2010 Fall Revision Cycle

Report on Comments

A compilation of NFPA® Technical Committee Reports on Comments for the 2010 Fall Revision Cycle.

Notice of Intent to Make a Motion (NITMAM) deadline: October 22, 2010.

NOTE: The proposed NFPA documents addressed in the Report on Proposals (ROP) and in this follow-up Report on Comments (ROC) will only be presented for action at the NFPA June 2011 Association Technical Meeting to be held June 12–16, 2011, at the Boston Convention and Exhibition Center in Boston, MA, when proper Amending Motions have been submitted to the NFPA by the deadline of October 22, 2010. Documents that receive no motions will not be presented at the meeting and instead will be forwarded directly to the Standards Council for action on issuance. For more information on the rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Standards Administration.

National Fire Protection Association®
1 BATTERYMARCH PARK, QUINCY, MA 02169-7471

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Information on NFPA Codes and Standards Development

I. Applicable Regulations. The primary rules governing the processing of NFPA documents (codes, standards, recommended practices, and guides) are the NFPA *Regulations Governing Committee Projects (Regs)*. Other applicable rules include NFPA *Bylaws*, NFPA *Technical Meeting Convention Rules*, NFPA *Guide for the Conduct of Participants in the NFPA Standards Development Process*, and the NFPA *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council*. Most of these rules and regulations are contained in the *NFPA Directory*. For copies of the *Directory*, contact Codes and Standards Administration at NFPA Headquarters; all these documents are also available on the NFPA website at "www.nfpa.org."

The following is general information on the NFPA process. All participants, however, should refer to the actual rules and regulations for a full understanding of this process and for the criteria that govern participation.

II. Technical Committee Report. The Technical Committee Report is defined as "the Report of the Technical Committee and Technical Correlating Committee (if any) on a document. A Technical Committee Report consists of the Report on Proposals (ROP), as modified by the Report on Comments (ROC), published by the Association."

III. Step 1: Report on Proposals (ROP). The ROP is defined as "a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees, accompanied by a ballot statement and one or more proposals on text for a new document or to amend an existing document." Any objection to an action in the ROP must be raised through the filing of an appropriate Comment for consideration in the ROC or the objection will be considered resolved.

IV. Step 2: Report on Comments (ROC). The ROC is defined as "a report to the Association on the actions taken by Technical Committees and/or Technical Correlating Committees accompanied by a ballot statement and one or more comments resulting from public review of the Report on Proposals (ROP)." The ROP and the ROC together constitute the Technical Committee Report. Any outstanding objection following the ROC must be raised through an appropriate Amending Motion at the Association Technical Meeting or the objection will be considered resolved.

V. Step 3a: Action at Association Technical Meeting. Following the publication of the ROC, there is a period during which those wishing to make proper Amending Motions on the Technical Committee Reports must signal their intention by submitting a Notice of Intent to Make a Motion. Documents that receive notice of proper Amending Motions (Certified Amending Motions) will be presented for action at the annual June Association Technical Meeting. At the meeting, the NFPA membership can consider and act on these Certified Amending Motions as well as Follow-up Amending Motions, that is, motions that become necessary as a result of a previous successful Amending Motion. (See 4.6.2 through 4.6.9 of *Regs* for a summary of the available Amending Motions and who may make them.) Any outstanding objection following action at an Association Technical Meeting (and any further Technical Committee consideration following successful Amending Motions, see *Regs* at 4.7) must be raised through an appeal to the Standards Council or it will be considered to be resolved.

VI. Step 3b: Documents Forwarded Directly to the Council. Where no Notice of Intent to Make a Motion (NITMAM) is received and certified in accordance with the Technical Meeting Convention Rules, the document is forwarded directly to the Standards Council for action on issuance. Objections are deemed to be resolved for these documents.

VII. Step 4a: Council Appeals. Anyone can appeal to the Standards Council concerning procedural or substantive matters related to the development, content, or issuance of any document of the Association or on matters within the purview of the authority of the Council, as established by the *Bylaws* and as determined by the Board of Directors. Such appeals must be in written form and filed with the Secretary of the Standards Council (see 1.6 of *Regs*). Time constraints for filing an appeal must be in accordance with 1.6.2 of the *Regs*. Objections are deemed to be resolved if not pursued at this level.

VIII. Step 4b: Document Issuance. The Standards Council is the issuer of all documents (see Article 8 of *Bylaws*). The Council acts on the issuance of a document presented for action at an Association Technical Meeting within 75 days from the date of the recommendation from the Association Technical Meeting, unless this period is extended by the Council (see 4.8 of *Regs*). For documents forwarded directly to the Standards Council, the Council acts on the issuance of the document at its next scheduled meeting, or at such other meeting as the Council may determine (see 4.5.6 and 4.8 of *Regs*).

IX. Petitions to the Board of Directors. The Standards Council has been delegated the responsibility for the administration of the codes and standards development process and the issuance of documents. However, where extraordinary circumstances requiring the intervention of the Board of Directors exist, the Board of Directors may take any action necessary to fulfill its obligations to preserve the integrity of the codes and standards development process and to protect the interests of the Association. The rules for petitioning the Board of Directors can be found in the *Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council* and in 1.7 of the *Regs*.

X. For More Information. The program for the Association Technical Meeting (as well as the NFPA website as information becomes available) should be consulted for the date on which each report scheduled for consideration at the meeting will be presented. For copies of the ROP and ROC as well as more information on NFPA rules and for up-to-date information on schedules and deadlines for processing NFPA documents, check the NFPA website (www.nfpa.org) or contact NFPA Codes & Standards Administration at (617) 984-7246.

2010 Fall Revision Cycle ROC Contents

by NFPA Numerical Designation

Note: Documents appear in numerical order.

TYPES OF ACTION

P Partial Revision **C** Complete Revision **N** New Document **R** Reconfirmation **W** Withdrawal

2010 Fall Revision Cycle ROC
Committees Reporting

COMMITTEE MEMBER CLASSIFICATIONS[1, 2, 3, ,4]

The following classifications apply to Committee members and represent their principal interest in the activity of the Committee.

1. M Manufacturer: A representative of a maker or marketer of a product, assembly, or system, or portion thereof, that is affected by the standard.

2. U User: A representative of an entity that is subject to the provisions of the standard or that voluntarily uses the standard.

3. IM Installer/Maintainer: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the standard.

4. L Labor: A labor representative or employee concerned with safety in the workplace.

5. RT Applied Research/Testing Laboratory: A representative of an independent testing laboratory or independent applied research organization that promulgates and/or enforces standards.

6. E Enforcing Authority: A representative of an agency or an organization that promulgates and/or enforces standards.

7. I Insurance: A representative of an insurance company, broker, agent, bureau, or inspection agency.

8. C Consumer: A person who is or represents the ultimate purchaser of a product, system, or service affected by the standard, but who is not included in (2).

9. SE Special Expert: A person not representing (1) through (8) and who has special expertise in the scope of the standard or portion thereof.

NOTE 1: “Standard” connotes code, standard, recommended practice, or guide.

NOTE 2: A representative includes an employee.

NOTE 3: While these classifications will be used by the Standards Council to achieve a balance for Technical Committees, the Standards Council may determine that new classifications of member or unique interests need representation in order to foster the best possible Committee deliberations on any project. In this connection, the Standards Council may make such appointments as it deems appropriate in the public interest, such as the classification of “Utilities” in the National Electrical Code Committee.

NOTE 4: Representatives of subsidiaries of any group are generally considered to have the same classification as the parent organization.

Documents Without Comments

The documents listed below appeared in the 2010 Fall Revision Cycle *Report on Proposals* but did not receive comments. Therefore, no reports of these documents appear in this *Report on Comments*.

12 P *Standard on Carbon Dioxide Extinguishing Systems*

1405 P *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires*

1912 P *Standard for Fire Apparatus Refurbishing*

The following documents have changed reporting cycle as indicated below:

NFPA 3
The Technical Committee Report on NFPA 3, *Standard on the Commissioning and Integrated Testing of Fire Protection and Life Safety Systems*, is not included in this *Report on Comments* for action in this revision cycle. The document will instead report in the A2011 *Report on Proposals*.

NFPA 285
The Technical Committee Report on NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*, is not included in this *Report on Comments* for action in this revision cycle. This committee has requested more time to properly address all of the comments during its ROC meeting. The document will instead report in the F2011 *Report on Comments*.

NFPA 1906
The Technical Committee Report on NFPA 1906, *Standard for Wildland Fire Apparatus*, is not included in this *Report on Comments* for action in this revision cycle. The document will instead report in the F2011 *Report on Proposals*.

Key to Comment Headings

The first line of every proposal includes the following information:

Document No.	Proposal No.	Log No.	Paragraph Reference	Committee Action
101	6	38	3.4	Accept

Example: 101-6 Log #38 **Final Action: Accept (3.4)**

FORM FOR FILING NOTICE OF INTENT TO MAKE A MOTION (NITMAM) AT AN ASSOCIATION TECHNICAL MEETING 2010 FALL REVISION CYCLE

FINAL DATE FOR RECEIPT OF NITMAM: 5:00 pm EDST, OCTOBER 22, 2010

If you have questions about filling out or filing the NITMAM, please contact the Codes and Standards Administration at 617-984-7249

For further information on the Codes- and Standards-Making Process see the NFPA website (www.nfpa.org)

FOR OFFICE USE ONLY

Log #:_____

Date Rec'd:_____

Date 8/10/2005 **Name** John B. Smith **Tel. No.** 617-555-1212

Company or Affiliation John B. Smith Consulting **Email Address**

Street Address 9 Seattle Street **City** Seattle **State** WA **Zip** 02255

1. **(a) NFPA Document (include Number and Title)** National Fire Alarm Code/NFPA 72 1999ed
   (b) Proposal or Comment Number **72-5**
   (c) Section/Paragraph 1.5.8.1

2. **Motion to be made. Please check one (See also 4.6 of the Regulations Governing Committee Projects):**

(a) Proposal

X (1) Accept. ____ (2) Accept an Identifiable Part.*

____ (3) Accept as modified by the TC. ____ (4) Accept an Identifiable Part as modified by TC.*

(b) Comment

____ (1) Accept. ____(2) Accept an Identifiable Part. * ____(3) Accept as modified by the TC.

____ (4) Accept an Identifiable Part as modified by TC.* ____(5) Reject ____(6) Reject an Identifiable Part.*

(c) Return Technical Committee Report for Further Study

____ (1) Return entire Report. ____ (2) Return a portion of a Report in the form of a proposal and related comment(s).

____(3) Return a portion of a Report in the form of identifiable part(s) of a proposal and related comments(s). (Identify the specific portion of the proposal and the related comments below)*

*** Clearly identify the Identifiable Part(s) indicated above (use separate sheet if required).**

3. I am entitled to make this motion in accordance with 4.6.8 of the Regulations Governing Committee Projects, as follows [check (a), (b), or (c)]:

(a) X This motion may be made by the original submitter or their designated representative, and I am the [if you check (a) indicate one of the following]:

X I am the original submitter of the proposal or comment, or

___I am the submitter's designated representative (attach written authorization signed by the original submitter)

(b)____This motion may be made by a Technical Committee Member and I am a Member of the responsible Technical Committee.

(c)____This motion may be made by anyone.

(Form continued on next page)

SAMPLE

NITMAM form (continued)

4. Comments or Clarification (optional): This NITMAM will be reviewed by a Motions Committee. In addition to determining whether your Amending Motion is proper, the Committee may take other actions as described in 2.3 of the Technical Meeting Convention Rules as follows:

> **Restating and Grouping of Motions. Upon request or on its own initiative, and in consultation with the mover(s), the Motions Committee may: (a) restate an Amending Motion to facilitate the making of a proper motion or to clarify the intent of the mover; and (b) group Amending Motions which are dependent on one another into a single Amending Motion. Dependent motions are motions that the mover(s) wish to be considered by the assembly and voted on as single up or down package. In addition to the foregoing, the Motions Committee may take such other actions or make such other recommendations as will facilitate the fair and efficient consideration of motions within the available time.**

The NFPA Staff may contact you to clarify your motion or to consult on the permitted actions in 2.3. If you have any comments, suggestions or requests of the Motions Committee as it reviews your NITMAM and considers actions permitted in 2.3, please provide them below. (Use additional sheet if necessary):

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_____

Name (please print): **John B. Smith**

Signature (required):_____

(Note: This NITMAM will be reviewed, and if proper, your Amending Motion will be certified in accordance with the Technical Meeting Convention Rules and posted on the NFPA website by November 19, 2010. Documents that have Certified Amending Motions will be considered at the June 2011 Annual Meeting Technical Committee Report Session. In order to have your Certified Amending Motion considered at that meeting you must appear, sign in, and make the motion as prescribed in the Convention Rules).

PLEASE USE A SEPARATE NITMAM FORM FOR EACH AMENDING MOTION YOU WISH TO MAKE

Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471
NFPA Fax: (617) 770-3500

SAMPLE

FORM FOR FILING NOTICE OF INTENT TO MAKE A MOTION (NITMAM)
AT AN ASSOCIATION TECHNICAL MEETING
2010 FALL REVISION CYCLE
FINAL DATE FOR RECEIPT OF NITMAM: 5:00 pm EDST, OCTOBER 22, 2010

If you have questions about filling out or filing the NITMAM, please contact the Codes and Standards Administration at 617-984-7249

For further information on the Codes- and Standards-Making Process, see the NFPA website (www.nfpa.org)

FOR OFFICE USE ONLY

Log #:_____

Date Rec'd:_____

Date_____ **Name**_____ **Tel. No.**_____

Company or Affiliation _____ **Email Address**_____

Street Address_____ **City**_____ **State**_____ **Zip**_____

1. (a) NFPA Document (include Number and Title)_____

(b) Proposal or Comment Number_____

(c) Section/Paragraph _____

2. Motion to be made. Please check one: (See also 4.6 of the Regulations Governing Committee Projects)

(a) Proposal

_____(1) Accept. _____ (2) Accept an Identifiable Part.*

_____ (3) Accept as modified by the TC. _____ (4) Accept an Identifiable Part as modified by TC.*

(b) Comment

_____ (1) Accept. ____(2) Accept an Identifiable Part.* ____(3) Accept as modified by the TC.

_____ (4) Accept an Identifiable Part as modified by TC.* ____(5) Reject ____(6) Reject an Identifiable Part.*

(c) Return Technical Committee Report for Further Study

_____(1) Return entire Report. _____ (2) Return a portion of a Report in the form of a proposal and related comment(s).

_____(3) Return a portion of a Report in the form of identifiable part(s) of a proposal and related comment(s). (Identify the specific portion of the proposal and the related comments below)*

*** Clearly identify the Identifiable Part(s) indicated above (use separate sheet if required).**

_____

_____

_____

3. I am entitled to make this motion in accordance with 4.6.8 of the Regulations Governing Committee Projects, as follows: [(check (a), (b), or (c)].

(a)____ This motion may be made by the original submitter or their designated representative, and I am the [(if you check (a) indicate one of the following)]:

___I am the original submitter of the proposal or comment, or

___I am the submitter's designated representative (attach written authorization signed by the original submitter)

(b)____This motion may be made by a Technical Committee Member and I am a Member of the responsible Technical Committee.

(c)____This motion may be made by anyone.

(Form continued on next page)

NITMAM form (continued)

4. Comments or Clarification (optional): This NITMAM will be reviewed by a Motions Committee. In addition to determining whether your Amending Motion is proper, the Committee may take other actions as described in 2.3 of the Technical Meeting Convention Rules as follows:

> **Restating and Grouping of Motions. Upon request or on its own initiative, and in consultation with the mover(s), the Motions Committee may: (a) restate an Amending Motion to facilitate the making of a proper motion or to clarify the intent of the mover; and (b) group Amending Motions which are dependent on one another into a single Amending Motion. Dependent motions are motions that the mover(s) wish to be considered by the assembly and voted on as single up or down package. In addition to the foregoing, the Motions Committee may take such other actions or make such other recommendations as will facilitate the fair and efficient consideration of motions within the available time.**

The NFPA Staff may contact you to clarify your motion or to consult on the permitted actions in 2.3. If you have any comments, suggestions, or requests of the Motions Committee as it reviews your NITMAM and considers actions permitted in 2.3, please provide them below. (Use additional sheet if necessary):

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Name (please print):_____

Signature (required):_____

(Note: This NITMAM will be reviewed, and if proper, your Amending Motion will be certified in accordance with the Technical Meeting Convention Rules and posted on the NFPA website by November 19, 2010. Documents that have Certified Amending Motions will be considered at the June 2011 Annual Meeting Technical Committee Report Session. In order to have your Certified Amending Motion considered at that meeting, you must appear, sign in, and make the motion as prescribed in the Convention Rules).

PLEASE USE A SEPARATE NITMAM FORM FOR EACH AMENDING MOTION YOU WISH TO MAKE.

Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471
NFPA Fax: (617) 770-3500

Sequence of Events Leading to Issuance of an NFPA Committee Document

Step 1 Call for Proposals

▼ Proposed new document or new edition of an existing document is entered into one of two yearly revision cycles, and a Call for Proposals is published.

Step 2 Report on Proposals (ROP)

▼ Committee meets to act on Proposals, to develop its own Proposals, and to prepare its Report.

▼ Committee votes by written ballot on Proposals. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Proposals (ROP) is published for public review and comment.

Step 3 Report on Comments (ROC)

▼ Committee meets to act on Public Comments to develop its own Comments, and to prepare its report.

▼ Committee votes by written ballot on Comments. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Comments (ROC) is published for public review.

Step 4 Association Technical Meeting

▼ *"Notices of intent to make a motion"* are filed, are reviewed, and valid motions are certified for presentation at the Association Technical Meeting. ("Consent Documents" that have no certified motions bypass the Association Technical Meeting and proceed to the Standards Council for issuance.)

▼ NFPA membership meets each June at the Association Technical Meeting and acts on Technical Committee Reports (ROP and ROC) for documents with "certified amending motions."

▼ Committee(s) vote on any amendments to Report approved at NFPA Annual Membership Meeting.

Step 5 Standards Council Issuance

▼ Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the NFPA Annual Membership Meeting.

▼ Standards Council decides, based on all evidence, whether or not to issue document or to take other action, including hearing any appeals.

The Association Technical Meeting

The process of public input and review does not end with the publication of the ROP and ROC. Following the completion of the Proposal and Comment periods, there is yet a further opportunity for debate and discussion through the Association Technical Meeting that takes place at the NFPA Annual Meeting.

The Association Technical Meeting provides an opportunity for the final Technical Committee Report (i.e., the ROP and ROC) on each proposed new or revised code or standard to be presented to the NFPA membership for the debate and consideration of motions to amend the Report. The specific rules for the types of motions that can be made and who can make them are set forth in NFPA's rules, which should always be consulted by those wishing to bring an issue before the membership at an Association Technical Meeting. The following presents some of the main features of how a Report is handled.

The Filing of a Notice of Intent to Make a Motion. Before making an allowable motion at an Association Technical Meeting, the intended maker of the motion must file, in advance of the session, and within the published deadline, a Notice of Intent to Make a Motion. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all amending motions that are proper. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other together so that they can be made in one single motion. A Motions Committee report is then made available in advance of the meeting listing all certified motions. Only these Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) will be allowed at the Association Technical Meeting.

Consent Documents. Often there are codes and standards up for consideration by the membership that will be noncontroversial and no proper Notices of Intent to Make a Motion will be filed. These "Consent Documents" will bypass the Association Technical Meeting and head straight to the Standards Council for issuance. The remaining documents are then forwarded to the Association Technical Meeting for consideration of the NFPA membership.

What Amending Motions Are Allowed. The Technical Committee Reports contain many Proposals and Comments that the Technical Committee has rejected or revised in whole or in part. Actions of the Technical Committee published in the ROP may also eventually be rejected or revised by the Technical Committee during the development of its ROC. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed code or standard based on these published Proposals, Comments, and Committee actions. Thus, the list of allowable motions include motions to accept Proposals and Comments in whole or in part as submitted or as modified by a Technical Committee action. Motions are also available to reject an accepted Comment in whole or part. In addition, Motions can be made to return an entire Technical Committee Report or a portion of the Report to the Technical Committee for further study.

The NFPA Annual Meeting, also known as the NFPA Conference & Expo, takes place in June of each year. A second Fall membership meeting was discontinued in 2004, so the NFPA Technical Committee Report Session now runs once each year at the Annual Meeting in June.

Who Can Make Amending Motions. NFPA rules also define those authorized to make amending motions. In many cases, the maker of the motion is limited by NFPA rules to the original submitter of the Proposal or Comment or his or her duly authorized representative. In other cases, such as a Motion to Reject an accepted Comment, or to Return a Technical Committee Report or a portion of a Technical Committee Report for Further Study, anyone can make these motions. For a complete explanation, the NFPA Regs should be consulted.

Action on Motions at the Association Technical Meeting. In order to actually make a Certified Amending Motion at the Association Technical Meeting, the maker of the motion must sign in at least an hour before the session begins. In this way a final list of motions can be set in advance of the session. At the session, each proposed document up for consideration is presented by a motion to adopt the Technical Committee Report on the document. Following each such motion, the presiding officer in charge of the session opens the floor to motions on the document from the final list of Certified Amending Motions followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the Association Technical Meeting and have registered for the meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee, which conducts a written ballot on all successful amending motions following the meeting and prior to the document being forwarded to the Standards Council for issuance.

Standards Council Issuance

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA codes and standards development process, is to act as the official issuer of all NFPA codes and standards. When it convenes to issue NFPA documents, it also hears any appeals related to the document. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the codes and standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a document before it, the Council, if appropriate, proceeds to issue the document as an official NFPA code or standard. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA code or standard becomes effective twenty days after Standards Council issuance.

Report of the Technical Correlating Committee on

Boiler Combustion System Hazards (BCS-AAC)

Michael C. Polagye, *Chair*
FM Global, MA [I]

James R. Bostick, ABB Automation, OH [M]
David Paul Cannon, Hurst Technologies, TX [SE]
William E. Cunningham, Jr., Riley Power Inc., MA [M]
Dale E. Dressel, Solutia Incorporated, MO [U]
David S. Eason, Detroit Edison Company, MI [U]
Gordon G. Gaetke, The Dow Chemical Company, TX [U]
David W. King, American Electric Power Service Corporation, OH [U]
Masaaki Kinoshita, Mitsubishi Heavy Industries Ltd., Japan [M]
Gail J. Lance, Babcock & Wilcox Company, OH [M]
Robert Malanga, Fire and Risk Engineering, NJ [SE]
Dennis P. Mason, AEGIS Insurance Services, MI [I]
Jerry J. Moskal, ALSTOM Power Incorporated, CT [M]
Jimmie J. Schexnayder, Entergy Corporation, LA [U]
Celso G. Schmidt, UTC/Forney Corporation, TX [M]
Peter J. Willse, XL Global Asset Protection Services, CT [I]
Henry K. Wong, Washington Group International, NJ [SE]
Allan J. Zadiraka, Akron, OH [SE]

Alternates

Barry J. Basile, Babcock Power, Inc., MA [M]
(Alt. to William E. Cunningham, Jr.)
Ronald J. Fleming, ABB Incorporated, OH [M]
(Alt. to James R. Bostick)
John P. O'Rourke, ALSTOM Power Inc., CT [M]
(Alt. to Jerry J. Moskal)

Nonvoting

John C. deRuyter, The DuPont Company, Inc., DE [U]
Rep. TC on Stoker Operations
John J. Eibl, The DuPont Company, Inc., TN [U]
Rep. TC on Single Burner Boilers
Dale P. Evely, Southern Company Services, Inc., AL [U]
Rep. TC on Fundamentals of Combustion Systems Hazards
Brian W. Moore, Hartford Steam Boiler Inspection & Insurance Company, CT [I]
Rep. TC on Fluidized Bed Boilers
William A. (Andy) Smith, Global Risk Consultants Corporation, GA [SE]
Rep. TC on Pulverized Fuel Systems
John Van Name, URS - Washington Division, NY [SE]
Rep. TC on Heat Recovery Steam Generators
Harold R. Yates, HRY, Inc., MI [SE]
Rep. TC on Multiple Burner Boilers

Committee Scope: This Committee shall have primary responsibility for documents on the reduction of combustion system hazards in single- and multiple-burner boilers with a heat input rate of 12,500,000 Btu/hr and above. This includes all fuels. This Committee also is responsible for documents on the reduction of hazards in pulverized fuel systems, fluidized-bed boilers, heat recovery steam generators and other combustion turbine exhaust systems, and stoker-fired boilers, at any heat input rate.

Report of the Technical Committee on

Fluidized Bed Boilers (BCS-FBB)

Brian W. Moore, *Chair*
Hartford Steam Boiler Inspection & Insurance Company, CT [I]

P. K. Chelian, Foster Wheeler Power Group, Inc., NJ [M]
Joseph N. Darguzas, EnviroPower, LLC, IL [IM]
Carl A. Dunn,WorleyParsons,PA [SE]
Shelton Ehrlich, Palo Alto, CA [SE]
David Habenicht, Global Risk Consultants Corporation, IL [SE]
Robert M. Herdman, ABB Automation Inc., OH [M]
Vic L. Jones, Merrick Industries Incorporated, FL [M]
David L. Kraft, Babcock & Wilcox Company, OH [M]
Donald L. Lueckenotte, Burns & McDonnell Engineering Company, MO [SE]
Paul H. Miller, Southern Company Services, AL [U]
Gary E. Norman, ALSTOM Power Inc., CT [M]
Everett W. Truman, Starr Technical Risks Agency, Inc., WV [U]
Rep. Edison Electric Institute

Alternates

Kevin M. Estes, Foster Wheeler Power Group, Inc., FL [M]
(Alt. to P. K. Chelian)
John P. O'Rourke, ALSTOM Power Inc., CT [M]
(Alt. to Gary E. Norman)

Committee Scope: This Committee shall have primary responsibility for documents on the operation and reduction of combustion system hazards and the prevention of boiler furnace explosions of fluidized-bed boilers. This includes all fuels at any heat input rate.

Report of the Technical Committee on

Fundamentals of Combustion Systems Hazards (BCS-FUN)

Dale P. Evely, *Chair*
Southern Company Services, Inc., AL [U]

Barry J. Basile, Babcock Power, Inc., MA [M]
Carlton A. Bosfield, Grand Bahama Power Company, FL [U]
David A. Cowdrick, Tampa Electric Company, FL [U]
John D. Eley, GN Electronics Inc., IL [M]
Richard A. Gallagher, Zurich Services Corporation, DE [I]
John S. Gilbert, Chubb Group of Insurance Companies, NY [I]
Ted Jablkowski, Fives North American Combustion, Inc., CT [M]
Richard Kimball, HF Controls Corporation, TX [M]
Randy J. Kleen, General Electric Company, TX [M]
James E. Lemanski, XL Insurance, IL [I]
Richard T. Long, Jr., Exponent, Inc., MD [SE]
Dennis P. Mason, AEGIS Insurance Services, MI [I]
John R. Puskar, CEC Combustion Safety, Inc., OH [SE]
Glenn A. Raney, Invensys-Premier Consulting Services, TX [M]
Mark A. Ratcliffe, Jacobs Engineering Group, TX [SE]
Celso G. Schmidt, UTC/Forney Corporation, TX [M]
Bill L. Smith, Jr., Exothermic Engineering Company, LLC, MO [SE]
William A. (Andy) Smith, Global Risk Consultants Corporation, GA [SE]
Franklin R. Switzer, Jr., S-afe, Inc., IN [SE]
Michael A. Walz, Burns & McDonnell Engineering Company, MO [SE]
Harold R. Yates, HRY, Inc., MI [SE]
Todd F. Young, Progress Energy, FL [U]

Alternates

Bryan R. Baesel, CEC Combustion Safety, Inc., OH [SE]
(Alt. to John R. Puskar)
H. Mark Ezekiel, Southern Company Generation, AL [U]
(Alt. to Dale P. Evely)
Kenneth Hurlburt, Babcock Power, Inc., MA [M]
(Alt. to Barry J. Basile)
Gail J. Lance, Babcock & Wilcox Company, OH [M]
(Voting Alt. to B&W Rep.)
Daniel R. May, Burns & McDonnell Engineering Company, MO [SE]
(Alt. to Michael A. Walz)
William M. Rucki, Fives North American Combustion, Inc., OH [M]
(Alt. to Ted Jablkowski)

Nonvoting

Carlos Lasarte, Combustion, Energia & Ambiente, C.A., Venezuela [U]

Committee Scope: This Committee shall have primary responsibility for documents or portions of documents on fundamentals, maintenance, inspection, training, and safety for the reduction of combustion system hazards. Fundamentals shall specifically include definitions, furnace explosion/implosion prevention, manufacture, design and engineering, installation, coordination of design, construction and operation, basic operating objectives, equipment requirements, and commissioning.

Report of the Technical Committee on

Heat Recovery Steam Generators (BCS-HRS)

John Van Name, *Chair*
URS - Washington Division, NY [SE]

Harold Honath, *Secretary*
John Zink Company, LLC, CA [M]

Donald W. Bairley, ALSTOM Power Inc., CT [M]
Robert R. Balsbaugh, Burns & McDonnell Engineering Company, MO [SE]
Alfred J. Beaty, UTC/Forney Corporation, TX [M]
Dale P. Evely, Southern Company Services, Inc., AL [U]
Gordon G. Gaetke, The Dow Chemical Company, TX [U]
David J. Hinshaw, Dynegy, Inc., NY [U]
George Y. Keller, Burns & Roe Enterprises, Inc., NJ [SE]
Randy J. Kleen, General Electric Company, TX [M]
Steven A. Lefton, Intertek-APTECH Engineering, CA [SE]
Steven A. Meierotto, Nooter Eriksen, MO [M]
Brian W. Moore, Hartford Steam Boiler Inspection & Insurance Company, CT [I]
Michael C. Polagye, FM Global, MA [I]
Jimmie J. Schexnayder, Entergy Corporation, LA [U]
Philip F. Souers, Siemens Power Generation Inc., FL [M]
John A. Stevens, Emerson Process Management, TX [M]
Joseph M. Vavrek, Sargent & Lundy, LLC, IL [SE]
James P. Walawender, Black & Veatch Corporation, KS [SE]
Ilya Yarinovsky, Bechtel Corporation, MD [SE]
Todd F. Young, Progress Energy, FL [U]

Alternates

Richard A. Brown, John Zink Company, LLC, OK [M]
(Alt. to Harold Honath)
Sanda Brumaru, Burns and Roe Enterprises, NJ [SE]
(Alt. to George Y. Keller)
Miguel Cancelado, Siemens Energy, FL [M]
(Alt. to Philip F. Souers)
Steven V. Graf, Emerson Process Management, PA [M]
(Alt. to John A. Stevens)
Joshua S. Kelly, UTC/Forney Corporation, TX [M]
(Alt. to Alfred J. Beaty)
Christopher J. Lech, ALSTOM Power Inc., CT [M]
(Alt. to Donald W. Bairley)
Michael R. Mulherin, The Dow Chemical Company, TX [U]
(Alt. to Gordon G. Gaetke)
Ronald Rispoli, Entergy Corporation, AR [U]
(Alt. to Jimmie J. Schexnayder)
Earl D. Snider, Southern Company Services, Inc., AL [U]
(Alt. to Dale P. Evely)

Committee Scope: This Committee shall have primary responsibility for documents covering the operation of heat recovery steam generators and other combustion turbine exhaust systems, and the related reduction of combustion system hazards and prevention of explosions. This includes all fuels at any heat input rate.

Report of the Technical Committee on

Multiple Burner Boilers (BCS-MBB)

Harold R. Yates, *Chair*
HRY, Inc., MI [SE]

Bernard Hrul, *Secretary*
Allen Bradley Company, GA [U]

Frank J. Bennett, Mirant Mid-Atlantic, MD [U]
Dale E. Dressel, Solutia Incorporated, MO [U]
John J. Eibl, The DuPont Company, Inc., TN [U]
Dale P. Evely, Southern Company Services, Inc., AL [U]
Kenneth Joe Frazier, Salt River Project, AZ [U]
Gordon G. Gaetke, The Dow Chemical Company, TX [U]
Kris A. Gamble, Black & Veatch Corporation, KS [SE]
Kenneth Hurlburt, Babcock Power, Inc., MA [M]
George Y. Keller, Burns & Roe Enterprises, Inc., NJ [SE]
Richard Kimball, HF Controls Corporation, TX [M]
David W. King, American Electric Power Service Corporation, OH [U]
Daniel J. Lee, ABB Incorporated, OH [M]
W. Scott Matz, Invensys Process Systems, TX [M]
Peter McKenna, Stone & Webster, Inc., MA [SE]
Lalit M. Mehta, Iris Systems Inc., Canada [M]
Terry A. Nelson, Yokogawa Corporation of America, TX [M]
John P. O'Rourke, ALSTOM Power Inc., CT [M]
Michael C. Polagye, FM Global, MA [I]
Glenn A. Raney, Invensys-Premier Consulting Services, TX [SE]
Thomas D. Russell, Honeywell, Inc., TX [M]
Jimmie J. Schexnayder, Entergy Corporation, LA [U]
Celso G. Schmidt, UTC/Forney Corporation, TX [M]
Franklin R. Switzer, Jr., S-afe, Inc., IN [SE]
Joseph M. Vavrek, Sargent & Lundy, LLC, IL [SE]
Michael A. Walz, Burns & McDonnell Engineering Company, MO [SE]
Peter J. Willse, XL Global Asset Protection Services, CT [I]
Henry K. Wong, Washington Group International, NJ [SE]
Allan J. Zadiraka, Akron, OH [SE]

Alternates

John E. Bollinger, Babcock & Wilcox Company, OH [M]
(Voting Alt. to B&W Rep.)
John C. deRuyter, The DuPont Company, Inc., DE [U]
(Alt. to John J. Eibl)
Ronald J. Fleming, ABB Incorporated, OH [M]
(Alt. to Daniel J. Lee)
Daniel R. May, Burns & McDonnell Engineering Company, MO [SE]
(Alt. to Michael A. Walz)
Michael R. Mulherin, The Dow Chemical Company, TX [U]
(Alt. to Gordon G. Gaetke)
Gary E. Norman, ALSTOM Power Inc., CT [M]
(Alt. to John P. O'Rourke)
Ronald Rispoli, Entergy Corporation, AR [U]
(Alt. to Jimmie J. Schexnayder)
Steven T. Riviere, Southern Company Services, Inc., GA [U]
(Alt. to Dale P. Evely)
Carlos Santos, Jr., Invensys Foxboro Systems, TX [M]
(Alt. to W. Scott Matz)

Nonvoting

S. Dharmalingam, Bharat Heavy Electricals Ltd., India [M]

Committee Scope: This Committee shall have primary responsibility for documents covering the reduction of combustion system hazards and the prevention of boiler furnace explosions and implosions in multiple burner boilers with a heat input rate of 12,500,000 Btu/hr and above. This includes all fuels.

Report of the Technical Committee on

Pulverized Fuel Systems (BCS-PFS)

William A. (Andy) Smith, *Chair*
Global Risk Consultants Corporation, GA [SE]

David A. Cowdrick, Tampa Electric Company, FL [U]
John C. deRuyter, The DuPont Company, Inc., DE [U]
David S. Eason, Detroit Edison Company, MI [U]
Rory G. Eastman, ALSTOM Power Inc., CT [M]
Mark T. Fecke, Exponent, Inc., IL [SE]
Roderick J. Hossfeld, Jenike & Johanson, Inc., MA [SE]
William N. Martin, Babcock & Wilcox Company, OH [M]
Kiran R. Patel, Babcock Power, Inc., MA [M]
Jonathan R. Pranitis, Foster Wheeler Energy Corporation, NJ [M]
Cleveland B. Skinker, Bechtel Power Corporation, MD [SE]
Erdem A. Ural, Loss Prevention Science & Technologies, Inc., MA [SE]
Frederick H. Wehe, Luminant, Big Brown SES, TX [U]

Nonvoting

Vincent Grosskopf, Thorwesten Vent GmbH, Germany [M]

Committee Scope: This Committee shall have primary responsibility for documents on the operation and design requirements of pulverized fuel systems and reduction of hazards associated with those systems. This includes all carbonaceous solid fuels at any heat input rate.

Report of the Technical Committee on

Single Burner Boilers (BCS-SBB)

John J. Eibl, *Chair*
The DuPont Company, Inc., TN [U]

Carlton A. Bosfield, Grand Bahama Power Company, FL [U]
John T. Connor, Burns & McDonnell Engineering Company, MO [SE]
Dale E. Dressel, Solutia Incorporated, MO [U]
Joseph E. Fehr, Sega Inc., KS [SE]
G. F. Gilman, SIS-Tech, OH [SE]
Ted Jablkowski, Fives North American Combustion, Inc., CT [M]
Robert A. Koehler, Liberty Mutual Property, TX [I]
Rep. Property Casualty Insurers Association of America
W. Scott Matz, Invensys Process Systems, TX [M]
Peter S. Pinto, SCC, Inc.,IL [M]
Gary J. Shrider, Babcock & Wilcox Company, OH [M]
Franklin R. Switzer, Jr., S-afe, Inc., IN [SE]
J. A. Wagner, UTC/Fireye, NJ [M]
Chris Wille, John Zink Company, LLC, CA [M]
Peter J. Willse, XL Global Asset Protection Services, CT [I]

Alternates

Michael Francis, John Zink Company, LLC, CA [M]
(Alt. to Chris Wille)
Glenn A. Raney, Invensys-Premier Consulting Services, TX [M]
(Alt. to W. Scott Matz)
William M. Rucki, Fives North American Combustion, Inc., OH [M]
(Alt. to Ted Jablkowski)
Dennis Szabo, XL Global Asset Protection Services, GA [I]
(Alt. to Peter J. Willse)

Committee Scope: This Committee shall have primary responsibility for documents on the reduction of combustion system hazards and the prevention of boiler furnace explosions in single burner boilers with a heat input rate of 12,500,000 Btu/hr and above. This includes all fuels.

Report of the Technical Committee on

Stoker Operations (BCS-STO)

John C. deRuyter, *Chair*
The DuPont Company, Inc., DE [U]

J. Mike Cantrell, The McBurney Corporation, GA [IM]
Andrew K. Dant, Cogentrix Energy, Incorporated, NC [U]
Mark T. Fecke, Exponent, Inc., IL [SE]
John Hoh, National Board of Boiler & Pressure Vessel Inspectors, OH [E]
Robert S. Morrow, Detroit Stoker Company, MI [M]
Bill L. Smith, Jr., Exothermic Engineering Company, LLC, MO [SE]

Staff Liaison: **Denise Beach**

Committee Scope: This Committee shall have primary responsibility for documents covering the operation of stokers and related fuel burning equipment. This includes all fuels at any heat input rate.

These lists represent 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 **Boiler Combustion System Hazards** is presented for adoption.

This Report on Comments was prepared by the individual Technical Committees and documents its action on the comments received on its Report on Proposals on NFPA 85, **Boiler and Combustion Systems Hazard Code**, 2007 edition, as published in the Report on Proposals for the 2010 Fall Revision Cycle.

The Reports were prepared by the:

- Technical Correlating Committee on Boiler Combustion System Hazards (BCS-AAC)
- Technical Committee on Fluidized Bed Boilers (BCS-FBB)
- Technical Committee on Fundamentals of Combustion Systems Hazards (BCS-FUN)
- Technical Committee on Heat Recovery Steam Generators (BCS-HRS)
- Technical Committee on Multiple Burner Boilers (BCS-MBB)
- Technical Committee on Pulverized Fuel Systems (BCS-PFS)
- Technical Committee on Single Burner Boilers (BCS-SBB)
- Technical Committee on Stoker Operations **(**BCS-STO)

This Report has been submitted to letter ballot of the individual **Technical Committees**. The results of the balloting, after circulation of any negative votes, can be found in the report.

This Report on Comments has also been submitted to the **Technical Correlating Committee on Boiler Combustion System Hazards** (TCC) in two Parts. Part 1 is a letter ballot on the TCC Actions, if any; and Part II is a letter ballot on the Report as a whole. The TCC, which consists of 18 voting members, voted as follows:

Part 1: 17 voted affirmatively, and 1 ballot(s) was not returned (C. Schmidt).

Part 2: 17 voted affirmatively, and 1 ballot(s) was not returned (C. Schmidt).

85-1 Log #CC100 BCS-FUN **Final Action: Accept**
(Entire Document)

Submitter: Technical Committee on Fundamentals of Combustion Systems Hazards,
Comment on Proposal No: 85-7
Recommendation: Revise text as follows:

Chapter 2 References

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 30, *Flammable and Combustible Liquids Code*, ~~2003~~ 2008 edition.

NFPA 31, *Standard for the Installation of Oil-Burning Equipment*, 2006 edition.

NFPA 54, *National Fuel Gas Code*, ~~2006~~ 2009 edition.

NFPA 69, *Standard on Explosion Prevention Systems*, ~~2002~~ 2008 edition.

NFPA 70, *National Electrical Code®*, ~~2005~~ 2008 edition.

2.3 Other Publications.

~~**2.3.1 AISC Publications.** American Institute of Steel Construction, One East Wacker Drive, Suite 700, Chicago, IL 60601.~~

~~AISC ASD, *Specifications for Structural Steel Buildings — Allowable Stress Design and Plastic Design*1989, including supplement No. 1, 2001.~~

~~AISC LRFD, *Load and Resistance Factor Design for Structural Steel Buildings*, 1999.~~

~~**2.3.2 ANSI Publications.** American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.~~

~~ANSI K61.1, *Safety Requirements for the Storage and Handling of Anhydrous Ammonia*, 1999.~~

~~ANSI/FCI 70-2, *Control Valve Seat Leakage*, 2006.~~

2.3.1~~3~~ ASCE Publications. American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

ASCE 7, *Minimum Design Loads for Buildings and Other Structures*, 2005~~2002~~.

2.3.2~~4~~ ASME Publications.
American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

ASME B31.1, *Power Piping*, 2007~~1998~~.

ASME B31.3, *Process Piping*, 2006~~1999~~.

2.3.3~~5~~ ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D 388, *Standard Classification of Coals by Rank*, 2005~~1999~~.

ASTM D 396, *Standard Specification for Fuel Oils*, 2009~~1998~~.

ASTM D 409, *Standard Test Method for Grindability of Coal by the Hardgrove-Machine Method*, 2009~~1997~~.

ASTM D 1655, *Standard Specification for Aviation Turbine Fuels*, ~~1998~~2009.

ASTM D 2880, *Standard Specification for Gas Turbine Fuel Oils*, 2003~~1998~~.

2.3.4 CGA Publications. Compressed Gas Association, 4221 Walney Road, 5th floor, Chantilly, VA 20151-2923.

CGA G-2.1/ANSI K61.1, *Safety Requirements for the Storage and Handling of Anhydrous Ammonia*, 1999

2.3.5 FCI Publications. Fluid Controls Institute, 1300 Sumner Avenue, Cleveland, OH 44115.

ANSI/FCI 70-2, *Control Valve Seat Leakage*, 2006.

2.3.6 Military Specifications. Department of Defense Single Stock Point, Document Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-T-5624, *Turbine Fuel, Aviation, Grade JP4, JP5, and JP5/JP8 ST*, 1995.

2.3.7 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, ~~2007~~ 2010 edition.

NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film*, 2007 edition.

NFPA 69, *Standard on Explosion Prevention Systems*, ~~2002~~ 2008 edition.

NFPA 72®, *National Fire Alarm Code®*, ~~2007~~ 2010 edition.

NFPA 850, *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*, ~~2005~~2010 edition.

NFPA 853, *Standard for the Installation of Stationary Fuel Cell Power Systems*, ~~2007~~2010 edition.

Extracted Text in Mandatory Sections:

3.3.8~~5~~ Inert Gas. Any gas that is nonflammable, chemically inactive, noncontaminating for the use intended, and oxygen deficient to the extent required. **[~~69,~~** 2002]

Appendix N References

N.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 30, *Flammable and Combustible Liquids Code*, 2008~~2003~~ edition.

NFPA 31, *Standard for the Installation of Oil-Burning Equipment*, 2006 edition.

NFPA 51, *Standard for the Design and Installation of Oxygen–Fuel Gas Systems for Welding, Cutting, and Allied Processes*, 2007 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, 2009~~2003~~ edition.

NFPA 54, *National Fuel Gas Code*, 2009~~2006~~ edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2008~~2004~~ edition.

NFPA 68, *Standard on Explosion Protection by Deflagration Venting*, 2007 edition.

NFPA 69, *Standard on Explosion Prevention Systems*, 2008~~2002~~ edition.

NFPA 70, *National Electrical Code®*, 2008~~2005~~ edition.

NFPA 77, *Recommended Practice on Static Electricity*, 2007 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 2009~~2004~~ edition.

NFPA 497, *Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*, 2008~~2004~~ edition.

NFPA 499, *Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*, 2008~~2004~~ edition.

NFPA 850, *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*, 2010~~2005~~ edition.

N.1.2 Other Publications.

N.1.2.1 ABMA Publications. American Boiler Manufacturers Association, 4001 N. 9th Street, Suite 226, Arlington, VA 22203-1900.

~~ABMA 202, *Recommended Design Guidelines for Stoker Firing of Bituminous Coal*.~~

ABMA 203, A Guide to Clean and Efficient Operation of Coal-Stoker-Fired Boilers.

ABMA 307, *C ombustion Control Guidelines for Single Burner Firetube and Watertube Industrial/Commercial/Institutional Boilers*, 1999.

Reference in Annex F:

F.1.3 Sizing. Sizing characteristics vary with stoker type as outlined in the ABMA 203, *A Guide to Clean and Efficient Operation of Coal-Stoker-Fired Boilers.* ~~ABMA 202, *Recommended Design Guidelines for Stoker Firing of Bituminous Coal*~~. Different coals have varying tendencies to break down during mining processes and in handling. Western sub-bituminous coals are considered friable and are generally delivered to the boiler with high percentages of particles less than 6.35 mm (¼ in.) in size. These can be burned satisfactorily using the correct equipment.

Each plant should carefully analyze the fuel characteristics and associated handling and combustion problems for the best overall operation. Anthracite is usually burned in finer sizes, generally less than 7.94 mm ($^{5}/_{16}$ in.), to expose more surface of the very high fixed carbon fuel to the oxygen in the air.

Sizing in the hopper should be within the two limits as set forth in the ABMA 203, *A Guide to Clean and Efficient Operation of Coal-Stoker-Fired Boilers.* ~~ABMA 202, *Recommended Design Guidelines for Stoker Firing of Bituminous Coal*~~. Means should be provided for the delivery of coal to the stoker hopper without size segregation.

N.1.2.2~~3~~ API Publications. American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005-4070.

API 620, *Standard for Design and Construction of Large, Welded, Low-Pressure Storage Tanks*, 2009~~1996~~.

API 650, *Standard for Welded Steel Tanks for Oil Storage*, 2008~~1998~~.

API RP 500, *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2*, 1998 (reaffirmed 2002).

API RP 505, *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2*, 1997 (reaffirmed 2002).

API RP 2003, *Recommended Practice for Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents*, 2008~~1998~~.

N.1.2.3~~4~~ ASME Publications. American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990.

ASME *Boiler and Pressure Vessel Code*, 2007~~1998~~.

N.1.2.4~~5~~ ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D 396, *Standard Specification for Fuel Oils*, 2009~~1998~~.

N.1.2.6~~2~~ ISA Publications. International Society for Automation, 67 Alexander Drive, Research Triangle Park, NC 27709.

~~**ANSI Publications.** American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.~~

ANSI/ISA S77.41.01, *Fossil Fuel Power Plant Boiler Combustion Controls*, 2005~~1997~~.

ANSI/ISA ~~S~~77.42.01, *Fossil Fuel Power Plant Feedwater Control System — Drum Type*, 1999 (R2006).

ANSI/ISA 77.43.01, *Fossil Fuel Power Plant Unit/Plant Demand Development — Drum Type,* 2002 (R2008).

ANSI/ISA ~~S~~77.44.01, *Fossil Fuel Power Plant Steam Temperature Control~~s System — Drum Type~~*, 2007~~2000~~.

~~ANSI/ISA 77.44.02, *Fossil Fuel Plant Steam Temperature Control System — Once-Through Type*, 2001~~.

A.4.6.5.1.3 Combustion control system design is addressed in ISA ~~S~~77.41, *Fossil Fuel Power Plant Boiler Combustion Controls*. The combustion control system is one of the components of the overall boiler control system. Other components of the boiler control system are addressed by the following standards: ANSI/ISA 77.42.01, *Fossil Fuel Power Plant Feedwater Control System — Drum Type*; ANSI/ISA 77.43, *Fossil Fuel Power Plant Unit/ Plant Demand Development — Drum Type*; ANSI/ISA 77.44.01, *Fossil Fuel*

Power Plant Steam Temperature Controls ~~System — Drum Type~~; ~~and~~ ANSI/ISA 77.44.02, ~~*Fossil Fuel Plant Steam Temperature Control System — Once-Through Type*~~.

Substantiation: References and extracts are updated to conform to the NFPA Regulations Governing Committee Projects.

AISC publications are deleted in accordance with proposal 85-103.

ANSI K61.1 and ANSI/FCI 70.2 are moved to new groupings reflecting the Standards Developer instead of the ANSI designation.

Extract tags for the following definitions can be updated editorially as no change has been made to the source definition:

3.3.164.4 Check Valve.
3.3.57 Explosion Vent.
3.3.64 Flame.
3.3.73.9 Municipal Solid Waste (MSW).
3.3.46 Damper.

NFPA 69 has modified the definition for inert gas in a way that is not acceptable to the BCS-FUN Committee. Therefore NFPA 85 will retain the existing definition and delete the extract tag.

ABMA 202 has been withdrawn replaced with ABMA 203, A Guide to Clean and Efficient Operation of Coal-Stoker-Fired Boilers. ABMA no longer sells or makes available ABMA 202. Robert Morrow of Detroit Stoker Company and member of the BCS-STO Technical Committee reviewed ABMA 203 and confirmed that it is an acceptable replacement reference for the purpose of Annex F. Annexes F and N are therefore updated editorially to reference the replacement standard.

Committee Meeting Action: Accept
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-2 Log #6 BCS-FUN **Final Action: Accept in Principle**
(3.3.38 Combustion Turbine Exhaust Systems)

Submitter: Dale P. Evely, Southern Company Services, Inc.
Comment on Proposal No: 85-106
Recommendation: Revise text to read as follows:

3.3.38 Combustion Turbine Exhaust Systems~~.~~ An HRSG, heat exchanger, or emissions control system, alone or in combination, and their associated ductwork ~~All ductwork~~ from the combustion turbine exhaust to the stack inlet. ~~, including any emission control systems contained within the exhaust flow path.~~

Substantiation: This definition was proposed to be revised by the BCS-HRS Technical Committee during their ROP meeting but the proposed wording was a bit ambiguous. The above proposed revision for this definition needs to be reviewed by both the BCS-HRS TC as well as the BCS-FUN TC.
Committee Meeting Action: Accept in Principle

3.3.38* Combustion Turbine Exhaust Systems~~.~~ ~~A~~n HRSG, heat exchanger, or emissions control system, alone or in combination, and ~~their~~ associated ductwork between the combustion turbine exhaust and the stack inlet.

A.3.3.38 The definition for combustion turbine exhaust system does not apply to combustion turbine exhaust systems that do not have a HRSG, heat exchanger, emissions control equipment, or any other restrictions in the exhaust flow path.

Committee Statement: The TC agrees that the definition should be further clarified. However, the TC developed an annex statement based on the original proposal to address any potential ambiguity in the definition itself.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-3 Log #6a BCS-HRS **Final Action: Accept in Principle**
(3.3.38 Combustion Turbine Exhaust Systems)

TCC Action: The BCS-AAC TCC reconciles actions on 85-2 and 85-3 by striking out the "s" at the end of "Combustion Turbine Exhaust System".
Submitter: Dale P. Evely, Southern Company Services, Inc.
Comment on Proposal No: 85-106
Recommendation: Revise text to read as follows:

3.3.38 Combustion Turbine Exhaust Systems~~.~~ An HRSG, heat exchanger, or emissions control system, alone or in combination, and their associated ductwork ~~All ductwork~~ from the combustion turbine exhaust to the stack inlet. ~~, including any emission control systems contained within the exhaust flow path.~~

Substantiation: This definition was proposed to be revised by the BCS-HRS Technical Committee during their ROP meeting but the proposed wording was a bit ambiguous. The above proposed revision for this definition needs to be reviewed by both the BCS-HRS TC as well as the BCS-FUN TC.
Committee Meeting Action: Accept in Principle

3.3.38* Combustion Turbine Exhaust Systems~~.~~ ~~A~~n HRSG, heat exchanger, or emissions control system, alone or in combination, and ~~their~~ associated ductwork between the combustion turbine exhaust and the stack inlet.

A.3.3.38 The definition for combustion turbine exhaust system does not apply to combustion turbine exhaust systems that do not have a HRSG, heat exchanger, emissions control equipment, or any other restrictions in the exhaust flow path.

Committee Statement: The BCS-HRS TC agrees with the BCS-FUN modifications and new annex material.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-4 Log #27 BCS-FUN **Final Action: Reject**
(3.3.81 Hardwired and A.3.3.81)

Submitter: Marcelo M. Hirschler, GBH International
Comment on Proposal No: 85-12
Recommendation: Revise text as follows:

3.3.81* Hardwired. The method of interconnecting signals or interlocks to a logic system or between logic systems using a dedicated interconnection for each individual signal. ~~When the term hardwired is applied to the logic system itself it is the method of using individual devices and interconnecting wiring to program and perform the logic functions without the use of software based logic solvers.~~

A.3.3.81 When the term hardwired is applied to the logic system itself it is the method of using individual devices and interconnecting wiring to program and perform the logic functions without the use of software based logic solvers.

Substantiation: NFPA definitions must be in a single sentence. The proposed definition is in two sentences. The second sentence should be located in a different section or, if informational, in Annex A.

I am the chair of the NFPA Advisory Technical Committee on Glossary of Terminology but this comment is not submitted on their behalf because we have not had the opportunity to discuss it.
Committee Meeting Action: Reject
Committee Statement: The TC recognizes that definitions should ideally be a single sentence. However, the additional sentence relates directly to the way the term is applied in the Code, and is therefore needed in the mandatory definition.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-5 Log #28 BCS-FUN **Final Action: Reject**
(3.3.94 Logic System and A.3.3.94)

Submitter: Marcelo M. Hirschler, GBH International
Comment on Proposal No: 85-13
Recommendation: Revise text to read as follows:

3.3.94* Logic System. The decision-making and translation elements of the burner management system. A logic system provides outputs in a particular sequence in response to external inputs and internal logic. ~~Logic systems are comprised of the following: (1) hardwired systems wired in direct electric series — individual devices and interconnecting wiring — and (2) microprocessor-based systems — (a) computer hardware, power supplies, I/O devices, and the interconnections among them; and (b) operating system and logic software.~~

A.3.3.94 A logic system provides outputs in a particular sequence in response to external inputs and internal logic. Logic systems are comprised of the following: (1) hardwired systems wired in direct electric series — individual devices and interconnecting wiring — and (2) microprocessor-based systems — (a) computer hardware, power supplies, I/O devices, and the interconnections among them; and (b) operating system and logic software.

Substantiation: NFPA definitions must be in a single sentence. The definition of logic system is in two sentences. The second sentence should be located in a different section or, if informational, in Annex A.
I am the chair of the NFPA Advisory Technical Committee on Glossary of Terminology but this comment is not submitted on their behalf because we have not had the opportunity to discuss it.
Committee Meeting Action: Reject
Committee Statement: The TC rejects the comment because the definition was modified by Proposal 85-11, and is now a single sentence.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-6 Log #29 BCS-FUN **Final Action: Reject**
(3.3.117.Y Combustion Turbine Purge Credit (New))

Submitter: Marcelo M. Hirschler, GBH International
Comment on Proposal No: 85-8
Recommendation: Revise text as follows:

Continue rejecting the addition of this definition.

Substantiation: NFPA definitions must be in a single sentence and should not contain requirements associated with the standard. The proposed definition is in two sentences, with the second sentence containing a requirement associated with section 8.8.4, which is inappropriate in a definition and, if desired, must be located in a different section or, if informational, in Annex A.

I am the chair of the NFPA Advisory Technical Committee on Glossary of Terminology but this comment is not submitted on their behalf because we have not had the opportunity to discuss it.

Committee Meeting Action: Reject
Committee Statement: The TC rejects the comment because the definition was approved by Proposal 85-14, and is a single sentence.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-7 Log #30 BCS-FUN **Final Action: Reject**
(3.3.117.Y Combustion Turbine Purge Credit (New))

Submitter: Marcelo M. Hirschler, GBH International
Comment on Proposal No: 85-9
Recommendation: Revise text as follows:
Continue rejecting the addition of this definition.
Substantiation: NFPA definitions must be in a single sentence and should not contain requirements associated with the standard. The proposed definition is in two sentences, with the second sentence containing a requirement associated with section 8.8.4, which is inappropriate in a definition and, if desired, must be located in a different section or, if informational, in Annex A.
I am the chair of the NFPA Advisory Technical Committee on Glossary of Terminology but this comment is not submitted on their behalf because we have not had the opportunity to discuss it.
Committee Meeting Action: Reject
Committee Statement: The TC rejects the comment because the definition was approved by Proposal 85-14, and is a single sentence.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-8 Log #CC103 BCS-FUN **Final Action: Hold**
(4.1.5, New 4.1.6, New A.4.1.6)

Submitter: Technical Committee on Fundamentals of Combustion Systems Hazards,
Comment on Proposal No: 85-116
Recommendation: Revise text to read as follows:
4.1.5 The burner or fuel feed piping and equipment shall be designed, ~~and~~ constructed and located to prevent the formation of hazardous concentrations of combustible gases ~~that exist~~ under normal operating conditions.
4.1.6* The installation of boilers or HRSGs in accordance with the requirements of this Code shall not in and of itself require a change to the electrical classification of the boiler or HRSG location.
A.4.1.6 The surrounding area around boilers or HRSGs that meet the requirements of 4.1.5 are not classified as a hazardous (classified) location due solely to the presence of their associated fuel gas and fuel oil systems and are considered as Unclassified Locations by NFPA 497-2008 section 5.4.
Substantiation: The NFPA 85 design, construction and location requirements for boilers and HRSG's require their location to not have hazardous concentrations of combustible gasses.
NFPA 497-2008 states, "Experience has shown that the release of ignitible mixtures from some operations and apparatus is so infrequent that area classification is not necessary." and "Open flames and hot surfaces associated with the operation of certain equipment, such as boilers and fired heaters, provide inherent thermal ignition sources. Electrical classification is not appropriate in the immediate vicinity of these facilities….".
Committee Meeting Action: Hold
Committee Statement: Comment 85-39 (Log #7) was submitted to address ROP item 85-116 which was rejected by the BCS-PFS and directed to BCS-FUN by the TCC. BCS-FUN took action on 85-39 (Log #7) to add annex material in the 2011 edition and developed this Committee Comment to be held for the next cycle.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-9 Log #CC102 BCS-FUN **Final Action: Hold**
(4.5.4)

Submitter: Technical Committee on Fundamentals of Combustion Systems Hazards,
Comment on Proposal No: 85-56
Recommendation: Revise text as follows:
4.5.4 The design shall not require any deliberate "defeating" of an interlock to start or operate equipment.
4.5.4.1 Whenever a required interlock device is removed temporarily from service, it shall be noted in the log and annunciated.
4.5.4.2 Other means shall be substituted to supervise this interlock function.
~~No interlocks shall be bypassed during start-up or operation of the unit unless the bypass is tagged and is governed by operating procedures.~~
Substantiation: This language was extracted from 6.4.2.2.13 at the suggestion of the BCS-AAC Technical Correlating Committee. The BCS-FUN TC recognizes that interlocks may need to be bypassed to complete maintenance and testing. While the existing 4.5.4 addresses this need, the language from the existing 6.4.2.2.13 provides a more thorough treatment of the procedure for doing so.
Committee Meeting Action: Hold
Committee Statement: The TC put the comment on hold because the requirement would greatly expand the requirement in the existing 4.5.4. This addition should be fully vetted by the public and the BCS technical committees that would be impacted by the modification.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-10 Log #25 BCS-FUN **Final Action: Hold**
(4.6.2.3.2.5(6))

Submitter: John Van Name, URS - Washington Division
Comment on Proposal No: 85-27
Recommendation: Revise text to read as follows:
(6) Where the common component does not contain a possible ignition source, a bypass shall not be required, as long as Open Flow Path requirements and emergency shutdown air flow requirements are met. The common tie point shall not permit reverse flow in any path under any conditions.
Substantiation: When two or more boiler outlets are tied together, it is possible to pressurize the connection point either by design or excursion. Positive pressure at the common component eliminates an open flow path (3.3.104), permits products of combustion from a running unit to enter a starting unit or a unit experiencing an emergency shutdown with loss of fans, and also prevents the unburned fuel and products of combustion from exiting the combustion chamber and gas paths via passive means when fans are lost. The most serious emergency condition in NFPA 85 is compromised by the present wording. This comment does not pertain to a specific type of equipment; it pertains to the requirements of any combustion products removal subsystem. Item (6) negates item (5) and this loophole has been used to design systems that create safety issues for unit purge, emergency shutdowns, inspections and maintenance, and to flagrantly violate the basic tenet of purge.
Chapter 4 presently quotes 6.6.3.2.2, 6.7.3.2.2 and 6.8.3.2.2, but specific references in the original comment have been replaced with definitions and references used throughout the document.
Committee Meeting Action: Hold
Committee Statement: The TC put the comment on hold because the requirement for no reverse flow under any condition would be new mandatory language that has not been fully vetted by the public or the BCS technical committees that would be impacted by the addition. The TC requests that this comment becomes a proposal in the next cycle to: BCS-FUN, BCS-FBB, BCS-HRS, BCS-MBB, BCS-SBB, and BCS-STO. The BCS-FUN encourages the other BCS technical committees to review the comment and substantiation language and the substantiation to the original proposal.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-11 Log #4 BCS-FUN **Final Action: Accept**
(4.6.2.4.3)

Submitter: Dale P. Evely, Southern Company Services, Inc.
Comment on Proposal No: 85-29
Recommendation: Revise text to read as follows:
4.6.2.4.3 Manifolding of Vents
4.6.2.4.3.1 Vents from systems operating at different pressure levels shall not be ~~permitted to be~~ manifolded together.
4.6.2.4.3.2 Vents from systems served from different pressure reducing stations shall not be manifolded together.
4.6.2.4.3.3 Vents from different boilers or HRSGs shall not be ~~permitted to be~~ manifolded together.
4.6.2.4.3.4 Vents from systems using different fuel sources shall not be ~~permitted to be~~ manifolded together.
4.6.2.4.3.5 Header vents shall only be permitted to be manifolded together with other header vents and only when operated and tripped in parallel.
4.6.2.4.3.6 Burner vents shall only be permitted to be manifolded together with other burner vents.
4.6.2.4.3.7 Igniter vents shall only be permitted to be manifolded together with other igniter vents.
4.6.2.4.3.8 Lance vents shall only be permitted to be manifolded together with other lance vents.
Substantiation: The language proposed by the BCS-FUN TC is in conflict due to a liberal use of cut and paste; the above addresses this.
Committee Meeting Action: Accept
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-12 Log #16 BCS-FUN **Final Action: Accept in Principle**
(4.6.3.1.3 (New))

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-31
Recommendation: The TCC instructs the BCS-FUN Technical Committee to consider changing the terminology "continuously variable process signals" to "process transmitters" in light of the new definition 3.3.159 for Transmitter.

Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Principle

4.11.3 The burner management system interlock and alarm functions shall be initiated by one or more of the following:

(1) ~~A~~ One or more switches or transmitters that are dedicated to the burner management system ~~independent of control functions and signals~~

(2) One or both signals from ~~of~~ two ~~continuously variable process~~ transmitters exceeding a preset value

(3) The median signal from ~~of~~ three ~~continuously variable process~~ transmitters ~~signals~~ exceeding a preset value

4.11.3.1 When signals from multiple ~~continuously variable process signals~~ switches or transmitters are provided to initiate interlock or alarm functions, those signals shall be monitored in comparison to each other by divergence or other fault diagnostic alarms.

4.11.3.2 When signals from multiple ~~continuously variable process signals~~ switches or transmitters are provided to initiate interlock or alarm functions, the provided signals shall be generated by individual sensing devices connected to separate process taps.

Committee Statement: The TC modified the subparagraphs to utilize the defined term transmitters in accordance with the TCC request. In addition, the TC modified subparagraph 4.11.3 (1) to reflect that more than one switch or transmitter may be used, and to clarify what those switches or transmitters must be connected to, rather than what they are prohibited from connecting to. This addresses the TCC instructions for proposals 85-30 and 85-31.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-13 Log #5 BCS-FUN **Final Action: Accept**
(4.6.3.2.5.7)

Submitter: Dale P. Evely, Southern Company Services, Inc.
Comment on Proposal No: 85-45
Recommendation: Revise text to read as follows:

4.6.7* Signals and the manually operated devices specified in 4.6.3.2.4(8) that initiate mandatory master fuel trips shall be hardwired. ~~hard wired.~~

A.4.6.7 Signals that initiate mandatory master fuel trips originate directly from hardwired interlocks or from signals developed by the burner management system logic. The required operator initiated trip (e.g. pushbutton or manual switch) is required to be hardwired directly to the master fuel trip relay and may be wired as an input to the burner management system logic as well.

Substantiation: ROP Sequences 85-41 and 85-45 have slightly different wording for the same paragraph. Both proposals were generated by the BCS-FUN TC. From the TC statement on 85-45, it looks like they intended to accept the language in 85-41, but for some reason they did not make them agree. This comment is meant to resolve the conflict between 85-41 and 85-45 at the suggestion of the NFPA liaison.
Committee Meeting Action: Accept
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-14 Log #17 BCS-FUN **Final Action: Accept in Principle**
(4.6.5.2.1)

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-49
Recommendation: The TCC instructs the BCS-FUN TC to reconsider this proposal in the ROC phase in light of the BCS-MBB actions adding terminology "minimum purge rate established by the designer" in accordance with 6.4.2.3.4.4.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Principle

4.6.5.2.1* Except as noted in 4.6.5.2.2 under no circumstances shall airflow demand be less than the minimum purge rate established by the designer.

Committee Statement: The TC reconsidered the proposal in light of the revised terminology generated by the BCS-MBB TC, and agreed that the paragraph should be modified accordingly.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-15 Log #18 BCS-FUN **Final Action: Accept in Principle**
(4.6.7.1)

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-51
Recommendation: The TCC instructs the BCS-FUN and BCS-SBB to reconsider this paragraph, and specifically consider modifying the language to 4.6.7.1.1 as follows:

"For single burner boilers, continuous trend display of operating parameters critical to operation shall be provided."

The TCC requests that the review is accomplished by a task group of BCS-SBB members for input prior to the BCS-FUN ROC meeting.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Principle

4.15~~6.7~~.1.1* For single burner ~~package~~ boilers, ~~minimum~~ continuous trend display of operating parameters critical to operation shall be provided. ~~shall include steam flow, airflow, drum level, steam pressure, and, where applicable, the furnace draft.~~

A.4.15.1.1 For single burner boilers, continuous trend display may include steam flow, fuel flow, drum or water level, steam pressure, and, where measurement is available, the furnace draft and airflow. When the main control for combustion control uses metered air/fuel ratio, the fuel flow and air flow should be available to the operators to ensure proper operation.

Committee Statement: The BCS-FUN TC reconsidered action on 85-51, 85-52, and 85-53. The TC adopted the wording recommended by the TCC, and adopted the annex material approved by the BCS-SBB TC. The BCS-FUN TC agrees that there are many different designs of single burner boilers and the operating information required by the existing provision is not appropriate for all designs. Therefore, the specific operating information has been moved to the annex material.
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-16 Log #19 BCS-FUN **Final Action: Accept in Principle**
(4.6.7.1.1)

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-52
Recommendation: The TCC instructs the BCS-FUN and BCS-SBB to reconsider this paragraph, and specifically consider modifying the language to 4.6.7.1.1 as follows:

"For single burner boilers, continuous trend display of operating parameters critical to operation shall be provided."

The TCC requests that the review is accomplished by a task group of BCS-SBB members for input prior to the BCS-FUN ROC meeting.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 85-15 (Log #18).
Number Eligible to Vote: 24
Ballot Results: Affirmative: 20
Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-17 Log #20 BCS-SBB **Final Action: Accept**
(4.6.7.1.1)

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-53
Recommendation: The TCC instructs the BCS-FUN and BCS-SBB to reconsider this paragraph, and specifically consider modifying the language to 4.6.7.1.1 as follows:

"For single burner boilers, continuous trend display of operating parameters critical to operation shall be provided."

(Proposed Annex A material would be included unchanged.)

The TCC requests that the review is accomplished by a task group of BCS-SBB members for input prior to the BCS-FUN ROC meeting.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept
Committee Statement: See BCS-FUN action on Comment 85-15 (Log #18).
Number Eligible to Vote: 15
Ballot Results: Affirmative: 13
Ballot Not Returned: 2 Bosfield, C., Pinto, P.
Comment on Affirmative:

WAGNER, J.: Need additional information on any loss reports.

85-18 Log #CC300 BCS-FBB **Final Action: Hold**
(4.11.3(4))

TCC Action: The TCC modified the BCS-FBB TC action to hold this comment because the proposed wording is new material that has not been reviewed by the BCS-FUN TC or the public.
Submitter: Technical Committee on Fluidized Bed Boilers,
Comment on Proposal No: 85-30
Recommendation: Add as follows:

4.11.3(4) Voting logic derived from three or more switches or transmitters exceeding a preset value

Substantiation: The BCS-FBB proposes an additional option for burner management system interlocks and alarm functions that addresses processes where multiple measurements are made and a median value selection is not appropriate, for example, airflow, oxygen measurement in the flue gas, or fluidized bed temperatures.
Committee Meeting Action: Accept
Number Eligible to Vote: 13
Ballot Results: Affirmative: 11
Ballot Not Returned: 2 Chelian, R., Kraft, D.
Comment on Affirmative:
DARGUZAS, J.: While I am voting in the Affirmative without Exception; I fear that the listed explanation does not totally capture the Committee's reasoning. In a FBB as well as other Boilers; stratification can and does result in the same Measured Variable having - sometimes - very different actual concentrations at different physical locations within the same Boiler. Therefore: somehow "blending" several different values for the same Measured Variable from several different physical locations may obscure a dangerous condition. The Committee's concern was that while averaging, auctioning, etc. a Measured Variable at one physical location in a Boiler maybe appropriate for some activities; doing so from different physical locations might mask a dangerous condition.

85-19 Log #10 BCS-SBB **Final Action: Hold**
(5.3.2.6)

Submitter: W. Scott Matz, Invensys Process Systems
Comment on Proposal No: 85-54
Recommendation: Revise text to read as follows:
Gas piping material and system design shall be in accordance with ~~NFPA 54, National Fuel Gas Code (for gas piping inside industrial and institutional buildings),~~ ASME B31.1, Power Piping (for gas piping in power applications), or ASME 31.3, Process Piping (for gas piping in process applications).
Substantiation: Aluminum alloy threaded valves should not be permitted due to their low melting point and they may become distorted when tightened.
Committee Meeting Action: Hold
Committee Statement: The BCS-SBB Committee holds this comment for further information and public review, recognizing that research is underway on the use of aluminum components in fuel gas trains in multiple standards, including NFPA 54, ASME B31.1 and B31.3, through a task group of the BCS-MBB Technical Committee.
Number Eligible to Vote: 15
Ballot Results: Affirmative: 13
Ballot Not Returned: 2 Bosfield, C., Pinto, P.
Comment on Affirmative:
WAGNER, J.: Further information and public review required.

85-20 Log #26 BCS-SBB **Final Action: Accept**
(5.3.2.6)

Submitter: John C. deRuyter, The DuPont Company, Inc.
Comment on Proposal No: 85-54
Recommendation: Delete text as follows:
~~**5.3.2.6.1** Where a conflict exists between this code and NFPA 54, ASME B31.1 or ASME B31.3, the requirements of 5.3.2.6 shall prevail.~~
~~**5.3.2.6.2** Aluminum alloy threaded fittings shall be permitted to be used with steel or wrought iron piping.~~
Substantiation: Problems have been experienced with threaded aluminum fittings with carbon steel piping due to lesser strength of aluminum leading to cross-threading, deformation, and body cracking resulting in gas leaks. Incidents have also occurred where aluminum fittings melted during an external fire leading to gas release causing enhanced damage and loss. NFPA 54 stipulates in 5.6.8.4(6) that threads shall not form the joint seal for aluminum alloy fittings and 5.6.8.4(2) prohibits use of aluminum alloy fittings with steel or wrought iron pipe by not listing aluminum or aluminum alloy as a permissible material. ASME B31.1 also prohibits use of aluminum and aluminum alloy fittings for flammable fluids within the boiler plant structure. This revision deleting the text added in the ROP will again provide consistency between NFPA 85, NFPA 54, ASME B31.1, and ASME B31.3 and will address the above concerns.
Committee Meeting Action: Accept
Committee Statement: The BCS-SBB Committee accepts this comment recognizing that research is underway on the use of aluminum components in fuel gas trains in multiple standards, including NFPA 54, ASME B31.1 and B31.3, through a task group of the BCS-MBB Technical Committee. The BCS-SBB Committee appreciates the anecdotal support provided by the submitter, but is not basing this action on the submitted substantiation. The BCS-SBB Committee encourages all interested parties to submit additional data or any loss reports available related to the use of aluminum components in a boiler fuel gas train.
Number Eligible to Vote: 15
Ballot Results: Affirmative: 13
Ballot Not Returned: 2 Bosfield, C., Pinto, P.
Comment on Affirmative:
WAGNER, J.: Need additional information on any loss reports.

85-21 Log #2 BCS-SBB **Final Action: Hold**
(5.3.6.4.3 and 5.3.6.4.3.1)

Submitter: Michael Francis, John Zink Company, LLC
Comment on Proposal No: 85-56
Recommendation: Allow testing and maintenance of interlocks for single burner boilers, since testing and maintenance is allowed for multiple burner boilers. Proposed text is based on paragraphs 6.4.2.2.3, 6.4.2.2.12, and 6.4.2.2.13:
5.3.6.4.3 Interlocks shall not be bypassed manually at any time during normal operation except for the following purposes:
(1) Testing and maintenance shall be performed to keep the interlock system functioning as designed.
(2) The capability for preventive maintenance shall be provided.
(3) The design shall not require any deliberate "defeating" of an interlock to start or operate equipment. Whenever a required interlock device is removed temporarily from service, it shall be noted in the log and annunciated. Other means shall be substituted to supervise this interlock function.
5.3.6.4.3.1 Interlocks shall be permitted to be bypassed as allowed by 5.3.6.4, 5.3.6.4.3, 5.4.3.2.1 (4), and 5.4.3.3.1 (4).
Substantiation: Since testing and maintenance of interlocks is allowed for multiple burner boilers, the code should also allow for single burner boiler interlock bypass, to be consistent.
In addition, there is no way to remove/replace/maintain most interlock devices without a shutdown of a burner/boiler while following NFPA 85 chapter 5 for single burner operation. Proper maintenance to interlock device is more likely to occur if means are provided to allow for such maintenance.
Many users operate boilers for long periods without shutting down, and would welcome a method of on-line maintenance for interlock devices. This is especially true when a transmitter is used as the interlock device, or the interlock is voted among multiple devices. Also, many users have both single and multiple burner boilers, and they commonly request to use the same testing/maintenance procedures for single burner boilers as they use for multiple burner boilers.
Committee Meeting Action: Hold
Committee Statement: The BCS-SBB TC holds the comment pending further information and public review, recognizing that a similar comment (BCS-FUN 85-9 Log #CC102) has been put on hold by the BCS-FUN TC which may address the needs of the Single Burner Boilers chapter.
Number Eligible to Vote: 15
Ballot Results: Affirmative: 13
Ballot Not Returned: 2 Bosfield, C., Pinto, P.
Comment on Affirmative:
WAGNER, J.: Need further additional information for SBB application.

85-22 Log #15 BCS-SBB **Final Action: Hold**
(5.3.6.4.3 and 5.3.6.4.3.1)

Submitter: Dale E. Dressel, Solutia Inc.
Comment on Proposal No: 85-56
Recommendation: Revise paragraph 5.3.6.4.3 from:
Interlocks shall not be bypassed manually at any time during normal operation.
To:
Interlocks shall not be bypassed, except as noted in 5.3.6.4.3.1, unless the bypass is tagged and is controlled by procedure.
Substantiation: As written, the referenced paragraphs only allow bypassing on single burner boilers for low water level interlocks (Sections 5.3.6.4.1 and 5.3.6.4.2) and atomizing medium interlocks (Sections 5.4.3.2.1(4) and 5.4.3.3.1(4). No allowance is given to service, maintain or replace a flame scanner or other interlock.
In addition, both Fundamentals - Chapter 4 (Section 4.5.4) and MBB-Chapter 6 (Section 6.4.2.2.13) allow bypassing of interlocks under certain conditions.
Committee Meeting Action: Hold
Committee Statement: The BCS-SBB TC holds the comment pending further information and public review, recognizing that a similar comment (BCS-FUN 85-9 Log #CC102) has been put on hold by the BCS-FUN TC which may address the needs of the Single Burner Boilers chapter.
Number Eligible to Vote: 15
Ballot Results: Affirmative: 12 Negative: 1
Ballot Not Returned: 2 Bosfield, C., Pinto, P.
Explanation of Negative:
WAGNER, J.: I take exception to bypassing a flame scanner under any operating conditions. Have a spare unit and replace.

85-23 Log #CC200 BCS-MBB **Final Action: Accept**
(Table 6.4.2.3.1(a))

Submitter: Technical Committee on Multiple Burner Boilers,
Comment on Proposal No: 85-61
Recommendation: Insert new line into Table 6.4.2.3.1(a):
Block 10 For drum type boilers, a low drum water level shall activate the master fuel trip relay.
Substantiation: The TC action on Proposal 85-61 did not capture the proposed text for the new Block 10 to be added to Table 6.4.2.3.1(a). The TC is adding this material to make the figure and table consistent.

Committee Meeting Action: Accept
Number Eligible to Vote: 31
Ballot Results: Affirmative: 28
Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.

85-24 Log #21 BCS-MBB **Final Action: Accept in Principle**
(Table 6.4.2.3.1(A) Blocks 3-12)

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-64
Recommendation: The TCC instructs the BCS-MBB TC to reconsider their action on this proposal based on the recognition that the pulverizer motor may need to run prior to boiler purge to clear the mill as per section 9.5.4 of the 2007 edition of the NFPA 85, proposal 85-117 of this ROP, and the Technical Committee Statement substantiating the rejection of proposal of 85-99. The TCC interprets Proposal 85-64 (Log #CP5) to require that if the MFT relay is used, then the pulverizer motor can not be restarted until after the boiler purge is complete and the master fuel trip relay is reset.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Principle
6.8.5.2.5.4 (B) The pulverizer motor shall be permitted to run prior to master fuel trip relay reset to clear residual coal from the pulverizer in accordance with 9.5.4.2.2.1(B).
(Renumber subsequent)
Committee Statement: The BCS-MBB TC reviewed the requirements of chapter 9, particularly the new section 9.5.4.2.2.1(B) developed by the BCS-PFS TC for the pulverizer motor published in the NFPA 85 F2010 Report on Proposals. As stated in committee statement on ROP 85-99, the BCS-MBB recognizes the potential need for the pulverizer motor to run prior to MFT relay reset. The TC added text to 6.8.5.2.5.4 to permit running the pulverizer motor only for the purpose of clearing residual coal from tripped pulverizers while the boiler is not in operation.
Number Eligible to Vote: 31
Ballot Results: Affirmative: 28
Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.

85-25 Log #14 BCS-MBB **Final Action: Accept in Principle**
(6.4.2.3.4.3(C), 6.5.3.2, 6.5.3.2.3, and Annexes)

Submitter: Michael A. Walz, Burns & McDonnell
Comment on Proposal No: 85-68
Recommendation: Revise as follows: **6.4.2.3.4.3...**
(C)* All Fan Trip. ~~On and emergency shutdown where no fans remain in service, boiler enclosure purge conditions shall be established and a boiler enclosure purge completed. Pure rate airflow shall be established in accordance with the following procedure.~~
(1) On an emergency shutdown where no fans remain in service, no action shall be taken other than damper actions necessary to prevent positive or negative furnace pressure transients beyond design limits. ~~no damper actions shall be permitted that would reduce flue gas or air flow through the boiler enclosure until after a normal boiler enclosure purge has been completed.~~
(2) ~~Damper positioning shall be allowed as required to achieve flow distribution through areas of the boiler enclosure where combustible gases may be present.~~ Once the FD & ID fan(s) have stopped, slowly open all dampers in the air and flue gas passages to the full open position.
(3) ~~Open isolation and control dampers, except on fans isolated for maintenance. The opening of these dampers shall be timed or controlled to maintain positive or negative furnace pressure transients within design limits. Where multiple boilers feed into a common piece of equipment or stack and there is the potential for reverse flow into an idle unit it shall be allowed to keep the most downstream damper closed.~~ This condition ~~conditions in (1) through (3)~~shall be maintained for an all fan trip hold period of at least 15 minutes prior to allowing any ID or FD fan to be restarted.
(4) At the end of this 15-minute period, the fan(s) shall be started in accordance with Section 6.5.
(5) The airflow shall be increased gradually to the purge rate, and a boiler enclosure purge shall be completed.
A.6.4.2.3.4.3 (C) ~~Many units are being equipped with downstream equipment that restricts flow. In this arrangement stack effect and any associated draft is reduced or completely eliminated. However,~~ a hold period prior to re-starting the fans allows the boiler setting to cool, in-leakage will promote further cooling, and, ~~in the case of little or no draft~~ while suspended particles are allowed to settle. ~~It is important to remember that as the fans coast down, furnace pressure must be controlled to prevent positive or negative excursions beyond design limits. This may require damper movement dampers should be closed to isolate the boiler from backflow originating in other boilers remain in operation. These dampers can be re-opened as the ID Fans are restarted and establish a positive flow out of the boiler.~~
6.5.3.2* Open-Flow Air Path.
A.6.5.3.2 One method of achieving the open-flow air path with common downstream equipment is to maintain the common point below atmospheric pressure whenever at least one boiler is in operation. This reduces the risk of hot flue gas from operating unit(s) flowing back into non-operating unit(s) and permits establishing an open flow path from FD fan inlet of the non-operating boiler(s) to the common point in accordance with the requirements of Chapter 6.
6.5.3.2.3* Isolating dampers, windbox dampers, air registers, and other control dampers shall be opened as required to ensure an open-flow path from the FD fan inlet through the furnace, the ID fans, and the stack.
A.6.5.3.2.3 Units may be equipped with downstream equipment that restricts flue gas/air flow through them. With this arrangement, stack effect, and any associated draft, can be reduced or completely eliminated. A bypass, internal or external to the equipment, is a method of assuring the open-flow air path.
Substantiation: By providing a more accurate reference to the condition, the Code subparagraph will be more easily understood. The requirements of each subparagraph are simpler and more direct than in the existing Code language, and the number of subparagraphs are reduced to further enhance clarity. The Annex is provided to explain how the process is expected to improve safety in that situation. The second and third annex additions are provided to offer the designer a suggested way in which the intent of the Code can be met.
Committee Meeting Action: Accept in Principle
(C)* All Fan Trip. ~~On and emergency shutdown where no fans remain in service, boiler enclosure purge conditions shall be established and a boiler enclosure purge completed. Pure rate airflow shall be established in accordance with the following procedure.~~
(1) On an emergency shutdown where no fans remain in service, no action shall be taken other than damper actions necessary to prevent positive or negative furnace pressure transients beyond design limits. ~~no damper actions shall be permitted that would reduce flue gas or air flow through the boiler enclosure until after a normal boiler enclosure purge has been completed.~~
(2) ~~Damper positioning shall be allowed as required to achieve flow distribution through areas of the boiler enclosure where combustible gases may be present.~~ Once the FD & ID fan(s) have stopped, slowly open all dampers in the air and flue gas passages to the full open position.
(3) ~~Open isolation and control dampers, except on fans isolated for maintenance. The opening of these dampers shall be timed or controlled to maintain positive or negative furnace pressure transients within design limits. Where multiple boilers feed into a common piece of equipment or stack and there is the potential for reverse flow into an idle unit it shall be allowed to keep the most downstream damper closed.~~ This condition ~~conditions in (1) through (3)~~shall be maintained for an all fan trip hold period of at least 15 minutes prior to allowing any ID or FD fan to be restarted.
(4) At the end of this 15-minute period, the fan(s) shall be started in accordance with Section 6.5.
(5) The airflow shall be increased gradually to the purge rate, and a boiler enclosure purge shall be completed.
A.6.4.2.3.4.3 (C) ~~Many units are being equipped with downstream equipment that restricts flow. In this arrangement stack effect and any associated draft is reduced or completely eliminated. However,~~ A hold period prior to re-starting the fans allows the boiler setting to cool, in-leakage will promote further cooling, and, ~~in the case of little or no draft while~~ suspended particles to settle. ~~It is important to remember that as the fans coast down, furnace pressure must be controlled to prevent positive or negative excursions beyond design limits. This may require damper movement dampers should be closed to isolate the boiler from backflow originating in other boilers remain in operation. These dampers can be re-opened as the ID Fans are restarted and establish a positive flow out of the boiler.~~
6.5.3.2* Open-Flow Air Path.
A.6.5.3.2 One method of achieving the open-flow air path with common downstream equipment is to maintain the common point below atmospheric pressure whenever at least one boiler is in operation. This reduces the risk of hot flue gas from operating unit(s) flowing back into non-operating unit(s) and permits establishing an open flow path from FD fan inlet of the non-operating boiler(s) to the common point in accordance with the requirements of Chapter 6.
6.5.3.2.3* Isolating dampers, windbox dampers, air registers, and other control dampers shall be opened as required to ensure an open-flow path from the FD fan inlet through the furnace, the ID fans, and the stack.
A.6.5.3.2.3 Units may be equipped with downstream equipment that restricts flue gas/air flow. With this arrangement, stack effect, and any associated draft, can be reduced or completely eliminated. A bypass, internal or external to the equipment, is a method of assuring the open-flow air path.
Committee Statement: The BCS-MBB TC accepted the comment with editorial changes. The TC recognizes that there may be configurations where it would not be good engineering practice to open all dampers to create an open-flow path, such as multiple units tied together at a fan discharge such that the common point is above atmospheric pressure. The language accepted by the committee mandates opening all dampers in the air and flue gas passages, but the TC directs users of the Code to refer to the Equivalency provision, paragraph 1.5 to establish alternate provisions where these requirements cannot be met.
Number Eligible to Vote: 31
Ballot Results: Affirmative: 28
Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.
Comment on Affirmative:
WONG, H.: Although I recognize the ability to cover the issue with the Equivalency provision, I believe we missed the opportunity to clearly cover the issue when line in 6.4.2.3.4.3 (C) (3) of the initial proposal, allowing leaving the most downstream damper closed, was removed.

85-26 Log #8 BCS-MBB **Final Action: Accept in Principle in Part (6.4.2.3.4.3(C) and A.6.4.2.3.4.3(C))**

Submitter: Sinming Kwong, Emerson Process Management Power & Water Solutions, Inc.
Comment on Proposal No: 85-68
Recommendation: Revise text to read as follows:

(C)* On an emergency shutdown where no fans remain in service, boiler enclosure purge conditions shall be established and a boiler enclosure purge completed. Purge rate airflow shall be established in accordance with the following procedure:

(1) Except for damper actions necessary to prevent positive or negative furnace pressure transients beyond design limits, no damper actions shall be permitted that would reduce flue gas or air flow through the boiler enclosure until after a ~~normal boiler enclosure~~ natural purge has been completed. ~~All dampers in the air and flue gas passages of the unit shall be opened slowly to the fully open position to create as much natural draft as possible to ventilate the unit.~~

(2) Damper positioning shall be allowed as required to achieve flow distribution through areas of the boiler enclosure where combustible gases may be present.

(3) Open isolation and control dampers except on fans isolated for maintenance. The opening of these dampers shall be timed or controlled to maintain positive or negative furnace pressure transients within design limits. Where multiple boilers feed into a common piece of equipment or stack and there is the potential for reverse flow into an idle unit it shall be allowed to keep the most downstream isolation damper closed; closing of the most downstream isolation damper should be timed to prevent positive furnace pressure transients beyond design limits and to minimize turbulence in the back end that could stir up combustible particles.

~~Opening of fan dampers shall be timed or controlled to ensure that positive or negative furnace pressure transients beyond design limits do not occur during fan coastdown.~~

(4) The conditions in (1) through (3) shall be maintained for an all fan trip hold period of at least 15 minutes prior to allowing any ID or FD fan to be re-started. This condition shall be maintained for at least 15 minutes.

(5) At the end of this period, the fan(s) shall be started in accordance with Section 6.5.

(6) The airflow shall be increased gradually to the purge rate, and a boiler enclosure purge shall be completed.

A.6.4.2.3.4.3(C) Many units are being equipped with downstream equipment that restricts flow. In this arrangement slack effect and any associated draft is reduced or completely eliminated. However a hold period prior to re-starting the fans allows the boiler setting to cool, in-leakage will promote further cooling and, in the case of little or no draft, suspended particles are allowed to settle. It is important to remember that as the fans coast down furnace pressure must be controlled to prevent positive or negative excursions beyond design limits. This may require damper movement or blade positioning on axial flow fans. In the case of multiple boilers connected to common downstream equipment, the most downstream isolation dampers should be closed to isolate the boiler from backflow originating in other boilers remaining in operation. These dampers can be re-opened as the ID Fans are restarted and establish a positive flow out of the boiler.

Substantiation: 6.4.2.3.4.3(C), (1)

To complete a normal boiler enclosure purge, ID Fan and FD Fan control and isolation dampers will be moved inadvertently for fan start up and to maintain purge airflow. The intent of the statement is to prevent closing of air dampers (reducing airflow) during the 15-min natural purge period. After the completion of the natural purge period, then 10 and FD Fans can be re-started following Section 6.5.

6.4.2.3.4.3(C), (3)

Isolation damper will be more effective to keep flue gas originated from other boilers flowing reversely into the idle boiler.

One would not want to close the most downstream dampers too early when FD Fan and/or ID Fan residual speeds are still high. Closing of the most downstream dampers should be timed to prevent positive furnace pressure transients beyond design limits and to prevent stirring up combustibles in the back end.

A.6.4.2.3.4.3(C)

Specify the most downstream isolation dampers.

Committee Meeting Action: Accept in Principle in Part

(2) ~~Damper positioning shall be allowed as required to achieve flow distribution through areas of the boiler enclosure where combustible gases may be present.~~ Once the FD & ID fan(s) have stopped, slowly open all dampers in the air and flue gas passages to the full open position.

Committee Statement: The comment reflects similar wording to proposal 85-68. The TC, under the direction of the BCS Technical Correlating Committee, substantially rewrote the ROP text from 85-68 in ROC 85-25 (Log #14) to provide clear, direct requirements. The revised language provides specific requirements for a boiler with a dedicated flue gas path, recognizing that these requirements represent a general philosophy for purge in the event that all fans are tripped.

The TC recognizes that there may be configurations where boilers cannot be isolated to prevent backflow, such as multiple units tied together at a fan discharge such that the common point is above atmospheric pressure. The language accepted by the committee mandates opening all dampers in the air and flue gas passages, and the TC directs users of the Code to refer to the Equivalency provision, paragraph 1.5 of the 2011 edition to establish alternate provisions where these requirements cannot be met. Therefore, references to any isolation dampers are not appropriate for the revised requirements.

In addition, the TC deliberately removed references to "natural draft" or "natural" purge to recognize that there are design configurations where no airflow will be present during the 15 minute hold period. ROC 85-25 (Log #14) further removed the phrase "normal boiler enclosure purge", recognizing that loss of fans by definition precludes a normal purge.

The TC agrees that dampers should not be closed when fan speeds are still high. ROC 85-25 (Log #14) addresses this concern by requiring ID and FD fans to be stopped before dampers change position.

Number Eligible to Vote: 31
Ballot Results: Affirmative: 28
Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.

85-27 Log #9 BCS-MBB **Final Action: Accept in Principle (6.5.2.2 and Figure 6.5.2.2.1)**

Submitter: Daniel J. Lee, ABB Incorporated
Comment on Proposal No: 85-75
Recommendation: Revise text to read as follows:

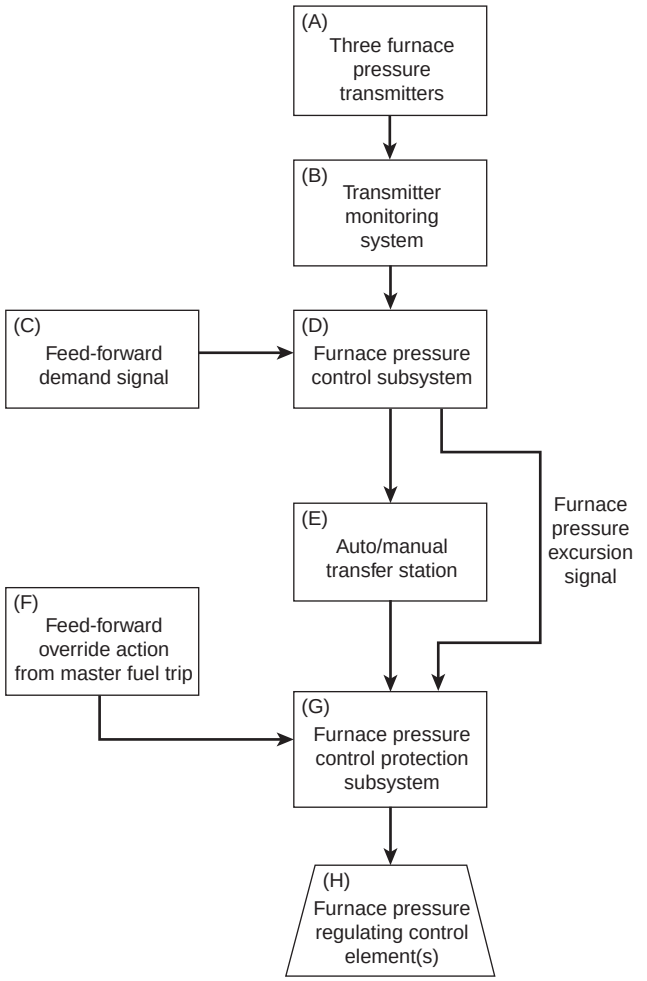

Figure 6.5.2.2.1 Furnace pressure control system requirements

Changes to Figure 6.5.2.2.1
a) Modified box identifier letter
b) Revise box G text
c) In box H change "draft" to "furnace pressure"
d) Add signal line identifier "Furnace Pressure Excursion Signal"
e) Modified box F line connections
f) In box H change "element" to element(s)"
g) delete MFT Signal input to box F
h) Modified figure title

6.5.2.2 System Requirements

~~**6.5.2.2.1** The furnace pressure control subsystem (A), as shown in Figure 6.5.2.2.1, shall position the draft-regulating equipment so as to maintain furnace pressure at the desired set point.~~

~~6.5.2.2.2~~ **6.5.2.2.1** The furnace pressure control system, as shown in Figure 6.5.2.2.1 shall include the following features and functions:

(1) Three furnace pressure transmitters ~~(B)~~ (A) in an auctioneered median-select system, each on a separate pressure-sensing tap and suitable monitoring ~~(C)~~ (B) to minimize the possibility of operating with a faulty furnace pressure measurement.

(2) A feed-forward signal ~~(D)~~ (C) to the furnace pressure control subsystem ((D), representative of boiler airflow demand, which can be permitted to be a fuel flow signal, airflow control equipment demand ~~boiler-master~~ signal, or other index of demand, but not a measured airflow signal.

(3) The furnace pressure control subsystem (D) shall position the furnace pressure regulating equipment so as to maintain furnace pressure at the desired set point.

(4)* ~~(3) An override action or direction blocking (E) on large furnace draft errors introduced after the auto/manual transfer station (F).~~ The furnace pressure control protection subsystem (G) shall be applied after the auto/manual transfer station (E) to minimize furnace pressure excursions under both auto and manual operation modes. The furnace pressure control protection shall include a feedforward override action (F) initiated by a master fuel trip in anticipation of a furnace pressure excursion due to flame collapse and work in conjunction with logic minimizing furnace pressure excursions.

~~(4) A feed-forward~~ override ~~action (G) initiated by a master fuel trip to minimize the furnace pressure excursions, introduced after the auto/manual transfer station (F).~~

(5) Axial fans, where used, operated in their stable range ~~to~~ to prevent uncontrollable changes in airflow or flue gas flow.

6.5.2.2. ~~6.5.2.3~~ Component Requirements. The furnace pressure control element(s) [(H) in Figure 6.5.2.2.1] (~~draft~~ fan inlet damper, blade pitch control, speed control) shall meet the following criteria;

(1)* The operating speed shall not exceed the control system's sensing and positioning capabilities

(2) The operating speed of the ~~draft~~ furnace pressure control equipment shall not be less than that of the airflow control equipment.

A.6.5.2.2.1(4) A typical method for preventing/minimizing furnace pressure excursions is to apply fan override action. Often used in conjunction with this fan override action is directional blocking which prevents the furnace pressure regulating control element(s) from moving in a direction that would aggravate an existing furnace pressure error.

Substantiation: The committee statement that "either directional blocking and/or fan override action may be acceptable control" does not clearly describe the system protection requirements. The revised figure and corresponding text convey system protection designs "to minimize furnace pressure error" in either manual or automatic mode. The substantiation for eliminating the "or" conjunction are as follows:

(1) The MBB committee originally used "or" conjunction because in some electric-analogy systems directional blocking was the only means to provide furnace implosion protections. With today's technology, this constraint is no longer a limitation.

(2) Based on published papers from 1970s on furnace implosion protection, all authors require fan override action as furnace implosion protection.

(3) Fan override logic is the only means in which to provide furnace implosion protection when the furnace pressure control station is in manual.

(4) Fan override logic is a common and good industry practice.

Section 6.5.2.2.1 and Section 6.5.2.2.2 both describe system requirements of Figure 6.5.2.2.1 and should be combined to better describe the figure. Renumber subsequent section.

The box identifier has been revised to a top - down order.

Deleted "MFT Single input to new box F as the text is duplicated with the text in box F. Also, deleted the signal to be consistent with box C that does not show signal inputs

Change "draft" to "furnace pressure" to be consistent with current industry terminology.

Change text in box G and text in 6.5.2.2.1 (4) to describe only the functional requirements of the protection subsystem. Delete "large furnace pressure error" as being unenforceable language. The method of implementing fan override and directional blocking is left up to the designer.

Add appendix clause A.6.5.2.2.1 (4) to convey industry practice of fan override action and directional blocking.

In 6.5.2.2.1 (2) change "boiler-master demand" to "airflow control equipment demand". FD fan demand is the most common feedforward signal used today and should be so identified. The "other index of demand" still allows a boiler-master demand signal.

Committee Meeting Action: Accept in Principle

(2) A feed-forward signal ~~(D)~~ (C) to the furnace pressure control subsystem ~~(~~(D), representative of boiler airflow demand, which can be permitted to be a fuel flow signal, airflow control equipment demand ~~boiler-master~~ signal, or other index of demand, but not a measured airflow signal.

Committee Statement: The Committee accepted the entire comment and revised figure with a minor editorial change to delete the extra "parens" mark on subparagraph 2.

Number Eligible to Vote: 31

Ballot Results: Affirmative: 28

Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.

Comment on Affirmative:

EVELY, D.: The figure that was included with this item in the ballot package is the current figure that is in NFPA 85-2007 and not the modified figure that was proposed as a part of Log #9 and agreed to during the ROC meeting.

O'ROURKE, J.: Regarding paragraph 3 of the submitter's substantiation, the text is not accurate as directional blocking can be applied after the auto/manual station. Accordingly, directional blocking is active in both automatic and manual modes of fan operation. Further, directional blocking should be applied to FD fans to limit FD fan action in the event of ID fan control malfunctions.

WONG, H.: Figure 6.5.2.2.1 attached to the ballot does not represent the text and approved final version.

85-28 Log #CC501 BCS-HRS **Final Action: Accept**
(8.1.2)

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-107
Recommendation: Revise text to read as follows:

8.1.2 Chapters 1 through 4 and 8 shall not dictate the methods or details of the combustion turbine manufacturer's product or control system. Chapter 8 shall identify specific functional considerations for proper interfacing related to the safety aspects of the combined combustion turbine and the HRSG or other combustion turbine exhaust systems.

Substantiation: The technical committee modified the requirement to inform users that the limited coverage for combustion turbines in chapter 8 does not result in combustion turbines being subject to the requirements contained in the fundamental chapters (1-4) of NFPA 85. This change brings the scope of chapter 8 back into agreement with the original scope of NFPA 8506 and attempts to prevent misapplication of the Code to combustion turbines that may have been caused by section 8.1.6.

Committee Meeting Action: Accept
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-29 Log #22 BCS-HRS **Final Action: Hold**
(8.7.4.1.6(1))

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,
Comment on Proposal No: 85-110
Recommendation: The TCC instructs the BCS-HRS Technical Committee to review paragraph 8.7.4.1.6 in light of the new definition 3.3.159 for transmitter.
Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazards in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.
Committee Meeting Action: Hold
Committee Statement: The BCS-HRS TC put this comment on hold so that the language in 4.11.3 can be studied further by the TC and the public with the intent of deciding whether this section should be revised or deleted from Chapter 8.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-30 Log #CC502 BCS-HRS **Final Action: Hold**
(8.8.4.6)

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-109
Recommendation: Revise text to read as follows:

8.8.4.6 Combustion Turbine Purge Credit. Following a Combustion Turbine Normal Shutdown, Combustion Turbine Purge Credit ~~is~~ shall be permitted to be established ~~allowed~~ for the next start up event provided that the following requirements are met ~~one of the following systems~~ in 8.8.4.6.2 ~~is incorporated~~ for each combustion turbine and duct burner fuel system.

8.8.4.6.1 Combustion turbine manufacturer's valve proving requirements shall be met.

8.8.4.6.2 Combustion Turbine Purge Credit Systems. One of the following systems shall be installed for each combustion turbine and duct burner system:

8.8.4.6.2.1* System 1 Gaseous Fuels Triple Block and Double Vent valve arrangement in accordance with the following requirements:

(1)* Combustion turbine normal shutdown shall be completed

8.8.4.6.2.2* System 2 Gaseous Fuels with pressurized pipe section. Triple Block and Double Vent valve arrangement filled with an inert gas or air and maintained at a pressure that prevents gaseous fuel from entering the combustion turbine or duct burner in accordance with the following requirements:

(1)* Combustion turbine normal shutdown shall be completed

(2), (3), (4) unchanged

~~(5) Combustion Turbine Purge Credit period is maintained as long as the conditions in 8.8.4.6.2(2), (3), and (4) are met.~~

(5) Provisions shall be made to ensure that fuel cannot enter the air or inert gas supply line at any time.

A.8.8.4.6.2.2 See Figure A.8.8.4.6.2.2. The intent of this section is to maintain an air or inert gas plug in the fuel piping to prevent fuel from entering the

combustion turbine or HRSG, and not to prove valve leak tightness. The Combustion Turbine Purge Credit can be maintained as long as the conditions in 8.8.4.6.2.2 are met.
Substantiation: The committee modified and reorganized the paragraphs to prioritize the actions and clarify some ambiguities in the text.
Committee Meeting Action: Hold
Committee Statement: The committee put the comment on hold because it is new material that has not had the benefit of public review.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-31 Log #12 BCS-HRS **Final Action: Accept in Principle in Part (8.8.4.6.2 and 8.8.7.4)**

Submitter: Gordon G. Gaetke, The Dow Chemical Company
Comment on Proposal No: 85-109
Recommendation: Revise text:
8.8.4.6.2* System 2 Gaseous Fuels with pressurized pipe section. Triple Block and Double Vent valve arrangement filled with an inert gas or air and maintained at a pressure that prevents gaseous fuel from entering the Combustion Turbine or duct burner in accordance with the following requirements:
(1)* Combustion turbine normal shutdown.
(2) Air or inert gas shall be introduced to create ~~and maintain~~ a pressurized pipe section between the middle and most downstream block valves.
(3) Fuel gas block and vent valve positions shall be continuously monitored. If continuous monitoring is lost or any valve deviates from its assigned position, Purge Credit is lost and subsequent start of the Combustion Turbine requires a Combustion Turbine Purge prior to light-off in accordance with 8.8.4.2.
(4) Pressures in the two double block and vent pipe sections shall be continuously monitored. If the continuous monitoring is lost or the differential pressure ~~downstream of~~ across the middle block valve ~~decreases~~ increases ~~to less~~ more than 3 psid ~~above the upstream pressure~~, Purge Credit is lost and subsequent start of the Combustion Turbine requires a Combustion Turbine Purge prior to light-off in accordance with 8.8.4.2.
(5) Combustion Turbine Purge Credit period is maintained as long as the conditions in 8.8.4.6.2 ~~(2),~~ (3)~~,~~ and (4) are met.
(6) Provisions shall be made to ensure that fuel cannot enter the air or inert gas supply line at any time.
8.8.7.4 When establishing a combustion turbine purge credit in accordance with 8.8.4.6.2, the following procedure shall be implemented for gaseous fuels (System 2):
(A) Open both vent valves of the combustion turbine and duct burner fuel supply.
(B) Admit the blocking medium to purge any remaining fuel until the fuel level is less than 25% of the LEL.
(C) Close both vent valves and the middle block valve creating high pressure plugs ~~the downstream (header) vent valve~~.
(D) Close the air or inert gas supply. ~~Establish and maintain the required blocking pressure~~
(E) Monitor the differential pressure across the middle block valve and the pressure between the upstream and middle block valves.
Substantiation: If air or inert gas pressure is maintained between the middle and downstream block valves, differential pressure monitoring will not detect a leak, assuming air or inert gas pressure was established upstream of the middle block valve. By charging up the system from the upstream through downstream block valves, then closing the middle block valve and isolating the air or inert gas; two high pressure plugs are created and valve integrity can be monitored. Text was modified to portray this arrangement.
From the original text of 8.8.4.6.2 (4) it is not clear what the intended pressure is, during the Purge Credit, between the upstream and middle block valves (between V1 and V2 in diagram). Whether that cavity is vented down to atmospheric pressure or at air or inert gas pressure. If atmospheric pressure, the accuracy of detecting a change from atmospheric pressure would be difficult with a transmitter that also has to measure full line pressure to the combustion turbine. Also, DPT would be a large value and difficult to detect a deviation. If established at air or inert gas pressure, then the DPT could detect a leaking vent valve (V4). However, the text says to monitor pressure downstream of the middle block valve for a decrease to less than 3 psid above the upstream pressure (??).
If the high pressure plug is only created but not maintained, text in 8.8.4.6.2 (5) would be changed by deleting a reference to (2).
In 8.8.7.4 reference to the combustion turbine should be added. System 2 is intended for both the combustion turbine and duct burner as stated in 8.8.4.6.2. Other proposed text revisions are intended to avoid ambiguity to 8.8.4.6.2. An option for the committee is to move 8.8.7.4 to the appendix suggesting a possible means to setup and monitor the high pressure plug with clear step-by-step references to the diagram in a similar manner as done for System 1.
Committee Meeting Action: Accept in Principle in Part
A.8.8.4.6.2 See Figure A.8.8.4.6.2. The intent of this section is to maintain an air or inert gas plug in the fuel piping to prevent fuel from entering the combustion turbine or HRSG, and not to prove valve leak-tightness.
8.8.7.4 When establishing a Combustion Turbine Purge Credit in accordance with 8.8.4.6.2, the following procedure shall be implemented prior to combustion turbine shutdown for duct burners utilizing gaseous fuels (System 2) :
Committee Statement: In discussion with the submitter, the actual concern on section 8.8.4.6.2 related to valve proving, not the air or inert gas plug. The committee developed the annex material to make it clear to users that the intent of describing system 2 is only to establish the air or inert gas plug, and not to verify leak-tightness of the valves. The modifications submitted would have resulted in changing the intent of the requirements from establishing an air or inert gas plug to a valve-proving system.
The committee discussed the requirements in 8.8.7.4, as the submitter was concerned that this section would apply only to duct burners. The TC rejected those changes because 8.8.7.4 is not intended to cover shutdown of combustion turbines and 8.8.4.6.2(1) requires the combustion turbine to complete a normal shutdown. The committee also changed the wording in the parent paragraph to make it clear that 8.8.7.4 applies only to duct burners.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-32 Log #CC504 BCS-HRS **Final Action: Hold (8.8.4.6.2.3)**

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-109
Recommendation: Revise text to read as follows:
8.8.4.6.2.3* System 3 Liquid Fuels with pressurized pipe section. Triple Block and Double Drain valve arrangement filled with an inert gas or air and maintained at a pressure that prevents liquid fuel from entering the combustion turbine or duct burner in accordance with the following requirements:
(1)* Combustion turbine normal shutdown shall be completed
(2), (3), (4) remain unchanged
~~(5) Combustion Turbine Purge Credit period is maintained as long as the conditions in 8.8.4.6.3(2), (3), and (4) are met.~~
(56) Provisions shall be made to ensure that fuel cannot enter the air or inert gas supply line at any time.
A.8.8.4.6.2.3 See Figure A.8.8.4.6.2.3. The intent of this section is to maintain an air or inert gas plug in the fuel piping to prevent fuel from entering the combustion turbine or HRSG, and not to prove valve leak tightness. The Combustion Turbine Purge Credit can be maintained as long as the conditions in 8.8.4.6.2.2 are met.
8.8.4.6.3 ~~In addition a~~ A positive means to prevent leakage of ammonia into ~~the~~ an idle HRSG or other combustion turbine exhaust system shall be provided in accordance with Section 4.6.9.
Substantiation: The committee modified the wording to clarify ambiguities in the text.
Committee Meeting Action: Hold
Committee Statement: The committee holds this comment because it is new material that has not had the benefit of public review.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-33 Log #CC505 BCS-HRS **Final Action: Accept (8.8.4.6.3)**

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-109
Recommendation: Add text as follows:
8.8.4.6.3.1 An inert liquid shall be permitted to be used in lieu of inert gas if acceptable to the original equipment manufacturer.
Substantiation: The technical committee reviewed a presentation by GE regarding existing designs utilizing water injection in the liquid fuel supply, including publicly available documentation such as: http://en.wikipedia.org/wiki/General_Electric_LM6000 and http://www.powergenworldwide.com/index/display/articledisplay/0873804673/articles/cogeneration-and-on-site-power-production/volume-11/issue-1/features/utilizing-associated/utilizing-associated.html.
The Technical Committee agreed that the ROP language would restrict the use of a liquid to establish the plug for a liquid fuel system, and modified requirements to permit the use of an inert liquid so that original equipment manufacturers whose systems include water/fuel mixtures may utilize the readily-available inert fluid for this application.
Committee Meeting Action: Accept
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-34 Log #13 BCS-HRS **Final Action: Accept in Principle in Part (8.8.4.6.3 and 8.8.7.5)**

Submitter: Gordon G. Gaetke, The Dow Chemical Company
Comment on Proposal No: 85-109
Recommendation: Revise text:

8.8.4.6.3* System 3 Liquid Fuels with pressurized pipe section. Triple Block and Double Drain valve arrangement filled with an inert gas or air and maintained at a pressure that prevents liquid fuel from entering the Combustion Turbine or duct burner in accordance with the following requirements:

(1)* Combustion turbine normal shutdown.

(2) Air or inert gas shall be introduced to create ~~and maintain~~ a pressurized pipe section between the middle and most downstream block valves.

(3) Liquid fuel block and drain valve positions shall be continuously monitored. If continuous monitoring is lost or any valve deviates from its assigned position, Purge Credit is lost and subsequent start of the Combustion Turbine requires a Combustion Turbine Purge prior to light-off in accordance with 8.8.4.2.

(4) Pressures in the two double block and drain pipe sections shall be continuously monitored. If the continuous monitoring is lost or the differential pressure ~~downstream of~~ across the middle block valve ~~decreases~~ increases ~~to less~~ more than 3 psid ~~above the upstream pressure~~, Purge Credit is lost and subsequent start of the Combustion Turbine requires a Combustion Turbine Purge prior to light-off in accordance with 8.8.4.2.

(5) Combustion Turbine Purge Credit period is maintained as long as the conditions in 8.8.4.6.3 ~~(2),~~ (3)~~,~~ and (4) are met.

(6) Provisions shall be made to ensure that fuel cannot enter the air or inert gas supply line at any time.

8.8.7.5 When establishing a combustion turbine purge credit in accordance with 8.8.4.6.3, the following procedure shall be implemented for liquid fuels (System 3) after scavenging in accordance with section 8.8.2.6:

(A) Open both drain valves of the combustion turbine and duct burner fuel supply.

(B) Admit the blocking medium to purge any remaining fuel.

(C) Close both drain valves and the middle block valve creating high pressure plugs ~~the downstream (header) vent valve~~.

(D) Close the air or inert gas supply. ~~Establish and maintain the required blocking pressure~~

(E) Monitor the differential pressure across the middle block valve and the pressure between the upstream and middle block valves.

Substantiation: If air or inert gas pressure is maintained between the middle and downstream block valves, differential pressure monitoring will not detect a leak, assuming air or inert gas pressure was established upstream of the middle block valve. By charging up the system from the upstream through downstream block valves, then closing the middle block valve and isolating the air or inert gas; two high pressure plugs are created and valve integrity can be monitored. Text was modified to portray this arrangement.

From the original text of 8.8.4.6.3 (4) it is not clear what the intended pressure is, during the Purge Credit, between the upstream and middle block valves (between V1 and V2 in diagram). Whether that cavity is vented down to atmospheric pressure or at air or inert gas pressure. If atmospheric pressure, the accuracy of detecting a change from atmospheric pressure would be difficult with a transmitter that also has to measure full line pressure to the combustion turbine. Also, DPT would be a large value and difficult to detect a deviation. If established at air or inert gas pressure, then the DPT could detect a leaking drain valve (V4). However, the text says to monitor pressure downstream of the middle block valve for a decrease to less than 3 psid above the upstream pressure (??).

If the high pressure plug is only created but not maintained, text in 8.8.4.6.3 (5) would be changed by deleting a reference to (2).

In 8.8.7.5 reference to the combustion turbine should be added. System 2 is intended for both the combustion turbine and duct burner as stated in 8.8.4.6.3. Other proposed text revisions are intended to avoid ambiguity to 8.8.4.6.3. An option for the committee is to move 8.8.7.5 to the appendix suggesting a possible means to setup and monitor the high pressure plug with clear step-by-step references to the diagram in a similar manner as done for System 1.

Committee Meeting Action: Accept in Principle in Part

A.8.8.4.6.3 See Figure A.8.8.4.6.3. The intent of this section is to maintain an air or inert gas plug in the fuel piping to prevent fuel from entering the combustion turbine or HRSG, and not to prove valve leak tightness.

8.8.7.5 When establishing a Combustion Turbine Purge Credit in accordance with 8.8.4.6.3, the following procedure shall be implemented prior to combustion turbine shutdown for duct burners utilizing liquid fuels (System 3):

Committee Statement: In discussion with the submitter, the actual concern on section 8.8.4.6.3 related to valve proving, not the air or inert gas plug. The committee developed the annex material to make it clear to users that the intent of describing system 3 is only to establish the air or inert gas plug, and not to verify leak-tightness of the valves. The modifications submitted would have resulted in changing the intent of the requirements from establishing an air or inert gas plug to a valve-proving system.

The committee discussed the requirements in 8.8.7.5, as the submitter was concerned that this section would apply only to duct burners. The TC rejected those changes and 8.8.7.5 is not intended to cover shutdown of combustion turbines because 8.8.4.6.3(1) requires the combustion turbine to complete a normal shutdown. The committee also changed the wording in the parent paragraph to make it clear that 8.8.7.5 applies only to duct burners.

Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-35 Log #CC503 BCS-HRS **Final Action: Hold (8.8.7.2 (New))**

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-109
Recommendation: Revise text to read as follows:

8.8.7.2 All duct burner fuel supply vent valves shall be opened.

Renumber subsequent sections.

Substantiation: The committee recognizes that there is no specific requirement to open the vent valves on a normal duct burner shutdown. The committee believes that this is good engineering practice.

Committee Meeting Action: Hold
Committee Statement: The committee is holding this comment because it is new material that has not had the benefit of public review.
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-36 Log #1 BCS-PFS **Final Action: Accept in Principle in Part (9.4.5.2.1(a) and 9.4.5.2.1)**

Submitter: Vincent Grosskopf, Thorwesten Vent GmbH
Comment on Proposal No: 85-114 & 85-115
Recommendation: 85-114, (Log #68) BCS-PFS

As an example of actualization of the figures relative to storage firing systems for power generation and other industries replace fig. 9.4.5.2.1(a) by the modified (modification yet to be re-edited as to have the NFPA style) version sent in by Grosskopf and decide on revision and actualization of the series of Figures 9.4.5.2.1(a) through 9.4.5.2.1(g), all of which are showing storage firing systems.

Rewrite text as to be consistent with the new figures.

Nevertheless, an effort to follow the request to modify the text as to be consistent with the modified fig. 9.4.5.2.1(a):

9.4.5.2 Storage-Firing Systems.

9.4.5.2.1 These systems, as shown in Figure 9.4.5.2.1(a) through Figure 9.4.5.2.1(g), shall be arranged to permit partial or complete venting of the pulverizer air and water vapor after separating the pulverized fuel in cyclones or other types of dust collectors.

~~**9.4.5.2.2** In addition to the components of a direct fired system as listed under 9.4.5.1, a typical storage system shall include some or all of the following equipment:~~

~~(1) Cyclone separator~~
~~(2) Dust collector (e.g. cyclone vent collector)~~
~~(3) Vent fan~~
~~(4) Cyclone pressure lock~~
~~(5) Transport system (e.g. pulverized fuel pump, piping, and valves)~~
~~(6) Pulverized fuel bins~~
~~(7) Pulverized fuel feeders~~
~~(8) Auxiliary air damper~~
~~(9) Primary air fan/List~~

Of this text, as result of replacing the original Figure 9.4.5.2.1(a) by the modified Figure 9.4.5.2.1(a), the following would have to be changed:

9.4.5.2.2 In addition to the components of a direct fired system as listed under 9.4.5.1, a typical storage system shall include some or all of the following equipment:

~~(1) cyclones,~~ dust collector (From the explosion protection point of view cyclones should be avoided, since difficult to protect, separators could be understood as already listed as classifiers, under 9.4.5.1.)
~~(2) Dust collector (e.g. cyclone vent collector)~~
~~(3) Vent fan~~
~~(4) Cyclone pressure lock~~

(5) Transport system from the separator, cyclone, and dust collector to the pulverized fuel bin (pulverized fuel pump, piping, and valves or mechanical conveying system)

(6) Pulverized fuel bins
(7) Pulverized fuel feeders
(8) ~~Auxiliary air damper~~ (dampers are already listed under 9.4.5.1)
(9) ~~Primary air fan~~ (main fan, already listed as Pulverizer air fan or exhauster)

85-115, (Log #13) BCS-PFS

Modify text of Chapter 9.4.6 through 9.4.6.2.1.2 as to be consistent with the currently common general knowledge of industrial protection against dust explosions. Such a modified version of the text has been prepared and made available to BCS-PFS on July 19, 2009, by Grosskopf.

Substantiation: 85-114, Log #68 BCS-PFS

The committee should have acted taking a stronger interest in typical examples of storage firing (fuel grinding) systems as in use in other industries.

The drawing submitted by Grosskopf is an example of a typical storage firing system in the cement industry and would need an appropriate make-over by NFPA in order to fit in style. Different from what has been said during the teleconference on August 3, no components are missing in the drawing. The proposed modified drawing (fig. 9.4.5.2.1(a) shows the actual version of such systems as they would be designed by reputable cement engineering organizations like FLSmidth, Inc. in Bethlehem, Pennsylvania and many others. Similar systems can be found in ore processing and other industries that operate kilns.

Fig. 5-3 on page 41, Recommended Guidelines for Solid Fuel Use in Cement Plants by PCA (Portland Cement Association, Skokie, Illinois, 2007 is referred to as an example.

If it was felt that fig. 9.4.5.2.1(a) is still actual and typical in power generation or other industries, all that would speak against leaving the unmodified version in place is that correct explosion protection for the unmodified configuration would be complicated and could, due to the many flame front propagation paths in it, hardly be left uncommented in some form or another, by Chapter 9.

Parallel to the a. m. modified drawing 9.4.5.2.1(a), which shows a typical vertical roller mill system, an example of a typical horizontal ball mill with a mill-external dynamic separator would be adequate.

The modification of the existing drawing fig. 9.4.5.2.1(a) by Grosskopf shows a system with positive pressure pneumatic conveying from the dust collector to the pulverized fuel bin. It could just as well be a mechanical conveying system with a horizontal screw conveying and the necessary explosion isolation in form of, e. g., rotary airlocks. The version with the mechanical conveying system would have demanded changes in the overall structure of the drawing, which would have cost more time to do. This is the reason why Grosskopf chose to show the system with positive pressure pneumatic conveying.

It is obvious that the introduction of other examples and their embedding in the existing document in a way that leaves Chapter 9 whole and balanced will be a lot of work.

85-115, Log #13 BCS-PFS

Chapter 9 in its present form doesn't cover its Application, 9.1.

9.1.1 speaks of fuels with a volatile content of 8 percent or greater only for one reason: The chapter is meant to deal with explosion hazards and with the protection against those hazards. Also see 9.3.1.1.

Chapters 5 through 12 from Recommended Guidelines for Solid Fuel Use on Cement Plants, Portland Cement Association PCA (USA), Skokie, Illinois, 2007, ISBN 0-89312-245-8 - 978-0-89312-245-6 are an example of guidelines that cover explosion and fire hazards, although especially for the situations that will be found in the cement industry. Chapters 1 through 4 are also relevant. However, their content is, dealing with issues that are not dealt with in Chapter 9.4.6 through 9.4.6.2.1.2. The Chapters 5 through 12 are dealing with a multitude of issues, but the area of concern is closely related to the area of concern of NFPA 85, Chapter 9.4.6 through 9.4.6.2.1.2. An effort to make the PCA publication available to BCS-PFS is on its way.

In its present form, Chapter 9 is not clear enough about the applicable basics of constructional explosion protection, which is more than just strength requirements. Apart from a statement about a pressure shock resistance requirement (designed to withstand an internal explosion gauge pressure of 344 kPa/50 psi) for certain parts is made, too little is said about the overall design-relevant phenomena that can be caused by a deflagration.

As a chapter that is meant to deal with explosion hazards, some of the essential basics are not referred to, or referred to in an obscure way. E.g.: 9.4.6.1.3 Shock wave pressures shall be included in the design, based on their locations in the system.

Apart from the fact that shock waves will hardly have a location and, according to the explosion protection literature, are phenomena that come with detonations, which Chapter 9 definitely doesn't deal with, it is necessary to connect the occurrence of propagation-related, violent pressure shocks (not waves) to the phenomena that, apart from non-propagating deflagrations in enclosures, can affect fuel grinding systems, namely flame front propagation, accelerating flame front propagation and the resulting pressure piling.

The need for explosion isolation in certain parts of storage firing fuel grinding systems also cannot be left out of what Chapter 9 has to say.

Committee Meeting Action: Accept in Principle in Part

See marked up drawing 85 BCS-PFS (Log #1). Existing 9.4.5.2.1(c) should be re-labeled 9.4.5.2.1(c-1). New diagram as shown below 9.4.5.2.1(c-2).

9.4.5.2.2 In addition to the components of a direct fired system as listed under 9.4.5.1, a typical storage system shall include some or all of the following equipment:

(1)* ~~cyclones,~~ Dust collector ~~(From the explosion protection point of view cyclones should be avoided, since difficult to protect, separators could be understood as already listed as classifiers, under 9.4.5.1.)~~

(2) ~~Dust collector (e.g.~~ cyclone vent collector~~)~~

(3) Vent fan

(4) ~~Cyclone~~ Dust collector pressure lock

(5) Transport system from the separator, cyclone, and dust collector to the pulverized fuel bin (pulverized fuel pump, piping, and valves or mechanical conveying system)

(6) Pulverized fuel bins

(7) Pulverized fuel feeders

~~(8) Auxiliary air damper~~

~~(9) Primary air fan~~

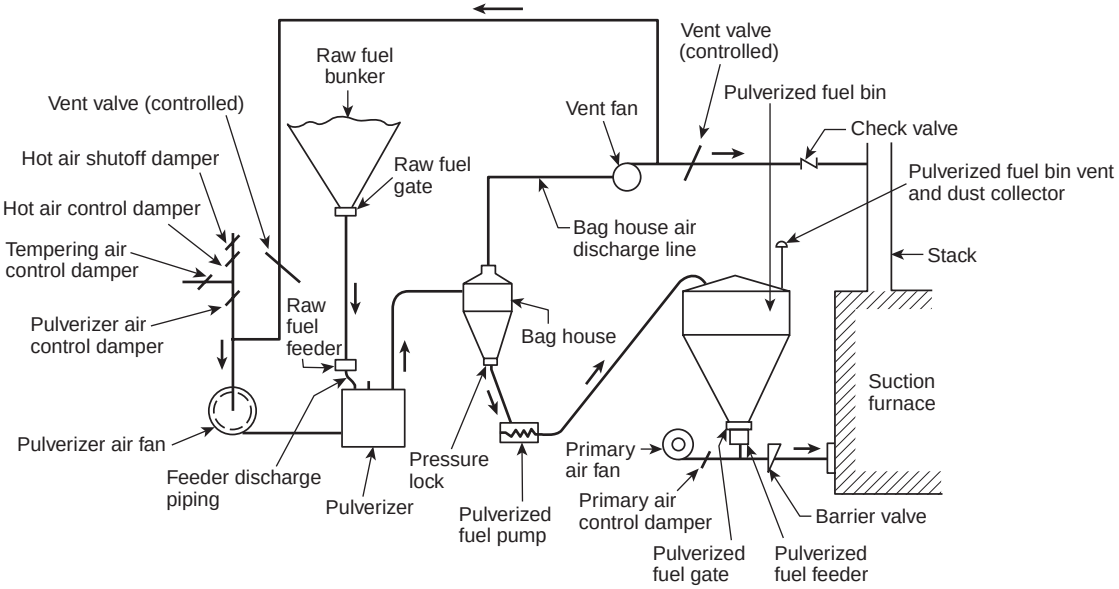

Figure 9.4.5.2.1(c-2) Pulverized Fuel Storage Firing System: Partial Recirculation - Vented Air to Stack

Committee Statement: The Committee recognizes that it is beneficial to show an alternate typical system utilizing a bag house instead of a cyclone dust collector. However, the diagram submitted during the ROP phase did not reflect all the requirements of the existing Code. The Committee created a new figure (9.4.5.2.1(c-2)) and modified the mandatory text to be more generic for dust collectors.

The Committee did not modify the drawing or text to reflect other industries, such as the rotary kilns. The comment as presented is more directed toward application in the kilns section (9.6.4) and the supplied text doesn't relate to that section. However, the Committee accepted the concept of the more generic dust collector for section 9.4.5.2.1.

Number Eligible to Vote: 13
Ballot Results: Affirmative: 10
Ballot Not Returned: 3 Eastman, R., Hossfeld, R., Wehe, F.
Comment on Affirmative:

DERUYTER, J.: ROC Committee Meeting Action section changes should read "9.4.5.2.1.2 In addition to the components..." instead of the current wording "9.4.5.2.2 In addition to the components..." (Also, the section reference for this comment above should be "9.4.5.2.1(c)" instead of "9.4.5.2.1(a)" for the correct figure reference).

MARTIN, W.: Paragraph should be 9.4.5.2.1.2.

PRANITIS, J.: The Committee Meeting Action indicates changes to be made to Section 9.4.5.2.2. Reference to this section is incorrect. It should reference changes to be made to Section 9.4.5.2.1.2.

SKINKER, C.: Please confirm if section 9.4.5.2.2 referenced under ROC 85-36 (Log#1) BCS-PFS should actually be 9.4.5.2.1.2. This reference appears under the Submitter Recommendation and the Committee Meeting Action.

85-37 Log #3 BCS-PFS **Final Action: Hold**
(9.4.6 through 9.4.6.2.1.2)

TCC Action: The BCS-AAC TCC modified the TC action from Accept in Principle in Part to "hold". As noted in the negative TC ballots, the wording as currently proposed creates conflicts between the requirements of NFPA 85, 68 and 69 that are not resolvable. The BCS-PFS TC needs to study this further for the next cycle. It is the understanding of the TCC that the BCS-PFS TC has established a task group to study issues related to direct and indirect fired systems, and that task group should include this issue in its scope.
Submitter: Vincent Grosskopf, Thorwesten Vent GmbH
Comment on Proposal No: 85-115
Recommendation: Revise text as follows:

9.4.6 Pulverizer System Component Design Requirements.

9.4.6.1 Strength of Equipment.

9.4.6.1.1 ~~All~~ The components of the pulverized fuel system as ~~described~~ listed in 9.4.6.1.4.2 that are designed to be operated at no more than gauge pressure of 13.8 kPa (2 psi), shall be designed to withstand an internal explosion gauge pressure of 344 kPa (50 psi) for containment of explosion pressure~~s~~ that is mitigated as result of the space available in form of duct connections of the pulverizer's air inlet and air & ground fuel outlet, which enables expansion of the air.

Those components listed in 9.4.6.1.4.2 in which the air, in case of a deflagration, cannot expand into adjoining duct connections that offer sufficient pressure-mitigating volume have to be designed for containment of the full fuel-specific maximum explosion pressure.

Exposure to pressure shocks as result of flame front propagation and exposure to elevated explosion pressure as result of pressure piling shall be mitigated by adequate constructional explosion protection, or be included in the design of those components that can be affected by these phenomena, based on their locations in the system. These components are listed in 9.4.6.1.4.3.

9.4.6.1.1.1 For operating gauge pressures in excess of 13.8 kPa (2 psi), the equipment as described in 9.4.6.1.4.2 shall be designed to withstand an internal explosion that is ignited under the condition elevated initial pressure.
The explosion pressure a design then has to take into account is 344 kPa (50 psi) multiplied by

$$\frac{\text{operating gauge pressure} - 100\ \text{kPa (14.5 psi)}}{100\ \text{kPa (14.5 psi)}}$$

Pressure mitigation as result of the availability of duct volume for air expansion in case of deflagration in the pulverizer can be taken into account. The reinforcing effects of pressure shock-accompanied flame front propagation and pressure piling on possible explosion pressure have to be taken into account by the design.

9.4.6.1.2 Equipment design strength shall incorporate the combined stresses from mechanical loading, operating, and explosion and implosion pressures plus an allowance for wear, which shall be determined by agreement between the manufacturer and the purchaser.

~~**9.4.6.1.3*** Shock wave pressures shall be included in the design, based on their locations in the system.~~

* refers to:

~~**A.9.4.6.1.3** Some parts of the pulverized fuel system, such as large flat areas and sharp corners, can be subjected to shock wave pressures.~~

9.4.6.1.3 All interconnected equipment in which a deflagration in one component can affect connected components shall be equipped with explosion isolation in accordance with NFPA 69, *Standard on Explosion Prevention Systems* or be adequately protected otherwise. The explosion isolation equipment shall at least effectively prevent the possibility of flame jet ignition in adjacent equipment.

9.4.6.1.4 Components

9.4.6.1.4.1 The components falling within the requirements of 9.4.6.1.1 through 9.4.6.1.2 ~~for a direct-fired system~~ shall begin at a point that is 0.61 m (2 ft) above the inlet of the raw fuel feeder, at the point of connection of ductwork to the pulverizer, and at the seal air connections to the pulverizer system, and they shall end at the discharge of the pulverizer, external classifier, or exhauster.

Exposure to pressure shocks and elevated explosion pressure as result of flame front propagation with subsequent pressure piling shall be included in the design of those components that can be affected by explosion propagation, based on their locations in the system.

9.4.6.1.4.2 These components shall include the following and any associated devices:

(1) Raw fuel feeding devices, discharge hoppers, and feed pipes to the pulverizer

(2) All parts of the pulverizer that are required for containment of internal pressure

~~(3) Exhauster and connecting piping from the pulverizer~~

~~(4) External classifiers and connecting piping from the pulverizer~~

(3) Foreign material-collecting hoppers that are connected to the pulverizer

9.4.6.1.4.3 Special pressure shock resistance requirements apply to the design of the following and associated components, which can be exposed to dynamic effects of pressure shock-accompanied flame front propagation and to elevated explosion pressure that results from pressure piling:

(1) Piping for process air that carries pulverized fuel from the pulverizer

(2) External classifiers and other air/pulverized fuel-separating equipment like cyclones and dust collectors

(3) All piping carrying pulverized fuel between all stages of air/pulverized fuel separation

If constructional explosion protection in the form of a pressure-mitigating technique is installed, the mitigation of the a. m. effects can be included in the design.

9.4.6.1.4.~~3~~4 The raw fuel bunker and mechanical components, including but not limited to seals, gears, bearings, shafts, and drives, shall not be required to meet these requirements.

9.4.6.1.5 Explosion vents shall not be used on the pulverizer, on the pulverizer's air inlet duct system and on the pulverizer's foreign material collecting system ~~any component of the system that is described in 9.4.6.1.4~~.

9.4.6.1.6* All ductwork, from the hot and tempering air supply ducts to individual pulverizers, including damper frames, expansion joints, supports, and hot primary air fans, shall be designed to contain ~~the test block capability of the pulverizer air supply fan~~ the explosion pressure that affects them when a deflagration in a pulverizer occurs.

* refers to:

~~**A.9.4.6.1.6** This ductwork is exposed to explosion pressures from the pulverizer in the event of an explosion.~~

9.4.6.1.7 Inert Atmosphere

9.4.6.1.7.1 If a pulverized fuel storage system is started and operated with an inert atmosphere in all parts of the system in accordance with NFPA 69, *Standard on Explosion Prevention Systems*, the strength requirements of ~~9.4.6.1.1~~ 9.4.6.1 shall not apply.

9.4.6.1.7.2 Any component of the system that is started and operated with an inert atmosphere shall not be required to comply with the strength requirements of ~~9.4.6.1.1~~ 9.4.6.1.

9.4.6.1.8 Noninert Atmosphere

9.4.6.1.8.1 A pulverized fuel storage system that is not started and operated with an inert atmosphere in accordance with NFPA 69, *Standard on Explosion Prevention Systems*, shall meet the requirements of ~~9.4.6.1.1~~ 9.4.6.1.

9.4.6.1.8.2 The components falling within these requirements shall be those described in 9.4.6.1.4, plus any or all of the following that are included in the system:

~~(1) Lock hoppers~~ Pulverized fuel silos and bins

~~(2) Circulating fans~~ Silo-top nuisance- and general purpose dedusting filters

~~(3) Transport systems~~ Lock hoppers

~~(4) Pulverized fuel feeders~~ Circulating fans

~~(5) Primary air fans handling fuel-laden air~~ Transport systems

~~(6) Vent fans if not located downstream of a dust collector that is vented in accordance with 9.4.6.1.9~~ Pulverized fuel feeders

(7) Primary air fans handling fuel-laden air

(8) Vent fans ~~if not located downstream of a dust collector that is vented in accordance with 9.4.6.1.9~~

9.4.6.1.8.3 All interconnected equipment in which a deflagration in one component can affect connected components shall be equipped with explosion isolation in accordance with NFPA 69, *Standard on Explosion Prevention Systems* or be adequately protected otherwise. The explosion isolation equipment shall at least effectively prevent the ignition of flame jet ignition in adjacent equipment.

9.4.6.1.9* In a pulverized fuel storage system that is not started and operated with an inert atmosphere in accordance with NFPA 69, *Standard on Explosion Prevention Systems*, the following equipment shall ~~meet the requirements 9.4.6.1.1 or shall be equipped with suitable vents~~ be protected by constructional explosion protection in the form of containment, explosion venting or explosion suppression, in combination with explosion isolation where

necessary, in accordance with NFPA 69, *Standard on Explosion Prevention Systems* and with NFPA 68, *Standard on Explosion Protection by Deflagration Venting*, respectively:

~~(1) Cyclone~~ External separators

~~(2) Dust collectors~~ Cyclones

~~(3) Pulverized fuel bins~~ Dust collectors

(4) Pulverized fuel bins

* refers to:

~~**A.9.4.6.1.9** See NFPA 68, *Standard on Explosion Protection by Deflagration Venting*.~~

9.4.6.1.10* Explosion vents shall not be used on the feeder or pulverizer of any system.

9.4.6.2 Piping

9.4.6.2.1 General

~~**9.4.6.2.1.1** For systems that are normally operated at a gauge pressure no more than 13.8 kPa (2 psi), the pulverized fuel piping from the outlet of the equipment, as defined in 9.4.6.1.4 and 9.4.6.1.9, to the pulverized fuel burner or storage bin shall comply with 9.4.6.1.~~

The explosion pressure resulting from a deflagration in a pulverizer affects the hot and tempering air supply ducts and their integrated components which their design has to include.

~~**9.4.6.2.1.2** Systems that are operated at a gauge pressure greater than 13.8 kPa (2 psi) shall be designed to withstand an internal explosion of 3.4 times the absolute operating pressure.~~ Flame front propagation is possible downstream of the outlet of the pulverizer. All the interconnections between components through which air-suspended pulverized fuel may flow can be affected. Flame front propagation as result of a deflagration in a system can be accompanied by a pressure shock that affects the pipe's wall and its flange connections both as radial- and as pulse force in the direction of the propagation. Where pipes change their direction, their support- or suspension points will be affected by deflagration-induced pulse forces. The design of piping shall include these forces.

Substantiation: Modified text is proposed as to make the text of 9.4.6 through 9.4.6.2.1.2 consistent with the currently common general knowledge of industrial protection against dust explosions.

Chapter 9 in its present form doesn't cover its Application, 9.1.

9.1.1 speaks of fuels with a volatile content of 8 percent or greater only for one reason: The chapter is meant to deal with explosion hazards and with the protection against those hazards. Also see 9.3.1.1.

Chapters 5 through 12 from Recommended Guidelines for Solid Fuel Use on Cement Plants, Portland Cement Association PCA (USA), Skokie, Illinois, 2007, ISBN 0-89312-245-8 - 978-0-89312-245-6 are an example of guidelines that cover explosion and fire hazards, although especially for the situations that will be found in the cement industry. Chapters 1 through 4 are also relevant. However, their content is, dealing with issues that are not dealt with in Chapter 9.4.6 through 9.4.6.2.1.2. The Chapters 5 through 12 are dealing with a multitude of issues, but the area of concern is closely related to the area of concern of NFPA 85, Chapter 9.4.6 through 9.4.6.2.1.2. An effort to make the PCA publication available to BCS-PFS is on its way.

In its present form, Chapter 9 is not clear enough about the applicable basics of constructional explosion protection, which is more than just strength requirements. Apart from a statement about a pressure shock resistance requirement (designed to withstand an internal explosion gauge pressure of 344 kPa/50 psi) for certain parts is made, too little is said about the overall design-relevant phenomena that can be caused by a deflagration.

As a chapter that is meant to deal with explosion hazards, some of the essential basics are not referred to, or referred to in an obscure way. E. g.: 9.4.6.1.3 Shock wave pressures shall be included in the design, based on their locations in the system.

Apart from the fact that shock waves will hardly have a location and, according to the explosion protection literature, are phenomena that come with detonations, which Chapter 9 definitely doesn't deal with, it is necessary to connect the occurrence of propagation-related, violent pressure shocks (not waves) to the phenomena that, apart from non-propagating deflagrations in enclosures, can affect fuel grinding systems, namely flame front propagation, accelerating flame front propagation and the resulting pressure piling.

The need for explosion isolation in certain parts of storage firing fuel grinding systems also cannot be left out of what Chapter 9 has to say.

Committee Meeting Action: Accept in Principle in Part

9.4.6.1.8.1 A pulverized fuel storage system that is not started and operated with an inert atmosphere in accordance with NFPA 69, Standard on Explosion Prevention Systems, shall meet the requirements of 9.4.6.1.1 and shall be protected in accordance with NFPA 68 and NFPA 69.

9.4.6.1.9* In a pulverized fuel storage system that is not started and operated with an inert atmosphere in accordance with NFPA 69, Standard on Explosion Prevention Systems, the following equipment shall meet the requirements of 9.4.6.1.1 and shall be protected in accordance with NFPA 68 and NFPA 69 ~~or shall be equipped with suitable vents~~:

(1) Cyclone

(2) Dust collectors

(3) Pulverized fuel bins

Committee Statement: The Committee added references to NFPA 68 and 69 to section 9.4.6.1.8 and 9.4.6.1.9 to address the submitter's concerns regarding explosion venting. The Committee rejected the bulk of the detailed information because much of it is covered in NFPA 68 and 69 and therefore should not be repeated in NFPA 85.

Number Eligible to Vote: 13

Ballot Results: Affirmative: 8 Negative: 2

Ballot Not Returned: 3 Eastman, R., Hossfeld, R., Wehe, F.

Explanation of Negative:

MARTIN, W.: The references to NFPA 68 and 69 create much confusion, because 85 chapter 9, 68 and 69 are not in agreement with each other. 85/9 and 69 result in different internal pressure design requirements. 85/9 and 69 both prohibit the use of explosion vents, thus contradicting 68. The intent is not clear, and the simple reference creates confusion.

PRANITIS, J.: The Committee Action does NOT make it clear where and when venting can and cannot be utilized. The existing language of the code is more clear but can be improved by adding reference in Section 9.4.6.1.9 to "... shall meet the requirements of 9.4.6.1.1 and NFPA 68".

Comment on Affirmative:

PATEL, K.: Para 9.4.6.1.9 is not required. The requirements have been already stated in Para 9.4.5.2.2 on Page 2 of Report on Comments- November 2010

URAL, E.: In response to Mr. Martin's negative, references to NFPA 68 and 69 were inserted to prevent the users from coming up with unreasonably dangerous system designs. Mr. Grosskopf's initial proposals, his additional drafts for committee proposals, and the subsequent committee discussions highlighted significant deficiencies in NFPA 85, and demonstrated that NFPA 85 can lead to unreasonably dangerous system designs. For example, Section 9.4.6 of NFPA 85 talked about pulverized fuel system design for containment of possible explosion pressures, and gave the false sense of security that components designed to withstand an internal explosion pressure of 50 psig (or 3.4 times the absolute operating pressure, if it is higher) will be adequate. However, none of the committee members knew where the 50 psig number came from. Even scarier was the fact that NFPA 85 made no mention of explosion isolation requirements recognized by modern NFPA standards. Complying fully with NFPA 68 or 69, as appropriate, will now provide the designers with more reliable parameters to accommodate.

85-38 Log #CC500 BCS-HRS **Final Action: Accept**
(A.8.8.4.6 (New))

Submitter: Technical Committee on Heat Recovery Steam Generators,
Comment on Proposal No: 85-109
Recommendation: Add new text as follows:

A.8.8.4.6 The initial concept of combustion turbine purge credit was presented to the Technical Committee on Heat Recovery Steam Generators in 2003. This concept was introduced due to the general industry trend to reduce the start up time for frequently cycling plants and concerns that the introduction of the cold purge air into the hot HRSG would have a negative impact on its long term reliability. In preparation for the 2007 edition, BCS-HRS members requested that the committee consider establishing procedures and equipment for purge credit, however, the material was not available for inclusion in that edition. The Technical Committee established a task group in 2006, and subsequent to that, the full BCS-HRS committee spent the next several years developing requirements to enable users to safely implement "rapid start" capability for HRSG equipment. The requirements for establishing purge credit in the 2011 edition of NFPA 85 represent the work of the task group and BCS-HRS technical committee.

Substantiation: The committee created an annex note for the new requirements to clarify how and why the requirements were developed.
Committee Meeting Action: Accept
Number Eligible to Vote: 21
Ballot Results: Affirmative: 15
Ballot Not Returned: 6 Bairley, D., Balsbaugh, R., Hinshaw, D., Lefton, S., Moore, B., Young, T.

85-39 Log #7 BCS-FUN **Final Action: Accept in Principle**
(A.4.1.5 (New))

Submitter: Dale P. Evely, Southern Company Services, Inc.
Comment on Proposal No: 85-116
Recommendation: New text to read as follows:

A.4.1.5 Locations at which natural gas, propane, or fuel oil systems are installed in compliance with this code normally are not considered hazardous locations for electrical equipment as defined in NFPA 70, *National Electrical Code*.

Substantiation: ROP item 85-116 Log #11 was rejected by the BCS-PFS TC but since it was meant to add new Chapter 4 material it should have been considered by the BCS-FUN TC but was not; this comment has been filed to allow that to happen. Since the submitter of this comment does not agree with the original proposal the above text reflects the ideas of the comment submitter and is meant to replace what was originally proposed by Mr. Cunningham. NFPA 70 general compliance is currently only mandated in Chapters 5, 8 and 9 of NFPA 85 and these requirements should not be generally extended to the other chapters. The general need to properly establish electrical area classifications is currently discussed in Annex A as a part of A.4.1 and A.4.6.5 (2) b and the above proposed material is meant to address Mr. Cunningham's additional concerns in this regard.

Committee Meeting Action: Accept in Principle

A.4.1.5 The installation of a boiler or HRSG in accordance with the requirements of this Code does not in and of itself require a change to the electrical classification of the boiler or HRSG location.

Committee Statement: The TC recognizes that there has been some confusion in the field related to the electrical classification of areas where boilers and HRSGs are installed. The TC adopted modified language from NFPA 86 that describes an analogous situation of installed ovens and furnaces. The TC believes that the installation of a boiler or HRSG does not impact the local area electrical classification.

Number Eligible to Vote: 24

Ballot Results: Affirmative: 20

Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-40 Log #CC101 BCS-FUN **Final Action: Accept**

(A.4.6.2.3.2.5(4))

Submitter: Technical Committee on Fundamentals of Combustion Systems Hazards,

Comment on Proposal No: 85-27

Recommendation: Revise as follows:

(4)* Components common to more than one boiler or HRSG shall not limit the rate of removal of products of combustion generated during the operation of all boilers or
HRSGs.

A.4.6.2.3.2.5 (4) The designer is cautioned that, when boilers or HRSGs share a common component between the furnace outlet and stack, a positive pressure at the tie-in point could create a reverse flow into a non-operating unit when at least one unit is in operation.

Substantiation: The TC agrees with the submitter in his proposal and comment (85-10 Log #25) that reverse flow may occur where boilers or HRSGs have a common component. The TC held the mandatory text in the comment for further study, but recognized the importance of capturing the concern in the annex for this edition.

Committee Meeting Action: Accept

Number Eligible to Vote: 24

Ballot Results: Affirmative: 20

Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-41 Log #11 BCS-FUN **Final Action: Accept**

(A.4.6.3(3))

Submitter: Gordon G. Gaetke, The Dow Chemical Company

Comment on Proposal No: 85-41

Recommendation: Revise text: (3) A documented life-cycle system ~~reliability~~ safety analysis that addresses all requirements of this Code and incorporates the appropriate application-based safety integrity level (SIL) for safety instrumented systems (SIS). One methodology for achieving a life-cycle system ~~reliability~~ safety analysis is to use a process that includes Safety Integrity Level (SIL) determination and a Safety Instrumented System (SIS) design and implementation consistent with the ISA 84 standard series.

Substantiation: Safety Integrity Level (SIL) assessments are a safety analysis, not reliability.

Committee Meeting Action: Accept

Number Eligible to Vote: 24

Ballot Results: Affirmative: 20

Ballot Not Returned: 4 Bosfield, C., Gilbert, J., Jablkowski, T., Young, T.

85-42 Log #23 BCS-SBB **Final Action: Accept in Principle**

(A.5.3.4.6.3 (New))

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,

Comment on Proposal No: 85-120

Recommendation: The TCC instructs the BCS-SBB TC to reconsider action on this proposal and adopt the language accepted by the BCS-FBB TC in proposal 85-126.

Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Committee Meeting Action: Accept in Principle

Analyzers may contain heated elements which exceed the auto-ignition temperature of many fuels. Zirconium oxide analyzers, commonly used for oxygen analysis, contain an element heated to 1300°F (704°C). This high temperature element presents a potential ignition source to unburned fuel which could be present at startup. Some analyzers are designed to protect the sampled space from the ignition source by providing flashback protection (such as flame arresters in sample gas path). Analyzers with that protection or that are not heated to auto-ignition temperature do not present an ignition hazard. ~~are permitted.~~

Committee Statement: The BCS-SBB accepts the TCC's recommendation and revises the wording to be consistent with that accepted by the BCS-FBB TC.

Number Eligible to Vote: 15

Ballot Results: Affirmative: 13

Ballot Not Returned: 2 Bosfield, C., Pinto, P.

85-43 Log #24 BCS-MBB **Final Action: Accept in Principle**

(A.6.4.2.3.4.6(2) (New))

Submitter: Technical Correlating Committee on Boiler Combustion System Hazards,

Comment on Proposal No: 85-121

Recommendation: The TCC instructs the BCS-MBB TC to reconsider action on this proposal and adopt the language accepted by the BCS-FBB TC in proposal 85-126.

Substantiation: This is a direction from the Technical Correlating Committee on Boiler Combustion System Hazard in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Committee Meeting Action: Accept in Principle

Analyzers may contain heated elements which exceed the auto-ignition temperature of ~~many~~ some fuels. Zirconium oxide analyzers, commonly used for oxygen analysis, contain an element heated to 1300°F (704°C). This high temperature element presents a potential ignition source to unburned fuel which could be present at startup. Some analyzers are designed to protect the sampled space from the ignition source by providing flashback protection (such as flame arresters in sample gas path).~~and skin temperatures rated at T2 (572°F / 300°C) or lower temperature rating. Analyzers without that protection will need to be proven off until a purge is successfully completed.~~ Analyzers with that protection or that are not heated to auto-ignition temperature do not present an ignition hazard.

Committee Statement: The BCS-MBB agrees that the BCS-FBB language is adequate and concise.

Number Eligible to Vote: 31

Ballot Results: Affirmative: 28

Ballot Not Returned: 3 Gamble, K., Hrul, B., Mehta, L.