

# RULEMAKING ISSUE

## (Notation Vote)

June 17, 2003

SECY-03-0100

FOR: The Commissioners

FROM: William D. Travers  
Executive Director for Operations /RA/

SUBJECT: RULEMAKING PLAN ON POST-FIRE OPERATOR MANUAL ACTIONS

### PURPOSE:

To obtain the Commission's approval to proceed with rulemaking to revise fire protection program requirements contained in Appendix R of 10 CFR Part 50 and associated guidance to resolve a regulatory compliance issue. This paper also requests the Commission's approval of the staff's plan to propose an interim enforcement policy to exercise enforcement discretion related to the fire protection compliance issue pending completion of rulemaking.

### BACKGROUND:

NRC's fire protection requirements prescribe a defense-in-depth approach to protect safe shutdown functions through (1) fire prevention activities (limits on combustibles through design, construction, and administrative controls); (2) the ability to detect, control, and suppress a fire rapidly (fixed systems and trained fire brigades); and (3) physical separation of redundant safe shutdown trains (distance and fire barriers).

10 CFR 50.48 imposed the fire protection requirements of Appendix R, Paragraph III.G.2, for nuclear power plants licensed to operate before January 1, 1979. Appendix R, Paragraph III.G.2, specifies three methods, any of which is acceptable, to provide reasonable assurance that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant. The three acceptable methods of protecting at least one shutdown train during a postulated fire when redundant trains are located in the same fire area are:

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1. Separation of the redundant system by a passive barrier able to withstand a fire for at least 3 hours; or
2. Separation of the redundant system by a distance of twenty feet containing no intervening combustible material, together with fire detectors and an automatic fire suppression system; or
3. Separation of the redundant system by a passive barrier able to withstand a fire for one hour, coupled with fire detectors and an automatic fire suppression system.

Plants licensed to operate after January 1, 1979, are not required to specifically meet Appendix R regulations. For these plants, the staff reviewed the licensees' fire protection programs and commitments against the regulatory guidance in Branch Technical Position (BTP) CMEB 9.5-1 or the Standard Review Plan (NUREG-0800) which incorporated the provisions of Appendix R, Paragraph III.G.2. These commitments would then become part of the licensing basis for the post-1979 plants.

During recent inspections of licensee fire protection programs, concerns have arisen about licensee compliance with fire protection of redundant safe shutdown systems that are located in the same fire areas. The principal nature of the concerns is summarized as follows:

- (a) Instead of providing separation and fire protection systems to protect the safe shutdown capability of redundant trains located in the same fire area, there are numerous instances where licensees are relying on "operator manual actions" that have not been approved by the NRC. "Operator manual actions" refer to those actions needed to achieve and maintain safe shutdown during a fire by using operators to perform field manipulations of components that would not ordinarily be necessary if the train were protected from fires as prescribed by the regulations or licensing commitments. Specifically, the staff is concerned that many of these licensees have implemented operator manual actions without NRC approval of an exemption to Appendix R (for pre-1979 plants) or a deviation to their fire protection program commitments (post-1979 plants).
- (b) The staff is also concerned that in some instances, where operator manual actions are relied upon to ensure safe shutdown capability, these operator manual actions may not be feasible when factors such as complexity, timing, environmental conditions, staffing, and training are considered.

It is the staff's understanding that most of the unapproved operator manual actions came about during the resolution of the Thermo-Lag fire barrier issue in the mid-1990s. The staff believes that many licensees utilized operator manual actions rather than upgrade or replace the Thermo-Lag fire barriers that were originally installed to comply with Appendix R requirements. Furthermore, it is the staff's understanding that most of the licensees that rely on unapproved operator manual actions have done so by making changes to their fire protection program in accordance with the license condition, which allows changes to be made, without NRC approval, provided that the changes have no adverse impact on the ability to achieve or maintain safe shutdown in the event of a fire. The staff also notes that this change process is stipulated in §50.48 (f)(3) for decommissioning plants. The current regulation requires such changes to be approved through the exemption or deviation process.

When the fire protection regulations were promulgated, it was recognized that there would be plant conditions and configurations where strict compliance with the prescriptive fire protection features specified in Appendix R or associated guidance would not significantly enhance the level of fire safety already provided by the licensee. In cases where a fire hazards analysis demonstrated that certain operator manual actions provided an equivalent level of fire safety to Appendix R or associated guidance, it was expected that licensees would seek NRC approval to use these specified operator manual actions in lieu of providing separation and fire protection systems to protect the safe shutdown capability (both pre- and post-1979 plants). The staff has granted exemptions to the technical requirements of Appendix R (pre-1979 plants) and approved deviations from associated guidance (post-1979 plants) that permitted specific operator manual actions as an acceptable alternative to the fire protection separation requirements. However, the staff had not envisioned that licensees would use their change process to implement a broader use of operator manual actions without NRC approval.

The staff sought advice from the Office of General Council (OGC) as to whether Appendix R, Paragraph III.G.2, permits licensees to rely on operator manual actions in lieu of fire barriers. OGC advised the staff that the regulation cannot be reasonably interpreted to permit reliance upon operator manual actions with respect to redundant safe shutdown. Therefore, any pre-1979 licensee that is using operator manual actions in lieu of fire barrier separation without an NRC-approved exemption is not in compliance with the regulations.

Fire protection programs for post-1979 plants generally commit to Appendix R, Paragraph III.G.2 (or equivalent guidance) as part of their initial licensing basis. However, commitment to Appendix R, Paragraph III.G.2 (or equivalent) is not legally binding for post-1979 plants. Use of operator manual actions in lieu of fire barrier separation without NRC approval may or may not be a compliance issue depending on how the change was justified and analyzed under the licensee's change control process to demonstrate that the operator manual actions are feasible and the ability to achieve and maintain safe shutdown has not been adversely affected. However, because of the lack of regulatory criteria on the use of operator manual actions for post-fire safe shutdown, post-1979 licensees would have to develop and defend the criteria governing use of operator manual actions on a case-by-case basis, and demonstrate that they would not adversely impact the ability to achieve or maintain safe shutdown in the event of a fire, as stipulated in plant license conditions.

Regardless of whether or not operator manual actions can be implemented by the licensee without NRC approval, the staff is more concerned about the technical feasibility of such actions. In the past, when the NRC staff had specifically reviewed and approved post-fire operator manual actions (by exemption or deviation), the staff's approvals generally included the following feasibility considerations:

- Are procedures and/or training for the operator manual actions adequate? Is there adequate time, staffing, or diagnostic instrumentation, based on the progression of the fire or the thermal-hydraulic conditions of the reactor, to permit feasible use of the operator manual actions?
- Are operator manual actions conducted in locations with environmental conditions suited for the tasks to be performed (i.e., have temperature, radiation, lighting, accessibility, or other limiting habitability problems been analyzed)?

The staff intends to provide criteria for feasible operator manual actions for licensees' use in determining the acceptability of their plant-specific post-fire operator manual-actions.

#### DISCUSSION:

The staff has had extensive interactions and dialogue with the industry on the manual action compliance concerns over the last year, including exchanged correspondence, meetings with industry representatives, and a presentation by the staff on the issue at a Nuclear Energy Institute (NEI) fire protection forum. NEI has surveyed licensees as to the extent that unapproved operator manual actions are relied on in lieu of separation and fire protection systems when redundant trains are located in the same fire area. In a meeting with the staff on June 20, 2002, NEI indicated that the use of unapproved operator manual actions in the event of a fire is pervasive throughout the industry and that most licensees have at least some instances where they rely on operator manual actions without NRC approval (via exemption or deviation). However, the industry does not agree with the staff that this is a compliance issue and has stated that the use of operator manual actions to achieve safe shutdown is acceptable, without prior NRC approval, as long as the reliance on operator manual actions does not adversely affect the ability of a plant to achieve and maintain safe shutdown.

While use of unapproved operator manual actions may contribute to increases in risk from fires, results from staff inspections to date indicate that there is insufficient evidence that the generic use of these actions poses a safety issue. Therefore, the staff does not consider this an immediate safety issue that requires prompt action. Furthermore, the staff considers that enforcement may not be the best remedy for this situation. Furthermore, a concerted enforcement effort related to identifying and correcting manual action compliance on a plant specific basis creates a prospect of significant resource expenditure without clear safety benefits. Licensees faced with enforcement actions might flood the NRC with exemption or deviation requests, which could divert NRC resources from more significant safety issues and may not result in any net safety improvement if the operator manual actions are determined to be acceptable.

To resolve the regulatory compliance issue, the staff has evaluated the options in the attached rulemaking plan, and has concluded that generic guidance and acceptance criteria for feasible operator manual actions should be developed. The staff believes that it can develop generic acceptance criteria that, when used in conjunction with regulatory guidance, would provide licensees a way of assessing the acceptability of currently unapproved operator manual actions. Documenting compliance with manual action feasibility criteria would demonstrate that safety has been maintained and that the operator manual actions do not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Licensees could assess their plant specific operator manual actions against the generic criteria and determine what if any additional actions are necessary. However, implementation of this approach would require both rulemaking and interim enforcement policy approval by the Commission.

Specifically, the staff recommends that the Appendix R fire protection regulations and associated guidance be revised to permit the use of operator manual actions that meet certain acceptance criteria. The manual action acceptance criteria would be included in the rule language, with detailed supportive guidance in a regulatory guide. The staff has concluded that amending Appendix R and associated guidance to allow the use of feasible operator manual actions is a safe and acceptable method for protecting safe shutdown capability from a fire (in

lieu of fire barrier separation). Furthermore, the staff believes that this rulemaking would have a positive effect on safety by establishing generic acceptance criteria for feasible operator manual actions. The criteria should provide a reasonable assurance that post-fire operator manual actions are uniformly evaluated by the licensee and should reduce variability and ambiguity in the licensing basis justifications for operator manual actions. By codifying the use of operator manual actions that meet feasibility criteria, the staff will define what operator manual actions can be utilized without adversely affecting the ability to achieve and maintain safe shutdown in the event of a fire. Upon establishment of generic criteria for feasible operator manual actions, licensees could then use their fire protection program change control process to adopt operator manual actions without NRC approval. This course of action would also permit licensees that currently rely on unapproved operator manual actions to achieve compliance through appropriate analysis and documentation against the feasibility acceptance criteria without NRC review and approval.

The staff notes that there may be policy concerns related to this recommended course of action. The proposed rulemaking would endorse the practice of using acceptable operator manual actions as substitute for fire barriers. This is a significant policy change in that NRC has previously preferred the use of physical fire barriers over the use of operator manual actions, given the choice. In addition, there is a policy concern regarding the use of operator manual actions as a resolution of the Thermo-Lag issue. There appears to have been a Commission expectation that Thermo-Lag, where found to be deficient, was to be resolved by replacement or upgrade rather than through the use of operator manual actions. The basis for this expectation is a statement made to Congress by Chairman Selin in March 1993 (discussed in the attached rulemaking plan). The staff has no safety concerns about using feasible operator manual actions as an alternative to deficient Thermo-Lag fire barriers where such actions have been previously approved by the staff or where the operator manual actions have been assessed by a licensee against generic acceptance criteria.

The staff's recommended approach is also justified based on an assessment against the agency's strategic performance goals.

- Amending Appendix R and associated guidance will maintain safety and increase public confidence by defining technically acceptable generic criteria for operator manual actions which can be used to assess the feasibility of existing or future operator manual actions employed by licensees.
- Development of generic criteria for feasible operator manual actions will be an efficient and effective method of providing quality and uniformity in licensee assessments and documentation of the acceptability of plant specific operator manual actions.
- Amending Appendix R and associated guidance to permit the use of feasible operator manual actions without the need for NRC approval should avoid unnecessary NRC and licensee regulatory burden and resource expenditure associated with exemption or deviation processing.
- Amending Appendix R and associated guidance to permit the use of feasible operator manual actions should result in more effective use of resources by both licensees and the NRC with respect to resolving existing manual action compliance issues encountered during plant specific inspections.

To avoid any backfit issues with the recommended rulemaking, it would be proposed as a voluntary alternative to the current requirements of Appendix R, Paragraph III.G.2. However, the staff notes that the nuclear power industry may view the current regulation as permitting

operator manual actions for safe-shutdown, which has not been consistent with the staff's interpretation of the regulation.

#### ENFORCEMENT CONSIDERATIONS:

Even with Commission consent to proceed with rulemaking, licensees using unapproved operator manual actions would be in non-compliance until the rulemaking is processed and the regulations and guidance are formally revised. The staff expects that licensees continue to review and document the feasibility of operator manual actions. However, the rulemaking in progress will not suspend staff inspection and findings of non-compliance nor avoid potential enforcement proceedings and the related potential for exemption or deviation requests associated with operator manual actions. The staff recently issued a fire protection inspection procedure 71111.05, dated March 06, 2003, to provide guidance for inspectors to consistently document inspection findings. To address the potential unnecessary regulatory burden during the interim rulemaking period from a large number of exemption requests, the staff would need to adopt conforming enforcement changes, specifically, the staff will also need to propose an interim enforcement policy. Upon receiving the Commission approval of the attached rulemaking plan, the staff will develop an interim enforcement policy to allow discretion and will refrain from taking enforcement action for those licensees that rely on unapproved operator manual actions, provided these licensees have documented the feasibility of their operator manual actions in accordance with the staff's proposed preliminary generic acceptance criteria. Although the staff has had numerous interactions with the industry on the manual action compliance concerns over the last year and discussed on a high level what constitutes feasible operator manual actions, there has not been a focus on the details of manual action criteria. Therefore, should the Commission approve the attached rulemaking plan, the staff would engage stakeholders in at least one public meeting to discuss the detailed manual action feasibility criteria and how it would be used in interim enforcement policy. Shortly after the public meeting, a specific interim enforcement policy will be submitted to the Commission for approval. If the Commission approves the interim enforcement policy, it will be published in the *Federal Register* together with a Regulatory Information Summary (RIS). The RIS will convey the staff's regulatory position and expectations that licensees will review existing operator manual actions to verify that these actions are feasible. The RIS will also summarize for the industry and public the expected change in enforcement policy and where the agency is headed with fire protection rulemaking.

#### RESOURCES:

The staff estimates that the resources to conduct the rulemaking, develop the associated guidance, and process the interim enforcement policy are 3.0 full-time equivalents (FTE) over the period FY 2003 - 2004. The staff has budgeted 0.4 FTE for FY 2003 to prepare the rulemaking plan and manage the rulemaking. The initial Office of Research (RES) support to prepare the proposed rule is estimated to be 0.2 FTE and \$60K in contract technical assistance. The resources, while currently not explicitly identified in the RES fire protection research plan, may be allocated from other fire research activities based on priority and timing. If the Commission approves the rulemaking plan, the staff will budget the remaining resources

through the planning, budgeting and performance management (PBPM) process. In addition, contract technical assistance may be needed to revise the regulatory guidance in support of the rulemaking and develop the regulatory analysis. It is estimated that these items will cost no more than \$50K in FY03 and \$50K in FY04. The staff will address the need for any contract funding through the PBPM process.

COORDINATION:

OGC has no legal objection to the rulemaking plan. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objection to its content. The Office of Enforcement (OE) concurs with the staff-recommended approach to an interim enforcement policy for licensees using unapproved fire protection related operator manual actions.

RECOMMENDATION:

That the Commission:

1. Approve the attached rulemaking plan to revise the reactor fire protection regulation and the associated guidance, as recommended in Option 3 of the rulemaking plan.
2. Approve the staff's approach to develop an interim enforcement policy relying on preliminary manual action acceptance criteria as discussed in the attached rulemaking plan.
3. Release the rulemaking plan to the public to facilitate staff interactions with external stakeholders.

*/RA/*

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Executive Director  
for Operations

Attachment: Rulemaking Plan

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Attachment: Rulemaking Plan

**ACCESSION NO:ML023180628 (package)**

**SECY: ML023180599**

**Attachment: ML023180613**

**\*See previous concurrence**

**\*\*Concurred via Email**

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