NUCLEAR ENERGY INSTITUTE

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Rulemaking, Directives and Editing Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Industry Comments on Draft Regulatory Guide DG-1214, *"Fire Protection for Nuclear Power Plants".*

Project Number: 689

The Nuclear Energy Institute (NEI)[1], on behalf of the nuclear energy industry, is pleased to provide comments on Draft Regulatory Guide DG-1214, *"Fire Protection for Nuclear Power Plants".* The satisfactory resolution of stakeholder comments and final issuance of this document is important to the common Industry and NRC desire for a stable and predictable Fire Protection Regulatory Process.

The enclosure to this letter provides detailed comments and recommended changes to the text of the guidance document. The following are key comments that are further discussed in the enclosure.

- Chapter 5 of DG-1214 contains a collection of guidance that when reviewed as a whole is not completely clear and could be described as repetitive. When the information is restated, it often uses slightly different wording, which changes the applicability of the guidance or modifies the set of acceptable actions. This has the potential to pose a problem for both inspectors and licensees. It is recommended that the guidance incorporate references to NEI 00-01 Revision 2, where possible, to provide a consistent and comprehensive approach and minimize the ambiguity currently in Section 5. Our comments on Section 5, contained in the enclosure, have attempted to provide these key references.

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

E-RFDS = ADM-03

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SUNSI Review Complete
Template = ADM-013

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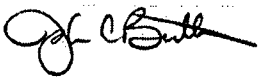
- The background discussion in DG-1214 includes a reference to RIS 2005-30. Contrary to the flexibility provided in DG-1214, some statements in the RIS could be read as requiring that all circuits important to safe shutdown ***must*** be protected through the methods prescribed in paragraph III.G.2 of Appendix R. In the future, conflicts between the RIS and DG-1214 may lead to unpredictable outcomes in compliance, inspection, and enforcement situations. To avoid confusion that could arise from apparent inconsistencies between DG-1214 and RIS 2005-30, NEI recommends that the DG-1214 include language reconciling these two documents, or that RIS 2005-20 be retracted if appropriate.

The basis for these concerns is explained in greater detail in the enclosure to this letter. A number of the comments in the enclosure center on a final resolution of agreements reached during public meetings conducted over the last year. We recognize that the NRC has been open to the Industry comments and has agreed to meet to resolve any questions which may arise from our comments. We look forward to the public meeting planned for June 26, 2009.

If you have any questions regarding the above comments, please do not hesitate to contact me at 202.739.8108; jcb@nei.org or Steven Hutchins at 202.739.8025, sph@nei.org.

Sincerely,



John C. Butler

Enclosure

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ENCLOSURE

Comments on Draft RG 1.189 Rev. 2 (DG-1214)
[page number references based on ADAMS document ML090070453 – 4/1/09]

Comment #	Section / Page	Text	Comment
1	B. Background Page 6	Discussion of BTP APCSB 9.5-1.	Discussion of BTP APCSB 9.5-1 is incomplete without also discussing the existence of BTP ASB 9.5-1, and RG 1.120. Depending on vintage, some licensee's designs were also reviewed against these sets of positions as well.
2	B. Background Page 9	Background discussion includes a discussion of RIS 2005-30, and a statement that "This revision reflects the staff positions documented in the recent generic communications."	Reference to RIS 2005-30 in DG-1214 may result in confusion and lead to unpredictable outcomes in future compliance, inspection, and enforcement situations. Section 5.3.1 of DG-1214 explains one acceptable method for identification and evaluation of post-fire, safe-shutdown circuits. Specifically, Section 5.3.1 identifies two classifications of plant equipment that should be addressed in the post-fire, safe-shutdown analysis: (1) equipment that comprises the success path of systems *necessary to achieve and maintain hot-shutdown conditions*, and (2) a broader class of equipment that is *important to safe-shutdown*, but not necessary to achieve and maintain hot shutdown, Importantly, DG-1214 goes on to explain that the success path for SSCs in the first category must be protected in accordance with the methods prescribed by paragraph III.G.2. of Appendix R, however SSCs (including circuits) in the second category may be protected by other means, such as Operator Manual Actions and Fire Modeling. This approach is consistent with the language of Appendix R, and was the result of careful deliberation by NRC staff. Unlike DG-1214, RIS 2005-30 does not distinguish between these two categories of equipment and appears to allow less flexibility when dealing with circuits that are important to safe shutdown, but not necessary to achieve and maintain hot shutdown (i.e. category 2), For example, RIS 2005-30 states

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			(emphasis added): "To clarify this issue for all stakeholders, **future NRC documents on post-fire safe-shutdown circuits will not distinguish between associated circuits and other post-fire safe-shutdown circuits**, except for alternative and dedicated shutdown systems as defined by GL 81-12." "The Appendix R requirement to protect circuits from the effects of fire does not exempt any type of circuits and specifically mentions nonsafety circuits to emphasize that all circuits whose fire-induced failure could prevent safe shutdown must be protected from the effects of fire, even nonsafety circuits. The term *associated circuit* has been used to identify circuits that do not directly perform a safe-shutdown function (e.g., the control circuit cable to a pump suction valve that is normally in the correct position for post-fire shutdown) but can cause a spurious actuation that affects safe shutdown. **However, no distinction is made in Appendix R between circuits whose failure could directly affect safe shutdown and circuits whose failure could indirectly affect safe shutdown (e.g., by causing spurious actuations).**" "Furthermore, unless protection is provided in accordance with III.G.2, it is generally agreed that in a deterministic approach to fire protection, such as the approach required by Appendix R, a fire is assumed to damage all circuits and equipment in a fire area. **Therefore, any and all other post-fire safe-shutdown circuits must be protected in accordance with III.G.2 unless an alternative or dedicated shutdown system is provided in accordance with III.G.3.**"

Comment #	Section / Page	Text	Comment
			Contrary to the flexibility provided in DG-1214, the emphasized statements in the RIS could be read as requiring that all circuits important to safe shutdown ***must*** be protected through the methods prescribed in paragraph III.G.2 of Appendix R. In the future, conflicts between the RIS and DG-1214 may lead to unpredictable outcomes in compliance, inspection, and enforcement situations. To avoid confusion that could arise from apparent inconsistencies between DG-1214 and RIS 2005-30 NEI recommends that the DG-1214 include language reconciling these documents, , or that RIS 2005-20 be retracted if appropriate.
3	B. Background Page 13	Discussion of Safety Evaluation Reports "For pre-1979 licensees, a staff decision in an SER that approves an aspect of the FPP that does not comply with regulatory requirements does not eliminate the need for an exemption. For example, pre-1979 licensees who have SERs, but not a corresponding exemption that approves operator manual actions credited with meeting the protection requirements of Appendix R, Section III.G.2, must request an exemption under 10	The language provided here seems to be a very slightly re-worded paragraph taken from RIS 2006-10, and seems to be very specific to the issue of manual operator actions, except for the first sentence, which has been "generalized". This paragraph seems to be very specific to the manual action issue, and does not seem appropriate for the "summary level" section of the document. The manual action issue receives adequate treatment elsewhere in the document as a specific issue. By taking the language from RIS 2006-10 and making it more general, confusion or misunderstanding may be created regarding what obligation licensees are under to request exemptions from Appendix R. For example, the language could be construed to mean that licensees are required to submit

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		CFR 50.12 by (1) highlighting the special circumstances of 10 CFR 50.12(a)(2)(ii), (2) citing the SER as the safety basis, and (3) confirming that the safety basis established in the SER remains valid."	exemptions from all paragraphs of Appendix R, even though for most Appendix R plants, G, J, O are the only requirements they are obligated by their license to meet.
4	B. Background Page 13	Discussion of Exemptions form Appendix R "Plants with previously approved fire protection features (see the above section on SERs) were exempt from the requirements of Appendix R with the exception of Sections III.G, III.J, and III.O."	This section states that plants are exempt from Appendix R, but this may be misleading the way it is written, since "exempt" generally means per 10CFR50.12. Per 10CFR50.48, Licensees with previously approved features were not required to comply with Appendix R, except provisions G, J, and O. This is not the same as saying that they are "exempt".
5	B. Background Page 14	**Plants Licensed after January 1, 1979** Existing plants licensed after January 1, 1979, are subject to the requirements of 10 CFR 50.48(a). [Plants that have adopted a performance-based FPP in accordance with 10 CFR 50.48(c) must meet both 10 CFR 50.48(c) and 10 CFR 50.48(a).]	Parenthetical statement referring to NFPA 805 plants does not appear to be relevant within the context of RG 1.189. Elsewhere within the document, there are other references to NFPA 805 that also may not be relevant within the context of RG 1.189. These may detract from the readability of the document, or create confusion about which requirements apply to a given plant.

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6	C.1.1 Page 20	Lettered paragraphs do not begin with 'a'	Editorial issue.
7	C.1.1.g.ii Page 21	Provide firefighting training for operating plant personnel and the plant's fire brigade; design and select equipment; periodically inspect and test fire protection systems and equipment in accordance with established procedures; and evaluate test results and determine the acceptability of the systems under test.	This paragraph combines multiple, unrelated items, which may make the intent confusing. For example, generally "operating plant personnel" would not receive fire fighting training (hands-on with fire hoses) unless they are part of the fire brigade. Expecting non-brigade personnel to fight fires would conflict with C.1.1.i.i ("The plant fire brigade positions should be responsible for fighting fires.").
8	C.1.5 Page 25-26	Compensatory Measures	The first paragraph in this section specifically discussed "pre-defined" compensatory measures. The remaining 6 paragraphs all appear to be discussions of alternative compensatory measures. Due to the length of the alternative compensatory measures discussion (companred to the pre-defined compensatory measures section), the reader may become lost, and inappropriately reach the conclusion that all of the paragraphs in this section apply to all compensatory measures (pre-defined and alternative). Therefore, it is recommended that these two distinct subjects be separated by their own sub-headings, to prevent confusion.
9	C.1.6.2 Page 27	General Employee Training	Generally, non-brigade members are not expected to initiate fire fighting. They are trained to notify the control room, and evacuate the area. Non-brigade members are not expected to

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		"Each nuclear plant employee has a responsibility to the prevent, detect, and suppress fires." And "a. appropriate actions to take upon discovering a fire, including, for example, notification of the control room, attempting to extinguish the fire, and actuation of local fire suppression systems"	initiate suppression systems. They are not provided the training that the brigade receives to make them eligible to manipulate plant suppression systems, or to understand the potential detrimental impacts of fire suppressant on plant operation or safety-related equipment. For example, section 1.6.4.2 describes the fire brigade training regimen, and highlights several advanced concepts regarding appropriate suppressant selection, adverse affects of suppressants, etc. General Employee Training does not provide this level of detail.
10	C.1.6.3 Page 27	**Fire Watch Training** "Fire watches provide for observation and control of fire hazards associated with hot work, and they may act as compensatory measures for degraded fire protection systems and features. Specific fire watch training should provide instruction on fire watch duties, responsibilities, and required actions for both 1-hour roving and continuous fire watches. Fire watch qualifications should include hands-on training on a	The text regarding fire watch training contains a combination of "hot work fire watch" and "compensatory measure fire watch" training and duties. By combining the two very distinct subjects under one section, the appearance is created that all fire watches, regardless of assigned duties, must have similar training and qualifications. NFPA 51B governs actions and training for "hot work fire watches" and requires training on extinguishing fires expected to occur during hot work. In addition, because these personnel are expected to fight fires as part of their job duties, OSHA 1910.252 rules govern their training. On the other hand, generally, compensatory measure fire watches are not expected to fight fires (unless they are providing a "backup suppression" function, which is rare). These

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		practice fire with the extinguishing equipment to be used while on fire watch. If fire watches are to be used as compensatory actions, the fire watch training should include recordkeeping requirements."	individually are typically responsible "to inspect for the control of ignition sources, fire hazards, and combustible materials; to look for signs of incipient fires; to provide prompt notification of fire hazards and fires". [ML012400048] In summary, their primary objective is prompt notification, not fire fighting. As a first responder to an incipient fire, these individuals would not necessarily have the training to determine the effects of fire or suppressant discharge on plant safety equipment (only brigade leaders typically would have that level of knowledge), therefore it is not reasonable to expect these individuals to perform an attack role. Only when these individuals are required by the degraded/inoperable condition to provide "backup suppression" (i.e., incipient fire fighting) does fire fighting training become necessary. Recommend this section be revised into two sub-sections, one governing each topic, so that confusion of the two types of fire watches does not occur.
11	C.1.6.4 Page 28	Numerous NFPA standards provide guidelines applicable to the training of fire brigades. The NRC staff considers the training recommendations of NFPA 600, "Standard on Industrial Fire Brigades" (Ref. 54), including the applicable NFPA publications referenced in NFPA 600, to be appropriate criteria for training the plant fire brigade. The licensee may also use NFPA	NFPA 600 was created by NFPA after all operating plants were licensed. A few operating plants may have voluntarily upgraded their programs to NFPA 600 from NFPA 27, but many have not. NFPA 27-1975 is the guidance referred to by previous NRC documents (ex., BTP CMEB 9.5.1, rev 3, 1981). For the majority of licensees, NFPA 27 would be the "Code of Record".

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		1410, "Standard on Training for Initial Emergency Scene Operations" (Ref. 55), and NFPA 1500, "Standard on Fire Department Occupational Safety and Health Program" (Ref. 56), as appropriate. NFPA booklets and pamphlets listed in NFPA 600 may be used, as applicable, for training references. In addition, the licensee should use courses in fire prevention and fire suppression that are recognized or sponsored by the fire protection industry.	
12	C.1.7 Page 30	**Quality Assurance**	The text as written is too broad, applies the same level of Quality Assurance to FP SSCs that protect safety-related areas and those that do not protect safety-related areas. This is in conflict with the NRC's document "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance", Attachment 6, which states: "The quality assurance (QA) program should assure that the requirements for design, procurement, installation, testing, and administrative controls <u>for the fire protection program for safety related areas</u> approved by NRC are satisfied." An identical statement is made in GL 82-21, Enclosure 2. This limitation to Safety-Related areas is also evident from

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			10CFR50.48, paragraph a, which focuses on fire effects to equipment important to safety. If this text is not revised, then the FP QA programs at all operating sites could be found deficient, since they are based on the common understanding from previous NRC guidance (cited above) that FP QA is applied to FP SSCs protecting safety-related areas. Formal FP QA is generally not provided for commercial structures, trailers, BOP plant areas, etc. Recommend adding an introductory sentence or two that establishes the scope of the FP QA plan.
13	C.1.7.10 Page 35	Exceptions to the allowable use of performance-based audit frequencies include the triennial audit of FPPs, conducted by outside qualified fire consultants, which should be maintained in accordance with technical specification requirements.	Delete sentence. NRC has already allowed the deletion of this Tech Spec requirement at sites, therefore this statement is not factually correct, and if not revised then the FP QA Program at many operating sites could be found deficient. Background: Several years of effort have been made between the NRC and Industry to remove items from TS that are "marginal to safety". In the case of audits, they typically have been relocated to a licensee controlled document, such as a "topical QA plan". Changes to this QA plan are governed by 10CFR50.54(a).
14	C.1.7.10 Page 35	Insurance company inspections typically do not satisfy any of the fire protection audit requirements because they do not evaluate plant FPPs against the NRC requirements, including the	This paragraph is fairly harsh / derogatory regarding the value of the insurance company inspections. Industry experience has been that Insurance company personnel are very qualified to assess fire brigade drill

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		requirements for post-fire safe-shutdown. Insurance company inspections do not reassess or reevaluate the FPP, since the insurance company has already agreed to insure the licensee's program as it is being implemented.	performance, and have been quite effective in providing the periodic independent drill observation required by the FP QA Plan.
15	C.1.7.10.1 Page 35	For those licensees who have relocated audit requirements from their technical specifications to the QA program, annual fire protection audits may be changed to a "maximum interval of 24 months" by implementation of a performance-based schedule, if justified by performance reviews, provided that the maximum audit interval does not exceed the interval specified in American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.2-1994, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants" (Ref. 58), or the comparable applicable standard of record.	The current edition of (ANSI/ANS) 3.2 (2006) no longer specifies a hard upper limit on audit frequencies. More flexible language is provided to allow audit frequencies to be extended, based on performance. See (ANSI/ANS) 3.2-2006 section 3.18.4.2 for further information. In addition, licensee's topical QA reports (revised per 10CFR50.54(a)) may have already implemented similar scheduling flexibility.
16	C.1.8.1	If an existing plant licensee has	The phrase "as documented in an evaluation in the FSAR." is

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	Page 37	adopted the standard license condition for fire protection and incorporated the FPP in the FSAR, the licensee may make changes to the approved FPP without the Commission's prior approval only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire as documented in an evaluation in the FSAR.	confusing. As the words are written, the evaluation would have to be documented in the FSAR. Typically, evaluations are contained in the change package, and the FSAR is updated to reflect the new conclusion, but does not contain the evaluation itself. Suggest re-ordering the phrases to read as follows: "... only if a documented evaluation concluded that those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire as documented in the FSAR."
17	C.1.8.1 Page 38	Within the context of the standard fire protection license condition, the phrase "not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire," <u>means to maintain sufficient safety margins.</u> ... A change that does not maintain a sufficient margin of safety fails to meet the plant's license condition.	This sentence and the discussion in the paragraphs following it seem to retroactively re-define what the individual site's license conditions say and mean. Issuance of a Reg Guide is not the appropriate vehicle to make this change. Also, the language "maintain sufficient safety margins" is subjective, and wide open to personal interpretation/opinions. (Similar to the pre-Brown's Ferry fire days, when GDC-3 was wide open to interpretation). NEI 02-03 has attempted to clarify what is considered an acceptable change in accordance with the standard licensing condition, however the language in the RG goes even beyond what is discussed in NEI 02-03. NRC's review of NEI 02-03 concluded that "This guidance may be used to evaluate changes to the AFPP, but changes that would result in noncompliance with the rules require NRC approval." [ML032400012] From this it is clear that non-compliance with the rules require NRC

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			approval (which agrees with NEI 02-03). "Maintain sufficient safety margins" is not a requirement of the rule, and therefore should not appear in the Reg Guide. The language in the RG 1.189 appears to have been taken directly from RG 1.174 "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis". RG 1.174 does not apply to changes made by the licensee within normal processes (e.g., 50.59, FP License Condition) for which a license amendment are not required. It only applies when the licensee is submitting a license amendment and chooses support a license amendment with risk information" SECY-85-306B, GL 86-10 (and individual license amendments granted while adopting the standard FP license condition) define "not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire" to mean: • *"The licensee may not make changes to the approved fire protection program which would adversely affect the ability to achieve and maintain safe shutdown in the event of a fire without prior approval of the Commission."* • *"This requirement ensures that all facilities will be held to the level of protection required by Appendix R unless the Commission specifically allows otherwise after prior review."*
18	C.1.8.1 Page 38	Industry guidance document NEI 02-03, "Guidance for Performing a Regulatory Review of Proposed Changes to the Approved Fire Protection Program" (Ref. 60),	The phrase "The changes should be performed in accordance with the guidance provided in the regulatory guide as well as in accordance with the applicable rules and the plant's specific licensing basis." is non-specific as to which Reg Guide is being

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		can provide useful guidance for performing change evaluations in accordance with the plant's fire protection licensing condition and approved fire protection program. The changes should be performed in accordance with the guidance provided in the regulatory guide as well as in accordance with the applicable rules and the plant's specific licensing basis. Changes that would result in noncompliances with the rules require NRC review and approval.	referred to. The phrase "*Industry guidance document NEI 02-03, "Guidance for Performing a Regulatory Review of Proposed Changes to the Approved Fire Protection Program" (Ref. 60), can provide useful guidance for performing change evaluations in accordance with the plant's fire protection licensing condition and approved fire protection program.*" does not appear to provide a conclusive endorsement of NEI 02-03. Industry requests that NRC endorse NEI 02-03 within RG 1.189 as an acceptable method for determining whether prior NRC approval is required for changes to the approved fire protection program for those plants that have adopted the standard FP license condition.
19	C.1.8.1.2 Page 38	Within the context of the standard fire protection license condition, the phrase "not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire," <u>means to maintain sufficient safety margins.</u> ... A change that does not maintain a sufficient margin of safety fails to meet the plant's license condition.	This sentence and the discussion in the paragraphs following it seem to retroactively re-define what the individual site's license conditions say and mean. Issuance of a Reg Guide is not the appropriate vehicle to make this change. Also, the language "maintain sufficient safety margins" is subjective, and wide open to personal interpretation/opinions. (Similar to the pre-Brown's Ferry fire days, when GDC-3 was wide open to interpretation). NEI 02-03 has attempted to clarify what is considered an acceptable change in accordance with the standard licensing condition, however the language in the RG goes even beyond what is discussed in NEI 02-03.

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			The language in the RG 1.189 appears to have been taken directly from RG 1.174 "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis". RG 1.174 does not apply to changes made by the licensee within normal processes (e.g., 50.59, FP Licn Condition) for which a license amendment are not required. It only applies when the licensee is submitting a license amendment and chooses support a license amendment with risk information" SECY-85-306B, GL 86-10 (and individual license amendments granted while adopting the standard FP license condition) define "not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire" to mean: • *"The licensee may not make changes to the approved fire protection program which would adversely affect the ability to achieve and maintain safe shutdown in the event of a fire without prior approval of the Commission."* • *"This requirement ensures that all facilities will be held to the level of protection required by Appendix R unless the Commission specifically allows otherwise after prior review."*
20	C.1.8.1.3 Page 39	General comment	This section should be made clear as to what process is expected to be followed for deviating from a "Staff Position" (see GL 86-10 position 8.14).
21	C.1.8.5 Page 42	NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 1 (Ref. 61), provides guidance for meeting the requirements of these two sections.	NUREG-1022 is currently Rev 2, not Rev 1. If the rev number is not critical to the point of the paragraph, then suggest removing the Rev number from the discussion.

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22	C.1.8.6 Page 42	**NFPA Code and Standard Deviation Evaluations** "More recent editions of the NFPA codes require submittal of technical documentation to the "authority having jurisdiction" (AHJ) to demonstrate equivalency of an alternative system, method or device for AHJ approval."	A large number of the current NFPA codes direct many interactions with the AHJ, such as the submittal of plans to the AHJ, prior to construction. As well as other mandatory AHJ interactions. For example, from NFPA 12-2005: "**4.4.2.1** Plans and calculations shall be submitted for approval to the authority having jurisdiction before the installation begins." It is not evident that the NRC wishes to operate in this intrusive a role in the FP design of the plants, having already set standards for the training and qualification of the personnel responsible for the design basis of the FP Program, and allowing self-acceptance of NFPA deviations that do not adversely affect system performance. Since the vast majority of the current NFPA codes governing FP SSC design contain similar words, it seems like it would be appropriate for the NRC to establish a position in RG 1.189 that either waives this (and similar) provisions of the NFPA codes, or sets out some clear guidance as to when the NRC does want to be involved in the plan review process, commissioning/testing process, and other AHJ interactions specified by the NFPA codes. During the original plant licensing, or during the BTP and Appendix R upgrade time-period, NRC appeared to perform this function, but today does not. For example, for a Licensee today that had removed Fire Protection from tech Specs (as most have done), if the licensee wished to install a detection or suppression system, what would drive a plan review of the design by the NRC? Is one required? If so, what legal process would the

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			Licensee be expected to follow?
23	C.2.1.1.h Page 45	h. Temporary power cables used during maintenance outages are transient combustibles and potential ignition sources. Procedures should adequately address fire protection for temporary electrical power supply and distribution.	This section appears to be repetitive to section 2.2.2. Also, this section could be (mis)read to mean that "hot work" protocols (NFPA 51B) are required whenever temporary power cables are in use. There is no provision in NFPA 51B for treating temporary power cables as ignition sources.
24	C.2.2.1 Page 47	"The use of ignition sources should be governed by a hot work permit system to control open flame, welding, cutting, brazing, or soldering operations."	The presence of the term "soldering" in this section creates ambiguity. Soldering is specifically excluded from NFPA 51B controls, unless it is "open-flame soldering".
25	C.2.2.1 Page 47	"Persons performing and directly assisting in such work should be trained and equipped to prevent and combat fires."	Suggest rewording for clarity. Per NFPA 51B, there are three individuals involved in the hot work process, and each has different, distinct responsibilities. The sentence as written has blended those three responsibilities together, creating the appearance that all personnel are to be trained/qualified in all three aspects. The three distinct aspects are: Permit Authorizing Individual; Hot Work Operator; Hot work Fire Watch.
26	C.2.2.2 Page 47	"The Institute of Electrical and Electronics Engineers (IEEE) Standard 835, "Standard Power Cable Ampacity Tables" (Ref. 74); ANSI/IEEE C.2, "National	Reference to NFPA 70, "National Electric Code" creates ambiguity, and may produce unpredictable or unenforceable results. NFPA 70 specifically exempts Generating Stations from compliance with the code.

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		Electrical Safety Code"® (Ref. 75); and NFPA 70, "National Electrical Code" (Ref. 76) provide guidance on temporary electrical installations, including derating of closely spaced cables."	Referencing the IEEE standards here may be sufficient.
27	C.2.4.c Page 48	Frequency of testing should be based on the code of record for the applicable fire protection system.	In some cases, frequencies specified in NFPA documents are excessive due to being based on a "least-common denominator". Favorable operating conditions, employee training, lack of tampering, and other circumstances unique to nuclear plants may justify less-frequent testing, and this is reflected in the existing frequencies in existing plant's Tech Specs and TRMs. Recommend re-wording as follows: "Frequency of testing should be based on the code of record for the applicable fire protection system, or based on an evaluation of the reliability of the system, so as to assure a high degree of reliability and availability.".
28	C.2.4.d Page 48	Inspection frequency should ensure that all seals will be inspected every 10 years.	Current industry practice (reflecting NRC-approved Tech Spec frequencies) is typically that all seals are inspected every 15 years for 18-month fuel cycle plants, and every 16 years for 24-month fuel cycle plants. Note that this sentence is also conflicting with the two sentences immediately prior, which state "Penetration seals may be inspected on a frequency and relative sample basis that provides assurance that the seals are functional. Sample size and inspection frequency should be determined by the total number of penetrations and observed failure rates."

Comment #	Section / Page	Text	Comment
			Recommend deleting the sentence "Inspection frequency should ensure that all seals will be inspected every 10 years."
29	C.3.4.1 Page 55	These systems should conform to NFPA 14, "Standard for the Installation of Standpipe and Hose Systems" (Ref. 95), for sizing, spacing, and pipe support requirements for Class III standpipes.	Prior to issuance of RG 1.189, rev 0, it appears that NRC did not have a staff position requiring "Class III" standpipes for hose stations (versions of BTP 9.5.1 were silent on this distinction). For Class III standpipe systems, the NFPA 14 code requires exterior fire department connections. Typically operating plants are not furnished with fire department connections, and existing standpipes are not consistently classified as Class III. For future plants, where installing standpipes as Class III is a possibility, there may still be a need to deviate from the NFPA 14 code requirement to provide fire department connections. These connections have the potential to create secondary containment breaches. Suggest the NRC review the language in the NFPA 14 code, and provide an allowance in RG 1.189 for future plants, to waive the fire department connection provision of NFPA 14, where secondary containment may be impacted.
30	C.3.5.1.3.c.ii Page 58	SSCs credited for fire safe shutdown	This section indicates that prefire plans should itemize "SSCs credited for fire safe shutdown" within the fire zone. Generally, the fire compartment is considered a total loss for the purposes of safe shutdown, so providing this information to the Brigade can be a distraction more than a benefit. This language could lead to ambiguous results or results that are of no value to the brigade. For example a licensee might satisfy this language by listing every component within the safe shutdown analysis that is within the compartment, not just the ones that require

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			protection. Such a list is likely to be of little value to the brigade, and would most likely be a distraction. Suggest re-wording to indicate that this info would only be provided to the brigade in situations where it is essential that the fire be prevented from spreading to affect redundant SSCs credited for fire safe shutdown. Reword as follows: "SSCs credited for fire safe shutdown for a fire in the area that require protection from the fire"
31	C.3.5.1.3.c.vii Page 58	organization of firefighting brigades and the assignment of special duties (including command control of the brigade, transporting fire suppression and support equipment to the fire scenes, applying the extinguishing agent to the fire, communication with the control room, and coordination with outside fire departments, according to job title so that all firefighting functions are covered by any complete shift personnel complement	The context of this entire section is procedures and pre-fire plans. Some of the items in this paragraph are more appropriately addressed thru training and drills, vs. thru pre-fire plans or procedural controls. In some cases, the items are already discussed in section C.1.6.4.2 for brigade training.
32	C.4.1.1.1	Suspended ceilings and their supports should be of	Section 6.1.2 of the Reg Guide is silent on combustibles in concealed spaces, which is likely to produce ambiguous results.

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	Page 62	noncombustible construction. Concealed spaces should be devoid of combustibles except as noted in Regulatory Position 6.1.2 of this guide.	
33	C.4.1.2.1 Page 62	A fire area is defined as that portion of a building or plant that is separated from other areas by fire barriers, including components of construction such as beams, joists, columns, penetration seals or closures, fire doors, and fire dampers. Fire barriers that define the boundaries of a fire area should have a fire-resistance rating of 3 hours or more and should achieve the following:	Revise Section 4.1.2.1 as follows: 4.1.2.1 Fire Areas A fire area is defined as that portion of a building or plant that is separated from other areas by fire barriers, including components of construction such as beams, joists, columns, penetration seals or closures, fire doors, and fire dampers. A fire area in the safe shutdown analysis is an "area" sufficiently bounded to withstand the hazards associated with the area and, as necessary, to protect equipment within the area from a fire outside of the area. Fire barriers that define the boundaries of a fire area, as described above or having a fire-resistance rating of 3 hours, should achieve the following:
34	C.4.1.3.1 Page 64	Electric cable construction should pass the flame test in IEEE Standard 383… New reactor fiber optic cable insulation and jacketing should also meet the fire and flame test requirements of IEEE 1202.	Previous NRC documents (BTP 9.5-1), stated this as "at a minimum". From BTP CMEB 9.5.1 (1981 edition) "Electric cable construction should, as a minimum, pass the flame test in the current IEEE Std 383." Using the language "at a minimum" would leave the RG language more open to new testing methodologies. Due to the proliferation of fire test protocols, Licensees are finding it increasingly difficult to find vendors willing to test cable to IEEE

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			383/1202, after they have already certified cable to a more stringent standard. Also recommend incorporating language from NFPA 805 FAQ 06-0022 regarding other fire test protocols that have been found acceptable to the staff.
35	C.4.1.8 Page 70	If the potential for an explosive mixture of hydrogen and oxygen exists in offgas systems, the systems should either be designed to withstand the effects of a hydrogen explosion or be provided with dual gas analyzers with automatic control functions to preclude the formation or buildup of explosive mixtures. NFPA 69, "Standard on Explosion Prevention Systems" (Ref. 116), is the applicable standard for explosion prevention systems.	The last sentence referring to NFPA 69 does not exist in previous NRC guidance (BTP 9.5-1). Other NRC documents have already defined other standards as the controlling source for explosion prevention for offgas systems, creating the potential for ambiguous results due to potentially conflicting codes. Generally, existing plant off gas systems are designed to more nuclear-specific criteria, such as: • Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components installed in Light-Water-Cooled Nuclear Power Plants." • ANSI/ANS-55.4 "Gaseous Radioactive Waste Processing Systems for Light Water Reactor Plants" (Appendices provide specific criteria for detonation resistant Offgas Systems). NOTE: ANSI/ANS-55.4 has been incorporated into RG 1.143 by reference. Suggest removing the last sentence referring to NFPA 69 being the design criteria for Offgas systems.
36	C.4.2.3.3 Page 76	Fire Stops for Cable Routing	This paragraph suggests that the current staff position requires fire stops, however a review of previous NRC guidance does not indicate this to be so. Perhaps this whole paragraph should be

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		Fire stops should be installed every 6.1 m (20 ft) along horizontal cable routings in areas important to safety that are not protected by automatic water systems. Vertical cable routings should have fire stops installed at each floor-ceiling level. Between levels or in vertical cable chases, fire stops should be installed at the mid-height if the vertical run is 6.1 m (20 ft) or more, but less than 9.1 m (30 ft), or at 4.6-m (15-ft) intervals in vertical runs of 9.1 m (30 ft) or more unless such vertical cable routings are protected by automatic water systems directed on the cable trays. Individual fire stop designs should prevent the propagation of a fire for a minimum period of 30 minutes when tested for the largest number of cable routings and maximum cable density.	deleted. Fire Stops were not required by BTP APCSB 9.5-1. A discussion of fire stops was added to BTP ASB 9.5-1 and Draft RG 1.120 (never issued). When Appendix R was issued, a lengthy discussion was provided in the Commission's June 12, 1981 Memorandum and Order (CLI-81-11) indicating that based on continued testing sponsored by the staff, there are several concerns with the efficacy of cable fire stops, and that a reduced reliance on fire retardant coatings is appropriate, and instead rated fire barriers should be used for separation. Subsequently, when BTP CMEB 9.5.1 was issued (1981) this criteria was removed. This makes it questionable as to whether fire stops for cable routing actually represents the current staff position on the issue. SECY-2000-0055 regarding the development of RG 1.189 indicates that the staff intends to resolve conflicting staff guidance, however in this case, it does not appear that this has occurred. Also, an important contextual reference is missing in RG 1.189 regarding these words. In BTP ASB 9.5-1 and Draft RG 1.120, the use of fire stops for cable routing was provided as <u>one of several options</u>, to be chosen by fire hazards analysis. The language explaining this fact appears in BTP ASB 9.5-1 and Draft RG 1.120, but has been omitted from RG 1.189. The language in RG 1.189 provides the words from BTP ASB 9.5-1 and Draft RG 1.120 regarding the qualification protocol for fire stops, but not the criteria for where they should be installed. Without this missing language to provide that context, the RG 1.189 reader could only reach the conclusion that fire stops are being required throughout the plant, not just where justified by

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			fire hazards analysis. "Within fire areas containing components of a safety-related system, special attention should be given to detecting and suppressing fires that may adversely affect the system. Measures that may be taken to reduce the effects of a postulated fire in a given fire area include limiting the amount of combustible materials, installing fire-resistant construction, providing fire stops or fire-retardant coating in cable trays, installing fire detection systems and fixed fire suppression systems, or providing other protection suitable to the installation. The fire hazard analysis will be the mechanism to determine that fire areas have been properly selected." Delete this section.
37	C.5 Page 77	Consequently, new reactors should not credit physical separation or local fire barriers (e.g., electrical raceway fire-barrier systems) within these fire areas as providing adequate protection.	This statement conflicts with the statement in paragraph C.4.2.1, which says not to use raceway fire wrap "wherever feasible". The statement in C.5 appears to be an absolute prohibition on the use of raceway fire wraps. The result is an apparent conflict within the document, which may result in ambiguous results during new plant design, licensing, and inspection.
38	C.5 (inclusive) Page 77	General comment	General comment. Chapter 5 has become such a patchwork of repetitive information, special cases, exceptions, etc. that it is unlikely that clear comprehension is possible. This will pose a problem for both inspectors and licensees. Information is repeated several times, but with slightly different wording, which would change the applicability, or change what exceptions/deviations are permissible.

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			Information regarding "safe" and "alternative" shutdown are intermixed in some sections, separated in some sections, and then repeated slightly differently somewhere else. In some cases (associated circuits of common power supplies, common enclosures, spurious operations), the information has been treated as generically applicable to all fire areas by licensees, however the information is nested under a section exclusively dealing with alternative shutdown, signifying that it doesn't apply to "safe" shutdown. It is a concern that new personnel (NRC/Utility) trying to interpret and implement the RG will have difficulty determining what the appropriate staff position is to a particular situation, due to the general disorganization of the document. The following comments provided suggested re-writes of paragraphs to help make the RG a clear, usable document.
39	C.5	General Comment	Re-write section 5 as follows: When considering the consequences of a fire in a given fire area during the evaluation of the safe shutdown capabilities of the plant, licensees should demonstrate that one success path that can be used to bring the reactor to hot shutdown remains free of fire damage. Some plant designs (e.g. those that use SRVs and Low pressure systems for the success path) bypass hot shutdown and proceed directly to cold shutdown. For the purpose of this guide, the term "safe-shutdown" will be used to

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			indicate bringing a plant to a safe shutdown condition, either hot shutdown or cold shutdown (when hot shutdown is bypassed by use of the selected success path), as applicable to each reactor design and as defined by the plant's Fire Hazard Analysis or technical specifications. The analysis should also demonstrate that fire damage to one success path needed for achieving cold shutdown will be limited so that a success path can be repaired within 72 hours for the purpose of achieving cold shutdown, or for areas requiring alternative or dedicated shutdown, the licensee should demonstrate that cold shutdown capability can be restored and cold shutdown achieved within 72 hours. For reactor designs that cannot safely remain in hot shutdown for 72 hours, the analysis should demonstrate that cold shutdown can be achieved and maintained within the required period of time. The Safe Shutdown Analysis should evaluate a fire in each fire area containing SSCs important to safety and identify a success path. The analysis should also identify those fire-induced circuit failures that could directly or indirectly (e.g., by causing spurious actuations) prevent safe shutdown. For existing reactor plants, the success path should be capable of meeting Regulatory Positions 5.1 and 5.2 of this guide and performing the necessary shutdown functions. The capability of the required shutdown functions should be based on a previous analysis, if possible (e.g., those analyses in the FSAR or supporting analysis for the internal events PRA model). The equipment required for alternative or dedicated shutdown should have the same or equivalent capability as that relied on in the above-referenced analyses. The FPP should include an analysis, i.e. Safe Shutdown Analysis, to demonstrate that the components on each success path can accomplish their respective post fire safe shutdown functions. The Safe Shutdown Analysis should demonstrate the

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			necessary functioning of success path components, including electrical circuits, by demonstrating that they remain free of fire damage in the event of postulated fires. As required by applicable regulations, fire barriers, physical separation with no intervening combustibles, and/or automatic detection and suppression should provide this protection. Where a success path cannot be adequately protected, an alternative or dedicated shutdown success path should be identified and protected to the extent necessary to ensure post fire safe shutdown. The Safe Shutdown Analysis for new reactor designs should demonstrate that safe shutdown can be achieved, assuming that all equipment in any one fire area (except for the control room and containment) will be rendered inoperable by fire and that reentry into the fire area for repairs and operator actions is not possible. (See Regulatory Position 8.2 of this guide.) Consequently, new reactors should not credit physical separation or local fire barriers (e.g., electrical raceway fire-barrier systems) within these fire areas as providing adequate protection. The control room is excluded from this approach, provided that the design includes an independent alternative shutdown capability that is physically and electrically independent of the control room. New reactors should provide fire protection for a success path in the reactor containment building that will ensure, to the extent practicable, that the success path will be free of fire damage.
40	C.5.1, page 78	The postfire safe-shutdown performance goal is that the plant achieves and maintains hot shutdown or hot standby, as defined by the technical	Revise 2nd Paragraph to remove "or hot standby" from the paragraph.

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		specifications. Section III.L of Appendix R to 10 CFR Part 50 provides the following specific performance goals to achieve the postfire safe-shutdown goals for alternative or dedicated shutdown capability in accordance with Section III.G.3 of Appendix R:	
41	C.5.1.b, page 78	b. The reactor coolant makeup function should be capable of maintaining the reactor coolant level above the top of the core for boiling-water reactors (BWRs) and within the level indication of the pressurizer for pressurized-water reactors (PWRs).	Revise Sub-Paragraph b. as follows: b. The reactor coolant makeup function should be capable of maintaining the reactor coolant level above the top of the core for boiling-water reactors (BWRs) and within the level indication of the pressurizer for pressurized-water reactors (PWRs). [Note: Temporary core uncovery when using SRVs and Low Pressure Systems for post-fire safe shutdown has been approved for BWRs.]
42	C.5.1, page 78		Revise the last paragraph to read as follows: GL 81-12 (Ref. 13) describes the systems and instrumentation that are generally necessary for achieving alternative post fire safe shutdown for existing PWRs and BWRs. [Note: Delete the last sentence.]
43	C.5.2, page 78	For normal safe shutdown, redundant systems necessary to achieve cold shutdown may be damaged by a single fire, but	Revise the 1st Paragraph to read as follows: Components for systems necessary to achieve cold shutdown

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		damage should be limited so that at least one success path can be repaired or made operable within 72 hours using onsite capability or within the time period required to achieve a safe-shutdown condition, if less than 72 hours.	may be damaged by the fire. Damage should be limited so that the component can be repaired or made functional. Any repairs must be made using materials readily available onsite with procedures in effect to implement the repairs, so that cold shutdown can be achieved within the time frame specified below.
44	C.5.2, page 79	For alternative or dedicated shutdown, equipment, or systems that are the means to achieve and maintain cold-shutdown conditions should not be damaged by fire, or the fire damage to such equipment and systems should be limited so that the systems can be made operable and cold shutdown achieved within 72 hours (or less, if required) using only onsite power. Systems and components used for safe shut down after 72 hours (or less, if required) may be powered from offsite power only.	Revise the1st Sentence in the 2nd Paragraph to read as follows: For alternative or dedicated shutdown, damage to equipment or systems necessary to achieve cold shutdown should be limited so that the equipment or systems can be repaired and cold shutdown achieved within 72 hours. For safe shutdown, damage to equipment or systems necessary to achieve cold shutdown should be limited so that the equipment or systems can be repaired within 72 hours. Revise the 2nd Sentence to reads as follows: Equipment and systems used after 72 hours (or less, if required) may be powered from offsite power only.
	C.5.2	General	The term "success path" and "train" appear to be used interchangeably in Section 5.2. Given the importance of the precision of wording, it is recommended that these terms be consistently used.
45	C.5.3, page 79	The postfire safe-shutdown analysis should ensure that one success path of shutdown SSCs	1st sentence – Remove the words "of shutdown SSC's".

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		remains free of fire damage for a single fire in any single plant fire area. The analysis should address all circuits for which fire-induced failure could prevent safe shutdown by affecting components important to safe shutdown, and appropriate protection should be provided.	Last sentence – Remove the words "by affecting components important to safe shutdown".
46	C.5.3 Page 79	The postfire safe-shutdown analysis should ensure that one success path of shutdown SSCs remains free of fire damage for a single fire in any single plant fire area. The NRC acknowledges that Chapter 3 of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable deterministic methodology for the analysis of postfire safe-shutdown circuits, when applied in conjunction with this regulatory guide.	Experience has shown that NRC inspectors are not aware of the information provided in NEI 00-01. For example, NEI 00-01 provides more practical language for addressing the question "what is a redundant safe shutdown system" than the subjective language ("preferred") provided in GL 86-10 Position 3.8.3. Even though this NEI guidance has been endorsed by the NRC, Inspectrors and NRR Staff continue to inspect and enforce using the subjective language in GL 86-10 (Ref ML070640415).
47	C.5.3.1, page 79		1st Paragraph should be revised as shown below:: "Two classifications of equipment in the plant are important when evaluating the ability to achieve post-fire safe shutdown.

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			The NRC acknowledges that the approach outlined in Appendix H of NEI 00-01 provides an acceptable methodology for the classification of components on the success path required for hot shutdown and those important to safe shutdown, when applied in conjunction with this regulatory guide. Regulatory Position 5.3.1.1 describes the equipment on the success path necessary to achieve and maintain hot-shutdown conditions. The components on each success path are those components required to perform each of safe shutdown functions, e.g. reactor make-up, reactor decay heat removal, for the success path. Regulatory Position 5.3.1.2 describes the equipment that is important to safe shutdown. The components that are important to safe shutdown are those components that can adversely affect the ability of the success path to perform its required safe shutdown functions. These classifications are not applicable to alternative or dedicated shutdown systems credited for post fire safe shutdown as defined in Appendix R, Section III.G.3. Position 5.4 discusses alternative or dedicated shutdown." 2nd Paragraph: Remove the word "circuits" from the 1st sentence. 5th sentence – Remove "SSCs" from the words "… on the success path SSCs …". 5th sentence, near end – Revise as follows: "… ;specifically, spurious operations that could adversely affect the performance of a required safe shutdown function by causing a flow diversion from the primary flow path as described in Appendix H to NEI 00-01 are required to be protected in accordance with Position 5.3.1.1." Add the following - "The NRC acknowledges that the approach

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			outlined in Chapter 4 of NEI 00-01 which relies upon the Expert Panel Process and the Generic List of Multiple Spurious Operations contained in Appendix G provides an acceptable methodology for the analysis of multiple spurious operations, when applied in conjunction with this regulatory guide." Change "spurious actuations" to "spurious operations" in 4 locations.
49	C.5.3.1, page 79		Section 5.3.1 notes that the assumption of one spurious actuation at a time must be supported by a safety and technical analysis that demonstrates the assumption's validity. With regard to the guidance, the following is suggested: 1. A safety analysis should only be required for plant fire protection programs under 10CFR50.59. Otherwise, an adequate technical analysis is sufficient. 2. It is recommended that Section 5.3.1 specifically note that fire modeling is an acceptable methodology in establishing the basis for the "one-at-a-time" assumption regardless of the plant licensing basis. General Comment: In Section 5.3.1, 2nd paragraph - The 4th sentence indicates that cable fire testing performed by the industry has demonstrated that multiple spurious actuations occurring in rapid succession (without sufficient time to mitigate the consequences) may have a relatively high probability, based on multiple factors, including cable insulation or jacketing materials and cable configurations. While the tests indicate that multiple spurious actuations may occur the evidence was far from

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			conclusive that there was a relatively high probability of occurrence in actual field installation and circuits. Request that "relatively high probability" be deleted.
50	C.5.3.1. page 79		The "common power source" and "common enclosure" examples of "Safe Shutdown Success Path SSCs" refers to alternative shutdown. Section 5.3.1 states that classifications are not applicable to alternative or dedicated shutdown..." This needs to be reconciled. Section 5.3.1, 2nd paragraph - Request that the RG section be revised to acknowledge that Chapter 4 and Appendix G of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable methodology for addressing multiple spurious actuations.
51	C.5.3.1.1, page 80	Section 5.3.1.1 states: "For the success path of SSCs necessary to achieve and maintain hot-shutdown conditions, fire barriers or automatic suppression, or both, should be installed to protect redundant systems or components."	Fire suppression alone does not meet any of the protection criteria of Appendix R. This statement should be clarified.
52	C.5.3.1.1, page 80		General comment: All references to Section 5.3.1.1 for protection methods should include a cross reference to Section 6.1.1 for means of protection inside of noninerted containment.

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53	C.5.3.1.1, page 80	General	Request that the RG section be revised to acknowledge that Appendix H of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable methodology for classification of equipment for post fire safe-shutdown circuits. Also, clarify that "a success path of systems necessary to achieve and maintain hot-shutdown conditions" is the same as "required for hot shutdown" components in Appendix H.
54	C.5.3.1.1, page 80	If permitted by the plant license, plants licensed after January 1979 may credit protection other than items a, b, and c above, if they can show that the use of the protection does not adversely affect safe shutdown. Positions 5.3.1.2, 5.3.1.3, and 5.3.1.4 below present additional ways of demonstrating adequate protection. Note that the omission or elimination of these capabilities in an area containing SSCs (including circuits) important to safety may be considered an adverse effect on safe shutdown, since it would reduce, at a minimum, fire protection defense in depth. Where safe shutdown would be adversely affected because of a reduction in the protection discussed above, the licensee	Recommend following changes to last paragraph" If permitted by the plant license, plants licensed after January 1979 may credit protection other than items a, b, and c above **(or Section 6.1.1 inside of noninerted containments)**, if they can show that the use of the protection does not adversely affect safe shutdown. Positions 5.3.1.2, 5.3.1.3, and 5.3.1.4 below present additional ways of demonstrating adequate protection. Note that the omission or elimination of these capabilities in an area containing SSCs (including circuits) important to safety may be considered an adverse effect on safe shutdown, since it **could potentially** ~~would~~ reduce, at a minimum, fire protection defense in depth. Where safe shutdown would be adversely affected because of a reduction in the protection discussed above, the licensee should submit a license amendment to the NRC for review and approval.

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		should submit a license amendment to the NRC for review and approval.	
55	C.5.3.1.1, page 80	For plants licensed before January 1979, the methods described in Regulatory Position 5.3.1.2 are not available for the protection of the safe-shutdown success path without the approval of an exemption under 10 CFR 50.12. For pre-1979 licensees, a staff decision in an SER that approves the use of operator manual actions, in lieu of one of the means specified in Section III.G.2 of Appendix R, does not eliminate the need for an exemption. Pre-1979 licensees that have SERs, but not a corresponding exemption that approves operator manual actions, must request an exemption under 10 CFR 50.12, by citing the special circumstances of 10 CFR 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid.	Recommend changes. For plants licensed before January 1979, the methods described in Regulatory Position 5.3.1.2 are not available for the protection of the safe-shutdown success path without the approval of an exemption under 10 CFR 50.12. For pre-1979 licensees, a staff decision in an SER that approves the use of operator manual actions, in lieu of one of the means specified in Section III.G.2 of Appendix R, does not eliminate the need for an exemption. Pre-1979 licensees that have SERs, but not a corresponding exemption that approves operator manual actions, must request an exemption under 10 CFR 50.12, by citing the special circumstances of 10 CFR 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid. Note that **operator action inside of the Main Control Room to mitigate potential spurious actuation is not prohibited, since these actions are not considered operator manual actions as defined in the Glossary.**
56	C.5.3.1.2, page 81	The protection options described in Regulatory Position 5.3.1.1 are	Revise as shown below:

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		available but not required for the protection of SSCs (including circuits) important to safe shutdown. Additional protection options available for this category are, for example, Operator Manual Actions (Position 5.3.1.3) and Fire Modeling (Position 5.3.1.4). These additional options are not available for safe-shutdown success path equipment (Position 5.3.1.1).	The protection options described in Regulatory Position 5.3.1.1 are available but not required for the protection of components (including circuits) important to safe shutdown. Additional protection options available for this category are, for example, Operator Manual Actions (Position 5.3.1.3) and Fire Modeling (Position 5.3.1.4). These additional options are not available for the safe shutdown success path equipment without prior NRC approval, except as noted above (Position 5.3.1.1). The NRC acknowledges that the approach outlined in Appendix H of NEI 00-01 provides an acceptable methodology for the classification of components on the success path required for hot shutdown and those important to safe shutdown, when applied in conjunction with this regulatory guide. The NRC acknowledges that the approach outlined in Section 3.0 of NEI 00-01 provides an acceptable methodology for the evaluation of fire-induced circuit failures for components classified as important to safe shutdown, when applied in conjunction with this regulatory guide.
57	C.5.3.1.2, page 81	General	Section 5.3.1.2 - Request that the RG section be revised to acknowledge that Appendix H of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable methodology for classification of equipment for postfire safe-shutdown circuits.
58	C.5.3.1.3 Page 81	<u>Operator Manual Actions</u> All postfire operator manual actions should be feasible and reliable. NUREG-1852 (Ref. 48) provides the technical bases in the form of criteria and technical guidance that should be used to demonstrate that operator manual actions are feasible and	Language in the RG appears to have elevated NUREG-1852 to the level of a requirements document. Per NRC's comment resolution on NUREG-1852 [ML071430064] "NRC does not plan to impose the NUREG's criteria on pre-approved OMAs. Nor does the NUREG change any regulatory requirements. The NUREG provides NRR staff with an acceptable approach to ensure consistent reviews

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		can be performed reliably under a wide range of plant conditions that an operator might encounter during a fire. The use of feasible and reliable manual actions alone may not be sufficient to address all levels of defense in depth. Therefore, fire prevention, detection, and suppression should be considered, in addition to the feasibility and reliability of operator manual actions.	of applications for exemptions and maintenance of adequate safety margins." The regulatory standing of NUREG-1852 does not allow it to be used as a requirements document. Section 5.3.1.3 - Request that the RG section be revised to acknowledge that Appendix E of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable methodology for addressing operator manual actions.
59	C.5.3.1.3, page 81	When one of the redundant safe-shutdown trains in a fire area is maintained free of fire damage by one of the means specified in Regulatory Position 5.3.1.1, then the use of operator manual actions may be credited to mitigate fire-induced operation or maloperation of components that are not required for the success path, including SSCs that are not part of the safe-shutdown train that is free of fire damage. The crediting of operator manual actions should be in accordance with the licensee's FPP and license condition. Operator manual actions may also be credited when an alternative or	Revise the 1st paragraph as shown below: When one of the redundant safe-shutdown trains in a fire area is maintained free of fire damage by one of the means specified in Regulatory Position 5.3.1.1, then the use of operator manual actions may be credited to mitigate fire-induced operation or maloperation of components that are not required for the success path, including components classified as important to safe shutdown that are not part of the success path that is free of fire damage. The crediting of operator manual actions should be in accordance with the licensee's FPP and license condition. Operator manual actions may also be credited when an alternative or dedicated shutdown capability is provided as described in Position 5.4. Add the following between the 2nd and 3rd paragraphs: The NRC acknowledges that the approach outlined in Appendix E of NEI 00-01 for assessing the reliability and feasibility of

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		dedicated shutdown capability is provided as described in Position 5.4.	operator manual actions and repairs provides an acceptable methodology for evaluating the acceptability of operator manual actions for existing plants, when applied in conjunction with this regulatory guide. Any actions taken by the operator in the Control Room are not considered to be operator manual actions and are considered to be an acceptable means of effecting safe shutdown for the selected success path. Similarly, an action taken by an operator at a location outside of the Control Room, e.g. Remote Shutdown Panel, Local Control Station, that is specifically designed with local controls, e.g. hand switches, for the purpose operating plant equipment is not considered to be an operator manual action. The use of this latter set of equipment, however, must be assured to be free of fire damage and capable of being operated in the time required given the potential environmental conditions caused by the fire at the location of the equipment and along the travel path to the equipment. Emergency lighting should also be provided to light the path of travel to the location for these actions, if operation of the equipment is required within the first 8 hours post-fire.
60	C.5.3.1.4, page 81	When one of the redundant safe-shutdown trains in a fire area is maintained free of fire damage by one of the specified means in Regulatory Position 5.3.1.1, then fire modeling may be used to demonstrate that components important to safe shutdown, including SSCs that are not part of the safe shutdown train, are protected from fire damage. The	Revise the 1st paragraph as shown below: When one of the redundant safe-shutdown trains in a fire area is maintained free of fire damage by one of the specified means in Regulatory Position 5.3.1.1, then fire modeling may be used to demonstrate that components important to safe shutdown, including components that are not part of the success path, are protected from fire damage. The use of fire modeling should be in accordance with the licensee's FPP and license condition.

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		use of fire modeling should be in accordance with the licensee's FPP and license condition.	
61	C.5.3.1.5 Page 82	Examples of Safe-Shutdown Success Path Components and Components Important to Safe Shutdown Each table includes a final item that states: • "Other components in the safe-shutdown success path" • "Other components important to safe shutdown"	The final items in each table do not add additional information, and at most, appear to be circular, since they say the same thing as the table heading. At worst, these items might add confusion or ambiguity about what each table is trying to require. Recommend deleting these final items from each table.
62	C.5.3.1.5 Page 82	General	Section 5.3.1.5 - Request that the RG section be revised to acknowledge that Appendix H of industry guidance document NEI 00-01 (Ref. 25) provides an acceptable methodology for classification of equipment for postfire safe-shutdown circuits.
63	C.5.3.1.5, page 82	The following table provides general examples of components that should be considered part of the safe-shutdown success path and components that are important to safe shutdown.	Add the following after the 1st paragraph: The NRC acknowledges that the approach outlined in Appendix H of NEI 00-01 provides an acceptable methodology for the classification of components on the success path required for hot shutdown and those important to safe shutdown, when applied in conjunction with this regulatory guide. Revise the list of Safe Shutdown Success Path Components as follows:

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			Safe Shutdown Success Path Components: • Reactivity control components that are required to achieve and maintain cold shutdown reactivity conditions. • Reactor coolant makeup components that are required to maintain the reactor coolant level above the top of the core for BWRs and within the level indication in the pressurizer for PWRs. • Reactor heat removal components that are required to achieve and maintain decay heat removal. • Process monitoring components that are required to provide direct readings of the process variables necessary to achieve and maintain safe shutdown. • Supporting components that are required to provide the process cooling, lubrication, etc., necessary to permit the operation of the equipment used to achieve and maintain safe shutdown. • Significant flow diversions from the flow path that could lead to core damage rupture of the primary coolant boundary or primary containment within 1 hour after the start of the flow diversion. • Power supplies for the safe shutdown success path components
64	C.5.3.1.5, page 82		Revise the List of Components Important to Safe Shutdown as follows: **Components Important to Safe Shutdown:** • Success path supply tank spurious drain or bypass. • Decay heat removal system valves, when not part of the safe shutdown success path.

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			• HVAC systems and components required to provide cooling to success path components to the extent that cooling is required for post fire safe shutdown. • Power-operated relief valves and safety relief valves not part of safe-shutdown success path. • Spurious start of equipment not relied on for a safe-shutdown success path, which could cause overfill conditions. • Small diversion paths from success path flow path—smaller than the significant diversion paths described above. • Multiple separate small diversion paths that when combined that would lead to core damage, rupture of the primary coolant boundary or primary containment within 1 hour after the start of the flow diversion. • A connection to circuits of equipment where spurious operation would adversely affect the SSCs important to safe shutdown (e.g., residual heat removal/reactor coolant system isolation valves).
65	C.5.3.2, page 83	*High-Low Pressure Interface*	Add the following at the end of this section: "The NRC acknowledges that the approach outlined in Appendix C of NEI 00-01 provides an acceptable methodology for the determination of components as High-Low Pressure Interface Components, when applied in conjunction with this regulatory guide."
66	C.5.3.2.c Page 83	Where adequate separation is not provided, demonstrate that fire-induced failures (multiple hot shorts, open circuits, and shorts to ground) of the cables will not	The criteria regarding High-Low pressure interfaces in the RG are not the same as those in GL 81-12 and GL 86-10. The language in the RG prohibits any breach of a high-low pressure interface, whereas previous NRC guidance was more flexible in that it allowed the licensee the flexibility to evaluate the impact of

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		cause maloperation and result in an interfacing system LOCA.	a particular interface as to the effects on safe shutdown. For example, GL 86-10 allowed for the maloperation of High-Low pressure interfaces, as long as the safe shutdown capability was not adversely affected. The GL 86-10 language allowed for the evaluation of the consequence of the opening of select interfaces, and justification based on their lack of adverse impact on safe shutdown. GL 86-10 - 5.3.10.c. "The safe shutdown capability should not be adversely affected by a fire in any plant area which results in spurious actuation of the redundant valves in any one high-low pressure interface line." Similarly, GL 81-12 allowed the licensee the option of evaluating the consequence of a particular High-Low interface, and justifying it's acceptability "as-is".
67	C.5.4.1, page 83	General	Add the following at the end of this section: "The NRC acknowledges that the approach outlined in Appendix D of NEI 00-01 provides an acceptable methodology for evaluating Alternative and Dedicated Shutdown, when applied in conjunction with this regulatory guide."
68	C.5.4.3.2, page 85	Spurious actuation is considered to be mitigated if one of the following criteria is met (note that the fire-induced spurious actuations of components included in the safe shutdown success path should be prevented using the methods described in Regulatory Position 5.3.1.1):	Recommend: "Spurious actuation is considered to be mitigated if one of the following criteria is met (note that the fire-induced spurious actuations of components included in the safe shutdown success path should be prevented using the methods described in Regulatory Position 5.3.1.1, or by operator action inside of the Main Control Room, since these actions are not considered operator manual actions as defined in the Glossary):"

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69	C.5.4.2 C.5.4.3 Page 84-86	Sections discussing associated circuits	These sections discuss Associate Circuits of common power sources, common enclosures, and spurious actuations. The location of these sections hierarchically is placed under section 5.4 dealing specifically with Alternative Shutdown. This creates the impression that these topics are not of concern for non-alternative shutdown fire areas. Licensee experience has been that the NRC wanted these topics applied to all fire areas, not just alternative shutdown areas. (NEI 00-01 reflects the understanding that these concepts apply to all fire areas). GL 81-12 Clarification indicates that these concepts are to be treated for both Alternative and redundant shutdown areas (referred to as III.G.2 and III.G.3 in the GL). Similarly, GL 86-10 appears to apply the associated circuit discussion equally to both III.G.2 and III.G.3. As written, the document appears to be misleading, since licensees expect the NRC will continue to inspect and enforce these concepts against all fire areas, not just III.G.3 areas like what is written in the Reg Guide.
70	C.5.5 Page 87	Implementation of the procedures should not further degrade plant safety functions.	Based on discussion between the Staff and NEI on May 20, 2009 there are concerns that this stipulation may be un-attainable when the effects of MSO's are considered. One possible method of resolving MSOs is to "turn off" the offending system (unprotected train) that is involved in a maloperation. This approach to resolution of MSOs on the unprotected train might be interpreted as further degrading a plant safety system. It is requested that the staff reconsider the quoted language from the RG, and confirm that it represents the true staff position.

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			Note that the language in Appendix R appears to suggest that the ability to achieve post-fire safe shutdown takes on a higher priority than protecting safety-related functions. It is also requested that the staff consider making the language more flexible, so as to not specifically prohibit degrading plant safety functions, as in some cases that may be the inevitable outcome of the MSO process.
71	C.6.1.1, page 88	Fire protection for the primary and secondary containment areas should be provided for the hazards identified in the fire hazards analysis. Under normal conditions, containment fire hazards may include lubricating oils, hydraulic fluids, cables, electrical penetrations, electrical cabinets, and charcoal filters. During refueling and maintenance operations, additional hazards may be introduced, including contamination control and decontamination materials and supplies, scaffolding, plastic sheathing, wood planking, chemicals, and hot work. The fire hazards analysis should evaluate the effects of postulated fires within the primary containment to	The protection schemes for protection inside of non-inerted containments in Section 6.1.1(e.g. separation of cables and equipment and associated nonsafety circuits of redundant trains) is inconsistent with the terminology in Section 5.3.1.1. Given the importance of the precision of wording, it is recommended that the wording in Sections 5.3.1.1 be made consistent with Section 6.1.1.

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		ensure that the integrity of the primary coolant system and containment is not jeopardized and the safe-shutdown performance objectives described in Regulatory	
72	C.6.2.3 Page 95	Radwaste Building/Storage Areas and Decontamination Areas	Suggest adding note that Reg Guide 1.143 provides additional design criteria for some of these areas.
73	C.6.2.4 Page 95	Independent Spent Fuel Storage Areas	The text provided is not very informative regarding how a licensee maintains compliance with their ISFSI license. Suggest adding additional discussion for clarity. Generally, the ISFSI cask system is licensed by the cask vendor and the NRC (10CFR72 subpart L). The cask vendor provides a UFSAR for the cask system to the licensee (10CFR72.248). The licensee is required to maintain the ISFSI site in compliance with the terms specified in the cask UFSAR, including fire protection provisions in the Cask UFSAR.
74	C.6.2.5 Page 95	Water Tanks Storage tanks that supply water for safe shutdown should be protected from the effects of an exposure fire. Combustible materials should not be stored next to outdoor tanks.	In BTP CMEB 9.5.1 (1981 edition) and BTP APCSB 9.5-1, this provision was explicitly limited to "safety-related water tanks". By removing the distinction that this only applies to "safety related" tanks, this paragraph would now apply to more tanks. This appears to be a change that was introduced in Rev 0 of RG 1.189, however the Rev 0 draft, summary of new text, etc. do not indicate that a change in staff position was intended (Rev 0 Reg Guide draft states that position is based on Regulatory Position 6.2.5 of CMEB 9.5.1). Recommend restoring original section heading to be "Safety-

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			Related Water Tanks".
75	General		General Comment – It has been our experience that in spite of the statement in Section 8.1 that, "Unless specifically noted otherwise, the guidance in the regulatory guide is applicable to the FPP for new reactor plants." the Regulatory Guide is written in a manner that promotes confusion as to what sections are applicable to the different categories of plants. It is recommended that the Regulatory Guide be revised to contain a matrix table that specifically identifies which sections of the technical requirements are applicable to: Plants licensed before January 1979 (Pre-1979 Plants) Plants licensed after January 1, 1979 (Post-1978 Plants) New Reactor Plants An example of the confusion that may exist is: Section 8.1 states, "Similarly, when practical, reliance on operator manual actions should be avoided..." While Section 5.3.1.3 states,"...the use of operator manual actions may be credited to mitigate fire-induced operation or maloperation of components that are not required for the success path....Operator actions may also be credited when an alternative or dedicated shutdown capability is provided as described in Position 5.4."
76	General	Lack of endorsement of NFPA 804	In NRC's comment resolution to DG-1170, they stated that the NRC has not yet completed a review of NFPA 804, to determine if the NRC can endorse it. Has the NRC performed such a review at this time? Can the NRC provide an endorsement of NFPA 804?

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77	General	Document contains several references to NFPA 805 licensing basis.	This document is not applicable to plants that have adopted a licensing basis based on NFPA 805. In some portions of the document, NFPA 805 is discussed at length, which might create confusion with the reader, since the document's intent is not to address NFPA 805.
78	General	Overall Comment	Add a statement that the approaches outlined in this regulatory guide when properly applied as outlined in this document supersede other approaches contained in regulatory information summaries, generic letters and information notices related to fire protection.
79	Glossary	Definition of "Repair"	Recommend adding the phrase "Repairs should be of sufficient quality to ensure safe operation until the normal equipment is restored to an operating condition." This will make the definition agree with the discussion in Section 5.2 (Page 78)
80	Glossary	Definition of “success path”	Glossary - Request that the RG glossary for “success path” be revised to acknowledge that this classification is the same as the NEI 00-01Appendix H classification of required for hot shutdown.
81	Glossary	Definition of “Important to Safe Shutdown”	Glossary - Request that the RG glossary be revised to add a definition for “important to safe shutdown” as discussed in the RG, Section 5.3.1.
82	References	Reference 25	References - Update Reference 25, NEI 00-01, Revision 2, to reflect the later revision.
83	Appendix B	The term “fire PRA” encompasses all levels and types of PRAs, ranging from a simplified bounding analysis to a detailed analysis in accordance	Third paragraph of Appendix B should be updated to reflect issuance of the ANS Fire PRA standard.

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		with NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities" (Ref. 132), and the draft American Nuclear Society Fire PRA Standard. NUREG/CR-6850 should be the basis for the review of the proposed methodologies. Chapter 19, "Probabilistic Risk Assessment," of NUREG-0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants" (Ref. 2) contains additional guidance on the review of nuclear power plant PRAs.	