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**Subject:** NUBARG Comments on NRC Draft Feasibility Criteria

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January 26, 2004

Michael Lesar, Chief  
Rules and Directives Branch  
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Mail Stop T6-D59  
Washington, DC 20555-0001

**Subject:        Comments on Draft Interim Criteria for Determining the  
Acceptability of Manual Actions to Achieve Post-Fire Safe Shutdown**

Dear Mr. Lesar:

The U.S. Nuclear Regulatory Commission ("NRC" or the "Commission") Staff (the "Staff") issued a *Federal Register* Notice<sup>1</sup> of opportunity for public comment regarding a proposed interim enforcement policy addressing reliance on operator manual actions<sup>2</sup> to achieve post-fire safe shutdown.<sup>3</sup> Specifically, the Staff requested comments on draft criteria for determining the feasibility of those actions while it conducts rulemaking on this matter. The

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<sup>1</sup> Notice, Draft Criteria for Determining Feasibility of Manual Actions to Achieve Post-Fire Safe Shutdown, 68 Fed. Reg. 66,501 (Nov. 26, 2003). *See also* SECY-03-100, "Rulemaking Plan on Post-Fire Operator Manual Actions" (June 17, 2003), and NRC Memorandum, "Staff Requirements – SECY-03-100 – Rulemaking Plan on Post-Fire Operator Manual Actions" (Sept. 12, 2003).

<sup>2</sup> "Operator manual actions refer to those actions taken by operators to manipulate components and equipment from outside the main control room to achieve and maintain post-fire safe shutdown." 68 Fed. Reg. 66,502.

<sup>3</sup> Subsequently, the NRC extended the comment period to January 26, 2004. Extension, Draft Criteria for Determining Feasibility of Manual Actions to Achieve Post-Fire Safe Shutdown, 68 Fed. Reg. 69,730 (Dec. 15, 2003).

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Nuclear Utility Backfitting and Reform Group ("NUBARG")<sup>4</sup> has followed the Staff's activities with interest.

## I. BACKGROUND

The proposed interim enforcement discretion relates to the regulatory provisions for fire protection of safe shutdown capability set forth in 10 C.F.R. Part 50, Appendix R, Section III.G. The current issue involves criteria listed in Section III.G.2 for separating redundant safe shutdown equipment and associated non-safety circuits that could cause abnormal operation of redundant safe shutdown equipment. The Staff explains in its proposal that some licensees have previously interpreted NRC guidance as allowing operator manual actions as part of a safe shutdown strategy without NRC prior approval, as long as the reliance on operator manual actions did not adversely affect the ability to achieve and maintain safe shutdown.<sup>5</sup>

We believe that the Staff is also aware that numerous operator manual actions were reviewed during inspections of licensees' fire protection programs and would agree that the Staff's position regarding operator manual actions had not previously been clearly articulated to the industry. Further, the industry (through the Nuclear Energy Institute) has maintained that the current NRC position represents a change in Staff position, in that the Staff has previously considered certain operator manual actions acceptable for post-fire safe shutdown strategies, whether through specific NRC approval in a safety evaluation or through NRC oversight of fire protection programs over the last twenty years.<sup>6</sup>

The Staff is considering rulemaking that would allow a licensee to perform an analysis and demonstrate that operator manual actions may, in some instances, provide adequate protection for achieving post-fire safe shutdown in lieu of applying the separation criteria in Section III.G.2. As part of its draft interim enforcement policy, the Staff proposes that licensees may rely on operator manual actions rather than comply with these separation criteria if the fire

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<sup>4</sup> NUBARG is a consortium of utilities (representing a number of operating power reactors), which was formed in the early 1980s and actively participated in the development of the NRC's backfitting rule (10 C.F.R. § 50.109) in 1985. NUBARG has subsequently monitored the Staff's implementation of the backfitting rule and regulatory reform efforts.

<sup>5</sup> 68 Fed. Reg. 66,502.

<sup>6</sup> See A. Marion (NEI) to J. Hannon (NRC), "Use of Manual Actions to Achieve Safe Shutdown for Fire Events" (Jan. 11, 2002).

area where the fire occurs has fire detectors and an automatic fire suppression system, and if the manual actions relied upon are consistent with ten separate draft feasibility criteria.<sup>7</sup>

## II. COMMENTS AND RECOMMENDATIONS

In support of providing interim enforcement discretion, the Staff has concluded that (1) there is insufficient evidence that the generic use of operator manual actions poses a safety concern; (2) that enforcement may not be the best remedy for resolution of the situation; and (3) that licensees faced with enforcement actions might submit numerous exemption requests, diverting NRC resources from more significant safety issues.<sup>8</sup> NUBARG agrees with these conclusions but disagrees that an interim enforcement discretion policy is necessary because it implies that licensees have failed to comply with NRC regulations. Instead, NUBARG recommends that the Staff “grandfather” the existing operator manual actions credited in licensees’ fire protection programs and, until rulemaking is final, establish a grace period in which licensees may review operator manual actions and take corrective actions for those that may not meet all of the feasibility criteria. NUBARG also recommends that the draft feasibility criteria be modified to eliminate the requirement that fire detection and suppression be installed in the area where the fire is assumed to occur. We provide a background of the issue and discuss each of NUBARG’s suggested modifications in detail below.

### A. Grandfather Existing Operator Manual Actions

Regarding reliance on operator manual actions, the industry has, in good faith, relied on its interpretation of NRC regulations and Staff guidance and continued oversight for the past 20 years in implementing fire protection programs to meet the requirements of Appendix R. In fairness to the regulated industry for its good-faith efforts, the Staff should grandfather those operator manual actions currently relied upon in a fire protection program until the rulemaking is final. By establishing an “interim enforcement policy,” the Staff implies that the industry is in noncompliance with regulatory requirements that include at least some provisions addressing operator manual actions (*i.e.*, Section III.G.1(a) refers to ensuring that one train of equipment “necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage”). Notwithstanding that the current operator manual actions would be grandfathered, the Staff would issue final “interim” feasibility criteria for assessing operator manual actions until rulemaking is complete.

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<sup>7</sup> The ten draft feasibility acceptance criteria included are: available indications; environmental considerations; staffing and training; communications; special equipment; procedures; local accessibility; demonstration; complexity and number; and equipment pre-conditions. 68 Fed. Reg. 66,502, 66,503.

<sup>8</sup> 68 Fed. Reg. 66,502.

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By grandfathering the current operator manual actions relied upon for post-fire safe shutdown, the Staff would allow licensees to perform a systematic review of the actions against the final feasibility criteria in preparation for the final rulemaking without further NRC oversight during the interim period until rulemaking is complete. If during its review a licensee identifies a safety concern with the feasibility of specific operator manual actions, it would identify the concern in its corrective action program, establish appropriate compensatory measures, and determine whether the condition would be reportable to the NRC. The condition would be documented and resolved in accordance with the licensee's corrective action program.

Under this proposal, since many plants have been operating based upon utilization of operator manual actions and the NRC has concluded that such operation does not pose a significant safety risk, it would appear that those plants should be able to continue operation without modification of their approach regarding operator manual actions. However, operator manual actions that are newly incorporated into a fire protection program would be subject to the final feasibility criteria during the interim period until rulemaking is complete. This approach would ensure that licensees address the feasibility of operator manual actions through a methodical review, and would also preclude the need for submitting numerous exemption requests for those that do not meet all elements of the feasibility criteria until the final rulemaking is complete.

If the Staff elects not to grandfather current operator manual actions, the Staff should discuss in its path-forward policy (called other than an enforcement discretion policy) a grace period for licensees to complete their assessment of operator manual actions, and the Staff's expectations regarding corrective actions until the rulemaking is complete and full compliance with the new requirements is assured. Particularly, the Staff should address whether it expects licensees to submit exemption requests in the interim or await the final rulemaking.<sup>9</sup> In addition, the Staff should clarify that licensees may employ compensatory measures consistent with their fire protection programs until compliance is assured, even if those compensatory measures remain in place for an extended period during the rulemaking activities and subsequently (*e.g.*, while the Staff reviews exemption requests submitted for compliance with the final rule). Establishing compensatory measures would be consistent with NRC Staff guidance<sup>10</sup>

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<sup>9</sup> We note that exemptions are required only for Appendix R plants. Post-Appendix R plants fall into a different category, as the Staff discusses in detail in SECY-03-100.

<sup>10</sup> See Generic Letter ("GL") 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections On Resolution of Degraded and Nonconforming Conditions and On Operability" (Nov. 7, 1991), and GL 91-18, Revision 1, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions" (Oct. 8, 1997).

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and the recent internal NRC Staff position that discusses how to credit the operator manual actions as compensatory measures in lieu of a fire barrier.<sup>11</sup>

**B. Fire Detection and Fire Suppression**

NUBARG understands that some licensees have relied on operator manual actions for fire areas lacking fire detection and/or suppression. By imposing a general requirement in the draft interim feasibility criteria rather than providing licensees the flexibility to assess the safety and risk significance of a lack of fire detection and/or suppression for a given fire area, we believe that the anticipated final interim feasibility criteria may have unintended consequences and unnecessarily restrict the policy's use by some licensees. Therefore, NUBARG recommends that the Staff reconsider its proposed requirement and instead specify in the final interim feasibility criteria that a licensee may assess the impact of a lack of fire detection and/or an automatic fire suppression for those fire areas where operator manual actions are credited for achieving post-fire safe shutdown. An assessment could address such issues as (1) other fire protection features in the area, (2) how an operator may become aware of a fire in the area, (3) fire hazards and combustible loadings in the area, (4) the availability of manual fire suppression in the fire area, and (5) whether the NRC has previously approved any exemptions in this regard for the fire area. This recommendation is consistent with a risk-based approach and is based on the following considerations:

- The regulations already include an option to apply an alternative or dedicated shutdown approach when the separation criteria of Section III.G.2 cannot be met. Licensees already have an option to apply the alternate shutdown provisions in Section III.G.3, which provides that certain operator manual actions may be credited for post-fire safe shutdown, and specifies that fire detection and a *fixed* fire suppression system must be installed in the fire area of concern.<sup>12</sup> The Staff's

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<sup>11</sup> P. Qualls to S. Weerakkody, NRC Memorandum, "White Paper on Alternative Fire Protection Compensatory Measures" (Aug. 20, 2003).

<sup>12</sup> Appendix R, Section III.G.3 provides an alternative "[w]here the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section" or "[w]here redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems." 10 C.F.R. Part 50, Appendix R, Section III.G.3 ¶¶ (a) and (b). The alternative involves performing "alternative or dedicated shutdown capability" for the fire area under consideration, and specifies the additional provision that "fire detection and a *fixed fire suppression system* shall be installed in the area, room, or zone under consideration" (*emphasis added*). 10 C.F.R. Part 50, Appendix R, Section III.G.3. In accordance with current NRC guidance, alternative shutdown is acceptable in both of the following (footnote continued)

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proposed interim enforcement discretion may be more restrictive than current regulatory provisions or simply provide an already existing regulatory option for some fire areas.

- The risk of significant damage from fires in nuclear power plants is low. A recent NRC-supported study of fire incidents to gain fire risk insights concluded that current plant improvements as a result of Appendix R are likely the reason for “[t]he lack of any fires that have significantly challenged nuclear safety at any plant in the U.S. since 1975.”<sup>13</sup>
- Studies indicate, in general, the current low risk and low safety significance of a lack of fire detection and/or an automatic fire suppression system. For example, in a Sandia National Laboratories presentation at the 2001 NRC Fire Risk Research Workshop, insights and trends from a review of approximately 1300 fire events at U.S. nuclear power plants were discussed.<sup>14</sup> The presentation indicated that (1) since the issuance of 10 C.F.R. Part 50, Appendix R, the number of fire events reports appears relatively flat; (2) the majority of fires are manually detected (e.g., by security patrols, in-plant personnel, operators, work-related fire watches); (3) the majority of fires are suppressed manually (e.g., by plant fire brigade, fire watches, other plant personnel such as security); (4) very few fires involve actuation of fixed fire suppression systems; and (5) many fires are self-extinguished fires.
- Relying on operator manual actions may not increase fire risk in all fire areas. An NRC contractor’s review of the proposed feasibility criteria indicates that, based on fire risk assessments, even if a licensee credits operator manual actions, (1) it may be that for some fires even without completion of the proper operator manual actions, the risk significance may be low compared with other fires, other external events, or other internal event scenarios; and (2) on that basis, in

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situations: (1) operator manual actions associated with equipment outside the fire area under consideration; or (2) operator manual actions in the same fire area, but independent of the room or zone under consideration. NRC Regulatory Guide (“RG”) 1.189, “Fire Protection for Operating Nuclear Power Plants” (April 2001), at 93. (RG 1.189 is a compilation of previous NRC fire protection program guidance.)

<sup>13</sup> NUREG/CR-6738, “Risk Methods Insights Gained From Fire Incidents” (Sept. 2001), at 52, 53.

<sup>14</sup> Presentation, USNRC Fire Risk Research Workshop, Sandia National Laboratories, “Detection and Suppression” (Aug. 23, 2001).

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assessing reliance on operator manual actions, the risk potential of the fire scenarios of interest if the actions are not (or cannot) be taken should be considered.<sup>15</sup>

- Fire hazards analyses can provide insights regarding the fire risk of specific configurations and shutdown strategies for a given fire area. Fire hazards analyses have always been an inherent part of the process for implementing fire protection programs, and licensees are familiar with performing these analyses.<sup>16</sup> For fire areas without fire detection and/or automatic fire suppression, licensees may already have results of fire hazards analyses demonstrating the low risk of fire in these areas. The NRC and industry efforts continue to improve fire-modeling techniques,<sup>17</sup> which may be useful in assessing the need for fire detection and/or automatic fire suppression for a specific fire area.
- Licensees may already have exemptions for a lack of fire detection and/or automatic fire suppression for a given fire area. The NRC has previously granted exemptions for the lack of fire detectors and/or automatic suppression in instances where a licensee provided adequate justification through an assessment of the fire hazards in the area and where modifications would not enhance fire protection safety.<sup>18</sup>

### III. CONCLUSION

NUBARG urges the Staff to consider the recommendations discussed above as alternatives to the draft proposal. The related matter has recently been the focus of significant resources on the part of both the industry and the NRC Staff. The regulatory history indicates that the position currently espoused by the Staff was not previously clarified and, in some cases, is inconsistent with Staff guidance regarding post-fire operator manual actions credited under

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<sup>15</sup> Sandia National Laboratory to NRC, Letter Report, "Risk Insights Related to Post-Fire Operator Manual Actions" (Sept. 19, 2003).

<sup>16</sup> See, e.g., Section 1.2, "Fire Hazards Analysis," of RG 1.189.

<sup>17</sup> See, e.g., S. Newberry, RIC 2003 Fire Protection, Session T10, "Advanced in Fire Modeling and Fire PRA" (April 17, 2003).

<sup>18</sup> See, e.g., D. Muller (NRC) to E. Utley (Carolina Power & Light Company), "Exemption from Requirements of Appendix R to 10 CFR Part 50, Section III.G and J" (Dec. 30, 1986), listing general criteria for accepting alternative fire protection configurations, such as a lack of fire suppression in an area.



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one or more of the provisions of 10 C.F.R. Part 50, Appendix R, Section III.G. In summary, NUBARG recommends that (1) in lieu of establishing an interim enforcement discretion policy, the NRC should consider grandfathering current operator manual actions and (2) in establishing interim feasibility criteria that can be used by licensees for assessing operator manual actions in the interim period until rulemaking is complete, the NRC should consider allowing licensees to determine the need for fire detection and fire suppression rather than require fire detection and fire suppression be installed in each affected fire area. Please contact us if you have any questions regarding NUBARG's comments and recommendations.

Sincerely,

*Original signed by P. Campbell for T. Poindexter*

Thomas C. Poindexter  
Patricia L. Campbell  
Counsel to the NUBARG

cc: C. Ader, Chairman  
Committee to Review Generic Requirements