



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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Appendix B

RULEMAKING ISSUE
NOTATION VOTE

SECY-02-XXXX

FOR: The Commissioners
FROM: William D. Travers
Executive Director for Operations
SUBJECT: RULEMAKING PLAN ON FIRE PROTECTION 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).

Section of 10 CFR
10 CFR 50.48 packfit the fire protection requirements of Appendix R, Paragraph III.G.2, for plants licensed to operate before January 1, 1979. Appendix R, Paragraph III.G.2 specifies three methods, any one 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: *as follows*

1. Separation of the redundant system by a passive barrier able to withstand a fire for at least three hours; or
2. Separation of the redundant system by a distance of ²⁰ twenty feet containing no intervening combustible material, together with fire detectors and an automatic fire suppression system; or

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- 3. Separation of the redundant system by a passive barrier able to withstand a fire for ¹one hour, ~~coupled~~ ^{fray} with fire detectors and an automatic fire suppression system.

Plants licensed to operate ^{both of} after January 1, 1979, are not required to meet Appendix R regulations. For these plants, the staff reviewed the fire protection programs 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. Most licensees committed in their fire protection plans to meet the Appendix R, Paragraph III.G.2, ^{or} equivalent regulatory guidance. These commitments would ^{become} 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 are summarized as follows:~~

(1) ^{There are two performed}
 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 ^{many} instances where licensees are relying on "manual actions" that have not been approved by the NRC. ^{Manual actions refer to those actions needed} ~~Manual actions refer to those actions needed to achieve and maintain safe shutdown during a fire by using operators to perform field manipulations of system 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 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).~~

(2) ^{The manual}
 The staff is also concerned that in some instances, where manual actions are relied upon to ensure safe shutdown capability, the 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 manual actions ^{original} came about during the resolution of the Thermo-Lag fire barrier issue in the mid-1990s. The staff believes that many licensees utilized 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 manual actions have done so on the basis of a 10 CFR 50.59-like change process allowed by their operating licenses. The change process is specified in a standard license condition that allows licensees to change their fire protection program without NRC approval provided that the change has no adverse impact on the ability to achieve or maintain safe shutdown in the event of a fire.

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 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 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 many exemptions to the

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technical requirements of Appendix R (pre-1979 plants) or approved deviations from associated guidance (post-1979 plants) that permitted 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 for such significant changes 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 manual actions in lieu of fire barriers. OGC advised the staff that the regulation cannot be reasonably interpreted to permit reliance upon manual actions with respect to redundant safe shutdown. Therefore, any pre-1979 licensee that is using manual actions 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 for equivalent guidance as part of their initial licensing basis. However, commitment to Appendix R, Paragraph III.G.2 for equivalent is not legally binding for post-1979 plants. Use of manual actions in lieu of separation and fire protection systems 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 manual actions are feasible and the ability to achieve and maintain safe shutdown had not been adversely affected. However, because of the lack of regulatory criteria on use of manual actions for safe shutdown, post-1979 licensees would have to develop and defend the criteria governing use of manual actions on a case-by-case basis.

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

- Are procedures and/or training for the 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 manual actions?
- Are 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)?

However, since there are currently no generic criteria for feasible manual actions, the staff is uncertain as to what basis licensees (that rely on unapproved manual actions) used to determine the acceptability of the 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 to the extent that unapproved manual actions are used as a method of protecting a safe shutdown train during a postulated fire 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 manual actions for protecting a safe shutdown train in the event of a fire is pervasive throughout the industry and that most licensees have at least some instances where they rely on 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 numerous times that the use of manual actions to achieve safe shutdown is acceptable without prior NRC approval as long as the reliance on manual actions does not adversely affect the ability of a plant to achieve and maintain safe shutdown.

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As stated previously, while the staff is concerned that licensees have implemented manual actions without NRC approval, the staff is more concerned about the feasibility of these unapproved manual actions. It is presumed that most licensees used plant specific engineering judgement and oversight in implementation of manual actions. These changes would need to have been reviewed and approved by a plant onsite review committee. Even so, there is no assurance that all safety concerns related to manual actions have been appropriately assessed by all licensees. Because there is currently no generic guidance or acceptance criteria for what constitutes feasible manual actions, there is no objective way for the staff to determine if any given licensee's manual actions are feasible or otherwise acceptable without performing a detailed plant specific review.

The staff

While unfeasible actions might translate to increased core damage frequencies and ultimately increased risk from fires, there is no evidence that this is a generic safety issue, even though the manual actions have not been approved by the NRC. Notwithstanding the staff's concern that some unapproved manual actions may not be feasible, the staff believes that most manual actions are likely to be feasible based on robust change control procedures employed by licensees. Therefore the staff does not consider this an immediate safety issue that requires prompt action. However, because the question of manual action feasibility is associated with regulatory compliance, a remedy must be found.

are likely to be infeasible or represent a

Given the implied extent of this compliance issue, the staff believes that active enforcement may not be the best remedy for this situation. A concerted enforcement effort related to identifying and correcting manual action compliance on a plant specific basis creates the prospect of significant resource expenditures with uncertain 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 manual actions are determined to be acceptable.

Emergency

plant specific inspection and

To resolve the regulatory compliance issue, the staff has evaluated its options in the attached rulemaking plan, the staff has concluded that generic guidance and acceptance criteria for manual actions needs to 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 manual actions. Documenting compliance with manual action feasibility criteria would demonstrate that safety has been maintained and that the 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 manual actions against the generic criteria and determine what additional actions are necessary. However, implementation of this approach would require both rulemaking and interim enforcement policy approval by the Commission.

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Specifically, the staff recommends that the Appendix R fire protection regulations and associated guidance be revised to permit the use of manual actions that meet certain acceptance criteria. The manual action acceptance criteria would be included in the rule language along with detailed supportive guidance. The staff has concluded that amending Appendix R and associated guidance to allow the use of feasible manual actions is a safe and acceptable method for protection of 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 criteria for feasible manual actions. The criteria should ensure that manual actions are uniformly evaluated by the licensee and should reduce variability and ambiguity in the licensing basis justifications for manual actions. By codifying the use of manual actions that meet feasibility criteria, the staff will define what manual actions can be utilized without adversely affecting the ability to achieve and maintain safe shutdown in the event of a fire. Upon the establishment of generic criteria for feasible manual action, licensees could then use their fire protection program change control process to adopt manual actions without NRC approval. This course of action would also permit licensees that currently rely on unapproved manual actions to achieve compliance through appropriate analysis and documentation against the feasibility 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 effectively provides that manual actions that meet feasibility compliance criteria are as acceptable as physical fire barriers. This is a significant policy change in that NRC has previously preferred the use of physical fire barriers over the use of manual actions given the choice. In addition, there is a policy concern regarding the use of 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 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 manual actions as an alternative to deficient Thermo-Lag fire barriers where such actions have been previously approved by the staff or where the manual actions have been assessed by a licensee against generic acceptance criteria.

In summary, this approach is justified based on an assessment against the agency's strategic performance goals.

- Amending Appendix R and associated guidance will maintain safety by defining technically acceptable generic criteria for manual actions which can be used to assess the feasibility of existing or future manual actions employed by licensees.
- Development of generic criteria for feasible 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 manual actions.
- Amending Appendix R and associated guidance to permit the use of feasible manual actions without the need for NRC approval should avoid unnecessary (NRC and licensee's) burden and resource expenditure associated with exemption or deviation processing.
- Amending Appendix R and associated guidance to permit the use of feasible manual actions should reduce the resources expended by both licensees and the NRC with respect to resolving existing manual action compliance issues encountered during plant specific inspections.

The staff realizes that public confidence may be decreased by amending Appendix R to permit the use of manual actions because there is an appearance that regulations are being relaxed to resolve a compliance issue. However, the rulemaking process will permit sufficient opportunity for all stakeholders to comment on the technical criteria governing reliance on and feasibility of manual actions for post-fire safe shutdown which should help offset any reduction in public confidence concerning the technical adequacy of the staff's resolution of this compliance issue.

To avoid any backfit issues with the recommended rulemaking, ^{the rulemaking} it would be proposed as a voluntary alternative to the current requirements Appendix R, Paragraph III.G.2.

ENFORCEMENT CONSIDERATIONS

Even with Commission consent to proceed with rulemaking, licensees using unapproved manual actions may not be in compliance until the rulemaking is processed and the regulations and guidance are formally revised. In the interim, rulemaking, by itself, will not avoid potential inspection compliance issues and enforcement proceedings or the related potential of exemption or deviation requests associated with manual actions. To address this potential unnecessary regulatory burden during the interim rulemaking period, the staff would need to adopt conforming enforcement changes, specifically, the staff ~~will also~~ need to propose an interim enforcement policy. If the Commission approves the attached rulemaking plan, the staff ~~intends to develop an interim enforcement policy to exercise discretion and refrain from taking enforcement action for these licensees that rely on unapproved manual actions, provided these licensees have demonstrated and documented feasibility of their manual actions in accordance with preliminary generic acceptance criteria similar to those in the attachment (recognizing that the final acceptance criteria might be modified during the rulemaking process).~~ 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 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 ~~would~~ 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 summarize for the industry and public the expected change in enforcement policy and where the agency is headed with fire protection rulemaking.

RESOURCES

Resources to conduct the rulemaking, modify the associated guidance, and process the interim enforcement policy are estimated at 3.0 full-time equivalent (FTE) over the period FY 2003 - 2004 and are currently budgeted. 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 in its mid-year review.~~

See words in a bit.

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 manual actions in lieu of fire protection separation that have not been approved by the NRC.

RECOMMENDATION:

That the Commission:

1. Approve the attached rulemaking plan to revise 10 CFR Part 50, Appendix R, and *the* associated guidance, as recommended in Option 3 of the 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.

William D. Travers
Executive Director
for Operations

Attachment: Rulemaking Plan

Handwritten notes:
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Attachment: Rulemaking Plan

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