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August 18, 2000

Rules and Directives Branch  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

**SUBJECT:** Issuance and Availability of Draft Regulatory Guide DG-1097, *Fire Protection for Operating Nuclear Power Plants, (Fed. Reg. 38866)*  
Request for Comments

**PROJECT NUMBER: 689**

The Nuclear Energy Institute,<sup>1</sup> offers the following comments relative to the *Federal Register* notice that solicited public comments on draft Regulatory Guide DG-1097, *Fire Protection for Operating Nuclear Power Plants*. We appreciate the opportunity to comment on this draft regulatory guide. As noted in our letter of August 10, enclosed is a detailed listing of the comments unresolved from our January letter and new comments resulting from the industry review of DG-1097.

The comments we provided in our letter of August 10 state general concerns about the use and implementation of DG-1097; the comments in this letter reflect a cross section of specific issues with DG-1097. These specific comments support the general concerns described earlier and clearly illustrate why the general concerns are valid.

The organization of the comments in the enclosure is as follows:

- Table 1: Implementation Issues
- Table 2: New or Revised Guidance

<sup>1</sup> 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, nuclear materials licensees, and other organizations and individuals involved in the nuclear energy industry.

TEMPLATE: ADM-03

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ADD: E. CONNELL (EAC)

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- Table 3: Information That Should Be Referenced to Other Regulatory Documents
- Table 4: Other Comments

The industry comments on DG-1094 that were not addressed in DG-1097 are prefixed in this submittal with the designation "1094". New comments pertaining to DG-1097 are prefixed with the designation "1097".

We recommend that guidance in DG-1097 on 10 CFR 50.59 be referenced to the regulatory guide being prepared for that process, rather than be repeated in DG-1097. We support the position in NEI 96-07, Revision 1, that fire protection program changes be implemented using the GL 86-10 process rather than through 10 CFR 50.59.

Please note that, despite the apparent lack of consideration by NRC staff of many of the comments submitted for DG-1094, an extensive effort was made by many industry organizations to provide a detailed review of DG-1097. This reflects the high importance placed by the industry on the content and the implementation of this regulatory guide. The comments were prepared by individuals with extensive experience in plant fire protection programs, and should be given serious consideration for optimizing the usefulness of this regulatory guide. We further request that you balance this extensive industry effort with an accounting of how the comments on DG-1094 and DG-1097 were considered.

As noted in our earlier comment letter, this regulatory guide can provide a key element in assuring a more uniform and consistent understanding of the myriad licensing positions that evolved following the promulgation of 10 CFR 50.48 and 10 CFR 50, Appendix R.

NEI is prepared to meet with the NRC staff to address these issues in more detail.

Sincerely,



David J. Modeen

FAE/maa  
Enclosure

c: Mr. John Hannon, US Nuclear Regulatory Commission  
Mr. Eric Weiss, US Nuclear Regulatory Commission  
Mr. Edward Connell, US Nuclear Regulatory Commission

Table 1

Industry Comments on DG-1097  
Implementation Issues

Comment Number	Page	Section	Comment
			<b>The comments in this section of Table 1, until noted otherwise, are those submitted on DG-1094 and not addressed in DG-1097. These comments are still applicable.</b>
1094-2-1	104	D	Two provisions in Section D suggest that the NRC will consider this regulatory guide as a new standard for fire protection programs: (1) The request for licensees to review existing programs against this regulatory guide; and (2) the NRC's proposed use of the regulatory guide for inspecting plant programs. Without further explanation, these statements effectively negate the NRC statement that existing programs need not be changed. It is difficult to envision how an NRC inspector in the field will be able to distinguish between the new NRC staff positions contained in the regulatory guide with the existing guidance a plant is committed to comply with as part of its licensing bases. More thought is necessary to determine how these regulatory guide provisions are reflected in revised NRC inspection procedures so that inappropriate pressure to "upgrade" fire protection programs does not arise. Plants should be inspected only for compliance with their existing licensing bases.
1094-2-2	104	D	Some of this needs to be up front in Section A, Purpose – for a document like this, it is very important that we discuss this early and not all the way back on page 104.
1094-2-3	104	D	First paragraph: After "10 CFR 50.59" insert "to ensure there is no affect on the ability to achieve, maintain and monitor safe shut down in the event of fire and to minimize radiation releases."
1094-2-4	104	D	The Guide states that " ...this guide presents the best available methods for meeting fire protection requirements and objectives that are acceptable to the Commission, and will be used in the evaluation of fire protection programs..." It is not appropriate that NRC base its inspections on a Guide that is clearly above-and-beyond a plant's licensing basis. This leaves the inspected plant in the position of having to defend its program that is in compliance with its licensing basis, diverting resources in an unnecessary manner. This implementation section should be pared-down to stating only something like "This Guideline presents the best available methods for meeting fire protection requirements and objectives that are acceptable to the commission, and should be considered when implementing fire protection program changes and upgrades. However, existing fire protection programs need not be changed to meet the positions contained within this Guide."
1094-2-5	104	D	It is unclear as to the action to be taken by the NRC and the licensee when it is found that a new requirement (as defined in this Guide) is not met.

Comment Number	Page	Section	Comment
1094-2-6	104	D	CMEB 9.5.1, ASB 9.5.1 and the balance of Appendix R that provide the majority of the references are not included in the licensing basis of much of the industry. This will create a significant burden on licensees to perform a baseline against this document. Section D of DG-1094 implies that this baseline review must be performed. Then the question remains how would this baseline review be documented? Would this baseline review be subject to regulatory review during inspections?
1094-2-7	104	D	The Guide states that "Existing fire protection programs ... need not be changed to meet the positions contained within this guide to the extent that these existing programs or elements have been found to be acceptable to the NRC..." Staff should not tell licensees at a later date, "We didn't review 'this' when we approved 'that,' so the guidance of the Reg Guide applies to your plant."
1094-2-8	104	D	The Guide states that "Licensee's should consider reviewing their fire protection programs against the guidelines contained herein during a self-assessment or other internal review to provide reasonable assurance that the necessary elements of the program ... have been considered." Remember that SECY 99-140 states that plants that have not performed a self-assessment are candidates to experience the 'new-and-improved' intense triennial inspections first. It is not appropriate for a plant to use this guide as inspection guidance; any self-assessments should be performed against the plant licensing basis. Licensees should not be candidates for inspections simply because they do not use this guide for self-assessment criteria.
			<b>The remainder of these comments are new comments on DG-1097 related to implementation. Please note that revised wording for DG-1097 Section D was submitted in NEI's letter of August 10, 2000.</b>
1097-1-1	1	A	Fifth paragraph regarding Implementation. This paragraph sets the stage for how the NRC will use this document. First sentence, "This regulatory guide is being developed to provide a comprehensive fire protection guidance document and to identify the scope and depth of fire protection that the staff has determined to be acceptable for operating nuclear power plants." The CLB is what is used to determine what the staff found acceptable for operating nuclear power plants. The Regulatory Guide acknowledges that the staff has formed and changed various positions over the years. If the staff is now taking exception to previous positions under which plants were licensed, issuing this Regulatory Guide will not change anything.  The last sentence is also interesting, "Risk-informed and performance based alternatives to the guidance presented in this regulatory guide may be acceptable to the staff." Why do licensees need to find acceptable alternatives to be presented to the staff for information in a regulatory guide? The point of this comment is that these words seem to indicate the staff has plans for this document beyond a regulatory guide. This points to the need for a clear statement in the implementation section that this document is not to be applied to existing plants.
1097-1-2	13	B	<b>Shutdown/Refueling Operations</b> The text states: "During shutdown operations, particularly during maintenance or refueling outages, fire conditions can change significantly as a result of work activities. Redundant systems important to safety may not be available as allowed by plant Technical Specification and plant procedures. Fire protection during shutdown or refueling conditions

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			<p>should minimize the potential for fire events to impact safety functions (e.g., reactivity control, reactor decay heat removal, spent fuel pool cooling), or result in the release of radioactive materials, under the differing conditions that may be present during these operations.”</p> <p>If the NRC has some specific issues that they feel need to be addressed then those issues need to be clearly identified. This section is too ambiguous to implement.</p>
1097-1-3	81	5.3	<p>General comment, Appendix R III.L criteria (“Alternative/Dedicated Shutdown”) have been interspersed throughout this section. These prescriptive criteria do not apply to safe shutdown capability (Appendix R III.G.1 and III.G.2). This may be considered a backfit. This section references an Internal Staff Memo (End note #322). It is not clear if this Memo is publicly available. Also, due to the wide variations of systems provided in various vintages of BWRs, many systems listed in this section do not exist at various plants. This could lead to additional confusion. Suggest that the NRC reference a suitable document which provides this same information while at the same time reflecting the variations that exist between</p>
1097-1-4	101	D	<p>There are a lot of what could be perceived as “requirements” contained within this draft Regulatory Guide. It should be clearly understood by management AND the NRC that this is a “Guide” and does not constitute requirements unless a licensee commits to meeting it. It should be clear that this document provides a lot of “good to know” information and some “good practices” but it should not be something we should be measured against. Our fire protection programs should be measured against our fire licensing basis (SERs, commitments, etc.).</p> <p>This position should also be clearly identified to the QA organization so that they are not performing assessments using inappropriate guidance documents.</p>
1097-1-5	101	D	<p>How this regulatory guide is going to be implemented is still a concern. There is a lot of new guidance or revised guidance that is contained in the draft regulatory guide (most of which was identified in the comments provided by NEI in the January 7, 2000 letter) that has not received any regulatory analysis for applicability to plants whose fire protection programs were licensed prior to the existence of this new guidance.</p>
1097-1-6	101	D	<p>It should be specified in the implementation section of the regulatory guide that this guide does not apply to plants who received their construction permits prior to the date that the guide is actually issued.</p>
1097-1-7	101	D	<p>Revise the Section D wording to properly characterize the RG as being for guidance only.</p>
1097-1-8	101	D	<p>We are concerned about how the NRC plans to implement DG-1097 provisions at existing facilities and programs. Section A, INTRODUCTION, states that this regulatory guide is a “guidance” document and that “compliance with regulatory guides is not required.” However, Section D, IMPLEMENTATION, states:  “the methods to be described in the active guide reflecting public comments will be used in the evaluation of submittals in connection with fire protection programs at operating nuclear power plants.”</p> <p>This statement seems to imply that the NRC would attempt to impose the provisions of DG-1097 on a licensee through review of a submittal involving the fire protection program, such as a request for the NRC review of a proposed fire protection plan revision. Utility X is concerned that DG-1097 would be used as the basis for approving the plan revisions. Utility X is further concerned that the NRC would attempt to implement the DG-1097 provisions at facilities</p>

Comment Number	Page	Section	Comment
			<p>through inspections of the fire protection program. It is suggested that Section D be revised to state that the regulatory guide will be used only in the review of fire protection programs that are part of new applications for operating licenses.</p> <p>Many of the provisions specified in DG-1097 would be classified at Plant X as backfits in accordance with 10 CFR 50.109. As such the NRC would have to follow the process described in 10 CFR 50.109 to impose certain of the provisions of DG-1097. Any attempt to impose DG-1097 provisions by review of submittals or by inspection would be circumventing the required process delineated in 10 CFR 50.109.</p>
1097-1-9	101	D	<p>Section D on implementation of the proposed Regulatory Guide has changed significantly from that proposed in DG-1094. DG-1094 stated that existing fire protection programs or elements thereof, need not be changed to meet the positions contained within this guide to the extent that these existing programs or elements have been found acceptable to the NRC...</p> <p>Now, DG-1097, Section D, IMPLEMENTATION, (page 101) does not provide this same acknowledgement of the variations in commitments based on licensing dates. DG-1097 also does not acknowledge that any new material contained in the Regulatory Guide is for licensee information only and should not be considered new requirements.</p> <p>COMMENT: This guide should continue to state that the specific NRC fire protection requirements applicable to any given operating facility are a function of licensing dates, specific license conditions, approved exemptions/deviations and individual Safety Evaluation Reports.</p>
1097-1-10	101	D	<p>The Regulatory Guide does an excellent job of compiling the guidance documents that have been generated over the years. It provides a road map and good insight into the fire protection and Appendix R programs. Further, the NRC recognizes that plants will not have the same fire protection programs and that compliance with the Reg Guide will vary from plant to plant. However, it is likely that this Regulatory Guide will be used by the NRC Regions as a tool to assist in conducting future inspections. This may place an added burden on a utility when it is required to justify variations from the Reg Guide that are not a part of the utility's licensing basis.</p>
1097-1-11	101	D	<p>The Reg. Guide should be carefully reviewed for any backfit implications. In some cases, simply re-stating a requirement can have broad sweeping impacts on licensees, since implementation of various requirements may be based on the verbatim text of the requirement. Simply replacing a verbatim requirement with a more generalized "conceptual" requirement may mean a great difference in terms of a requirement's scope of applicability, or how it must be implemented.</p>
1097-1-12	101	D	<p>During a February 2000 meeting between the NRC fire protection staff and NEI (and industry), concern regarding the Implementation section of DG-1094 was expressed by NEI. The NRC Staff indicated that they understood industry concerns regarding how this document could be misapplied, and appeared to agree to revise the Implementation Section to address these concerns. The Implementation Section in DG-1097 is no better and perhaps worse in terms of placing specific limits on the use of this document.</p>
1097-1-13	101	D	<p>This document provides fire protection guidance beyond the licensing basis of most if not all plants. This is especially true for older plants. Specifically, APCSB 9.5-1 was written following the Browns Ferry fire. The existing plants and</p>

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			<p>those that were substantially complete could not comply without making massive changes, thus Appendix A to APCSB 9.5-1 was born. Revisions of BTP 9.5-1 continued with guidance even further beyond that in Appendix A. DG-1097 uses the latest BTP (CMEB) 9.5-1 guidance and in many cases includes new guidance. Plants will be forced to depend on the current licensing basis to defend existing configurations against comparisons to DG-1097. In many cases the current licensing basis (CLB), primarily the fire protection safety evaluation reports, are not absolutely clear and certainly do not address as many fire protection issues as DG-1097. The NRC may use this opportunity to challenge CLBs that do not agree with their current philosophy, which can lead to potential "regulatory creep" and have a significant impact on plants.</p>
1097-1-14	101	D	<p>This section on implementation has been rewritten since the previous draft. The discussion is brief. It implies that alternative methods for compliance exist. However, it does indicate that the Reg. Guide will be used to evaluate licensee submittals. The intent of this section is somewhat vague. Past submittals have already been reviewed and accepted. Future submittals would only be expected to address emergent deficiencies. Is it correct to interpret that this Guide would not be used during the fire protection inspection process? Is it also correct to interpret that there would be no expectation to evaluate a specific plant's licensing and design basis against this Reg. Guide nor subsequently justify or rectify any differences? The discussion of section D in the introduction (section A) implies that licensees should use this Reg. Guide for self assessments. The introduction also indicates that Reg. Guides are .."not substitutes for regulation, and compliance with regulatory Guides is not required."</p>
1097-1-15	101	D	<p>It appears that if a plant were to upgrade the fire protection features in an area of their plant that requires the plant to submit this change to the NRC for review, the NRC would review the fire protection features for this plant against the new regulatory guide instead of the plant specific licensing basis. This could have a potential negative impact on the industry in that a plant would not upgrade their existing level of protection unless they meet all the requirements of new regulatory guide. The regulatory guide should allow fire protection improvements in plant fire areas with existing exemptions and deviations previously approved by the staff to be reviewed based on the merits of the change in the fire area without re-reviewing the entire plant's conformance to current regulatory guidance.</p>
1097-1-16	101	D	<p>This section states "The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this draft Regulatory Guide. This proposed Guide has been released to encourage public participation in its development. Except in those cases in which an applicant or licensee proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the methods to be described in the active guide reflecting public comments will be used at operating nuclear power plants." This tends to indicate that the Regulatory Guide will be used to evaluate future licensee submittals (presumably exemption requests and deviations submitted for staff concurrence). Historically, the NRC staff has not evaluated submittals made under 10CFR50.59. If the staff intends to perform some new kind of evaluation in the future under which submittals would be expected, that expectation should be clarified here. As it stands, the expectation regarding what kind of submittals the Regulatory Guide would be used to evaluate is extremely unclear.</p> <p>This section conflicts with statements the Staff has made verbally at ACRS Meetings (Jan 20, 1999 - Fire Protection Subcommittee) and at a recent public meeting with the BWR Owner's Group and NEI (July 26, 2000). This section is also in conflict with the <i>Federal Register</i> notice which issued DG-1097 for comment (Vol. 65, No. 121 / Thursday, June</p>

Comment Number	Page	Section	Comment
			<p>22, 2000 /Notices 38867).</p> <p>The <i>Federal Register</i> Notice states "This guide is being developed to provide a comprehensive fire protection guidance document and to identify the scope and depth of fire protection that the NRC staff has determined to be acceptable for operating nuclear plants." At the July 26, 2000, meeting with the BWROG and NEI, the NRC Staff indicated that this Regulatory Guide would be used as part of the inspection process, and that in cases where a plant's licensing basis on a subject area covered in the Regulatory Guide was not well documented, the guidance in the Regulatory Guide would be applied.</p> <p>The discussions in the January 20, 1999, ACRS Fire Protection Subcommittee meeting indicate that implementation of this Regulatory Guide will not be simple, and that the Staff will have to accommodate plants of various licensing vintages within the Regulatory Guide. The comments made by the Staff on July 26, 2000, and the discussion contained in the <i>Federal Register</i> notice are of concern, since they don't acknowledge any consideration for the licensing vintage of various plants, including the fact that plants may have been licensed to widely disparate requirements and staff positions. Nevertheless, in each case, the staff has found that GDC-3 has been satisfied at each facility as well as the applicable implementing documents (10CFR50 Appendix R; APCS 9.5-1, Appendix A; APCS 9.5-1; NUREG-0800 BTP 9.5-1; Regulatory Guide 1.120). The NRC took great care in clearly defining which set of staff positions was applicable to a specific facility. Similarly, at each facility, it was clearly understood that the NRC's approval of the fire protection program (based on whatever set of Branch Technical Positions), signified that the facility was in compliance with GDC-3. Variations in the implementing documents are partly based on differences in construction and separation practices in effect across the various vintages of plants, as well as what features the staff could justify under backfit analysis. Creating and enforcing a "one size fits all" (or a "most conservative case") Regulatory Guide, without acknowledging these variations and evolutions does not benefit the industry, the NRC staff, or the NRC inspectors. Wherever the Regulatory Guide has taken the "most conservative case" from the variations in guidance, an explanation should be provided, explaining how the guidance evolved, and what safety basis the staff has found for selecting that case. Examples of other compliance strategies utilized by licensees (and accepted by the staff) would round out the document, and go a long way towards making it truly a "best practices" document. A major concern is that the NRC states the Regulatory Guide will apply to situations where the licensing basis of a facility is not clear. Since the staff has found that each facility is in compliance with GDC-3, the licensing bases are clear. To try to apply the Regulatory Guide on top of the existing, approved fire protection programs is a backfit. As discussed in the January 20, 1999 ACRS meeting, the staff is aware of these backfit issues, but has yet to address them in a substantive manner. Furthermore, the licensing basis for a plant licensed to APCS 9.5-1 or APCS 9.5-1 Appendix A would obviously be silent on items subsequently added to NUREG-0800. Every plant's licensing basis will be silent regarding any "new text" contained in the Regulatory Guide. Using this document to determine compliance would lead to endless questions regarding topics to which a plant does not have to comply with. Responding to questions that are not applicable to the licensing vintage of the plant results in man-years of work with no safety benefit (backfit). More discussion should be made with regard to this document not delineating "requirements" but rather identifying good practices. It should be clear that plants should not be measured against the Regulatory Guide.</p>

Table 2

Industry Comments on DG-1097  
New or Revised Guidance

Comment Number	Page	Section	Comment
			<b>The comments in this section of Table 2, until noted otherwise, are those submitted on DG-1094 and not addressed in DG-1097. These comments are still applicable.</b>
1094-1-5			There are a number of instances in which the text is "new" per the reference guide in Appendix J to DG-1094. This raises questions of the bases for this new information and how it will be applied to existing programs. While some of the new text is sound from a fire protection standpoint, the impact of implementation, and the actual benefit in terms of risk reduction would have to be determined. The burden for performing this activity is significant
1094-1-6			We need to be careful regarding the impact on BOP areas. We take care of these because it is the right thing to do to protect our investments and the ability to generate electricity - the expansion of regulatory guidance will only complicate the program.
1094-1-7			The Reg. Guide should be carefully reviewed for any backfit implications. In some cases, simply re-stating a requirement can have broad sweeping impacts on licensees, since implementation of various requirements may be based on the verbatim text of the requirement. Simply replacing a verbatim requirement with a more generalized "conceptual" requirement may mean a great difference in terms of a requirement's scope of applicability, or how it must be implemented.
1094-1-13	1	A	New guidance is being promulgated within this document. Section D is being cited as the means to implement this guide. Although Section D correctly states that requirements are a function of any given plant's licensing basis, it infers that some subjects like Life Safety requirements (specifically stated as NFPA 101 throughout the Guide) represent objectives and requirements considered acceptable to the NRC and they will be used in the evaluation of existing fire protection programs. Considering that NFPA 101 is not defined in any existing NRC fire protection requirement, it is unclear as to what a utility's actions should be relative to this subject. Since life safety requirements (to the extent described in NFPA 101) are not implemented to "prevent the performance of necessary safe shutdown functions and will not significantly increase the risk of radioactive releases to the environment" it is not clear why there are references to them in this document.
1094-1-19	20	B-4.2.1	The term "fire damage limit" is new and is undefined. The term implies that different measurable limits are defined and are considered acceptable. If there are limits other than ensuring the capability to safely shutdown and minimize damage to safety related equipment to prevent release to the environment, those should be uniquely defined. It is unclear how to implement or interpret this paragraph. The glossary should be updated.
1094-3-1	8	A	The Guide states that "...as appropriate, new guidance is provided where the existing guidance is weak or non-existent." There are 55 End Notes that reference "New text" as the source for the requirement. So, in at least 55

Comment Number	Page	Section	Comment
			cases, the Guide provides new guidance, potentially above what any plant may be committed to. These should be individually flagged to ensure proper "Backfit" analysis is performed.
1094-3-2	20	B-4.2.2	Provide references/basis for all of this apparently new guidance.
1094-3-3	20	B-4.2.2	Paragraph B 4.2.2 discusses earthquake as an initiating event. This is not considered an initiating event at most sites. In addition, this paragraph discusses fires common to more than one unit for site related events that have a reasonable probability of occurring such as an aircraft crash. This basis for this position is not stated.
1094-3-4 - refs to new text removed	21	B-4.2.3	Sections 4.2.3, 4.2.4 and 4.4.2 contain new text related to self-imposed SBO without a reference to new text in the List of References. This a concern that new wording is being injected into some sections which may not receive the appropriate "Backfit" review.
1094-3-5 Same as 3-4	21	B-4.2.4	Sections 4.2.3, 4.2.4 and 4.4.2 contain new text related to self-imposed SBO without a reference to new text in the List of References. We have a concern that new wording is being injected into some sections that may not receive the appropriate "Backfit" review.
1094-3-6	22	B-4.4.1	Sections B.4.4.1 "Power Operations", and C.5.1 "Safe Shutdown Performance Goals" first sentence state: "...reactor safety and performance goals for post-fire safe shutdown should be consistent with those for normal plant shutdown." Without any additional clarification, this guidance can be interpreted as a new requirement to ensure reactor process variables to be maintained within those anticipated for a normal plant shutdown. However, it should be noted that when a decision is made to shutdown the plant because of a fire, some process variables might exceed those that are anticipated for a normal plant shutdown. This condition is a forced plant shutdown because of a fire and therefore some latitude should be allowed to exceed normal plant shutdown process variable limits with assurance of an adequate margin of safety.
1094-3-7	23	B-4.4.2	Section B.4.4.2 "Shutdown and Refueling Operations" is new and should be evaluated as new guidance / requirements according to existing NRC backfit policy guidelines.
1094-3-8	29	C-1.1.5	This section implies that a compensatory measures program should be implemented for all aspects of the fire protection and post-fire safe shutdown program. Outside of the TRM there are no specific compensatory measures required specifically for post-fire safe shutdown. While many plants have instituted such programs, they vary widely. Depending on what the actual NRC expectations for compensatory measures are, this could become a significant issue. Recommend that we get clarification from the Staff on how they see this section being implemented. Previous guidance recommended that the compensatory measures be commensurate with the safety significance of the issue under consideration. Application of this guidance typically required no comp measures for routine maintenance of FSSD equipment, while fire watches might be relied upon for significant design basis errors in the FSSD capability. At one plant, the NRC recently requested the development of systematic placement of fire watches whenever any piece of FSSD equipment was out of service for any reason, which appears to be inappropriate given the safety significance.
1094-3-9	29	C-1.1.5	Suggest that the fire program document should address 90% of the comp measures that would be necessary to support routine impairments and deficient conditions. The program should also cover the length of time at risk under those comp measures is acceptable, and the actions needed if that time at risk is exceeded. The program document can then also cover how the unusual is handled – that way as issues come up, the program addresses the approach – this can be incorporated under 50.59 and then be available for controlling conditions and the risk.

Comment Number	Page	Section	Comment
1094-3-10 (ref to AHJ added)	37	C-1.4.7	Section 1.4.7 appears to now require a formal code compliance review or study not previously codified.
1094-3-11	41	C-2.1.4	Section 2.1.4, "External/Exposure Fire Hazards," states that for miscellaneous exterior areas, (shops, warehouses, auxiliary boilers, etc.) smoke effects must be considered along with fire effects. The potential for smoke infiltration via the fresh air intakes of the ventilation system would need to be addressed. This could become a significant issue for some plants, particularly those that have compact sites. These types of reviews are typically contained within the UFSAR descriptions of the site's general characteristics, including special site-wide concerns such as transportation accidents. To re-perform these evaluations using new criteria promulgated in the DG is clearly a backfit.
1094-3-12	41	C-2.2.2	This section was never before imposed in the fire protection CFR or BTP.
1094-3-13	43	C-3.1.1	Section 3.1.1 has a lot of specific guidance that we probably don't follow today. It has to be clear that we're not going to do a bunch of modifications to meet the guidance in this document.
1094-3-14	43	C-3.1.1.d	Section 3.1.1.d "Fire Detection and Alarm Design Objectives and Performance Criteria" states in part, "Local audible alarms should sound in the fire area. This appears to be a new requirement.
1094-3-15	46	C-3.2.1-.i	Section 3.2.1.i "Fire Protection Water Supply" states, "Fire water supplies should be filtered and treated as necessary to prevent biofouling or microbiologically influenced corrosion of fire water systems. If the supply is raw service water, fire water piping runs should be periodically flushed and flow tested." This may be a good idea, but it's also a new requirement.
1094-3-16	45	C-3.2.1	Section 3.2.1 "Fire Protection Water Supplies," item (h) requires seismic considerations for the hose stations. During the NFPA 805 process it was determined that many plants, particularly old east coast plants do not meet this.
1094-3-17	49	C-3.3.2	This section was never before imposed in the fire protection CFR or BTP.
1094-3-18	54	C-3.5.1.2	Section C.3.5.1.2.third paragraph requires self-contained breathing apparatus near containment entrances. This is a new requirement.
1094-3-19	62	C-4.1.2.3	RG 1.120, Section A is not intended to define life safety requirements. The purpose of imposing this new requirement in this draft Guide is not clear since it does not support the basic FP Goals/Objectives stated in the previous sections. It should be deleted. This comment is applicable to all sections where life safety requirements are defined.
1094-3-20	62	C-4.1.2.3	Delete all of the first paragraph after "nuclear power plant."
1094-3-21	65	C-4.1.3.4	Paragraph C 4.1.3.4 discusses requirements for class 1E cables not required for fire safe shutdown must meet the requirements of RG 1.75. For older plants not meeting RG 1.75 all exposed cables must be coated with fire retardant and a fixed automatic water fire suppression system should be provided. The source references for most of this paragraph appear to be staff memorandums. Have these memorandums ever been transmitted to licensees and what regulatory standing do they have?
1094-3-22	65	C-4.1.3.4	Section C.4.1.3.4 requires separation/protection for systems used to mitigate design basis accidents other than fire. This is a new requirement.
1094-3-23	66	C-4.1.3.6	Section 4.1.3.6 requires area-wide automatic fire suppression in rooms containing electrical cabinets important to safety. It also requires fire detection in cabinets. These are new requirements.

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1094-3-24	67	C-4.1.4.2	Section 4.1.4.2, "Smoke Removal," opens up a new regulatory area that should be treated as a backfit issue. The effort to address smoke control and removal for safe shutdown activities may be valid, but will likely involve considerable effort. In the past many plants used fire area or fire zone boundaries as smoke boundaries as well. However, depending on the expectations of the NRC this may not be adequate. The NRC should be very clear on what level of analysis is expected for smoke impacts on post-fire Operator actions. NFPA 204 is not a standard that most licensees are committed to. The imposition of specific requirements for smoke removal at this time is inappropriate.
1094-3-25	64	C-4.1.3.3	Section 4.1.3.3, directs the use of continuous line-type fire detection. This type of prescriptive equipment should be avoided in the new Reg. Direction for fire detection compliant with NFPA-72 would be more appropriate. Also, it is not clear what the technical basis was for the trade off conditions for having manual hose stations in lieu of automatic water suppression. The new standard should avoid non-technically founded bases such as this appears to be.
1094-3-26	67	C-4.1.4.3	Section C. 4.1.4.3 "Habitability;" includes a requirement that egress pathways and remote control stations be habitable. This is new guidance. During an emergency that necessitates the evacuation of the control room, habitability of egress pathways and remote control stations may be suspect. Provisions for use of self-contained breathing apparatus must be considered. Egress pathways and remote control stations should not be required to meet control room habitability standards. This may depend upon the definition of "habitability."
1094-3-27	68	C-4.1.4.4	Section C.4.1.4.4 mentions "smoke dampers". This is a new requirement.
1094-3-28	69	C-4.1.6.1	Section C.4.1.6.1 "Life Safety" requires emergency lights in accordance with egress requirements of NFPA 101 Life Safety Code. This is new material.
1094-3-29	69	C-4.1.6.2	Section 4.1.6.2 "Emergency Lighting Post-Fire Safe Shutdown," Item A, also includes the need for testing of the emergency lighting units. While the words seem fairly consistent with what the industry is already doing for the most part, this does add an increased burden that was not in the original rule. This section also states "Where a licensee has provided emergency lighting per Section III.J Appendix R, the licensee should verify by field testing that this lighting is adequate to perform the intended tasks". Imposition of a specific testing approach (i.e., Blackout testing) is not the subject of any previous NRC requirement, but has been recommended by GL 86-10. Industry Standards (ex., Illumination Engineering Society of North America) contains sufficient technical guidance for lighting system design, without recourse to blackout testing. The imposition of blackout testing as the only means of satisfying the regulations is unnecessary, and is a backfit (See 10CFR50.109 (a)(7)).
1094-3-30	70	C-4.1.7.b	Does this imply that all protective relays must be impervious to the keying of radios in close proximity? In other words establishment of radio free areas in the plant would not be allowed?
1094-3-31	71	C-4.1.8	Section C.4.1.8 requires automatic fire detection and automatic explosion suppression / venting in areas with process piping or components containing hydrogen or explosive gases. It also requires designing to resist hydrogen and oxygen explosions or automatic dual gas analyzers. These are new requirements.
1094-3-32	78	C-4.2.3.2	Section C.4.2.3.2 requires an exemption or deviation for use of fire rated cables. This is new material, and there is no regulatory basis for this requirement.

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1094-3-33	81	C-5.2	Section 5 needs to clarify that use of off-site power is optional for normal shutdown if the system can be shown available following the fire. Furthermore, the NRC's basis for requiring offsite power as assumed lost for Alternative Shutdown is based on an assumption made by the commission. They assumed that Alternative shutdown would be required for the control rooms and cable spreading rooms of plants. In these areas, they concluded that it was highly probable that offsite power circuits would be present and would be affected/unreliable. Where plants have selected "Alternative Shutdown Capability" for other plant areas, they really should not be penalized by this assumption that the NRC made in 1980.
1094-3-34	81	C-5.2	Sixth and Seventh Bullets – The generic requirement for hot standby (PWR) or hot shutdown (BWR) equipment to have the capability to be powered by an onsite emergency power system is inappropriate. This is a requirement in excess of the Rule and should be subjected to the backfit process. In addition, if the Rule requires that cold shutdown be achieved within 72 hours, there is no basis for requiring a capability to maintain hot standby, or hot shutdown, in excess of 72 hours.
1094-3-35	85	C-5.4	Section 5.4, "Cold Shutdown Systems and Instrumentation and Allowable Repairs," indicates that pulling fuses is an acceptable cold shutdown repair. This apparently means that it is not acceptable for hot shutdown. The basis for this section is an internal NRC memorandum. Is an internal memorandum sufficient for inclusion in the Reg Guide? Industry has generally accepted that fuse replacement is considered a repair, but simply removing fuses (without replacement) to achieve isolation is not a repair. This may be due to conflicts in prior NRC guidance.
1094-3-36	91	C-6.1.1	This section requires that DG Section C.5.1 be met for all containments, including inerted containments. Since no fire is postulated in the inerted containment of an operating reactor, this section has exceeded the authorized-scope of Appendix R by requiring safe shutdown capability be analyzed for shutdown and low power operations. The Commission has specifically instructed the staff not to proceed with these provisions in SECY-1998-168M.
1094-3-37	91	C-6.1.1	Section 6.1.1 - This section discusses fires during "refueling and maintenance operations". There are no regulatory bases/requirements for this. This should not be included in this document. The "Guidance Source Notations" indicates that this is a minor editorial change. The change discussed in the notations is neither minor nor editorial in nature.
1094-3-38	91	C-6.1.1.1	Second bullet: Is this supported by experience and previous regulation? Without normal access and not much work going on in non-inerted containments when the plant is in operation, the need for auto suppression is minimal. Detection and hose standpipe should be enough.
1094-3-39	92	C-6.1.1.2 & 6.1.1.3	Sections 6.1.1.2 & 6.1.1.3 - These sections provide guidance for Suppression and Detection inside containment. The existing regulatory basis for these requirements should be provided.
1094-3-40	95	C-6.1.3	Section 6.1.3 - The basis for an aisle "0.9 m (3 ft.) wide and 2.4 m (8 ft.) should be provided. This requirement appears to be a new requirement and not capable of being met by any plant in the country. No "Guidance Source Notations" reference is provided for this requirement.
1094-3-41	100	C-6.2.6	The availability of non-combustible products for cooling towers has become more difficult with most designs going back to plywood and now fiberglass and PVC components. Asbestos cement board is no longer readily available or desired. This should be a BOP issue only if there is no exposure to safety related areas and functions. For the water supply or ultimate heat sink, this should not be a restriction unless it is a single source.

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1094-3-42	100	C-7.1	This is a new section that could be viewed as a backfit. These cables are not necessarily SR or SSD cables, but they could expose SR or SSD components. This section requires that these cables be protected with an automatic water based suppression system and the area containing the cables provided with smoke venting. This could be a significant burden on plants, particularly in the Turbine Building.
1094-3-43	101	C-7.3	This section discusses fire protection requirements for the Turbine/Generator Building. This is not an area covered by regulatory guidance in the past. What is the basis for this section?
1094-3-46	102	C-7.4	This section discusses fire protection requirements for outdoor oil-filled transformers. This is not an area covered by regulatory guidance in the past. What is the basis for this section? The referenced document in the "Guidance Source Notations" is not acceptable.
1094-3-47	114	App A 1.1	This section was never before imposed in the fire protection CFR or BTP.
1094-3-49	152	App J	General comment on the use of "New Text" as a citation. This needs to be addressed very carefully and where the addition of the new text substantially changes the application or intent of the original text it should be attached within a separate appendix with justification and basis for the added text being implied as new regulation. Example: see Citation 8. What is the basis for implying that BTP CMEB 9.5.1, C.1.e; BTP ASB 9.51, C.1.e. apply to decommissioning and to what extent?
			<b>The remainder of these comments are new comments on DG-1097 related to new and revised guidance.</b>
1097-2-1	11	B	Section B, Discussion, Conditions of Fire Occurrence, indicates that for shared facilities between units, a fire affecting both units should be considered (aircraft crash). This appears to be a new requirement
1097-2-2	12	B	Section B, Discussion, Loss of Off-Site Power / Station Blackout indicates that for stations that use a self imposed station blackout, the relative risk may be greater than the fire event. The DG implies that the licensee would need to re-evaluate the shutdown strategy. Plant X is licensed to this strategy. These words in this section of the DG may be used as a leverage for a new shutdown strategy to be developed to support future Appendix R exemptions or NRC considerations going forward. It can also be considered as a new requirement in Licensing space.
1097-2-3	12	B	The NRC indicates that this is a best practices Guide. This section indicates that some external events, (e.g. earthquakes) could cause fires. This statement is a concern, since there are a number of new requirements (or at least not applicable to Appendix A plants) regarding the need for fire protection systems to be available following an earthquake. EPRI conducted a study of power plants that have experienced earthquakes, and fires were found not to be a concern. This includes fossil plants where the fuel and ignition sources would be more numerous than at a nuclear plant. If the NRC wants a best practices document then they need to find out what the current research shows, particularly if adding new requirements.
1097-2-4	12	B	<b>Loss of Offsite Power/Station Blackout</b> The final two paragraphs of this section state: "Several licensees have alternative post-fire safe shutdown methodologies that may result in loss of all ac power (i.e., station blackout). Some of these plants voluntarily enter station blackout as a means to cope with the potential for spurious operations and to provide positive (manual) control of safe shutdown equipment. Others have procedures that may cause a station blackout (SBO) condition to be created as a result of fire effects (e.g., procedures that direct

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			<p>operators to manually trip the credited safe shutdown emergency diesel generator (EDG) in the event of fire damage to circuits of vital EDG support systems).</p> <p>The ability to cope with SBO as part of the post-fire safe shutdown methodology is dependent on such issues as timeline logic; assumptions and bases for plant and operator response relative to component realignment; the ability of plant operators to monitor and control plant parameters and align plant components before, during, and after SBO control room evacuation and abandonment; and the practicality and reliability of EDG start and load (and restart, if applicable) under post-fire safe shutdown SBO conditions. The relative risk of self-imposed SBO may greatly exceed the actual risk posed by the fire and should be given appropriate consideration when evaluating the plant safe shutdown design and procedures.”</p> <p>These paragraphs in this section discuss the concept of a self-induced station blackout (SISBO). It is not clear what this section is advising licensees to do with regards to SISBO. The NRC needs to clarify what is being expected of licensees by this section.</p>
1097-2-5	12	B	<p><b>Prevention of Radiological Release</b></p> <p>This section states:</p> <p>“The fire protection program, including the fire hazards analysis, should demonstrate that the plant will maintain the ability to minimize the potential for radioactive releases to the environment in the event of a fire. Fires are expected to occur over the life of a nuclear power plant and thus should be treated as anticipated operational occurrences. Requirements for protection against radiation during normal operations are in 10 CFR Part 20. Anticipated operational occurrences should not result in radiological consequences, and the exposure criteria of 10 CFR Part 20 apply.”</p> <p>The applicable text from 10CFR50 Appendix R (Section II.B.2) reads as follows:</p> <p>“Determine the consequences of fire in any location on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment.”</p> <p>The Regulatory Guide contains a slight wording change from Appendix R. Appendix R requires that the consequences be understood, while the Regulatory Guide goes the additional step of prescribing a specific limit. The Regulatory Guide goes an additional step by providing an apparent “after the fact” rationalization for prescribing 10CFR20 criteria to fire protection design and analysis. This is all new text, which has no basis in industry experience. It should be noted that Appendix R Section II.B.2 was not backfit on any plant, and that radiation control expectations have not previously been well defined in the various BTPs. Industry experience has shown that since the implementation of Appendix R, very few fires have occurred that had any significant impact on plant equipment, beyond the equipment actually involved in the initial failure. Therefore, to conclude that 10CFR20 applies to the small number of fires that actually resulted in a plant impact is not realistic. This logic implies that every plant in the country has at least one fire a year that damages plant SSCs not intimate with the initial fire. Industry experience does not support such a finding. To the contrary, few if any fires (including Browns Ferry) have resulted in any release of radiation. This suggests that a lower frequency should be assigned for consequential fire events, and that the relaxed criteria of 10CFR100 should be applied.</p>

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			Furthermore, the use of 10CFR100 criteria for "consequential" fire events have previously been accepted by the NRC in evaluations of "High/Low Pressure interfaces". To now specify more conservative criteria is a backfit.
1097-2-6	13	B	Section B, Discussion, Shutdown / Refueling Operations indicates that fire protection needs to evaluate critical safety functions during Mode 5 and 6 operations. Performing an analysis to determine loss of equipment during these evolutions would be extensive. A cost benefit analysis would need to be performed before any additional analysis by the licensee was performed. This appears to be a new requirement.
1097-2-7	13 & 80	B & C 5.1	<p>These sections indicate: "Fission product boundaries should not be affected. Fuel cladding, primary coolant system, and containment boundary integrity is maintained."</p> <p>10 CFR 50 Appendix R section III.L.1.e states: "...fission product boundary shall not be affected; i.e., there shall be no fuel clad damage, rupture of any primary coolant boundary, of [or] rupture of the containment boundary."</p> <p>Revised wording of the requirements (i.e., integrity vs. damage and rupture) appears to be new/revised guidance. It is recommended to repeat the words from 10 CFR 50 section III.L in these sections.</p>
1097-2-8	14	B	Section C, Regulatory Position, 1.1 indicates that additional fire barriers may be required to protect operating plants from plants being decommissioned. These additional barriers, if needed, should be determined by the licensee.
1097-2-9	14	Shutdown/ Refueling Operations	This is new information that the NRC has not been successful in implementing in other forms. It is being placed in here without any backfit considerations.
1097-2-10	14	Section 1.1	<p>The defense in depth description has changed somewhat. DG-1097 states:</p> <p>The fire protection program must extend the concept of defense in depth to fire protection in fire areas important to safety, with the following objectives.</p> <ul style="list-style-type: none"> <li>- To prevent fires from starting;</li> <li>- To detect rapidly, control, and extinguish promptly those fires that do occur;</li> <li>- To provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.</li> </ul> <p>BTP CMEB 9.5-1 rev. 2 states:</p> <ol style="list-style-type: none"> <li>1. <u>Defense-in-Depth</u></li> </ol> <p>Nuclear power plants use the concept of defense-in-depth to achieve the required high degree of safety by using echelons of safety systems. This concept is also applicable to fire safety in nuclear power plants. With respect to the fire protection program, the defense-in-depth principle is aimed at achieving an adequate balance in:</p> <ol style="list-style-type: none"> <li>a. Preventing fires from starting;</li> </ol>

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			<p>b. Detecting fires quickly, suppressing those fires that occur, putting them out quickly, and limiting their damage; and</p> <p>c. Designing plant safety systems so that a fire that starts in spite of the fire prevention program and burns for a considerable time in spite of fire protection activities will not prevent essential plant safety functions from being performed.</p> <p>The difference seems to be that DG-1097 states "important to safety" in the last "bullet" whereas the BTP discusses safety systems. This may be a way of opening up scrutiny to more than just safety "related" systems.</p>
1097-2-11	17	1.1.2 FHA	There is a list of 8 items to include in the FHA on page 18. This list was not in DG-1094. Some of these items, such as 'determine the effect of lack of explosion prevention measures', are new, and beyond what needs to be included in an FHA. This list should be removed from this document.
1097-2-2	18	C-1.1.2	Numbers 1-7 appear to be new material
1097-2-13	19	C 1.1.3	"Backup" shutdown is a new undefined term. It should be deleted
1097-2-14	19	C-1.1.4	<p>Section 1.1.4 "Fire Test Reports and Fire Data," states: "Fire reports and data (e.g., fire barrier testing results and cable derating data) that are used to demonstrate compliance with NRC fire protection requirements should be evaluated to ensure that the information is applicable and representative of the conditions for which the information is being applied."</p> <p>Utility X does not own fire tests for all fire barrier components such as fire dampers and fire doors. All components are Underwriters Laboratory/Factory Mutual (UL/FM) approved. However, some of these components were procured 30 years ago and testing data may no longer be available from the manufacturer.</p>
1097-2-15	20 86 95	Safe Shut-down Analysis C.5.1 C.5.6	The term "back-up shutdown capability" appears for the first time in this section and then appears in a number of locations elsewhere in DG-1097. This term is not defined in DG-1097 and was not used in DG-1094. Even though the definition for "alternative" states that the term "backup" may be used, its use in an area that already creates considerable confusion is unwise. Therefore, the term should be deleted, as it is redundant to other terms already defined.
1097-2-16	21	C-1.2.2	General Employee Training: The first bullet states a requirement to train general employees for "actuation of local fire suppression systems." The licensee does not want non-fire brigade personnel to activate/operate the fire protection system.
1097-2-17	21	C-1.2.4	Fire watch training is necessary for active fire watches (such as "hotwork"). Passive fire watch for compensatory measures should only require instructions to call the control room
1097-2-18	23	C-1.3	<p>This new guidance significantly extends the quality assurance requirements for fire protection programs and equipment. This section includes statements directing licensees on options relative to implementing the new guidance, setting the expectation that this section is <u>required</u> to be implemented. The following changes are recommended.</p> <p>Replace the second paragraph under §1.3 with the verbatim words from the CMEB version of 9.5-1 (§4 - 'Quality Assurance Program). While the CMEB version of quality assurance program expectations is not a requirement for all</p>

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			<p>licensees, it is the 'most severe' of existing guidance for fire protection QA programs.</p> <p>Replace the 3<sup>rd</sup> paragraph under §1.3 with the following: "Licensees that choose to upgrade their fire protection quality assurance programs to meet more recent NRC guidance (e.g., upgrading from APCSB program commitments to CMEB program commitments) may effect the upgrade by including the revised fire protection QA program as part of the plant's overall QA program, as applicable. Such program upgrades do not require prior NRC review or acceptance."</p> <p>Delete the 4<sup>th</sup> paragraph under §1.3.</p> <p>Delete the daughter paragraphs of §1.3 (1.3.1 – 1.3.10). These sections extend fire protection QA program requirements well beyond any existing licensing requirements. Alternatively, these sections could be retained as 'items to consider' when a licensee is reviewing/upgrading its fire protection QA program, with a clear statement that these are <u>not</u> NRC requirements or expectations.</p>
1097-2-19	23	C-1.3	A large amount of new material was added to DG-1097 that was not in DG-1094 in the section on Quality Assurance. The source of this material is not identified. (Note the word 'protection' in the second paragraph of 1.3 page 23 is misspelled.)
1097-2-20	26, 27	C-1.3.8	Another comment that was submitted recommends either deleting this section or retaining it as an 'item to consider' if a licensee choose to upgrade its fire protection QA program. If this section is retained in any form, the last paragraph of this section should be deleted. This last paragraph of Section 1.3.8 adds a requirement that 'degraded or nonconforming conditions' be reviewed under the 10CFR50.59 process. This just doesn't fit. 10CFR50.59 has a defined scope of applicability; it is not appropriate to add to this scope via a Regulatory Guide.
1097-2-21	36	C-1.4.5	This section implies that inoperable fire protection systems would make the SSC that it was protecting inoperable, and Operability Determinations would need to be performed. If this interpretation is correct, this change would have a significant impact on plant operation and impact schedule maintenance on fire systems at power. Fire protection systems do not support other SSC's, but rather they protect them from a fire event. Crediting FP systems as a support component (via tech specs) is not appropriate. The draft reg. Guide seems to be trying to drive a cascade of tech specs.
1097-2-22	38	C-1.4.7	NFPA code and standard deviation evaluations are not necessary for those systems that do not protect systems, structures or components important to safety or prevent the release of radioactive materials to the atmosphere due to a fire.
1097-2-23	40	C-2.1	Control of Combustible. Appendix R allows storage of combustibles in plant areas important to safety with the caveat: "or establish designated areas with appropriate fire protection". This should be recognized as an option in the DFPRG.
1097-2-24	42	C-2.1.1	Lumber used for 6" x 6" or larger cribbing does not need to be fire retardant treated. This document should be revised to reflect this.
1097-2-25	43	2.4.c.	"Frequency of testing should be based on code of record for the applicable fire protection system." Plants follow the TRM requirements, which were based primarily on the old Technical Specification testing requirements. These did not always match the code of record frequencies. This statement should be removed.

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1097-2-26	43	2.4.d	"Inspection frequency should ensure that all seals will be inspected every 3 refueling cycles at a minimum." This was not in DG-1094. This is a new and baseless requirement. Most plants are on a 10 to 15 year cycle. This could have a tremendous impact on the industry. This requirement should be removed.
1097-2-27	43	C-2.4.d	This section identifies that all seals must be inspected every 3 refueling cycles at a minimum. This is not consistent with the original standard Technical Specifications for fire protection that required an inspection of 10% of the seals every 18 months (standard refuel cycle at the time). If failures were not identified, this could result in all seals being inspected every 15 years.
1097-2-28	43	C-2.4.d	This section requires inspection of all pen seals "every 3 outages". The Westinghouse standard tech specs require inspection of 10% of pen seals every 18 months. The Reg Guide should be changed to be consistent with existing industry practices and guidance.
1097-2-29	43	C-2.4.d	<p>Section 2.4 "Fire Protection System Maintenance and Impairments," item d., states: "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. Inspection frequency should ensure that all seals will be inspected every 3 refueling cycles at a minimum."</p> <p>Plant X inspects 10% of the penetration seals and fire dampers (drop test) each year. Thus, 10 years are required to inspect all seals and dampers rather than 6 years in accordance with DG-1097, i.e. three 2-year refueling cycles. Increasing our current inspection frequency is not warranted.</p>
1097-2-30	44	3.1.1	<p>DG-1097 states:</p> <p>3.1.1 Fire Detection and Alarm Design Objectives and Performance Criteria</p> <p>The fire detection and alarm system should be designed with the following objectives.</p> <p>a. Detection systems are to be provided for all areas that contain or present a fire exposure to equipment important to safety.</p> <p>BTP CMEB 9.5-1 Rev. 2 states the following...</p> <p>6. <u>Fire Detection and Suppression</u></p> <p>a. <u>Fire Detection</u></p> <p>(1) Detection systems should be provided for all areas that contain or present a fire exposure to safety-related equipment.</p> <p>This is another example of the "safety-related" or "equipment important to safety" issue. It appears that these terms are being used interchangeably in this Regulatory Guide even though their definitions are slightly different. It is important to be consistent and use definitions that are described or previously used by industry and the regulations.</p>

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1097-2-31	44	3.1.1	There are several new requirements (g. and h) specifically, that are not easily traceable to any NRC guidance document. These sections add seismic and natural phenomena requirements for detection that simply are not necessary. These requirements should be deleted.
1097-2-32	45	C-3.1.1.i	Requiring continuous in-line type heat detection in cable trays is excessive for most areas and should only be required when identified as a significant fire hazard by the FHA.
1097-2-33	45	3.1.1	<p>item "i" states the following:            Redundant cable systems important to safety located in cable trays outside the cable spreading room should be provided with continuous line-type heat detectors. Cable spreading rooms should also have smoke detection. (Also see Regulatory Positions 4.1.3.3 and 6.1.3.)</p> <p>BTP CMEB 9.5-1 Rev. 2 does not have a corresponding statement. The BTP has a requirement for...</p> <p>Continuous line-type heat detectors for cable trays inside the cable spreading room.</p> <p>The difference is "outside" vs. "inside".</p>
1097-2-34	45	C-3.1.1.i	<p>Section 3.1.1 "Fire Detection and Alarm Design Objectives and Performance Criteria," subpart i, states: "Redundant cable systems important to safety located in cable trays outside the cable spreading room should be provided with continuous line-type heat detectors." This is restated in Section 4.1.3.3 "Electrical Cable System Fire Detection and Suppression."</p> <p>Plant X uses this type of detection only for cable trays in the Reactor Building. The balance of the plant relies on ionization type smoke detectors that provide detection in the incipient stage of a cable tray fire.</p>
1097-2-35	45	C-3.1.1.j	Fire detection systems in BWR inerted primary containments should only be required when the FHA identifies that area as a significant fire hazard.
1097-2-36	45	C-3.1.1.l	Fire detection in decontamination areas should only be required when the FHA identifies that area as a significant fire hazard.
1097-2-37	45	C-3.2.1.c	This section requires the refilling of the water supply capacity within 8 hours, which is approximately 625 gpm. No basis exists for this requirement.
1097-2-38	46	C-3.2.1.j	Appendix A plants are not required to be seismically designed with respect to SSEs for the fire system.
1097-2-39	47	C-3.2.2.b	<p>Section 3.2.2 <u>Fire Pumps</u>, subpart b., states: "Each pump and its driver and controls are located in a room separated from the remaining pumps by a fire wall with a minimum rating of 3 hours."</p> <p>The three fire pumps at Plant X are housed in the fire pump house that is provided with a wet pipe sprinkler system. The pumps, drivers, and controls are not separated by firewalls.</p>
1097-2-40	47	C-3.2.2.d	Appendix A plants are not required to have low pressure alarms.
1097-2-41	43	C-2.4.d	This section requires inspection of all pen seals "every 3 outages". The Westinghouse standard tech specs require inspection of 10% of pen seals every 18 months. The Reg Guide should be changed to be consistent with existing

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			industry practices and guidance.
1097-2-42	44	C-3.1.g,h	The requirement for seismic design of fire protection systems is new. It should be deleted.
1097-2-43	49	C-3.3.2	There is no NFPA code requirement to periodically test the protected area boundary seals except when inspections indicate degradation. Additionally, such tests have not typically been technical requirements within licensee fire protection programs.
1097-2-44	49	C-3.3.2	States that manually actuated gaseous systems should not be used as primary protection. This is a standard practice. The requirement should be deleted.
1097-2-45	49	C-3.3.2	Section 3.3.2 "Gaseous Fire Suppression," states: "The adequacy of gas suppression systems and protected area boundary seals to contain the gas suppressant should be tested on initial installation and periodically thereafter to ensure adequate protection."  Plant X performs surveillance testing of the Halon system to measure the quantity available every 6 months and to test the functionality (flow test, manual initiation, automatic fire damper actuation) every 18 months. However, the concentration after discharge was measured at initial installation but is not performed periodically.
1097-2-46	50	C-3.3.2.2	Quarterly weighing of Halon cylinders is excessive. The current requirement of every six months is more than adequate.
1097-2-47	52	C-3.5.1.2	Appendix A plants do not need to meet all of the requirements in this section.
1097-2-48	54	C-3.5.1.4	Drills should be performed quarterly, not every 3 months for each shift.
1097-2-49	54	C-3.5.1.4	While it is nice to have the local fire department participate in on site drills on an annual basis, they are not compelled to do so. Our local full time FD does not do so, although we do invite them.
1097-2-50	54	C-3.5.1.4	This section, Performance Assessment/Drill Critique, states that unannounced fire drills should not be scheduled closer than 4 weeks apart.  At the DAEC, we have six fire brigades, and if we were to wait a minimum of four weeks between unannounced drills, scheduling problems would certainly develop since it is not always possible to conduct drills anytime we wish. LCOs, Refuel of forced outages, as well as many other plant conditions and priorities often prevent conducting drills.  I do not understand what value the four week waiting period provides. An unannounced drill, is still an unannounced drill. The four week waiting period only imposes an arbitrary and unnecessary road block to conducting drills, and puts undue burden on personnel attempting to schedule drills, and could result in postponing plant work for no good reason. In addition, this is an Appendix R requirement, and I do not believe it currently applies to Appendix A plants.
1097-2-51	57	C-4.1.2.1	Fire barriers don't necessarily need to be three hour rated, see Generic Letter 86-10.
1097-2-52	58, 59	C-4.1.2.3	Nuclear plants are specialized structures that may not meet all of the requirements set forth in NFPA 101.
1097-2-53	58	C-4.1.2.3	Information concerning personnel egress should be deleted from the Reg Guide. Personnel safety issues more properly belong in a design guide.

Comment Number	Page	Section	Comment
1097-2-54	58	4.1.2.3	<p>Section 4.1.2.3, "Access and Egress Design" states in part...</p> <p>Provisions should be made for personnel access to and escape routes from each fire area. Under emergency conditions, prompt ingress into certain areas important to safety should be ensured to enable manual fire suppression and safe shutdown of a nuclear power plant. Unimpeded egress from all parts of the facility should be assured in the interest of life safety. NFPA 101, "Life Safety Code," provides guidance on egress design and requirements for protection of egress routes...</p> <p>BTP CMEB 9.5-1 Rev. 2 does not have a corresponding statement.</p>
1097-2-55	59	C-4.1.2.3	<p>The National Fire Protection Association code NFPA-101 has been identified in several sub-sections of this draft guide.</p> <p>COMMENT: Our state does not recognize this Code and instead requires our plant meet the Uniform Building Code and Uniform Fire Code. The draft guide does not provide for this situation.</p>
1097-2-66	59	C-4.1.3.3	Delete the requirement for continuous line-type heat detectors unless the need is shown in the FHA.
1097-2-67	61	C-4.1.3.6	The basis for this new requirement is not clear.
1097-2-68	61	C-4.1.3.6	<p>Section 4.1.3.6 "Electrical Cabinets" states in part...</p> <p>Rooms containing electrical cabinets important to safety should be provided with area-wide automatic fire detection, automatic fire suppression, and manual fire suppression capability.</p> <p>Electrical cabinets containing a quantity of combustible materials (e.g., cabling) sufficient to propagate a fire outside the cabinet of fire origin, should be provided with in-cabinet automatic fire detection.</p> <p>BTP CMEB 9.5-1 Rev. 2 does not have a corresponding statement.</p>
1097-2-59	61	C-4.1.3.6	<p>Section 4.1.3.6 <u>Electrical Cabinets</u>, states: "Rooms containing electrical cabinets important to safety should be provided with area-wide automatic fire detection, automatic fire suppression, and manual fire suppression capability."</p> <p>Plant X 4160-Volt and 480-Volt Switchgear Rooms are not provided with automatic fire suppression.</p>
1097-2-60	62	C-4.1.4.1	Separate smoke and heat vents should be provided. This is new material. This is appropriate for a design guide not a Reg Guide.
1097-2-61	62	C-4.1.4.2	<p>Section 4.1.4.2 <u>Smoke Control/Removal</u>, states: "To facilitate manual firefighting, separate smoke and heat vents should be provided in specific areas such as cable spreading rooms, diesel fuel oil storage areas, switchgear rooms, and other areas where the potential exists for heavy smoke conditions."</p> <p>The Plant X design does not include smoke and heat vents. Pre-Fire Plans and fire brigade ensure fires are effectively extinguished and dealt with.</p>
1097-2-62	62	C-4.1.4.3	See C4.1.2.3 above, it would be very difficult and expensive to modify some plants to meet NFPA 101.

Comment Number	Page	Section	Comment
1097-2-63	63	C-4.1.5	<p>Section 4.1.5 "Drainage," states: "Floor drains sized to remove expected firefighting water without flooding equipment important to safety should be provided in areas where fixed water fire suppression systems are installed. Floor drains should also be provided in other areas where hand hose lines may be used if such firefighting water could cause unacceptable damage to equipment important to safety in an area. Facility design should ensure that fire water discharge in one area does not impact equipment important to safety in adjacent areas."</p> <p>Plant X does not have floor drains in all areas, e.g. the 4160-Volt and 480-Volt Switchgear Rooms.</p>
1097-2-64	63	C-4.1.6.1	New requirement, see C4.1.2.3 above.
1097-2-65	64	C-4.1.7	It appears that this section implies that the normal plant communications systems should be located and powered from diverse areas such that no single fire can disable the system.
1097-2-66	64, 65	C-4.1.8	This also appears to be a new requirement. There are many plant areas that may have Hydrogen or other flammable gas that do not require explosion prevention systems. There are other ways to design around this.
1097-2-67	65	C-4.1.8	Areas with process piping etc containing explosive gases should have automatic detection and explosion prevention \ suppression systems. This is new material. It should be revised to require seismic design, concentrations below 2% or excess flow valves, consistent with existing regulation documents.
1097-2-68	66	C-4.2.1.2	This section of Appendix R for fire doors does not apply to all plants.
1097-2-69	67	C-4.2.1.3	<p>Section 4.2.1.3 "Fire Dampers," states: "Fire damper testing methods that do not simulate the actual total differential pressure at the damper (i.e., visual inspection or drop testing with duct access panels open) may not show operability under air flow conditions. Fire damper surveillance testing should model air flow to ensure dampers will close fully when called upon to do so. This can be addressed by (1) type testing "worst-case" air flow conditions of plant-specific fire damper configurations, (2) testing under air flow conditions all dampers installed in required fire barriers, or (3) administratively shutting down the ventilation systems to an area upon confirmation of a fire. The last approach should be incorporated into plant emergency procedures."</p> <p>With the exception of testing of the Halon system in the Cable Spreading Room, Plant X does not perform drop testing of fire dampers with associated ventilation systems in service. Emergency Operating Procedures (EOPs) do require the shut down of the ventilation system in certain areas in the event of a fire.</p>
1097-2-70	71	C-4.2.3.3	"Individual fire stop designs should prevent ...for a minimum period of thirty minutes...maximum cable density". This is not a requirement for Appendix A plants. In addition, there are no referenced test standards for this requirement.
1097-2-71	71 79	4.2.3.2 4.3.5	Section 4.2.3.2 requires that fire rated cables should have exemptions or deviations granted. The origin of this requirement is unclear. It should be clarified or deleted. Section 4.3.5 specifics fire test requirements for fire rated cables. The 2 sections seem inconsistent.
1097-2-72	80	C5.2	Second bullet says that reactor coolant level should be maintained above the top of the core for BWRs. The NRC has accepted use of ADS and low pressure injection methods for numerous plants via their SERs (typically based on acceptable fuel cladding temperatures).

Comment Number	Page	Section	Comment
1097-2-73	80	C5.2	Sixth bullet says that credited equipment and systems need to be capable of being powered by onsite emergency power systems. Use of offsite power sources has been acceptable in support of redundant safe shutdown, provided that the licensee can demonstrate that the fire does not impact offsite power.
1097-2-74	83	C5.4	Removal of fuses is mentioned only in this section, which appears that fuse removal is considered a "repair" and may not be allowed as "manual action" for hot shutdown. Guidance for fuse removal as a "manual action" needs to be added to this document.
1097-2-75	90	5.6.2	1 <sup>st</sup> bullet states offsite power is lost as well automatic starting of onsite electrical generators. This should only be postulated is there is a common mode failure. Otherwise the automatic starting of onsite power should be considered available.
1097-2-76	90	C5.7.1	This section implies that the normal shutdown capability is made up of two normal paths of shutdown systems. If the NRC intends to limit licensees to two strategies for shutting a plant down, then this is a backfit.  GL 86-10 provides a satisfactory recommendation regarding procedures in Attachment 2, items 5.2.1 and 5.2.2. Although these are not "requirements" per se, they are satisfactory guidance. The NRC should consider retaining their information via some form of guidance in DG-1097.
1097-2-77	92	C-6.1.1.1	Section C, 6.1.1 implies that a shutdown analysis (above FHA) for a containment fire during Mode 5 and 6 operation is required. This appears to be a new requirement.
1097-2-78	92	C-6.1.1.2	Section 6.1.1.2 "Containment Fire Suppression," states: "During normal operations, containment is generally inaccessible and therefore fire protection should be provided by automatic fixed systems."  Plant X does not have automatic fixed systems in the Reactor Building (containment). Rather, a standpipe system which is drained with a locked closed containment isolation valve is provided.
1097-2-79	94	C-6.1.2.3	Section 6.1.2.3 "Control Room Ventilation," states: "Manually operated [smoke] venting of the control room should be available to the operators."  The Plant X Control Room does not have smoke vents. Pre-Fire Plans and fire brigade ensure fires are effectively extinguished and dealt with.
1097-2-80	94	C-6.1.3	Section 6.1.3 "Cable Spreading Room," states: "Cable spreading rooms should have: a. At least two remote and separate entrances for access by fire brigade personnel; b. An aisle separation between tray stacks at least 0.9 m (3 ft) wide and 2.4 m (8 ft) high; c. Hose stations and portable extinguishers installed immediately outside the room; d. Area smoke detection; and e. Continuous line-type heat detectors for cable trays inside the cable spreading room."  "The primary fire suppression in the cable spreading room should be an automatic water system such as closed-head sprinklers, open-head deluge system, or open directional water spray system."  "Alternative gas systems (Halon, or CO <sub>2</sub> ) may be used for primary fire suppression if they are backed up by an installed

Comment Number	Page	Section	Comment
			<p>water spray system and hose stations and portable extinguishers immediately outside the room and if access requirements stated above are met.”</p> <ul style="list-style-type: none"> <li>• The Plant X Cable Spreading Room has two access locations, but only one entrance is suitable for fire brigade personnel. (The escape hatch in the ceiling is intended for emergency egress from the southeast corner of the room.)</li> <li>• The current cable tray arrangement does not meet the recommended separation criteria.</li> <li>• The Cable Spreading Room is provided with smoke detectors, but there are no continuous line-type heat detectors for cable trays.</li> <li>• The Cable Spreading Room contains a Halon 1301 total flooding system, but no automatic water suppression system.</li> </ul>
1097-2-81	97	6.1.9	<p>Section 6.1.9 “Pump Rooms” states in part...</p> <p>Equipment pedestals, curbs, and floor drains should be provided to prevent water accumulation from damaging equipment important to safety (see Regulatory Position 4.1.5).</p> <p>BTP CMEB 9.5-1 Rev. 2 does not have a corresponding statement.</p>

Table 3

**Industry Comments on DG-1097  
Information That Should be Referenced to Other Regulatory Documents**

Comment Number	Page	Section	Comment
1097-3-1	7	B	BACKGROUND, Section titled "10 CFR 50.59, "Changes, Tests, and Experiments". The draft regulatory guide states in the last sentence of this section, "...Licensees are required to submit a report every 24 months containing a brief description of any changes, tests, and experiments...". This statement does not accurately reflect the requirements of 10CFR50.59(b)(2). It would be better to state, "Licensees are required to submit a report containing a brief description of any changes, tests, and experiments as required by 10CFR50.59(b)(2)."
1097-3-2	9	B	<b>Exemptions to Appendix R</b> This section contains a repetition of the contents of 10CFR50.12. Instead of repeating 50.12, it would be more useful to provide a discussion of the information the staff typically expects licensees to submit when requesting a fire protection exemption. This information was widely circulated in the early 1980's, but may be difficult to obtain today.
1097-3-3	30, 31	C-1.4.1	Section 1.4.1 of the DG has the following paragraph:  If the licensee has adopted the standard license condition and incorporated the fire protection program in the FSAR, the licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes, (a) do not otherwise involve a change in a license condition or technical specification or result in an unreviewed safety question, and (b) such changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire <b>and do not result in failure to complete the fire protection program as approved by the Commission.</b> In addition to planned changes, a safety evaluation may also be required for nonconforming conditions.  Our license condition (which is verbatim with 86-10) states that we may make changes to the fire protection program as approved by the commission as long as they do not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Any change to the program may result in a "failure" to complete the fire protection program as approved by the Commission. Therefore, I think the statement that is bolded above should be deleted.
1097-3-4	30-35	C-1.4.1	This section repeats generic guidance on 50.59 evaluation, non-conformances, safety evaluation criteria and reporting guidelines. To preclude the need to revise DG-1097 to reflect changes in NRC guidance on these broadly applicable subjects, it is recommended that generic process guidance be removed from DG-1097. Content on these subjects in this draft Regulatory Guide should be limited to guidance specifically applicable to fire protection.

Comment Number	Page	Section	Comment
1097-3-5	30	C-1.4.1	<p>Our two units have the standard license condition. The approved fire protection program includes deviations and we may discover or introduce deviations on an on-going basis. The license condition permits us to evaluate these under 50.59 and to include an evaluation of whether this deviation "adversely affects...". It is not hard to envision a deviation which is not a USQ and which does not adversely affect...The point is that there is no regulatory requirement to submit deviation requests for fire protection. This is distinctly different from the regulatory requirement to submit exemption requests from applicable regulations, such as certain portions of Appendix R for our plant.</p> <p>There remains much confusion over what the license conditions mean in regards to evaluating changes to the approved fire protection programs. This DG does not clarify that confusion.</p>
1097-3-6	30	C-1.4.1	<p>Draft NEI 96-07, Guidelines for 10 CFR 50.59 Evaluations, is expected to be endorsed by the NRC. The wording from DG-1097 should be changed to be consistent with the proposed NEI 96-07 guidance.</p>
1097-3-7	30	C-1.4.1	<p>The 50.59 criteria listed in this section are the new criteria from NEI 96-07, Revision 1 that have not been formally issued or accepted. The regulatory guide should only reflect guidance that has been approved. Further more it does not seem prudent to put the specific details of 10CFR50.59 in this regulatory guide, the regulatory guide should only make a reference to the 10CFR50.59 and the guidance documents. In the current state of detail in the draft regulatory guide, if 10CFR50.59 were to change in the future, this would mean that the regulatory guide would need to be revised to reflect those changes, which would be an inefficient and unnecessary use of NRC resources.</p>
1097-3-8	30	C-1.4.1	<p>Section C, 1.4, 50.59 Safety Evaluations, Item c indicates that a licensee can alter their program if (c) such changes do not result in failure to complete the fire protection program as approved by the commission. This statement appears to imply that you can not change your program if elements are expressly stated in the licensees approved SER. This would be contrary to current methods of changing the plant's LB.</p>
1097-3-9	31 36	C-1.4.1.3 C-1.4.4	<p>Section C, 1.4.1.3 and 1.4.4 imply that changes to the program that at one time required Deviations to 9.5-1 still require NRC approval. Changes not in strict compliance to 9.5-1 have been evaluated under 50.59 as not being USQ's and deviations have not been sent to NRC for approval post commercial operation. This section would appear to be an extension of an old requirement. Our plants have the standard license condition. The approved fire protection program includes deviations and we may discover or introduce deviations on an on-going basis. The license condition permits us to evaluate these under 50.59 and to include an evaluation of whether this deviation "adversely affects...". It is not hard to envision a deviation which is not a USQ and which does not adversely affect...The point is that there is no regulatory requirement to submit deviation requests for fire protection. This is distinctly different from the regulatory requirement to submit exemption requests from applicable regulations, such as certain portions of Appendix R for our plants.</p>

Comment Number	Page	Section	Comment
1097-3-10	36	C-1.4.4	<p>"Plants licensed after January 1, 1979 which have committed to meet the requirements of Section III.G, III.J and III.O, of Appendix R or other NRC guidance (e.g., Branch Technical Position CMEB 9.5-1), and are required to do so as a license condition, do not need to request exemptions for alternative configurations. However, deviations from the requirements of Section III.G, III.J and III.O or other applicable requirements or guidance should be identified and justified in the FSAR or FHA and the deviation may require a license amendment to change the license condition. Deviations submitted to the NRC for review and approval should include a technical justification for the proposed alternative approach. The technical justification should address the criteria described in Regulatory Positions 1.4.1 for 50.59 Evaluations and 1.4.2 for exemptions."</p> <p>COMMENT: Currently, NRC regulations do not contain provisions for requesting NRC approval of deviations from UFSAR Appendix R commitments, NRC Guidelines, or Safety Evaluation Reports. The NRC has established codified processes for changing the operating license (10 CFR 50.90), and the UFSAR (10 CFR 50.59), and plants such as Palo Verde, have license conditions controlling changes to their fire protection programs. The guidance in DG-1097 would legitimize a process that has no regulatory basis.</p>
1097-3-11	69	C-4.2.1.6	It would probably be best to simply reference NUREG 1552 rather than to reproduce it here.

Table 4

Industry Comments on DG-1097  
Other Comments

Comment Number	Page	Section	Comment
			<b>The comments in this section of Table 4, until noted otherwise, are those submitted on DG-1094 and not addressed in DG-1097. These comments are still applicable.</b>
1094-1-13	1	A	New guidance is being promulgated within this document. Section D is being cited as the means to implement this guide. Although Section D correctly states that requirements are a function of any given plant's licensing basis, it infers that some subjects like Life Safety requirements (specifically stated as NFPA 101 throughout the Guide) represent objectives and requirements considered acceptable to the NRC and they will be used in the evaluation of existing fire protection programs. Considering that NFPA 101 is not defined in any existing NRC fire protection requirement, it is unclear as to what a utility's actions should be relative to this subject. Since life safety requirements (to the extent described in NFPA 101) are not implemented to "prevent the performance of necessary safe shutdown functions and will not significantly increase the risk of radioactive releases to the environment" it is not clear why there are references to them in this document.
1094-1-14			All references to NFPA Codes and/or Editions issued since the BTP and Appendix R, or that were not required to be reviewed during the approval process (i.e., NFPA 101, 1620, 600, etc....) should be deleted from this document since they were not applied to the "approved" fire protection programs.
1094-1-15	8	A	The stated purpose of DG-1094 is as follows:  "This regulatory guide was developed to provide a comprehensive fire protection guidance document, and to identify the scope and depth of fire protection that the staff has determined to be acceptable for operating nuclear plants. This guide may be used for licensee self-assessments and as the deterministic basis for future rulemaking."  This scope statement itself is misleading, since in fact the NRC has accepted the Fire Protection Programs of many facilities, even though they do not meet all of the aspects of this Reg Guide. Previous NRC attempts to implement a comprehensive set of staff positions on fire protection has resulted in backfit appeals which ultimately resulted in the promulgation of 10CFR50, Appendix R and the specific backfit of varying portions of Appendix R at each facility. Licensee's contentions regarding the merits of back-fitting aspects of BTP APCS 9.5-1 (and Appendix A to APCS 9.5-1) remain valid. By re-publishing those same staff positions via a Reg. Guide, the NRC puts the industry at risk of "double jeopardy", by not acknowledging that the NRC did not have the regulatory authority to impose the majority of APCS 9.5-1 criteria on operating plants, and at the same time, re-writing history to reflect that plants have in fact embraced these criteria, so that their backfit analysis for the DG shows that there is no impact to the industry.
1094-1-18	19	B-4.1	After third bullet - Since the "Purpose" in Section A covers rad releases, it would be appropriate to mention here -- this is

Comment Number	Page	Section	Comment
			part of the defense-in-depth concept similar to the bullet above.
1094-1-19	20	B-4.2.1	The term "fire damage limit" is new and is undefined. The term implies that different measurable limits are defined and are considered acceptable. If there are limits other than ensuring the capability to safely shutdown and minimizing damage to safety related equipment to prevent release to the environment, those should be uniquely defined. It is unclear how to implement or interpret this paragraph. The glossary should be updated.
1094-1-20	20	B-4.2.2	First paragraph, second sentence: Rather than "e.g.", think a list or at least additional examples of internal and external events could be provided.
1094-1-21	20	B-4.2.2	First paragraph states "... However, some external or internal events (e.g., earthquakes) may initiate a fire event..." Is it the intent of this section to require consideration of earthquake initiated fires? It is not clear from this section and no additional guidance is provided in this document to assist in evaluating this issue. It appears that this document is adding a new requirement to consider earthquake initiated fires and therefore fire protection features (including detection, suppression, etc...) are needed to be seismically qualified. In addition, if this document is implying to consider Appendix R fire due to an earthquake and then having capability for safe shutdown, it is adding much more requirement than previous requirements and guidelines.
1094-1-23	21	B-4.2.3	The last sentence in this section should be removed.
1094-1-27	26	C-1.1.1.2.b.viii	This section requires a position be designated that among other fire protection program responsibilities, also to be "... responsible for the maintenance and modification of structures, systems, and components important to safety." The responsibility for maintenance and modification of structures, systems, and components important to safety is very general requirement that is not entirely under fire protection program. This item should be a little more specific for fire protection.
1094-1-28	27	C-1.1.1.2.d.iv	This section uses the term "significant fire" and section 1.2.4 uses the term "potential fires". Suggest that both sections use "challenging and credible fires" as the basis for what we should be prepared for.
1094-1-30	30	C-1.2.1	Recommend that "member" grade status be identified only and that the qualifications, i.e., "3 years engineering experience...." be deleted. These qualification requirements have changed in the past and if they do so in the future, the RG will become inconsistent.
1094-1-33	31	C-1.2.3	Requirements and definitions for this type of fire watch should be separate (i.e., hot work versus compensatory measure) as follows: (Refer to NRC Inspection Procedure 64740, "Fire Protection Program.") <ul style="list-style-type: none"> <li>• Hands-on training should only be required for hot work fire watch personnel</li> <li>• Hot Work Fire Watch – individual(s) responsible for watching for fires at the hot work location and trying to extinguish them first only when obviously within the capacity of the equipment available, or otherwise report the fire immediately. Hot work fire watches shall have fire extinguishing equipment readily available and shall be trained in its use, including practice on test fires. (Refer to NFPA 51B)</li> <li>• Compensatory Action Fire Watch – individual(s) responsible for providing compensatory (i.e., for system impairments) coverage of plant activities or areas for the purpose of detection fires, or for identifying activities and conditions that present a potential fire hazard. The individual should be trained in identifying conditions or activities that present potential fire hazards and the proper fire notification procedures.</li> </ul>

Comment Number	Page	Section	Comment
1094-1-34	31	C-1.2.4	In the first sentence, the term "potential fires" is used. An earlier term in 1.1.1.2.d.iv used "significant" – suggest terms "challenging and credible" be used as the basis for preparation and capability
1094-1-36	32	C-1.2.4.2	See comment/question on different wording regarding instructor qualifications in Section 1.2.1.d
1094-1-38	37	C-1.4.4	Clarify when a deviation may require a license amendment to change the license condition. Examples would be beneficial.
1094-1-39	37	C-1.4.5	Use of providing guidance based on information contained within NRC Inspection Manuals seems inappropriate without other source documents. Example is 1.4.5. The List of References contains several cases where an inspection manual is used as a source document.
1094-1-40	37	C-1.4.7	Section 1.4.7 NFPA Code and Standard Deviations, requires that code deviations be identified and documented. As long as the intent of this requirement is the big picture type of code deviations, this should be consistent with the guidance in G.L. 86-10. However, if the Staff sees this section as requiring an evaluation for every sprinkler head or fire detector that may not be exactly per code, then this is a significant burden. Recent inspections by the NRC appear to be heading down the path of a very low threshold regarding code deviations. It should be noted that GL 86-10 is the first time the NRC documented any staff position on NFPA Code compliance issues. Their expectation, described in a "Staff Position", did not result in NFPA Code compliance reviews becoming a "requirement" for licensees, since this was not the appropriate vehicle for promulgating them as a requirement. Prior to GL 86-10, the NRC had approved the fire protection features of numerous plants "as is". Therefore, any additional emphasis on NFPA Code compliance by the NRC should be considered a "back fit".
1094-1-41	38	C-2.1.1	In the second paragraph insert "Bulk" instead of "Those" at the start of the paragraph.
1094-1-42	41	C-2.1.4	Delete the sentence beginning with "NFPA 80A..."
1094-1-44	45	C-3.2.1	Section 3.2.1 and others, metric units are specified first in the regulation. Consideration of the industry maturity and total previous use of English units should reverse this for ease of use.
1094-1-46	47	C-3.2.2	Existing section incorrectly infers that seismic fire fighting capability must meet 100% of design flow (maximum single demand plus hose streams).
1094-1-47	47	C-3.2.3.d	The recommendation to periodically check the position of "all" fire protection valves should be changed to "all normally open fire protection valves in the flow path." With the exception of deluge valves in pre-action, deluge, or water spray systems, charcoal filter manual isolation valves, and hose station control valves, the valves "in the flow path" to a fire protection system are normally maintained in the open position. Opening a normally closed valve "in the flow path" would be conservative from a fire protection standpoint. In addition, opening a normally closed valve that results in a flow diversion path (i.e., drain or inspector's test) would be detected by flow and/or low system header pressure alarms. Therefore, since the intent of the code of record (i.e., NFPA 25) position check is to insure that normally open valves required to be open for fire suppression are maintained in the open position, and the position of normally closed valves is monitored by alarms and controlled by procedure, there is no need for dedicating O&M resources to periodically check the position of a normally closed valve.
1094-1-48	52	C-3.4.1	Section 3.4.1, specifies frequency of fire hose hydrostatic testing. Suggest frequencies not be specified or prescribed for individual items in the document.
1094-1-49	53	C-3.5.1	Section 3.5.1, details of fire brigade requirements are scattered in the document. Suggest all requirements be placed together for similar programmatic aspects (ref. Section 1.2.4).

Comment Number	Page	Section	Comment
1094-1-50	54	C-3.5.1.2	The quantity of "reserve air" required on-site (i.e., 6 hours) should be clarified <ul style="list-style-type: none"> <li>• 6 hours of breathing air, or</li> <li>• 6 hours of breathing air for 5 fire brigade members (30 hours total), or</li> <li>• 6 hours of breathing air for 10 masks (60 hours).</li> </ul>
1094-1-51	56	C-3.5.1.4	"Unannounced drills should not be scheduled closer than 4 weeks." It might be clearer to say that unannounced drills should not be scheduled too close together for each shift.
1094-1-54	66	C-4.1.3.6	First paragraph: For equipment built to IEEE standards and conforming to UL requirements, electrical faults should not pose a hazard to anything outside of the cabinet. Unless the bus/MCC/panel is underrated for the application this should not need to be demonstrated again under fire protection. All of this was reviewed under the EDSFI program several years ago. Also 480 volts is defined as low voltage (600 volts and below).  Fourth paragraph: Again, if properly applied per UL standards a fire inside a panel/bus/MCC should not propagate outside the cabinet.
1094-1-55	68	C-4.1.4.4	This section indicates that fire dampers should close under anticipated air flow conditions. Later in Section 4.2.1.3, Fire Dampers, it indicates that administrative controls to shut down air flow in the event of a fire are also acceptable. Section 4.1.4.4 should be revised to agree with Section 4.2.1.3.
1094-1-56	69	C-4.1.6	4.1.6 - Emergency Lighting - Is an 8 hour discharge test necessary to establish the operability. Can other testing methods be used in lieu of discharge tests; also, can the duration of the discharge test reduced to say 4 hours? Needs clarification in this section.
1094-1-59	73	C-4.2.1.3	Third paragraph, last sentence: Add, "or a mix of the three."
1094-1-60	78	C-4.2.3.2	Suggest that the info needed to support this type of application be listed – such as qual testing, design control of routings, debris evaluations, post fire performance testing etc. There is enough info on currently approved cable to meet Appendix R that the staff's information needs for that approval could be listed.
1094-1-61	78	C-4.2.3.3	First sentence, does "areas" mean "safety-related areas"?
1094-1-62	79	C-4.2.3.3	This is an old insurance guideline for protection of any cable concentration (think ANI used 3 trays wide by a stack 3 trays high to classify as concentrated or dense cable runs. As stated here without defining "areas", this seems to be aimed at BOP locations. What is the safe shutdown benefit?
1094-1-64	80	C-5	First paragraph – delete "immediately". Second paragraph – delete the last two sentences.
1094-1-65	82	C-5.3	Paragraph 2 could use more explanation, especially the phrase "may indirectly affect hot shutdown". For example, does this mean that pressurizer level may momentarily drop out of the indicating band so long as you have an analysis showing that it will recover back to the indicating band and not uncover the core?
1094-1-66	85	C-5.4	What is the position on the question regarding multi-meters? Some plants have had difficulty with how they control standard test equipment that may be used to check post fire repairs or troubleshooting. Here's a chance to clearly state the expectations.

Comment Number	Page	Section	Comment
1094-1-68	85	C-5.4	Removal of fuses is mentioned only in this section, which appears that fuse removal is considered a "repair" and may not be allowed as "manual action" for hot shutdown. Guidance for fuse removal as a "manual action" needs to be added to this document.
1094-1-69	85	C-5.4.1	This section considers only RCS pressure reduction by cooldown using Steam Generator PORV or atmospheric dump valve. This section should also consider RCS pressure reduction by using Pressurizer PORV Pressurizer auxiliary spray, etc.
1094-1-70	88	C-5.6.2	Fourth Paragraph – The first sentence should be reworded to state, "... usually given credit for is reactor trip."
1094-1-71	91	C-6.1.1.1	A minimum fire rating of ½ hour is identified for radiant energy shields for the separation of cables and equipment inside containment. It should be noted that 10CFR50 Appendix R section III.G.2 (f) does not specify minimum fire rating. This section should be clarified to indicate that ½ fire rating is acceptable to the NRC staff, however, other alternatives can also be utilized with a documented evaluation.
1094-1-72	92	C-6.1.1.2	The second and third paragraphs are in conflict with each other. The second paragraph requires hose lines and standpipes inside containment for plants with inerted containments, while the third paragraph requires they be outside containment.
1094-1-73	92	C-6.1.1.2	First paragraph: Should auto suppression be required?
1094-1-74	93	C-6.1.2	Delete the paragraph beginning "Equipment important to safety..."
1094-1-75	97	C-6.1.7	Other industries that work with flammable gases and toxic products use 10% of the LEL as the lower setpoint for alarms. Allowing a concentration here for about 50% of the LEL is fairly high and may be contrary to OSHA's requirements for life safety.
1094-1-76	98	C-6.1.8.b	Suggest options based on rupture alarms and interlocks to block auto refill. If a day tank for one diesel is in the room with that diesel there may be a fire exposure and loss control problem, but there should not be a post fire safe shut down capability problem.
1094-1-77	98	C-6.2.1	First Sentence: It makes more sense to have extinguishers at the entrance to the area. These areas are usually locked and well controlled. If there is a fire in an area like this, we should make the entry with what we need to deal with the fire rather than enter the area to obtain what is needed. If there is work planned for the area, that planning should address providing the work crew what they may need to deal with a fire if the work may cause that – then they would take a portable in the area / room with them.
1094-1-78	100	C-7.2	Provisions should be allowed for normal minor leakage that is not a fire hazard yet is normally expected with this type of rotating equipment.
1094-1-79	101	C-7.2.b	For collection systems that only hold the content of one pump's reservoirs, there should be administrative tracking of freeboard and procedure requirements to check prior to heat up, tracking during a cycle, and draining the system before the required free board volume for the single failure is lost.
1094-1-80	102	C-7.5	The EPA will most likely require that emergency use fuel supplies in underground tanks be relocated. With space at a premium for this type facility if it has to be relocated to above ground, any available flexibility should be provided here.
1094-1-81	102, 103	C-7.6	Insert "Bulk" at the start of the second sentence. Delete the last three paragraphs.
1094-1-82	109	Glossary	Provide basis (references) for all items listed in the glossary.

Comment Number	Page	Section	Comment
1094-1-83	111	Glossary	Is this the definition of High Impedance Fault NRC chooses to use? This Indicates that phase-to-ground is the only consideration and that phase-to-phase need not be evaluated?
1094-1-84	111	Glossary	Hot Short – Reword the definition from, “an energized conductor within a cable comes in electrical contact...” to “an energized conductor within a cable that comes in electrical contact...”
1094-1-87	117	App B	Appendix B - This section should be consistent with the ongoing efforts of the BWROG and NEI for multiple hot shorts.
1094-1-88	117	App B B-1b	Sentence beginning “However, two proper polarity...” should be dropped as not having regulatory basis. It is in direct conflict with the previous statement from 86-10, 5.3.1, which is the regulatory basis. This appears to be a classic “ratchet”. As an alternative NRC should issue the cited memo as a supplement to 86-10.
1094-1-89	118	App B B-1.2	This section describes Multiple High Impedance Faults (MHIF) that should be considered. Additional clarification or guidance is necessary. Probability of occurrence of MHIF on medium and high voltage systems (i.e., 4 Kv) is extremely low such that it should not be considered. Additional clarification, based on the licensees’ past analyses, would reduce unnecessary future evaluations.
1094-1-90	123	App C, 2.1.2	With the issuance of Regulatory Issue letter 99-02, the last statement “The adoption of standard license.....” should be revised.
1094-1-92	123	App C 2.1.3	The term “significant” should be defined or references provided to document(s) that define this term. Significant should be defined as “adversely impacting safe shutdown capability.”
1094-1-93	123	App C 2.1.3	Per this section (last sentence), if a licensee fails to meet a portion of the approved fire protection program, and modifications are not going to be made to achieve compliance, an exemption (or deviation) is required to be submitted to the NRC. As stated throughout this Guide, there are several components (fire protection features, administrative controls, etc.) that make up a Licensee’s Fire Protection Program. Based on GL 86-10 it did not appear to be the intent of the NRC to review and approval ALL changes to the approved fire protection program. As stated above, threshold of what needs to be reviewed and approved by the NRC must be better defined.
1094-1-94	126	App C, 3.1	Items a, b, c, d – The term “minimal increase” should be defined in the Glossary, or a reference provided so that both industry and the NRC are working from a common base. The goal of this section, as well as the remainder of the document, should be to leave nothing open to interpretation. Significant technical decisions related to fire safety and safe shutdown capability will be based upon the guideline of “minimal increase.”
1094-1-95	151	App I, 1.3	Last two sentences: We should either be guided to submit or not. Anything we do should be maintained and subject to audit if it deals with regulatory compliance or maintenance of our SER’s. Should this be in section 1.4.3 rather than an appendix?
1094-1-96	End Notes		Many of the end notes reference non-binding documents like SECY papers, staff memoranda, inspection modules, temporary instructions, 'draft copy for public comment contained in a letter....,' etc. The regulatory basis of using such documents is questionable.
1094-1-97	End Notes		All cited staff memos, if not available through the NRC web site, should be attached in a separate appendix in their entirety for reference. (Ref. Citations 61, 239, 270, 448 as selected specific examples.)

Comment Number	Page	Section	Comment
			<b>The remainder of these comments are new comments on DG-1097.</b>
1097-4-1	None	All	It is difficult to assess whether or not the NRC has specifically addressed the comments that were provided to the NRC on DG-1094 by NEI on January 7, 2000. Typically, what is done with rule making activities is that a disposition document is provided for the comments submitted (i.e., the staff agreed with the comment and the following changes were made, etc). A similar type document would be useful in this case.
1097-4-2	None	All	The word "must" is used in a number of locations in DG-1097. "Must" as it relates to the use in this document should be defined.
1097-4-3	None	All	In order to be a useful document for licensee self-assessment of current operating plants that may not be in full compliance with DG-1097, it is desirable to retain the cross-referencing to the source documents. In this regard, DG-1094 Appendix J, "Guidance Source Citations" was beneficial. It is recommended that such an appendix of source documents with an index reference number to the text portions be included.
1097-4-4	None	All	General Comment: The term "important to safety" is used throughout as the scope of equipment or plant areas of concern. The glossary states that these are the SSC's required to provide reasonable assurance that the facility can be operated without undue risk to health and safety of the public. This definition sounds good, but is too generic to use to determine the true scope of applicability. A clear understanding of the definition of "important to safety" is very important for licensees to draw the line at what is part of the regulatory fire protection program and what is not. From comparing the BTP (CMEB) to this draft, it appears the words "safety-related" were replaced by "important to safety". Can it be concluded that plant areas "important to safety" are those with "safety-related" SSC's? If yes, this is a different scope than systems credited for post-fire safe shutdown.
1097-4-5	None	All	The guide incorporates items contained in staff memorandums and Information Notices and portrays them as being requirements. This approach is also not comprehensive in that it appears that only selected memorandums are referenced which substantiate a specific staff position.
1097-4-6	None	All	A discussion should be included which describes the relationship of the requirements of the BTP (including Appendix A) and Appendix R in areas that overlap. An example would be fire barriers required under Appendix A. Are they superceded by Appendix R separation requirements, are they to be inspected at the same frequency as Appendix R components Etc? This has been an issue in the industry with some Licensees and the staff has not consistently applied their requirements.
1097-4-7	None	All	The DFPRG does not consistently recognize that the requirements for plants operating prior to July 1, 1976 are those of Appendix A to BTP APCS 9.5-1.
1097-4-8			In general Utility X supports the allowed use of risk-informed methodology in defining the elements of fire protection as acknowledged in DG-1097. [DG-1097 contains provisions allowing the use of a risk-informed approach. Section A, INTRODUCTION, states that "risk-informed" alternatives to the guidance may be acceptable to the NRC staff. The Glossary defines "Fire Risk" as the combination of the probability of a given fire event occurring and the estimated consequences of the event. REGULATORY ANALYSIS, Part B, <u>Objective</u> , states that the guide allows for the use of risk-informed, performance-based approaches as they mature, and Part C, <u>Alternatives</u> , states that this DG was presented to the Commission in SECY-98-058, entitled "Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants."]

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1097-4-9	10	B	<p><b>Plants Licensed After January 1, 1979</b></p> <p>Existing text states: "Plants licensed after January 1, 1979, are subject to the requirements of 10 CFR 50.48(a) and (e) only, and as such must meet the provisions of GDC 3 as specified in their license conditions and as accepted by the NRC in their SERs. These plants are typically reviewed to the guidance of SRP Section 9.5-1. For these plants, where commitments to specific guidelines cannot be met, or alternative approaches are proposed, the differences between the licensee's program and the guidelines are documented in deviations (see Regulatory Position 1.4.4)."</p> <p>Some plants maintain an item by item comparison to APCS 9.5-1 and BTP 9.5-1 respectively in their UFSARs. In many cases, these comparisons discuss "alternative compliance strategies". The NRC has reviewed these strategies, and issued SERs for the programs. Based on the discussion provided in the Regulatory Guide, it is not clear if the NRC now considers these item by item comparisons to be deviations, and if so, what additional documentation they would expect to see.</p>
1097-4-10	11	B	Page 11 has Assumptions. The bottom of page 17 and top of page 18 state some of the same assumptions again. Unnecessary redundancy.
1097-4-11	11	B	The DG states that a fire is assumed to occur anytime. However, it should be clarified that safe shutdown capability is evaluated for the plant in the 100% power configuration, which places the highest demand on operations. Other configurations are generally expected to permit more time to take mitigative actions and more resources are likely to be available, such as during a refueling outage.
1097-4-12	11	B	LOOP / Station Blackout – Loss of offsite power need not be postulated non alternative shutdown areas. Should not consider simultaneous, coincidental LOOP for any scenario unless fire could cause LOOP
1097-4-13	12	B	Suggest the use of the word "failure" in place of "fragility" in the paragraph heading, and "failure modes" in place of "fragility" in the last section of the paragraph. By "failure," it is meant "failure to meet the design criteria," but by use of the word "fragility," requirements remain unclear. "Fragility" is a property of structural components and is unclear when the term is applied to systems.
1097-4-14	14	C.1.1	It is appropriate that decommissioning of unit(s) on multi unit sites has been added to Section C.1.1 based on our earlier comment. This multi unit site consideration should be added to section C.1.1.1.c for consistency.
1097-4-15	16	C.1.1.1	Section C.1.1.1.f.iv now states that the size of the fire brigade "should be consistent with the activities required to combat the most significant fire". Better wording that has been used in the past without objection by the industry has been "credible and challenging fire" as the basis for sizing and equipping the brigade. No argument on "no less than five".
1097-4-16	16	C.1.1.1	At the end of section C.1.1.1 is a statement about the guidance in this regulatory position being in two places plus the "Stello Letter to Bixel". It is not evident if this statement is necessary or of real value in a Regulatory Guide. The letter is listed as a reference on page 113 along with others that went to specific dockets – suggest that these references to letters are acceptable in drafts as long as they are provided for all to review and that they come out of the final issue – let the Regulatory Guide stand on it's own especially since the content of a letter is not subject to any consensus review. Same comment on the Regulatory Guide referencing memos such as on page 87 in section C.5.2.
1097-4-17	16	C-1.1.1	Section C, 1.1.1, references a letter from Stello to Bixel. Is this common practice to use internal NRC letters as references to reg. guides?

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1097-4-18	17	C-1.1.2	<p>DG-1097 states: Where automatic suppression systems are installed, the effects of the postulated fire should be evaluated with and without actuation of the automatic suppression system.</p> <p>This raises questions about areas where the suppression system is credited to allow the use of 1 hour encapsulation. Is this supposed to mean that we should be able to handle the cases where encapsulation is gone after 1 hour into the scenario?</p>
1097-4-19	17	C-1.1.2	Last paragraph – postulate damage without suppression functioning delete as overly conservative
1097-4-20	18	C-1.1.2	<p>DG-1097 states: Fires involving facilities shared between units and fires caused by man-made site-related events that have a reasonable probability of occurring and affecting more than one reactor unit (such as an aircraft crash) should be considered.</p> <p>For plants where this is a concern or may be of significant probability, it would be in the site licensing basis and covered by the FSAR and possibly the T.S. For other plants, the probability is well below the value, which warrants it, being addressed.</p>
1097-4-21	19	C.1.1.5	Suggest that IN 97-48 also be used as a reference regarding compensatory measures.
1097-4-22	20	C-1.2.1	Section C, 1.2.1 discusses fire hazards analysis, and the fragility of SSC's in the fire area. Additional guidance needs to be reviewed and approved by the Commission concerning this concept of Fragility. It would appear to be a very subjective concept.
1097-4-23	21	C.1.2.3	<p>It is not justified to require that compensatory fire watches be required to receive hands-on training on a practice fire. It is justified for hot work fire watches where the probability of a fire has increased. A compensatory measure fire watch for a system impairment or safe shut down function impairment is more appropriately qualified as eyes and ears as a reporting tool to get qualified people to the scene.</p> <p>Agree with the last sentence in this section, but it should also state that any compensatory measure fire watch also is instructed on why they are being assigned and what their duties are for each assignment.</p>
1097-4-24	21	C-1.2.3	<p>Requirements and definitions for the type of fire watches should be separate(i.e., hot work versus compensatory measure), as follows: Hands on training should only be required for hot work fire watch personnel (Section 1.2.3, Fire Watch Training).</p> <p>* Hot Work Fire Watch - individual(s) responsible for watching for fires at the hot work location and trying to extinguish them first only when obviously within the capacity of the equipment available, or otherwise report the fire immediately. Hot work fire watchers shall have fire extinguishing equipment readily available and shall be trained in its use, including practice on test fires. (Refer to NFPA 51B)</p> <p>* Compensatory Measure Fire Watch - individual(s) responsible for providing compensatory (e.g., for system impairments) coverage of plant activities or areas for the purpose of detecting fires, or for identifying activities and</p>

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			conditions that present a potential fire hazard. The individual should be trained in identifying conditions or activities that present potential fire hazards and the proper fire notification procedures.
1097-4-25	21	C.1.2.4	Section C.1.2.4 on page 21 uses the term "potential fires" as the basis for brigade training. The term "most significant" should replace "potential fires".
1097-4-26	21	C-1.2.4.1	<p>The training and qualifications of a full time dedicated fire brigade is not considered in brigade leader qualifications.</p> <p>Draft RG DG-1097 states the following:</p> <p>The brigade leader and at least two brigade members should have sufficient training in or knowledge of plant systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members should include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The brigade leader should be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant systems.</p> <p>COMMENT: This requirement does not acknowledge sites that have a dedicated full time fire brigade staffed by qualified fire fighters and brigade leader. In this case a fire team advisor supports the brigade and would meet the brigade leader requirements stated above. Some allowance should be made for other equivalently staffed organizations.</p>
1097-4-27	26	C 1.3.6	<p>This section indicates: "Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections. These measures should include provisions for identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests and operating status."</p> <p>While tags, labels, and temporary markings are used to identify items such as fire extinguishers that satisfactorily passed required tests and inspections, tags and labels are not practical for other items such as: fire pumps, valves, penetration seals, etc. Inspection results of most items are generally "documented". It is recommended to revise this section to allow documenting test and inspection results, as well.</p>
1097-4-28	26	C-1.3.7.a	This should also include compensatory measures as applicable.
1097-4-29	30	C-1.4.1	<p>Regarding the first paragraph under Section 1.4.1, it should be clarified that the "technical specification" referred to is the license, and not the "fire protection specifications" that were removed from the technical specification and incorporated in the FSAR.</p> <p>Also, the phrase "...and do not result in failure to complete the fire protection program as approved by the Commission..." should be deleted. The test should only be whether the change involves an unreviewed safety question or requires a change to the technical specifications, even regarding a fire as an accident or event. In this regard, the standard license condition would be sufficient.</p>

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1097-4-30	31-33	C-1.4	The wording appears to assign more importance to fire than other design basis accidents or events. It should be made clear that high regard is given to fire events due to the DG-1097 context. Also, degraded fire protection features are classified as "impairments" and are evaluated for non-conforming and operability conditions. Compensatory measures may already be specified in the fire protection specifications, and would not require 50.59 evaluations. Implementation of any other corrective actions is preceded by 50.59 screening and, if necessary, a 50.59 evaluation.
1097-4-31	34	C-1.4.1.5	Section 1.4.1.5, page 34, states the accident to be considered is a fire. Fires are not design basis accidents. Fires are design basis events covered under the questions on malfunctions of equipment important to safety. This statement that fires are accidents is contrary to NSAC-125, NEI 96-07, and site specific training. This terminology error, promulgated by GL 86-10, has caused great confusion over the years on how to write 50.59 evaluations for fire protection changes.
1097-4-32	35	C-1.4.2	We believe that our fire protection licensing condition allows us to make modifications to the plant without requesting an exemption from the requirements of previously accepted fire protection configurations. We do, however, agree that an exemption would be needed for modifications that affect applicable sections of Appendix R.
1097-4-33	35	C-1.4.2	Item c "fire-retardant coatings are not used as fire barriers". Supplement 1 to Generic Letter 86-10 says that such coatings "may" not be acceptable, implying that they could be acceptable if they were tested and passed the requirements.
1097-4-34	35	C-1.4.2	This section (1 <sup>st</sup> paragraph) requires that exemption requests be submitted for "modifications that deviate from the previously accepted fire protection configurations used to satisfy NRC requirements." The last sentence in this paragraph also states that exemption requests are required "for proposed modifications that would alter previously approved features used to satisfy NRC requirements."  As written, this would require submittal of an exemption request for a modification that alters the configuration accepted via an existing exemption request <i>even if the modification places the plant in compliance with Appendix R</i> . NRC review and acceptance should not be required to place the plant in compliance with existing regulations.  It is recommended that this paragraph be rephrased to make it clear that no NRC review is required for modifications that place the plant in compliance with applicable NRC regulations.
1097-4-35	38	C-1.4.7	Defines AHJ as the Office of NRR. It is acknowledged that the NRC approves licensee fire protection programs, however, changes are acceptable without NRC approval under the standard license condition. In addition, in many cases the AHJ determines specific design requirements. This section should clearly state that the licensee and insurance provider are the AHJ for changes that do not specifically require NRC approval, such as for Code deviations. If the NRC is identifying themselves as the Authority Having Jurisdiction (AHJ), it would appear that they are requesting prior review of a lot fire protection designs and documents. I do not believe that they are aware of the implications of that statement. Our program is written to identify the Site Fire Protection Engineer as the AHJ for SSES.
1097-4-36	38	C.1.4.7	The reference back to GL 86-10 does not support this position. There is no objection to having a definition of the Authority Having Jurisdiction (AHJ). Agree with the third paragraph that no exemption is needed for NFPA code deviations. It should go on to state that the AHJ assigns the licensee that responsibility under the licensee's license conditions and the 50.59 process.

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1097-4-37	38	C-1.4.7	Deviations from the codes should be identified and justified, however, this should not be part of the FSAR or FHA. It should be backup calculations/studies that support the FHA.
1097-4-38	40	C-2.1.1	This section covers transient combustibles. It seems inconsistent that there are such strict limitations on untreated wood and untreated shipping packing, but no specific guidance for combustible and flammable liquids and gases as a transient, when these are the most hazardous transients. Example: Liquid pool fires are typically used as the fire source for fire modeling.
1097-4-39	43	C-2.4.d	This section states that the inspection frequency for seals should be every 3 refuel cycles at a minimum. This conflicts with many plants that perform a 10% group of pen seals every 18 months. Where did the 3 year refuel interval come from?
1097-4-40	43	C-2.4.d	The inspection frequency for penetration seals currently allows inspection of all seals in a 15 year frequency. The proposal here would reduce that to a 6 year frequency. The existing 15 year frequency includes additional samples being inspected if any failures are found. There is no basis for this reduction.
1097-4-41	44	C-3.1	Fire Detection; Does automatic sprinkler protection constitute automatic detection? The sprinkler heads will function as heat detectors.
1097-4-42	44	C-3.1.1	[C3.1.1c & f] Many plants have systems that were installed before NFPA 72 was written to consolidate NFPA 72 A-E.
1097-4-43	44	C.3.1.1.g, h,i	The seismic and other phenomena should not be tied to detection system design requirements. The line type detection system for cable raceways would not be an engineering choice today for the use required in section i.
1097-4-44	45	C-3.1.1.i	Plants, whose programs were approved under the guidance of Appendix A to APCSB 9.5-1, do not need continuous line type detectors for the subject cable systems.
1097-4-45	45	C-3.2.1.b	While it's agreed that the system should be designed as indicated, were the largest demand to be for a warehouse that does not expose any safety related SSCs, the design would not be subject to regulatory oversight.
1097-4-46	46	C-3.2.1.i	The guidance should be to <u>control</u> biofouling and MIC in the fire water system, since it can't always be prevented.
1097-4-47	46, 47	C-3.2.2	[C3.2.2] There are alternatives to weighing cylinders to verify quantity. In addition, typically the verification of quantity is performed semiannually, not quarterly.
1097-4-48	51	C-3.4.2	<p>Previous commitments for hose house equipment are not recognized or addressed. Draft RG DG-1097 states the following:</p> <p>3.4.2 Hydrants and Hose Houses</p> <p>Outside manual hose installation should be sufficient to provide an effective hose stream to any onsite location where fixed or transient combustibles could jeopardize equipment important to safety. Hydrants should be installed approximately every 76 m (250 ft) on the yard main system. A hose house equipped with hose and combination nozzle and other auxiliary equipment recommended in NFPA 24 should be provided as needed, but at least every 305-m (1,000-ft). Alternatively, mobile means of providing hose and associated equipment, such as hose carts or trucks, may be used. When provided, such mobile equipment should be equivalent to the equipment supplied by three hose houses.</p> <p>COMMENT: This requirement does not recognize those stations that may have a different commitment such as a Class A fire truck</p>

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			with the equivalent equipment of two hose houses. The difference between a truck and a Class A fire truck should be recognized.
1097-4-49	52	C-3.5.1.2	The minimum equipment must include turnout/bunker pants. All personnel protective equipment should be NFPA compliant.
1097-4-50	53	C3.5.1.3	All previous sections of the Regulatory Guide discussed areas "important to safety". This section in subparagraph 'c' requires "strategies for all plant areas". We have developed these for all our assets including non-plant structures but the regulatory requirement should stay focused on the areas relied upon for achieving the post fire performance goals.
1097-4-51	54	C-3.5.1.4	The statement that "Unannounced drills should not be scheduled closer than 4 weeks" needs to be clarified. Does that mean closer than 4 weeks for a particular shift? Or doesn't the shift matter? If I run an unannounced drill for "A" shift today, can I run an unannounced drill for "D" shift in 2 weeks or do I have to wait 4 weeks?
1097-4-52	54	3.5.1.4	Requires drills not to exceed every 3 months. The industry standard is quarterly. The Reg Guide should be revised to state, "quarterly".
1097-4-53	54	C-3.5.1.4	If an unannounced drill fails, and the shift is required to repeat a drill within 30 days, does it have to be or can it be unannounced?
1097-4-54	54	C-3.5.1.4.b	Delete "emergency breathing equipment" or define the difference between "self contained emergency breathing apparatus" and "emergency breathing equipment".
1097-4-55	55	C-3.5.1.4.d	It is good to see a defined retention period for drill records! This should be extended to Hot Work records, Firewatch records, etc.
1097-4-56	56	4.1.1	States that suspended ceiling tile should be non-combustible material. Based on the ASTM E 136 drop in ceiling tile are limited combustible materials. The Reg Guide should be revised to permit suspended ceiling material to be limited combustibles.
1097-4-57	56, 57	C-4.1.1.1	<p>This section states that "interior finish" should be listed for a flame spread of 25 or less. Section 4.1.1.1 does list some floor materials. The glossary does not have a definition for "interior finish". Based on these facts, one would conclude that floors must also meet the ASTM E-84 flame spread requirement.</p> <p>The requirement for a flame spread of 25 or less comes from ASTM E-84. ASTM E-84 does not make the distinction on whether the flame-spread requirement is applicable to floors. However, ASTM E-84 is an equivalent standard to NFPA 255. NFPA 255 does clarify that the flame-spread criteria are for the rating of walls and ceilings. Thus, the 25 or less flame-spread criteria should not be interpreted to apply to interior floor finishes, as ASTM E-84 is not an appropriate test for flooring materials. NFPA 253 or ASTM E-648 is the appropriate standards for floor finishes. This is validated by the following statement from the NFPA Life Safety Code Handbook (Seventh Edition), pp 220-221:</p> <p><i>"When judgement is made to regulate floor coverings, the evaluation is to be made based upon tests conducted in accordance with NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, also known as ASTM E-648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source. The Flooring Radiant Panel Test was specifically developed to evaluate the tendency of a floor covering material to propagate flame."</i></p>

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			<p>ASTM E-648 and NFPA-253 are the standards applicable to floor coatings. The criteria is measured in terms of critical radiant flux, an indication of the radiant heat needed to initiate combustion. The NEIL Member's Information Manual states that floor coverings in all insured buildings meet a flammability of <math>\geq 0.45</math> critical radiant flux. In addition, smoke development rating of <math>\leq 450</math> is specified.</p> <p>In summary, 1) the term interior finish is applicable to walls/ceilings; and 2) floor coating surface flammability is based on critical radiant flux per ASTM E-648 or NFPA-253. This should be clarified.</p>
1097-4-58	57	C-4.1.1.2.a	ASTM E-84 is an old test. I believe there are more current and repeatable tests available for use.
1097-4-59	57	C-4.1.1.2	Administrative - Use of asterisk in the text, however, an 8 is used in the footnote.
1097-4-60	57	C-4.1.2.1.b	<p>Barrier type clarifications are needed throughout the document. Separation of redundant safety-related divisions by 3-hour barriers is not possible. This is further validated by section 6.1.3 third paragraph starting with "If division."</p> <p>Separation of redundant safety-related divisions is accomplished by RG 1.75 (section 4.1.3.4, page 60/61). There needs to be changes through the various sections on barriers that indicate the goal is separation of redundant post-fire safe shutdown SSC's (not SSC's important to safety).</p> <p>Examples: 1) Section 4.1.2.1.b (page 57) should have the words "and components important to safety" removed; 2) The bottom paragraph of page 57, second sentence should read, "<i>Particular design attention to the use of separate fire areas for separation of redundant post-fire safe shutdown cables is important.</i>" 3) section 4.2.3.1, first sentence should read, "<i>Redundant post-fire safe shutdown cable systems should be separated in accordance with Regulatory Position 5.5.a-c.</i>"</p>
1097-4-61	59	C.4.1.3.1	Suggest it is time to delete the out of date requirement regarding cable fire retardant coatings or open head water spray systems in cable raceways. Since a previous section in this draft gives no credit to such coatings there does not appear to be a need to require them. This type of suppression system does not benefit nuclear safety.
1097-4-62	60	4.1.3.3	This type of suppression system (i.e., open head water spray) does not benefit nuclear safety. This entire section is more focused on property protection than on assuring the post-fire performance functions. The Regulatory Guide needs to stay focused on these performance goals.
1097-4-63	61	4.1.3.4	For plants with construction permits before July 1, 1976, cables that do not satisfy Reg Guide 1.75 should be covered by a fire retardant material and protected by automatic water fire suppression system. Reg Guide 1.75 pertains to channel separation to avoid electrical not post fire safe shutdown. This should be deleted.
1097-4-64	62	C.4.1.4.3	Habitability is also a consideration to essential personnel pathways for post-fire functions necessary for safe shut down.
	65	C-4.2.1.a	There have been numerous questions and debates on what specifically the word "continuity" means. Providing a more understandable explanation would be useful.
1097-4-65	65	C-4.2.1.b	An enhancement would be to clarify that the "minimum" thickness of the barrier is maintained.
1097-4-66	67	C-4.2.1.3	Section 4.2.1.3 (page 67): The first paragraph indicates fire dampers should have greater than a 2-hour fire rating. NFPA 90A-1999 section 3-3.1.1 states: "...a fire resistance rating of 2 hours or more." Thus, the RG has misquoted

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			NFPA. In addition, the older NFPA 90A editions only called for 1.5-hour fire dampers. BTP 9.5-1 (CMEB) requires fire damper that meet the hourly rating of the barrier. Thus, most plants have 3-hour dampers in 3-hour barriers or 1.5-hour dampers in 2-hour barriers.
1097-4-67	67	C-4.2.1.4	The generic exclusions to any of the draft reg. Guide requirements are those for which prior approval of existing or proposed fire protection features has been obtained.
1097-4-68	67	C-4.2.1.4	Paragraph 4.2.1.4 should clarify that conduit stuffing is not in the same category and is not evaluated with the same criteria as penetration seals.
1097-4-69	69	C-4.2.1.5	In general, this whole section is not optimally written. Re-categorizing in accordance with the below outline would be more technically correct and includes the main factors that can impact penetration seal fire rating:  Sealant/Damming(including boots & caulk): material type and thickness Subdivider board: material type, thickness, and attachment Position of Penetration Seal to Relative Barrier Barrier: Orientation (floor or wall), thickness, construction Penetration Size (Maximum Undivided Area For Blockouts and Diameter for Sleeves) Maximum Free Rectangular Area (Blockouts) or Maximum Annular Gap (Sleeves). Penetrant: Type, conductivity, size (including cable fill or bundle size) Cable Combustibility Penetrant-to-Penetrant Separation (not applicable to electrical cables) Penetrant-to-Opening Clearance (or minimum annular gap for sleeves) Penetrant Movement and Temperature Limitations Type testing (as described in 4.2.1.6.g)
1097-4-70	69	C-4.2.1.6:	While the lead-in paragraph recognizes the reality of a limited number of penetration seal tests supporting in-plant configurations, some of the subsequent paragraphs impose severe restrictions on the ability of fire protection engineers to perform fire barrier equivalency evaluations. This section should be revised as below to allow the performance of engineering evaluations which recognize the differences between tested and as-built configurations and utilize sound fire protection engineering principles.  a. In a., delete the text following "size of sealed opening" b. In b. delete "reducing" and increasing" c. In c., replace "the same or smaller" with "a different"; replace "the same cable jacket material" with "the cable jacket material"; delete "or a less combustible jacket material." d. Delete g altogether
1097-4-71	70	C-4.2.1.6.g	It would be an enhancement to reference section 4.2.1.a-e for more guidance.
1097-4-72	71-79	4.3	Section 4.3 (page 71-79): This section is very long and detailed. It would match the other sections better if there was a brief discussion of electrical raceway fire barriers and either: 1) move the rest to an Attachment; or 2) simply reference GL 86-10 Supplement 1 for more details.

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1097-4-73	71	C-4.2.3.2	Section 4.2.3.2 (page 71) & Section 4.3.5 (page 79): 1) It would be more clear if these sections were combined. 2) The GL 86-10 guidance for requiring an exemption or deviation for the use of fire rated cable is out-of-date guidance and should be changed. This RG should state that its use is acceptable provided: 1) it passes the 1 or 3-hour fire test (performed to the ASTM E-119 time-temp curve without loss of continuity) and under the electrical loads experienced in the plant (with analysis that the electrical properties maintain plant systems operable without instrument error); 2) it is installed in the plant similar to that fire tested; and 3) where no automatic suppression exists, the cable routing is such that falling debris will not impact cable operability.
1097-4-74	71 79	4.2.3.2 and 4.3.5	These sections conflict with each other. Section 4.2.3.2 states that an exemption is required for the use of fire rated cable. Section 4.3.5 states that fire rated cables should be tested by a recognized testing laboratory, with no mention of the need for exemption. Section 4.2.3.2 should be revised to eliminate the requirement for an exemption.
1097-4-75	71	C-4.2.3.3	Fire stops (Paragraph 4.2.3.3) are only required as barriers between fire areas, not within a fire area.
1097-4-76	79	C.4.3.5	The section on the use of fire rated cables should include an application statement regarding evaluation of debris causing damage / installation restrictions that has been a consideration in their use.
1097-4-77	81	C-5.2	Last bullet: This requirement is confusing and implies that offsite electrical power is needed when, by rule, we must assume it may be lost. This needs clarification
1097-4-78	81	C-5.3.1.1	This section implies that reactor trip circuitry should be instrumentation needed to ensure reactivity control. This is contrary to the normally used assumptions that credit is taken for a manual reactor scram in the control room prior to evacuation.
1097-4-79	84	C-5.5 (General)	NRC should leave a place holder in the Regulatory Guide to include the information contained in the following Industry Documents once agreement is reached between the NRC and the Industry:  1) GE Report No. GE-NE-T43-00002-00-03-R01, BWROG Position on the use of Safety Relief Valves and Low Pressure Systems as Redundant Safe Shutdown Paths.  2) GE Report No. GE-NE-T43-00002-00-02 Revision 0, Generic Guidance for BWR Post-Fire Safe Shutdown Analysis.  3) NEI Report No. NEI-00-01, Guidance for Post-Fire Safe Shutdown Analysis.
1097-4-80	84	C-5.5	It appears that fire detection was inadvertently omitted room the first sentence.
1097-4-81	93	C-6.1.2	In control rooms where electrical cabinets are not located on pedestals, curbs and drains should be provided. This is not practical and is in conflict with the need to maintain control room positive pressure. The requirement for providing means to close the drains is impractical. This section should be deleted.
1097-4-82	93	C-6.1.2	There should be no carpet in the control room. Carpet does not significantly contribute to fire. In addition, human factors consideration demonstrated that carpet is the preferred floor coverings for control rooms.
1097-4-83	94	C-6.1.2.1	Electrical raceways under control room floors or above suspended ceilings over 1 sq. ft. cross sectional area Are required to have automatic suppression inside. This type of plenum would typically have plenum rated cables or at a minimum have low voltage control and signal cables. Automatic fire suppression is not necessary for these areas. This requirement should be deleted.

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1097-4-84	94	C-6.1.3	Third paragraph starting with "If division": Change the "and" to an "or". RG 1.75 does not require both.
1097-4-85	96	C-6.1.6	Section 6.1.6 (page 96): It would be an enhancement to change the title to "Remote Shutdown Panels." The first sentence should be deleted. Again the term "important to safety" is used instead of "post-fire safe shutdown."
1097-4-86	99	C-7.2	States that alternates may be acceptable under the exemption process. This only applies to Appendix R plants. This section should be revised accordingly.
1097-4-87	112	Glossary	The definition of "important to safety" is very broad and could now apply to most power block systems, structures, and components (SSCs). This is a change beyond the intended "compilation of the fire protection requirements" from the existing regulations.