SUPPLEMENTARY

Report of the Committee on
Boiler Combustion System Hazards

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This list represents the membership at the time the Committee was balloted
on the text of this edition. Since that time, changes in the membership
may have occurred.

Committee Scope: This committee shall have primary responsibility
for documents on the reduction of combustion system hazards in
commercial, industrial and utility boilers with a heat input rate of
12,500,000 Btu/hr and above. This includes all fuels or heat inputs
except nuclear. Also responsible for documents on reduction of
combustion system hazards in pulverized fuel systems, and stoker fired boilers with a
heat input rate of 400,000 Btu/hr and above.

The Supplementary Report of the Committee on Boiler Combustion System Hazards is presented for adoption.

This Supplementary Report was prepared by the Technical Committee on Boiler Combustion System Hazards and proposes for adoption a Supplementary Report which documents its action on the public comments received on the proposed NEPA 85H-1989, Standard for the Prevention of Combustion Hazards in Atmospheric Fluidized Bed Combustion System Boilers, published in the Technical Committee Reports for the 1993 Annual Meeting.

This Supplementary Report has been submitted to letter ballot of the Technical Committee on Boiler Combustion System Hazards which consists of 30 voting members; of whom 27 voted affirmatively, 1 abstained (Mr. Lundberg), and 2 ballot(s) were not returned (Messrs. Cunningham and Toomsalu).

Mr. Lundberg abstained for the following reasons:
1. I have not seen the final standard.
2. I disagree with the handling of fans and purge procedures.
85H-1 - (Entire Document): Accept

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Correct spelling of "igniter" throughout this document and in figures.

SUBSTANTIATION: Correct spelling is "igniter."

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: This will be handled editorially by NFPA staff.

85H-2 - (Entire Document): Accept in Principle

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Detail purge procedures at least as stringent as those in NFPA 8505 and NFPA 85C. Include inerting as an option for either the setting or the air ducts as appropriate.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: This will be handled editorially by NFPA staff.

85H-3 - (Title): Accept in Principle

SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Third line: change "operation" to "operator."

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-4 - (Title): Accept

SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise "furnace explosions" to "boiler explosions."

SUBSTANTIATION: Chapter 3 definition of furnace as the combustion chamber of the boiler. Explosions could occur in air duct work or the zone under the bed. These boilers often use duct burners and have the possibility of the release of combustibles in this area. Also 2-1.4 refers to "boiler explosion."

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The current wording is sufficient and descriptive.

85H-5 - (1-1.6): Accept

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change "it's" to "its."

SUBSTANTIATION: Spelling.

COMMITTEE ACTION: Accept.

85H-6 - (1-1.7 (New)): Accept

SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add new 1-1.7 and renumber accordingly. 1-1.7 Revisions to this document reflect the current state of knowledge and do not imply that previous editions were inadequate.

SUBSTANTIATION: Consistency with other 85 series standards. Editorial.

COMMITTEE ACTION: Accept.

85H-7 - (1-2.3): Accept

COMMITTEE ACTION: Accept in Principle.

85H-8 - (1-2.4): Reject

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Insert between "boiler" and "is" on the second line: "upon the design of the air and gas handling equipment"

SUBSTANTIATION: "The effect" in the first sentence is never qualified as to what is being affected.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The added wording would make the paragraph more restrictive than it is intended to be.

85H-9 - (1-2.4): Accept

SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise second sentence to read: "Coordination of the operating procedures and design of the boiler and the air quality control systems is required."

SUBSTANTIATION: Editorial. Simplifies sentence.

COMMITTEE ACTION: Accept.

85H-10 - (2-1.1): Reject

SUBMITTER: Donald L. Lueckenotte, Burns & McDonnell Engr. Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise "furnace explosions" to "boiler explosions."

SUBSTANTIATION: Chapter 3 definition of furnace as the combustion chamber of the boiler. Explosions could occur in air duct work or the zone under the bed. These boilers often use duct burners and have the possibility of the release of combustibles in this area. Also 2-1.4 refers to "boiler explosion."

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The current wording is sufficient and descriptive.
85H-11 - (2-1.2): Reject
SUBMITTER: Donald L. Lueckenotte, Burns & McDonnell Engr. Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise "furnace explosion" to "boiler explosion" in the first sentence.
SUBSTANTIATION: Explosions could occur in other areas than the furnace.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is sufficient and descriptive.

85H-12 - (2-1.3(a)): Accept
SUBMITTER: Donald L. Lueckenotte, Burns & McDonnell Engr. Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise "burners" to "auxiliary burners."
SUBSTANTIATION: Fluidized bed boilers don't normally have burners except where designed for load carrying. The more appropriate term would be auxiliary burners.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Burners is a more general and appropriate term.

85H-13 - (2-1.3(a)): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: "...followed by restoration and delayed reignition of accumulated combustibles."
SUBSTANTIATION: Fluidized bed boilers do not normally reignite, but combustibles can be reignited.
COMMITTEE ACTION: Accept.

85H-14 - (2-1.3(a) (New)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new 2-1.3(a) as follows and renumber present (a) through (f).
(a) Purging an explosive mixture into hot bed material that acts as a source of ignition. Bed material retains heat long after a boiler shutdown and may be an ignition source even if its exposed surfaces may have cooled.
SUBSTANTIATION: The present standard cautions about accumulation of combustibles and ignition by spark or other source. In fluidized bed boilers, the most likely source of ignition is the hot bed material!!! Reports of duct explosions indicate hot bed material as the ignition source for the explosion.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This is more appropriate wording and addresses the concerns of the submitter.

85H-15 - (2-1.3(b)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "auxiliary" with gaseous or liquid. SUBSTANTIATION: "Auxiliary fuel" is not defined. Any leakage of fuel from any source is hazardous.
COMMITTEE ACTION: Accept in Principle.
Instead of changing 2-1.3(b), add two new definitions as follows:
Fuel, Auxiliary. Fuel, generally gaseous or liquid, used to warm the bed material sufficiently to permit ignition of the main fuel upon injection into the heated bed material. May also be used to carry partial or full load as an alternate to the main fuel. Auxiliary fuels are fired in burners.
Fuel, Main. Gaseous, liquid or solid fuel introduced into the bed after bed temperature has reached a value sufficient to support its combustion and that is used during the normal operation of the boiler. Main fuels require the use of the fluidized hot bed as their ignition source.
COMMITTEE STATEMENT: The current wording of 2-1.3(b) is appropriate, and the new definitions meet the intent of the submitter.

85H-16 - (2-1.3(c)): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new 2-1.3(c) as follows and renumber present (e) and (f).
(e) The accumulation of an explosive mixture in the furnace or in plenums or ducts feeding combustion air to the furnace as a result of terminating air flow through an operating bed before the combustibles in the bed have been burned out and the ignition of the accumulation by a spark or other source of ignition.
SUBSTANTIATION: The present standard cautions about accumulation of combustibles due to feeding fuel into a bed whose temperature is below the ignition temperature for the fuel. The termination of fluidizing air to a bed known to contain an excess of unburned fuel can also produce a potentially explosive gas.
Reports of duct explosions indicate excess fuel in a hot unfluidized bed may be the source of an explosive mixture in the duct.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-14 (Log #141).

85H-17 - (2-1.3(d)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new 2-1.3(d) as follows and renumber present (e) and (f).
(f) Under certain unusual operating, start-up, or shutdown conditions, it is possible to accumulate combustibles in the windbox and ductwork. Bed material retains heat long after a boiler shutdown and may be an ignition source even if its exposed surfaces may have cooled.
SUBSTANTIATION: The suggested wording is considered too restrictive.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This is more appropriate wording and addresses the concerns of the submitter.

85H-18 - (2-1.5): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to the end of the paragraph: "However, notice should be taken that during unit warm-up or operation with a slumped or semi-fluidized bed the unit will not benefit from these mitigating factors.
SUBSTANTIATION: The qualifier suggested with prevent a sense of complacency that a fluidized bed boiler is not prone to the same operational quirks as burner combustion. While the first statement is true, it is only true at elevated loads with the unit and bed material hot and fluidized.
COMMITTEE ACTION: Accept in Principle.
Add a note to 2-1.5 as follows:
"NOTE: During unit warm-up or operation with a slumped or semi-fluidized bed the unit will not benefit from these mitigating factors."
COMMITTEE STATEMENT: This is more appropriate as a note, and meets the intent of the submitter.

85H-20 - (2-2.2): Accept
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text to read as follows:
2-2.2 A condition likely to cause furnace pressure excursions in a fluidized bed boiler is maloperation of the equipment regulating the boiler gas flow, including air supply and flue gas removal system. It may result in the furnace being exposed to excessive fan head capability.

SUBSTANTIATION: It is one of several conditions. The statement is more descriptive and allows more latitude.
COMMITTEE ACTION: Accept.

85H-21 - (2-2.2 Note): Accept in Principle
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace “conventional” with “single or multiple burner fired.”

SUBSTANTIATION: Conventional is an imprecise term for burner fired.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This term more appropriately defines the intent of this note.

85H-22 - (2-2.4): Reject
SUBMITTER: Bob Melvin, A/C Power - ACE Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Remove reference to “scrubber.”

SUBSTANTIATION: It is unlikely that any FBC’s, at least in the near future would have a scrubber. Carry over from PC’s.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This change is too restrictive, and reference should still be made to scrubbers.

COMMITTEE STATEMENT: This is covered in greater detail in 2-8.3(c).
SUBSTANTIATION: This paragraph is useful and appropriate.
COMMITTEE ACTION: Reject.

85H-24 - (2-4.1(b)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace “not operate the boiler” with “avoid boiler operation.”

SUBSTANTIATION: Clarification. Present text does not conform to the correct usage of the English language.
COMMITTEE ACTION: Accept.

85H-25 - (2-4.1(c)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the fourth line: replace “normal” with “the.”

SUBSTANTIATION: Protective interlocks should be tested during the entire operating life of the plant; whether that life in “normal” or “abnormal”?
COMMITTEE ACTION: Accept.

85H-26 - (2-5.1): Reject
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete section and renumber accordingly.

SUBSTANTIATION: The section is entitled “Coordination of Design, Operation, and Construction.” The reference paragraph deals with determining the cause of an error after the error has occurred, and consequently does not belong as part of this section.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed wording changes the meaning of this sentence.

85H-27 - (2-5.1): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise second sentence as follows:
“Human error is a...”

SUBSTANTIATION: A simpler statement of fact without having to produce the statistics at a later date.
COMMITTEE ACTION: Accept.

85H-28 - (2-5.2): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise the sentence as follows:
“Frequently, an investigation has revealed human error when...”

SUBSTANTIATION: This is covered in greater detail in 2-8.3(c).
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This paragraph is useful and appropriate.

COMMITTEE STATEMENT: The current wording is needed to explain coordination of design, construction, and operation.

85H-29 - (2-5.3): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add “when possible” to the end of this paragraph.

SUBSTANTIATION: Depending upon the nature of the installation, operating personnel may not yet be available to participate in the design and engineering phases of the project.
COMMITTEE ACTION: Accept.

85H-30 - (2-5.4(b)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:

(b) Periodically analyzing the plant’s status with respect to evolving technology so that improvements for greater safety and reliability can be implemented.

SUBSTANTIATION: Removes the incorrect implication that the initial design was deficient. Consistent with 1-1.6 and 1-2.2 (and new 1-1.7 if accepted).
COMMITTEE ACTION: Accept.
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85H-31 - (2.6.1): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "*" after 2-6.1.
SUBSTANTIATION: "A-2.8.8" appears to be wrong designation for material it contains. "A-2.6.1" appears more appropriate.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This is consistent with the intent of the submitter and appropriately relocates this appendix section.

85H-32 - (2.7.1(b)): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: "Chapter 5" should be changed to "Chapter 6."
SUBSTANTIATION: Chapter 5 refers to "Furnace Pressure Excursion Protection." The reference should be to Chapter 6 "Sequence of Operations."
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-33 - (2.7.1(b)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change reference in last sentence from "Chapter 5 to "Chapters 5 and 6."
SUBSTANTIATION: Operating sequences are described in both Chapter 5 and Chapter 6.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-34 - (2.7.1(b)): Accept in Principle
SUBMITTER: David D. Cole, Texas - New Mexico Power Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: "Chapter 6 describes..." at the start of the fourth sentence.
SUBSTANTIATION: Editorial - Chapter 6 is Sequence of Operations chapter.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-35 - (2.7.1(b)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "Chapter 5" with "Chapter 6."
SUBSTANTIATION: Improper cross reference.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-36 - (2.7.1(b)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Next to the last line: change "Chapter 5" to "Chapters 6, 7, and 8."
SUBSTANTIATION: Chapter 5 is not the correct reference.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-37 - (2.7.1(b)): Accept in Principle
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Reference to "Chapter 5" should be "Chapter 6."
SUBSTANTIATION: Correction.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Refer to Comment 85H-33 (Log #107) on 2.7.1.

85H-38 - (2.8.3(b)): Reject
SUBMITTER: Donald L. Lueckenotte, Burns & McDonnell Engr. Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "or pulverized." 
SUBSTANTIATION: Pulverized coal is not fired in fluidized bed boilers.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed wording is too restrictive.

85H-39 - (2.8.3(c)): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "or combustion" to the end of the paragraph.
SUBSTANTIATION: Wide variations in fuel sizing and moisture content can result in corresponding variations in how long it takes to burn the fuel.
COMMITTEE ACTION: Accept.

85H-40 - (2.8.3(c)): Accept
SUBMITTER: Bob Melvin, A/C Power - ACE Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Second sentence - remove the words "much of."
SUBSTANTIATION: Reads better - as in reality any of it could cause an interruption in fuel feed.
COMMITTEE ACTION: Accept.

85H-41 - (2.8.4(c)): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace last phrase with: "...requiring an evaluation of special fuel handling and burning safeguards."
SUBSTANTIATION: "Greater special consideration" doesn't mean too much.
COMMITTEE ACTION: Accept.

85H-42 - (2.8.6): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert "typically" before 1400°F.
SUBSTANTIATION: This range of bed operating temperatures is typical. Operating outside this range may be done for specific applications.
COMMITTEE ACTION: Accept.
85H-43 - (2-8.8): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete **" after "2-8.8" unless appropriate appendix material is added.

SUBSTANTIATION: Current appendix A-2-8.8 should be A-2-6.1.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-31 (Log #416) on paragraph 2-6.1.

85H-44 - (2-8.8(b)): Reject
SUBMITTER: Bob Mefvin, A/C Power - ACE Operations

RECOMMENDATION: Add at end of paragraph: "... recommendation of supplier should be followed."

SUBSTANTIATION: I believe this is an area covered by ASME and therefore is an issue between supplier and ASME. We can point it out as a consideration but should not dictate.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The proposed wording does not add to the intent of this paragraph.

85H-45 - (2-8.8(c)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.

RECOMMENDATION: Replace "within the solids inventory" with "in the bed."

SUBSTANTIATION: Clarification. The present wording is unclear.

COMMITTEE ACTION: Accept.

85H-46 - (2-8.8(d) (New)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.

RECOMMENDATION: Add new paragraph (d) as follows and renumber present (d) and (e).

(d) Potential for generation of explosive gases if the air supply to a bed is terminated before the fuel in the bed is burned out.

SUBSTANTIATION: Reports of duct explosions indicate that the explosive mixture may have been generated in a fuel rich unburned bed.

COMMITTEE ACTION: Accept.

85H-47 - (2-8.8(f) (New)): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA

RECOMMENDATION: Add new text as follows:

"Steam can at operating bed temperatures initiate gasification reactions within the bed."

SUBSTANTIATION: The reactions due to tube leaks can cause both exothermic and endothermic reactions that are capable of unit destructions. Such reactions were utilized commercially to produce hydrogen.

COMMITTEE ACTION: Hold for Further Study.

COMMITTEE STATEMENT: This introduces a new concept that requires further review and cannot be handled within the allotted time period.

85H-48 - (2-8.9 (New)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler

RECOMMENDATION: Insert new section based on following proposal from NFPA 8506.

2-8.9 Training.

2-8.9.1 Operator Training.

2-8.9.1.1 The owner or its agent shall be responsible for establishing a formal and ongoing program for training operating personnel. The training program shall be established to prepare personnel to safely and effectively operate the equipment. This program shall consist of study or review of operating manuals, videotapes, programmed instruction, examinations, computer simulation (if available) and supervised hands-on field training. The training program shall be consistent with the type of equipment and the hazard involved.

2-8.9.2.2 The owner or its agent shall certify that operators are trained and competent to operate the equipment under all possible conditions, prior to their operating it.

2-8.9.1.3 The owner or its agent is responsible for periodic retraining of operators, including review of their competency.

2-8.9.1.4 The training program and manuals shall be periodically reviewed to keep them current with changes in equipment or operating procedures. The training program and manuals covering operating and maintenance procedures should be readily available for reference and use at all times.

2-8.9.1.5 Operating procedures that cover both normal and emergency conditions shall be established. Start-up and shutdown procedures, normal operating conditions, and lockout procedures shall be covered in detail in operating manuals and the associated training program.

2-8.9.1.6 Operating procedures shall be directly applicable to the equipment involved and shall be consistent with safety requirements and the manufacturers' recommendations.

2-8.9.1.7 Operators shall be trained on the proper procedures for reducing load or tripping the system whenever there is a potential for an unsafe condition that may lead to personnel danger or property damage. They shall be authorized to call for outside assistance in case of emergency.

SUBSTANTIATION: Operators are critical to safety and we need to focus more effort in establishing accountability in this area.

COMMITTEE ACTION: Accept in Principle.

Insert this proposed material as a new section "2-8 Training" and renumber subsequent sections accordingly.

COMMITTEE STATEMENT: This more appropriately belongs as its own section of Chapter 2.
85H: 50 - (3-1 Air, Secondary): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Add:

"Typically, in a bubbling bed, that portion of the air introduced through the air distributor; and, in a circulating bed, that air which enters the combustor at levels above the air distributor."

SUBSTANTIATION: Completes the definition and provides consistency with definition for "Air, Primary."

COMMITTEE ACTION: Accept.

85H: 51 - (3-1 Air/Fuel Ratio): Reject
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: 1. For coal firing, delete the first three definitions which pertain to air/fuel ratio.
   2. Delete all paragraphs which contain the terms air/fuel ratio, fuel-rich mixture of limiting fuel to available. For example, 4-5.1.3, 4-5.2.3, 4-5.2.4, 4-5.2.5 and 10-2.2(c).

SUBSTANTIATION: Air/fuel ratio is a meaningless term when applied to the type of delayed combustion present in fluidized combustion or stoker fired furnaces. Those protection strategies used on "instantaneous" combustion furnaces such as parallel flow, cross limiting, air lead and lag should not be used on delayed combustion furnaces as they may needlessly restrict the operator. The term fuel inventory should be used to indicate a buildup or decrease of fuel in the circulating material.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The existing text adequately addresses the submitter's concern and is believed to be pertinent and useful.

85H: 52 - (3-1 Ambient Temperature (New)): Hold for Further Study
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Add definition of:

Ambient Temperature. The design air temperature of the plant, as defined by the purchaser, the manufacturer, and the "authority having jurisdiction."

SUBSTANTIATION: An assumed value for ambient temperature is required in many statements of this standard. A definition of what value this represents is therefore required.

COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: This introduces a concept that requires considerable review that cannot be handled in the allotted time period.

85H: 53 - (3-1 Ash and Ash, Other): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: 1. Add: "Also see char, spent bed material." to definition of "Ash."
   2. Delete: "Ash, Other. See char, spent bed material."

SUBSTANTIATION: "Other Ash" does not require a definition.

COMMITTEE ACTION: Accept.

85H: 54 - (3-1 Ash, Fly): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: 1. Change "refuse" to "material."
   2. Delete "furnace,"

   2. "Boiler enclosure" is the defined term.

COMMITTEE ACTION: Accept.

85H: 55 - (3-1 Ash, Fusion Temperatures): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Delete "s" in "Ash, Fusion Temperatures."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H: 56 - (3-1 Atomizing Medium): Reject
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Replace "breaking down liquid fuel into" with "emitting liquid fuel from a burner in a"
SUBSTANTIATION: More specific and consistent with application of term in this standard.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is consistent with NFPA 85C.

85H: 57 - (3-1 Bed Compartment): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Add "bubbling type" before "fluidized bed."
SUBSTANTIATION: Not applicable to CFB.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed wording is considered too restrictive.

85H: 58 - (3-1 Bed Material): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Accept in Principle
SUBMITTER: Felix Silva, Pyropower Corporation
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Revise text as follows:

"The bed temperature as determined by the method discussed in Appendix A-4-4.2."

SUBSTANTIATION: Bed temperature should not be defined as the mean average temperature of the fluidized bed. Through actual operating experience we know that the average temperature can indicate a false reading. The average temperature should be based on a voting scheme. This point is also discussed in Appendix A-4-4.2 of the 85H draft.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The proposed wording is considered too restrictive.

85H: 59 - (3-1 Bed Temperature): Accept
SUBMITTER: Felix Silva, Pyropower Corporation
COMMENT ON PROPOSAL NO: 85H:12
RECOMMENDATION: Revise text as follows:

"Mean average temperature of the fluidized bed. Through actual operating experience we know that the average temperature can indicate a false reading. The average temperature should be based on a voting scheme. This point is also discussed in Appendix A-4-4.2 of the 85H draft."
85H-61 - (3-1 Bubbling Fluidized Bed): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the third line: add "and" between "particles" and "where."
COMMITTEE ACTION: Accept.

85H-62 - (3-1 Burner): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the third and fourth lines: add "in a defined flame envelope" between "fuel" and "within."
SUBSTANTIATION: Helps distinguish burner from lance. A lance plus air coming through the air distributor does not constitute a burner.
COMMITTEE ACTION: Accept.

85H-63 - (3-1 Burner Management System): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the definition of Burner Management System, replace "flame monitoring and main fuel monitoring, and warm-up burner subsystems" with "combustion monitoring, bed temperature monitoring and the flame monitoring and tripping for burners."
SUBSTANTIATION: A fluidized bed boiler, by definition, does not utilize burners as the primary combustion method. The essential safety system for fluidized bed combustion is bed temperature monitoring and the flame monitoring and tripping for burners. I personally believe we should not call the safety system for a fluidized bed combustion boiler a burner management system.
COMMITTEE ACTION: Accept in Principle.

85H-64 - (3-1 Calcium ion): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In line three: replace "the" with "calcium."
SUBSTANTIATION: Better word choice.
COMMITTEE ACTION: Accept.

85H-65 - (3-1 Calcium to Sulfur Molar Ratio (Ca/S)): Accept in Principle
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
SUBSTANTIATION: All definitions in this Chapter (hopefully) pertain to fluidized bed combustion.
COMMITTEE ACTION: Accept.

85H-66 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: "...The unburned combustibles in solid form, combined within the defined flame envelope, divided by the total moles of sulfur in the fuel fed to the boiler bed..."
COMMITTEE ACTION: Accept in Principle.

85H-67 - (3-1 Char): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: "...The unburned combustibles in solid form, combined within the defined flame envelope, divided by the total moles of sulfur in the fuel fed to the boiler bed...
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is sufficient.

85H-68 - (3-1 Combustion Chamber): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "in fluidized bed combustion," and "subsystem." Not needed in definition.
COMMITTEE ACTION: Accept in Principle.

85H-69 - (3-1 Combustion Control System): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the definition of Combustion Control System, replace the first sentence with: "The control system that regulates the furnace fuel input, furnace air input, bed inventory and other bed heat transfer mechanisms to maintain the bed temperature and the air/fuel ratio within the limits required for continuous combustion and stable bed operation throughout the operating range of the boiler in accordance with demand." Substantiation: The present definition is from NFPA 85C for burner combustion NOT for FBC.
COMMITTEE ACTION: Accept.

85H-70 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-71 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-72 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-73 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-74 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-75 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-76 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.

85H-77 - (3-1 Continuous Display): Accept in Principle
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Add "Trend" between "Continuous" and "Display."
2. Revise definition with: "A dedicated visual display of operating trend(s) by any instrument such as a cathode ray tube (CRT), trend chart recorder, or other device, to quantify changes in the measured variable(s)."
SUBSTANTIATION: Better presents the definition of continuous display. With this definition, paragraph 4-7 presents no conflict and both are clear.
COMMITTEE ACTION: Accept in Principle.
85H-71 - (3-1 Dilute Phase): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete parenthetical statement at end of definition.
SUBSTANTIATION: Not needed.

Also, suggest that a word search be conducted. Is “dilute phase” used in standard?

COMMITTEE ACTION: Accept in Principle.

Delete the definition of “Dilute Phase.”

COMMITTEE STATEMENT: This term is not used in the standard and is not necessary.

85H-72 - (3-1 Directional Blocking): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete “in furnace pressure.”
SUBSTANTIATION: Not needed for definition. The use of directional blocking to control furnace pressure transients is covered in Chapter 5.

COMMITTEE ACTION: Accept.

85H-73 - (3-1 Elutriation): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Replace “upflowing” with “the upward flowing flux.”
SUBSTANTIATION: More precise definition.

COMMITTEE ACTION: Accept in Principle.

Replace “upflowing gas” with “the upward flowing products of combustion.”

COMMITTEE STATEMENT: This more appropriately clarifies this definition.

85H-74 - (3-1 Exit Gas Temperature): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Replace “upflowing flux” with “the upward flowing flux.”
SUBSTANTIATION: “Exit gas temperature” can refer to any number of locations.

COMMITTEE ACTION: Accept in Principle.

Delete the definition of “Exit Gas Temperature.”

COMMITTEE STATEMENT: This term is not used in the standard and is not necessary.

85H-75 - (3-1 Exit Gas Temperature): Accept in Principle
SUBMITTER: David Kraft, B&W

RECOMMENDATION: Revise as follows:

“The temperature of the flue gases leaving the boiler furnace enclosure final heat trap. Usually referenced to the thermal efficiency calculation.”

SUBSTANTIATION: Exit gas temperature can refer to any exit temperature, such as furnace exit, economizer exit, air heater exit, etc. I do not remember any reference in the text to this phrase and perhaps the committee should consider dropping the definition.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-74 (Log #435) on 3-1, Exit Gas Temperature.

85H-76 - (3-1 Fan Test Block): Accept
SUBMITTER: David Kraft, B&W

RECOMMENDATION: Revise last line as follows:

“...Rating of the boiler furnace plus head, and flow and temperature margin.”

SUBSTANTIATION: Add temperature. Technical correction.

COMMITTEE ACTION: Accept.

85H-77 - (3-1 Fans, Primary Air Fans): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete second sentence and replace with “See Air, Primary.”

SUBSTANTIATION: Definition as written is only true for CFB applications.

COMMITTEE ACTION: Accept in Principle.

Delete the definition of “Fans, Primary Air Fans.”

COMMITTEE STATEMENT: This is sufficiently covered by the definition of “Air, Primary.”

85H-78 - (3-1 Fans, Secondary Air Fans): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete second sentence of definition and replace with “See Air, Secondary.”

SUBSTANTIATION: Definition as written is only true for CFB applications.

COMMITTEE ACTION: Accept in Principle.

Delete the definition of “Fans, Secondary Air Fans.”

COMMITTEE STATEMENT: This is sufficiently covered by the definition of “Air, Secondary.”

85H-79 - (3-1 Flame Detector, Self-Checking): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: 1. Delete second sentence of definition.
2. Add to end of first sentence: “To ensure that a false indication of flame does not exist.”

SUBSTANTIATION: Reworded for clarity.

COMMITTEE ACTION: Accept.

85H-80 - (3-1 Furnace): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Delete. Does not apply to BFB or CFB applications.

SUBSTANTIATION: See comment.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Furnace is an industry term and should be defined.

85H-81 - (3-1 Ignitor): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler

RECOMMENDATION: Change “it’s” to “its.”

SUBSTANTIATION: Spelling.

COMMITTEE ACTION: Accept.
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85H-82 - (3-1 Ignitor, Class 1 (Continuous Ignitor)): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: On sixth line change "creditable" to "credible."
SUBSTANTIATION: Word usage.
COMMITTEE ACTION: Accept.

85H-83 - (3-1 Ignitor, Class 1 (Continuous Ignitor)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Delete "(Continuous Ignitor)" on first line.
2. Add to end of definition: "Class 1 ignitors can be operated as continuous, intermittent, or interrupted ignitors.
SUBSTANTIATION: A Class 1 ignitor does not have to be a continuous ignitor.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current definition is appropriate and should remain.

85H-84 - (3-1 Ignitor, Class 2 (Intermittent Ignitor)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Delete "(Intermittent Ignitor)" in first line.
2. Replace last sentence of definition with:
   "A Class 2 ignitor may be operated as an intermittent or interrupted ignitor. When used as an intermittent ignitor, a flame detector dedicated to sensing only the main burner flame associated with that ignitor, as well as a flame detector for sensing the ignitor flame, is required."
SUBSTANTIATION: The need for two flame detectors when using Class 2 ignitors for intermittent service is an important point and should be clearly presented.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current definition is appropriate and should remain.

85H-85 - (3-1 Ignitor, Class 3 (Interrupted Ignitor)): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "it's" to "its" on the sixth line.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-86 - (3-1 Ignitor, Class 3 (Interrupted Ignitor)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete: "special Class 3" from the end of the first line.
SUBSTANTIATION: Should not use term to be defined in the definition.
COMMITTEE ACTION: Accept.

85H-87 - (3-1 Lance): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "bed" with "combustion chamber."
SUBSTANTIATION: Better choice of words.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed text changes the meaning of the definition and is not appropriate.

85H-88 - (3-1 Loop Seal (New)): Hold for Further Study
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Definition for Loop Seal needed such as:
   "U or J shaped device that conducts solids from the bottom of the cyclone back to the furnace and acts as a pressure seal."
SUBSTANTIATION: I want to recognize a loop seal as mention of accumulation of material with blockage needs to be mentioned in Appendix or text. See later comment.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: This introduces a concept that requires considerable review that cannot be handled in the allotted time period.

85H-89 - (3-1 Main Fuel Temperature Permit): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "minimum" between "The" and "bed" at start of definition.
SUBSTANTIATION: Needed to complete definition.
COMMITTEE ACTION: Accept.

85H-90 - (3-1 Master, Fuel Trip Relay): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Delete "comma" after "Master" in term to be defined.
2. Add to end of definition: "when a Master Fuel Trip is initiated."
SUBSTANTIATION: 1. Editorial.
2. Needed to complete the definition.
COMMITTEE ACTION: Accept.

85H-91 - (3-1 Natural Gas): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Second sentence replace "BTU value" with "heating value" and on next line put "BTU/ cu ft" before the parenthesis.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-92 - (3-1 Overbed): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "50 percent" to "75 percent."
SUBSTANTIATION: A significant portion of the defined pressure drop is used in passing through the air distributor. Thus the use of 50 percent is insufficient to truly define overbed.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-94 (Log #150) on 3-1, Overbed.
85H-94 - (3-1 Overbed): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete or revise the definition of “Over bed.”
SUBSTANTIATION: Over bed is above the surface of a bubbling bed. For a circulating bed this term is meaningless.

85H-95 - (3-1 Overbed): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change to: “...total pressure drop from the air distributor to the connection bank inlet...”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-94 (Log #150) on 3-1, Overbed.

85H-96 - (3-1 Override Action, Fan): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to end of definition: “(See Directional Blocking.)”
SUBSTANTIATION: Provides cross-reference of similar terms.
COMMITTEE ACTION: Accept.

85H-97 - (3-1 Purge): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace “furnace, boiler gas passages,” with “boiler enclosure.”
SUBSTANTIATION: Provides consistent use of terms.
COMMITTEE ACTION: Accept.

85H-98 - (3-1 Purge Rate): Hold for Further Study
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add the following to the definition of Purge Rate: “The full load volumetric airflow shall be calculated on the basis of ambient pressure and temperature.”
SUBSTANTIATION: The definition as worded does not sufficiently define what volumetric air flow is to be used. As volume as pressure and temperature dependent, further criteria are necessary to define the intent of the paragraph.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: This introduces a concept that requires considerable review that cannot be handled in the allotted time period.

85H-99 - (3-1 Stable Flame): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace “boiler” with “burner” at end of definition.
SUBSTANTIATION: More appropriate word choice for BFB/CFB applications.
COMMITTEE ACTION: Accept.

85H-100 - (3-1 Start-Up Combustion Control System): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete the definition of “Start-Up Combustion Control System.”
SUBSTANTIATION: Fluidized bed combustion boilers do not require or use a “Start-Up Combustion Control System.”
COMMITTEE ACTION: Accept.

85H-101 - (3-1 Sulfur Reacted): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change “sulfur” to “sulf.”
SUBSTANTIATION: Spelling.
COMMITTEE ACTION: Accept.

85H-102 - (3-1 Unit Purge): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Delete “or” before “(2).”
2. Add after “boiler enclosure,”: “or (3) 5 changes in volume through the precipitator, bag house or other component, whichever is greater.”
SUBSTANTIATION: This third requirement is part of the unit purge and could govern time required to complete a unit purges. See 6-1.5.1(b).
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is an unnecessary addition to the definition.

85H-103 - (3-1 Valve, Charging): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “for” between “and” and “testing.”
SUBSTANTIATION: Word not needed.
COMMITTEE ACTION: Accept.

85H-104 - (3-1 Valve, Safety Shutoff (Fuel Trip Valve)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Define other valves.
SUBSTANTIATION: Valves. There are other valves that need definition. In particular, Circulating Valves should be defined as a small valve bypassing the main safety shutoff valve used for circulating oil for preheating.
COMMITTEE ACTION: Accept.

85H-105 - (3-1 Valves): Reject
SUBMITTER: Felix Silva, Pyropower Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise the definition of Valve, Safety Shutoff (Fuel Trip Valve) as follows: “A fast closing valve that automatically and completely shuts off the fuel supply to burners, lances or igniters in response to a trip of that fuel or a master fuel trip.”
SUBSTANTIATION: Fluidized bed combustion boilers do not have “main” burners but do have lances. This requires that the NFPA 85C definition safety shutoff valve be modified for use in this standard.
COMMITTEE ACTION: Accept.
SUBMITTER: Felix Silva, Pyropower Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Define key verbs such as: "Verify" and "Ensure." These key words need to be defined since they are intended to be different from "Prove." (Ensured 5-3.1.2)
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Words are used such as "Verify" and "Ensure." These key words need to be defined since they are intended to be different from "Prove." (Ensured 5-3.1.2)

SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMITTER: William Axtman, Manassas, VA
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: Bob MelMn, A/C Power- Ace Operations
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: Peter Matthews, Hartford Steam Boiler
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 4-1.1.1 (b) is changed. Peter Matthews, Hartford Steam Boiler
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: William Axtman, Manassas, VA
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-109 (4-1.1.1(b)): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is appropriately addressed in 4-1.1.2.

SUBMISSOR: 85H-107 (4-1.1.1(a)): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Paragraph is correct as written.

SUBMISSOR: 85H-109 (4-1.1.1(b)): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is appropriately addressed in 4-1.1.2.

SUBMISSOR: 85H-108 (4-1.1.1): Accept
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-110 (4-1.1.2): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The term "should" is not recognized in the body of the standard.

SUBMISSOR: 85H-112 (4-2.1.1): Accept
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-113 (4-2.2.2): Accept
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-114 (4-2.2.2(a)2): Accept
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-115 (4-2.2.2(a)2): Accept
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-116 (4-2.2.2(e)1): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.

SUBMISSOR: 85H-117 (4-2.2.2(f)): Reject
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: These terms are adequately defined as standard dictionary terms.
Safe scavenging of oil fired lances and burners needs to be addressed. See NFPA 85C paragraph 7-5.2.5.3.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The current wording and arrangement of the text is sufficient.

85H-118 - (4-2.2.2(g)(1)): Accept in Principle

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: 1. Replace "bed drain material" with "bed material" or 2. Replace "bed drain material, fly ash, and spent sorbent" with "bed material.

SUBSTANTIATION: 1. The correct terminology is bed material. 2. It is not possible to selectively drain fly ash or spent sorbent.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The term "drain" should be deleted when referring to bed material to clarify the intent of this paragraph.

85H-119 - (4-2.2.2(b)(4)): Accept

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Replace "I" with "one."

SUBSTANTIATION: There is no reason to use the numeral 1. Also to conform with NFPA 85C.

COMMITTEE ACTION: Accept.

85H-120 - (4-2.2.2(h)(4)): Accept

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows: "1. should be written "one."

SUBSTANTIATION: Style.

COMMITTEE ACTION: Accept.

85H-121 - (4-2.2.2(h)(4)): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise the last line to add: "any or" between "of" and "all."

SUBSTANTIATION: Clarifies intent of statement.

COMMITTEE ACTION: Accept.

85H-122 - (4-3): Reject

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12


SUBSTANTIATION: A Burner Management System is for burner fired boilers. This standard is for Fluidized Bed Combustion Boilers.

The use of the title "burner management system" infers that these logic requirements apply only to burners and to NOT apply to fluidized bed firing of solid fuel or lance firing of oil and gas. It also infers that bed temperature interlock logic need NOT meet these requirements.

Bed temperature monitoring is the key variable distinguishing safe fluidized bed combustion. Boiler safety interlock logic utilizing bed temperature should be designed to meet the requirements of Section 4-3.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-65 (Log #148).
85H-128 - (4-5.1.3 Note): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Note before 4-5.2.4 stating:
“Since many fluidized bed combustion boilers burn fuels widely
varying in heating value and air demand per unit of fuel, the fuel air
ratio limits discussed herein shall include provision for dynamic
calibration of required fuel-air ratio.”
SUBSTANTIATION: Conventional preset wt. of fuel to wt. of air
limits will force operation at incorrect fuel air ratio under off-design
basis fuel operation.
COMMITTEE ACTION: Accept in Principle.
Add a note after 4-5.2.3 as follows:
“NOTE: When fluidized bed combustion boilers burn fuels that
vary widely in heating value and air demand per unit of fuel, the fuel air
ratio limits shall include provision for calibration of required
calibration of required fuel-air ratio.”
COMMITTEE STATEMENT: Editorial.

85H-129 - (4-5.2.3 Note (New)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMm. ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Note before 4-5.2.9 stating:
“Flue gas analyzers needs further study, and cannot be properly addressed in
the allotted time period.
COMMITTEE ACTION: Hold for Further Study.

85H-130 - (4-5.2.9): Hold for Further Study
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace Section 4-5.2.9 with “Flue gas
oxygen and combustibles analyzers shall be provided for use as an
operation guide.”
SUBSTANTIATION: Flue gas analysis for both oxygen and low
range combustibles is required to monitor fluidized bed combus-
tion. These measurements are needed to determine if a fuel rich
bed condition exists. These measurements are also needed to insure
safe operation of individually fired warm-up burners when used.
COMMITTEE ACTION: Hold for Further Study.

85H-131 - (4-6): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Delete “Warm-Up Burners and Lances.”
2. Add “Fuel Supply System.”
SUBSTANTIATION: Clarity.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The title is correct as written and is
appropriately descriptive.

85H-132 - (4-6.1.2): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise last sentence to add “See also 7-5.3.”
SUBSTANTIATION: 4-6.1.2 refers to addition of a high gas supply
pressure trip which is also covered in 7-5.3. Addition of a cross
reference increases usability of the standard.
COMMITTEE ACTION: Accept.

85H-133 - (4-6.1.6 (New)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: 1. Insert new text as follows:
4-6.1.6 As much of the fuel subsystem as practical shall be located
outside the boiler house. A manual emergency shutoff valve shall be
provided that is accessible in the event of fire in the boiler area.
2. Renumber subsequent sections
SUBSTANTIATION: This applies equally to oil and gas firing.
COMMITTEE ACTION: Accept.

85H-134 - (4-6.1.6): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise last sentence to add "See also
“Furnace System.”
SUBSTANTIATION: Editorial. The proposed change clarifies the
intent of the sentence.
COMMITTEE ACTION: Accept.

85H-135 - (4-6.2.3): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change “increase” to “increased” in last
line.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-136 - (4-6.2.8): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add “or” between “oil” and “vapors.”
Delete “or toxic fumes.”
SUBSTANTIATION: Use of the term “toxic fumes” is unnecessary.
COMMITTEE ACTION: Accept.

85H-137 - (4-6.2.11): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
“All instrument and control piping and other small lines containing
oil shall be tagged...”
SUBSTANTIATION: I’m guessing the proper word is tagged.
CORRECTION.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The correct term is “tagged,” as in
regard to strength.

85H-138 - (4-6.2.12): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert “idle” before “furnace.”
SUBSTANTIATION: See 4-6.1.6.
COMMITTEE ACTION: Accept in Principle.
CORRECTION.
COMMITTEE STATEMENT: This meets the intent of the submitter
but is a more appropriate change.
85H-139 - (4-6.3.2): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.

RECOMMENDATION: Insert a new 4-6.3.2 as follows:
"Provision shall be made for visual observation of conditions at the burn-on ignition zone. Additional provisions shall be made for flame detection equipment. The burner equipment shall be located in an appropriate environment with convenient access for maintenance. Special cognizance shall be taken of the fire hazards imposed by leakage or rupture of piping near the burner. Requirements of good housekeeping shall be recognized."

SUBSTANTIATION: These are burner equipment requirements from NFPA 85C.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE STATEMENT: This is a more appropriate location.

85H-140 - (4-6.3.2.3): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: This change is unnecessary and does not add to the current text.

85H-141 - (4-6.3.2.3(a), (b), (c), (e), and (f)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The document numbering will be editorially addressed by NFPA staff.

85H-142 - (4-6.3.2.3(b)): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMITTEE ACTION: Reject.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE ACTION: Accept in Principle

COMMITTEE STATEMENT: The concerns of the submittal are adequately addressed in other portions of the document, and further clarification is not required.

85H-143 - (4-6.3.2.4(a), (b), (c), (d), and (e)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: The present text is adequate and appropriate.

85H-144 - (4-6.3.2.4(d)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The present text is adequate and appropriate.

85H-145 - (4-6.3.2.4(d) and (e)): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The present text is adequate and appropriate.

85H-146 - (4-6.3.2.5(b)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

Insert "that" after "condition."
95H-147 - (4-6.3.2.5(b) and 4-5.2.4): Accept in Principle in Part

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 95H-12

RECOMMENDATION: Revise text as follows:
1. Rename section "Warm-Up Burner Combustion Control System."
2. Replace 4-6.3.2.5(b) with:
   "Each warm-up burner shall have a fuel and air supply. Equipment shall be provided and operating procedures established to preclude the possibility of an improper air/fuel ratio condition at any burner."
3. Add:
   "Capability shall be provided for setting minimum and maximum limits on the warm-up burner fuel and air control subsystems to prevent fuel and airflows beyond the stable flame limits of the burner(s). These minimum and maximum limits shall be defined by the burner manufacturer and verified by operating tests. (See 7-3.2)"
4. Move 4-5.2.4 to this section.

SUBSTANTIATION: The present 4-6.3.2.5 provides no substantive equipment requirements for burners and does not clearly differentiate itself from Section 4-5. Section 4-5.2.4 is not appropriate for fluidized bed combustion but does apply to burner firing.

COMMITTEE ACTION: Accept in Principle. Delete the first sentence of 4-6.3.2.5(b). Add the submitter’s item 3 as a new 4-6.3.2.5(c). Duplicate 4-5.2.4 as a new 4-6.3.2.5(d).

COMMITTEE STATEMENT: Item 3 is rejected because the proposed wording is redundant with existing wording.

COMMITTEE STATEMENT: The first sentence of the existing 4-6.3.2.5(b) clarifies this section, and merits the intent of the proposed item 2.

COMMITTEE STATEMENT: Item 3 is more appropriate as a new 4.6.3.2.5(c).

COMMITTEE STATEMENT: For item 4, 4-5.2.4 should not be deleted, but should be copied to a new 4-6.3.2.5(d) to emphasize this criteria.

95H-148 - (4-6.4 through 4-6.4.2.2(b)): Reject

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 95H-12

RECOMMENDATION: Move Section 4-6.4 through 4-6.4.2.2(b) to follow 4-6.3.2.2(e).

SUBSTANTIATION: Functional section reorganization.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: It is unclear as to what the proposed changes will add if implemented. The present wording is appropriate.

95H-149 - (4-6.4.2.11(c)): Accept

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 95H-12

RECOMMENDATION: Change last sentence to:
"Good housekeeping practices shall be enforced.

SUBSTANTIATION: Need to implement rather than recognize. Essentially editorial.

COMMITTEE ACTION: Accept.

95H-150 - (4-6.5): Accept

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 95H-12

RECOMMENDATION: Replace 4-6.5 Burner Testing with new text as follows:
4-6.5 Power Supplies. All reasonable precautions shall be taken to assure the availability of a failure-free power supply (electric or pneumatic) to all devices.

SUBSTANTIATION: Burner testing is not an equipment requirement. This requirement is and should be in Chapter 7 (7-5.2).

COMMITTEE STATEMENT: The existing 4-6.5 is useful and should not be deleted.
85H-156 - (5-2.3.1 and 5-4.2.1): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Delete "and implosion" from 5-2.3.1.
2. Replace "furnace implosion" with "furnace pressure excursion" in 5-4.2.1.

SUBSTANTIATION: Chapter 5 does not address furnace implosion as furnace implosion is not considered a significant problem for FBC boilers.
COMMITTEE ACTION: Accept.

85H-157 - (5-3.1.1): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "applicable to the fuel being fired" from last sentence.
SUBSTANTIATION: Chapter 6 does not contain material on operating fuels.
COMMITTEE ACTION: Accept.

85H-158 - (5-3.1.2 Note): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "it's" to "its."
SUBSTANTIATION: This paragraph came from 85C. The wording makes it more applicable to BFB and CFB applications.
COMMITTEE ACTION: Reject.

85H-159 - (5-3.1.2(b)): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: At the end of the third line (second sentence) modify to read:
"Once the induced draft fan is operating and has stabilized, the forced draft fan's associated..."

SUBSTANTIATION: Clarification of intent. The paragraph as written does not preclude closing the forced draft fan dampers to start up position prior to starting the induced draft fan.
COMMITTEE ACTION: Accept.

85H-160 - (5-3.1.2(c) Note): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "Note;" and make the note the second sentence of (c).

SUBSTANTIATION: This is not an advisory comment and should not be a note.
COMMITTEE ACTION: Accept.

85H-161 - (5-4.2.1(b)): Reject
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "5-5.1" with "10-2.1."

COMMITTEE ACTION: Reject.

85H-162 - (5-4.2.2(c)): Reject
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
"Initiate master fuel trip on loss of any forced draft fan required to sustain safe combustion. Upon loss of all forced draft fans, their dampers shall... Gas recirculation fan(s) shall also be tripped and the gas recirculation system dampers shall be closed."

SUBSTANTIATION: This paragraph came from 85C. The wording makes it more applicable to BFB and CFB applications.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording accurately addresses the intent of this paragraph.

85H-163 - (5-4.2.2(d)): Hold for Further Study
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "and gas recirculation fan(s)" to end of second sentence.

COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The topic requires further review, and cannot be appropriately addressed in the allotted time period.

85H-164 - (5-4.2.2(d)): Reject
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Third sentence: Make into two sentences.
   (a) Sentence 1: "Dampers shall remain open."
   (b) Sentence 2: "Fans shall be started..."

COMMITTEE ACTION: Accept.

85H-165 - (5-4.2.2(e)): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Replace: "On start of second fan and" with "At start of the first induced draft and forced draft fans,..."
2. Delete "the fan" in second line.

SUBSTANTIATION: 1. Makes wording more applicable to BFB and CFB applications.

COMMITTEE ACTION: Accept.

85H-166 - (5-5.2): Reject
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "5-5.1" with "10-2.1."

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The current wording is sufficient.
transmitters may not be a reliable indication of a problem. Other means, such as a constant furnace pressure being recorded at one sensor over a limited period of time may be a better indication.

SUBSTANTIATION: If two of three taps plug the correct pressure sensor over a limited period of time may be a better indication and cannot be appropriately addressed in the allotted time period.

checks.

may be disregarded. Plugged taps may not be sensed by deviation means, such as a constant furnace pressure being recorded at one transmitter, may not be a reliable indication of a problem.

SUBMITTER: Felix Silva, Pyropower Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Accept.

COMMITTEE STATEMENT: Additional alarm proposed.

ACTION: Hold for Further Study.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE STATEMENT: Disagrees with the definition of bed temperature in Appendix A-4.4.1.

ACTION: Reject.

SUBMITTER: Robert M. Lundberg, Los Altos, CA

ACTION: Accept in Principle in Part

ACTION: Reject.

ACTION: Accept in Principle in Part

ACTION: Reject.

ACTION: Hold for Further Study

COMMITTEE STATEMENT: “Average” is a commonly used term, and its definition is implied in the appendix and is not in disagreement.

COMMITTEE STATEMENT: The term “furnace” is still defined and used in the standard

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text: “...purge air flow... (may be) reduced below purge value... however, total air flow shall (not be) less than unit purge rate.”

SUBSTANTIATION: This section is unclear and ambiguous. Needs to be rewritten (you supply the words) so meaning/intent is clear.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The sentence that follows the third sentence (addressed by the submitter) clarifies this section and addresses the concerns of the submitter. Also see 6-2.1.2.

ACTION: Reject.

85H-168 - (5.5.2(d) (New)): Accept

SUBMITTER: Felix Silva, Pyropower Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add:

(d) Fan override action.

SUBSTANTIATION: Additional alarm proposed.

COMMITTEE ACTION: Accept.

ACTION: Hold for Further Study.

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:

1. Revise (a) and (b) to read as follows:
   (a) For various reasons, it is desirable that the starting and shutdown sequences for fluidized bed boilers preserve the temperature of the bed material and refractory while providing proper operating conditions.
   (b) As a result, the recommended warm-up cycle for cold start-up and hot restart as well as the shutdown sequence may be different from other coal, oil or gas fired boilers and not be identical to previous NFPA procedures.

2. Delete (c).

3. Revise (d) to read as follows:
   (d) The objective is to maintain bed temperature and protect the refractory against sudden temperature change by reducing the cooling effect from high volumes of air.

Delete or revise (e).

SUBSTANTIATION: 1. The former paragraph is not justified with backup material.

2. Add comma after agreed. Move up next paragraph. In 85C coal fired standard, there is reference to a heated up condition. I will recommend that it be deleted from 85C.

3. Delete 613(c). Multi beds at different air flows are not as desirable as all beds at same conditions of flow and temperature. A severe fire was caused by this condition.

4. Delete first sentence of 613(d) “boiler manufacturer might allow ...” How can NFPA sponsor this without data or justification?

5. Delete 613(c) for the following reasons:
   a. “Provided average temperature”... This cannot be measured reliably without flow. Will they show us how? As units grow very large, it may be difficult to tell if the bed contains some hot material and perhaps some colder material.
   b. Volatile matter is not the only active material in the bed(s). An ignition source may exist in the stationary bed in the form of hot carbon particles or even red hot limestone particles that will be blown into an ignitable mixture above the bed if the bed is fluidized. The 85 series of standards already recognizes the basic problem, that is, the possibility that changes in air flow can induce an explosion by “carrying up embers” that provide an ignition source. (See for example, 85C-1991, 2.13(b))
   c. After the master fuel trip, which is designed to stop the burnout of the active material, a set procedure must be provided. It must take into account that the trip may occur for different reasons.

Prudent individuals should want to proceed slowly.

Conclusion: The paragraph 613 reads as an economic goal and is not entirely true unless severely restricted. It is inconsistent with NFPA general practice.

There are inconsistencies elsewhere in the A05-TCR that this paragraph ignored.

Without specifics, this paragraph appears to tacitly grant approval for any procedure or none.

COMMITTEE ACTION: Hold for Further Study.

COMMITTEE STATEMENT: It is unclear as to which sections are being addressed, and the concerns of submitter cannot be adequately addressed in the allotted time period.

ACTION: Reject

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Specify “bubbling fluidized bed” for these sections.

SUBSTANTIATION: Not applicable to CFB as they are not sectionized.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Future technology may change, and the current wording is not overly restrictive.

85H-175 - (6.1.4.1): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “shall be directly accessible by a source of ignition energy and.”
SUBSTANTIATION: It is not clear what, if anything, this clause permits or prevents.
6.1.4.1 is more clear without this clause.
COMMITTEE ACTION: Accept.

85H-176 - (6.1.4.1): Accept in Principle
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-175 (Log #169) on 6-1.4.1.

85H-177 - (6.1.4.2): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Move 6-1.4.2 and combine with 6.2.1.2(i).9.
SUBSTANTIATION: 6.1.4.2 does not belong in the “General” section and should be moved to the Bubbling Bed section.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The proposed change would be overly restrictive.

85H-178 - (6.1.5): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Retain first sentence.
2. Delete second sentence.
3. Add “If bed material is already on the bed, purge the bed(s) while in the fluidized or semifluidized condition.”
SUBSTANTIATION: Do not add materials to a unit which hasn’t been purged. Static electricity or a spark can create an explosion.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is sufficient and does not imply absolute safety.

85H-179 - (6.1.5(b)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new text as follows:
“Purge the unit as specified in 6-2.1.2(i). A freeboard purge without air specifically passing through the bed material is not sufficient.”
SUBSTANTIATION: This is already covered and would be redundant with existing criterion.
COMMITTEE ACTION: Accept.

85H-180 - (6.1.5.1): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise to read as follows:
“The basic startup procedure shall incorporate the following operating objectives.”
SUBSTANTIATION: More descriptive.
COMMITTEE ACTION: Accept.

85H-181 - 6.1.5.1(a): Accept
SUBMITTER: Michael C. Polagey, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert new text as follows:
(a) All dampers and burner air registers shall be placed in a predetermined open position.
SUBSTANTIATION: Replaced for BFB and CFB application.
COMMITTEE ACTION: Accept.

85H-182 - 6.1.5.1(a) (New): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert new text as follows:
“This information is not needed to clarify the intent of this paragraph.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This information is not needed to clarify the intent of this paragraph.

85H-183 - 6.1.5.1(b): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Retain first sentence.
2. Delete second sentence.
3. Add “If bed material is already on the bed, purge the bed(s) while in the fluidized or semifluidized condition.”
SUBSTANTIATION: Do not add materials to a unit which hasn’t been purged. Static electricity or a spark can create an explosion.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The concern for static electricity requires further review and cannot be adequately addressed in the allotted time period.

85H-184 - 6.1.5.1(b): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace 6.1.5.1(b) with the following:
“Purge the unit as specified in 6-2.1.2(i). A freeboard purge without air specifically passing through the bed material is not sufficient.”
SUBSTANTIATION: This is already covered and would be redundant with existing criterion.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is already covered and would be redundant with existing criterion.

85H-185 - 6.1.5.1(c) (New): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new text as follows:
“If no material was on the bed(s), add such non-flammable material to the beds, preferably at purge rate.
SUBSTANTIATION: Continuation of good practice recommended in changed 6-1.5.1(b).
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The concern for static electricity requires further review and cannot be adequately addressed in the allotted time period.

85H-192 - (6-1.5.1(e)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Rewrite sentence which starts with “Multizone” to read:
“Some beds in a multizone bubbling bed unit may have to be slumped during start up, if they are not being heated.”
SUBSTANTIATION: Editorial - Present sentence is confusing.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-190 (Log #237).

85H-193 - (6-1.5.1(e)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In line four delete “need.”
SUBSTANTIATION: Editorial. Word not “needed.”
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-190 (Log #237).

85H-194 - (6-1.5.1(e)): Accept in Principle
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the third line, change: “A lower fuel input temperature limit...” to “A lower fuel input temperature limit...”
SUBSTANTIATION: Clearer statement.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-190 (Log #237).

85H-195 - (6-1.5.1(g)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the first sentence add commas after “input” and “material.”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-196 - (6-1.5.1(g)): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete 6-1.6.
SUBSTANTIATION: This statement on its own is not self explanatory.
COMMITTEE ACTION: Accept.

85H-197 - (6-1.6): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete 6-1.6.
SUBSTANTIATION: This statement on its own is not self explanatory.
COMMITTEE ACTION: Accept.

85H-198 - (6-2.1.1(b)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Delete punctuation after “personnel” in first line.
2. Add semi-colon after “equipment” in first line.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
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85H-99 (6-2.1.1(c)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "ignition" before "sparks.
SUBSTANTIATION: Clarity - correct expression.
COMMITTEE ACTION: Accept.

85H-200 (6-2.1.1(j)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the second line, delete "is" before "operating.
SUBSTANTIATION: Consistency of form.
COMMITTEE ACTION: Accept.

85H-201 (6-2.1.1(j)): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Delete parentheses.
2. Add "comma" after "if provided.
3. Delete "is.
SUBSTANTIATION: More defined editorially.
COMMITTEE ACTION: Accept.

85H-202 (6-2.1.1(m) Note): Accept
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Include "such as sand" after "material" on second line.
SUBSTANTIATION: More defined editorially.
COMMITTEE ACTION: Accept.

85H-203 (6-2.1.1(m) Note): Accept in Principle
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: "If no bed inventory material is available at start-up, consideration shall be given to use of an inert material to reduce the hazard of calcium oxide to maintenance personnel. [should be necessary to re-enter the unit shortly after start-up. See A28.7(b)].
SUBSTANTIATION: Clearer statement.
COMMITTEE ACTION: Accept in Principle.
Accept the submitter's wording but change "shall" to "should," and add "to" before "...re-enter the unit..."
COMMITTEE STATEMENT: Editorial.

85H-204 (6-2.1.2(a)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to end of second sentence: "and that control and safety systems are energized.
SUBSTANTIATION: Important part of preparing unit for operation.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is already covered in 6-2.1.1(j).

85H-205 (6-2.1.2(c)): Accept
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Add to second sentence: "As recommended by the manufacturer.
2. Add third sentence: "Air heater soot blower shall be operated as recommended by the air heater manufacturer.
SUBSTANTIATION: None.
COMMITTEE ACTION: Accept.

85H-206 (6-2.1.2(c)): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the last line, delete: "Where provided, air heaters would not be started until the flue gas temperature is high enough to prevent moisture carryover by the combustion air to the burner.
SUBSTANTIATION: If start-up fuel is natural gas, regenerative air heaters would not be started until the flue gas temperature is high enough to prevent moisture carryover by the combustion air to the burner.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The concerns of the submitter are addressed in the preceding paragraph. This statement is useful and should not be deleted.

85H-207 (6-2.1.2(d) (New)): Hold for Further Study
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert between (c) and (d):
"If manufacturer does not require a specific level of material on the air grid, proceed with starting up the furnace as a simple gas or oil fired furnace with the primary air fan off or damper closed to stop air flow through the grid.
SUBSTANTIATION: Present wording in (f) "purge the bed" is confusing if a bed doesn't exist. If furnace is operating as described above or with a bed but no primary air pressure under the bed, the burners must be tripped with a slight positive pressure in the furnace for a sustained period >10 seconds. If they are not tripped, hot flue gas will flow down through the bed (if it exists) and through the grid, creating a situation like the Morgantown incident.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The concerns of the submitter are related to the caution in Section 6-2.4, but the proposed change requires in-depth review which cannot be appropriately addressed in the allotted time period.

85H-208 (6-2.1.2(e)): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: "Open dampers and air registers to the purge position in accordance with...
SUBSTANTIATION: The referenced 6.4.5 adds no further detail.
COMMITTEE ACTION: Accept.

85H-209 (6-2.1.2(f)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change last sentence to read: "The purge shall include the air and flue gas ducts, air heater(s), warm-up burner(s), windbox(s), and bed(s)."
SUBSTANTIATION: 1. Specific reference to only primary air ducts is not appropriate.
2. Other changes for editorial consistency.
COMMITTEE ACTION: Accept.

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85H-210 - (6-2.1.2(g)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace existing (g) with:
(g) Gas recirculation systems present special problems with respect to ensuring a complete unit purge. The boiler manufacturer’s recommendations on gas recirculation fan operation during purge and light-off shall be followed.
SUBSTANTIATION: Gas recirculation fan may not, in my opinion should not, be started until after purge is complete.
COMMITTEE ACTION: Accept.

85H-211 - (6-2.1.2(i)): Reject
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace 6-2.1.2(i) with:
“The BFB process initiates its warm-up cycle with the purge complete permissive. In general, the light-off and warm-up recommendations of the manufacturer shall be followed.”
SUBSTANTIATION: The original 6-2.1.2(i)1 reads OK but adds no value and is certainly out of place.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is sufficient and does not require modification.

85H-212 - (6-2.1.2(i)4 Note): Reject
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “ignition” before “period” in second line.
SUBSTANTIATION: To avoid confusion over what “trial for ignition” is being specified.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is appropriately addressed and does not require further clarification.

85H-213 - (6-2.1.2(i)6): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete 6-2.1.2.(i)6.
SUBSTANTIATION: 6-2.1.2.(i)6 permits 1100°F for oil and natural gas whereas 6-2.2.5 permits 1200°F for oil and natural gas.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: The reference to 6-2.2.5 and Appendix B” to “(See Appendix B).”

85H-214 - (6-2.1.2(i)6): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the second line, add: “for the section being started” between “temperature” and has.”
SUBSTANTIATION: Clarifies intent of sentence.
COMMITTEE ACTION: Accept.

85H-215 - (6-2.1.2(i)6): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change “A lower fuel temperature input limit” to “A lower fuel temperature input limit.”
SUBSTANTIATION: Editorial. It is a limit on temperature for fuel input, not a limit of fuel temperature.
COMMITTEE ACTION: Accept.

85H-216 - (6-2.1.2(j)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Relocate last sentence to before: “Warm-up burners shall...”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-217 - (6-2.1.2(j)6): Accept
SUBMITTER: David Kraft, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the third line, change: “A lower fuel temperature input limit...” to “A lower fuel input temperature limit...”
SUBSTANTIATION: As it currently reads, it implies there is a fuel temperature limit instead of a fuel input limit based on bed temperature.
COMMITTEE ACTION: Accept.

85H-218 - (6-2.1.2(j)8 Note): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “NOTE” and add the note as a third sentence in item 8.
SUBSTANTIATION: This is not advisory.
COMMITTEE ACTION: Accept.

85H-219 - (6-2.1.2(j)8 Note and 6-2.1.2(j)5 Note): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Consider questions below:
“Allow + percent of full load hourly rate of feed for 30 seconds.
Shutdown feeder, wait for temperature change then turn on feeder.”
SUBSTANTIATION: Insufficient detail:
Is 90 seconds necessary?
90 seconds at full load of all feeders?
Any kind of fuel?
All beds?
In suspension firing of coal, one excellent technique is to place.
(minimum feeder speed for thirty seconds) charge in pulverizer
while running and wait for flame detection, then restart feeder.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current practice of using 90 seconds is generally accepted and is believed to be appropriate and safe based on operating experience.

85H-220 - (6-2.1.2): Reject
SUBMITTER: Bob Melvin, A/C Power - Ace Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In first line after “in service” add “(Duct Burner or Start-Up Burner).”
SUBSTANTIATION: Clarify as some units have duct burners as well as start-up burners.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The terms of concern are appropriately defined.

85H-221 - (6-2.1.2(j)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the second line, add: “material” between “average bed” and “temperature.”
SUBSTANTIATION: More appropriate terminology for CFB.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The existing wording is appropriate and clear.
85H-222 - (6-2.1.2(j)1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "A lower fuel temperature input limit" to "A lower fuel input temperature limit."
SUBSTANTIATION: Editorial. It is a limit on temperature for fuel input, not a limit on fuel temperature.
COMMITTEE ACTION: Accept.

85H-223 - (6-2.1.2(j)4): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Relocate last sentence to before: “Warm-up burners shall...”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-224 - (6-2.1.2(j)5 Note): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "NOTE:" and add the note as a third sentence in item 5.
SUBSTANTIATION: This is not advisory.
COMMITTEE ACTION: Accept.

85H-225 - (6-2.2.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add underlined qualifier:
"This does not prohibit provisions for air lead and lag during changes in firing rate."
SUBSTANTIATION: Conform to NFPA 85C wording.
The intent is to permit air flow to lead fuel on load increases and lag the fuel flow on load decreases such that the air/fuel ratio is higher than normal during load changes. For bed firing, normally only air lag on a load decrease is used. It provides a constant air/fuel ratio by accounting for fuel hold up in the bed.
COMMITTEE ACTION: Accept.

85H-226 - (6-2.2.1): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise last sentence to read:
"... during increases and decreases in firing rate, respectively".
SUBSTANTIATION: Better clarifies intent of air lead-lag philosophy.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-225 (Log #170).

85H-227 - (6-2.2.2): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete 6-2.2.2.
SUBSTANTIATION: Delete because it is unimportant. Lances fire into the bed. They can be fired at any rate consistent with their design, the boiler’s load demand and the proper air/fuel ratio.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The existing wording is necessary and appropriate.

85H-228 - (6-2.2.2): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace with:
6-2.2.2 For those applications firing gas or oil, the firing rate shall be regulated by flow control or pressure control valves or by similar devices and shall not be regulated by modulating the shut-off valves. Shut-off valves shall be wide open or completely closed.
SUBSTANTIATION: Reworded for clarity.
COMMITTEE ACTION: Accept.

85H-229 - (6-2.2.5): Accept in Principle
SUBMITTER: Henry K. Wong, Foster Wheeler Energy Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add underlined qualifier:
"The stable operating philosophy of a fluidized bed shall be to maintain a bed temperature greater than 1400°F (760°C) and to initiate a main fuel trip below this temperature if the warm-up burner flame is not proven."
SUBSTANTIATION: Addition follows original intent, reflects current operating philosophy, allows system start-up and is consistent with Figure 9-3.1 (b) Boiler Trip Logic.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This wording further clarifies the intent of this section.

85H-230 - (6-2.2.5): Accept in Principle
SUBMITTER: Donald Wain, Pyro-Pacific Operating Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add underlined qualifier:
"The stable operating philosophy of a fluidized bed shall be to maintain a bed temperature greater than 1400°F (760°C) and to initiate a main fuel trip below this temperature if the warm-up burner flame is not proven."
SUBSTANTIATION: Addition follows original intent, reflects current operating philosophy, allows system start-up and is consistent with Figure 9-3.1 (b) Boiler Trip Logic.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This wording further clarifies the intent of this section.

85H-231 - (6-2.3.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "Where" to "When."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-232 - (6-2.3.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "Where" to "When."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-233 - (6-2.3.2(a)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Rearrange last sentence to read:
"Following a 5-minute postpurge, allow fans...for maintenance."
SUBSTANTIATION: Easier to understand sentence.
COMMITTEE ACTION: Accept.
85H- 234 - (6-2.3.2(a)): Reject
SUBMITTER: David Kraf, B&W
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In the last line, delete: "following a 5-minute postpurge"
SUBSTANTIATION: The FD and ID fans are running to cooling the unit down which is far in excess of a 5 minute postpurge.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The current wording is appropriate and supports the intent of the paragraph.

85H- 235 - (6-2.3.2(a) and (b)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Delete "following a 5-minute postpurge" from 6-2.3.2(a).
2. In 6-2.3.2(b), replace "remove volatiles from the furnace" with "burn the fuel remaining in the bed."
3. Add before last sentence of paragraph 6-2.3.2(b) "The fans shall not be tripped until there is positive indication of fuel burn out."
SUBSTANTIATION: A 5-minute postpurge is not required or pertinent. Reports of duct explosions indicate explosive mixtures are entering the combustion air ducts from the bed. Fans should not be automatically or routinely tripped without positive indication of fuel burn out.
COMMITTEE ACTION: Accept in Principle in Part.
COMMITTEE STATEMENT: The existing text adequately addresses this topic.

85H- 236 - (6-2.3.2(b) New) and (c) (New)): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add the following new text:
(b) If the unit is scheduled to be restarted, soon, complete a post purge of 5 minutes and continue to operate the fans or shut down the unit including the windbox and ductwork. The procedures for post purge and normal shutdown will aid in disturbances that will tend to lull the operator into thinking that under all conditions the safest thing to do is to shutdown the ID fans (recommended by Mgrs).
SUBSTANTIATION: Recommended procedure of 30 years - refer to Kessler's paper.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The existing caution is sufficiently clear to address the hazard. The concept of post purge is complex and requires further study. See Comment 85H-273 (Log #98).

85H- 237 - (6-2.4): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
CAUTION: It is possible to accumulate combustible throughout the unit including the windbox and ductwork. The procedures for post purge and normal shutdown will aid in disturbances that will effect minimizing and mixing of combustibles and air.
SUBSTANTIATION: 85C procedure of 30 years - refer to Kessler's paper.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The existing caution is sufficiently clear to address the hazard. The concept of post purge is complex and requires further study. See Comment 85H-273 (Log #98).

85H- 238 - (6-2.3.2(b) Note and Appendix A-2.8.8): Accept in Principle
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise the first and second sentences:
"Residual carbon (fuel inventory) in the bed can vary widely in coal fired units. If the fuel inventory is not known or if information prior to an MFT indicates it is high, the operator should not proceed with shutting down fans and collapsing the bed in the normal manner. If feasible he should reduce the fuel inventory to a level where the circulating material can be collapsed on the grid."
SUBSTANTIATION: Enough incidents of significant damage have occurred because operation after an MFT with high fuel inventory has been faulty; i.e. Nucla and Morgantown. The "Note" as it exists tends to lull the operator into thinking that under all conditions the safest thing to do is to shutdown the ID fans (recommended by Mgrs).
Appendix A paragraph addresses fuel inventory but does not help the operator in how he should handle the problem.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-235 (Log #172) and 85H-237 (Log #89).

85H- 239 - (6-2.4.1): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add paragraph 6-2.1.2(4) to the references
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This reference to CFB requirements was apparently omitted.

85H- 240 - (6-2.4.1): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add paragraph 6-2.1.2(j)4 to the references
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-243 (Log #173).

85H- 241 - (6-2.4.1): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete entire section 6-2.4.1.
SUBSTANTIATION: The hazards below constitute a partial list:
See 2-8.2 Char carryover
Char reinjection - is that continued during "hot restart"?
See 2-8.2 and 6-3.3 for additional hazards.
See 6-2.4 CAUTION.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-246 (Log #488).

85H- 242 - (6-2.4.1): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add the following new text:
"Before restarting a unit, a post-purge shall have been completed and the fans shall have been continuously operated. If the air flow is above purge rate, it may gradually be decreased to this value and information prior to an MFT indicates it is high, the operator should not proceed with shutting down fans and collapsing the bed in the normal manner. If feasible he should reduce the fuel inventory to a level where the circulating material can be collapsed on the grid."
SUBSTANTIATION: Enough incidents of significant damage have occurred because operation after an MFT with high fuel inventory has been faulty; i.e. Nucla and Morgantown. The "Note" as it exists tends to lull the operator into thinking that under all conditions the safest thing to do is to shutdown the ID fans (recommended by Mgrs).
Appendix A paragraph addresses fuel inventory but does not help the operator in how he should handle the problem.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-235 (Log #172) and 85H-237 (Log #89).

SUBSTANTIATION: Safe procedure to permit proper post purging and restarting after normal shutdown.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-246 (Log #488).

85H-245 - (6-2.4.1): Accept

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Replace reference "6-2.2.5" with "6-2.1.2(i)4.

OR

Replace both references with "6-1.5.1(g). Preferred.

SUBSTANTIATION: Paragraph 6-2.2.5 is for a bed temperature trip during normal operation when a serious combustion upset condition exists. This setpoint would be higher than the setpoint that is used during bed start-up. The correct reference is the start-up requirements for CFBCs or a single reference to the base requirement in paragraph 6-1.5.1(g).

The bed must be fluidized before the bed temperature is verified to meet the requirements of 6-2.4.1 for hot restart.

6-2.4.1 is a Typo.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: Replace both references as proposed, and make the other proposed changes.

85H-246 - (6-2.4.1): Accept in Principle

SUBMITTER: Bob Melvin, A/C Power - Ace Operations

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add reference at end of last sentence: 6-2.1.2(i)4.

SUBSTANTIATION: Consistent with the reference 6-2.1.2(i)4.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-243 (Log #173).

85H-247 - (6-2.4.1): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Replace "6-2.2.5" with "6-2.1.2(i)4.

SUBSTANTIATION: 6-2.2.5 is not the correct reference.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-243 (Log #173).

85H-248 - (6-2.4.1): Accept in Principle

SUBMITTER: David Kraft, B&W

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:

"When restarting a unit after it has been tripped or after the furnace has been bottled up, the purge cycle specified in 6-2.1.2 shall not be required prior to introduction of main fuel if the bed temperature is above the fuel [input] temperature [limit] specified in [6-1.5.1(g)] or 6-2.1.2.

SUBSTANTIATION: Wrong references and consistent wording with references.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-243 (Log #173).

85H-249 - (6-2.4.2): Reject

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete in its entirety.

SUBSTANTIATION: Air purge is required for all hot restarts.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Hot restarts are allowed without purge in accordance with 6-2.4.1.

85H-250 - (6-2.4.2): Reject

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add the following new text:

"If fans are shutdown, the procedure for startup after an emergency trip shall be followed."

SUBSTANTIATION: It is necessary to have another more stringent procedure to prevent mixing of combustibles present in the furnace with air due to drastic changes in air flow. Cold air has a property of creating sublimation which can cause quite unusual hazardous situations.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-246 (Log #488).

85H-251 - (6-2.4.2): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete "*" unless appendix material is added.

SUBSTANTIATION: See comment.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: This will be handled editorially by NFPA staff.

85H-252 - (6-2.4.2 (New)): Reject

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add the following new text:

"After completion of the unit purge, closing the burner air registers and shutting down of the Forced Draft and Induced Draft fans are optional. However, consideration shall be given to maintaining airflow through the unit to prevent accumulation of combustible gases. Leakage of main or igniter fuel into the furnace or windbox shall be prevented."

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85H-253 - (6-2.4.3) (New)): Reject

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete CAUTION and replace with new
6-2.4.3 as follows:
6-2.4.3 If a fan trip or other emergency prevents following a
normal hot shutdown sequence, combustibles may accumulate in
the windbox or air plenum and associated ducts. Combustibles shall
be proved not present prior to making any changes to damper
position or fan operation. Restart shall follow the boiler
manufacturer’s instructions.

SUBSTANTIATION: Provides specific guideline for action to take
rather than only caution that a problem may be present. There have
been enough recent experience to warrant this paragraph.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-246 (Log #488).

85H-254 - (6-2.5.1): Accept in Principle

SUBMITTER: Robert M. Lundberg, Los Altos, CA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise as follows:
6-2.5.1 With the initiation of a master fuel trip (MFT) all fuel shall
be stopped from entering the boiler. Oil and gas safety shut-off
valves shall be tripped and ignitor sparks deenergized. The fuel,
sorbent, and bed feed system and the bed drain system shall be
tripped. Electrostatic precipitators, fired reheaters, or other ignition
sources shall be tripped. Master fuel trips shall operate in a manner
to stop all fuel flow into the furnace within a period that will not
permit a dangerous accumulation of fuel in the furnace.

Add a new last sentence:
“Char recirculation shall be stopped.”

SUBSTANTIATION: From any of the listed hazards too.

The option of tripping the fans has always lengthened the
procedure of startup. I am not in favor of this. Manual tripping is
available.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-246 (Log #488).

85H-256 - (6-2.5.1): Accept in Principle

SUBMITTER: Gordon L. Johnson, Bechtel Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add to paragraph 6-2.5.1:
“The owner shall have the option on low drum water level and
combustible outlet temperature above 900°F to stop the flow of
primary (fluidizing) air immediately. This may require tripping a
primary air fan. The ID fan however shall not be tripped.

SUBSTANTIATION: Some CFC boiler manufacturer are tripping
the ID fan when above conditions exist to quickly reduce heat
transfer in the furnace because it’s the easiest thing to do. I think
PA fans (or equivalents) should be tripped and ID and sec air fans
left in service at minimum air flow. If a startup burner was in service
when PA fans tripped I would leave it in service (no MFT) to
preclude a purge and let the operator trip it if waterwalls are in
jeopardy.

COMMITTEE ACTION: Accept in Principle.

Add a new 6-2.5.3 as follows:
“The owner shall have the option on low, low drum water level and
furnace outlet temperature above 900°F to stop the flow of fluidizing
air immediately. This may require tripping a forced draft fan. The
induced draft fan, however, shall not be tripped.”

COMMITTEE STATEMENT: This editorially clarifies and more
appropriately locates this criteria.

85H-257 - (6-2.5.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: 1. Add "by operator action or" between
"(MFT)" and "and "in the first line.
2. In the last line spell out "forced draft" and "induced draft.

SUBSTANTIATION: 1. Need to recognize that operator can
initiate MFT.
2. More appropriate for BFB and CFB applications.

COMMITTEE ACTION: Accept.

85H-258 - (Table 6-2.5.1(a)): Accept

SUBMITTER: William Astman, Manassas, VA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add “volumetric” before "air flow”.

SUBSTANTIATION: Consistency with definition and other
paragraphs.

COMMITTEE ACTION: Accept.

85H-259 - (Tables 6-2.5.1(a) and 6-2.5.1(b)): Reject

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Combine these fuel trips with those in
6-2.5.1(a).

SUBSTANTIATION: If these are mandatory trips, then there is no
reason for them not to be automatic.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: It’s not realistically feasible to make
the trips automatic.

85H-260 - (Table 6-2.5.1(a), Item (a)): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
(a) Loss of any induced draft or forced draft fan required to
sustain safe combustion. (See Chapter 5.)

SUBSTANTIATION: Reworded to better apply to BFB and CFB
applications.

COMMITTEE ACTION: Accept.
85H-261 -(Table 6-2.5.1(a), Item (c)): Reject
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Move insufficient drum level to Table 6-2.5.1(b) mandatory master fuel trips with alarms (not necessarily automatic).
SUBSTANTIATION: Low drum level is not a "combustion system hazard" and some prefer an operator initiated action.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The committee believes this should be an automatic trip.

85H-262 -(Table 6-2.5.1(a), Item (c)): Reject
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
"Insufficient drum level during those periods where imminent damage to water walls or drum is present.
SUBSTANTIATION: First, I don't think this should be a mandatory trip.
Second, if it must be, then qualifying conditions must be stated to prevent nuisance trips. For example, during a cold start with a single startup burner on, tripping the burner because drum level is insufficient is not warranted. Restarting the burner creates more of a safety hazard than keeping burner on.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is unnecessary clarification and is not required.

85H-263 -(Table 6-2.5.1(a), Item (f)): Accept
SUBMITTER: Thomas M. McKee, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add: "when main fuel is being admitted to bed."
SUBSTANTIATION: Loss of interlock systems energy supply constitutes a hazardous situation and an immediate automatic trip is warranted.
COMMITTEE ACTION: Accept.

85H-264 -(Table 6-2.5.1(a), Item (f)): Accept
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add: "Bed temperature below value specified in 6-2.2.5 and warm-up burner established.
SUBSTANTIATION: Tripping properly operating SU burners makes no sense just because bed temperature is low. As the committee cannot seem to agree on the proper safe purging procedure with hot material collapsed on the grid it seems prudent to keep operating in a manner that does not require a purge; i.e., a startup burner is established.
COMMITTEE ACTION: Accept.

85H-265 -(Table 6-2.5.1(a), Item (g) (New)): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to 6-2.5.1(a) (Table)
(item (g) loss of energy supply to interlock systems.
SUBSTANTIATION: Loss of the interlock systems under any circumstances constitutes a hazardous situation and an immediate automatic trip should result.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This clarifies the intent of this paragraph.

85H-266 -(Table 6-2.5.1(a), Item (g) (New)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add item (g) "Bed temperature below value specified in 6-2.2.5 and warm-up burner flame not proven.
SUBSTANTIATION: Original statement does not agree with original intent nor Figure 9-3.1 (b) Boiler Trip Logic.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: See Comment 85H-264 (Log #226).

85H-267 -(Table 6-2.5.1(a), Items (e), (f), and (g) (New)): Accept in Part.
SUBMITTER: R.S. Rand, Bailey Controls, Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace item (e) with "Whenever the total airflow drops below the purge rate by 5 percent of the full load volumetric airflow."
Replace item (f) with "Bed temperature has exceeded the main fuel operating limit specified in 6-2.2.5 by 100°F and then drops below the 6-2.2.5 operating limit."
Add item (g) "Bed temperature below the main fuel ignition limit specified in 6-1.5.1(g) and loss of all warm-up burner flame."
SUBSTANTIATION: The above changes are intended to make this list match the intent of this standard.
Paragraph 6-1.5.1 (g) and paragraph 6-2.2.5 specify MFTs at different bed temperatures and for different reasons. The tripping of the last warmup burner when the bed temperature is low, indicates a release of unburned fuel into the furnace or ducts and requires a unit purge prior to restarting the fuel.
New item (g) is shown in Figure 9-3.1 (b) Boiler trip logic. NFPA 85C requires a MFT of loss of all flame and a partial loss of flame introducing a hazard. New item (g) matches the first and replacement item (f) is similar to the second.
COMMITTEE ACTION: Accept in Part.
Accept only the change to item (e).
COMMITTEE STATEMENT: Items (f) and (g) are addressed by Comment 85H-263 (Log #209) and Comment 85H-264 (Log #226).

85H-268 -(Table 6-2.5.1(b), Item (a)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls, Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In Table 6-2.5.1 (b) modify item (a) to read: "loss of energy supply for combustion control."
SUBSTANTIATION: Loss of interlock systems energy supply constitutes a hazardous situation and an immediate automatic trip is warranted.
COMMITTEE ACTION: Accept in Principle.
Modify item (a) to: "Sustained loss of energy supply for combustion control."
COMMITTEE STATEMENT: This clarifies the intent of this paragraph.
85H-270 - (6-2.5.2): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Accept in Principle.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept

85H-271 - (6-2.5.2): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise 6-2.5.2 to read:
6-2.5.2 The fans that are operating after the master fuel trip shall be continued in service. Do not immediately increase the airflow by deliberate manual or automatic control action.
SUBSTANTIATION: None.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Editorial.

85H-272 - (6-2.5.3): Reject
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add a new 6-2.5.3 as follows:
6-2.5.3 Procedure for Purging after an Emergency Shutdown. Fans that are operating after the master fuel trip shall be continued in service. Do not immediately increase the airflow by deliberate manual or automatic control action. If the airflow is above purge rate, it may gradually be decreased to this value for a post-firing purge. If the airflow is below purge rate at the time of the trip, it shall be continued at the existing rate for five minutes and then gradually increased to this purge airflow and held at this value for a post-firing purge.
6-2.5.4 If the emergency trip was caused by loss of draft fans, or draft fans have also tripped, close gas recirculating fan dampers and slowly open all dampers in the air and the gas passages of the unit to the wide open position in order to create as much natural draft as possible to ventilate the unit. Opening fan dampers shall be timed or controlled to avoid excessive positive or negative furnace pressure transients during fan coast-down. Maintain this condition for a period of not less than 15 minutes. At the end of this period, start the fan(s) in accordance with NFPA 85C, Chapter 5, "Furnace Implosion Protection." Gradually increase airflow to purge rate and complete a post-firing unit purge.
6-2.5.5 If it is impossible to restart for some extended period of time, a flow of air through the unit shall be maintained to prevent accumulations of combustible gases.
SUBSTANTIATION: Minimize disturbance of airflow in critical period.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The Committee rejects the new proposed 6-2.5.3 and 6-2.5.5 because they do not allow a hot restart. The proposed 6-2.5.4 introduces concepts that require further review, and cannot be appropriately handled in the allotted time period.

85H-273 - (6-2.5.3 (New)): Hold for Further Study
SUBMITTER: Robert M. Lundberg, Los Altos, CA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add a new item 6-2.5.3 as follows:
6-2.5.3 Procedure for Purging after an Emergency Shutdown. Fans that are operating after the master fuel trip shall be continued in service. Do not immediately increase the airflow by deliberate manual or automatic control action. If the airflow is above purge rate, it may gradually be decreased to this value for a post-firing purge. If the airflow is below purge rate at the time of the trip, it shall be continued at the existing rate for five minutes and then gradually increased to this purge airflow and held at this value for a post-firing purge.
6-2.5.4 If the emergency trip was caused by loss of draft fans, or draft fans have also tripped, close gas recirculating fan dampers and slowly open all dampers in the air and the gas passages of the unit to the wide open position in order to create as much natural draft as possible to ventilate the unit. Opening fan dampers shall be timed or controlled to avoid excessive positive or negative furnace pressure transients during fan coast-down. Maintain this condition for a period of not less than 15 minutes. At the end of this period, start the fan(s) in accordance with NFPA 85C, Chapter 5, "Furnace Implosion Protection." Gradually increase airflow to purge rate and complete a post-firing unit purge.
6-2.5.5 If it is impossible to restart for some extended period of time, a flow of air through the unit shall be maintained to prevent accumulations of combustible gases.
SUBSTANTIATION: Minimize disturbance of airflow in critical period.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: The Committee rejects the new proposed 6-2.5.3 and 6-2.5.5 because they do not allow a hot restart. The proposed 6-2.5.4 introduces concepts that require further review, and cannot be appropriately handled in the allotted time period.

85H-274 - (6-2.5.4 (New)): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Accept the submitter's wording with the following change: 
...(See 6-2.2.5) Use of warm-up burners is permitted to maintain bed material temperature. Use of lances is also permitted provided the bed temperature is above the minimum safe value for that fuel. If fuel feed to a malfunctioning feeder subsystem can be restored before the bed temperature falls below the main fuel temperature trip limit, the subsystem shall be permitted to return to service.
SUBSTANTIATION: Reworks existing text into "shall statement" format.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Editorial.

85H-275 - (6-3.3): Accept in Principle
SUBMITTER: Michael C. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace existing 6-3.3 with:
6-3.3 Momentary interruptions in main fuel supply or changes in fuel quality shall not require a unit trip provided the bed temperature remains above the limits for safe operation. (See 6-2.2.5) Auxiliary fuel firing using burned is permitted to maintain bed material temperature. Auxiliary fuel firing using lances is also permitted provided the bed temperature is above the minimum safe value for that fuel. If fuel feed to a malfunctioning feeder subsystem can be restored before the bed temperature falls below the main fuel temperature trip limit, the subsystem shall be permitted to return to service.
SUBSTANTIATION: Hold for Further Study.
COMMITTEE STATEMENT: Editorial.

85H-276 - (6-4.4): Hold for Further Study
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add a new item 6-4.4 as follows:
6-4.4 If the FD fan(s) trip with fuel in the bed, and an ID fan remains running, restart a FD fan at a low output sufficient to pressurize the combustion air ducts, and/or decrease the furnace pressure with the ID fan. If all FD and ID fan(s) trip with fuel in the bed, restart an ID fan and establish a lower than normal furnace pressure. These actions are intended as immediate actions to prevent back flow of gaseous combustibles into the combustion hazard. Longer term corrective actions shall be taken after an assessment of the boiler’s situation.
SUBSTANTIATION: These are prudent actions to prevent explosions in the combustion air ducts.
COMMITTEE ACTION: Hold for Further Study.
COMMITTEE STATEMENT: This introduces a concept that cannot be appropriately addressed in the allotted time period.
SUBMITTER: Robert M. Lundberg, Los Altos, CA

RECOMMENDATION: Revise text as follows:

"Prior to allowing personnel to enter a unit,..."

COMMITTEE ACTION: Accept.

SUBSTANTIATION: Clarity.

COMMENT ON PROPOSAL NO: 85H-12

COMMITTEE ACTION: Accept.

SUBSTANTIATION: The volumes of inerts necessary for this apparatus, it may be produced slowly through a small inert genera-

85H-278 - (6-4.1): Hold for Further Study

COMMITTEE ACTION: Hold for Further Study.

SUBMITTER: Peter Matthews, Hartford Steam Boiler

RECOMMENDATION: These paragraphs are equipment require-
ments and should be in Chapter 4.

COMMITTEE ACTION: Reject.

SUBSTANTIATION: These paragraphs are equipment require-
ments and should be in Chapter 4.

COMMITTEE STATEMENT: This introduces a concept that cannot not apply to warm-up burners for FBC boilers.

COMMITTEE ACTION: Reject.

SUBSTANTIATION: This paragraph already exists in 4-6.3.

COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

COMMITTEE ACTION: Accept.

SUBSTANTIATION: 1. Provides necessary cross-ret~erence.

COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

COMMITTEE ACTION: Reject.

SUBSTANTIATION: This paragraph already exists in 4-6.3.

COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

COMMITTEE ACTION: Accept.

SUBSTANTIATION: No supervision of lances but they are burner~

COMMITTEE STATEMENT: This section was added to parallel Chapter 8.

COMMITTEE ACTION: Accept.

SUBSTANTIATION: This paragraph appears in 4-6.1.9.

COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

COMMITTEE ACTION: Reject.

SUBSTANTIATION: This paragraph appears in 4-6.4.3.2.3(e) and (f).

COMMITTEE STATEMENT: This paragraph already exists in 4-6.3.

COMMITTEE ACTION: Reject.

SUBSTANTIATION: This paragraph already exists in 4-6.3.

COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

COMMITTEE ACTION: Accept.

SUBSTANTIATION: No supervision of lances but they are burner~
RECOMMENDATION:
COMMITTEE
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-289 - (7-4.1.1 (New)): Reject
RECOMMENDATION: Add new 7-4.1.1 as follows:
7-4.1.1 The number of flame detectors for each burner shall be consistent with the class ignitor provided the fuels used and the method of burner and ignitor operation. A burner with a class 2 ignitor used in intermittent service shall have two flame detectors.
SUBSTANTIATION: This paragraph is needed to highlight the need to properly design a flame detection system in order for it to provide safe and reliable operation.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is design criteria and is too specific for a minimum standard.

85H-290 - (7-5.1.3): Accept
SUBMITTER: Donald Wain, Pyro-Pacific Operating Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add the word "to." in second line.
"...value shall be permitted to be used at..."
SUBSTANTIATION: Syntax error, clarification of meaning.
COMMITTEE ACTION: Accept.

85H-291 - (7-5.1.3): Accept
SUBMITTER: William Axeman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "to" between "permitted" and "be" in second line.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-292 - (7-5.1.3): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete paragraph 7-5.1.3.
SUBSTANTIATION: The requirements of paragraph 7-5.1.3 does not apply to individual flow control burners. In addition, this paragraph provides little useful guidance for any type of warm-up burner.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Based on extensive subcommittee deliberations, it was determined that this paragraph is necessary to maintain NFPA 85H as a stand-alone document.

85H-293 - (7-5.1.3): Accept
SUBMITTER: Pete Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert "to" before "be" on second line.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-294 - (7-5.1.3) Accept in Principle in Part
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Reject the submitter's items 1 and 2.
COMMITTEE STATEMENT: Item 3 is too specific and restrictive, and not necessary.

85H-295 - (7-5.1.4): Accept
SUBMITTER: R. S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In last sentence, replace "7-5.2" with "7-1.2.
SUBSTANTIATION: 7-5.2 does not appear to be the correct reference.
COMMITTEE ACTION: Accept.

85H-296 - (7-5.2.1.1 (b)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete this paragraph.
SUBSTANTIATION: Units with unreliable ignitors should have their ignitor fixed or replaced; not tested more often.
COMMITTEE ACTION: Accept.

85H-297 - (7-5.2.1.2(a) and Figure A-7-5.1.1 (e)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Paragraph 7-5.2.1.2(a) (a) Replace "main fuel control valve" with "main fuel control valve(s)."
(b) Replace "vent valve" with "vent valve(s)."
2. Add a low pressure switch to the fuel header on Figure A-7-5.1.1 (e).
3. Add a Note after 7-5.2.1.2(a) "The burner header and igniter header should be vented for the system shown in Figure A-7-5.1.1 (e)."
4. Add a Note after paragraph 6.2.1.2(d) to indicate that the warm-up burner leak test step can be performed at this time.
SUBSTANTIATION: Individual flow controlled burners do not have a low header pressure switch per Figure A-7-5.1.1 (e). Also, individual flow control burners have many fuel control valves. Also, individual flow control burners have two header vent valves i.e. test figure do not match.
COMMITTEE ACTION: Accept in Principle in Part.

85H-298 - (7-5.2.1.2(a) and Figure A-7-5.1.1 (e)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Paragraph 7-5.2.1.2(a) (a) Replace "main fuel control valve" with "main fuel control valve(s)."
(b) Replace "vent valve" with "vent valve(s)."
2. Add a low pressure switch to the fuel header on Figure A-7-5.1.1 (e).
3. Add a Note after 7-5.2.1.2(a) "The burner header and igniter header should be vented for the system shown in Figure A-7-5.1.1 (e)."
4. Add a Note after paragraph 6.2.1.2(d) to indicate that the warm-up burner leak test step can be performed at this time.
SUBSTANTIATION: Individual flow controlled burners do not have a low header pressure switch per Figure A-7-5.1.1 (e). Also, individual flow control burners have many fuel control valves. Also, individual flow control burners have two header vent valves i.e. test figure do not match.
COMMITTEE ACTION: Accept in Principle in Part.

85H-299 - (7-5.2.1.2(a) and Figure A-7-5.1.1 (e)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. (a) Accept.
2. (b) Accept.
3. Accept in Principle. Revise 7-5.2.1.2(a) as follows:
7-5.2.1.2(a) If a charging valve (required self closing) on the main gas supply is furnished, this shall be opened in conjunction with the furnace purge to bypass the main safety shutoff valve. Open main fuel control valve. Vent the burner supply piping or header until it is filled with gas. Close burner header or supply piping atmospheric vent valve. Leave charging valve open until the gas pressure on the burner supply piping or header is raised sufficiently so that a significant drop in pressure can be detected using a switch or transmitter after the main safety shutoff valve and charging valve are closed. If any significant leakage occurs during the purge, this pressure will decrease and shall trip the system.
4. (a) Accept.
COMMITTEE STATEMENT: 2. See Comment 85H-566 (Log #65).
3. This addresses the submitter's concern. See Comment 85H-503 (Log #504).
4. A change to this paragraph is unnecessary based on the other proposed changes.
COMMITTEE STATEMENT: See Comment 85H-299 (Log #181).

COMMITTEE STATEMENT: Further clarification has been added, and it is believed that these changes meet the intent of the submitter.

COMMITTEE STATEMENT: The existing text is sufficient and accurate.

COMMITTEE STATEMENT: This provides wording that addresses the concerns of the submitter.
COMMENT ON PROPOSAL NO: 85H-306 - (7.5.2.1.2(e) and (f) Note (New)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.

RECOMMENDATION: Revise text as follows:
1. Replace "ignitor" with "igniter" in many places and Figure A-7-5.1.1(e).
2. Add Note under paragraph 7.5.2.1.2(f):
   "The steps (e) and (f) above apply to fuel control systems as shown on Figure A-7-5.1.1(d) only. fuel systems as shown on Figure A-7-5.1.1(e) shall:
   (1) Vent the gas headers to fill them with gas if not performed in step (a) above,
   (2) Set all fuel control valves to the light off position,
   (3) Verify the igniter header press regulator is holding the recommended fuel pressure and
   (4) Vent the igniter gas headers to fill them with gas if not performed in step (a) above."

SUBSTANTIATION: 1. Ignitor is not the correct spelling, see NFPA 85C, NFPA 850, and NFPA 8503 ABMA lexicon, the correct spelling is igniter.
2. Equipment and operating procedures are different for individual flow control burners. For example, the individual flow control burner does not have an igniter safety shut-off valve and does not have a main fuel bypass control valve.

COMMITTEE STATEMENT: See Comment 85H-308 (Log #140).
COMMITTEE ACTION: Accept in Principle.

COMMENT ON PROPOSAL NO: 85H-307 - (7.5.2.1.2(c)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: In the first line, add "header" between "ignitor" and "safety shutoff valve."

SUBSTANTIATION: This section does not apply to systems with Class 3 direct electric ignitors. The addition of the exception clarifies this, and provides continuity with 7.8.1.3(c), etc.

COMMITTEE STATEMENT: The existing wording is sufficient and clearly meets the intent of the paragraph.
COMMITTEE ACTION: Accept.

COMMENT ON PROPOSAL NO: 85H-308 - (7.5.2.1.2(h) Exception (New)): Reject
SUBMITTER: Robert Herdman, ABB Combustion Engineering

RECOMMENDATION: Add exception:
"Exception: For direct electric (Class 3 special) ignitors, (h) does not apply."

SUBSTANTIATION: This section does not apply to systems with Class 3 direct electric ignitors. The addition of the exception clarifies this, and provides continuity with 7.8.1.3(c), etc.

COMMITTEE STATEMENT: See Comment 85H-309 (Log #29).
COMMITTEE ACTION: Reject.

COMMENT ON PROPOSAL NO: 85H-309 - (7.5.2.1.2(i)): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering

RECOMMENDATION: In the second line, add section (k):
"...described in 7.5.2.1.2(a) through (h), (j), (k), and (m) through (p)."

SUBSTANTIATION: The section (k) was apparently inadvertently omitted, and is appropriate when using a Class III direct electric ignitor.

COMMITTEE ACTION: Accept in Principle.

In 7.5.2.1.2(l), revise the references to read:
"...described in 7.5.2.1.2(a) through (e), (g), and (j) through (m) shall be..."

COMMITTEE STATEMENT: This more appropriately corrects the references.

COMMITTEE ACTION: Reject.

COMMENT ON PROPOSAL NO: 85H-310 - (7.5.2.1.2(j), (f) Exception (New) and (h) Exception (New)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Revise text as follows:
1. Delete paragraph (i).
2. Add after paragraphs (f) and (h) in this section, the following: "Exception: This does not apply where Class 3 special electric ignitors are used."
SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Note under paragraph 7-5.2.1.2(o):
"The above paragraph (o) does not apply to burner fuel system as shown in Figure A-7-5.1.1(e). Each individual flow control burner as must have an individual combustion control system that maintains the correct air/fuel ratio, a stable flame and fire rate in accordance with the demand over the full operating range of the burner."
SUBSTANTIATION: The control of individual flow control warm-up burners is different than headered burners. The combustion control for each burner is much like those used in a single burner boiler. See NFPA 8501.
COMMITTEE ACTION: Accept.

SUBMITTER: Robert Herdman, ABB Combustion Engineering
RECOMMENDATION: Modify third sentence (6th line): "(as measured by burner fuel header pressure, individual burner flows, or other equivalent means)"
SUBSTANTIATION: Simplifies paragraph. Also, per 7-5.2.1.2(c), the vent may be open to provide flow even if there is a charging valve present.
COMMITTEE ACTION: Accept.

SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "[see 7-5.2.1.2(m)"
SUBSTANTIATION: Reference not needed.
COMMITTEE ACTION: Accept.

SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete second sentence.
SUBSTANTIATION: The proposed modification maintains the intent without unnecessarily restricting the means of measurement.
COMMITTEE ACTION: Accept.

SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Modify third sentence (th line): "Follow the procedures of 7-5.2.1.2(g) through (l) for placing...
COMMITTEE STATEMENT: This is also consistent with Comment 85H-309 (Log #29).

SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "Mandatory Automatic Burner Subsystem" with "Mandatory Automatic Fuel Trip for Gas Fired Warm-up Burners."
SUBSTANTIATION: Clarification, "fuel trip" missing.
COMMITTEE ACTION: Accept.

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add exception:
Exception No. 2: In the case of a duct burner, the firing rate is to be regulated by increasing or decreasing the fuel flow. An interlock shall be provided to prevent air flow to the duct burner from falling below the minimum required for combustion as recommended by the manufacturer.
SUBSTANTIATION: To allow for duct burner application.
COMMITTEE ACTION: Accept.

SUBMITTER: Felix Silva, Pyropower Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: This should be rewritten as follows: "When the last burner or group of burners is taken out of service the main safety shutoff valve shall trip."
SUBSTANTIATION: Clarity.
COMMITTEE ACTION: Accept.

SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "Mandatory Automatic Burner Subsystem" with "Mandatory Automatic Fuel Trip for Gas Fired Warm-up Burners."
SUBSTANTIATION: Clarification, "fuel trip" missing.
COMMITTEE ACTION: Accept.

SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add "Trips" after the word "Subsystem" in the Title.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

SUBMITTER: R.F. Eng, Foster Wheeler Energy Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "fuel trip" to "burner trip".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "fuel flow control" to "individual burner flows.
SUBSTANTIATION: Nice word, but not necessary here. If it accomplishes what is required by paragraph, it is reliable.
COMMITTEE ACTION: Accept.
 NFPA 85H — A93 TCD

85H-326 - (7-5.3(a) through (f)): Accept in Principle

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Add subheading: "7-5.3.1 For Warm-up burner fuel systems as shown in Figure A-7.5.1(d):"
2. Replace (b) with: "Loss of air supply fan for or inadequate airflow to the warm-up burner(s)."
3. Delete (c) and (d).
4. Add subsection: "7-5.3.2 For Warm-up burner fuel systems as shown in Figure A-7.5.1(e):"
   a. High fuel gas header pressure.
   b. Low fuel gas header pressure.
   c. Loss of air supply fan for or inadequate airflow to the warm-up burner(s).
   d. Master fuel trip.

SUBSTANTIATION: Loss of warm-up burner's air flow should include loss of fan. Loss of all flame is a combustion monitoring system trip and includes bed temperature considerations. The main fuel safety shut-off valve for gas fired warm-up burners is not tripped closed when the last burner is tripped.

The fuel supply system for individual flow controlled burners is different. The burners are prevented from operating below their limit of stable operation by setting a light off position limit on the closing of the fuel control valve. High and low fuel gas header pressure is monitored to insure each burner is operated within its capacity and stability limits.

NOTE: The High and Low pressure switches downstream of the burner safety shutoff valve(s) on Figure A-7.5.1(e) are not needed if high and low pressure switches are installed on the header and the fuel control valve(s) have mechanical maximum and minimum position limits. This is the method used for single burner boilers.

NFPA 85H-328 - (7-5.4): Reject

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
- Insert in title "an Automatic" between "Requiring" and "shutdown.
- Revise last sentence to read:
  "If fuel flow cannot be reduced, a Master Fuel Trip shall be initiated.

SUBSTANTIATION: This chapter deals with gas-fired warm-up burners. A fuel rich condition cannot be tolerated.

COMMITTEE STATEMENT: Text as written is consistent with NFPA 85C and changes are not necessary.

85H-329 - (7-5.5.1): Reject

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add at end of statement: "except for hunches which are lighted from the bed material.

SUBSTANTIATION: Lances are excluded from the requirement.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: Clarification is not necessary.

85H-330 - (7-5.5.2): Accept in Principle

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Replace "Where operation at low capacity..." with: "For warm-up burner fuel systems as shown in Figure A-7.5.1(e), where operating at low capacity..."

SUBSTANTIATION: The fuel supply system for individual flow controlled burners is different. To reduce capacity using individual flow control burners, reduce fuel flow and/ or remove burners from service. Burner header pressure is not a criterion for operation.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-331 (Log #808).
NFPA 85H — A93 TCD

85H-335 - (7.7.2): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "10" to "9."
SUBSTANTIATION: Incorrect reference.
COMMITTEE ACTION: Accept.

85H-336 - (7-7.2): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
"Furnace pressure fluctuations at burner throat shall be considered in determining location of and setting for low burner header pressure trip functions."
SUBSTANTIATION: Low pressure gas burners can present a situation where furnace pressure fluctuations can predominate over burner gas passage pressure drop in influence of fuel flow through the burner.
COMMITTEE ACTION: Accept in Principle.
Add the proposed wording to the end of 7-7.2(b).
COMMITTEE STATEMENT: The existing text is appropriate and should not be deleted.

85H-337 - (7.7.2): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise first sentence to: "The pressure at the fuel gas meter shall be..."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-338 - (7.7.2(c)): Accept
SUBMITTER: R.F. Eng, Foster Wheeler Energy Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
(g) Burner Discharge Temperature (High). The discharge temperature from a burner, such as a duct burner, that is designed to maintain a desired discharge temperature shall be monitored and alarmed when the temperature exceeds the maximum operating temperature to warn the operator in advance of the temperature that leads to a trip.
COMMITTEE STATEMENT: Reworded for clarity.

85H-339 - (7.8): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete Section 7.8 Boiler Front Control (Supervised Manual).
SUBSTANTIATION: Fluidized bed boilers do not permit operator observation of the burner flame as required by the present text. The safety requirements for fluid bed firing are too complicated for operator to follow at the boiler front. There is insufficient operating experience with supervised manual operation of gas fired warm-up burners on fluidized bed combustion boilers to develop a viable standard.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The submitter's substantiation is not correct. Boiler front operation is used.

85H-340 - (7.8.1.1(c)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "(c)" to "(b)."
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-341 - (7.8.1.1(d)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add second sentence as follows: "Total air flow through the unit shall not be reduced below purge rate."
SUBSTANTIATION: This statement is made elsewhere in standard: but seem particularly appropriate here as well.
COMMITTEE ACTION: Accept.

85H-342 - (7.8.1.3(b)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add at end of sentence: "except for lances, which have no flame safety system."
SUBSTANTIATION: Lances are exceptions.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This section only applies to warm-up burners.

85H-343 - (7.8.1.3(f)): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add at end of sentence: "except for lances which have no flame safety system."
SUBSTANTIATION: Cannot verify flame stability of lances.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This section only applies to warm-up burners.

85H-344 - (7.8.1.3(h)): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add at end of sentence: "except for lances which have no flame safety system."
SUBSTANTIATION: Cannot verify flame stability of lances.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This section only applies to warm-up burners.

85H-345 - (7.8.1.4(d)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise parenthetical statement to: "(see also 9-3)."
SUBSTANTIATION: I think 9.2.3 is incorrect reference.
COMMITTEE ACTION: Accept.
85H-346 - (7-8.1.4.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Accept.

85H-347 - (7-8.1.5.1): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Reject.

85H-348 - (7-8.2): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Accept.

85H-349 - (7-8.2.1): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMITTEE ACTION: Accept.

85H-350 - (7-8.2.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Accept.

85H-351 - (7-8.2.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMITTEE ACTION: Accept.

85H-352 - (7-8.2.1.c): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMITTEE ACTION: Accept.
85H-358 - (7-8.2.2(f) and (g) (New)): Accept
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add new text as follows:
(f) Open burner shutoff valve if igniter flame is proven
(g) If main burner flame is not established within main flame trial for ignition period (Class 2 and Class 3 ignitors) an MFT shall be initiated.

SUBSTANTIATION: Needed to complete light-off.
COMMITTEE ACTION: Accept.

85H-360 - (7-8.2.3): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "First Burner" to "First Igniter".
SUBSTANTIATION: Text of paragraph covers igniters not burners.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-356 (Log #607).

85H-359 - (7-8.2.3): Reject
COMMITTEE ACTION: Accept.

85H-361 - (7-8.2.4 (New) through 7-8.2.7 (New)): Accept in Principle in Part
Operator Actions Interlock Functions
(a) Reduce burner load to minimum. Do not reduce airflow through burner below its minimum operating rate.
(b) Close individual supervisory shutoff valve at burner and associated igniter valve if in operation. Leave burner airflow at firing rate;
(c) Purge burner for at least one minute. Adjust burner airflow per manufacturer's instructions;
(d) Repeat steps (a) through (c) for subsequent burners.

COMMITTEE STATEMENT: 1. The new 7-8.2.4 is already addressed by 7-8.2.2. See Comment 85H-358 (Log #524).
2. New 7-8.2.5 is addressed by Comment 85H-360 (Log #525).
3. Header controlled supervised manual warm-up burners do not need to be addressed in this standard. Industry practice for these burners is to use individually controlled warm-up burners.
4. New 7-8.2.7 is better addressed as shown. See substantiation for item 3.

85H-362 - (7-8.2.8 (New) and 8-7.2.9 (New)): Accept in Principle
SUBMITTER: James Toutz, Forney International, Inc.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add 7-8.2.8 (use wording from 85C, 6-8.2.8).
Add 7-8.2.9 (use wording from 85C, 6-8.2.9)
SUBSTANTIATION: This data appears to have been left out.
COMMITTEE ACTION: Accept in Principle.

85H-363 - (7-8.2.4 (New) through 7-8.2.7 (New)): Accept in Principle in Part
SUBMITTER: James Toutz, Forney International, Inc.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add 7-8.2.4 (use wording from 85C, 6-8.2.4)*
Add 7-8.2.5 (use wording from 85C, 6-8.2.5)*
Add 7-8.2.6 (use wording from 85C, 6-8.2.6)*
Add 7-8.2.7 (use wording from 85C, 6-8.2.7)*
Modify any reference paragraph numbers from 85C text to correspond to 85H.
SUBSTANTIATION: This appears to have not been picked up in addressing burner light-off procedures consistent with 85C.
COMMITTEE ACTION: Accept in Principle in Part.
1. Reject.
2. Reject.
3. Accept in Principle.
Revise 7.8.1.1 by adding "individually controlled" before "warm-up burners" in second line.
Add 7-8.2.4 Normal Shutdown Cycle
Operator Actions
(a) Reduce burner load to minimum. Do not reduce airflow through burner below its minimum operating rate.
(b) As each burner supervisory shutoff valve is closed, loss of flame will cause its associated shutoff valve to close. After last burner supervisory shutoff valve is closed, loss of all burner flame shall cause header or safety supply shutoff valve to close.
Atmospheric vent valve shall open;

COMMITTEE STATEMENT: This additions address the submitter’s concerns.
85H-364 - (8.2(c)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “either immediately or at a later time” in first line.
SUBSTANTIATION: Not needed. Is there any other condition but “immediately” or “later?”
COMMITTEE ACTION: Accept.

85H-365 - (8.2(d)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change at end of paragraph “8-2” to “8-2(c)”
SUBSTANTIATION: Needed so that reference makes sense.
COMMITTEE ACTION: Accept.

85H-366 - (8.2(0)): Accept
COMMITTEE ACTION: Accept.

85H-367 - (8.3): Accept
COMMITTEE ACTION: Accept.

85H-368 - (8.3.1): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change “8-3 System Requirements” to “8-3 Warm-up Burner Subsystem Requirements”.
SUBSTANTIATION: Consistency with the format of Chapter 7.
COMMITTEE ACTION: Reject.

85H-369 - (8-3.1.1): Accept
COMMITTEE STATEMENT: See Comment 85H-280 (Log #496).

85H-370 - (8.3.1.1): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change reference 8-3.2.2 to 8-3.1.2.
SUBSTANTIATION: The old reference is inappropriate. As modified it defines the proper testing requirements.
COMMITTEE ACTION: Accept.
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

RECOMMENDATION: Copy Note following 44.2.17 into text following 8-3.2.3.

SUBSTANTIATION: Heavy oil has been known to back into atomizing media piping through check valves causing serious consequences.

COMMITTEE ACTION: Accept.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE ACTION: Accept in Principle in Part.

COMMITTEE STATEMENT: To allow for use of duct burner.

NOTE: For duct burner with inlet damper and/or blower (if provided), the inlet damper shall open to purge position and blower running to allow boiler air flow purge through the duct burner.

SUBSTANTIATION: To allow for use of duct burner.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-309 (Log #226).
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85H-387 - (8-5.2.1.2(d)): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT: This exception does not apply to systems with Class 3 direct electric igniters. The addition of the Exception clarifies this and provides continuity with 7-8.1.3(c), 7-5.2.1.2(h) etc.
COMMITTEE ACTION: Accept.

85H-388 - (8-5.2.1.2(c)): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT: Editorial. The above wording more properly reflects the possibility of multiple fuel control valves.
COMMITTEE ACTION: Accept.

85H-389 - (8-5.2.1.2(e)): Reject
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT: Editorial. The above wording more properly reflects the possibility of multiple fuel control valves.
COMMITTEE ACTION: Reject.

85H-390 - (8-5.2.1.2(f)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT: See Comment 85H-393 (Log #38).
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-391 - (8-5.2.1.2(i)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT: See Comment 85H-305 (Log #297).
COMMITTEE STATEMENT: See Comment 85H-305 (Log #297).

85H-392 - (8-5.2.1.2(h) Exception (New)): Reject
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT: This Exception does not apply to systems with Class 3 direct electric igniters. The addition of the Exception clarifies this and provides continuity with 7-8.1.3(c), 7-5.2.1.2(h) etc.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-393 - (8-5.2.1.2(i)): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT: See Comment 85H-305 (Log #297).
COMMITTEE STATEMENT: See Comment 85H-305 (Log #297).

85H-394 - (8-5.2.1.2(j)): Accept in Principle
SUBMITTER: William Axtman, Manassas, VA
COMMENT: See Comment 85H-393 (Log #38).
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-395 - (8-5.2.1.2(k)): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT: See Comment 85H-393 (Log #38).
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-396 - (8-5.2.1.2(l)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT: See Comment 85H-393 (Log #38).
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-397 - (8-5.2.1.2(i)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT: See Comment 85H-393 (Log #38).
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).

85H-398 - (8-5.2.1.2(m)): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT: Delete paragraph (i).
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-393 (Log #38).
A MASTER FUEL TRIP shall be initiated when the bed temperature is below the main fuel ignition temperature. A master fuel trip shall be initiated when satisfactory ignition has not been attained within 10 seconds for gas or No. 2 or 4 oil and 15 seconds for No. 5 or 6 fuel oil.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace the "master fuel trip shall be initiated when satisfactory ignition has not been..." with "A master fuel trip shall be initiated when the bed temperature is below the main fuel ignition temperature as defined in 6-1.5.1(g) and when satisfactory ignition has not been..."

SUBMISSION: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle

COMMITTEE STATEMENT: Editorial.

NOTE: Paragraph (o) does not apply to the burner fuel system as shown in Figures A-8-5.1.1(f) through (i). Each control system that maintains the correct air/fuel ratio, a stable flame, and firing rate in accordance with the demand over the full operating range of the burner.

SUBMISSION: The control of individual flow control warm-up burners is different than headered burners. The combustion control for each burner is much like those used in a single burner boiler. See NFPA 8501.

COMMITTEE ACTION: Accept in Principle.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add a note as follows:

NOTE: Paragraph (o) does not apply to the burner fuel system as shown in Figures A-8-5.1.1(f) through (i). Each control system that maintains the correct air/fuel ratio, a stable flame, and firing rate in accordance with the demand over the full operating range of the burner.

COMMITTEE ACTION: Accept in Principle.

SUBMISSION: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE ACTION: Accept.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Modify third sentence to read: "The fuel flow to each burner (as measured by burner fuel header pressure, individual burner flows, or other equivalent means) is..."

SUBMISSION: The statement as originally written was too restrictive. The proposed modification maintains the interest without unnecessarily restricting the means of measurement and parallels the content of 7-5.2.1.2(u).

COMMITTEE ACTION: Accept.

SUBMISSION: Robert Herdman, ABB Combustion Engineering, ABB Combustion Engineering

COMMITTEE ACTION: Accept in Principle.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In first line change "(p) to "(l)"

SUBMISSION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

SUBMISSION: Peter Matthews, Hartford Steam Boiler

COMMITTEE ACTION: Accept in Principle.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Exception as follows:

Exception: In the case of duct burner, the firing rate is regulated by increasing or decreasing the fuel flow to the duct burner to maintain the desired duct burner discharge temperature. Interlock shall be provided to limit air flow to the duct burner from falling below the minimum required air flow for combustion as recommended by the manufacturer.

SUBMISSION: To allow for duct burner application.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

COMMITTEE ACTION: Accept.

SUBMISSION: R.F. Eng, Foster Wheeler Energy Corp.

COMMITTEE ACTION: Accept.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Exception as follows:

Exception: In the case of duct burner, the firing rate is regulated by increasing or decreasing the fuel flow to the available air to maintain the desired duct burner discharge temperature. Interlock shall be provided to prevent air flow to the duct burner from falling below the minimum required for combustion as recommended by the manufacturer.

SUBMISSION: No. 2: In the case of a duct burner, the firing rate is to be regulated by increasing or decreasing the fuel flow. An interlock shall be provided to limit air flow to the duct burner from falling below the minimum required for combustion as recommended by the manufacturer.

COMMITTEE STATEMENT: Editorial.

SUBMISSION: To allow for duct burner application.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

SUBMISSION: Put a period (.) after start up and paragraph for last sentence.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

SUBMISSION: Accept.
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85H: 410 - (85.3): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add the word “trips” after the word “subsystems” in title.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: This is consistent with changes to 7.5.3 based on Comment 85H-324 (Log #186).

85H: 411 - (85.3(a) and 85.3(b) (New)): Accept
SUBMITTER: William A. Axman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Insert a new (b):

Insert a new (b):

"Fuel pressure and temperature (heated oil only) outside operating limits..."

Add subsection as follows:

8-5.3.2 For Warm-up burner fuel systems as shown in Figure A-8-5.1.1(b), (f) and (g):

(a) High fuel oil header pressure.
(b) Low fuel oil header pressure.
(c) Atomizing medium (if provided) outside operating limits required to accomplish proper atomization as established by the burner manufacturer, or by trial.
(d) Loss of air supply fan or inadequate airflow to the warm-up burner(s).
(e) Master fuel trip.
NOTE: This chapter deals with oil-fired warm-up burners. See Comment 85H-329 (Log #512).

85H: 412 - (85.3(a) through (e)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add subheading as follows:

For Warm-up burner fuel systems as shown in Figure A-8-5.1.1(c) and (e). Replace (a) with:

"Fuel pressure outside the capacity or stability limits of the burner as established by the burner manufacturer or by trial."

Delete (c) and (d).

Add subsection as follows:

8-5.3.2 For Warm-up burner fuel systems as shown in Figure A-8-5.1.1(b), (f) and (g):

(a) High fuel oil header pressure.
(b) Low fuel oil header pressure.
(c) Atomizing medium (if provided) outside operating limits required to accomplish proper atomization as established by the burner manufacturer, or by trial.
(d) Loss of air supply fan or inadequate airflow to the warm-up burner(s).
(e) Master fuel trip.
NOTE: For some fuel supply systems, some of the above main fuel trips are actually measured on a per burner basis and are actually burner trips rather than main fuel trips.

COMMITTEE STATEMENT: Loss of warm-up burner’s air flow should include loss of fan. Loss of flame is a combustion monitoring system trip and includes bed temperature considerations. The main fuel safety shut-off valve for oil fired warm-up burners is not tripped closed when the last burner is tripped.

The fuel supply system for individual flow controlled burners is different. The burner(s) are prevented from operating below there limit of stable operation by setting a light off position limit on the closing of the fuel control valve. High and Low fuel oil header pressure is monitored to insure each burner is operated within its capacity and stability limits. The fuel control valve(s) have mechanical maximum and minimum position limits. This is the method used for single burner boilers, NFPA 8501.

COMMITTEE ACTION: Accept in Principle.

Revise 7-5.3(b) as follows:

(b) Loss of air supply fan or inadequate airflow to the burner.

COMMITTEE STATEMENT: These changes address the submitter’s concerns. Also see Comment 85H-587 (Log #66).

85H: 413 - (85.3(f) (New)): Accept
SUBMITTER: R.F. Eng, Foster Wheeler Energy Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add (f) as follows:

(f) High burner discharge temperature (for duct burner only).

SUBSTANTIATION: To allow for duct burner application.
COMMITTEE ACTION: Accept.

85H: 414 - (8-5.4 and 8-5.4.1): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add (f):

Add (f) to read:

7-5.4.1: Accept.

COMMITTEE STATEMENT: See Comment 85H-328 (Log #512).

85H: 415 - (85.5.1): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add at end of paragraph:

NOTE: For some fuel supply systems, some of the above main fuel trips are actually measured on a per burner basis and are actually burner trips rather than main fuel trips.

COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is not applicable to warm-up burners. See Comment 85H-329 (Log #512).

85H: 416 - (85.5.2): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace “Where operation at low capacity...” with “For warm-up burner fuel systems as shown in Figure A-7-5.1.1(d), where operating at low capacity...” OR Delete 7-5.5.2.

SUBSTANTIATION: The fuel supply system for individual flow controlled burners is different. To reduce capacity using individual flow control burners, reduce fuel flow and/or remove burners from service, burner header pressure is not a criterion for operation. This paragraph states the obvious and therefore can be eliminated without loss.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-356 (Log #609).

85H: 417 - (8-5.5.2): Accept in Principle
SUBMITTER: James Trott, Forney International, Inc.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise to read as follows:

8-5.5.2 When operating at low capacity with multiple burners on one header, maintain a burner fuel pressure above minimum by reducing the number of burners in service as necessary.

SUBSTANTIATION: Original text did not apply to multiple burners on one header.
COMMITTEE ACTION: Accept in Principle.
Revise 8-5.5.2 to:

"When operating at low capacity with multiple burners controlled by one master flow control valve, maintain a burner fuel pressure above minimum by reducing the number of burners in service as necessary."
COMMITTEE STATEMENT: The revision is more accurate and meets the intent of the submitter.
SUBSTANTIATION: Sentence states a conclusion which is unnecessary and redundant.

COMMITTEE STATEMENT: See Comment 85H-419 (Log #244).

COMMITTEE ACTION: Accept.

RECOMMENDATION: 1. In parenthetic comment in title, delete "also".
2. Delete rest of 846.

COMMITTEE ACTION: Accept.

SUBSTANTIATION: Everything in this section is stated in Chapter 9.

COMMITTEE ACTION: Accept.

SUBSTANTIATION: Incompressible oil systems in steel piping are difficult to leak test with procedures developed for gas piping. An extremely miniscule leak to anywhere (not necessarily, of even necessarily, of even to the furnace) can cause frustrating problems. With accumulators in the system it can't detect leaks.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This is well established criteria within NFPA 85C based on years of experience. It should not be removed from NFPA 85H based on correlation purposes.

COMMITTEE ACTION: Accept in Principle.

SUBSTANTIATION: Interlocks are covered in Chapter 9. There should not be two interlock sections for oil fired warm-up burners.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

SUBSTANTIATION: There appears to be a gap in the requirements for gas fired warm-up burners as compared to NFPA 85C. Interlocks are covered in Chapter 9. There should not be two interlock sections for oil fired warm-up burners.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept in Principle.

SUBSTANTIATION: Fluidized bed boilers do not permit operator observation of the burner flame as required by the present text. The safety requirements for fluid bed firing are too complicated for operator to follow. There is insufficient operating experience with supervised manual operation of oil fired warm-up burners on fluidized bed combustion boilers to develop a viable standard.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-339 (Log #190).

COMMITTEE ACTION: Reject.

SUBSTANTIATION: Four figures need to be referenced to address igniters and burners with and without steam/air atomization. In another comment I recommend deleting Figure (d).

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Revise to "Figures A-8-5.1.1 (a), (b), (c), and (e)."

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.

SUBSTANTIATION: A monitoring of temperature is required as it is directly related to viscosity.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: Reworded for clarity.

COMMITTEE ACTION: Accept.

SUBSTANTIATION: This is also well established criteria within NFPA 85C based on years of experience. It should not be removed from NFPA 85H based on correlation purposes.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept.

SUBSTANTIATION: Add a new (i) as follows:

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-420 (Log #542).

SUBSTANTIATION: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

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COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: In the first sentence change "oil pressure" to "oil temperature".

COMMITTEE ACTION: Accept in Principle.
85H-436 - (8-8.2.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move “Interlock functions” over the proper column (to the right).

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-437 - (8-8.2.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: relocate “Interlock Functions” to be over right hand column as is done in 8-8.2.2.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-438 - (8-8.2.1 (a)): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add as follows:

(j) Open atomizing medium

SUBSTANTIATION: This is more appropriate, and meets the intent of the submitter.

COMMITTEE STATEMENT: This is more appropriate, and meets the intent of the submitter.

85H-439 - (8-8.2.1 (c) and (d)): Accept

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change “7-8.1.3(a) and (b)” to “8-8.1.3 (a) and (b)”.

SUBSTANTIATION: Wrong reference.

COMMITTEE ACTION: Accept.

85H-440 - (8-8.2.1(i)): Accept

SUBMITTER: William Axtman, Manassas, VA

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change “7-8.1.3(a) and (b)” to “8-8.1.3 (a) and (b)”.

SUBSTANTIATION: Editorial. To provide consistency with 7-8.2.1.

COMMITTEE ACTION: Accept.

85H-441 - (8-8.2.1(k)): Accept in Principle

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete “prior to initiation of purge cycle” from the end of (k) Interlock function.

SUBSTANTIATION: Total airflow is required to be above the purge rate at all times. The existing sentence would have permitted reduction below purge rate once initial lightoff had been completed.

COMMITTEE ACTION: Accept in Principle.

Revise this section as follows:

(j) Open atomizing medium

SUBSTANTIATION: This is more appropriate, and meets the intent of the submitter.

COMMITTEE STATEMENT: This is more appropriate, and meets the intent of the submitter.

85H-442 - (8-8.2.1): Accept

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move “Interlock functions” over the proper column (to the right).

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-439 - (8-8.2.1(c) and (d)): Accept

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: relocate “Interlock Functions” to be over right hand column as is done in 8-8.2.2.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-438 - (8-8.2.1(a)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete requirement.

SUBSTANTIATION: It is generally completely impractical to inspect a fluidized bed furnace for oil accumulation in the lightoff process.

COMMITTEE ACTION: Accept in Principle.

Add “if feasible” at the end of (a).

COMMITTEE STATEMENT: This is more appropriate, and meets the intent of the submitter.

85H-437 - (8-8.2.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: relocate “Interlock Functions” to be over right hand column as is done in 8-8.2.2.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-436 - (8-8.2.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move “Interlock functions” over the proper column (to the right).

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-435 - (8-8.2): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: 1. Add a new sentence after second sentence:

“The sequence may also vary somewhat depending on the system installed.”

SUBSTANTIATION: This statement is made elsewhere in standard; but seems particularly appropriate here as well.

COMMITTEE ACTION: Accept.

85H-434 - (8-8.1.3): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Changed “indicated” to “alarmed”.

SUBSTANTIATION: Not sure what “indicated” means.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-348 (Log #519).
(k) Immediately proceed with light-off cycle after completion of purge.

(l) Repurge required if airflow rate drops below purge rate.

COMMITTEE STATEMENT: The need for this requirement is understood.

COMMITTEE ACTION: Accept.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE STATEMENT: Reference is incorrect.

SUBMITTER: James Toutz, Forney International, Inc.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: ILS. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept.

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: William Axtmann, Manassas, VA

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: James Toutz, Forney International, Inc.

COMMITTEE ACTION: Accept.

SUBMITTER: Michael C. Polagye, Medfield, MA

COMMITTEE ACTION: Accept in Principle.

SUBMITTER: William Axtmann, Manassas, VA

COMMITTEE ACTION: Accept.

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: The term "combustor" is not defined in this document or other NFPA 85 documents. It is not defined in the ABMA lexicon 4th Ed. It is not defined in fluidized bed combustion guidelines' ABMA 1997. The "McGraw-Hill Dictionary of Scientific and Technical Terms" 3rd Ed defines "combustor" as the combustion chamber of a gas turbine. Fluidized bed "combustors" are used in pressurized fluidized bed applications.

COMMITTEE ACTION: Accept in Principle.

1. For 9-3.1.5, replace "combustor" with "bed" in two places.
2. For Figure 9-3.1 (a), delete the word "combustor."
3. For 9-3.4.1, replace "combustor" with "bed."
4. For Figure 9-3.4, replace "combustor" with "bed."
5. For Figure 9-3.5, replace "combustor" with "bed."

COMMITTEE STATEMENT: This meets the intent of the submitter.

85H-447 - (8-8.2.3): Reject

SUBMITTER: James Toutz, Forney International, Inc.

COMMITTEE ACTION: Reject.

SUBMITTER: Michael C. Polagye, Medfield, MA

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-359 (Log #606).
SUBSTANTIATION: Audized bed combustion system boilers have main fuel trips and interlock in addition to master fuel trips. These main fuel trips and interlocks are needed for safe operation of FBC boilers and must be designed to the same high standards and requirements as MFT circuits. The addition of nonessential trips will reduce system reliability and may actually increase the risk of injury of personnel or equipment damage. In addition, we must decide if the interlocks in paragraph 6-2.1.2(j), 6-2.1.2(i)8 NOTE, 6-2.1.2(j),4, and 6-2.1.2(j)5 NOTE need to be elevated to the same requirements as MFT circuits.

COMMITTEE ACTION: Accept in Principle. 
Revise the beginning of 9-1.2 as follows: "The mandatory automatic master fuel trips (MFT) shown in Table 6-2.5.1(a), the main fuel trips specified in 6-2.5.4, and the warm-up burner trips specified in 7.5.3 and 8.5.3, represent those automatic trips for which sufficient experience..."

COMMITTEE STATEMENT: This clarifies the references and meets the intent of the submitter.

85H-452 - (9-1.2): Accept in Principle
SUBMITTER: Steve Edwards, Black & Veatch
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise "6-2.5.1.2" to "6-2.5.1(a)."
SUBSTANTIATION: To correct reference.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-451 (Log #207).

85H-453 - (9-1.2): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace "6-2.5.1.2" to "6-2.5.1.2.1, 7.5.3 and 8.5.3."
SUBSTANTIATION: Mandatory automatic trips are specified in each of these sections.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-451 (Log #207).

85H-454 - (9-1.3): Reject
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change reference "6-2.5.1.2 and 6-2.5.1.3" to "Table 6-2.5.1(a) and Table 6-2.5.1(b)."
SUBSTANTIATION: Incorrect references.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This change does not apply.

85H-455 - (9-2.1): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change references to "6-2.5.2, 7.5.3, and 8.5.3."
SUBSTANTIATION: The sections referenced no longer exist.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-457 (Log #554).

85H-456 - (9-2.1): Accept in Principle
SUBMITTER: Steve Edwards, Black & Veatch
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise "6-2.5.1.2 and 6-2.5.1.3" to read "6-2.5.1(a) and 6-2.5.1(b)."
SUBSTANTIATION: To correct reference.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-457 (Log #554).

85H-457 - (9-2.1): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: End sentence at "announced."
SUBSTANTIATION: Rest of section is not needed.
COMMITTEE ACTION: Accept.

85H-458 - (9-2.3(e)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: 1. In the second line, delete punctuation after "sequence."
2. In the third line, replace "available" with "provided."
SUBSTANTIATION: 1. Editorial.
2. Word choice. To me "not available" means it does not exist and cannot be obtained.
COMMITTEE ACTION: Accept.

85H-459 - (9-2.3(e) and (h)): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace paragraph 9-2.3(e) with: "Where automatic equipment is not available to accomplish the intended function, provide sufficient instrumentation to enable the operator to complete the proper operating sequence." In paragraph 9-2.3(h), replace "Require no deliberate defeating on an interlock..." with "Shall not require any deliberate "defeating" of an interlock..."
SUBSTANTIATION: Use the exact wording from 85C. There is not need to change.
COMMITTEE ACTION: Accept in Principle in Part.
COMMITTEE STATEMENT: For 9-2.3(e), refer to Comment 85H-458 (Log #555).
For 9-2.3(h), this is not grammatically correct.

85H-460 - (9-2.3(g)): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change "Provide for" to "Permit."
SUBSTANTIATION: Reads more easily.
COMMITTEE ACTION: Accept.

85H-461 - (9-2.3(i)): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: 1. Replace paragraph 9-2.3(i) with "The mandatory master fuel trip sensing elements and circuits shall be independent of all other control elements and circuits."
2. Add new paragraph "Circuits for mandatory automatic main fuel trips for warm-up burners as specified in 7.5.3 and 8.5.3 shall meet all the requirement for mandatory master fuel trip circuits."
SUBSTANTIATION: Use the exact wording from 85C. There is no need to change. The present explanation can be moved to Appendix A.
Main fuel trips for warm-up burners should be required to meet the same standards as MFT circuits.
COMMITTEE ACTION: Accept in Principle.
Move 9-2.3(i) to A-9-2.3(i). Add a new 9-2.3(i) as follows: 9-2.3(i) The mandatory automatic master fuel trip and the mandatory automatic main fuel trip systems including sensing elements and circuits shall be functionally independent from all other control system functions. The warm-up burner fuel trip system, sensing elements, and circuits shall be functionally independent from all other control system functions.
COMMITTEE STATEMENT: These changes address the concerns of the submitter.
SUBSTANTIATION: These are two cases where the most reliable signal is the signal used for normal control. We should not force independence when it results in less reliability of the safety system.

COMMITTEE STATEMENT: This introduces a concept that requires further review that cannot be handled in the allotted time period.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE ACTION: Hold for Further Study.

COMMITTEE STATEMENT: This is unnecessarily restrictive for a minimum standard.

SUBMISSION: Not needed.

COMMITTEE STATEMENT: This is unnecessarily restrictive for a minimum standard.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This meets the intent of the submitter, and makes similar corrections throughout the standard that are consistent with definitions.

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: This introduces a concept that requires further review that cannot be handled in the allotted time period.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This introduces a concept that requires further review that cannot be handled in the allotted time period.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: This introduces a concept that requires further review that cannot be handled in the allotted time period.

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COMMITTEE ACTION: Accept.
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85H-471 - (9-3.1.7): Accept
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace 9-3.1.7 with:
"Other trips, as required by 6-2.5 and additional automatic master fuel trips required for a particular boiler design shall actuate the master fuel trip relay."
SUBSTANTIATION: Clarification.
COMMITTEE ACTION: Accept.

85H-473 - (Figure 9-3.1(a)): Accept in Principle
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change references on logic blocks.
SUBSTANTIATION: Number referenced are incorrect e.g. Duct Burner Logic (Figure 9-3.4); Figure 9-3.4 is lance safety subsystem.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-472 (Log #331) and Comment 85H-500 (Log #210).

85H-472 - (Figure 9-3.1(a)): Accept
SUBMITTER: Steve Edwards, Black & Veatch
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise Figure numbers in boxes to match correct figure numbers on following:

- Purge Logic (Figure 9-3.2)
- Master Fuel Trip Logic (Figure 9-3.1(b))
- Combustor Purge Complete
- Reset Master Fuel Trip Device
- AND
- Fuel Release Logic
- AND
- Warmup Burner Logic (Figure 9-3.3)
- AND
- Duct Burner Logic (Figure 9-3.4)
- AND
- Lance Logic (Figure 9-3.4)
- AND
- Solid Fuel Logic (Figure 9-3.5)
- NOT

Figure 9-3.1(a) Interlock system overview.

SUBSTANTIATION: Incorrect references.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

85H-474 - (Figure 9-3.1(a) and 9-3.1.9): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
1. Replace "commands" with "permits" in paragraph 9-3.1.9.
2. The following apply to Figure 9-3.1(a):
   (a) Replace "Combustor purge complete" with "Purge complete..."
   (b) Delete "fuel release" and "duct burner" boxes.
(c) Replace "(Figure 9-3.4)" with "(Figure 9-3.3)." Same for Figures 9-3.5 and 9-3.6 i.e. decrement one.
(d) Delete all the ANDs and NOTs.
(e) Connect "Purge complete" to "Permits reset of MFT relay" and then connect to MFT logic.
(f) Delete line and arrow from MFT logic to Purge logic.

SUBSTANTIATION:
1. Purge complete permits reset of the MFT relay. See 9-3.2.3 NOTE.
2. Clarification. Combustor purge complete is incorrect terminology.
3. Fuel release and duct burner logic do not exist.
4. Figure numbers are incorrect.
5. MFT goes direct to warm-up burner, lance and solid fuel logic. Purge complete does not AND with anything.
6. Purge complete permits reset of the MFT relay. See 9-3.2.3 NOTE.

COMMITTEE ACTION: Accept in Principle in Part.

1. Accept.
2(a) Accept. (b) Accept in Principle. Delete "fuel release" box.
(c) Accept. (d) Reject. (e) Accept. (f) Reject.

COMMITTEE STATEMENT:
2(b) Duct burners are important and should be addressed. See Comment 85H-500 (Log #210).
2(d) These terms are required for clarity.
2(f) This line is required for clarity.

85H-475 - (9-3.1(b)): Accept
SUBMITTER: William Axtman, Manassas, VA
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change reference on "Mandatory Automatic Trips per 6-2.5.1.2" to "Table 6-2.5.1 (a)."
SUBSTANTIATION: Incorrect reference.
COMMITTEE ACTION: Accept.

85H-476 - (Figure 9-3.1(b)): Reject
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete Drum Level Low.
SUBSTANTIATION: Low drum level is not a "Combustion Systems Hazard" and some prefer an operator initiated action.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-261 (Log #238) and Comment 85H-500 (Log #210).

85H-477 - (Figure 9-3.1(b)): Accept
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Master Fuel Trip Action:
"Trip electrostatic precipitators fired reboilers and other sources of ignition energy."
SUBSTANTIATION: Consistent with 6-2.5.1.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

85H-478 - (Figure 9-3.1(b)): Accept in Principle
SUBMITTER: Bob Melvin, A/C Power - Ace Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Under Note: 2ID.F.D "Suppliers" assumed for this diagram. Should this read: "2ID. F.D. "Supplied" assumed for this diagram."
SUBSTANTIATION: Correct wording.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Clarity. See Comment 85H-500 (Log #210).

85H-479 - (Figure 9-3.1(b)): Accept in Principle
SUBMITTER: Bob Melvin, A/C Power - Ace Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows: "(Mandatory automatic trips per 6-2.5.1.2 shown)" should this be per "6-2.5.1.2(b)."
SUBSTANTIATION: Correct reference.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-475 (Log #135) and Comment 85H-500 (Log #210).

85H-480 - (Figure 9-3.1(b)): Reject
SUBMITTER: Bob Melvin, A/C Power - Ace Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Committee should consider loss of sec air fan as a mandatory trip. This could also include high press blowers on CFB for loop seal fluidization and could be listed (if applicable).
SUBSTANTIATION: Consideration of additional mandatory trips.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is unnecessarily specific for a minimum standard. See Comment 85H-500 (Log #210).

85H-481 - (Figure 9-3.1(b)): Accept in Principle
SUBMITTER: Gordon L. Johnson, Bechtel Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Figure 9-3.1(b) should be revised as follows:

Figure 9-3.1(b) Boiler trip logic.
SUBSTANTIATION: Existing Figure 9-3.1(b) does not agree with paragraph 9-3.1.6 which requires that the combustor temperature be proven to be less than the main fuel operating permit to cause an MFT on zero fuel input. Existing logic will not permit startup due to input (9) and inputs (10) and (11). Correct logic must permit starting a coal feeder after a zero fuel input incident providing fluidization is proven and bed temperature is adequate.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

85H-482 - (Figure 9-3.1(b)): Accept
SUBMITTER: Steve Edwards, Black & Veatch
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise Figure 9-3.1(b) per markup:
SUBSTANTIATION: To correct references.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

Figure 9-3.1(b) Boiler trip logic.
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

RECOMMENDATION: Revise Block (9) in Figure 9-3.1:

85H-486 - (Figure 9-3.1(b) and 9-3.1.5): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
1. Replace text in Figure 9-3.1(b) box 10 with “Bed temperature below ignition limit.”
2. Replace text in Figure 9-3.1(b) box 11 with “Loss of all warm-up burner flame.”
3. Replace “MFT device” with “MFT relay(s)” wherever used in section 9 figures.
4. Add box “Bed temperature below operating limit” as input to OR for actuation of the MFT relay.
5. Replace 9-3.1.5 with “Bed temperature below the ignition limit per 6-1.5.1(g) and loss of all warm-up burner flame(s) (11) shall actuate the master fuel trip relay. This condition in dictates the possibility that unburned fuel has entered the furnace. This trip is reset upon successful completion of a unit purge.”
6. Add new paragraph 9-3.1.6 “Bed temperature below the operating limit per 6-2.2.5, after having operated at normal temperature, shall actuate the master fuel trip relay. Bed temperature below the operating limit indicates a serious loss of combustion stability in the bed. If the bed temperature remains above the ignition limit per 6-1.5.1(g), the MFT relay may be reset and fuel(s) may be restarted in accordance with starting sequence procedures per 6-2.1.2. The bed shall be considered to have operated at normal temperature if the bed temperature has exceeded 1450 F or exceeded the operating temperature limit by 50 F.”
7. Renumber remaining paragraph.

SUBSTANTIATION: There are two MFTs associated with bed temperature. The first, (bed temp below the ignition limit as defined in 6-1.5(g) and loss of all warm-up burner flame(s)), requires a unit purge prior to restart. Purge is required because an unknown amount of unburned fuel has entered the furnace. The second, (bed was operating normally and bed temperature dropped below the operating limit defined in 6-2.5), permits a MFT reset and restart following the start-up operating procedures. Purge is not required if the bed temperature is above the ignition temp limit 6-1.5(g). BUT the operator MUST follow the start-up procedures that require close monitoring of the conditions in the bed.

The FBC boiler operators shall be very vigilant of bed conditions when feeding fuel into a bed whose temperature has not reached its normal operating temperature.

COMMITTEE ACTION: Accept in Principle in Part.
1 through 5. Accept in Principle.
6. Reject.

COMMITTEE STATEMENT: 1 through 5. See Comment 85H-500 (Log #210).
6. This subject is already addressed in other portions of the document.
7. See Comment 85H-500 (Log #210).

85H-487 - (Figure 9-3.1(b) and 9-3.1.6): Accept in Principle
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
1. Delete paragraph 9-3.1.6.
2. Delete Figure 9-3.1(b) box 9 “All fuel inputs zero.”
3. Correct figure numbers in boxes along the right side of this figure.

SUBSTANTIATION: There is no requirement for a MFT on “all fuel inputs zero.” Fluidized bed combustion by virtue of the more constant ignition source available from the mass of high temperature bed material during normal operation is not adversely effected by momentary loss of fuel.

This trip is NOT listed in Table 6-2.5.1(a). Figure numbers are wrong.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).
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85H- 488 - (9-3.2): Accept
SUBMITTER: Michael C. Pologne, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise last line:
1. Delete comma after “prior to.”
2. Delete “occur.”
3. Delete comma after “during.”
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H- 489 - (Figure 9-3.2): Accept in Principle
SUBMITTER: Donald Walm, Pyro-Pacific Operating Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
“Reset Master F017 Fuel Trip Device.”
SUBSTANTIATION: Correct misspelled word.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-489 (Log #219).

85H- 490 - (Figure 9-3.2): Accept in Principle
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete “(Bed Slumped)” from the center box.
SUBSTANTIATION: A two stage purge is not required by this standard. Purge must be accomplished with the bed fluidized.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

85H- 491 - (Figure 9-3.2): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change “full” to “fuel” in the lower right box in Figure 9-3.2.
SUBSTANTIATION: Editorial - spelling.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-500 (Log #210).

85H- 492 - (Figure 9-3.2): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add inputs to light off permissive gate (furthest right) air at purge/light off rate.
SUBSTANTIATION: Air must be at correct rate to light off even when bed is up to temperature.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-489 (Log #219) and Comment 85H-500 (Log #210).
SUBSTANTIATION: 1. Changes to 4 blocks on top left are editorial.
2. Delete "Bed Slumped" in top center box to be consistent with 6.1.5.1(b).
3. Add box in lower left to be consistent with 9-3.1.8.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Operator reset of the master fuel trip relay is not required. See Comment 85H-500 (Log #210).

SUBSTANTIATION: 1. Changes to 4 blocks on top left are editorial.
2. Delete "Bed Slumped" in top center box to be consistent with 6.1.5.1(b).
3. Add box in lower left to be consistent with 9-3.1.8.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: Operator reset of the master fuel trip relay is not required. See Comment 85H-500 (Log #210).

85H-497 - (9-3.2.3): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "Section" in parenthetical reference.
COMMITTEE ACTION: Accept.

SUBSTANTIATION: This is not advisory. See 9-3.1.8.
COMMITTEE STATEMENT: Inconsistent with 9-3.1.8.

85H-498 - (9-3.3): Accep
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change ...the solid Fuel or...
To read ...the main Fuel or...
COMMITTEE ACTION: Accept.

SUBSTANTIATION: This is not advisory. See 9-3.1.8.
COMMITTEE STATEMENT: Inconsistent with 9-3.1.8.

85H-499 - (9-3.3 and Figure 9-3.3): Accept in Principle in Part
SUBMITTER: R.S. Rand, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Replace paragraph 9.3.3 with "Warm-up Burners. The warm-up burners shall not be placed in service until a unit purge has been completed and the master fuel trip relay has been reset."

SUBSTANTIATION: This is not advisory. See 9-3.1.8.
COMMITTEE STATEMENT: Inconsistent with 9-3.1.8.
2. Modify Figure 9-3.3 as follows:
   (a) Delete numbers in lower left of boxes. Change MFT "device" to "relay."
   (b) Replace "close warm-up burner safety shutoff valves" with "Close individual warm-up burner safety shutoff valve."
   (c) Change reference for MFT relay and logic to "(Figure 9-3.1(b))."
   (d) Add box "Close the warm-up burner header safety shutoff valve and the igniter header safety shutoff valve" under the "close individual warm-up burner safety shutoff valve(s)" box.
   (e) Add OR under other ORs.
   (f) Add a line from the MFT relay to the new warm-up burner header SSV box.
   (g) Add a line from new OR to the OR for tripping the individual warm-up burners and to the new warm-up burner header SSV box.
   (h) Add a line from the OR for tripping an individual warm-up burner to the OR for tripping individual igniters.
   (i) Add "Loss of combustion air supply fan for or inadequate airflow to warm-up burners," "High or Low fuel supply (metering) header pressure to warm-up burners," "Low burner header pressure to warm-up burners" and "Master fuel trip" as inputs to ORs.
   (j) Delete Master fuel trip as input to ORs for individual igniters and burners.
   (k) Replace "warm-up burner air/fuel flows less than minimum" with "Inadequate combustion air for warm-up burner."
   (l) Add Note under Figure title: "NOTE: A specific fuel system may not require all the trips shown."  

COMMITTEE ACTION: Accept in Principle.  

1. Accept.
2(a) Accept.
2(b) Accept.
2(c) Accept.
2(d) Accept.
2(e) Accept in Principle.
2(f) Accept in Principle.
2(g) Accept in Principle.
2(h) Accept in Principle.
2(i) Accept in Principle.
2(j) Accept in Principle.
2(k) Accept in Principle.
2(l) Accept in Principle. Add the following note under the figure title:  

"NOTE: A specific fuel system may not require all the trips shown."

COMMITTEE STATEMENT: 2(e) through (k), see Comment 85H-500 (Log #210).  
2(l) Clarity.

85H-500 - (Figure 9-3.3): Accept in Principle  
SUBMITTER: R.S. Rood, Bailey Controls Co.  
COMMENT ON PROPOSAL NO: 85H-12  
RECOMMENDATION: Revise text as follows:  
1. Revise Figure 9-3.3: Replace "Close warm-up burner safety shutoff valves" with "Close Individual warm-up burner safety shutoff valves."  
2. Add logic for "Close warm-up burner header safety shutoff valves."
3. Add note(s) to distinguish the fuel supply system that is represented by the logic. Two or more logs may need to be shown because of the diversity of fuel supply systems.  

SUBSTANTIATION: NFPA 85C Figure 6-6.31.1 clearly shows separate logic for tripping individual burner and burner header (main) safety shutoff valves. NFPA 85H Figure 7-5.5 and 8-5.3 provide the trip requirements.  

COMMITTEE ACTION: Accept in Principle.  
Replace the Figures in Chapter 9 with the following:

Figure 9-3.1(a) Interlock System Overview.
NOTE 1: Mandatory automatic trips per Table 6-2.5.1(a) shown.

NOTE 2: Two induced draft and forced drafts fans are assumed for this diagram.

Figure 9-3.1(b) Boiler trip logic.
Unit Airflow
Greater Than
Purge Rate

All Air Paths
in Purge Position

All Required
Air Sources
Operating

All Feeders
Tripped and All
Safety shutoff
Valves Closed

No Boiler Trip
Conditions
(See 9-3.1(b))

Bed Fluidized and
Bed Temperature
Above Main Fuel
Ignition Point

Begin and Complete
5 Volume or
5 Minute Purge
(Bed Fluidized)

Main Fuel, Warm-Up
Burner, and Lance
Purge Complete

Permit
Reset Master
Fuel Trip
Relay

Figure 9.3.2 Purge logic.
Note: A specific fuel system may not require all trips shown.

Figure 9.3.3 Warm-up burner safety subsystem.
NFPA 85H — A93 TCD

Figure 9-3.4 Lance safety subsystem.

Figure 9-3.5 Solid fuel safety subsystem.

Bed Temperature Low (See 6-2.2.5)

Master Fuel Trip Relay (Figure 9-3.1(b))

Lance Bed Temperature Permit Inadequate (See 6-2.1.2(d)6 and 6-2.1.2(d)4)

Lance Fuel Supply Pressure Unsatisfactory

Loss of Lance Atomizing Media (If Required)

Warm-Up Burners Not Proven

Bed Not Fluidized

Close Lance Safety Shut-Off Valves

Master Fuel Trip Relay (Figure 9-3.1(b))

Solid Fuel Bed Temperature Permit Inadequate (See 6-2.1.2(d)6 and 6-2.1.2(d)4)

Solid Feed System Component Malfunction

Warm-Up Burners Not Proven

Bed Not Fluidized

Trip Solid Fuel Feed System

Trip Upstream Feed System Equipment

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COMMITTEE STATEMENT: This incorporates the concerns of the submitter, along with the concerns of various other public comments. Refer to various other comments in this report that address this section.

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Block #5, change reference to:

"(Figure 9.3.1 (a))"

COMMITTEE ACTION: Editorial.

COMMITTEE STATEMENT: Editorial. See Comment 85H-500 (Log #210).

85H-501 - (Figure 9-3.3): Accept in Principle
SUBMITTER: R.S. Rand, Wickliffe, OH

RECOMMENDATION: Revise text as follows:

1. Replace paragraph 9.3.3.1 with:
   "Loss of individual warm-up burner flame shall initiate the tripping of its individual safety shutoff valve(s) and its individual igniter safety shutoff valve(s) and deenergize associated sparks."

2. Replace paragraph 9.3.3.2 with:
   "Improper warm-up burner header pressure, (high or low) shall initiate the tripping of the individual burner safety shutoff valve(s) and its individual igniter safety shutoff valve(s) and deenergize associated sparks. Burner header pressure shall be monitored to insure each warm-up burner is being operated within its capacity and stability limits as designated by the burner manufacturer and demonstrated by test."

3. Delete the Note under paragraph 9.3.3.2.

4. Replace paragraph 9.3.3.3 with:
   "Improper warm-up burner atomizing media pressure shall initiate the tripping of the individual burner safety shutoff valve(s) and its individual igniter safety shutoff valve(s) and deenergize associated sparks."

5. Replace paragraph 9.3.3.4 with:
   "Improper warm-up burner combustion air flow shall initiate the tripping of the individual burner safety shutoff valve(s) and its individual igniter safety shutoff valve(s) and deenergize associated sparks."

6. Replace paragraph 9.3.3.5 with:
   "Improper warm-up burner header pressure, improper atomizing media pressure, inadequate combustion air flow or loss of fan(s) affecting all warm-up burners, shall initiate the tripping of the warm-up burner header safety shutoff valve, the warm-up burner igniter header safety shutoff valve, all individual burner safety shutoff valves, all individual igniter safety shutoff valves and deenergize all sparks."

7. Add under new paragraph 9.3.3.5:
   "Note: Some fuel supply systems for warm-up burners are configured with sensors and interlock logic for monitoring and tripping burners on a per burner basis. Others are configured with sensors and interlocks for monitoring and tripping warm-up burners as a group."

8. Replace paragraph 9.3.3.6 with:
   "A master fuel trip shall initiate the tripping of all warm-up burner safety shutoff valves, all warm-up burner igniter safety valves, and deenergize all sparks."

9. Add paragraph 9.3.3.7:
   "The master fuel trip relay shall directly trip all warm-up burner safety shutoff valves, trip all warm-up burner igniter safety shutoff valves, and deenergize all sparks."

SUBSTANTIATION: The present standard contains 15 different fuel system diagrams for warm-up burners. These revisions are to accommodate all fuel systems. These revisions are based on NOT tripping the warm-up header safety shutoff valves unless a combustion safety hazard is detected that affects all burners. It is NOT necessary to trip the warm-up burner header safety shutoff valves on a loss of all warm-up burner flame. Warm-up burners are intended to be used for unit start-up and as method of maintaining and stabilizing bed temperature during upset conditions in the bed.

COMMITTEE ACTION: Accept in Part/hold for Further Study.

1. Accept.
2. Hold for Further Study.
COMMITTEE STATEMENT: This is the correct reference. See Comment 85H-500 (Log #210).

85H-509 - (Figure 9-3.4, 9.3.4.1 through 9-3.4.4, and 9-3.4.5 (New)): Accept in Principle in Part/ Hold for Further Study

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Replace paragraph 9-3.4.3 with:
   "For steam or air assisted lances, improper lance atomizing media pressure or improper transport air flow shall initiate tripping of all lance safety shutoff valve(s)."
2. On Figure 9-3.4, replace "loss of lance atomizing media" with "loss of lance atomizing media or loss of transport air."

SUBSTANTIATION: The present paragraph addresses only oil fired lances with atomizing media. Some gas fired lances use mechanical atomization and transport air.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The existing text is adequate, and the changes that are proposed are not appropriate. See Comment 85H-500 (Log #210).

85H-510 - (Figure 9.3.4 and 9.3.4.4 (New)): Accept in Principle

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add new paragraph and block to diagram 9-3.4.4 Loss of adequate primary air flow to fluidize the bed shall result in a lance trip.

SUBSTANTIATION: Adequate primary air flow is a serious combustion hazard and should be interlocked with lance system operation.

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.4.4 as follows:

"Loss of Adequate Air Flow"

Refer to Comment 85H-500 (Log #210).

COMMITTEE STATEMENT: This provides further clarification.
85H-513 - (9-3.4.2 Note): Hold for Further Study

RECOMMENDATION: Add to end of Note: "unless pressure drop through the lance is relatively low compared to bed pressure and bed temperature limits per 6-1.5.1 (g) and 6-2.2.5.

COMMITTEE STATEMENT: This introduces a new concept that cannot be appropriately addressed within the allotted time period.

COMMITTEE ACTION: Hold for Further Study.

Steve Edwards, Black & Veatch

COMMITTEE STATEMENT: This provides further clarification.

COMMITTEE ACTION: Accept in Principle. Add a new box to Figure 9-3.5 as follows: "Bed temperature below the operation limit." Add a line from this new box to OR for solid fuel trip.

Thomas M. McKee, Bechtel Power Corp.

COMMITTEE STATEMENT: This adds further editorial clarification, and a useful reference. See Comment 85H-500 (Log #210).

COMMITTEE ACTION: Accept in Principle in Part

Hold for Further Study:
1. Accept.
2. Hold for Further Study.
3. Hold for Further Study.
4. Reject.
5. Reject.
6. Accept. See Comment 85H-500 (Log #210).
7. Accept in Principle. Add a new box to Figure 9-3.5 that states "Bed temperature below the operation limit." Add a line from this new box to OR for solid fuel trip. In middle box on left, replace "combustor" with "bed" and add "(See 6-2.2.5)."

COMMITTEE STATEMENT: This introduces a new concept that cannot be appropriately addressed within the allotted time period.

1. Same reason as item 2.
2. The existing text is acceptable and adequate.
3. The submitter's concerns are addressed by existing text.
4. This provides further editorial clarification, and a useful reference. See Comment 85H-500 (Log #210).

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE STATEMENT: This provides further clarification.

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE STATEMENT: This provides further clarification.

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE STATEMENT: This provides further clarification.

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE STATEMENT: This provides further clarification.

COMMITTEE ACTION: Accept in Principle.

Add a new 9-3.5 as follows:
"Loss of adequate air flow to fluidize the bed shall result in a solid fuel trip."

COMMITTEE STATEMENT: This provides further clarification.
85H-500: (Figure 9-3.5 and 9-3.5.5 (New)): Reject

SUBMITTER: Robert Herdman, ABB Combustion Engineering

RECOMMENDATION: Add new paragraph and block to diagram 9-3.5 and 9-3.5.5. Loss of adequate solids inventory as recommended by the manufacturers shall result in a solid filel trip.

SUBSTANTIATION: Inadequate solids inventory is a serious combustion hazard and should result in a solid fuel trip.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-274 (Log #63) and Comment 85H-500 (Log #210).

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85H-521 - (10-1.1): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Line 3, delete "permitted to be.
2. Line 5, replace "concern is alarms that" with "primary purpose of alarms is to take action when...

SUBSTANTIATION: 1. Not needed.
2. Clarifies purpose of alarms required by this standard.

COMMITTEE ACTION: Accept.

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85H-522 - (10-1.2): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Replace "those" with "all required" (first line).
2. In the second line, delete "required by 10-2.1.
3. In second line, add "an" between "receives" and "audible.
4. In line three, delete "of the abnormal condition.
5. In line 3, insert a new second sentence, "The visual indication shall identify the source or cause of the alarm.

SUBSTANTIATION: 1 and 2. Editorial. Statement applies to all required alarms; not just those identified in 10-2.
3. Editorial.
4 and 5. Clarifies what I think is intended. A visual indication simply flashing "alarm" is not adequate. The operator must know what the alarm is for.

COMMITTEE ACTION: Accept.

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85H-523 - (10-1.2): Accept in Principle

SUBMITTER: David Kraft, B&W

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise the third line to: "Means shall be permitted to silence the audible alarm..."

SUBSTANTIATION: Improves wording.

COMMITTEE ACTION: Accept in Principle.

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85H-524 - (10-1.5): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add "additional" between "an" and "annunciation.

SUBSTANTIATION: Makes intent of this sentence more clear.

COMMITTEE ACTION: Accept.

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85H-525 - (10-2.1): Accept

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add paragraph 5-5.2 to references, i.e. "required alarms of 5-5.2, 7-7.2, and 8-7.2, the..."
SUBSTANTIATION: Reported to be a potential hazard and should be discussed in committee as to possible inclusion in appendix material.

COMMITTEE ACTION: Hold for Further Study.

COMMITTEE STATEMENT: This requires further review that cannot be addressed in the allotted time period.

85H-532 - (A-2.8.7(a)(ii)(b)): Accept

SUBMITTER: Peter Matthews, Hartford, CT

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change "overpressurized" to "overpressurizing."

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-533 - (A-2.8.7(b)(i)): Accept

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Next to the last line, reword: and "will react with moisture on skin..." 

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-534 - (A-2.8.7(b)(ii)): Reject

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete theoretical lime concerns.

SUBSTANTIATION: No real relationship to "combustion hazards prevention."

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This is useful information and should not be deleted.

85H-535 - (A-2.8.7(c)): Reject

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Hypothetical concern not seen in commercial units

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This is useful information and should not be deleted.

85H-536 - (A-2.8.7(d)): Reject

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete. 

SUBSTANTIATION: Normal plant safety issue. 

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: This is useful information and should not be deleted.

85H-537 - (A-2.8.7(e)): Reject

SUBMITTER: Stephen Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete. 

SUBSTANTIATION: Normal plant safety issue. 

COMMITTEE ACTION: Reject. 

COMMITTEE STATEMENT: This is useful information and should not be deleted.

85H-538 - (A-2.8.8): Hold for Further Study

SUBMITTER: Peter J. Gore Willse, Industrial Risk Insurers

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Relocate this to A-2.6 Maintenance Organization and add the following section at part (g).

(a) Daily.
   (i) Flame failure detection system
   (ii) Low water level cutoffs and associated alarms
(b) Weekly.
   (i) Igniter and burner operation
   (c) Monthly.
   (i) Fan and airflow interlocks
   (ii) Fuel safety shutoff valves for leakage
   (iii) Low fire start interlock
   (iv) High steam pressure interlock
   (v) For oil:
   1. Fuel pressure and temperature interlocks.
   (vi) For gas:
   1. Gas strainer and drip leg
   2. High and low fuel pressure interlocks
   (d) Semiannually or Annually as Required.
   (i) Igniter and burner components
   (ii) Combustion air supply system
   (iii) Flame failure system components
   (iv) Piping, wiring, and connections of all interlocks and shutoff valves
   (v) Combustion control system
   (vi) Calibration of indicating and recording instruments
   (c) As Required for Oil Firing.
   (i) Atomizers
   (ii) Strainers

SUBSTANTIATION: 2-8.8 is entitled "Additional Problems Requiring Consideration" and this section is on maintenance and Equipment Inspection. We do not indicate a schedule for testing, but do require tests to be conducted (i.e., Leakage testing of the safety shutoff valves).

COMMITTEE ACTION: Hold for Further Study.

COMMITTEE STATEMENT: This is new material that requires further evaluation and cannot be appropriately addressed in the allotted time period.

85H-539 - (A-2.8.8): Accept

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change "effect" to "affect" in line 2.

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept.

85H-540 - (A-2.8.8): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change "A-2.8.6" to "A-2.6.1."

SUBSTANTIATION: This material is not closely related to 28.8. Section 2.6.1 is the closest section I found which is related.

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-31 (Log #416) on paragraph 2.6.1.
85H-542 - (A-2.8.8(V)(c) through (c)(ii)): Accept in Principle
SUBMITTER: Donald Walz, Pyro-Pacific Operating Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Section IV - Safety
(c) Confined Space - delete through (c)(ii).
SUBSTANTIATION: NFPA should NOT attempt to define "confined space" nor prescribe safety measures therefore. Definition is already provided by OSHA and (in some areas) conflicts with proposed language.
A CFB combustor is NOT always a "confined space" as defined by OSHA, because it can be proven not to be subject to toxic, 02 deficient, or other harmful accumulations. NFPA overstepped its charter in this area. STRONGLY OBJECT.
COMMITTEE ACTION: Accept in Principle.

85H-543 - (A-2.8.8(h)(i)): Reject
SUBMITTER: Bob Melvin, A/C Power - Ace Operations
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Reference to pulverizers should be removed. I don't know of any CFB that uses pulverizers. It needs to be rewritten or deleted entirely.
SUBSTANTIATION: Delete reference to pulverizers.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This technology does not exist.

85H-544 - (A-4.1.1.1): Reject
SUBMITTER: Humphrey Fedorak, Du Pont
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: A-4.1.1.1 The boiler enclosure shall be capable of withstanding a transient pressure without permanent deformation due to yield or buckling of any support member. The design pressure shall meet requirements discussed in Chapter 5. Delete (a) and (b).
SUBSTANTIATION: Paragraphs (a) and (b) are design specific and may not be applicable to all manufacturers' equipment configurations. Designers may be lured into applying these specific requirements incorrectly.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: This is not an appropriate appendix material, and it is addressed in Chapter 5.

85H-545 - (A-4.1.1.1): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change symbol "Y" to the multiplication symbol "X".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: This will be handled editorially by NFPA staff.

85H-546 - (A-4.1.1.1): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add SI units to all values.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-545 (Log #56).

85H-547 - (A-4.1.1.1): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In Figure A-4.1.1 move "B = +20" w.g., "C = +50" w.g., and "D = +70" w.g., and line up with "A".
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.

85H-548 - (A-4.1.1.1): Accept
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Correct multiplication sign in a1, b1, c1, d1.
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-545 (Log #56).

85H-549 - (A-4.1.1.1): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: In accordance with shut-off head capability of fan.
SUBSTANTIATION: See comment on 5-1(a).
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: See Comment 85H-153 (Log #377).

85H-550 - (A-4.1.1.1): Accept
SUBMITTER: Michael G. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-545 (Log #56).

85H-551 - (A-4.1.1.1)(a), (b), (c), and (d), and Figure A-4.1.1.1): Accept
SUBMITTER: Francisco Palacios, Riley Stoker Corp.
COMMENT ON PROPOSAL NO: 85H-12
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: Replace all references to "fan test block capability" with "maximum head capability".

85H-552 - (A-4.4.2): Reject
SUBMITTER: Peter Matthews, Hartford Steam Boiler
COMMENT ON PROPOSAL NO: 85H-12
COMMITTEE ACTION: Critical parameter.
COMMITTEE STATEMENT: The existing text is adequate.
85H-553 - (A-6.2.2.5): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Accept in Principle.

SUBSTANTIATION: Reworded for clarity.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: This provides further clarification and meets the intent of the submitter.

85H-554 - (A-6.2.4.2): Accept in Principle

SUBMITTER: Donald Wain, Pyro-Pacific Operating Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise as follows:

"... back to ..."

SUBSTANTIATION: Correction of misspelled word.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64).

85H-555 - (A-6.2.4.2): Accept

SUBMITTER: Robert Herdman, A/C Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete this section.

SUBSTANTIATION: This section does not support 6-2.4.2 as written. Alternatively, provide new support material. Note: If proposal for new 6-2.4.3 is accepted, new material should be assigned "A-6.2.4.3."

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64).

85H-556 - (Figures A-7-5.1.1): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text for all the figures as follows:

1. Add manual shut-off valve downstream of the final safety shut-off valve to each burner and ignitor.

2. Add a leak test connection downstream of each safety shut-off valve.

SUBSTANTIATION: These additions are required to show compliance with 4-6.1.17.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64) and Comment 85H-555 (Log #64).

85H-557 - (A-6.2.4.2): Accept in Principle

SUBMITTER: Peter Matthews, Hartford Steam Boiler

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change "sitting" to "sifting".

SUBSTANTIATION: Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64).

85H-558 - (A-6.2.4.2): Accept

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete this section.

SUBSTANTIATION: This section does not support 6-2.4.2 as written. Alternatively, provide new support material. Note: If proposal for new 6-2.4.3 is accepted, new material should be assigned "A-6.2.4.3."

COMMITTEE ACTION: Accept.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64).

85H-559 - (Figures A-7-5.1.1): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change title to:

"Typical Gas Ignitor System Diagram."

SUBSTANTIATION: Clarify intended use of Figure. Be consistent with NFPA 85C.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-555 (Log #64).
NFPA 85H — A93 TCD

85H-562 - (Figure A-7-5.1.1(a)): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add to end of title: “Gas Firing.”

SUBSTANTIATION: Aids in identifying application of sketch.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-566 (Log #65).

85H-563 - (Figure A-7-5.1.1(a)): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Add to end of title: “Gas Firing, Automatic.”
2. Change reference for “To Ignition System” to “(See Figure A-7-5.1.1(a)).”

SUBSTANTIATION: 1. Aids in identifying application of sketch.
2. Editorial.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-566 (Log #65).

85H-564 - (Figures A-7-5.1.1(a), (b), (c), (d) and (e)): Accept in Principle

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Change the title of Figure A-7-5.1.1(a) to “Typical gas igniter system (diagram) - automatic.”
2. Change the title of Figure A-7-5.1.1(b) to “Typical gas igniter system (diagram) - manual.”
3. Change the title of Figure A-7-5.1.1(c) to “Typical main burner fuel supply system for a gas-fired multiple burner boiler-furnace (diagram) - automatic.”
4. Change the title of Figure A-7-5.1.1(d) to “Typical main burner fuel supply system for a gas-fired multiple burner boiler-furnace (diagram) - automatic.”
5. Add press switches downstream of PRV (J). Delete “other equipment” from item “T.” Add cleaner or strainer, PRV, Hi & Lo pressure Sw, relief valve and other outside the boiler room items. Include a gas pressure gage on the supply header. Individual fuel control valves should a low fire position limit and low fire switch to insure the burner does not operate below the burner’s minimum operating limit.

85H-565 - (Figures A-7-5.1.1(a) through (e)): Accept in Principle

SUBMITTER: Peter J. Gore Wiles, Industrial Risk Insurers

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise the figures as follows. The titles need correction and leakage test connection need to be shown.

SUBSTANTIATION: We require the leakage testing of the safety shutoff valves, but did not indicate the valving for them.

COMMITTEE ACTION: Accept in Principle.

COMMITTEE STATEMENT: See Comment 85H-566 (Log #65).

85H-566 - (Figures A-7-5.1.1(a) through (e)): Accept in Principle

SUBMITTER: R.S. Rand, Bailey Controls Co.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Revise text as follows:
1. Change the title of Figure A-7-5.1.1(a) to “Typical gas igniter system (diagram) - automatic.”
2. Change the title of Figure A-7-5.1.1(b) to “Typical gas igniter system (diagram) - manual.”
3. Change the title of Figure A-7-5.1.1(c) to “Typical main burner fuel supply system for a gas-fired multiple burner boiler-furnace (diagram) - automatic.”
4. Change the title of Figure A-7-5.1.1(d) to “Typical main burner fuel supply system for a gas-fired multiple burner boiler-furnace (diagram) - automatic.”
5. Add press switches downstream of PRV (J). Delete “other equipment” from item “T.” Add cleaner or strainer, PRV, Hi & Lo pressure Sw, relief valve and other outside the boiler room items. Include a gas pressure gage on the supply header. Individual fuel control valves should a low fire position limit and low fire switch to insure the burner does not operate below the burner’s minimum operating limit.
Figure A-7.5.1.1(a) Master fuel control valve for multiple ignitors (automatic).
Figure A-7-5.1.1(b) Master fuel control valve for multiple ignitors (supervised manual).

- C5: Individual Ignitor Atmospheric Vent Valve
- F: Ignitor Fuel Control Valve
- G: Individual Ignitor Safety Shutoff Valve
- K: Pressure Relief Valve
- S: Fuel Pressure Gage
- T: Manual Shutoff Valve
- L: Leakage Test Connections
A Main Safety Shutoff Valve
B Individual Burner Safety Shutoff Valve
C Main Burner Header Vent Valve
D Main Fuel Control Valve
D1 Main Fuel Bypass Control Valve
J Constant Fuel Pressure Regulator
K Pressure Relief Valve
Q Strainer or Cleaner
Q High Fuel Pressure Switch
R Low Fuel Pressure Switch
R1 Low Fuel Pressure Switch (alternate location)
S Fuel Pressure Gage
SS Individual Burner Supervisory Shutoff Valve, Manual
T Manual Shutoff Valve
V Main Atmospheric Vent Valve, Manual
L Leakage Test Connection

Figure A.7-5.1.1(c) Master fuel control valve for multiple burners (supervised manual).
Figure A-7.5.1.1(d) Master fuel control valve for multiple burners (automatic).
Figure A-7.5.1.1(e) Typical individual fuel controlled multiple gas burners (automatic).
NFPA 85H — A93 TCD

85H-566 - (Figures A-7-5.1.1(a) through (i)): Accept in Principle

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Replace existing figures with the following.

A  Main Safety Shutoff Valve
B  Individual Burner Safety Shutoff Valve
C1  Burner Header Atm. Vent Valve
C2  Individual Burner Atm. Vent Valve
C4  Ignitor Header Atm. Vent Valve
C5  Individual Ignitor Atm. Vent Valve
D  Main Fuel Control Valve
D1  Main Fuel Bypass Control Valve
E  Ignitor Header Safety Shutoff Valve
F  Ignitor Fuel Control Valve
G  Individual Ignitor Safety Shutoff Valve
H  Recirculating Valve
I  Charging Valve (optional - must be self-closing)
J  Constant Fuel Pressure Regulator
K  Pressure Relief Valve
L  Flow Meter
N  Low Atomizing Media Pressure Switch
O  Strainer or Cleaner
P  Restricting Orifice
Q  Low Fuel Pressure Switch
Q1  Low Fuel Pressure Switch (Alternate Location)
Q2  Low Fuel Supply Pressure Switch
R  High Fuel Pressure Switch
R1  High Fuel Pressure Switch (Alternate Location)
R2  High Fuel Supply Pressure Switch
S  Pressure Gage
T  Manual Shutoff Valve
U  Temperature Indicator
V  Main Atm. Vent Valve, Manual
W  Scavenging Valve
Y  Check Valve
Z  Atomizing Media Control Valve
I  Circulating Valve
QQ  Low Temperature or High Viscosity Alarm Switch
SS  Individual Burner Supervisory Shutoff Valve
T5  Atomizing Media Shutoff Valve

Figure A-7-5.1.1(a) Typical Fuel Gas Supply to Powerhouse.

Figure A-7-5.1.1(b) Typical Fuel Gas Ignition System Master Fuel Control Valve for Multiple Ignitors (Automatic).
Figure A-7.5.1.1(c) Typical Fuel Gas Ignition System Master Fuel Control Valve for Multiple Ignitors (Supervised Manual).

Figure A-7.5.1.1(d) Typical Fuel Gas Ignition System Individual Fuel Control Valve (Automatic).

Figure A-7.5.1.1(e) Typical Fuel Gas Ignition System Individual Fuel Control Valve (Supervised Manual).
Figure A7-5.1.1(f) Typical Fuel Gas Burner/Lance System Master Flow Control Valve for Multiple Burners (Automatic).

Figure A7-5.1.1(g) Typical Fuel Gas Burner/Lance System Master Flow Control Valve for Multiple Burners (Supervised Manual).

Figure A7-5.1.1(h) Typical Fuel Gas Burner/Lance System Individual Fuel Control Valve (Automatic).
Figure A-7.5.1.1(i) Typical Fuel Gas Burner/Lance System Individual Fuel Control Valve (Supervised Manual).

SUBSTANTIATION: Figures edited for consistency in symbology and intent. Titles modified to more properly reflect information shown. Changes made to ensure more consistency in application.

COMMITTEE ACTION: Accept in Principle.

Revise Figures A-7.5.1.1(a) through (i) as follows:

A  Main Safety Shutoff Valve
B  Individual Burner Safety Shutoff Valve
C1 Burner Header Atm. Vent Valve
C2 Individual Burner Atm. Vent Valve
C4 Igniter Header Atm. Vent Valve
C5 Individual Igniter Atm. Vent Valve
D  Main Fuel Control Valve
D1 Main Fuel Bypass Control Valve
E  Igniter Header Safety Shutoff Valve
F  Igniter Fuel Control Valve
G  Individual Igniter Safety Shutoff Valve
H  Recirculating Valve
I  Charging Valve (optional - must be self-closing)
J  Constant Fuel Pressure Regulator
K  Pressure Relief Valve
L  Leakage Test Connection
M  Flow Meter
N  Low Atomizing Media Pressure Switch
O  Strainer or Cleaner
P  Restricting Orifice
Q  Low Fuel Pressure Switch
Q1 Low Fuel Pressure Switch (Alternate Location)
Q2 Low Fuel Supply Pressure Switch
R  High Fuel Pressure Switch
R1 High Fuel Pressure Switch (Alternate Location)
R2 High Fuel Supply Pressure Switch
S  Pressure Gage
T  Manual Shutoff Valve
U  Temperature Indicator
V  Main Atm. Vent Valve, Manual
W  Scavenging Valve
Y  Check Valve
Z  Atomizing Media Pressure Regulator
II Circulating Valve
QQ Low Temperature or High Viscosity Alarm Switch
SS Individual Burner Supervisory Shutoff Valve
T5 Atomizing Media Shutoff Valve

COMMITTEE STATEMENT: This incorporates the concerns of the submitter, along with the concerns of various other public comments. Refer to various other comments in this report that address this section.

Figure A-7.5.1.1(a) Typical Fuel Gas Supply to Powerhouse.
Figure A-7-5.1.1(b) Typical Fuel Gas Ignition System - Multiple Igniters Supplied from a Common Header (Automatic).

Figure A-7-5.1.1(c) Typical Fuel Gas Ignition System - Multiple Igniters Supplied from a Common Header (Supervised Manual).

Figure A-7-5.1.1(d) Typical Fuel Gas Ignition System - Individually Controlled Igniters (Automatic).
Figure A-7-5.1.1(e) Typical Fuel Gas Ignition System - Individually Controlled Igniters (Supervised Manual).

Figure A-7-5.1.1(f) Typical Fuel Gas Burner/Lance System Master Flow Control Valve for Multiple Burners (Automatic).

Figure A-7-5.1.1(g) Typical Fuel Gas Burner/Lance System Master Flow Control Valve for Multiple Burners (Supervised Manual).
Figure A-7-5.1.1(h) Typical Fuel Gas Burner/Lance System Individual Fuel Control Valve (Automatic).

Figure A-7-5.1.1(i) Typical Fuel Gas Burner/Lance System Individual Fuel Control Valve (Supervised Manual).

85H-567 - (Figure A-7-5.1.1(b)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change title to: "Typical Fuel Gas Ignition System Diagram.
SUBSTANTIATION: Clarify intended use of Figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-569 - (Figure A-7-5.1.1(c)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change title to: "Typical Gas Burner Fuel Supply System-Multiple Burners on a Common Control Valve (supervised manual).
SUBSTANTIATION: Clarify intended use of Figure.
COMMITTEE ACTION: Accept in Principle
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-568 - (Figure A-7-5.1.1(b)): Accept in Principle
SUBMITTER: Michael C. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete this figure.
SUBSTANTIATION: Redundant with Figure A-7-5.1.1(a).
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-570 - (Figure A-7-5.1.1(c)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change reference to related ignition system figure to A-7-5.1.1(b).
SUBSTANTIATION: No figure number A-7-5.1.2(b) in proposal.
COMMITTEE ACTION: Accept in Principle
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).
85H-571 - (Figure A-7-5.1.1(c)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
1. Change reference for "To Ignition System" to "(See Figure A-7-5.1.1(a))."
SUBSTANTIATION: 1. Editorial.
2. Aids in identifying application of sketch.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-572 - (Figure A-7-5.1.1(d)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change figure reference for ignitor fuel gas supply to A-7-5.1.1(a).
SUBSTANTIATION: There is no Figure A-7-5.1(a).
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-573 - (Figure A-7-5.1.1(e)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change title to: "Typical Gas Burner Fuel Supply System-Multiple Burners on a Common Control Valve (automatic)."
SUBSTANTIATION: Clarify intended use of Figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-574 - (Figure A-7-5.1.1(e)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change title to: "Typical Gas Burner Fuel Supply System - Individual Flow Controlled Burners."
SUBSTANTIATION: Clarify intended use of Figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-575 - (Figure A-7-5.1.1(e)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete "Manual Valves" in Bypass Loop to "Charging Valve."
SUBSTANTIATION: Excessive detail relative to other figures clutters up schematic making it more difficult to understand.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-576 - (Figure A-7-5.1.1(e)): Accept
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Use circle with an "F" in center as symbol for the flowmeters consistent with other figures.
SUBSTANTIATION: Consistency makes for easier comprehension.
COMMITTEE ACTION: Accept.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-577 - (Figure A-7-5.1.1(e)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Connect ignition gas supply ahead of main safety shutoff valve and include ignitor heater safety shutoff valve.
SUBSTANTIATION: To obtain consistency with other figures in standards.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-566 (Log #65) and Comment 85H-565 (Log #353).

85H-578 - (A-7-7.2): Accept
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
1. Revise title to "Recommended Additional Alarms for Automatic Systems (Fuel Gas)."
2. Delete in first paragraph: "I. Automatic System."
SUBSTANTIATION: Locates appendix material more closely with related material in body of standard.
COMMITTEE ACTION: Accept.

85H-579 - (Figure A-8-5.1.1): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise designation of check valve:
from

85H-580 - (Figure A-8-5.1.1): Reject
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise designation of check valve:
from

to

SUBSTANTIATION: I think it is backwards as drawn in text.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: The correct symbol is already used. See Comment 85H-566 (Log #60).
85H-580 - (Figure A-8-5.1.1(a)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change title to:
"Typical Mechanically Atomized Light Oil Ignitor System."
SUBSTANTIATION: Clarify intended use of Figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-581 - (Figure A-8-5.1.1(a)): Accept in Principle
SUBMITTER: Michael C. Polage, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to end of title: "Oil Firing, No Steam or Air Atomization."
SUBSTANTIATION: Aids in identifying application of sketch.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-582 - (Figures A-8-5.1.1(a) through (j)): Accept in Principle
SUBMITTER: R.S. Randall, Bailey Controls Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Change the title of Figure A-8-5.1.1(a) to
"Typical mechanical atomizing light oil igniter system (diagram)."
Change the title of Figure A-8-5.1.1(c) to "Typical main oil burner fuel supply system (diagram) - mechanical atomizing - automatic."
Change the title of Figure A-8-5.1.1(d) to "Typical main oil burner fuel supply system (diagram) - steam or air atomizing - automatic."
Change the title of Figure A-8-5.1.1(e) to "Typical main oil burner fuel supply system (diagram) - steam or air atomizing - supervised manual."
Change the title of Figure A-8-5.1.1(f) to "Typical fuel supply system for mechanical atomizing light oil igniter system (diagram)."
Delete this diagram.
Change the title of Figure A-8-5.1.1(h) to "Typical fuel supply system for individual flow controlled burners - heavy oil - mechanical atomizing."
Change the title of Figure A-8-5.1.1(i) to "Typical fuel supply system for individual flow controlled burners - heavy oil - steam or air atomizing - supervised manual."
Change the title of Figure A-8-5.1.1(j) to "Typical fuel supply system for individual flow controlled burners - heavy oil - steam or air atomizing - automatic."
SUBSTANTIATION: The most common warm-up burners are duct burners and individually controlled in bed burners. It should be determined if any fluidized bed boiler vendor supplies a burner fuel system as shown in Figure A-8-5.1.1(d) and (i). If none supplied, delete these diagrams.
Referenced Figures (a) through (e) are diagrams directly from 85C, A-7.5.1.2 but the titles are different and incorrect.
Referenced Figure A-8-5.1.1(h) has fuel temperature, pressure switches and fuel pressure gage connected to the scavenging medium lines. All oil diagrams must be carefully reviewed for feasibility and correctness. i.e., Figures A-8-5.1.1(g) and (h) may have intended to be light oil main burner fuel supply systems; individual flow control warm-up burners may not be feasible for heavy oil. The fuel supply systems for individual flow controlled oil burners in this document should be compared to Figure A-4.1.8 in NFPA 8501 and any discrepancies should be resolved.
The text in Section 8-5 is dependent on the fuel system and combustion air system being used. It is not possible to provide one safe operating sequence for both conventional and individually flow controlled oil burners.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-583 - (Figures A-8-5.1.1(a) through (j)): Reject
SUBMITTER: Peter J. Gore Willie, Industrial Risk Insurers
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise the figures as follows. The titles need correction and leakage test connection need to be shown.
SUBSTANTIATION: We require the leakage testing of the safety shutoff valves, but did not indicate the valving for them.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Leak test connections and related shutoff valves on an oil system are unnecessary to test for leakage. See Comment 85H-587 (Log #66).
Figure A8-5.1.1(a) Master fuel control valve for multiple light oil ignitors (mechanical atomization.)

E  Ignitor Safety Shutoff Valve
F  Ignitor Fuel Control Valve
G  Individual Ignitor Safety Shutoff Valve
O  Cleaner or Strainer
R  Low Fuel Pressure Switch
S  Fuel Pressure Gage
T  Manual Shutoff Valve
W  Scavenging Valve
Y  Check Valve
L  Leakage Test Connection
Figure A-8-5.1.1(b) Master fuel control valve for multiple light oil ignitors (steam or air atomization).
A  Main Safety Shutoff Valve
B  Individual Burner Safety Shutoff Valve
D  Main Fuel Control Valve
D1 Main Fuel Bypass Control Valve (optional)
H  Recirculating Valve
II  Circulating Valve
M  Flow meter
O  Cleaner or Strainer
QQ Low Temperature or High Viscosity Alarm Switch
R  Burner Header Low Fuel Pressure Switch
R1  Low Fuel Pressure Switch
S  Fuel Pressure Gage
T  Manual Shutoff Valve
W  Scavenging Valve
Y  Check Valve
L  Leakage Test Connection

Figure A-8.5.1.1(c) Master fuel control valve for multiple burners (mechanical atomizing-automatic).
Figure A-8.5.1.1(d) Master fuel control valve for multiple burners (steam air atomization - supervised manual).
Figure A-8-5.1.1(e) Master fuel control valve for multiple burners (steam or air atomizing - automatic).
Figure A-8-5.1.1(f) Individual fuel control valves for multiple light oil ignitors (mechanical atomization).
Figure 8.5.1.1(g) Individual fuel control valve for multiple light oil ignitors (steam or air atomization).
Figure A-8.1.1(h) Individual fuel control valve for multiple burners (mechanical atomizing - automatic).
Figure A-8.5.1.1(i) Individual fuel control valve for multiple burners (steam atomizing - manual).
Figure A-8-5.1.1(j) Individual fuel control valve for multiple burners (steam atomizing - automatic).
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Replace Figures with the following:
(No Figure (a))

A Main Safety Shutoff Valve
B Individual Burner Safety Shutoff Valve
C1 Burner Header Atm. Vent Valve
C2 Individual Burner Atm. Vent Valve
C4 Ignitor Header Atm. Vent Valve
C5 Individual Ignitor Atm. Vent Valve
D Main Fuel Control Valve
D1 Main Fuel Bypass Control Valve
E Ignitor Header Safety Shutoff Valve
F Ignitor Fuel Control Valve
G Individual Ignitor Safety Shutoff Valve
H Recirculating Valve
I Charging Valve (optional - must be self-closing)
J Constant Fuel Pressure Regulator
K Pressure Relief Valve
L Flow Meter
M Low Atomizing Media Pressure Switch
O Strainer or Cleaner

P Restricting Orifice
Q Low Fuel Pressure Switch
Q1 Low Fuel Pressure Switch (Alternate Location)
Q2 Low Fuel Supply Pressure Switch
R High Fuel Pressure Switch
R1 High Fuel Supply Pressure Switch (Alternate Location)
R2 High Fuel Supply Pressure Switch
S Pressure Cage
T Manual Shutoff Valve
U Temperature Indicator
V Main Atm. Vent Valve, Manual
W Scavenging Valve
Y Check Valve
Z Atomizing Media Control Valve
II circulating Valve
QQ Low Temperature or High Viscosity Alarm Switch
SS Individual Burner Supervisory Shutoff Valve
T5 Atomizing Media Shutoff Valve

Figure A-8-5.1.1(b) Typical Light Oil Ignition System - Mechanically Atomized Master Fuel Control Valve for Multiple Ignitors (Automatic).
Figure A-8-5.1.1(c) Typical Light Oil Ignition System - Mechanically Atomized Master Fuel Control Valve for Multiple Ignitors (Supervised Manual).

Figure A-8-5.1.1(d) Typical Light Oil Ignition System - Mechanically Atomized Individual Fuel Control Valve (Automatic).
Figure A-8-5.1.1(e) Typical Light Oil Ignition System - Mechanically Atomized Individual Fuel Control Valve (Supervised Manual).

Figure A-8-5.1.1(h) Typical Light Oil System - Steam/Air Atomized Individual Fuel Control Valve (Automatic).
NOTE: Some designs require differential pressure control between the ignitor fuel oil pressure and the atomizing media. In this instance, a differential pressure control valve and differential pressure interlock are required in lieu of the constant pressure regulating valve and static pressure interlock.
Figure A-8-5.1.1(k) Typical Oil Burner/Lance System - Mechanically Atomized Master Fuel Control Valve for Multiple Burners (Supervised Manual).

Figure A-8-5.1.1(l) Typical Oil Burner/Lance System - Mechanically Atomized Individual Fuel Control Valve (Automatic).
Figure A-8.5.1.1(m) Typical Oil Burner/Lance System - Mechanically Atomized Individual Fuel Control Valve (Supervised Manual).

Figure A-8.5.1.1(n) Typical Oil Burner/Lance System - Air or Steam Atomized Master Fuel Control Valve for Multiple Burners (Automatic).
Figure A-8-5.1.1(o) Typical Oil Burner/Lance System - Air or Steam Atomized Master Fuel Control Valve for Multiple Burners (Supervised Manual).

Figure A-8-5.1.1(p) Typical Oil Burner/Lance System - Air or Steam Atomized Individual Fuel Control Valve (Automatic).
Figure A-8.5.1.1(q) Typical Oil Burner/Lance System - Air or Steam Atomized Individual Fuel Control Valve (Supervised Manual).

**SUBSTANTIATION:** Figures edited for consistency in symbology and presentation. Title modified to more properly reflect content. Changes made to ensure more consistency in application.

**COMMITTEE ACTION:** Accept in Principle.

Committee Statement: This incorporates the concerns of the submitter, along with the concerns of various other public comments. Refer to various other comments in this report that address this section.

A. Main Safety Shutoff Valve
B. Individual Burner Safety Shutoff Valve
C1. Burner Header Atm. Vent Valve
C2. Individual Burner Atm. Vent Valve
C4. Igniter Header Atm. Vent Valve
C5. Individual Igniter Atm. Vent Valve
D. Main Fuel Control Valve
D1. Main Fuel Bypass Control Valve
E. Igniter Header Safety Shutoff Valve
F. Igniter Fuel Control Valve
G. Individual Igniter Safety Shutoff Valve
H. Recirculating Valve
I. Charging Valve (optional - must be self-closing)
J. Constant Fuel Pressure Regulator
K. Pressure Relief Valve
L. Leakage Test Connection
M. Flow Meter
N. Low Atomizing Media Pressure Switch
O. Strainer or Cleaner
P. Restricting Orifice
Q. Low Fuel Pressure Switch
Q1. Low Fuel Pressure Switch (Alternate Location)
Q2. Low Fuel Supply Pressure Switch
R. High Fuel Pressure Switch
R1. High Fuel Pressure Switch (Alternate Location)
R2. High Fuel Supply Pressure Switch
S. Pressure Gage
T. Manual Shutoff Valve
U. Temperature Indicator
V. Main Atm. Vent Valve, Manual
W. Scavenging Valve
Y. Check Valve
Z. Atomizing Media Pressure Regulator
II. Circulating Valve
QQ. Low Temperature or High Viscosity Alarm Switch
SS. Individual Burner Supervisory Shutoff Valve
T5. Atomizing Media Shutoff Valve
Figure A-8-5.1.1(a) Typical Light Oil Ignition System - Multiple Mechanically Atomized Igniters Supplied by a Common Header (Automatic).

Figure A-8-5.1.1(b) Typical Light Oil Ignition System - Multiple Mechanically Atomized Igniter Supplied by a Common Header (Supervised Manual).
Figure A-8-5.1.1(c) Typical Light Oil Ignition System - Individually Controlled Mechanically Atomized (Automatic).

Figure A-8-5.1.1(d) Typical Light Oil Ignition System - Individually Controlled Mechanically Atomized (Supervised Manual).
Figure A-8.5.1.1(e) Typical Light Oil System - Steam/Air Atomized - Igniters Supplied from a Common Header (Automatic).

Figure A-8.5.1.1(f) Typical Light Oil Ignition System - Steam/Air Atomized Igniters Supplied from a Common Header (Supervised Manual).

NOTE: Some designs require differential pressure control between the igniter fuel oil pressure and the atomizing media. In this instance, a differential pressure control valve and differential pressure interlock are required in lieu of the constant pressure regulating valve and static pressure interlock.
Figure A-8.5.1.1(g) Typical Light Oil Ignition System - Individually Controlled Steam/Air Atomized (Automatic).

Figure A-8.5.1.1(h) Typical Light Oil Ignition System - Individually Controlled Steam/Air Atomized (Supervised Manual).
Figure A-8.5.1.1(i) Typical Oil Burner/Lance System - Mechanically Atomized Master Fuel Control Valve for Multiple Burners (Automatic).

Figure A-8.5.1.1(j) Typical Oil Burner/Lance System - Mechanically Atomized Master Fuel Control Valve for Multiple Burners (Supervised Manual).
Figure A-8-5.1.1(k) Typical Oil Burner/Lance System - Mechanically Atomized Individual Fuel Control Valve (Automatic).

Figure A-8-5.1.1(l) Typical Oil Burner/Lance System - Mechanically Atomized Individual Fuel Control Valve (Supervised Manual).
Figure A-8-5.1.1(m) Typical Oil Burner/Lance System - Air or Steam Atomized Master Fuel Control Valve for Multiple Burners (Automatic).

Figure A-8-5.1.1(n) Typical Oil Burner/Lance System - Air or Steam Atomized Master Fuel Control Valve for Multiple Burners (Supervised Manual).
Figure A-8.5.1.1(o) Typical Oil Burner/Lance System - Air or Steam Atomized Individual Fuel Control Valve (Automatic).

Figure A-8.5.1.1(p) Typical Oil Burner/Lance System - Air or Steam Atomized Individual Fuel Control Valve (Supervised Manual).
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

COMMITTEE ACTION: Accept in Principle.

85H-590 - (Figure A-8-5.1.1(e)): Reject

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE STATEMENT: This change is not needed and is already covered. See Comment 85H-587 (Log #66).

COMMITTEE ACTION: Accept in Principle.

85H-591 - (Figure A-8-5.1.1(e)): Reject

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE STATEMENT: Some atomizers use constant pressure atomizing media.

COMMITTEE ACTION: Accept in Principle.

85H-592 - (Figure A-8-5.1.1(d)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

COMMITTEE ACTION: Accept in Principle.

85H-593 - (Figure A-8-5.1.1(d)): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.

COMMITTEE STATEMENT: Duplicate Figure A-8-5.1.1(e).

COMMITTEE ACTION: Accept in Principle.
85H-599 - (Figure A-8-5.1.1(g)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete figure.
SUBSTANTIATION: No application requires individually throttlable ignitors.

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-600 - (Figure A-8-5.1.1(g)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add "A" to figure number so it reads "Figure A-8-5.1.1(g)"
SUBSTANTIATION: Editorial.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-601 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move Oil Return Connection to individual Burner Piping between present locations of Valves A and D.
SUBSTANTIATION: Show need for a return flow block valve from each burner.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-602 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move Circulating Valve K1 to bypass Main Safety Shut Off Valve A at header.
SUBSTANTIATION: To allow metering of individual burner flow rate.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-603 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change title to read: "Typical Fuel Oil Supply to Individually Flow Controlled, Mechanically Atomized, Oil Burner."
SUBSTANTIATION: Needed to describe the intent of the figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-604 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Change title to read: "Typical Fuel Oil Supply to Individually Flow Controlled, Steam or Air Atomized Burner-Supervised Manual."
SUBSTANTIATION: Needed to describe the intent of the figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-605 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Interchange position of Safety Shut Off Valve A on individual Burner Piping and Control Valve D.
SUBSTANTIATION: Needed to allow piping to be warmed up.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-606 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Move Flow Meter to individual Burner Piping between Main Header and Control Valve D.
SUBSTANTIATION: To allow metering of individual burner flow rate.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-607 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Thomas M. McKee, Bechtel Power Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Show Oil Return Connection from Other Main Burners Down Stream of Recirculation Valve H.
SUBSTANTIATION: To permit monitoring fuel parameters.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-608 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

SUBSTANTIATION: Aids in identifying application of sketch.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-609 - (Figure A-8-5.1.1(h)): Accept in Principle

SUBMITTER: Michael G. Polage, Factory Mutual Research Corp.

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Add to end of title: "- Oil Firing, No Steam or Air Atomization."
SUBSTANTIATION: Needed to describe the intent of the figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-610 - (Figure A-8-5.1.1(i)): Accept in Principle

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-611 - (Figure A-8-5.1.1(i)): Accept in Principle

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-612 - (Figure A-8-5.1.1(i)): Accept in Principle

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-613 - (Figure A-8-5.1.1(i)): Accept in Principle

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-614 - (Figure A-8-5.1.1(i)): Accept in Principle

COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-612 - (Figure A-8.5.1.1(i)): Accept in Principle

SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete figure.
SUBSTANTIATION: Duplicates Figure A-8.5.1.1(j).
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-613 - (Figure A-8.5.1.1(j)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Move Oil Supply to Other Burners to just ahead of Control Valves D and D1 in Common Piping.
SUBSTANTIATION: Needed to describe the intent of the Figure.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-614 - (Figure A-8.5.1.1(j)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Move Flow Meter to Common Piping ahead of Valves D and D1 in Common Piping.
SUBSTANTIATION: Need to monitor oil flow to individual burners.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-615 - (Figure A-8.5.1.1(j)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add Main Oil Header Safety Shut Off Valve in parallel with Circulating Valve 11.
SUBSTANTIATION: Main Header Shut Off Valve is needed for Boiler Trips.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-616 - (Figure A-8.5.1.1(j)): Accept in Principle
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Show Oil Return Connection from Other Burners in downstream of Recirculating Valve H.
SUBSTANTIATION: To illustrate proper connection point for Return Oil from other Burners.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-618 - (Figure A-8.5.1.1(j)): Accept in Principle
SUBMITTER: Michael C. Polagye, Factory Mutual Research Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise as follows:
1. Redraw discharge of Circulating Valve (II) to also bypass Control Valves D and D1.
2. Delete "T" from symbol for Trip.
3. Replace "Oil Header" and "Steam or Oil Header" with single line.
4. Add to end of title:
   "- Oil Firing, with Steam or Air Atomization."
SUBSTANTIATION: 1. Required to permit open path for circulation during non-firing periods.
   2. The "T" may cause confusion with Manual Shutoff Valve.
   3. These are not headers as they are supplying a single burner.
   4. Aids in identifying application of sketch.
COMMITTEE ACTION: Accept in Principle.
COMMITTEE STATEMENT: See Comment 85H-587 (Log #66).

85H-619 - (B-1): Accept
SUBMITTER: Thomas M. McKee, Bechtel Power Corp.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Add to end:
"The pilot test approach described in B-3 and B-4 is a typical appecroach followed by a manufacturer to assist in this equipment design activities. The test method described in B-5 is an important boiler commissioning activity performed on each new unit by the manufacturer and observed by other interested parties."
SUBSTANTIATION: Actual field experience with a given unit is the guiding fact. Pilot tests offer assurances to the manufacturer on design assumptions.
COMMITTEE ACTION: Accept.

85H-620 - (B-2(a)): Accept
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
"The purpose of this recommended procedure is to establish an initial minimum temperature permissive above which fuel can be fed into the fluidized bed. This initial temperature permissive shall be verified by tests in the full scale plant.
SUBSTANTIATION: This standard should require a test and validation of the temperature permissive. The purpose of the test is to establish an initial valve for unknown fuels which should be validated by the final testing performed on the unit.
COMMITTEE ACTION: Accept.

85H-621 - (B-2(d)): Reject
SUBMITTER: Robert Herdman, ABB Combustion Engineering
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Delete this paragraph.
SUBSTANTIATION: This is not pertinent. If the bed temperature falls below the established set point (permissive valve), the fuel input is immediately stopped. Furthermore, this standard requires the use of warm-up burners at temperatures less than "stable" (See 6-2.2.5) yet still above the "starting" temperature permissive. Thus, it is unlikely that temperatures would fall.
COMMITTEE ACTION: Reject.
COMMITTEE STATEMENT: Existing text is informative and not incorrect.

85H-622 - (B-3(b)): Accept
SUBMITTER: Donald Wain, Pyro-Pacific Operating Co.
COMMENT ON PROPOSAL NO: 85H-12
RECOMMENDATION: Revise text as follows:
"100 Btu/lb".
SUBSTANTIATION: Proper use of exponent - clarity meaning.
COMMITTEE ACTION: Accept.
SUBSTANTIATION: Editorial.

SUBMITTER: Robert Herdman, ABB Combustion Engineering

should read 1 x 10^6 not 1 x 10^6.

COMMITTEE ACTION:

SUBMITTER: Robert Herdman, ABB Combustion Engineering

various fuels at the actual plant and the verified minimum ignition
subsequent items as B-3-1 etc. Insert new Section B-3-2.

85H-624 - (B-3-2 (New)): Reject

COMMITTEE STATEMENT: See Comment 85H-625 (Log #310).

85H-626 - (B-4-2 (New)): Reject

COMMITTEE STATEMENT: See Comment 85H-629 (Log #71).

COMMITTEE STATEMENT:

This provides more detail than is necessary, and the existing text is adequate.

85H-625 - (B-4-1.1): Reject

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Renumber existing paragraph B-4-3 and all subsequent items as B-3-1 etc. Insert new Section B-3-2.

B-3-2 An alternate means of establishing an initial minimum ignition temperature by test is through the use of conventional ignition or flammability tests. The intent of these tests is not so much to directly establish a minimum ignition temperature, but rather to allow the manufacturer to extrapolate an ignition temperature based upon the results of a given test and similar tests on fuels fired at other actual installations. The correlation between the ignition temperature (flammability index) yielded by tests of various fuels at the actual plant and the verified minimum ignition temperature established for those plants and the results of the testing performed on the unknown fuel are sufficient to yield an initial set point for the unknown fuel. As a minimum, the following are required:

(a) A furnace with a controllable heat source.
(b) Thermocouples to monitor the temperature of the furnace.
(c) Representative samples of the fuel to be fired. The samples should be prepared in accordance with normal procedures for the test setup to be utilized. (The intent is not to require any specific test, but rather to use the same test on multiple fuel samples in order to establish a relationship between the unknown fuel and its appropriate minimum ignition temperature based upon the relationship of other known fuels and their proven ignition temperatures.)

SUBSTANTIATION: Utilizing a pilot plant as described may not yield more accurate minimum permissives than more conventional ignition (flammability) test. Pilot plants, in spite of the criteria listed in the standard are typically refractory lined or external heated throughout the combustor height. Surface area to volume effects are high in comparison with full scale units and energy flux rates for the walls to individual particles will be appreciable. Furthermore, given the complexity and variability of the designs offered by most manufacturers, it is unlikely that model pilot plant to the level of detail proposed will be build routinely, and thus, the accuracy of any test will be suspect not only due to the effects just discussed, but also as a result in the significant differences in design between the pilot plant and the actual design. Ignition or flammability tests as conventionally performed will yield information about various fuels with respect to one another which may then be correlated with reasonable assurance with operating data to determine a minimum temperature permissive.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: The existing text is adequate, and sufficiently addresses the concerns of the submitter.

85H-627 - (B-4-2.1(b)): Reject

SUBMITTER: Bob Melvin, A/C Power - Ace Operations

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Should "SO2" be "CO2"?

SUBSTANTIATION: Correct typo.

COMMITTEE ACTION: Reject.

COMMITTEE STATEMENT: See Comment 85H-629 (Log #71).

85H-628 - (B-5-2): Accept

SUBMITTER: Robert Herdman, ABB Combustion Engineering

COMMENT ON PROPOSAL NO: 85H-12

RECOMMENDATION: Delete this paragraph.

SUBSTANTIATION: This is not pertinent. If the bed temperature falls below the established set point (permissive value), the fuel input is immediately stopped. Furthermore, this standard requires the use of warm-up burners at temperatures less than "stable" (See 5.2.2.5) yet still above the "starting" temperature permissive. Thus, it is unlikely that temperatures would fall.

COMMITTEE ACTION: Accept.
The Committee on Boiler Combustion Systems Hazards wishes to note the following editorial changes:

1. In 2-7.2, change the beginning of the sentence to "Written operating procedures..."

2. In 6-2.1.2(j4), change "(See 6-2.2.5 and Appendix B)" to "(See Appendix B)" to be consistent with Comment 85H-213 (Log #382).

3. In Figure 9-3.2, change "Reset Master Trip Device" to "Reset Master Fuel Trip Device."

4. Revise 8-8.2 as follows to coordinate with Chapter 7 changes made by the actions on Comment 85H-362 (Log #604) and Comment 85H-361 (Log #605):

   (a) Revise 8-8.2 by adding "individually controlled" before "warm-up burners" in second line.

   (b) Add 8-8.2.4 Normal Shutdown Cycle

   Operator Actions
   (a) Reduce burner load to minimum. Do not reduce airflow through burner below its minimum operating rate;
   (b) Close individual supervisory shutoff valve at burner. Leave burner airflow at firing rate;
   (c) Open clearing valve to clear the burner;
   (d) Shut off igniter;
   (e) Leave burner register at firing rate;
   (f) Shut off atomizing medium to each burner;
   (g) If oil guns are not cleared into the furnace eliminate steps a, c, and d above. Remove oil guns and drain oil outside the furnace;
   (h) Purge burner for at least one minute. Adjust burner airflow per manufacturer’s instructions;
   (i) Repeat steps (a) through (c) for subsequent burners.

   Interlock Functions
   (a) None;
   (b) As each burner supervisory shutoff valve is closed, loss of flame will cause its associated shutoff valve to close. After last burner supervisory shutoff valve is closed, loss of all burner flame shall cause header or supply safety shutoff valve to close;
   (c) None;
   (d) Igniter safety shutoff valves close, igniter atmospheric vent valve opens (for gas igniters);
   (e) None;
   (f) None;
   (g) None;
   (h) None;
   (i) None.

5. In 7-3.4, "posed" should be "imposed."