

FOIA 2003-0358

Appendix B

CGC / GSM (2003)

DRAFT

9-11-2002

**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
(REVISION TO APPENDIX R OF 10 CFR PART 50)

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 to resolve a regulatory compliance issue.

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 (trained fire brigades); and (3) physical separation of redundant safe shutdown trains. Appendix R, Paragraph III.G.2 of 10 CFR Part 50 specifies three approved methods, any one of which is an acceptable method, to ensure 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 methods of protecting at least one shutdown train during a postulated fire when redundant trains are located in the same fire area are:

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 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, couples with fire detectors and an automatic fire suppression system.

If a licensee is unable to satisfy the above requirements, then Appendix R specifies that alternative or dedicated shutdown capability and associated circuits shall be provided.

CONTACT: William C. Huffman, NRR/DRIP/RPRP
415-1141

7C 10

D/3

As a result of recent fire program inspections of licensees by the regions, the staff has determined that some licensees are not in compliance with Appendix R requirements in Paragraph III.G.2 for fire protection of safe shutdown capability. The nature of the non-compliance only involves some common fire areas in which redundant safe shutdown trains are both located. Specifically, in some instances:

- There are licensees whose safe shutdown trains do not have the physical fire barrier separations specified by the regulations for fire areas where both safe shutdown trains are located; and
- These licensees have not designated an alternate or dedicated shutdown system; and
- These licensees have not received NRC approval of an alternative method of compliance with Appendix R

Furthermore:

- These non-compliant licensee rely on “manual actions” instead of fire barriers to protect the safe shutdown capability of a redundant train. “Manual actions” refer to those actions needed to maintain functionality of a safe shutdown train during a fire by using operators to perform field manipulations of components that would not ordinarily be necessary if the train were protected by the prescribed fire barrier or separation distance as required by the regulations.
- These non-compliant licensees have taken credit for manual actions as an acceptable alternative to the Appendix R requirements based on a 50.59—like change process. The change process is 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
- The staff has provided many exemptions to the fire protection regulations of Appendix R that approved manual actions as an acceptable alternative to the physical fire barrier separation requirements; however, in the case of the non-compliant licensees, no NRC approval was sought or given
- It is the staff’s understanding that most of these non-compliant conditions came about during the resolution of the Thermo-Lag fire barrier material issue in the early 1990’s. The staff believes that many licensees utilized manual actions rather than upgrade or replace the Thermo-Lag fire barrier material that was originally used to comply with Appendix R requirements.

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. In the past, the NRC staff had specifically reviewed and approved by exemption licensee’s requests to rely upon manual action in complying with Paragraph III.G.2. However, the staff’s approvals were based on consideration of the feasibility of the manual actions involving factors such as complexity, timing, environmental conditions, and training. Many of the licensees identified in recent inspections as being in non-compliance with Paragraph III.G.2, because of their reliance on manual actions, have not considered these criteria.

DISCUSSION:

The staff has exchanged correspondence and had meetings with industry representatives from the Nuclear Energy Institute (NEI) on the non-compliance condition. NEI has surveyed licensees on the extent of the non-compliance condition. In a meeting with the staff on June 20, 2002, NEI indicated that the use of unapproved manual actions for maintaining safe shutdown capability during 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. 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.

Given the implied extent of the non-compliance condition, the staff is concerned that enforcing the current regulations will result in the expenditure of significant licensee and NRC resources in processing enforcement actions and/or exemption requests. The staff feels that the use of manual actions is not of sufficient safety concern to justify diversion of both licensee and staff resources from more safety significant issues.

However, the staff is concerned that some of the unapproved manual actions may not in all cases be feasible. Specifically, regional inspectors have found some examples of manual actions that were considered unfeasible to perform due to one or more of the following deficiencies:

- Procedures and/or training for the manual actions were inadequate, or
- There was not adequate time, staffing, or diagnostic instrumentation, based on the progression of the fire or the thermal-hydraulic conditions of the plant, to permit feasible use of the manual actions, or
- Manual actions were conducted in locations with environmental conditions ill-suited for the tasks to be performed (e.g., temperature, radiation, lighting, accessibility, or other limiting habitability problems)

Notwithstanding the staff's concern that some unreviewed manual actions may not always be feasible, the staff agrees that manual actions are generally feasible and have been frequently approved by the staff as an alternative for fire barrier protection of safe shutdown trains that are located in the same fire area. The staff believes that it can develop generic acceptance criteria that, when used in conjunction with detailed regulatory guidance, would provide licensees a way of assessing the acceptability of currently unapproved manual actions in a manner that maintains safety and does not adversely affect the ability to achieve and maintain safe shutdown.

The staff has evaluated its options in the attached rulemaking plan and recommends that the Appendix R fire protection regulations be revised to permit the use of manual actions, without prior NRC approval, provided the licensee can demonstrate that the manual actions meet certain acceptance criteria. These manual action acceptance criteria will be developed as part of the rulemaking. The staff anticipates that high level manual action acceptance criteria requirements will be placed in the rule language and detailed supportive guidance would be provided in an associated regulatory guide.

The staff can qualitatively justify its recommendation based on an assessment against the agency's strategic performance goals.

- The proposed rulemaking will maintain safety by ensuring that the manual actions currently in place (but not evaluated and approved by the NRC) will be assessed against generic acceptance criteria for manual actions.
- The proposed rulemaking will avoid significant regulatory burden on licensees compared to what would be expended should the NRC elect to enforce the current regulations.
- The proposed rulemaking will avoid significant NRC effort and resource expenditure associated with enforcing the current regulations or processing related exemptions.
- Public confidence may be decreased by the proposed rulemaking because there is an appearance that regulations are being relaxed to resolve a compliance issue. However, the rulemaking process will permit ample opportunity for all stakeholder to comment on the technical criteria governing reliance on manual actions for safe shutdown. Criteria governing the acceptable use of manual actions have been developed by the staff but have not been published for stakeholder input. Rulemaking, by providing an opportunity for stakeholder comment, may offset the reduction in public confidence concerning the staff's resolution of the proposed compliance issue.

As I discussed with you,

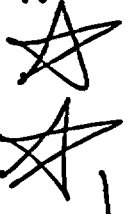
this would be difficult or impossible to achieve.

In summary, the proposed rulemaking will provide an alternate method for providing protection of safe shutdown capability from a fire by allowing the use of manual actions in lieu of fire barrier material. Use of this method would not require NRC prior approval when the manual actions are demonstrated to comply with generic acceptance criteria. This course of action will permit a majority of licensees that are non-compliant with current regulations to achieve compliance through appropriate analysis and documentation of their manual actions without NRC review and approval.

Wiensie has determined that

The staff notes that there may be policy concerns related to this recommended course of action. The proposed rulemaking could appear to imply that the staff finds manual actions equivalent to fire barrier protection. This is not the case. The staff would always prefer the use of physical fire barriers over the use of manual actions even if the safe shutdown capability can be adequately achieved and maintained during a fire with manual actions. In addition, there is a policy concern regarding the use of manual actions as a resolution of the Thermo-Lag issue. There is a perception 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 staff could find no basis for this perception besides a statement made to Congress by Chairman Selin in March 1993 (discussed in the attached rulemaking plan). The staff has no concerns about using manual actions as an alternative to deficient Thermo-Lag where such actions were approved by the staff or where the manual actions have been assessed against generic acceptance criteria.

NRC review and approval.



ENFORCEMENT CONSIDERATIONS

Until the regulations are formally revised and a final rule issued that permits the use of manual actions without NRC approval, most licensees will be non-compliant with Appendix R, Paragraph III.G.2 to some extent. The staff recommends enforcement discretion regarding existing violations of Appendix R, Paragraph III.G.2, where manual actions are used in lieu of

I have significant legal concern about this approach, esp. given discussion in RMP on p. 4

fire barrier protection without NRC approval. Contingent on the Commission's approval to resolve this compliance problem via rulemaking, the staff intends to issue an Enforcement Guidance Memorandum (EGM) which would allow feasible manual actions to be considered as minor violations for the interim period prior to a finalized amended rule. The staff will continue the existing practice of evaluating all manual actions used by licensees in lieu of Appendix R, Paragraph III.G.2 barriers to determine if the manual actions are feasible and no enforcement discretion would be exercised for manual actions that were found to not be feasible. The staff also plans to notify licensees of this intended course of action through a Regulatory Information Summary (RIS) upon the Commission's approval of the attached rulemaking plan.

RESOURCES

Resources to conduct the rulemaking are estimated at 2.5 full-time equivalent (FTE) over the period FY 2003-2004 and are currently budgeted.

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) has no objection to the rulemaking plan and concurs in it. OE specifically concurs with the staff recommendation of exercising enforcement discretion regarding existing violations of 10 CFR Part 50, Appendix R, Paragraph III.G.2 related to using manual action in lieu of fire barriers that have not been approved by the NRC.

RECOMMENDATION:

The staff recommends that the Commission approve the attached rulemaking plan to revise 10 CFR Part 50, Appendix R, as recommended in Option 4 of the plan.

The staff also recommends enforcement discretion for those licensees that currently rely on unapproved manual actions.

William D. Travers
Executive Director
for Operations

Attachment: Rulemaking Plan

fire barrier protection without NRC approval. Contingent on the Commission's approval to resolve this compliance problem via rulemaking, the staff intends to issue an Enforcement Guidance Memorandum (EGM) which would allow feasible manual actions to be considered as minor violations for the interim period prior to a finalized amended rule. The staff will continue the existing practice of evaluating all manual actions used by licensees in lieu of Appendix R, Paragraph III.G.2 barriers to determine if the manual actions are feasible and no enforcement discretion would be exercised for manual actions that were found to not be feasible. The staff also plans to notify licensees of this intended course of action through a Regulatory Information Summary (RIS) upon the Commission's approval of the attached rulemaking plan.

RESOURCES

Resources to conduct the rulemaking are estimated at 2.5 full-time equivalent (FTE) over the period FY 2003-2004 and are currently budgeted.

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) has no objection to the rulemaking plan and concurs in it. OE specifically concurs with the staff recommendation of exercising enforcement discretion regarding existing violations of 10 CFR Part 50, Appendix R, Paragraph III.G.2 related to using manual action in lieu of fire barriers that have not been approved by the NRC.

RECOMMENDATION:

The staff recommends that the Commission approve the attached rulemaking plan to revise 10 CFR Part 50, Appendix R, as recommended in Option 4 of the plan.

The staff also recommends enforcement discretion for those licensees that currently rely on unapproved manual actions.

William D. Travers
Executive Director
for Operations

Attachment: Rulemaking Plan

DISTRIBUTION

Commissioners
EDO
OGC
OE
NRR
Regions
SECY
ACRS

E-Mail

RidsEdoMailCenter
RidsNmssMailCenter
RidsSecyMailCenter
RidsOpaMail
RidsOcio

RidsNrrMailCenter
RidsOgcMailCenter
RidsOcaMailCenter
RidsOcoMailCenter
RidsNirsMialCenter

ACCESSION NO:MLxxxxxxxxx (package)

Memo: MLxxxxxxxxx

Attachment: MLxxxxxxxxx

*See previous concurrence

DOCUMENT NAME:C:\TEMP\GWViewer\FR Prot RMP SECY r2.wpd

OFFICE	NRR/DRIP/RPRP	NRR/DSSA/SLPB	NRR/DSSA/SLPB	NRR/DRIP/RPRP	NRR/DRIP/RPRP
NAME	WHuffman	PQualls	EWeiss:SC	SWest:SC	CGrimes:PD
DATE					
OFFICE	NRR/SLPB/SLPB	Tech Editor	NRR/DRIP	NRR/DSSA	NRR/PMAS
NAME	JHannon:BC		DMatthews	GHolahan	MCase
DATE					
OFFICE	NRR/ADIP	NRR/ADPT	OGC	OE	ADM
NAME	WBorchardt	BSheron			MLesar
DATE					
OFFICE	CIO	CFO	D/NRR	EDO	
NAME	BShelton		SCollins	WTravers	
DATE					

RULEMAKING PLAN ON FIRE PROTECTION MANUAL ACTIONS
Revision to Appendix R of 10 CFR Part 50
TAC #MB6148

Regulatory Issue

10 CFR Part 50, Appendix R, Section III.G prescribes fire protection features to ensure that at least one means of achieving and maintaining safe shutdown conditions will remain available during or after any postulated fire at a nuclear power plant. The staff believes that a regulatory compliance problem with Appendix R, Paragraph III.G.2 may exist at many nuclear power plants involving fire protection of redundant safe shutdown trains when these trains are located within the same fire area. Limited regional inspections, in conjunction with industry surveys, has determined that many licensees, under some plant-specific circumstances, rely on manual actions rather than fire barriers (or separation) to maintain safe shutdown capability of a redundant shutdown train. Manual actions refer to those actions needed to maintain functionality of a safe shutdown train during a fire by using operators to perform field manipulations of components that would not ordinarily be necessary if the train were protected by the prescribed fire barrier or separation distance required by the regulations.

Generic use of manual actions for providing fire protection of safe shutdown is not in compliance with the current fire protection regulations—even though manual actions have been accepted by the NRC in many previous exemption requests. Given the current situation, the industry would either need to expend significant resources to bring the fire barrier protection of the redundant safe shutdown trains into compliance or expend significant resources preparing and submitting numerous exemption requests for NRC approval. The staff is faced with the choice of either diverting resources to inspect and process a large number of enforcement actions and/or processing a large number of related exemptions requests or providing a regulatory alternative to the current prescriptive requirements. The industry believes that most of manual actions used by licensees for operation of a safe shutdown train during a fire are not safety significant and would likely be approved by the NRC if processed via an exemption. Assuming the industry is correct, unnecessary regulatory burden associated with enforcing this compliance issue can be avoided if generical criteria can be developed on acceptable manual actions for operating a safe shutdown train during a fire.

Existing Regulatory Framework

The fire protections regulations applicable for currently licensed nuclear power plants depends on when the plant was licensed. The requirements of Appendix R, Paragraphs III.G, III.J, and III.O were backfit onto all reactors licensed to operate prior to January 1, 1979 by 10 CFR 50.48. For plants licensed to operate after January 1, 1979, the requirements of GDC-3 and 10 CFR 50.48 apply. The provisions of Paragraphs III.G, III.J, and III.O are incorporated into NUREG-0800, the Standard Review Plan. 10 CFR 50.34(a) requires applications for OLs docketed after May 17, 1982 to include an evaluation of the plant against the Standard Review Plan.

10 CFR Part 50, Appendix R, Paragraph III.G.2 specifies three different means for protecting the safe shutdown capability of one of the redundant shutdown trains from a fire when located in the same fire area as its redundant train. Basically, one of the redundant trains, including cables and equipment and associated non-safety circuits, must be separated from the other redundant train by a 3-hour rated fire barrier; or separated by a 1-hour rated fire barrier with fire

detection and automatic fire suppression in the fire area, or separated by a 20 foot horizontal distance with fire detection and automatic fire suppression in the fire area.

Recent triennial inspections found that some licensees have relied on manual actions, without NRC staff review or approval by exemption, instead of providing the specified fire barrier or separation measures to meet the Paragraph III.G.2. It is believed that most of these unapproved manual actions were implemented by licensees as compensatory measures related to concerns about the adequacy of a fire barrier material known as Thermo-Lag. Rather than upgrading or replacing Thermo-Lag, it is the staff's understanding that many licensees instead evaluated the redundant safe shutdown trains and determined that, by relying on manual actions, any impact of a fire in an area where both trains are located could be circumvented without concern about the fire rating of the barrier material. This was done using the licensee's interpretation of the fire protection program change control process (a standard license condition similar to 10 CFR 50.59 that was sanctioned by Generic Letter 86-10). The change control process provides latitude in the licensee's need to submit fire protection program changes to the NRC for approval, as long as the licensee can demonstrate that the change does not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. In spite of this allowance, because the use of manual actions is not in compliance with the regulations, the staff does not believe that a licensee can implement manual actions under the change control process—even if the licensee's fire hazard analysis demonstrates that the use of the manual actions has no adverse impact on the plant safety.

When the fire protection requirements for the safe shutdown trains were ^{originally} crafted, the Commission understood the potential difficulty associated with meeting the specific fire protection requirements in Paragraph III.G.2, and provided an alternative method in Paragraph III.G.3, which permits the use of manual actions under certain conditions (described in Paragraph III.L). However, the regulatory issue discussed in this paper does not involve the use of manual actions for alternative or dedicated safe shutdown capability. This compliance issue only affects those licensees that do not employ an alternative or dedicated shutdown system and rely only on the redundant shutdown trains to achieve and maintain safe shutdown during a fire in an area where both trains are located.

With proper analysis, manual actions are allowed for fire safe shutdown activities under the following circumstances:

- operation of equipment for which cables are located in fire areas that meet Paragraph III.G.1 of Appendix R to 10 CFR Part 50, by having redundant cables and equipment in a completely different fire area
- manual operation of normally operated manual switches and valves
- staff-approved deviations and exemptions for specific manual actions in lieu of meeting the criteria of Paragraph III.G.2 of Appendix R to 10 CFR Part 50
- manual operation of equipment used to meet the requirements of Paragraph III.G.3 for Alternative or Dedicated Shutdown of Appendix R to 10 CFR Part 50, where meeting performance criteria of Section III.L is required

I don't understand this, or how it relates to the items on p. 4.



Adete

The staff has concluded that using these manual actions as a means of compliance with Paragraph III.G.2 requires staff approval by issuance of an exemption prior to implementation. The staff sought advice for the Office of General Council (OGC) on whether use manual actions met the requirements of Appendix R Paragraph III.G.2 if the licensee had determined that the manual actions did not adversely affect the ability of the plant to achieve and maintain safe shutdown in the event of a fire. OGC determined that Paragraph III.G.2 cannot reasonably be interpreted as permitting the use of manual actions. Accordingly, an exemption must be issued in order to permit a licensee to rely on manual actions for redundant safe shutdown.

The NRC has previously accepted the use of plant-specific manual actions as an alternative to establishing fire barriers or separation for redundant shutdown trains located in the same fire area. Therefore, the use of manual actions by licensees does not imply that a safety issue exists. Currently, because generic acceptance criteria has not been defined on the use of manual actions, the staff would need to review the manual actions and associated fire hazard analysis on a plant-specific basis before a safety conclusion could be reached.

Based on the staff's interpretation of the fire protection regulations discussed above, licensees currently relying on manual actions must either physically modify one redundant shutdown train to meet the prescribed fire barrier conditions (where both shutdown trains are located in the same fire areas) or they must submit exemption requests to the NRC for review and approval. Statements made by the Nuclear Energy Institute in a meeting with the staff on June 20, 2002, indicate that most licensees have reported circumstances where they have relied on manual actions in lieu of fire barriers for redundant shutdown trains without having obtained exemptions or deviations from the NRC. This presents a significant regulatory compliance issue. The staff believes there would likely be substantial resources needed for inspection and follow-up enforcement proceeding associated with this compliance issue if alternative regulatory solutions are not pursued. Compelling licensees to comply with the existing regulations could result in unnecessary regulatory burden for both the industry and the NRC assuming that most of the currently unreviewed manual actions would be found acceptable if reviewed by the Commission. The staff believes that acceptance criteria could be developed that would permit licensees to determine the acceptability of the manual actions without the need for NRC review and approval. However, such an approach would require changes to the current regulations.

Safety Significance

Employing manual actions to maintain functionality of a safe shutdown train during a fire rather than using fire barrier protection may increase the likelihood of the safe shutdown train being unable to fulfill its safety function. It is generally accepted that the excessive use of manual functions or the need to use complex manual actions will certainly result in a greater failure probability for a safe shutdown train than safe shutdown trains in compliance with Appendix R prescribed fire barriers. Furthermore, the feasibility of the manual actions must be considered in terms of having adequate time, staffing, and environmental conditions needed to support the actions. Even a national fire protection standard, National Fire Protection Association (NFPA)-805, notes that fire risks may be increased where manual operator actions are relied on to provide the primary means of recovery in lieu of fire protection features.

The difficulty in assessing the acceptability of manual actions in lieu of fire barriers is due to the plant-specific nature and variability of the manual actions. Generic criteria are not current

Handwritten notes on the right margin:
- "The difficulty in assessing the acceptability of manual actions in lieu of fire barriers is due to the plant-specific nature and variability of the manual actions." -> "Generic criteria are not current"
- "The difficulty in assessing the acceptability of manual actions in lieu of fire barriers is due to the plant-specific nature and variability of the manual actions." -> "Generic criteria are not current"
- "The difficulty in assessing the acceptability of manual actions in lieu of fire barriers is due to the plant-specific nature and variability of the manual actions." -> "Generic criteria are not current"

Handwritten note at the bottom right:
These following criteria have been used for capturing exceptions but have not been used.



available that can be applied uniformly by all licensees to assess the adequacy of manual actions. The type of questions normally considered by the staff when assessing manual actions include:

- Can the licensee detect that a fire induced mal-operation occurred? (NOTE: Annunciators, indicating lights, pressure gages, and flow indicators are among those instruments typically not protected from a fire and thus should not be credited.)
- Can the licensee defeat the mal-operation prior to unrecoverable conditions occurring?
- How many manual actions are required to accomplish safe shutdown?
- How many locations have manual actions required? If coordination is required then communications capability must be considered.
- How complex are the manual actions? Are special tools and training required? Are the tools dedicated and placed in a nearby location? Is the training adequate and current?
- Are the manual actions in the fire affected area or in an area that may be affected by smoke, toxic combustion products, or hot gas?
- If normal lighting can be lost due to the fire, is emergency lighting provided?
- Accessibility should be reviewed. Is a ladder needed? Can an operator even reach the required location?
- Can the manual actions be accomplished before unrecoverable conditions occur based on the licensee's thermal-hydraulic time line?
- Is staffing adequate? Have operators been trained on special manual actions?
- Is procedural guidance adequate? Have operators been trained on the procedure?
- Have the manual actions been verified and validated by plant walkdowns using the current procedure? Who performed the walkdowns? Were the walkdowns timed to assure accomplishment within required time frames specified in the plant's safe shutdown analysis?

If this is true, then NRC review & approval by license amendment is necessary.

Note: the approach O&C staff would take originally was to put details in R.G. & have

fast-track approval via license amendment.

While there are concerns that some of the unreviewed and unapproved usage of manual actions could increase the overall plant risk from a fire due to failure to achieve or maintain safe shut down, the staff believes that acceptance criteria could be developed that would negate the risk. Licensees should be able to demonstrate that manual actions are feasible, given an appropriate environment in which the actions are to be carried out, the time frame available for performing the actions, and the availability of equipment and operating staff to perform the

Please see legal analysis for concerns (very significant) about the staff's approach.

manual action(s). A licensee's analysis should address such factors as accessibility, operator guidance and procedures, emergency lighting availability, adequate time to perform the action, availability of equipment necessary to complete the action, adequate communications, and prevention of spurious actuations that would negate the actions. With appropriate selection of manual actions and a thorough analysis that demonstrates their feasibility, no appreciable increase in risk should result.

Policy Concerns

The staff has identified two possible policy concerns that may arise in the resolution of this regulatory issue.

The first involves endorsing the practice of using manual actions as an acceptable substitute for fire barriers. Up to now, the staff has considered that the use of manual actions should be the exception rather than the rule for protecting the functionality of safe shutdown equipment from fire damage. By endorsing manual actions to resolve a specific compliance issue, the staff may be sending a message that it has no preference between the choice of using a physical fire barrier or using acceptable manual actions. As a consequence, licensees may be more likely to rely on manual actions rather than physical fire barrier design features for resolving future fire barrier adequacy issues. In addition, permitting manual actions via regulation could theoretically result in a licensee not reinstalling fire barrier protection for a safe shutdown train if it were removed for some reason unrelated to the adequacy of the fire barrier (such as a system modification).

The second concern involves the role of Thermo-Lag in generating the current regulatory issue. The staff speculates that a majority of the currently existing manual actions are a result of the Thermo-Lag resolution activities of the 1990s. It appears that many utilities incorporated manual actions into their fire protection program, without NRC staff review and approval, rather than replacing or upgrading the electrical raceway fire barrier system (ERFBS) material. While the staff has found manual actions to be acceptable alternative to Thermo-Lag upgrades under plant specific conditions, it should be noted that the Commission appears to have intended to resolve the Thermo-Lag issue generically by replacing or upgrading the material as necessary to achieve an acceptable fire barrier resistance—not to employ manual actions as an alternative. This viewpoint is expressed in the testimony of former Commission Chairman Selin before Congress on March 3, 1993. The Chairman stated that "The NRC's fundamental regulatory requirement to provide one hour or three hour rated barriers to separate redundant safe shutdown functions within the same fire areas has not been changed." The Commission may decide that its commitments made before Congress are irrevocable and direct the staff to enforce the existing regulation. However, enforcement to require actual fire barrier in place of manual actions would likely be challenged by the industry as a backfit since it can be demonstrated that the staff has routinely found manual actions acceptable and safe via exemptions and deviations.

Industry Position

In a letter to the staff dated January 11, 2002, the Nuclear Energy Institute stated that many licensees use manual actions to achieve safe shutdown to meet Appendix R, Paragraph III.G.2 requirements. Nothing in the NRC regulations specifically prohibits the use of manual actions.

NRC
effecti
provid
that
man
acti
an
or
accept
as
physi
fire
barri

The industry considers the use of manual actions acceptable, without prior NRC approval, as long as the reliance on manual actions does not adversely affect the ability of the plant to achieve and maintain safe shutdown. The industry agrees that the licensee should be able to demonstrate that the manual actions can be carried out in the time frame and under the environmental conditions applicable to the actions.

Alternative Considered

Option 1: No regulatory changes—Enforce current requirements

The staff could notify nuclear power plant licensees that using manual actions to operate a safe shutdown train as an alternative for fire barrier protection from a fire in a location where redundant trains are located is a violation of Appendix R, Paragraph III.G.2 of 10 CFR Part 50, if such changes have not specifically received NRC approval.

Advantages

- Upgrading the safe shutdown train fire barrier protection from manual actions to physical barriers would likely result in a net safety improvement over the assumed existing conditions [Improves Safety]
- Enforcing existing regulations with known non-compliance concerns is a part of the NRC's mission [Maintains Public Confidence]
- By enforcing the current requirements, there would be no costs associated with developing a new rule and associated guidance documentation

Disadvantages

- Enforcing the current requirements could significant increase costs for both the staff and licensees through enforcement actions [Increased Regulatory Burden and Decreased NRC Efficiency and Effectiveness]
- Since there are numerous examples where the staff has approved the use of manual actions in lieu of fire protections barriers for safe shutdown trains, the staff would likely receive a large number of exemption requests from licensees resulting in significant burden for both licensees and the staff [Increased Regulatory Burden and Decrease NRC Efficiency and Effectiveness]
- There is reason to believe that the industry would appeal enforcement of the current requirements as a generic backfit This action by the industry could result in the diversion of significant staff resources (Note that the CRGR has reviewed this issue and does not consider enforcement of the existing regulations a backfit) [Decreased NRC Efficiency and Effectiveness]
- The safety benefit of forcing licensees to upgrade the physical fire barriers, where unapproved manual actions are currently utilized, is judged to not be significant when compared to the expected costs and resource diversions discussed in the disadvantages above. In addition, it is likely that most licensees would seek an exemption rather than install compliant fire barrier. Assuming that most exemptions would be approved, no safety benefit would be derived from enforcement [Compliance is not Cost Justified]

Option 2: Revise regulatory guidance

The staff considered the possibility that use of manual actions could be interpreted as permissible under the current regulations assuming appropriate analysis and justification has been conducted and documented by the licensee. The staff would issue a regulatory information summary in conjunction with an update of the applicable regulatory guidance and inspection guidance on the use of manual actions.

Although there would be many advantages to this approach, the staff has determined that this is not an option based on consultation with OGC. Specifically, OGC has advised the staff that physical fire barriers are the only option allowed by Appendix R, Paragraph III.G.2 and that use of manual actions would require NRC approval.

Option 3: Exercise enforcement discretion without rulemaking

The primary safety concern of the staff is that a safe shutdown train must be capable of achieving and maintaining safe shutdown after a fire in a location where redundant safe shutdown trains are located. All licensees should currently have documented analysis demonstrating the safety of any manual actions they rely upon. Routine regional inspections could be used to determine if these manual actions appear to be feasible and appropriate. Inspection guidance would need to be formalized as necessary to detail appropriate manual actions. Recognizing that licensees have implemented manual actions believing that there was no adverse impact on the fire protection program and without intent to circumvent existing regulations, the staff could exercise enforcement discretion regarding instances where inspection reveals that a licensee relied on manual actions without NRC approval. If the manual actions are determined to be adequate, then the regulatory issue could be enforced as a minor violation for failure to obtain NRC approval. The violation closeout could be resolved by entering the issue into the licensee's corrective action program. Any instances of undocumented, insufficient, or inadequate analysis of manual actions—including feasibility, would be a more significant violation of the intent of Appendix R, Paragraph III.G.2 and subject to normal enforcement proceedings.

Advantages

- This regulatory issue could be resolved fairly quickly [NRC Efficiency and Effectiveness]
- The staff has already developed inspection criteria for acceptable manual actions [NRC Efficiency and Effectiveness]
- Enforcement discretion would not relax inspection or enforcement of the feasibility and safety of the manual actions employed to ensure the functionality of safe shutdown trains during fires. Enforcement discretion would only be applied to those cases where the manual actions were found to be acceptable [Maintains Safety]

Disadvantages

- Failure to enforce existing regulations with known compliance concerns would likely impact public confidence [Decreases Public Confidence]

- Many licensees might still be inclined to seek formal NRC approval of manual actions rather than be subject to even minor violations. Processing exemption requests would divert unnecessary resources from the staff and result in unnecessary regulatory burden of licensees [Decreased NRC Efficiency and Effectiveness and Unnecessary Regulatory Burden]

Option 4: Revise the existing regulations (rulemaking)

The existing regulations (Appendix R, Paragraph III.G.2) could be revised to explicitly permit the use of manual actions in lieu of using fire barrier protection to maintain functionality of a safe shutdown train in a location where redundant trains are located. The change would also clarify that the use of manual actions would not require NRC approval provided that compliance with high level acceptance criteria is documented and that the manual actions do not adversely affect the ability to achieve or maintain safe shutdown. The criteria would specify that a licensee should have documentation to support use of the manual actions including:

- A fire hazards analysis demonstrating that there is adequate time, staffing, and diagnostic instrumentation to perform the manual actions based on the thermal-hydraulic time-line to achieve and maintain safe shutdown
- Procedures and training are provided for the manual actions to be performed
- Analysis of environmental conditions confirming that the manual actions are feasible given consideration of such conditions as temperature, radiation, lighting, accessibility and habitability

Option 3 would be utilized in the interim until the regulations were revised.

Advantages

- Acceptance criteria would be developed and codified on the use of manual actions as a means of protecting safe shutdown train's functionality during a fire in an area where redundant shutdown trains are located [Maintains Safety]
- Revising the regulations to permit manual actions would legalize their use and should rectify most associated compliance issues [Maintains NRC Efficiency and Effectiveness]
- Rulemaking would avoid the need for licensees to preparing exemption requests and NRC processing of such requests assuming the use of manual action complies with the regulatory criteria to be included in the rule language [Reduces Unnecessary Regulatory Burden and Maintains NRC Efficiency and Effectiveness]
- Avoids backfit issues since licensee that comply with the acceptance criteria for manual actions will not be required to modify their safe shutdown trains to install fire barrier material [Reduces Unnecessary Regulatory Burden and Maintains NRC Efficiency and Effectiveness]

Disadvantages

- Failure to enforce existing regulations with known compliance concerns would likely impact public confidence [Decreases Public Confidence]
- Staff resources would need to be expended on rulemaking and associated revisions to regulatory guidance documents
- Enforcement discretion as described in Option 3 will need to be exercised until rulemaking is completed

Preferred Option

Option 4 is preferred by the staff because rulemaking would be the best regulatory solution to the current compliance issue. Resolving this regulatory issue through rulemaking also provides the most open and direct interface with public stakeholders while developing the criteria that assures that manual actions can be employed safely and without NRC approval (as an alternative to the use of physical fire barriers for safe shutdown trains located in the same fire area). This options is also more likely to avoid the need for processing numerous fire protection related exemption requests than any other option considered.

Enforcement Considerations

The staff proposes not to expend special inspection resources to determine whether licensees are in compliance with the current Appendix R, Paragraph III.G.2. Licensees will continue to be inspected for fire protection compliance consistent with the current frequency as part of the baseline inspection program. For deficiencies that are identified through the inspection program related to the use of unapproved manual actions, the staff recommends exercising enforcement discretion in accordance with Section VII.B.6 of the enforcement policy. The staff will continue to inspect the acceptability and feasibility of the manual actions in accordance with preliminary criteria that has been developed by the staff. The staff will prepare interim inspection guidance on this matter. The staff recommends that the enforcement discretion be extended until rulemaking is complete. Once the rulemaking plan is approved by the Commission, the Office of Enforcement will develop enforcement guidance for the staff.

Risk-Informed or Performance Based

The staff's rulemaking recommendation is risk-informed to the extent that it has qualitatively assessed the risk from permitting the use of manual operations to maintain the functionality of a safe shutdown train during a fire. While the staff prefers the use of physical fire barriers to manual actions, it has been concluded that any additional risks can be minimized if compliance with the acceptance criteria for feasible manual actions is demonstrated in the licensee's fire hazard analysis.

The staff's rulemaking recommendation is performance based to the extent that the NRC will not require approval of licensee fire protection programs that employ manual actions for maintaining the functionality of safe shutdown trains that comply with the criteria to be specified in the rulemaking. In addition, the criteria will be at a high level and will not be so prescriptive that it will result in regulatory inflexibility. Details of acceptable compliance methods would be provided in updated fire protection regulatory guidance (Regulatory Guide 1.189, Fire Protection for Operating Nuclear Power Plants).

Backfit

To resolve an existing regulatory compliance issue, the proposed rulemaking represents a voluntary alternative to the current requirements. The proposed rule would allow the use of manual actions for maintaining the functionality of a safe shutdown train during a fire in an area where redundant shutdown trains are located. Licensees that currently have approved manual actions would not be required to perform any additional actions (such as analysis or documentation) under the proposed rulemaking. Licensees that employ manual actions but have not received NRC approval are out of compliance with the current regulations. In as much as the NRC position on use of manual actions under Paragraph III.G.2 has not changed, there is no backfitting as defined in 10 CFR 50.109(a)(1) with respect to licensees who are currently relying upon manual actions to comply with Paragraph III.G.2 and who have not previously received an exemption approving such use. For non-compliant licensees, the proposed rulemaking would provide another possible option that could be used to restore compliance. Non-compliant licensees would not be required to seek NRC approval if they have documentation that demonstrates acceptability of manual actions in accordance with acceptance criteria (as discussed elsewhere in this plan and to be developed and included in the rulemaking language). While such documentation of manual action acceptability in the fire hazards analysis would represent additional requirements, they are strictly voluntary for non-compliant licensees; non-compliant licensees could elect to comply with the currently specified physical fire barrier requirements. Therefore, the staff has concluded that the proposed rule would not constitute a backfit as defined in 10 CFR 50.109(a)(1).

✓
[all or
word]

OGC
^ Legal Analysis

✓

As we understand it, the proposed rule would provide current licensees a voluntary alternative of relying upon manual actions under certain circumstances in complying with the fire protection requirements for redundant safe shutdown in Paragraph III.G.2. of 10 CFR Part 50, Appendix R. The proposed rule would set forth the specific circumstances and the proposed criteria for licensee reliance on manual actions. After review of the Atomic Energy Act of 1954, as amended (AEA), we conclude that Sections 103, 104, 161, and 182 of the AEA provide the Commission with sufficient authority to promulgate the proposed rulemaking.

We understand that the staff is considering a rulemaking approach whereby licensees would be able to implement the voluntary alternative without requesting NRC review and approval. We note that such an approach is possible only if the rule sets forth sufficiently objective, non-discretionary criteria for the use of manual actions, in order to avoid a challenge to the rule on the basis that the rule is void for vagueness under 5 U.S.C. § 706(2)(A), and/or that it constitutes an unconstitutional delegation of regulatory authority under 5 U.S.C. 706(2)(B) and (C). We also note that any review and approval by the staff which involves substantial discretion and judgement, would also require a license amendment under the principles outlined in *Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Unit 1)*, CLI-96-13, 44 NRC 315 (1996).

We understand that many licensee's existing fire protection programs are governed or affected by license conditions, orders, or technical specifications. It is possible that these license conditions, orders or technical specifications must be changed in order to implement the voluntary alternative. The rule language must include appropriate language modifying those

license conditions, orders and technical specifications in order to avoid the need for issuance of license amendments modifying and/or superseding those license conditions, orders and technical specifications. The feasibility of developing such rule language depends upon the language of current fire protection technical specifications, orders and technical specifications. The staff (with the assistance of OGC) should review a representative set of license conditions, orders and technical specifications, in order to assess the feasibility of developing such "self-executing" rule language. In addition, licensees' current final safety analysis reports (FSARs) may include descriptions of the facility with respect to fire protection for redundant safe shutdown. Assuming that the staff is able to develop a "self-executing" rule, the staff should assess whether such FSAR changes are necessary, and consider the need for inclusion of rule language stating that the requirements of 10 CFR 50.59 do not apply (consistent with the provisions of § 50.59(c)(4)).

The staff also proposes that the proposed criteria governing the use of manual actions under Paragraph III.G.2. would not apply to licensees who already have exemptions from Paragraph III.G.2. Special rulemaking language may not be necessary to accomplish this goal if current exemptions are written in a manner which provides a general exemption from III.G.2. The staff (with the assistance of OGC) should review a representative set of exemptions, in order to confirm this understanding.

The proposed rule will require preparation of an environmental assessment, as it appears that there are no categorical exclusions in 10 CFR § 51.22(c) which would apply to this rulemaking.

We do not believe that the proposed rule will constitute a backfit as defined in 10 CFR § 50.109(a)(1). This is because the rule would provide a voluntary alternative to nuclear power plant licensees

It is unclear whether the rule is a "major rule" under the Small Business Regulatory Enforcement Fairness Act, inasmuch as there is insufficient information provided as to whether the rule is likely to result in a \$100 million impact upon nuclear power plant licensees. If the rule is not a major rule, then the mandated 60-day period prior to effectiveness of major rules is not applicable and the normal 30-day period for effectiveness in the Administrative Procedures Act would apply.

The proposed rule will require licensees who choose the voluntary alternative to generate and maintain records related to their fire protection programs. If the proposed rulemaking involves recordkeeping and reporting requirements, review by the Office of Management and Budget for purposes of the Paperwork Reduction Act will be required.

The National Technology Advancement and Transfer Act of 1995 requires consideration of voluntary consensus standards as an alternative to agency-developed standards. The staff must determine whether there are voluntary consensus standards that address the use of manual actions in providing for redundant safe shutdown, that could be endorsed *in lieu* of a NRC-developed rule.

In conclusion, OGC has determined that there are no known bases for legal objection to the contemplated rulemaking.

Agreement State Compatibility

Under the "Policy Statement of Adequacy and Compatibility of Agreement State Programs" approved by the Commission on June 30, 1997, and published in the *Federal Register* on September 3, 1997 (62 FR 46517), Part 50 is classified as compatibility category "NRC." The NRC program elements in this category are those that relate directly to areas of regulation reserved to the NRC by the Atomic Energy Act or provisions of Title 10 of the Code of Federal Regulations. Therefore, there are no agreement state implementation issues to address.

Supporting Documents

Preparation of the proposed rule would require the normal supporting documentation including:

- an environmental assessment
- a clearance package to obtain Office of Management and Budget approval of new information collection requirements
- a simplified regulatory analysis (since the proposed rule would be a voluntary alternative) with sufficient information to demonstrate that the regulation will not have a significant economic impact on small entities (as required by the Regulatory Flexibility Act)
- a revision to Regulator Guide 1.189, Fire Protection for Operating Nuclear Power Plants
- revision to fire protection inspection plans and enforcement guidance

Small Business Regulatory Flexibility Act

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the staff has concluded that the proposed rulemaking would not be a major rule because the economic impact is less than \$100 million. As discussed in the cost-benefits section of this plan, there is actual economic benefit (other than avoided compliance costs) from this rule. The economic costs are those associated with fire hazards analysis and documentation and would only impact non-compliant licensees. These costs are judged to be relatively minor.

Use of Standards

The applicable fire protection standard for protection of nuclear power plant safe shutdown trains is National Fire Protection Association (NFPA) - 805. This standard does not address criteria or standards for the use of manual actions and cannot be used in support of this proposed rulemaking action.

Issuance by the Executive Director of Operations or the Commission

Because of the potential policy concerns associated with this rulemaking (association with Thermo-lag and relaxation of fire barrier protection to resolve a compliance issue), the staff recommends that the proposed rule be issued by the Commission.

Key Staff

(i) Working Group

NRR Rulemaking Lead
NRR Technical Lead
NRR Support

William Huffman, NRR/DRIP/RPRP
Phil Qualls, NRR/DSSA/SPLB
Peter Koltay, NRR/DIPM/IIPB
Laura Dudes, NRR/DIPM
Eric Weiss, NRR/DSSA/SLPB
???????

ADM

OGC Support

Geary Mizuno, OGC

Other NRC Offices

None Anticipated

(ii) Interoffice Management Steering Group

The staff anticipates only minor interoffice interactions on this rulemaking and has concluded that a steering group is unnecessary.

Public/Industry Participation

The staff anticipates a moderate amount of public interest in this rulemaking. Consequently, the staff plans to have a public meeting on this compliance issue and the staff's resolution process shortly after Commission direction is received on this plan. In addition, the staff will prepare a Regulatory Information Summary (RIS) on the proposed action.

The staff will post this rulemaking plan and any subsequent rule-related information on the NRC's rulemaking Web site contingent on the Commission's approval of this plan. The staff will also post draft rule language on the Web site as it is developed in accordance with the recent protocol for sharing draft rule language with the public (ADAMS Accession #ML012850096).

Priority

Because this issue involves a known regulatory compliance concern, the staff is treating its resolution as high priority. However, because of the possible public sensitivity of this issue, the staff does not believe that the proposed rulemaking should be accelerated. To enhance public confidence, the staff intends to process this rulemaking as a normal notice and comment rulemaking allowing full opportunity for public comment. The resources and schedule to support this high priority rulemaking are discussed below. The treatment of this rulemaking as high priority will not impact the schedule or resources applied to any other NRR rulemakings currently in progress.

Resources

Approximately 2.5 FTE of staff effort is estimated to complete this rulemaking assuming that there is not a significant public reaction to the proposed course of action. Resource usage is

estimated at 1.25 FTE in FY03 and 1.25 FTE in FY04. These resources are available are available within the current budgets for these years. 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 \$????? in FY03 and \$???? in FY04. The staff will address the need for any needed contract funding in its mid-year review.

Schedule

- Issuance of revised inspection guidance.....1 month after approval of this rulemaking plan
-
- Issuance of interim enforcement guidance.....1 month after approval of this rulemaking plan
-
- Issuance of a Regulatory Information Summary.....2 months after approval of this rulemaking plan
-
- Public meeting3 months after approval of this rulemaking plan
-
- Proposed rule to the Commission.....9 months after approval of this rulemaking plan
-
- Public comment period.....75 days
-
- Final rule to the Commission..... 9 months following the end of the public comment period on proposed rule