passing through the compartments under analysis.

3.5.2.1.2.1 The design fire developed for these scenarios should consider both the early stages in the fire development when the major damage mechanism is exposure of equipment and circuits in the compartments to corrosive and conductive products of combustion and the later stage fire growth and peak heat release rates that could result in fire extension to additional fuel packages or compartments.

3.5.2.1.3* Nontelecommunications Equipment Fires. These scenarios should be representative of a free-burning fire in ordinary combustibles, ignited by a small open-flame source, and these scenarios should apply in technical support areas and ancillary areas such as administrative areas and building support spaces where telecommunications equipment is not exposed or in spaces containing telecommunications equipment.

3.5.2.1.3.1 The design fire developed for these scenarios should consider fire growth and peak heat release rates that could result in fire extension to additional fuel packages or compartments.

3.5.2.1.4* Ignitible Liquid Fires. These scenarios should consider the ignition of any flammable or combustible liquids located within the area in question, with subsequent ignition of exposed combustibles. The analysis should consider the specific properties of the liquid fuel as related to the development of vapor-air mixtures that could result in deflagrations. The fire size should be based upon the maximum potential exposed liquid surface area, taking into consideration the presence of liquid release or spill containment barriers.

3.5.2.1.4.1 The design fire developed for these scenarios should consider rapid fire growth and short time to reach peak heat release rates and compartment damage that could result in rapid fire extension to additional compartments.

3.5.2.1.5* Combustible Gas Fires. These scenarios should be representative of those areas in which the potential for the build-up of combustible gases and the ignition of a flammable gas/air mixture within the space exists. The selected scenarios should include rapid pressure rise with damage to exposed equipment and compartment boundaries with no subsequent fire or rapid ignition of easily ignited combustible materials within the space or a combination of both. The fire exposure to adjacent equipment and equipment spaces should be based upon the sustained burning of combustible materials within the space.

3.5.2.1.5.1 The design fire developed for these scenarios should consider damage to equipment and compartment boundaries due to thermal and pressure effects from an explosion or deflagration, and rapid fire extension to additional compartments.

3.5.2.1.6* Interior Exposure Fires. These scenarios should be representative of spread of fire and of passage of fire products from a fire scenario originating in any of the adjacent building spaces into the target area, including exposures from below or above the target area.

3.5.2.1.6.1 The design fire developed for these scenarios should consider both the fire growth and peak heat release rates in the exposing compartment and the fire growth and peak heat release rates that would result from fire growth and spread within the exposed compartment.

3.5.2.1.7* Exterior Exposure Fires. These scenarios should be representative of damage by exposure to smoke or thermal energy from an uncontrolled fire exterior to the building or space in question and should consider ignition of combustible exterior building finishes, building contents exposed through openings or combustible materials adjacent to building openings, or damage resulting from smoke or corrosive products of combustion.

3.5.2.1.7.1 The design fire developed for these scenarios should consider spread by convection, radiation, or direct flame contact as appropriate.

3.6 Methods of Assessing Performance.

3.6.1 General. A proposed design’s performance should be assessed relative to each performance objective in Section 3.2 and each applicable scenario in Section 3.5, with the assessment conducted through the use of appropriate calculation methods, including computerized modeling programs.

3.6.1.1 The proposed design should meet the goals and objectives if its performance is verified.

3.6.1.2 The installation should be deemed to meet the goals and objectives if its performance is verified.

3.6.2 Use. The design professional should use the assessment methods to demonstrate that the proposed design will achieve the goals and objectives, as measured by the performance criteria in light of the safety margins and uncertainty analysis, for each scenario, given the assumptions.

3.6.3 Safety Factors. Reasonable safety factors should be included in the design methods and calculations to reflect uncertainty in the assumptions and other factors associated with the performance-based design.

3.6.4 Output Data. The assessment methods used should accurately and appropriately produce the necessary output data from input data based on the design specifications, assumptions, and scenarios.

3.6.5 Validity. Evidence should be provided confirming that the assessment methods are valid and appropriate for the proposed facility, use, and conditions.

3.6.5.1 The validity and applicability of all mathematical models, computer models, scale models, or any combination used in developing a performance-based design should be documented.

3.6.5.2 Limitations of models used should be clearly stated.

3.6.6* Methods for Verifying Performance. The performance predicted by the performance design analysis should be verified, to
the extent practical, by field testing of the installed subsystems (e.g., fans, dampers, fire detection, fire alarm) in accordance with industry practices.

3.7 Documentation.

3.7.1 General. All aspects of the design, including those described in 3.7.2 through Section 3.8, should be documented.

3.7.2 Hazard Mitigation Specifications. All details of the proposed hazard mitigation plan to meet the stated goals and objectives should be documented.

3.7.3 Building Design Specifications. All details of the proposed building design that affect the ability of the building to meet the stated goals and objectives should be documented.

3.7.4 Survivability Criteria. Survivability criteria, with sources, should be documented.

3.7.5 Fire Scenarios. Descriptions of fire scenarios should be documented.

3.7.6 Input Data. Input data to models and assessment methods, including sensitivity analysis, should be documented.

3.7.7 Output Data. Output data from models and assessment methods, including sensitivity analysis, should be documented.

3.7.8 Safety Factors. Safety factors utilized should be documented.

3.7.9 Prescriptive Elements. Any prescriptive elements used should be documented.

3.8 Acceptance. Acceptance testing, evaluation, and approval by the authority having jurisdiction should be documented.

Chapter 4 Large Telecommunications Facilities

4.1* General.

4.1.1 Application. A large telecommunications facility includes operations such as switching, transmission, and routing of voice data and or video signals within an enclosed area of greater than 232 m² (2500 ft²) of telecommunications equipment space.

4.1.2* Prescriptive Approach. Where the performance-based approach of Chapter 3 is not used, the prescriptive recommendations of this chapter should apply.

4.1.3 Co-Located Telecommunications Equipment. Major co-located telecommunications equipment installation, operation, and maintenance should meet the recommendations of this chapter.

4.2 Construction. Building construction should be in accordance with Section 6.2.

4.3* Protection from Exposures. Exterior walls and openings should be protected as required by the applicable building code or should be protected in accordance with the provisions of NFPA 80A, Recommended Practice for Protection of Buildings from Exterior Fire Exposures, where no building code is adopted.


4.4.1 For purposes of application of NFPA 101, Life Safety Code, requirements, telecommunications equipment spaces, including technical support areas, should be considered special purpose industrial occupancies.

4.5 Telecommunications Equipment Spaces.

4.5.1 General. Telecommunications equipment spaces should be arranged to provide protection against fires in adjacent spaces; to provide protection against fire spread to adjacent equipment; to provide protection from fire, smoke, and related thermal and nonthermal equipment damage; and to increase the survivability of the equipment for continuity of service.

4.5.2 Construction.

4.5.2.1 Floor/Ceiling Assemblies. Floor/ceiling assemblies over telecommunications equipment spaces should be constructed to protect against the penetration of water from the roof or occupied spaces above.

4.5.2.2 Raised Floors.

4.5.2.2.1 Structural supporting members and decking for raised floors should be of noncombustible material.

4.5.2.2.2 Access sections or panels should be provided in raised floors so that all the space beneath is accessible. Floor puller(s) should be provided to gain access beneath the raised floor.

4.5.2.2.3 Electric cable openings in floors should be made smooth or should be otherwise protected to preclude the possibility of damage to the cables.

4.5.2.2.4 The space beneath any raised floors should not be used for storage.

4.5.2.2.5 Abandoned cables and cables not identified for future use should be removed from the underfloor space.

4.5.3* Compartmentation. Telecommunications equipment spaces should be separated from non-equipment spaces by a minimum 1-hour fire-resistive construction, in accordance with Section 6.3.

4.5.4 Building Service Equipment. Building services should be provided in accordance with the requirements of the applicable mechanical and electrical codes.

4.5.4.1 Where a heating, ventilating, and air-conditioning (HVAC) system is provided for the telecommunications equipment spaces, it should comply with one of the following:

1. An HVAC system that is dedicated for telecommunications equipment use and is separate from other building/hazard areas

2. An HVAC system that serves other hazard areas and serves the telecommunications equipment spaces where the air ducts are provided with automatic smoke and fire dampers

4.5.4.2 Dampers in HVAC systems serving compartmented telecommunications equipment spaces should operate upon activation of smoke detectors, unless the HVAC system is part of the smoke management system (see Section 6.7).
4.5.4.3* HVAC ducts and air transfer openings serving nontelecommunications equipment areas should have smoke dampers or combination fire/smoke dampers installed in the ducts or air transfer openings where they penetrate the wall to the telecommunications equipment area. The dampers should be installed in accordance with NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems.

4.5.4.4 All duct insulation and linings, including vapor barriers and coatings, should be noncombustible.

4.5.4.5 Air filters for use in air-conditioning systems should be limited combustible and installed in accordance with manufacturer’s instructions.

4.5.4.6* HVAC systems should be provided with either automatic shutdown or manual shutdown or both. The automatic shutdown of the HVAC system should be accomplished through the fire alarm system or the facility management system. Automatic shutdown of HVAC should not take place prior to confirmation of the presence of smoke.

4.5.4.6.1 HVAC components that make up part of the automatic smoke management system should not be arranged to shut down upon detection of smoke. (See Section 6.7.)

4.5.4.6.2 When the affected compartment is smoke isolated from the balance of the facility, the system design should be reviewed to determine if the balance of the HVAC system should continue to operate.

4.5.4.6.3 HVAC systems in individual unaffected spaces should be permitted to continue to operate.

4.5.4.6.4* HVAC systems in individual affected spaces should be permitted to continue to operate until confirmation of circulation of smoke. HVAC units should be permitted to be shut down on an individual basis.

4.5.4.7 Emergency lighting should be provided in the telecommunications equipment spaces, in accordance with NFPA 101, Life Safety Code.

4.5.5 Telecommunications Equipment.

4.5.5.1 All cables and telecommunications equipment installed after January 1, 2003, whether owned or co-located, should meet the recommendations in Section 6.8 as appropriate for the type of cable or telecommunications equipment.

4.5.5.2* Telecommunications equipment should be industry-standard compliant and should be installed and used in configurations and uses for which it has been tested.

4.5.5.3 Cables and equipment that do not comply with the fire safety requirements of standards referenced in Section 6.8 should be separated from the remainder of the telecommunications equipment space by either of the following:

(1) Sufficient spatial separation and smoke management to prevent fire and smoke damage to equipment other than the equipment of fire origin

(2) A rated fire separation with a minimum fire resistance of 1 hour

4.5.5.3.1 Where major equipment, wire, or cable do not comply with Section 6.8 then automatic fire suppression should be provided.

4.5.6 Fire Detection.

4.5.6.1 General. Telecommunications equipment spaces should be provided with a very early warning fire detection (VEWFD) system for detection and alarm processing in accordance with Chapter 6.

4.5.6.1.1 Raised floor areas that do not have a common airflow with the above floor area and contain combustibles should be provided with early warning fire detection (EWFD).

4.5.6.1.2 Where raised floor areas share common airflow with the above floor area, the VEWFD provided above should be considered adequate to protect the area below the raised floor.

4.5.6.2 Installation. All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, National Fire Alarm Code®.

4.5.7 Fire Suppression.

4.5.7.1 Portable Fire Extinguishers. Telecommunications equipment spaces should be provided with listed portable fire extinguishers suitable for use on electronic equipment in accordance with Section 6.6.

4.5.7.1.1 The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4.5.7.1.2 Because of the sensitive nature of the electronic equipment, dry chemical and corrosive liquid agent portable fire extinguishers should not be used.

4.5.7.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided, they should be in accordance with Section 6.6. Careful consideration should be made to recognize the impact the agent could have on the energized telecommunications equipment.

4.5.8 Limitation of Combustibles. Telecommunications equipment spaces should not be used for the storage of combustible materials or other equipment unrelated to the switching, transmission of voice, data, or video signals, and associated power systems.

4.5.8.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited in accordance with Section 7.4.

4.5.8.2 Small work spaces, directly related to the support of the telecommunications equipment, should be permitted within the equipment area if furnishings meet California Technical Bulletin 133, State of California Department of Consumer Affairs Bureau of Home Furnishings, and Thermal Insulation Technical Bulletin 133, Flammability Test Procedure for Seating Furniture for Use in Public Occupancies, or UL 1056, UL Standard for Safety Fire Test of Upholstered Furniture, and noncombustible containers are provided for combustible materials.

4.5.9 Special Hazards.

4.5.9.1 Hazardous operations, such as cutting and welding, should not be conducted without special permits.
4.5.9.2 Heat-producing appliances not related to the support of telecommunications equipment should not be permitted within the space.

4.5.10 Smoke Management Systems. Where smoke management systems are provided, they should comply with Section 6.7.

4.6 Cable Entrance Facilities.

4.6.1 General. Cable entrance facilities should be arranged to minimize the intrusion of gas into the building; limit the fuel load; prevent the spread of fire and smoke to other areas; and prevent the intrusion of unwanted electrical sheath currents in accordance with NFPA 70, National Electrical Code.

4.6.2 Compartmentation. Cable entrance facilities should be separated from adjacent equipment and non-equipment spaces by a minimum of 2-hour fire-resistance-rated construction in accordance with Section 6.2.

4.6.2.1 The recommended fire resistance should be permitted to be reduced to 1 hour, if the cable entrance facility is protected throughout by an automatic fire suppression system.

4.6.2.2 Compartmentation is not necessary where the cable entrance terminates directly within the main distribution frame area.

4.6.3 Building Service Equipment. Building service equipment should be limited to that needed to support the space.

4.6.4 Telecommunications Equipment. All cables and equipment that extend from the cable entrance facility to other spaces within the building installed in cable entrance facilities after January 1, 2003, whether owned or co-located, should be in accordance with Section 6.8 as appropriate for the type of cable or equipment.

4.6.5 Fire Detection.

4.6.5.1 General. Cable entrance facilities should be provided with EWFD systems in accordance with Chapter 6 for detection and alarm processing.

4.6.5.1.1 Where ambient conditions prohibit installation of automatic smoke detection, other appropriate automatic fire detection should be considered.

4.6.5.2 Installation. All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, National Fire Alarm Code.

4.6.6 Fire Suppression.

4.6.6.1 Portable Fire Extinguishers. Cable entrance facilities should be provided with listed portable extinguishers suitable for use on electronic equipment in accordance with Section 6.6. The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4.6.6.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided, they should be in accordance with Section 6.6.

4.6.7 Limitation of Combustibles. Cable entrance facilities should not be used for the storage of combustible materials, or other equipment not related to the cable entrance facility operations.

4.6.8 Special Hazards. Cable entrance facilities should be vented with either gravity vents or with positive venting, in order to minimize the buildup of methane gas.

4.7 Power Areas.

4.7.1 General. Power areas should be arranged to provide protection against fire and smoke in adjacent spaces, to provide protection against fire and smoke spread to adjacent equipment, and to provide for the capability to disconnect power from telecommunications equipment to facilitate emergency intervention.

4.7.2 Compartmentation. Power areas should be separated from adjacent non-equipment spaces by a minimum of 1-hour fire-resistance-rated construction in accordance with Section 6.2.

4.7.3 Building Service Equipment. Building services should be provided in accordance with the requirements of the applicable mechanical and electrical codes.

4.7.4 Telecommunications Equipment. All cables and equipment installed in power areas after January 1, 2003, whether owned or co-located, should be in accordance with Section 6.8 as appropriate for the type of cables and equipment.

4.7.5 Fire Detection.

4.7.5.1 General. Power areas should be provided with an EWFD system in accordance with Chapter 6 for detection and alarm processing.

4.7.5.2 Installation. All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, National Fire Alarm Code.

4.7.6 Fire Suppression.

4.7.6.1 Portable Fire Extinguishers. Power areas should be provided with listed portable extinguishers suitable for use on electronic equipment in accordance with Section 6.6. The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4.7.6.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided in power areas, they should be in accordance with Section 6.6. Careful consideration should be made to recognize the impact the agent could have on the energized telecommunications equipment.

4.7.7 Limitation of Combustibles. Power areas should not be used for the storage of combustible materials or other equipment not related to the power area operations.

4.7.7.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited in accordance with Section 7.4.

4.7.8 Special Hazards.

4.7.8.1 Safety Venting. Lead acid batteries should be provided with safety venting caps.

4.7.8.2 Spill Control and Neutralization. An approved method and appropriate materials for the control and neutralization of a spill of electrolyte should be provided in power areas.
4.7.8.2.1 The method and materials should be capable of controlling and neutralizing a spill from the largest battery cell to a pH of between 7.0 and 9.0.

4.7.8.3* Thermal Runaway. The potential of thermal runaway of valve regulated lead acid (VRLA) batteries should be reduced by a proper battery management program.

4.7.8.4 Ventilation. When a separate room is provided for the DC power plant, the room should be provided with mechanical exhaust ventilation to limit the maximum concentration of hydrogen to 1.0 percent of the total volume of the room, or continuous ventilation should be provided at the rate of not less than 1 ft³/min/ft² of floor area of the room.

4.7.8.5 Signs. When a separate room is provided for the DC power plant, doors into the room should be provided with signs indicating the use of the room.

4.7.8.6 Seismic Protection. The battery systems should be seismically braced in seismic zones that need such bracing.

4.7.9 Smoke Management Systems. Where smoke management systems are provided, they should comply with Section 6.7.

4.8 Main Distribution Frames.

4.8.1 General. Main distribution frame spaces should be arranged to provide protection against fires in adjacent spaces; protect against fire spread to adjacent equipment; to provide protection from smoke and related nonthermal damage; and to increase the survivability of the main distribution frame.

4.8.2* Compartmentation. Main distribution frames should be separated from non-equipment spaces by a minimum of 1-hour fire-resistance-rated construction in accordance with Section 6.3.

4.8.2.1 Main distribution frames consisting of components that do not meet the fire safety requirements of standards referenced in Section 6.8 should be separated from other equipment spaces by 1-hour fire-resistance-rated construction, or the area should be protected throughout by an automatic fire suppression system.

4.8.3 Building Service Equipment. Building service equipment should be limited to that needed to support the space.

4.8.4 Telecommunications Equipment. All cables and equipment installed after January 1, 2003, whether owned or co-located, should be in accordance with Section 6.8 as appropriate for the type of cables and equipment.

4.8.5 Fire Detection.

4.8.5.1 General. Main distribution frame spaces should be provided with a VEWFD system in accordance with Chapter 6 for detection and alarm processing.

4.8.5.1.1 Raised floor areas that do not have a common airflow with the above floor area and contain combustibles should be provided with EWFD.

4.8.5.1.2 Where raised floor areas share common airflow with the above floor area, the VEWFD provided above should be considered adequate to protect the area below the raised floor.

4.8.5.2 Installation. All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, National Fire Alarm Code.

4.8.6 Fire Suppression.

4.8.6.1 Portable Fire Extinguishers. Main distribution frame spaces should be provided with listed portable fire extinguishers suitable for use on electronic equipment in accordance with Section 6.6.

4.8.6.1.1 The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

4.8.6.1.2 Because of the sensitive nature of the electronic equipment, dry chemical and corrosive liquid agent portable fire extinguishers should not be used.

4.8.6.2 Automatic Fire Suppression. Where automatic fire suppression systems are provided, they should be in accordance with Section 6.6. Careful consideration should be made to recognize the impact the agent could have on the energized equipment.

4.8.7 Limitation of Combustibles. Main distribution frame spaces should not be used for the storage of combustible materials or other equipment not related to the main distribution frame operations.

4.8.7.1 Combustible construction and maintenance materials for work that directly supports telecommunications equipment should be limited in accordance with Section 7.4.

4.8.8 Special Hazards. Heat-producing appliances not related to support of main distribution frame activities should not be permitted.

4.8.9 Smoke Management Systems. Where smoke management systems are provided, they should comply with Section 6.7.

4.9 Standby Engine Areas.

4.9.1 General. Standby engine areas should be arranged to prevent the spread of fire to adjacent spaces and to reduce the hazards associated with the fuel supply for the generator.

4.9.2 Construction. Where used, soundproofing should be of noncombustible or limited-combustible materials.

4.9.3 Compartmentation.

4.9.3.1 Standby Engine Areas. Standby engine areas should be separated from adjacent spaces by a minimum of 2-hour fire-resistance-rated construction in accordance with Section 6.3, or for standby engine areas protected by automatic fire suppression systems, the fire resistance rating of the enclosure can be reduced to a minimum of 1 hour.

4.9.3.2* Fuel Control. To limit fire spread and flashback, fuel supplies to standby engines should be controlled by appropriate containment, automatic fuel cutoffs in lines supplying the standby engine and any tanks in the compartment, and by appropriate control of effluent.

4.9.4 Building Service Equipment. Building services should be provided in accordance with the requirements of the applicable mechanical and electrical codes.
4.9.5 **Telecommunications Equipment.** Standby engine installations should comply with NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.*

4.9.6 **Fire Detection.**

4.9.6.1 **General.** Standby engine installations should be provided with a heat or flame detection system for detection and alarm processing in accordance with Chapter 6.

4.9.6.2 **Installation.** All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, *National Fire Alarm Code.*

4.9.7 **Fire Suppression.**

4.9.7.1 **Portable Fire Extinguishers.** Standby engine spaces should be provided with listed portable extinguishers suitable for use on both electronic equipment and liquid fuel fires in accordance with Section 6.6.

4.9.7.1.1 The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, *Standard for Portable Fire Extinguishers.*

4.9.7.2 **Automatic Fire Suppression.** Where automatic suppression systems are provided, they should be in accordance with Section 6.6. Careful consideration should be made to recognize the impact the agent could have on the energized telecommunications equipment.

4.9.8 **Limitation of Combustibles.** Standby engine areas should not be used for the storage of combustible materials or other equipment not related to standby engine operations.

4.9.8.1 Combustible construction and maintenance materials for work that directly supports standby engine areas should be limited in accordance with Section 7.4.


4.9.10 **Smoke Management Systems.** Where smoke management systems are used in standby engine areas, they should comply with Section 6.7.

4.10 **Technical Support Areas.**

4.10.1 **General.** Technical support areas should be arranged to protect against fire spread to adjacent equipment areas.

4.10.1.1 Binders and other paperwork associated with the support of telecommunications equipment should be kept to a minimum and should be stored in noncombustible cabinets.


4.10.1.3 Cooking and portable heating equipment should not be allowed in these areas.

4.10.2 **General Fire Protection Measures.** Technical support areas should be protected with standard fire detection systems when separate from telecommunications space and VEWFD systems when within the telecommunications space, in accordance with Chapter 6 for detection and alarm processing, and portable fire extinguishers appropriate for the expected fuel load.

4.11 **Administrative Areas.**

4.11.1 **General.** Administrative areas should be arranged to prevent the spread of fire to adjacent equipment areas.

4.11.2 **Construction.** Soundproofing, if used, should be of noncombustible or limited-combustible materials. Floor assemblies over equipment spaces should be constructed to protect against the penetration of water.

4.11.3 **Compartmentation.** Administrative areas should be separated from adjacent equipment spaces by a minimum of 1-hour fire-resistance-rated construction in accordance with Section 6.3.

4.11.4 **Fire Protection.** The administrative area should be protected by either a standard fire detection or an automatic fire suppression system.

4.11.4.1 **Fire Detection.** Where a fire detection system is provided, it should be in accordance with Chapter 6 requirements for detection and alarm processing.

4.11.4.1.1 **Installation.** All fire alarm, detection, and alarm notification equipment should be installed and maintained in accordance with NFPA 72, *National Fire Alarm Code.*

4.11.4.2 **Fire Suppression.**

4.11.4.2.1 **Portable Fire Extinguishers.** Administrative areas should be provided with listed portable extinguishers suitable for use in accordance with Section 6.6.

4.11.4.2.1.1 The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, *Standard for Portable Fire Extinguishers.*

4.11.4.2.2 **Automatic Fire Suppression.** Where automatic suppression systems are provided in administrative areas, they should be in accordance with the requirements of Section 6.6. Careful consideration should be made to recognize the impact the agent could have on energized equipment.

4.11.5 **Cooking Areas.** Cooking areas should be protected in accordance with NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.*

4.12 **Building Service and Support Areas.**

4.12.1 **General.** Building service and support areas should be arranged to prevent the spread of fire and products of combustion to adjacent equipment areas.

4.12.2 **Construction.** Soundproofing, if used, should be of noncombustible or limited-combustible materials. Floor assemblies over equipment spaces should be constructed to protect against the penetration of water.

4.12.3 **Compartmentation.** Building service and support areas should be separated from adjacent equipment spaces by a minimum of 2-
hour fire-resistance-rated construction or a minimum of 1-hour fire-
resistance-rated construction where automatic fire suppression is
provided within the building services and support compartment(s).

4.12.3.1 Building service and support areas should be separated from
adjacent non-equipment spaces by a minimum of 1-hour fire-
resistance-rated construction.

4.12.3.2 All construction should be in accordance with Section 6.3.

4.12.4 Fire Protection. The building service and support areas
should be protected by either a standard fire detection system or an
automatic fire suppression system.

4.12.4.1 Fire Detection. Where a fire detection system is provided, it
should be in accordance with Chapter 6 requirements for detection
and alarm processing.

4.12.4.1.1 Installation. All fire alarm, detection, and alarm
notification equipment should be installed and maintained in
accordance with NFPA 72, National Fire Alarm Code.

4.12.4.2 Fire Suppression.

4.12.4.2.1 Portable Fire Extinguishers. Building service and support
areas should be provided with listed portable extinguishers suitable
for use in accordance with Section 6.6.

4.12.4.2.1.1 The selection, placement, and maintenance of portable
fire extinguishers should be in accordance with NFPA 10, Standard for
Portable Fire Extinguishers.

4.12.4.2.2 Automatic Fire Suppression. Where automatic
suppression systems are provided in building service and support
areas, they should be in accordance with the requirements of Section
6.6. Careful consideration should be made to recognize the impact
the agent could have on energized equipment.

4.12.5 HVAC Systems. HVAC system(s) should be installed in
accordance with NFPA 90A, Standard for the Installation of Air-
Conditioning and Ventilating Systems.

4.12.6 Electrical. Nontelecommunications power circuits should be
installed in accordance with NFPA 70, National Electrical Code.

4.12.7 Lightning and Surge Protection. Lightning and surge
protection, where provided, should be installed in accordance with
NFPA 780, Standard for the Installation of Lightning Protection Systems,
and NFPA 70, National Electrical Code, respectively.

4.12.8 Special Hazards. Flammable and combustible liquids and
aerosols should be stored in listed fire-rated storage cabinets.

Chapter 5 Small Telecommunications Facilities

5.1* General.

5.1.1 Application. A small telecommunications facility includes
operations such as switching, transmission, and routing of voice, data,
or video signals within an enclosed area of 46 m² to 232 m² (500 ft² to
2500 ft²) of telecommunications equipment space.

5.1.2* Prescriptive Approach. Where the performance-based
approach of Chapter 3 is not used, the prescriptive elements of this
chapter should apply.

5.1.3 Co-Located Telecommunications Equipment. Major co-located
telemcunications equipment installation, operation, and
maintenance should meet the recommendations of this chapter.

5.1.4 Automatic Fire Protection. Where the prescriptive approach
elements of Chapter 5 are not provided, automatic fire suppression
should be provided.

5.2 Construction. Building construction should be in accordance
with Section 6.2.

5.3 Protection from Exposures. Exterior walls and openings should
be protected as required by the applicable code or should be
protected in accordance with the provisions of NFPA 80A,
Recommended Practice for Protection of Buildings from Exterior Fire
Exposures, where no building code is adopted.

5.4 Means of Egress. Means of egress should be provided in

5.4.1 For purposes of application of NFPA 101, Life Safety Code,
requirements, telecommunications equipment spaces, including
technical support areas, should be considered special purpose
industrial occupancies.

5.5 Telecommunications Equipment Spaces.

5.5.1* General. The following should pertain to
telemcunications spaces.

5.5.2 Construction. Partitions should be of noncombustible or
limited-combustible construction in accordance with Section 6.2.

5.5.3* Compartmentation. Compartmentation should not be
necessary in small facilities, except as recommended in Sections 5.5
and 5.6.

5.5.4 Telecommunications Equipment.

5.5.4.1 All cables and telecommunications equipment installed after
January 1, 2003, whether owned or co-located, should be in
accordance with Section 6.8 as appropriate for the type of cables and
telemcunications equipment.

5.5.4.2 Telecommunications equipment should be industry-standard
compliant and should be installed and used in configurations and
uses for which it has been tested.

5.5.4.3 Cables and equipment that do not comply with Section 6.8
should be separated from the remainder of the telecommunications
equipment space by either of the following:

1. Sufficient spatial separation and smoke management to
prevent fire and smoke damage to equipment other than the
equipment of fire origin

2. A rated fire separation with a minimum fire resistance of 1
hour

5.5.5 Fire Detection. Small facilities should be provided with an
EWFD system for detection and alarm processing in accordance with
Chapter 6.

5.5.5.1 Installation and maintenance should be in accordance with
NFPA 72, National Fire Alarm Code.

5.5.6 Fire Suppression.
5.5.6.1 Portable Fire Extinguishers. Listed portable fire extinguishers suitable for use on electronic equipment should be provided in accordance with Section 6.6.

5.5.6.1.1 The selection, placement, and maintenance of portable fire extinguishers should be in accordance with NFPA 10, Standard for Portable Fire Extinguishers.

5.5.7 Limitation of Combustibles. Small telecommunications facilities should not be utilized for the storage of combustible materials or other equipment not related to the switching and transmission of voice, data, and video signals.

5.5.7.1 Temporary staging areas of construction and maintenance materials should be permitted for current work that directly supports telecommunications equipment in accordance with Section 7.4.

5.5.8 Special Hazards. Hazardous operations, such as cutting and welding, should not be conducted without special permits.

5.5.8.1 Heat-producing appliances not related to the support of telecommunications equipment should not be permitted within the space.

5.5.9 Smoke Management. Where smoke management systems are used, they should comply with Chapter 6.

6.0 Administrative, Building Service and Support, and Standby Engine Areas. Where administrative, building service and support, and standby engine areas are provided in small telecommunications facilities, they should be separated from equipment spaces by 1-hour fire-resistance-rated construction in accordance with Section 6.3.

6.1 Building Service Equipment. Building services should be provided in accordance with the requirements of applicable mechanical and electrical codes.

Chapter 6 Fire Protection Elements

6.1 General. Chapter 6 contains fire protection elements used to meet the prescriptive recommendations of Chapters 4 and 5 and should not be applied independently of Chapters 4 and 5.

6.2 Construction. Buildings housing telecommunications facilities should be of noncombustible construction in accordance with NFPA 220, Standard on Types of Building Construction.

6.2.1 Telecommunications Facilities. Telecommunications facilities should be of noncombustible or limited-combustible construction as defined in NFPA 220, Standard on Types of Building Construction.

6.2.2 Interior Walls. All interior walls should be of non-combustible or limited-combustible construction.

6.3 Compartmentation. Compartmentation should be provided to reduce the spread of fire and smoke within the telecommunications facility and to other building occupancies.

6.3.1 Fire-Resistance-Rated Construction.

6.3.1.1 Fire-Resistance-Rated Construction. Where recommended in this document, fire-resistance-rated construction (e.g., wall and floor/ceiling assemblies) should be provided around designated spaces to prevent the spread of fire.

6.3.1.1.1 The fire resistance rating of the assembly should correspond to the highest rating recommended for the separated spaces.

6.3.1.1.2 Fire-resistance-rated walls should extend from the foundation or floor below to the underside of the roof or floor deck above to provide a complete separation.

6.3.2 Protection of Fire-Resistance-Rated Construction Openings.

6.3.2.1 Doors. Doors should be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and should be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows.

6.3.2.1.1 The fire rating of the door assemblies should correspond to the fire rating of the wall assemblies, as follows:

   (1) 1-hour wall 1-hour fire-resistance-rated door assembly
   (2) 2-hour wall 1-1/2 hour fire-resistance-rated door assembly
   (3) 3-hour wall 3-hour fire-resistance-rated door assembly

6.3.2.1.2 Doors should be self-closing or automatic-closing upon appropriate alarm signal activation.

6.3.2.2 Glazing Materials in Doors. Glazing materials in doors should be fire tested under positive pressure to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and should be installed in accordance with NFPA 80, Standard for Fire Doors and Fire Windows.

6.3.2.3 Glazing Materials in Fire-Resistance-Rated Construction. Glazing materials in fire-resistance-rated walls should have an equal fire resistance rating as the wall or be protected with an automatic fire-resistance-rated shutter in accordance with NFPA 80, Standard for Fire Doors and Fire Windows.

6.3.2.3.1 The fire-resistance-rated glazing material should be fire tested to NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies.

6.3.2.3.2 The fire-resistance-rated glazing material should be listed and labeled.

6.3.2.4 Construction Joints. Joints in or between walls and floor/ceiling assemblies of fire-resistance-rated construction should be fire tested in accordance with ASTM E 1966, Standard Test Method for Fire Resistant Joint Systems.

6.3.2.4.1 The fire-resistance-rated joint systems should be listed.

6.3 Penetrations in Fire-Resistance-Rated Construction.

6.3.3 Penetrations in Fire-Resistance-Rated Construction.

6.3.3.1 Pipes, Conduits, Cables, and Cable Trays. Pipes, conduits, cables, and cable trays that penetrate fire-resistance-rated construction (e.g., walls or floor/ceiling assemblies) should be protected with assemblies tested in accordance with ASTM E 814, Standard Test Method for Fire Test of Through-Penetration Fire Stops, or NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials.

6.3.3.1.1 The penetration fire stop systems should be listed.

6.3.3.2 HVAC Systems. Fire dampers, smoke dampers, or combination fire/smoke dampers should be used to protect penetrations of fire-resistance-rated walls, floor/ceiling assemblies,
and smoke barriers created by HVAC system elements in accordance with NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*.

6.3.3.2.1 Combination fire/smoke dampers in the affected area should be automatically activated by a smoke detection system installed throughout the area or by duct smoke detectors installed in the duct adjacent to the dampers.

6.3.3.2.2 The annular space around the HVAC system ductwork through fire-resistance-rated construction (e.g., walls, floor/ceiling assemblies) and smoke barriers should be protected with a listed fire stop system in accordance with ASTM E 814, *Standard Test Method for Fire Test of Through-Penetration Fire Stops*, or NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*.

6.4 Alarm Processing.

6.4.1 General.

6.4.1.1 Alarm processing described in Section 6.4 should include automatic or manual actions and responses to be performed as a result of a change in status of monitored alarm initiating devices, supervisory initiating devices, and trouble conditions.

6.4.1.2 Fire alarm, supervisory, and trouble signals should be annunciated at a constantly attended location.

6.4.1.3* Use of very early warning fire detection systems with an alert (pre-alarm) condition should provide for an initial response by authorized personnel prior to fire department notification.

6.4.1.3.1 The initial response should be by owner designated personnel such as a telecommunications facilities person or technician.

6.4.1.4* Network alarm monitoring centers maintained by the telecommunications service provider that have dedicated personnel 24 hours per day 7 days per week should be permitted to be the supervising station.

6.4.1.5 Supervising stations meeting the requirements of NFPA 72, *National Fire Alarm Code*, for proprietary or central station service should be acceptable supervising stations.

6.4.2 Signaling. Fire alarm control units should provide for receipt and processing of signals for transmission to an approved supervising station.

6.4.2.1 Supervisory Signals.

6.4.2.1.1 Disposition of supervisory signals should conform to the requirements of NFPA 72, *National Fire Alarm Code*.

6.4.2.1.2* Supervisory signals should be given priority over all other general building maintenance alarm signals.

6.4.2.1.3 Supervisory signals should be immediately transmitted to a supervising station.

6.4.2.1.4 Supervisory signals should include, but not be limited to, the following:

1. Alert signal (pre-alarm) from a VEWFD system
2. Hydrogen gas (danger level)
3. Methane gas (danger level)
4. Battery room ventilation fan failure
5. Fire alarm initiating devices, where designated as such (e.g., duct smoke detectors)
6. Sprinkler valve supervisory switches
7. Fire pump off-normal conditions, and so forth
8. Other safety systems

6.4.2.1.5 The alert pre-alarm signal from a VEWFD system should be distinguishable from all other fire alarm, supervisory, and trouble signals.

6.4.2.1.6 The supervising station operator should initiate the following actions upon receipt of a supervisory signal:

1. Where required, communicate immediately with the designated person(s) to ascertain the reason for the signal
2. Where required, investigate, unless supervisory conditions are promptly restored to normal
3. Where required, notify the fire department
4. Where required, notify the authority having jurisdiction when the fire protection systems are wholly or partially out of service for 8 hours or more
5. Where required, provide written notice to the authority having jurisdiction as to the nature of the signal, time of occurrence, and restoration of service, when equipment has been out of service for 8 hours or more

6.4.2.1.7 Supervisory signals should not cause activation of building fire alarm notification appliances.

6.4.2.2 Fire Alarm Signals.

6.4.2.2.1 Disposition of fire alarm signals should conform to the requirements of NFPA 72, *National Fire Alarm Code*.

6.4.2.2.2 Manual fire alarm signals should be initiated by manual pull stations.

6.4.2.2.3 Automatic fire alarm signals should be initiated by, but not be limited to, the following:

1. Smoke detectors
2. Heat detectors
3. Flame detectors
4. Suppression system release
5. Waterflow initiating devices

6.4.2.2.4 Fire alarm signals should take precedence in processing over all other signals.

6.4.2.2.5 The automatic or manual initiation of alarm conditions should cause the building fire alarm notification appliances to operate in accordance with the requirements of NFPA 72, *National Fire Alarm Code*.

6.4.2.2.6 Fire alarm signals should be automatically and immediately transmitted to a constantly attended supervising station.

6.4.2.2.7 The supervising station should immediately notify the local fire service of any fire alarm signal, and in addition, should provide the fire service with information as to the site location and any special conditions that could exist.

6.4.2.2.8 Designated telecommunications personnel should be dispatched to the site immediately upon receipt of alarm.
6.4.2.2.9 The fire alarm system should be restored to its normal operating condition as soon as possible after the disposition of the cause of the alarm signal.

6.4.2.2.10 Systems should be so arranged that loss of commercial power does not cause a fire alarm signal.

6.4.2.3 Trouble Signals.

6.4.2.3.1 Disposition of fire alarm system trouble signals should conform to the requirements of NFPA 72, National Fire Alarm Code.

6.4.2.3.2 Trouble signals should include, but not be limited to, the following:

   (1) Ground fault condition
   (2) Open or short circuit fault
   (3) Loss of primary power
   (4) Fire alarm system component failure
   (5) Alarm transmitter failure
   (6) Microprocessor failure

6.4.2.3.3* Upon receipt of a trouble signal, designated maintenance personnel should be dispatched to the site to determine the trouble and to begin repairs.

6.4.2.3.4 Where required, notification of trouble conditions to the local fire department should be provided.

6.4.2.3.4.1 Where monitoring systems provide the supervising station with detailed trouble information that allows determination of the degree of system impairment, response should be permitted to be delayed until the next working day where it is determined that the trouble does not affect the ability to detect and report a fire condition.

6.4.3 Signal Path Integrity. Wiring between the fire alarm control unit and the telephone equipment that processes the signals to be sent to the supervising station should be monitored for integrity such that an open, shorted, or ground fault condition on any conductor(s) should cause a trouble signal to be indicated at a supervising station.

6.4.3.1 Systems using a method of switching ground in normal operation should not cause a trouble indication upon grounded condition.

6.4.3.2 Paragraph 6.4.3 should not apply where the distance between the fire control unit and the telephone equipment that processes the signal to be sent to the supervising station is no more than 0.9 m (3 ft).

6.4.3.3 Paragraph 6.4.3 should not apply where the primary notification location for alarm, supervisory, and trouble signals is an approved supervising station and the monitoring is accomplished in accordance with the requirements of NFPA 72, National Fire Alarm Code.

6.5 Fire Detection.

6.5.1* General. Fire detection systems should be designed, installed, and maintained to provide the level of protection recommended in Chapters 4 and 5. The levels of protection are as follows:

   (1) VEWF
   (2) EWFD
   (3) SFD

6.5.2 Detection Systems.

6.5.2.1* EWFD and VEWF smoke detection systems should use sensors or ports with spacing that is less than that normally required by NFPA 72, National Fire Alarm Code.

6.5.2.2 Flame detection systems provided for EWFD use should be installed to provide line-of-sight detection for critical areas of a room where flaming fires can occur in a rapid manner.

6.5.3 Installation.

6.5.3.1 VEWF.

6.5.3.1.1 Where recommended by Chapters 4 and 5, very early warning fire detection systems should comply with 6.5.3.

6.5.3.1.2* Every type of sensor and port installed in a space should be limited to a maximum coverage area of 18.6 m$^2$ (200 ft$^2$).

   When two levels (high and low) of ports or sensors are provided, each level should be limited to a coverage of 37.2 m$^2$ (400 ft$^2$) or less per port or sensor. The coverage limitation between high and low levels should be limited to 18.6 m$^2$ (200 ft$^2$) providing for staggered port or sensor arrangements between each level.

6.5.3.1.3 The sensors or ports need not be located directly in the center of the bay but should be located so that they are exposed to the movement of smoke. The sensor or port should not be located within 0.3 m (3 ft) of supply duct registers. Locations selected should be visible from the floor and accessible for maintenance.

6.5.3.1.4* Sensors or ports should be installed to monitor return air from the space. Spacing of sensors or ports should be installed such that each covers no greater than 0.4 m$^2$ (4 ft$^2$) of the air grille.

6.5.3.1.4.1* Where stand-alone packaged HVAC units are used, sensors or ports should be installed where return air is brought back to the unit. Spacing of sensors should be installed such that each covers no greater than 0.4 m$^2$ (4 ft$^2$) of the return air opening.

6.5.3.1.5 Where air-sampling systems are used, the systems should be designed using manufacturer-provided listed criteria to determine at each sampling port, as a minimum, the pipe air pressure, the airflow rate through that sampling port, the percentage of the total pipe flow through the sampling port, and the time needed for a smoke sample to be drawn from that sampling port to the detector.

6.5.3.1.6* Minimum sensitivity settings above ambient air-borne particulate levels for the VEWF systems used should be as follows:

   a. Alert condition is as follows:

      (1) Air-sampling systems 0.2 percent per foot obscuration (effective sensitivity at each port)
      (2) Spot-type sensors 0.2 percent per foot obscuration

   b. Alarm condition is as follows:

      (1) Air-sampling systems 1.0 percent per foot obscuration (effective sensitivity at each port)
      (2) Spot-type sensors 1.0 percent per foot obscuration
6.5.3.1.7 Maximum transport time from the most remote port to the detection unit of an air-sampling system should be limited to 60 seconds.

6.5.3.2 EWFD.

6.5.3.2.1 Smoke Detection Systems.

6.5.3.2.1.1 Where recommended by Chapters 4 and 5, early warning fire detection systems should comply with 6.5.3.

6.5.3.2.1.2* The area of coverage for a single sensor or port should be limited to 37.2 m² (400 ft²), spacing at 6.1 m × 6.1 m (20 ft × 20 ft).

6.5.3.2.1.3 The sensors or ports need not be located directly in the center of the bay but should be located so that they are exposed to the movement of smoke. The sensor or port should not be located within 0.9 m (3 ft) of supply duct registers. Locations selected should be visible from the floor and accessible for maintenance.

6.5.3.2.1.4 The minimum alarm sensitivity setting at the sensor or port used for EWFD in telecommunications equipment spaces should be 1.5 percent per ft.

6.5.3.2.1.5 Maximum transport time from the most remote port to the detection unit of an air-sampling system should be limited to 90 seconds.

6.5.3.2.1.6 Where air-sampling systems are used, the systems should be designed using manufacturer-provided listed criteria to determine at each sampling port, as a minimum, the pipe air pressure, the airflow rate through that sampling port, the percentage of the total pipe flow through the sampling port, and the time needed for a smoke sample to be drawn from that sampling port to the detector.

6.5.3.2.2 Flame Detection Systems.

6.5.3.2.2.1 Where recommended by Chapters 4 and 5, flame detection systems should be installed in accordance with this section.

6.5.3.2.2.2* The flame detection systems should be installed to provide line-of-site detection for critical areas of the space.

6.5.3.2.3 SFD. Where recommended by Chapters 4 and 5, SFD systems should comply with the requirements of NFPA 72, National Fire Alarm Code.

6.6 Fire Extinguishing Systems.

6.6.1* General. Where provided, fire suppression systems should comply with Section 6.6.

6.6.2 Automatic Fire Suppression.

6.6.2.1 General.

6.6.2.1.1 Automatic fire suppression systems provided in telecommunications facilities should be selected with due consideration given to the hazards being protected and the impact of the agent on energized equipment. Facilities should be protected from accidental discharge of extinguishing agents to prevent damage to equipment or danger to personnel.

6.6.2.1.2 Fire suppression agents should not cause severe damage to the equipment. Suppression agents such as those containing dry chemical agents or corrosive wet agents in fixed systems should not be used in any area containing telecommunications equipment.

6.6.2.1.3 Activation of any fire suppression system should transmit an alarm to a constantly attended location.

6.6.2.2 Fire Sprinkler Systems.

6.6.2.2.1* Where provided, fire sprinkler systems should be designed, installed, tested, and maintained in accordance with the requirements of NFPA 13, Standard for the Installation of Sprinkler Systems.

6.6.2.2.2 All piping for dry pipe and pre-action sprinkler systems should be installed with a pitch in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, whether or not the piping is subjected to freezing conditions.

6.6.2.2.3 Detection systems used to actuate pre-action fire sprinkler systems should be installed in accordance with Section 6.5.

6.6.2.3 Clean Agents.

6.6.2.3.1* Where provided, clean agent extinguishing systems should be designed, installed, and maintained in accordance with the requirements of NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems.

6.6.2.3.2 Detection systems used to actuate clean agent suppression systems should be designed in accordance with Section 6.5. Detection should be either cross-zoned, or an equivalent method should be used to limit the possibilities of false discharges.

6.6.2.4 Halon Systems.

6.6.2.4.1* Where provided, halon systems should be designed, installed, and maintained in accordance with NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems.

6.6.2.4.2 Detection systems used to actuate halon suppression systems should be designed in accordance with Section 6.5. Detection should be either cross-zoned, or an equivalent method should be used to limit the possibilities of false discharges.

6.6.2.5 Water Mist Fire Protection Systems.

6.6.2.5.1 Where provided, all water mist fire protection systems should be installed in accordance with the requirements of NFPA 750, Standard on Water Mist Fire Protection Systems.

6.6.2.5.2 Water mist fire protection systems should be designed and installed for the specific hazards and protection objectives specified in the listing.

6.6.2.5.3 Detection systems utilized for the operation of water mist fire protection systems should be installed in accordance with Section 6.5 or the listing criteria.

6.6.3 Manual Fire Suppression.

6.6.3.1 Portable Fire Extinguishers.

6.6.3.1.1 Where recommended, listed portable extinguishers suitable for use on energized telecommunications equipment should be provided. They should be installed and maintained in accordance with NFPA 10, Standard for Portable Fire Extinguishers.
6.6.3.2* Standpipes. Where standpipes are provided, they should be installed and maintained in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems.

6.7 Smoke Management Systems.

6.7.1* General. Smoke management systems should be considered as means to meet the prescriptive elements of this recommended practice. Where properly designed, installed, tested, and maintained, smoke management systems, which includes smoke control systems and smoke removal systems, should be recognized as an effective means to prevent smoke from spreading to noninvolved areas in low heat release rate fires, minimize damage, and facilitate search and clean-up operations.

6.7.2 Installation. Where provided, smoke management systems installed in accordance with the applicable sections of NFPA 92A, Recommended Practice for Smoke-Control Systems, NFPA 92B, Guide for Smoke Management Systems in Malls, Atria, and Large Areas, and NFPA 204, Guide for Smoke and Heat Venting, except as noted herein, should be permitted to be used to meet the performance objectives of Section 3.5.

6.7.2.1 Operation of the smoke management system installed in the telecommunications equipment space, power area, main distribution frame space, or standby engine area should be automatically activated or manually activated from a location outside of the space.

6.7.2.2 Where mechanical exhaust systems are installed, a source of make-up air should be provided. Make-up air inlets should be designed so that the velocity of the supplied air does not exceed 61 m/min (200 ft/min) and to take maximum use of the mixing and dilution effects created. Where outside air is used, consideration should be given to conditioning the outside air to provide an environment that would be similar during regular operations to avoid temperature shocks to electronic equipment.

6.7.2.3* Exhaust points should be used to reduce the possibility of smoke being drawn into noninvolved equipment.

6.7.2.4 The smoke exhaust should discharge to the outside of the building, away from fresh air intakes, make-up air intakes, and building openings.

6.7.2.5 HVAC systems for telecommunications equipment areas should be provided in accordance with Section 8.1 of NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment.

6.8 Equipment Ignition and Fire Resistance.

6.8.1* General. Where needed to achieve an objective of a performance-based design permitted by Chapter 3 or to meet the prescriptive recommendations permitted by Chapters 4 and 5, the equipment, cables, wiring, and associated components should comply with the provisions of Section 6.8.

6.8.2 Wire and Cable.

6.8.2.1* Wire, fiber, and cable should comply with the flammability requirements in ANSI T1.307, Fire Resistance Criteria — Ignitability Requirements for Equipment Assemblies and Fire Spread Requirements for Wire and Cable, and the test methods referenced therein including smoke generation tests, where available.

6.8.2.2* Where nonmetallic conduit and trays are used for wires, fibers, and cables, they should comply with the following:


(2) Conduit for wires, fibers, and cables installed in plenums should comply with UL 910, UL Standard for Safety Test for Flame — Propagation and Smoke Density Values for Electrical and Optical Fiber Cables Used in Spaces Transporting Environmental Air.

(3) Conduit for wires, fibers, and cables installed vertically between floors in a building should comply with UL 1666, UL Standard for Safety Test for Flame Propagation Height of Electrical and Optical Fiber Cables Installed Vertically in Shafts.

6.8.3 Major Equipment Systems.

6.8.3.1* Major telecommunications equipment should meet the fire resistance criteria specified in Telcordia GR-63-CORE, Network Equipment Building System (NEBS) Requirements: Physical Protection, following the methodologies specified in ANSI T1.307, Fire Resistance Criteria — Ignitability Requirements for Equipment Assemblies and Fire Spread Requirements for Wire and Cable; and ANSI T1.319, Telecommunications Equipment Assemblies — Fire Propagation Hazard Testing Procedure. Other equipment should be permitted to be evaluated using appropriate standards referenced in Annex C.

6.8.3.2 Where requested, documentation regarding compliance with the fire resistance criteria specified in 6.8.3.1 should be provided.

Chapter 7 Fire Prevention

7.1 General. Telecommunications facilities should implement a level of fire prevention measures and should be constructed, maintained, and occupied in a way that reduces the likelihood of ignition and the spread of a fire by minimizing the ignition potential and reducing the fire load.

7.1.1* Housekeeping.

7.1.1.1 All combustibles should be kept to a minimum.

7.1.1.2 Combustibles should be removed daily or, when necessary, be stored appropriately in properly protected storage rooms, noncombustible storage cabinets, storage bins, or listed refuse containers.

7.1.2* Limiting other Combustibles. Combustible materials, such as packing materials and office supplies, should not be stored in areas exposing critical equipment and related components unless these materials are located in noncombustible cabinets or are within areas provided with fire suppression systems.

7.1.2.1 Areas around the outside of the facility, especially areas near the ventilation system intake, or any openings (e.g., equipment doors, egress routes) should be free of combustibles.

7.1.2.2 Inspections should be performed by telecommunications personnel or by a designated outside agency.
7.1.2.2.1 One part of the inspection should cover housekeeping practices.

7.1.3 Portable Heating Appliances in Telecommunications Spaces. Portable heaters should not be permitted.

7.1.3.1 If the primary heating source is inadequate, the building management should take appropriate permanent action to correct the heating deficiencies.

7.1.3.2 Where portable space heaters are necessary for work activities or due to extraordinary problems with HVAC, they should include the following features:

(1) Electronic powered
(2) Listed
(3) De-energized upon tilt or tipover
(4) Illuminated “power-on” pilot light
(5) Variable temperature control
(6) Building management approval
(7) Limited to temporary use of no more than 7 consecutive days

7.1.4 Heat-Producing Appliances. The use of portable heat-producing appliances and/or devices not related to the support of telecommunications equipment (e.g., heaters, mug warmers, coffee pots, hot plates, microwave units, refrigerators) should not be located in any telecommunications equipment space, computer room, individual office spaces/cubicles, or storage/shipping areas.

7.1.5 Smoking. Smoking, carrying, or depositing any lighted or smoldering substance should not be permitted in telecommunications equipment and support buildings (e.g., switching spaces, power and battery rooms, generator rooms, warehouse/combustible storage/staging spaces, computer rooms) and all additional areas identified by local management as a risk to the network operation.

7.1.5.1 Designated Smoking Areas. If a designated smoking area is to be allowed in other areas of the building, local management should conduct a fire risk analysis prior to designating such areas.

7.1.5.1.1 The fire risk analysis should include consideration of the following criteria to protect the network:

(1) Noncombustible ash trays
(2) Noncombustible waste receptacles
(3) Ignition-resistant furnishings
(4) Commensurate detection and/or suppression
(5) A minimum 1 hour fire separation of the space

7.1.5.2 Signage.

7.1.5.2.1 “No Smoking” signs should be posted in conspicuous designated locations where smoking is prohibited.

7.1.5.2.2 A sign at each entrance to a smoke-free building should comply for notification to occupants.

7.1.6 Outdoor Grills/Barbecues. Grills/barbecues should be located not less than 15.3 m (50 ft) from any structure. No unit should be kindled or maintained on combustible patios or within or upon any portion of a structure. Use of liquid or solid fueled (charcoal burners) units should be governed by local management and prohibited when atmospheric conditions or local circumstances make the use of units hazardous. Cooking fires should be constantly attended by an assigned person until such fire is extinguished and heat dissipated. This person should have a garden hose connected to the water supply or other fire extinguishing equipment readily available for use. The storage of the units and associated liquids, gases, and flammable materials (lighter fluids) should comply with local codes. All ashes should be rendered harmless and properly disposed.

7.1.7 Hot Work. A hot work permit should be used for operations involving open flame or spark-producing equipment. Hot work permits that are issued for welding, cutting, and use of torches should comply with this chapter and NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, for areas not designed for this type of operation.

Where soldering irons, heat guns, glue guns, and other similar heat-producing tools are used, they should be attended at all times when in use. Additionally, these tools should be de-energized and safely stored when not in use.

7.1.8 Flammable/Combustible Liquids. The storage, handling, and use of flammable and combustible liquids, including waste liquids, should comply with the requirements of NFPA 30, Flammable and Combustible Liquids Code.

7.1.8.1 Flammable and combustible liquids such as paints, solvents, and other lubricants should not generally be permitted in telecommunications equipment facilities.

7.1.8.2 All liquids should be stored in approved fire-rated cabinets at the end of each shift (work day).

7.1.9 Compressed Gases. Noncombustible compressed gases within telecommunications spaces should follow the Compressed Gas Association guide for safe handling, CGA P-1, Safe Handling of Compressed Gases in Containers.

7.1.9.1 Propane stored in cylinders and containers on the exterior of the building should comply with NFPA 54, National Fuel Gas Code, and NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

7.1.10 Clear Access. Clear and unobstructed access to telecommunications facilities should be maintained for fire/EMS operations.

7.1.11 Exterior Maintenance. The telecommunications-controlled exterior land around telecommunications buildings should be maintained free of combustible vegetation (e.g., brush, weeds) and combustible products.

7.1.12 Vehicle Parking. All vehicle parking should be at a safe distance from all structures and storage.

7.2 Nontelecommunications Electrical Equipment and Wiring. The installation and maintenance of electrical equipment and wiring should be in accordance with applicable requirements of NFPA 70, National Electrical Code, such as the use of listed electrical fittings, materials, and equipment.

7.2.1 Electrical Cords. Electrical extension cords should only be used when a flexible, temporary (i.e., less than 30 days) connection is necessary and never for permanent wiring. Flexible electric cords (e.g., extension cords) should be adequate to carry the anticipated amperage and should be listed. Cords should never be under carpets, rugs, or chair mats. Cords should be placed in a cord tray to avoid tripping hazards and wear. If additional electrical demand is needed, the local management should correct the condition.
7.2.2 Current-Limiting Devices. Fuses, circuit breakers, and other current-limiting protection for both telecommunications equipment and building equipment should be listed for the intended use.

7.3 Staging of Equipment. Staging areas assigned for crating, de-crating, and containment of combustibles for equipment installation/removal should be designed with appropriate detection and/or separation and managed so as to not to lower the overall level of fire safety within the telecommunications building.

7.4* Construction and Alterations. All construction and alteration projects should comply with NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, and should be carefully reviewed by management to ensure conformance with all codes, regulations, and company standards.

7.4.1 Installation of Telecommunications Equipment. The delivery, storage, installation, testing, and cleanup associated with the installation of telecommunications equipment should be performed in a manner that exhibits the highest degree of fire safety procedures.

7.4.2 Vendors and Installers. Vendors, installers, and contractors associated with the installation of telecommunications equipment should comply with the safety standards of the telephone company during the installation of such equipment.

7.4.3 Cutting and Welding Activities. Cutting and welding activities should comply with 7.1.7 and hand-held fire extinguishers should be provided and comply with 6.6.3.1.

7.4.4 Use and Storage of Combustible Materials. Combustible materials should not be stored in telecommunications equipment areas.

7.4.5* Building Construction and Alteration Work. The delivery, storage, construction, and cleanup associated with building construction and alteration work should be performed in a manner that complies with fire safety procedures of OSHA, local building and fire codes, and the telecommunications company’s policies. In buildings under construction, renovation, or alteration, adequate escape facilities should be maintained at all times for the use of construction workers. Escape facilities should consist of doors, walkways, stairs, ramps, fire escapes, ladders, or other approved means or devices arranged in accordance with the general principles of NFPA 101, Life Safety Code, insofar as they can reasonably be applied to buildings under construction. Where the building is protected by fire protection systems, such systems should be maintained operational at all times during alterations, or appropriate alternative protection should be provided.

7.4.6 Contractors Access, Security, and Work. The activities of building construction contractors should be regulated by policies of the telecommunications company.

7.4.7 Bus Bar Protection During Construction Work. Provisions should be made to protect the bus bars when building construction activity occurs in the area around or over live bus bars.

7.4.8 Fire Prevention Awareness for Contractors. Telecommunications companies should provide awareness information to contractors of fire prevention and protection issues or measures within telecommunications facilities.

7.4.8.1 Contractors should disseminate this information to all of their employees and their contractors prior to commencement of work.

7.4.9 Maintenance Work — Building Services. Building maintenance work associated with building and janitorial services should consider all the physical forces expected to exhaust, destroy, or otherwise wear out the various operational systems that could cause a fire.

7.5 Employee Awareness. All employees should receive information regarding fire prevention policies, procedures, and fire safety hazards.

7.6* Physical Security. A review of the security procedures and compliance to internal practices should be conducted to identify any potential exposures, and corrective actions should be implemented. Access should be controlled to the building or to areas containing critical equipment to reduce the possibility of arson.

7.7 Means of Egress. All means of egress should be maintained in accordance with the requirements of NFPA 101, Life Safety Code.

7.8 Displays/Decorations. No displays, Christmas trees, or other decorations should be allowed to obstruct corridors, exit ways, or other means of egress.

7.8.1 Natural cut Christmas trees should not be permitted.

7.8.2 Artificial Christmas trees, displays, and decorations should be labeled or otherwise identified or certified by the manufacturer as being flame retardant or flame resistive.

7.8.3 Only listed electrical lights and wiring should be used on Christmas trees and similar decorations.

7.8.4 Electrical lights should be prohibited on metal artificial trees, displays, and other decorations not labeled for the use of listed lights.

7.9* Open Flame Devices. In nontelecommunications spaces, the use of solid-fueled heat sources for warming of food trays should be permitted and should be constantly attended and operated with the approval of management. Other open flames should only be permitted as otherwise stated in this document. Areas should have appropriate portable fire extinguishers.

7.10* Cable Management. The management of retired telecommunications and power cables should be based on the consideration of potential fuel load within any given equipment space or hazard area.

7.10.1 Points or tips of metal horns and other protruding devices on cable racks should be insulated from the cables.

7.11 Abandoned Cables. Power cables that have been cut and abandoned in place should be capped.

7.12 Vacant Areas. Vacant areas or spaces in a building should be annually reviewed for the fire risk and to ensure that the areas or spaces do not add an additional risk.
Chapter 8  Pre-Fire Planning, Damage Control, and Emergency Recovery

8.1* General.

8.1.1 Annual Review. Management of each facility should develop and implement a written pre-fire plan.

8.1.1.1 This plan should be reviewed and updated annually or where necessary because of personnel changes, management structure realignment, or facility changes.

8.1.1.2 All employees of the facility should be provided with appropriate information regarding their emergency assignments, relocation, or evacuation during an emergency.

8.1.1.3 This plan should identify authority responsibilities and actions of employees to ensure the safety of themselves and all occupants of the facility.

8.1.1.4 Based upon local management conditions and required compliance with local, state, and federal regulations, all documentation should be in writing and approved by the management of the facility.

8.1.2 Elements. An effective pre-fire plan should include the following:

(1) Identification of an emergency contact and telephone number
(2) Life safety issues of the occupants of the facility
(3) Life safety of the responding firefighters to the facility
(4) Life safety issues of the community provided by the telecommunications facility through this normal operation and its continuity during fire emergencies (e.g., 911-type services)

8.1.2.1 For large facilities, the plan should include an annual exercise to ensure that management and staff can implement and work with the plan and incorporate lessons learned from the exercise into an updated plan.

8.2 Fire Safety Manager. Management should appoint a fire safety manager who is responsible for the protection of the facility from fire.

8.2.1 The fire safety manager’s duties should include the following:

(1) Pre-fire planning
(2) Life safety systems
(3) Fire prevention programs
(4) Fire inspections
(5) Periodic property surveys
(6) Proper operation of fire suppression and detection equipment and portable fire extinguishers

8.2.2 Other duties should include, where requested, the familiarization of the local fire department personnel with the unique aspects of telecommunications buildings and the switching facilities contained therein.

8.3* Life Safety of Occupants of the Facility. As part of the pre-fire plan, a building evacuation procedure should be developed and exercised to ensure the safe evacuation for facility occupants in cooperation with the local fire department and other applicable authorities and updated annually.

8.3.1 All employees should receive adequate orientation regarding the building evacuation procedure.

8.3.2 In circumstances regarding specially assigned tasks, orientation should be provided to ensure the safety of the employees and occupants of the facility during an emergency incident.

8.3.3 Additional orientation should be provided as needed.

8.3.4* Fire drills should be conducted annually at the facility for all employees.

8.3.5 Records should be maintained for these activities.

8.4* Fire Safety of Fire Fighters. Where requested by the local fire department, the following should be provided:

(1) A general description of the equipment within the building and how it’s powered
(2) An up-to-date drawing of all vital equipment and equipment areas
(3) Recommended actions to be taken concerning ventilation and contamination of areas not affected by the fire

8.4.1* Fire Service Orientation and Information. When requested by the local fire department, orientation and information should be provided to the fire personnel by the company management as follows:

(1) A general description of the facilities and all the equipment
(2) An orientation walk through of the facility to address all the orientation and information issues to ensure life safety and service continuity is upheld
(3) The strategy and tactics to confine, suppress, and limit an incident’s impact in the telecommunications equipment area

8.5* Damage Control Procedure. A damage control procedure should be developed for each telecommunications facility.

8.6* Emergency Recovery Procedures for Continued Operations. A recovery procedure should be developed for each telecommunications facility.

Chapter 9  Referenced Publications

9.1 The following documents or portions thereof are referenced within this recommended practice and shall be considered part of the recommendations of this document.

9.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.


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9.1.2 Other Publications.

9.1.2.1 ANSI Publications. American National Standards Institute, Inc., 11 West 42nd Street, 13th floor, New York, NY 10036.


9.1.2.2 ASTM Publications. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2950.


9.1.2.4 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.


9.1.2.5 FMRC Specification Test Standard for Cable Insulation, Class No. 3972, July 1989.


Annex A Explanatory Material

Annex A is not a part of the recommendations of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.1 The objective in multiple tenant buildings not controlled by the telecommunications service providers is to ensure that the telecommunications facility is located in a building that has a low probability of a catastrophic fire loss. As such, care should be taken in selecting the host structure to house the telecommunications facility both from a fire protection and risk consideration (see Chapter 2).
A.1.2.2 Fire loss records for the industry are compiled infrequently. The most current authoritative study can be found in the Federal Communications Commission Network Reliability Council Report to the Nation, Section G, "Fire Prevention in Telecommunications Facilities." This report includes a compilation of fire incidents, a root cause of analysis, and recommended countermeasures and business practices. Additional information is found in Chapters 9 through 27 of the NFPA Fire Protection Handbook. In general, the lessons learned in the prior incidents have been incorporated into this document.

A.1.3 This document contains both performance and prescriptive recommendations for new buildings and installations.

Existing buildings and installations were designed using prescriptive features and are difficult to summarize into one comprehensive set of prescriptive recommendations. Existing buildings could benefit from an evaluation using a performance-based perspective.

The performance of the varying prescriptive standards in existing buildings has been validated over time. No retrofitting is required by this document except under those cases where it has been determined by the authority having jurisdiction that the existing situation involves a distinct hazard to life or adjacent property.

Care should be taken when this document is applied in existing buildings because the new prescriptive recommendations could vary from the existing standard.

A.1.4.1 Users of this recommended practice outside of the United States and Canada should be aware that telecommunications equipment and cables used in the United States and Canada have fire resistance properties that limit flame spread and fire growth.

A.1.5.1.4 Power Area/Room. Examples of electrical equipment usually found in a power area/room includes rectifiers, inverters, and batteries.

A.1.5.1.5 Technical Support Areas. These areas are usually separated from the equipment space by glass or solid partitions and have one or two computer workstations where technicians program the switching equipment. These areas are not occupied on a full-time basis.

A.1.5.2 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction might base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority might require evidence of proper installation, procedure, or use. The authority having jurisdiction might also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.1.5.3 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities.

Where public safety is primary, the authority having jurisdiction might be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau; labor department; or building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative could be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official could be the authority having jurisdiction.

A.1.5.4.4 Telecommunications Equipment. This equipment typically includes but is not limited to switching equipment, servers, routers, computers, and cable television equipment that establishes any form of one- or two-way communications. The equipment is generally owned or leased by a telecommunications company offering wired telephone, cellular, cable television, or internet service.

A.1.5.14 Listed. The means for identifying listed equipment could vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.1.5.19 Rectifier. DC power is what typically drives telephone systems and the circuits that move the transmission.

A.1.5.24 Standby Engine Room. The standby power system is an apparatus consisting of either a gas turbine or a diesel powered internal combustion engine and a generator, capable of providing the appropriate amount of AC power to run the telecommunications equipment of a central office in the event of a commercial power failure.

A.2.1 The following is a list of hazard areas or issues that should be known when visiting a communications facility:

(a) Familiarizing with Functional Areas. When visiting a communications facility to determine conditions or familiarize one's self with the nature of telecommunications functional areas, it is wise to be aware of characteristics of the areas and hazards or issues that can be associated with them.

(b) Standby Engine Rooms. Standby power generators are located within these rooms and are used as a power source during commercial power failures. The generators are driven by engines and or turbines that are fueled using a variety of fuels including diesel, propane, natural gas, or #2 fuel oil. Fire hazards associated with liquid and gaseous fuels should be considered. Electrical hazards should also be considered including the power generated and the starting circuit for the engine. Technicians should wear hearing protection while the engine is running. They might not hear audible fire alarm signals while the engine is running and wearing hearing protection.

(c) Main Distribution Frame. The wiring associated with distribution frames could be combustible due to the type of wire insulation used and the large surface area created by the separation of wires. The wires forming the individual telecommunication circuits are usually protected against externally induced over-voltage conditions at the main distribution frame. Cables typically enter the frame area from a cable vault below through a floor or wall. Sealing of cable penetrations and ongoing maintenance of the seals are necessary for integrity of the cable vault fire separation.

(d) Cable Vaults. Unventilated cable vaults could have natural gas or methane gas accumulations having explosion potential if not properly ventilated. There is also the possibility of flammable liquids leaking into the vault from external fuel spills. Cable should be considered combustible. Cables entering the vault often have
metallic sheaths grounded within the vault to protect against accidental exposure of the sheath to external current sources.

(e) **Power Room and Areas.** Alternating current (AC) power is converted to direct current (DC) power by rectifiers and is stored in batteries to power the telecommunications equipment. The batteries will provide power during commercial AC power failures. The batteries can be expected to provide power to the telecommunications equipment for several hours. Visitors should act as if the batteries are fully charged at all times. This should be a consideration even when working in or around a “depowered” power area. DC bus bars are often not insulated, presenting a danger to personnel using metal tools or wearing metallic jewelry or watches in proximity to the bus bars. Hydrogen gas could be present and should be vented to prevent the buildup to explosive levels. Many types of batteries contain sulfuric acid. Hydrogen gas can be produced during battery use for both flooded cell and valve regulated lead acid (VRLA) batteries. Battery areas require proper ventilation. VRLA batteries minimize acid spill potential, because the electrolyte is immobilized. The VRLA batteries do have the potential for thermal runaway. VRLA batteries need to be maintained in a properly conditioned environment and should be monitored for signs of thermal runaway so proper action can be taken.

(f) **Uninterruptable Power Systems (UPS).** UPS could be present in various areas to power certain AC-powered equipment. These are not generally considered to be power areas unless they are large and, therefore, similar to power areas.

(g) **Telecommunication Equipment Areas.** Telecommunications equipment provides paths and switching for data, voice, video, and broadband signals, packets, and streams. Circuit boards and wiring insulation are combustible, but much of the equipment and cables in use in North America is designed and manufactured with fire-resistant components and treatments. Many of the recommendations of this recommended practice anticipate that the equipment and cable in use has fire resistance characteristics and ratings. The equipment might contain both AC and DC power circuits from more than one source. The switching equipment is very sensitive products of combustion, including acid gases and soot, and is sensitive to rapid changes in conditions including ambient temperature and humidity.

(h) **Security Requirements.** Access to the telecommunications facility as well as into vital areas within the facility should be controlled and limited.

(i) **Environmental Equipment Concerns.** Telecommunications equipment requires a controlled environment to operate properly. Abrupt changes to the environment should be avoided.

(j) **Multiple Power Sources.** Expect voltages of 120, 208, and 240 volts AC and possibly 600 volts AC. The DC power commonly used is 48 volts, 24 volts, and even lower for some circuits.

(k) **External Exposures.** Communications equipment should not be exposed to explosion, dust, electromagnetic fields, and high intensity radio frequency signals and should not be located adjacent to high hazard occupancies.

(l) **Effects of Water.** Water on energized communications equipment could cause permanent damage.

(m) **Building Support Equipment.** When building support equipment is installed on floors over telecommunications equipment areas, there is the potential for liquid releases from any source (e.g., plumbing systems, water piping) to penetrate through openings in the floor and damage telecommunications equipment below. Floors should be sealed to prevent the entry of liquids. Building support equipment should not be installed over telecommunications switching equipment, main distribution frames, power areas, generator rooms, or cable entrance areas.

(n) **Nonthermal Threat.** Smoke from all types of fires, in any combustible materials, pose a significant hazard to the electronic equipment and should be minimized or exhausted.

(o) **Limited Combustibility.** Limited combustibility has typically been used for telecommunications facility construction. Much of the equipment and cable contents could exceed the potential heat value given in NFPA 220, Standard on Types of Building Construction, of 3,500 Btu/lb when tested in accordance with NFPA 259, Standard Test Method for Potential Heat of Building Materials. The committee has cited acceptable industry standards that have been used by telecommunications service providers to limit the fire loading, flame spread, and heat release rates of combustibles in telecommunications facilities.

(p) **Removing Power from Equipment.** Familiarization with the proper procedures to shut down power to telecommunications equipment should be done in concert with the telecommunications personnel who are responsible for the facility.

(q) **Compartmentation.** Separation of sensitive electronic equipment from of other hazard areas, such as administrative office and storage areas, is important.

(r) **Installation Precautions.** During installation of fire protection systems, protection against dust and falling objects on telecommunications equipment should be considered. Contact with exposed conductors and battery terminals should be prevented.

(s) **AC and DC Power Panels and Lines.** Care should be taken not to touch any electrical connections or exposed conductors to prevent electrical shock hazards.

(t) **Static Electricity.** Some telecommunications equipment is extremely sensitive to static electricity discharge. People entering equipment areas should take care to avoid static discharge on equipment.

(u) **Combustible Packaging Material.** Excess packaging material should be limited to a few days supply. Typically, boxed new electronic equipment is brought in and staged in preparation for change out of older electronic equipment. (See Chapter 7 for guidance.)

(v) **People.** Equipment areas in most facilities have very low density of people. However, in some larger facilities, a growing number of administrative spaces can contain people in densities that are more typical of commercial office buildings.

A.3.1.1 The objectives of this recommended practice are as follows:

(1) Provide fire protection measures so that the risk of injury or death due to fire in a telecommunications facility is comparable to the levels of risk abatement for similar business-type uses
(2) Provide fire protection measures so that telecommunications equipment is not damaged due to a fire to a point that the damage will have an unacceptable impact on network operation

(3) Provide fire protection measures so that property is not damaged due to a fire to a point that the damage will have an unacceptable impact on property

A.3.1.2 Qualifications should include experience, education, and credentials that demonstrate knowledgeable and responsible use of applicable models and methods.

A.3.1.3 A third-party reviewer is a person(s) selected to review proposed performance-based designs.

A.3.1.5 Continued compliance with the goals and objectives of this recommended practice involves many things. The building construction, including openings, interior finish, and fire- and smoke-resistive construction; contents and hazards within the facility; and the facility fire protection systems should retain at least the same level of performance as provided by the original design parameters. The use and hazards should not change to the degree that assumptions made about life safety and network reliability characteristics, combustibility of furnishings, and existence of trained personnel are no longer valid. In addition, actions provided by other personnel, such as emergency responders, should not be diminished below the documented assumed levels. Also, actions needed to maintain reliability of systems at the anticipated level need to meet the initial design criteria. Significant changes in any of these factors should result in a review of the performance plan.

A.3.1.6.1 This term usually refers to a fire that starts outside a building (e.g., wildland fire or vehicle fire) and that consequently exposes the building to a fire. Exposure fires include fires starting in areas or floors occupied by other tenants of a multitenanted building.

A.3.1.6.2 Due to the complex nature of the principles involved, models are often packaged as computer software. Relevant input data, assumptions, and limitations needed to properly implement the model should be considered. The user should be aware of the limitations of the software or calculation method and not exceed these limitations.

A.3.1.6.3 The fire scenario describes factors critical to the outcome of the fire such as ignition sources and locations, nature and configuration of the fuel, ventilation, characteristics and locations of occupants, and condition of the supporting structure and other equipment.

A.3.1.6.7 Engineering terms include temperatures, radiant heat flux, and levels of exposure to fire products. Performance criteria provide threshold values that are treated as data for calculations used to develop a proposed design and implementation plan.

A.3.3.1 See Figure A.3.3.1.

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**Figure A.3.3.1 Example of the application of NFPA 101 to telecommunications equipment areas and an administrative office area.**

A.3.3.2.1 One method that has been demonstrated to provide a measure of the ability of equipment to withstand elevated temperature exposure is ANSI 304, *Test Procedure for Evaluation and Classification of Insulation Systems for Direct-Current Machines*. Additional information can be found in Telcordia’s GR-63-CORE, Issue 1 (formerly Bellcore).

A.3.3.2.2 Acid corrosion and conductive products of combustion have been known to cause problems after fires. *(Also see A.6.7.1.)* The following extract is from Barbara T. Reagor’s article in the *Journal of Fire Sciences*.

> “In general, an electronic switch would be expected to accumulate zinc chloride levels in the range of 30 to 60 µg/sq in. in the normal environment over its expected lifetime of 20+ years. A clean product is expected to have less than 10 µg/sq in. of chloride contamination present. After exposure to a fire involving halogenated materials, we have observed levels that range from 30 to 6000 µg/sq in. As a general rule we have found that equipment with contamination levels below 200 µg/sq in. can be easily restored to service with very little impact on long-term reliability. Equipment with exposure from 200 to 600 µg/sq in., can also be restored to service as long as no unusual corrosion problems arise and the environment was strictly controlled soon after the fire. However, as the contamination level rises above 600 µg/sq in., the effectiveness of cleaning dwindles and the cost of cleaning quickly approach the replacement cost of the equipment.”
A.3.4.3 This category of assumptions applies both to systems and features recommended by this document, that reference applicable standards, and to any additional systems or features included in the design at the discretion of the builder. The referenced standards are hereby expected to state maintenance, testing, and other requirements needed to provide positive assurance of an acceptable level of reliability. The referenced standards themselves could be prescriptive or performance based.

A.3.4.3.3 Systems addressed by this recommendation include automatic fire suppression systems and fire alarm systems. Performance issues that need to be documented could include response time indexes, discharge densities, and distribution patterns. Calculations should not include an unlimited supply of extinguishing agent if only a limited supply will be provided in the actual structure or building.

A.3.4.8 Characteristics requiring assumptions include occupant abilities and locations, and the nature of the thermal and nonthermal threats expected in telecommunications facilities (e.g., fuel loading and heat release rate of materials, extent of fire spread, amount and nature of smoke generated). The fuel loading and potential heat release rate of fires are dependent on the materials and equipment that are employed.

A.3.4.8.5 Although it would be expected that a fire in this area would be a Class B liquid fuel fire, recent history has shown that fires in these areas have been Class C electrical in nature.

A.3.4.8.7 Typical work location consists of metal furniture with a personal computer work station. Some amounts of file storage and catalog library are expected.

A.3.5 Scenarios define the challenge to which equipment, personnel, and buildings can be exposed. Fire scenarios capture and limit value judgments on the type and severity of the fire challenge to which a proposed fire safety system should respond. The fire safety system includes any and all aspects of the proposed design that are intended to mitigate the effects of a fire, such as materials control, smoke management, egress system, automatic detection and suppression, barriers, staff training, and placement of manual extinguishers.

In order to provide a comprehensive design (i.e., demonstrate how the fire safety system will respond to a variety of fires) more than one scenario needs to be considered. Scenarios are composed of an initial fire location, an ignition source, the first and second fuel items ignited, and the geometry and ventilation features of confining spaces. In telecommunications areas, the early smoke generation rate and initial growth in fire severity could be significant considerations.

It is desirable to run a wide variety of different fire scenarios to evaluate the range of effects on telecommunications equipment, personnel, and buildings. Fire scenarios should not be limited to a single or a couple of “worst credible” fire scenarios. Scenarios should not always assume that fire safety systems will function as designed. Furthermore, failure modes and reliability of systems should be included in scenario development.

A.3.5.2.1 Design fires are typically quantified in terms of their potential generation of heat, smoke, and combustion gases that are released into the environment. The generation of these products could be represented as time based rates (heat release rates or mass production rates). A fire’s heat release is partitioned between the radiative fraction and the convected fraction transported by the plume. Radiation and convection heat transfer modes control the thermal impact of the fire and should be considered. Smoke and combustion gases are the fire’s mass effluent and are generically termed species. In any particular fire scenario, species such as particulate smoke, CO, HCl, HBr, HF, and so forth could be important in terms of equipment survivability and life safety hazard and should be quantified when indicated.

Heat release rates and species generation rates for specific burning objects can be obtained from the following:

1. Full-scale fire tests
2. Estimations from correlation
3. Generic fire curves (t-squared curves)
4. Predictions from fire models
5. References including SFPE Handbook, Drysdale’s Introduction to Fire Dynamics, and the SFPE Guide to Performance-Based Design

Numerous data sources, fire test methods, correlation, and predictive models are available in the fire safety research and engineering literature. Specific data sources and fire test methods that could be appropriate for fire scenario development are identified in the appendices of the individual scenarios.

A.3.5.2.1.1 An example of such a scenario would have the failure or fire initiated in a component or system where damaging combustion products would be generated and transported to a nearby critical target. Fire could spread to other components located on different racks or cabinets depending on the fire exposure from the initially ignited component or systems and the ignition properties of the exposed materials.

Factors to be considered in developing design fire curves for component or systems fire scenarios include the following:

1. Chemical composition of wiring insulation, circuit boards and substrates, and electrical components
2. Species generation rates of overheated, electrically energized components or devices
3. Heat release rate and species generation rates of ignited items, and the potential for fire spread to other items based on the exposure fire and the ease of ignition of other items (racks or cabinets)

Significant amounts of combustion (pyrolysis) products could be generated prior to flaming ignition with overheated, electrically energized equipment. These products could pose a direct threat to critical network equipment. Therefore, particular attention should be placed on the pre-ignition scenario development.

Fire tests involving energized telecommunications equipment have demonstrated that where ignition is attributable to an electrical fault, such fires are slow to develop but do release great volumes of corrosive smoke soon after ignition. Products of combustion emitted during such tests included chloride from combusted plastics, tin and lead from solder connections, zinc from transistor chip coatings, copper and bromine from circuit boards, manganese, silicon, and so forth. When combined with moisture, chlorine formed hydrochloric acid, and ionic chlorides formed electrically conducting compounds that can lead to corrosion damage and electrical shorts or signal noise in the system. [Fire Extinguishment Testing of Sprinkler Protected Telecommunications Equipment, Bell Northern Research, 1987; The Special Need for a Smoke Exhaust System to Minimize Secondary Damage to Electronic Telephone Switching Equipment, H. H. Angus & Associates, 1992.]
Factors to be considered in developing design fire curves for ignitable liquid fires include the following:

1. Volatility and flash point of liquid
2. Initial quantity spilled and rate of additional liquid release
3. Liquid surface area and burning rate

In some cases, the growth phase of ignitable liquid fire scenarios could be represented by “standard” t-squared fires commonly referred to as “fast or ultra-fast” fires (see NFPA 72, *National Fire Alarm Code*, and SFPE *Handbook of Fire Protection Engineering*).

Some flammable liquids with high vapor pressures can result in explosive range mixtures and damaging deflagrations. Flash fires or deflagrations can also result from accidental releases of liquids into heated environments or onto surfaces above their flash points. Overpressures from explosions and deflagrations can cause further release of fuel or failure of compartment boundaries. Guidance for determining pressure rise is provided in NFPA 68, *Guide for Venting of Deflagrations*.

A.3.5.2.1.5 An example of such a scenario would be a combustible gas leaking into a cable entrance facility or vault from sources outside the telecommunications facility followed by ignition of an explosive mixture. Another example of such a scenario would be accumulation of hydrogen gas produced from battery use in a space with inadequate ventilation followed by ignition of an explosive mixture. Guidance for determining pressure rise can be found in NFPA 68, *Guide for Venting of Deflagrations*.

A.3.5.2.1.6 An example of such a scenario would be a fire in non telecommunications-controlled space involving flaming ignition of stored upholstered furniture that is controlled but not extinguished by a sprinkler system. The fire compartment is open to a corridor that is common to a leased space containing a switch.

Factors to consider in analysis of interior exposure fire scenarios include the following:

1. The nature and degree of closure of the opening between compartments
2. Integrity of fire and smoke barriers between compartments
3. The presence or absence of telecommunications equipment in the exposed space

Experimental values of heat release rate and species generation rates for suppressed and unsuppressed full-scale compartment fires are available in the literature and can be a basis for the interior exposure fire.

A.3.5.2.1.7 An example of such a scenario would be a fire involving chemicals producing corrosive products of combustion and a failure of the detection system to shut down air intakes for the HVAC serving a central office facility.

Factors to consider in analysis of exterior exposure fire scenarios include the following:

1. Existing and potential property uses of the adjacent property
2. Property line set-back (separation distance)
3. Exposure geometry (shape factor)
4. Radiant flux required for ignition
5. Ignition and flame spread properties of exposed materials
6. Degree of closure or protection of outside air intake
A.3.6.6 Where a fire detection system is used in a performance-based approach, system performance should be verified by test.

VEWFD systems should be designed, installed, and maintained to detect the products of combustion from the Heated Wire Tests described in Annex B.

EWFD systems should be designed, installed, and maintained to detect the products of combustion from the Lactose-Potassium Chlorate Test described in Annex B.

It should be recognized that there are potential fire scenarios in most telecommunications facilities that can grow to the point where a major service interruption can occur before an effective response can be mounted by facility personnel. Examples of such scenarios include fires of incendiary origin and arcing short circuits in battery plants or other primary power systems or cables. Since fires involving these scenarios are rare, the performance objectives and design approaches in this document have been developed to provide protection against more frequently occurring scenarios.

The performance criteria in 3.6.6 are based in part on the criteria in BS 6266, Code of Practice for Fire Protection for Electronic Data Processing Installations. The criteria define test fires for the VEWFD and EWFD levels of fire detection discussed in this document. The appropriate test fire is used to properly demonstrate fire detection system operation at initial acceptance and subsequent periodic system testing.

Fire detection systems should be designed, installed, and maintained to detect the test fires referenced in this section when the HVAC system serving the space is operating at normal air exchange rates, and also when the HVAC system is shut off. They should also be designed, installed, and maintained to detect the test fires when equipment in the space is fully operational.

It is common practice in some companies for some spaces to have minimal HVAC for energy conservation purposes. This is typical in colder regions where mechanical cooling is not necessary to relieve the heat gain from equipment with high energy density. Fan cycling is also a typical condition for equipment with lower energy density that does not produce as much heat (e.g., frame spaces, many transmission systems). Because a fire of a given size can cause the same damage irrespective of airflow in the area, it is essential that the fire detection system be able to function in any foreseeable condition. This recommendation can also ensure adequate fire detection in the event of fan failure.

a. Very Early Warning Fire Detection (VEWFD)

a.1 VEWFD systems should be designed, installed, and maintained to detect the products of combustion from the “Overheated Wire” test described in this section.

a.2 The purpose of this test procedure is to prove the performance of very early warning smoke detection systems in a smoldering fire scenario of much less than 1 kW. The test is intended to simulate a small amount of smoke, barely visible, that would be created in the early stages of an electrical overload in electronic equipment or cables. The test is intended to provide quantitative information useful for a performance-based specification. Prescriptive recommendations, such as detector chamber sensitivity and detector/port spacing, do not reliably equate to detection response time and do not assure the ability to detect fires during early stages. This test is also intended to meet the following general objectives:

It is intended to be repeatable, so that multiple tests can be used to accurately measure the effect of changes in the test environment or changes in the detection system design. It is intended use low cost test equipment that can be quickly set up in actual telecommunications facilities if desired. It is intended to prevent or minimize the potential of smoke damage to the equipment in the room under test. It should create little or no corrosive products of combustion and no flames. It is intended to avoid the creation of large amounts of smoke and gas that could pose a health threat to personnel in the test area.

The described test using an electrically overloaded PVC-coated wire is intended to simulate the early stages of a fire. Although a PVC wire is used, hydrogen chloride vapor is unlikely to be produced due to the relatively low temperatures reached. The off-gases produced this test are not sufficient to drive off the chlorine in the PVC formulations. If the current is applied for a longer time, or if the wire sample is shorter than stated, small quantities of HCl might be generated. In either event, a clearly perceptible odor that should dissipate in short time is produced by the test.

The test is essentially identical to the test specified in section A.3 of British Standard BS 6266:1992, Fire Protection for Electronic Data Processing Installations.

a.2 Test Apparatus: The test apparatus consists of the following items:

a.2.1 Wire: A 2 m (80 in.) length, of 28 AWG (10/0.1 mm strands) insulated with PVC to a radial thickness of 0.3 mm, the cross-sectional area of the conductor being 0.078 mm$^2$ (.00012 in.$^2$).

a.2.2 Insulating Board: A non-combustible board having minimum dimensions of 600 mm $\times$ 600 mm (24 in. $\times$ 24 in.).

a.2.3 Power Supply: A regulated power supply capable of supplying a current of 15 Amperes at 6 VDC.

a.3 Test Procedure:

a.3.1 The test should be performed in the room in which the detection system is installed, with all normal ventilation fans (e.g., fans internal to equipment, room ventilation fans) operating. Testing should also be performed with the fans turned off, although a longer response time in this condition might be acceptable to the facility owner.

a.3.2 Position the test apparatus at the test location, and secure all equipment to prevent damage.

a.3.3 Prepare the wire by carefully removing not more than 12 mm (1/2 in.) of the insulation from each end of the sample so that the conductor(s) is not nicked.

a.3.4 Place the wire on the insulating board so that there are no kinks or crossovers in the wire.

a.3.5 Set the power supply to supply a constant voltage of 6 VDC.

a.3.6 Connect the ends of the wire to the power supply.

a.3.7 When all other preparations are complete, switch the power supply on for a period of 180 seconds. After 180 seconds, turn the power supply off, and observe and record the test results.

To avoid burns, do not touch the wire during the test, or for three minutes after turning the power supply off. If the wire is located too close to HVAC registers or equipment exhaust ports, the air flow might cool the wire, and result in inadequate production of smoke.
In this event, either reposition the apparatus, or shield the wire from the air flow.

a.4 Test Sequence: Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus. Consideration should be given to testing of underfloor and above floor detection systems.

a.5 Pass/Fail Criteria: The VEWD system should produce an "Alert" signal within 120 seconds of the cessation of current to the test wire (i.e., within 300 seconds of start of the test).

b. Early Warning Fire Detection (EWFD)

b.1 EWFD systems should be designed, installed, and maintained to detect the products of combustion from the lactose/chlorate test described in the following sections.

The lactose/chlorate test used here is one of the test methods specified in BS 6266, with modifications. This method produces a controlled fire that produces both flame and smoke.

b.2 Lactose/Chlorate Test Method

b.2.1 Test Apparatus: The test apparatus should consist of the following:

Crucible or Open Cup: A non-combustible (e.g., metal, silica, or porcelain) crucible or similar cup-shaped item to hold the mixture of lactose and chlorate during combustion.

Support: A non-combustible surface to hold the crucible upright and to insulate it from the supporting surface below.

Scale: A scale accurate to 0.1 gram for weighing the mass of lactose and potassium chlorate.

Stop Watch: A stop watch or clock accurate to 1 second.

Ignitor: A long match or taper.

Ignition mixture: A mixture composed of equal masses of lactose and potassium chlorate. (This mixture is approximately 1.4 volumes of lactose to 1 volume of potassium chlorate.) For the EWFD test, the mass of lactose/chlorate mixture is one-third (1/3) of that specified in BS 6266 for testing of standard sensitivity smoke detection systems. The mass necessary to test standard sensitivity systems is given in Figure 6.5.2.3.2.2. [Extract Figure 2 from BS 6266 as Figure XXXX in this document. This figure relates room height and air changes per hour to the mass of lactose mixture necessary to conduct the tests.]

b.2.2 Procedure:

Determine the necessary mass of lactose/chlorate mixture by multiplying the mass shown in Figure 6.5.2.3.2.2 for the air flow present by a factor of 0.33. Extrapolation between the plotted lines shown on Figure 6.5.2.3.2.2 is acceptable.

Example: For a room that is 4 m (13 ft) high, with 20 air changes per hour, Figure 6.5.2.3.2.2 necessitates having 17.25 grams of the mixture. Multiply this by 0.33 to adjust for the EWFD sensitivity recommended by Section 6.5.2.3.2.1.6 to obtain a final necessary mass of mixture of 5.7 g. This can necessitate having 2.8 g of lactose and 2.8 g of potassium chlorate.

Weigh the mass of lactose and potassium chlorate into separate containers.

Place the crucible on the support in the test location.

When all other test preparations are complete, carefully mix the lactose and potassium chlorate in the crucible, and immediately ignite the mixture with a long match or taper.

WARNING: Great care should be used when mixing the lactose and potassium chlorate. Ignite the mixture from a distance using a long taper, fireplace match, or long-handled butane charcoal grill lighter. Do not use ordinary length match or butane lighters.

b.2.3 Test Sequence: Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus.

b.2.4 Pass/Fail Criteria: The EWFD system should produce an "Alert" signal within 120 seconds of the cessation of ignition.

A.4.1 Table A.4.1 provides a summary of recommendations from Chapter 4.

The fire protection recommended is based on noncombustible construction, fire ratings of major systems installed in the telecommunications areas, compartmentation of fire areas, early warning and very early warning fire detection systems, and effective response of trained individuals.

A.4.1.2 The prescriptive approach consists of elements including fire-resistant major equipment systems, cable, and wire; compartmentation; fire detection; alarm processing; and manual intervention strategies as the primary means to prevent major network failure due to fire.

A.4.3 Site selection should anticipate exposures from other hazards such as flood, earthquake, and so forth.

A.4.5.3 Compliance with compartmentation should be achieved in existing telecommunications equipment spaces provided rated separations and listed penetrations are practicable.

A.4.5.4 It is preferable to install HVAC ducts serving nontechnical equipment areas so that they do not pass through telecommunications equipment areas.

A.4.5.6 The confirmation of the presence of smoke can be accomplished by the following:

1. Cross-zoning
2. Time/smoke density factors
3. Activation of multiple detectors
4. Manual pull station in combination with detection strategy
5. Heat detection
6. Automatic suppression system actuation

A.4.5.6.4 The objective is to prevent undesirable smoke movement between compartments and/or spaces while permitting HVAC operation to prevent equipment overheating. HVAC operation within a fire-affected compartment is permitted until it circulates smoke that contributes to the telecommunications equipment contamination.

A.4.5.5.2 A provision of telecommunications equipment that is resistant to ignition and subsequent fire spread has a direct impact on the frequency and severity of fires in telecommunications facilities.
### Table A - 4-1 Large Telecommunications Facilities Summary of Requirements for Detection, Suppression, Smoke Management and Compartmentation of Hazard Area (Rating of Compartment Fire Walls [hours] in Table Body)

<table>
<thead>
<tr>
<th>Common Area Containing Some or All of the Following: Telecommunication Equipment, Power, MEP and Contiguous Technical Support Area</th>
<th>Equipment Space</th>
<th>Non Equipment Space</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detection</strong></td>
<td><strong>Automatic Suppression</strong></td>
<td><strong>Smoke Management System</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notes:**

1. Rating in table refer to minimum floor ceiling and wall separation requirements only. Additional separation may be required for structural elements due to building type.
2. Additional requirements may be required as per 4-1.2 in multiple tenant buildings not controlled by telecommunications operator.
3. NR No Requirement.
4. SABC Refer to applicable building code.
A.4.7.5 Batteries meeting the fire resistance recommendations might not be available at the time this document is published.

A.4.7.8.3 A battery management program can include an automatic battery monitoring system or periodic battery inspection and testing.

A.4.8.2 Compliance with compartmentation should be achieved in existing main frame distribution spaces provided rated separations and listed penetrations can be achieved.

A.4.9.3.2 Drainage and/or secondary containment systems should be provided to prevent fuel spills or leaks from contaminating soils or public drainage systems.

A.4.9.7.2 Appropriate segregation of the fuel supply is accomplished with a thermally actuated valve or equivalent in the fuel line to the stand by generator to isolate the fuel sources from the engine in the event of fire.

A.5.1 Table A.5.1 provides a summary of recommendations from Chapter 5.

A.5.1.2 The prescriptive approach consists of elements including fire-resistant major equipment systems, cable, and wire; compartmentation; fire detection; alarm processing; and manual intervention strategies as the primary means to prevent major network failure due to fire.

A.5.5.1 Many small telecommunications facilities have only one room. Some of these buildings could have separate rooms for the cable entrance facility and for the standby engine.

A.5.5.3 If separate rooms are desired, the telecommunications equipment space should be separated with noncombustible construction.

A.6.3 Compartmentation is accomplished by the use of separation between floors and of hazard/occupancy areas within a floor such as telecommunications equipment spaces from administrative areas and building support and service areas. The use of noncombustible construction is essential in restricting the spread of fire. Smoketight construction is essential in restricting the spread of smoke. It is assumed that the structural members not included in these recommendations are of listed noncombustible construction.

A.6.3.3.2 Automatic sprinklers and fusible links are a form of automatic fire detection.

A.6.4.1.3 In determining desired response time, whether or not a telecommunications equipment building could be unstaffed for any period of time should be considered as part of a response strategy as well as anticipated response time to an alert signal by owner or operator designated personnel.

A.6.4.1.4 Supervising stations meeting the requirements of NFPA 72, National Fire Alarm Code, for proprietary or central station service are acceptable supervising stations.

A.6.4.2.1.2 Generally, alert signals from VEWFD systems should not be transmitted to the municipal fire department.

A.6.4.2.3.3 Trouble signals can be responded to and remedied by local, trained telecommunications personnel.

A.6.5.1 A system designed, installed, and maintained to provide one level of protection will not, in every case, also provide another level of protection that could be necessary for a hazard area.

A.6.5.2.1 Ports and Sensors in EWFD and VEWFD Systems.

(a) A port is an orifice of a specific size in a smooth bore pipe through which (smoke-laden) air is drawn by an air-sampling smoke detector.

(b) A sensor is a device, such as a photoelectric cell, that receives and responds to a signal or stimulus.

A.6.5.3.1.2 In general, two sensors or ports per building bay are recommended 6.1 m × 6.1 m (20 ft × 20 ft bays are typical but not universal in many traditional central offices).

<table>
<thead>
<tr>
<th>Hazard Area</th>
<th>Detection</th>
<th>Suppression</th>
<th>Smoke Management</th>
<th>Compartmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications equipment</td>
<td>EWFD</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Cable entrance facility</td>
<td>EWFD</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Power area</td>
<td>EWFD</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Main distribution frame</td>
<td>EWFD</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Standby engine area</td>
<td>SFD</td>
<td>NR</td>
<td>NR</td>
<td>1 hour</td>
</tr>
<tr>
<td>Technical support area</td>
<td>Yes</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Administrative area</td>
<td>SFD</td>
<td>NR</td>
<td>NR</td>
<td>1 hour</td>
</tr>
<tr>
<td>Building service and support area</td>
<td>SFD</td>
<td>NR</td>
<td>NR</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

1 Per 5.5.6, small facilities should be provided with early warning fire detection systems.

2 Technical support areas should be protected with fire detection systems consistent with the main area in which the technical support area is located.

NR — not required.
Installation of sensors and ports should be determined on a case-by-case basis for buildings and enclosures that are different from the typical building bay design. In areas that have cable trays between the telecommunications equipment and the ceiling, and the cable density is such that the free flow of smoke will be inhibited to the ceiling, then sampling ports or sensors should be located both at the ceiling level and below the cable trays to overcome this stratification. (Refer to NFPA 72, National Fire Alarm Code.) In general, where stratification could be a concern, one high and one low sensor or port should be installed per building bay.

See Figure A.6.5.3.1.2 for clarification.

Example 1.

Port or sensor

High Level 37.2 m$^2$ (400 ft$^2$) 6.1 m (20 ft max) between ports or sensors

18.6 m$^2$ (200 ft$^2$) 4.3 m (14 ft max) between high and low ports or sensors

Low Level 37.2 m$^2$ (400 ft$^2$) 6.1 m (20 ft max)

Figure A.6.5.3.1.2 Staggered layout of sample ports/sensors.

A.6.5.3.1.4 Section 6.5.3.1.4 provides recommendations for the number of sensors and ports to be installed at return air grilles. However, to increase performance additional ports should be provided in accordance with manufacturer’s requirements. (Also see NFPA 72, National Fire Alarm Code, for guidance on port and sensor placement.)

A.6.5.3.1.4.1 Section 6.5.3.1.4.1 provides recommendations for the number of sensors and ports to be installed at return air grilles. However, to increase performance additional ports should be provided in accordance with manufacturer’s requirements. (Also see NFPA 72, National Fire Alarm Code, for guidance on port and sensor placement.)

A.6.5.3.1.6 Because the listed sensitivity for an air-sampling smoke detection system is that measured at the detector rather than that at each individual sampling port on its piping network, the entire piping network should be evaluated to determine the effective sensitivity at a sampling port. Sampling ports that draw in clean air will dilute smoke-laden air being drawn in by other ports. The accumulative affect of clean air being drawn through some ports causes dilution that reduces the effective sensitivity of other ports on the same pipe network. Conversely, the accumulative affect of smoke being drawn into multiple sample ports causes the overall effective sensitivity of the air-sampling system to increase beyond the sensitivity expected at a single sampling port.

The effective sensitivity of a sampling port is a function of the total number of ports on a piping network and the percentage of those sampling smoke-laden air. As the number of ports sampling clean air increases, the effective sensitivity at individual ports on an air-sampling smoke detection system is reduced to less than the listed sensitivity of the detector unit.

The following two examples show a best and a worst credible scenario:

(a) Assuming all sampling ports will sample smoke-laden air, with all the ports in one common interior area with the smoke being uniformly mixed throughout the space by an HVAC system, then the effective sensitivity of each sampling port is approximately equal to the listed sensitivity of the detector unit.

(b) Assuming that only one sampling port will sample smoke-laden air, and assuming a balanced piping network design where there is equal airflow, and thus equal sensitivity, at each sampling port, then the effective sensitivity of each sampling port is the listed sensitivity of the detector unit multiplied by the total number of sampling ports.

A.6.5.3.2.1.2 In general, one sensor or port per building bay is recommended 6.1 m × 6.1 m (20 ft × 20 ft bays are typical but not universal).

A.6.5.3.2.2 See NFPA 72, National Fire Alarm Code, for flame detector selection considerations.

A.6.6.1 This section provides for the use of automatic or manual fire suppression equipment as tools available to be used as fire safety elements in a fire protection plan for a telecommunications facility. Communications facilities have achieved an excellent fire loss record due to the high standards of construction, compartmentation of hazards, and high quality of telecommunications equipment. This high record of reliability has been achieved mostly without the use of automatic extinguishing systems. Automatic suppression should be considered when other fire protection elements cannot be employed.

A.6.6.2.1 Wet pipe, dry pipe, and pre-action systems are acceptable for use in the protection of telecommunications facilities.

The introduction of wet pipe sprinkler systems into telecommunications equipment areas should be carefully controlled. In addition to the recommendations for pipe pitch in 6.6.2.2.2, galvanized steel pipe could be necessary to prevent failure of the piping system and resultant leakage of water on equipment. Consideration should also be given to the use of dry pendent sprinklers to prevent water from residing in pipe drops, where pendent sprinklers are utilized.

The use of pre-action, double-interlocked sprinklers will minimize the risk of inadvertent water discharge.

A.6.6.2.3.1 Piping systems installed to deliver clean agents into telecommunications spaces should have particular attention paid to internal cleaning of the piping. Any debris discharged into the telecommunications space can cause catastrophic damage to the telecommunications equipment. All piping systems should be cleaned internally after fabrication to prevent discharge of debris. Cleaning should be in accordance with the requirements of NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems, and manufacturer’s recommended guidelines.
A.6.6.2.4.1 Piping systems installed to deliver halon systems into telecommunications spaces should have particular attention paid to internal cleaning of the piping. Any debris discharged into the telecommunications space can cause catastrophic damage to the telecommunications equipment. All piping systems should be cleaned internally after fabrication to prevent discharge of debris. Cleaning should be in accordance with the requirements of NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems, and manufacturer’s recommended guidelines.

A.6.6.3.1.2 Dry chemical agents and corrosive liquid agents will contaminate the switching equipment and cause damage to the terminals and connectors. It has been experienced that such contamination and damage can be catastrophic to the equipment. It is recommended that any occupancy near or adjacent to telecommunications areas not have dry chemical or corrosive liquid extinguishers installed.

A.6.6.3.2 All pipes carrying water in or around telecommunications equipment should be monitored for waterflow to prevent catastrophic water damage and loss of network reliability. All hose connections should be installed outside telecommunications areas.

A.6.7.1 The following information is adapted from “Network Reliability: A Report to the Nation,” Federal Communication Commission’s Network Reliability Council.

Although smoke management is applicable to all areas of a building, it is most important in the telecommunications equipment space, main distribution frame and power areas. It is estimated that 95 percent of the fire damage in telephone central offices is attributed to the smoke products and only 5 percent is caused by the thermal effect of fires. In any fire accident there is a quantity of combustion products generated before the complete suppression of the fire that can cause short- or long-term damage to sensitive equipment. The objective of smoke management systems is the rapid confinement and elimination of the products of combustion. Therefore, the design parameters of smoke management systems are driven by equipment vulnerability criteria and the respective smoke generation rate and transport patterns.

The hazards associated with materials involved in fires can be defined and quantified by the heat release rate during their combustion, the rate of generation of fire products (gases, liquids and solids), and the total amount of heat and fire products generated. In addition it is necessary to know the amount of cooling air (forced and convection) passing through equipment that will enter the smoke layer. This fire source information is necessary input to smoke movement and transport models. Information about the heat release rates and smoke yields of materials and commodities is catalogued, and methods for obtaining these values have been reported in the *SFPE Handbook of Fire Protection Engineering*. Pyrolysis and combustion models that simulate fire spread and growth have also been developed. They could be used in combination with computer models that predict the smoke movement (e.g., models for smoke detection and models predicting the descent of smoke from the ceiling to the floor, or the transport of smoke to adjacent spaces).

The cumulative quantity of the collected smoke, and the rate of deposition on the surfaces exposed to the combustion products as a function of time and source intensity, is used to assess the damage inflicted on sensitive equipment.

Research and field experience have suggested a casual relationship between zinc chloride accumulation on electronic components and equipment damage. The success of post-fire recovery and restoration of equipment exposed to smoke containing halogenated gases was found to depend strongly on the amount of zinc chloride accumulated on equipment surfaces. For electronic switch equipment, levels of 30 to 60 µg/in.² were observed to accumulate over greater than 20 years of normal environmental exposure and pose no special problem. Switch equipment exposed to fire gases and attaining accumulations of below 200 µg/in.² were easily restorable with little loss of reliability. Accumulation levels up to 600 µg/in.² were restorable as long as strict environmental controls were implemented soon after the fire. The cost of restoration of equipment with accumulations above 600 µg/in.² approached the cost of the equipment itself, with no guarantee of long-term reliability.

The goal of any smoke management solution in a telecommunications facility is the mitigation of possible service interruption consequences by reducing smoke damage to acceptable levels. The following steps are necessary to evaluate the potential damage caused by a fire and to establish quantitative criteria and objectives for any engineered solution averting smoke damage:

1. Determination of detection time
2. Determination of smoke control system activation
3. Determination of the distribution of smoke spatial concentration
4. Calculation of deposition rate of smoke products on vulnerable surfaces
5. Calculation of total deposition of smoke products from fire initiation until final smoke control

Currently available tools and methods provide the vehicle for the computation of these five parameters.

The next step is the selection of the most appropriate and feasible smoke management strategy that minimizes the total smoke deposition and reflects the realistic conditions of the facility.

The most appropriate considerations for telecommunications facilities are as follows:

1. Compartmentation
2. Early and reliable detection of smoke from flaming and non-flaming fires
3. Automatic and reliable activation of smoke removal systems at the early stages of the fire (small flame size).
4. Measures limiting migration of smoke into connecting spaces in combination with passive smoke barriers, opposing airflow, and pressurization of surrounding space

The most attractive smoke strategy for existing facilities that are not scheduled for any other retrofit is the early smoke detection with automatic activation of smoke exhaust system. For systems that will undergo planned equipment changes, compartmentalization combined with early detection and automatic exhaust system activation could be a desirable and feasible smoke control strategy. For new facilities (new designs), in particular multistory, multi-occupant buildings, compartmentalization, on passive or active and automatic pressurization of adjacent spaces connected with the room of the fire origin would be a recommended strategy.

A.6.7.2.3 Consideration should be given to using exhaust point(s) to reduce the possibility of smoke being drawn into non-involved equipment. Exhaust openings should be designed and positioned to
Section 6.8 describes the procedures and test methods used to quantify ignition and fire resistance in equipment. Provision of telecommunications equipment that is resistant to ignition and subsequent fire spread has a direct impact on the frequency and severity of fires in telecommunications facilities.

ANSI T1.307, American National Standard for Telecommunications — Ignitability Requirements for Equipment Assemblies and Fire Spread Requirements for Wire and Cable, lists the specific test methods applicable to wire and cable, according to the various installed locations or configurations in a typical telecommunications facility.

Nonmetallic conduit and trays should be permanently marked or labeled to indicate the successful completion of the tests.

While 100-percent compliance with some type of assembly level fire tests are highly desirable, it is recognized that such a level of testing is not generally achievable for most electrical equipment assemblies. By requiring industry-standard-compliant equipment, the committee feels that an acceptable level of fire safety is achieved. Where large noncompliant subsystems are installed, it is recommended that users consider placing noncompliant equipment in a separate fire compartment to prevent a fire initiating in the noncompliant equipment from spreading to the major system, or provide a fire suppression system in the noncompliant equipment areas.

This applies to both owned and leased structures.

A.7.1.1 Inadequate housekeeping provides a potential fuel for an ignition source and allows combustibles to be closer to potential ignition sources. The basic prevention is prompt disposal of combustible materials, or safe storage of these materials and periodic inspections to verify this is being done.

A.7.1.2 Such combustibles within unprotected areas and having a heat release rate greater than 300 kW represents a potential hazard, even for noncritical areas of telecommunications facilities (see appendix material within NFPA 72, National Fire Alarm Code, for various examples of heat release rates and see guidance within NFPA 220, Standard for the Fire Protection of Storage, and NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, concerning such storage, etc.). If such combustibles cannot practically be stored within protected areas, then other prevention measures within this recommended practice should be implemented to ensure that the buildup of or the amount of combustibles is limited or otherwise kept to a minimum.

These devices could be located in an established break or food services area within a facility.

Smoking is defined as the carrying or use of a lighted pipe, cigar, cigarette, tobacco, or any other type of smoking substance.

The objectives of these actions should be to reduce ignition risks and to provide appropriate fire prevention intervention strategies.

Electrical powering of telecommunications equipment is exempt from the requirements of NFPA 70, National Electrical Code®. [See Section 90-2(b)(4).] Construction and alteration projects could pose an additional risk exposure to a telecommunications facility.


Security is a deterrent of potential arson, both from interior and external parties.

See NFPA 10, Standard for Portable Fire Extinguishers, for selection of an appropriate portable fire extinguisher(s). Otherwise, open flames should not be permitted.

For new cabling installations, AC, DC, and telecommunications cables should be run in separate paths and not mixed. Where practical, unused or dead cables should be mined (removed) and discarded. Care should be taken during the removal process so as to protect the existing live cables from damage.

Infrared thermography or other like technology can be used to detect hot spots in telecommunications operations. Thermography scanning should be conducted for power boards, rectifiers, batteries, power room bus connectors, switchgear, AC/DC, and primary power supply.

Pre-fire planning for telecommunications facilities covered by this recommended practice is an essential component for life safety considerations of its occupants and for the fire fighters providing protection for the facility. Telecommunications facilities vary both in size and complexity of operation. Further, the critical nature of the communications service provided by the facility might not be reflected by the variables of size and complexity of operation. In any event, achieving the objective of this section, pre-fire plans would be expected to vary significantly in details from those for a small facility and those for a large facility, as described within this recommended practice. The plan can incorporate actions including investigation, evaluation and mitigation of the incident, fire suppression activities, and evacuation/relocation guidelines and assignments.

A fundamental concept of effective fire protection of a telecommunications facility is the recognition that there should be a good relationship or interaction or both between the telecommunications industry provider and the emergency services provider (normally the local fire department).

Telecommunications facilities are unique occupancies that provide (normally provide) vital links for the community for emergency services through 911-type communications links and other vital government-type circuits in addition to routine communication services expected of their customers.

It is recognized that sensitivity to this and other unique services provided to the community by the facility are brought to the awareness level of the emergency services provider through pre-fire planning. Pre-fire planning for the facility by the fire officials along with the necessary interface with representatives of the facility can ensure that objectives during actual fire emergencies are accomplished effectively and efficiently with as little interruption in to the service as possible.

It is recognized that as the magnitude of a fire within a facility increases, issues of depowering parts of the facility become more of a concern to fire suppression officers. Decisions regarding depowering a facility should be carefully weighed, having been considered during pre-fire planning and given
full consideration to the loss of the vital community communication links. When it is deemed necessary to depower a facility or part of a facility, the pre-fire planning done for the facility will help ensure the safe and efficient accomplishment of this objective with the minimum amount of service interruption for the facility as is possible.

The pre-fire plan can also include the following:

(a) Location of all pre-fire plan documents.
(b) Location of facilities alarm panel.
(c) Completed building fact sheet including a list of emergency contacts.
(d) Specific responsibilities assigned to designated personnel including the use of a guard service (where provided). The telecommunications management should ensure that guards are knowledgeable of fire emergency systems in the facility and the pre-fire plan.
(e) Depowering procedures to enable continuity of service in a fire situation by identifying the locations of electrical depowering devices. This procedure should include the following:
   (1) Coded floor prints located in the pre-fire plan document and facility signage to direct fire personnel to depowering locations
   (2) The method of turning off power to the following:
      a. AC power board (This is the primary source of electrical power for a telecommunications office and is supplied by the local power company.)
      b. Standby power generator (This unit, usually a turbine or diesel generator, provides standby AC power that is transferred manually or automatically whenever a loss of AC power is experienced.)
      c. DC primary disconnect fuse bay (This unit distributes DC power to the secondary fuse panels throughout the central office. The secondary fuse panels feed all the operating voltages to the central office branch circuits.)
      d. Uninterruptible power supply (UPS)
      e. The HVAC systems serving the area.

A.8.3 The telecommunications company should ensure that employees receive periodic and regular orientation pertinent to their assigned responsibilities involving the following:

(1) Facility evacuation
(2) Facility fire prevention measures
(3) Facility fire detection systems
(4) Alarm processing
(5) Fire suppression or response to fire incidents

A.8.3.4 See NFPA 101, Life Safety Code, for exemptions for number of occupants.

A.8.4 Figure A.8.4 is an example of a pre-fire plan drawing.

A.8.4.1 This might include the review of the equipment placement, the depowering issues, and how to perform them.

A.8.5 The purpose of this procedure, which can be a subset of the pre-fire plan, is to address methods by which damage to the telecommunications equipment can be minimized and timely restored to operation.

A damage control procedure should provide a means for the following:

(a) Preventing or minimizing damage to operations and equipment. (Whenever electronic equipment or any type of record is wet, smoke damaged, or otherwise affected by the results of a fire or other emergency, it is vital that immediate action be taken to clean and dry the electronic equipment. If the water, smoke, or other contaminants are permitted to remain in the equipment longer than absolutely necessary, the damage could be grossly increased.)
(b) A means for preventing water damage to electronic equipment (The proper method of doing this will vary according to the individual equipment design. Consideration should be given to the provision of waterproof covers, which should be stored in easily accessible locations.)

A.8.6 The purpose for the procedure is to ensure that if a major fire occurs within a telecommunications facility that affects its service that provisions have been addressed to identify critical service, alternative site locations, replacement equipment, emergency callback of employees, temporary rerouting of services, and other functions. Further the procedure is intended to ensure that the down-time of the telecommunications facility is kept to a minimum and that service is restored promptly. This procedure should be updated annually.
The procedure should include the following:

1. Procedures to identify and prioritize types and levels of service affected
2. A list of salvage equipment suppliers, vendors, and tradespeople
3. A current contact list of telecommunications disaster recovery specialists
4. A list of internal and external people or agencies assigned to assist with recovery
5. Operations, including staff to deal with the press, fire authorities, police, and authorities that can restrict entry following a fire of suspicious origin
6. Measures to maintain up-to-date copies of important documents in a secure off-site location (Examples of such records include but are not limited to essential business records, insurance records, building plans, and system documentation)
7. Procedures to identify and handle hazardous materials that can cause a health hazard or contaminate the structure, equipment, or contents

Annex B Performance Test Procedures for Very Early Warning and Early Warning Fire Detection Systems

B.1 Introduction.

B.1.1 Scope. The purpose of these test procedures is to prove the performance of very early warning and early warning fire detection systems in a smoldering fire scenario of much less than 1 kW in heat release rate and early warning fire detection systems.

B.1.1.1 These tests are intended to simulate the small amounts of smoke that would be created in the early stages of a fire in an equipment space. If an actual fire were to produce the amounts of smoke produced by these tests, telecommunications companies would want to be alerted by the fire alarm system.

B.1.1.2 The tests represent a good balance between the desire to use smoke sources that are representative of the types of fires that have occurred in equipment spaces, and the desire to minimize the introduction of smoke that can cause damage to operating equipment in the space.

B.1.2 Objectives. These tests are also intended to meet the general objectives listed in B.1.2.1 through B.1.2.4:

B.1.2.1 The tests are intended to be repeatable, in that a consistent quantity, temperature, and color of smoke is produced each time the test is performed.

B.1.2.2 The tests are intended to use test equipment that can be quickly set up in actual telecommunications facilities (i.e., in situ).

B.1.2.3 The tests are intended to prevent or minimize the potential for smoke damage to the equipment in the room under test. They should create little or no corrosive products of combustion.

B.1.2.4 The tests are intended to avoid the creation of large amounts of smoke and gas that could pose a health threat to personnel in the test area.

B.2 Heated Wire Test.

B.2.1 This test uses an electrically overloaded PVC-coated wire to simulate the early stages of a fire. Although a PVC wire is used, hydrogen chloride vapor is unlikely to be produced, in quantities significant enough to be of concern, if the test procedures herein are followed, due to the relatively low temperatures reached. If the current is applied for a longer time, or if the wire sample is shorter than stated, small quantities of hydrogen chloride can be generated. In either event, a clearly perceptible odor that should dissipate in short time is produced by the test.

The tests are based on the test specified in Section A.3 of British Standard BS 6266, Fire Protection for Electronic Data Processing Installations. The principal differences for some tests include the use of a regulated DC power supply and different wire, electrical load, and wire length.

Users are directed to Table B.2.1 to select the parameters to be used during the testing.

The test parameters to be used should be selected based on the detection system performance levels dictated by the performance-based analysis.

B.2.2 Test Apparatus. The test apparatus consists of the items listed in B.2.2.1 through B.2.2.4.

B.2.2.1 Wire. Table B.2.1 lists four options for wire selection and test parameters for the users to select. Test wire should be cut cleanly to the length specified in Table B.2.1.

B.2.2.2 Wire Mounting. The wire should be arranged by placing it on a noncombustible, nonconductive board, or suspended on a noncombustible, nonconductive support. The wire should be arranged so that there are no kinks or crossovers where localized higher-temperature heating can occur.

B.2.2.3 Power Supply and Leads. A regulated DC power supply capable of supplying a current of 0 to 30 amperes at 0 to 18 VDC (i.e., Kenwood Model XL6524E-D). The lead wires between the power supply and the test wire(s) should be #10 awg wire, 3.25 m (10.66 ft) long to avoid unacceptable voltage drop.

B.2.2.4 Stop Watch. A stop watch or clock accurate to 1 second.

B.2.3 Test Procedure.

B.2.3.1 The test should be performed in the room in which the detection system is installed, with all normal ventilation fans (e.g., fans internal to equipment, room ventilation fans) operating. Testing should also be performed with the fans turned off to simulate the potential for fan cycling and/or a power failure. This does not preclude testing required by NFPA 72, National Fire Alarm Code®.

B.2.3.2 Detector Programming. The detector alarm sensitivity setting (i.e., pre-alarm or alarm) used during the test should be identical to those used during normal operation of the system. Alarm verification or time delay features should be disabled during the test to permit the detector response to be annunciated immediately upon activation.
### Table B.2.1 Heated Wire Test Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BS 6266 Test (1992)</th>
<th>Modified BS 6266 Test</th>
<th>North American Wire Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire Specs</td>
<td>10 strands of 0.1-mm diameter tinned copper wire. Total cross-sectional area of conductor is 0.078 mm². Insulated with PVC to a radial thickness of 0.3 mm. Wire is very flexible due to stranded construction and highly plasticized insulation.</td>
<td>A single strand of 24 awg copper wire, insulated with PVC to a radial thickness of 0.043 in. (1.1 mm). This wire is stiffer than the BSI wire due to the single-strand construction and the minimally plasticized PVC insulation.</td>
<td></td>
</tr>
<tr>
<td>Smoke Characterization</td>
<td>Smoke is very light (barely visible). HCl vapor is unlikely to be produced due to the low temperature achieved in the wire. The primary constituent of the smoke is plasticizer.</td>
<td>More visible smoke than the 2-m test, but still very light smoke. Due to the higher temperature in the wire, a very small amount of HCl vapor will be produced.</td>
<td>More visible smoke than the BSI wire tests, but still very light. A minor amount of HCl is produced, but for a shorter duration than the BSI wire tests.</td>
</tr>
<tr>
<td>Test Period</td>
<td>180 seconds</td>
<td>60 seconds</td>
<td>60 seconds</td>
</tr>
<tr>
<td>Electrical Load</td>
<td>Constant voltage — 6.0 VDC, current varies from 0 to 15 amperes during the test due to changing resistance in the wire.</td>
<td>Constant voltage — 6.0 VDC, current varies from 0 to 15 amperes during the test due to changing resistance in the wire.</td>
<td>Constant voltage — 6.0 VDC, current varies from 0 to 30 amperes during the test due to changing resistance in the wire.</td>
</tr>
<tr>
<td>Pass/Fail Criteria</td>
<td>Fire detection system should &quot;respond&quot; within 120 seconds of the end of the test period.</td>
<td>&quot;Alert&quot; or &quot;pre-alarm&quot; signal within 120 seconds of the end of the test period.</td>
<td></td>
</tr>
</tbody>
</table>

This testing is intended to verify that the detectors will "see" smoke in sufficient concentrations to reach the specified alarm levels. Since the test produces a small amount of smoke for a brief period of time (i.e., a puff of smoke), the use of the alarm verification or time delay features would likely result in the detector not reaching the specified alarm levels. In a "real-world" fire, the smoke would continue to be produced as the fire grows, permitting the detector to reach alarm. If these features are disabled during the testing, they should be enabled at the conclusion of the testing before leaving the room.

**B.2.3.3 Test Locations.** Select test locations by considering the airflow patterns in the room and choosing challenging locations for the tests (i.e., both low airflow and high airflow can be challenging). If possible, vary the locations and elevations of the test apparatus to simulate the range of possible fire locations in the room. Avoid locations where the smoke will be drawn directly into the equipment cooling ports or fans. Locations where the smoke will be entrained into the air exhausting from an equipment cabinet are acceptable.

**B.2.3.4 Positioning.** Position the test apparatus at the test location, and secure the test equipment to prevent damage.

**B.2.3.5 Preparation.** Prepare the test wire by carefully removing not more than 12 mm (1/2 in.) of the insulation from each end of the sample so that the conductor(s) is not nicked.

**B.2.3.6 Mounting.** Mount the wire on the insulating material so that there are no kinks or crossovers in the wire.
B.2.3.7 Setting. Set the power supply to supply either a constant voltage or constant current as shown in Table B.2.3.7.

<table>
<thead>
<tr>
<th>Test</th>
<th>Voltage Setting</th>
<th>Current Setting</th>
<th>Current Application Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-m BSI Wire Test</td>
<td>6.0 VDC</td>
<td>0 to 15 amperes (varies)</td>
<td>180 seconds</td>
</tr>
<tr>
<td>1-m BSI Wire Test</td>
<td>6.0 VDC</td>
<td>0 to 15 amperes (varies)</td>
<td>60 seconds</td>
</tr>
<tr>
<td>Two BSI 6266 Wires in Parallel</td>
<td>6.0 VDC</td>
<td>Current varies from 0 to 30 amperes during the test due to changing resistance in the wire.</td>
<td>60 seconds</td>
</tr>
<tr>
<td>One North American Wire</td>
<td>Voltage varies from 0 to 18 VDC during the test due to changing resistance in the wire.</td>
<td>28 amperes</td>
<td>30 seconds</td>
</tr>
</tbody>
</table>

B.2.3.8 Connection. Connect the ends of the test wire(s) to the power supply leads.

B.2.3.9 Test. When all other preparations are complete, switch the power supply on for a period shown in Table B.2.3.7. After the appropriate current application time, turn the power supply off, and observe and record the test results.

To avoid burns, do not touch the wire during the test, or for 3 minutes after turning the power supply off. If the wire is located close to HVAC registers or equipment exhaust ports, the airflow can cool the wire and result in inadequate production of smoke. In this event, either reposition the apparatus or shield the wire from the airflow.

B.2.3.10 Test Sequence. Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus.

B.2.3.11 Pass/Fail Criteria. The pass or fail criteria for the VEWFD system should be as indicated in Table B.2.1.

B.3 Lactose-Potassium Chlorate Test.

B.3.1 Description. The lactose-potassium chlorate test is one of the test methods specified in BS 6266, Fire Protection for Electronic Data Processing Installations, with modifications to the mass of mixture used for North American conditions. A mixture of 50 percent by weight of lactose and 50 percent by weight of potassium chlorate is ignited in a long-handled butane lighter to produce a small, vigorous flame and clean white smoke.

B.3.2 Test Apparatus. The test apparatus should consist of the items listed in B.3.2.1 through B.3.2.6.

B.3.2.1 Crucible or Open Cup. A noncombustible (i.e., metal, silica, or porcelain) crucible or similar cup-shaped item to hold the mixture of lactose and potassium chlorate during combustion.

B.3.2.2 Support. A noncombustible surface to hold the crucible upright and to insulate it from the supporting surface below.

B.3.2.3 Scale. A scale accurate to 0.1 g for weighing the required mass of lactose and potassium chlorate.

B.3.2.4 Stop Watch. A stop watch or clock accurate to 1 second.

B.3.2.5 Ignitor. A long-handled butane lighter (i.e., one used to light a barbecue grill). CAUTION: DO NOT USE AN ORDINARY CIGARETTE LIGHTER – BURNS COULD RESULT!

B.3.2.6 Ignition Mixture. A mixture composed of equal masses of lactose and potassium chlorate. (This mixture is approximately 1.4 volumes of lactose to 1 volume of potassium chlorate.) For testing EFWD systems, the mass of lactose/chlorate mixture should be 4.0 g.

B.3.3 Procedure.

B.3.3.1 Detector Programming. The detector alarm sensitivity setting (i.e., pre-alarm or alarm) used during the test should be identical to those used during normal operation of the system. Alarm verification or time delay features should be disabled during the test to permit the detector response to be annunciated immediately upon activation.

This testing is intended to verify that the detectors will "see" smoke in sufficient concentrations to reach the specified alarm levels. Since the test produces a small amount of smoke for a brief period of time (i.e., a puff of smoke), the use of the alarm verification or time delay features would likely result in the detector not reaching the specified alarm levels. In a "real-world" fire, the smoke would continue to be produced as the fire grows, permitting the detector to reach alarm. If these features are disabled during the testing, they should be enabled at the conclusion of the testing before leaving the room.

B.3.3.2 Test Locations. Select test locations by considering the airflow patterns in the room and choosing challenging locations for the tests (i.e., both low airflow and high airflow can be challenging). If possible, vary the locations and elevations of the test apparatus to simulate the range of possible fire locations in the room. Avoid locations where the smoke will be drawn directly into the equipment cooling ports or fans. Locations where the smoke will be entrained into the air exhausting from an equipment cabinet are acceptable.

B.3.3.3 Preparation. Weigh the required mass of lactose and potassium chlorate into a mixing container, and mix it well by shaking or stirring to break up all lumps or clumps. Seal the mixing container tightly until ready to conduct the test.
B.3.3.4 Placement. Place the crucible on the support in the test location.

B.3.3.5 Test. When all other test preparations are complete, pour the required amount of mixture into the crucible, keeping it in a compact mound (without packing it down), and ignite the mixture with the long-handled butane lighter. This mixture is essentially the formula for a match head. When ignited, it burns vigorously like a match (and smells the same). Be sure to use a long lighter to avoid being burned when the mixture ignites.

B.3.4 Test Sequence. Repeat the test at least three times for each HVAC condition, with the test apparatus placed in a different location in the room each time. If possible, vary the elevation of the test apparatus.

B.3.5 Pass/Fail Criteria. The EWFD system should produce an "alert" or "pre-alarm" signal within 120 seconds of the cessation of ignition.

Annex C Referenced Publications

C.1 The following documents or portions thereof are referenced within this recommended practice for informational purposes only and are thus not considered part of the recommendations of this recommended practice unless also listed in Chapter 9. The edition indicated here for each reference is the current edition as of the date of the NFPA issuance of this recommended practice.

C.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.


SFPE: Guide to Performance-Based Design.

C.1.2 Other Publications.

C.1.2.1 CSA Publication. Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canada M9W 1R3.

CSA C22.2, Test Methods for Electrical Wires and Cables.


C.1.2.3 UL Publication. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.


Network Equipment Development Standards

Wire, Cable, and Equipment (Switching)


Bellcore GR-65-CORE Issue 1, October 1995

Network Equipment-Building System (NEBS) Requirements: Physical Protection


CAN/CSA-C22.2 No. 0.3-92, Test Method for Electrical Wires and Cables.


ANSI T1.319-1995, Equipment (Switching).


ISO 9705-1993, Fire test - Full scale Room Test for Surface Products.


ASHRAE Handbook - Fundamentals, 1993


Protection of the Telecommunication Link.


Conduit / Trays for Fiber Optic Cable
- Plenum (OFNP) UL 910
- Riser (OFNR) UL 1666
- Tray – Limited Smoke (OFNG) UL 1685
- OFN – Vertical Tray – UL 1581

DC Power

Computers / NFPA 75.


Telecommunications Equipment (will be incorporated into UL 1950 by the year 2000):
- UL 1459, Telephone Equipment.
- Fire Resistance of Building Construction
- Leakage Tests – Cold Smoke
- UL1479, Fire Tests of Through-Penetration Firestops.
- UL 1784, Air Leakage Tests of Door Assemblies.

Draft Standards (Currently Being Used To Evaluate Equipment/Materials):
- Power Distribution Systems
- Sub UL1801, DC Power / Distribution Systems
- Effects of Smoke on Equipment Reliability

UL Subject 1985 Leakage Current Due To Combustion Products (materials test - used to evaluate components of wire and cable)