NEI Letter

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January 11, 2002 > Mr. John Hannon
Chief, Plant Systems Branch Office of Nuclear Reactor Regulation Mail Stop O11-A11
U. S. Nuclear Regulatory Commission Washington, DC 20555-0001 **SUBJECT:** Use of Manual Actions to Achieve Safe Shutdown For Fire Events **PROJECT NUMBER:** 689 Dear Mr. Hannon: NEI has been made aware of a growing regulatory concern about licensee reliance on manual actions for safe shutdown related to fire events. This awareness has come through informal discussion with licensees and NRC staff members, and through the related guidance you provided to regional inspectors on November 14, 2001. In this letter, NEI is providing the industry's position on this issue for your consideration. We believe that our position provides a solid basis for resolving this issue on a generic basis rather than through inspection and enforcement actions. We that request NRR issue appropriate additional guidance to regional inspectors accordingly to resolve this issue. Alex Marion NEI 202-739-8080 am@nei.org

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NEI

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January 11, 2002

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Dear Mr. Hannon:

NEI has been made aware of a growing regulatory concern about licensee reliance on manual actions for safe shutdown related to fire events. This awareness has come through informal discussion with licensees and NRC staff members, and through the related guidance you provided to regional inspectors on November 14, 2001. In this letter, NEI is providing the industry's position on this issue for your consideration. We believe that our position provides a solid basis for resolving this issue on a generic basis rather than through inspection and enforcement actions. We that request NRR issue appropriate additional guidance to regional inspectors accordingly to resolve this issue.

The principal NRC concerns about the use of manual actions appear to be twofold:

1. Regulatory: Licensees rely on manual actions to achieve and maintain Appendix R Section III.G.2 redundant safe shutdown without an approved exemption or deviation

2. Risk: There may be excessive use of manual actions, or supporting evaluations are inadequate to demonstrate that manual actions can be successfully carried out before maloperation of equipment causes an unrecoverable condition, with a resulting potential for increased risk

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Industry Position

In summary, the industry position is:

The use of manual actions to achieve safe shutdown (both alternate and redundant) is 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. Licensees should be able to demonstrate that the actions can be carried out in the time frame and under the environmental conditions applicable to the actions.

Regulatory Issue: Use of Manual Actions for Redundant Shutdown

Applicable Regulatory Guidance

The use of manual actions to achieve safe shutdown is not directly addressed in 10 CFR 50.48, or in Appendix R. However, a number of regulatory guidance documents have provided guidance on the use of manual actions. Excerpts from pertinent guidance are provided in Enclosure 1. While much of the guidance relates to the use of manual actions for alternate shutdown, the guidance does not confine the use of manual actions to alternate shutdown. In fact, Temporary Instruction 2515 Appendix C (draft guidance for the River Bend and Prairie Island Fire Protection Functional Inspections) clearly indicates that manual actions for redundant shutdown were considered acceptable at the time the guidance was written. These guidance documents also indicate that manual actions to achieve safe shutdown should be achievable prior to the fire or to fire suppressant induced maloperations resulting in an unrecoverable plant condition.

I need a copy

The NRC also provided a guidance document (*The Use of Manual Operator Actions for Achieving and Maintaining Fire Safe Shutdown*) to the regions on November 14, 2001, for discussion in a quarterly workshop. This document was intended to provide additional clarity for NRC inspectors evaluating manual actions during the inspection process. While the document does provide additional clarity, it also includes information that could lead to incorrect consideration of licensee positions. Examples of such information are provided in Enclosure 2, along with industry comments. We request that this guidance document be revised.

Industry Experience

NEI surveyed a number of utilities to determine plant experience with NRC acceptance of manual actions to achieve safe shutdown. The survey results indicate many cases where the NRC accepted the use of manual actions as part of the fire protection/safe shutdown program. These acknowledgements by the NRC staff have

taken the form of SERs on fire protection/safe shutdown program submittals, and favorable findings in inspection reports. They cover both alternate and redundant shutdown manual actions. The time frame in which these positions have been taken by the NRC staff ranges from the early 1980's until this year.

A number of licensees have considered manual actions to fall within the bounds of the definition of control stations in Appendix R, Section III.G.1a, and therefore concluded that their reliance on manual actions meets regulatory requirements and specific NRC review and approval is not required.

Risk Issue

NRC staff has expressed concern that excessive use of manual actions, or reliance on use of manual actions without supporting evaluations, could raise to an unacceptable level the overall risk of failure to shut down safely. We agree that licensees should be able to demonstrate that manual actions are feasible, given the environment(s) 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 manual action(s). The appropriate evaluations could 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 the ability to demonstrate their feasibility, no appreciable increase in risk will result. man actions = Automatic = protection/prevent? wrt risk?

Summary

Many licensees use manual actions to achieve safe shutdown to meet Appendix R III.G.1, III.G.2, and III.G.3 requirements. NRC has reviewed and accepted such positions, many without exemption or deviation requests. Nothing in NRC regulations or regulatory guidance prohibits the use of manual actions to achieve III.G.1 or III.G.2 safe shutdown. Therefore, a licensee should be able to rely on manual actions that do not adversely affect the ability of the plant to achieve and maintain safe shutdown, and it should not be necessary for a licensee to seek an exemption or deviation to implement such manual actions. Licensees should be able to demonstrate this ability. There is no regulatory justification for the NRC to conclude that violation of NRC regulations has occurred where a licensee appropriately relies on manual actions to comply with Appendix R requirements.

We look forward to an opportunity to discuss this position with you in more detail. Please contact Fred Emerson at 202-739-8086 to schedule a meeting for this purpose.

Sincerely,

Alex Marion

Alex Marion

Enclosures

c: Mr. Brian Sheron, U. S. Nuclear Regulatory Commission
Mr. Eric Weiss, U. S. Nuclear Regulatory Commission

Enclosure 1

Selected Regulatory Guidance on Manual Actions

The following are excerpts from regulatory guidance documents related to the use of manual actions for safe shutdown.

Regulatory Guide 1.189

Section 5.3: Manual operation of valves, switches, and circuit breakers is allowed to operate equipment and isolate systems and is not considered a repair.

NEI Note: In general, guidance in this Regulatory Guide is applicable only to those plants committing to it. The manual operation guidance in this Regulatory Guide does not restrict the use of manual actions to alternate shutdown.

In the context of defining what a "repair" is.

July 1982 Internal NRC Memorandum, Mattson to Vollmer

Section III.G.1 of Appendix R states that one train of systems needed for hot shutdown must be free of fire damage. Thus, one train of systems needed for hot shutdown must be operable during and following a fire. Operability of the hot shutdown systems, including the ability to overcome a fire or fire suppressant-induced maloperation of hot shutdown equipment and the plant's power distribution system, must exist without repairs. Manual operation of valves, switches and circuit breakers is allowed to operate equipment and isolate systems and is not considered a repair.

NEI Note: This guidance indicates that the use of manual actions to achieve hot shutdown is acceptable, and is not restricted to alternate shutdown.

Generic Letter 86-10

Response to Question 5.3.8

Assoc'd circuits must be considered in III.G.2. & 3

To meet the separation criteria of Section III.G.2 and III.G.3 of Appendix R, high impedance faults should be considered for all associated circuits located in the fire area of concern. Thus, simultaneous high impedance faults (below the trip point for the breaker on each individual circuit) for all associated circuits located in the fire area should be considered in the evaluation of the safe shutdown capability. Clearing such faults on associated circuits which may affect safe shutdown may be accomplished by manual breaker trips governed by written procedures. Circuit coordination studies need not be performed if it is assumed that shutdown capability will be disabled by such high impedance faults and appropriate written procedures for clearing them are provided.

wrt III.G.3

NEI Note: This guidance permits the use of manual actions to clear multiple high impedance faults for both redundant shutdown (III.G.2) and alternate shutdown (III.G.3).

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TI 2515 Appendix C, Post-Fire Safe Shutdown Capability Inspection Requirements (drafts) for River Bend (June 5, 1997) and Prairie Island (April 6, 1998) Fire Protection Functional Inspections)

4.(a)3. The number of manual actions required to achieve post-fire safe shutdown for the subject plant areas. It would not be expected that numerous manual actions would be required for post-fire safe shutdowns using redundant trains of normal shutdown equipment.

6. For normal (redundant train) and alternative/dedicated post-fire safe shutdown, evaluate operator activities (manual actions both inside and outside the main control room) that are necessary to achieve safe shutdown conditions in the event of fire in the selected area(s).

NEI Note: Both of these references indicate that reliance on manual actions was considered acceptable for redundant shutdown at the time this inspection guidance was used.

Enclosure 2

NRC Manual Actions Guidance Document, 11-14-2001

This guidance document provides useful information on the regulatory guidance for manual actions, but also contains a number of positions or statements, noted below, that should be revised to improve their accuracy.

1. Insights to Regulations, Page 2: "Appendix R does not offer manual actions as an acceptable alternative to comply with the separation requirements of Section III.G.2 of Appendix R."

   Comment: Neither Appendix R nor any known regulatory guidance prohibits the use of manual actions to achieve Section III.G.2 safe shutdown. The fact that NRC inspectors have allowed such usage without prior approval would indicate that such usage is acceptable.

2. Insights to Regulations, Page 2: "During the Appendix R program initial review process, the staff approved, via the deviation and exemption process specific manual actions at most utilities on a case-by-case basis."

   Comment: The staff also accepted the use of manual actions in SERs and during inspections without formal exemptions or deviations.

3. Insights to Regulations, Page 2: "All the relevant guidance provided by the staff concerning manual actions were in documents specifically addressing Alternative Shutdown."

   Comment: A number of guidance document citations addressing manual actions were not specifically associated with Alternative Shutdown. Examples are noted in Enclosure 1.

4. Insights to Regulation, Page 2: "It appears that NEI's ongoing effort to resolve associated circuits, NEI 00-01 DRAFT, Rev C, lists manual actions, with no further criteria, as an acceptable solution to comply with Appendix R, III.G.2 criteria."

   Comment: The discussion of manual actions appears in Appendix E to NEI 00-01. It provides numerous criteria for their use, but does not differentiate their use between redundant and alternate shutdown.

5. Discussion of Generic Letter 81-12, Page 5: "Also, if multiple circuit failures may occur, the licensee should be able to justify why they do not occur simultaneously."

   Comment: The issue of multiple simultaneous circuit failures is being addressed separately in NEI 00-01, and should not be made an issue by this

inspection guidance.

6. What An Inspector Should Look For, Page 6, includes a discussion of guidance in Regulatory Guide 1.189 related to manual actions.

   Comment: The use of Regulatory Guide 1.189 for inspection guidance is not appropriate unless the licensee submits a docketed commitment to it.

7. Summary, Pages 9 and 10: "The use of manual actions to satisfy the requirements of Appendix R, Section III.G.2 has not been accepted by the staff in prior generic guidance for REQUIRED components and cables."

   Comment: NRC staff has accepted the use of manual actions to satisfy III.G.2 requirements in TI 2515 and in inspections.

8. Summary, Pages 9 and 10: "For redundant (III.G.2 fire areas) safe shutdown, the regulations require that manual actions, necessary to respond to a mal-operation (spurious actuation), receive prior review and approval by the staff in the exemption/deviation process."

   Comment: There is no requirement in the fire protection regulations for prior review and approval of manual actions to achieve III.G.2 safe shutdown.

9. Conclusion, Page 10: "Manual actions have not been accepted, without prior approval, in lieu of complying with the separation requirements of Appendix R, Section III.G.2, for required equipment."

   Comment: NRC inspectors have accepted manual actions for achieving Section III.G.2 safe shutdown without prior approval. Examples can be provided.

10. Conclusion, Page 10: "The use of manual actions, in lieu of protecting circuits appears to increase the risk associated with a fire in a fire area."

    → inspectors are not staff reviewers.

    Comment: Prior statements in this inspection guidance document indicate that manual actions <u>could</u> increase risk. It is not appropriate to conclude that they <u>appear to</u> increase risk. While it is possibly true in specific cases, it is inappropriate to generalize that conclusion. If a licensee is able to demonstrate the feasibility of manual actions, there should be little or no increase in risk.

11. Item 2, Page 11: "If the MA has NO NRC reviewed and approved exemption, deviation, or SER, then the licensee should be cited for violating Appendix R, Section III.G.2 (for a pre-1979 unit). If the plant is a post-1979 plant, the inspector would cite against the approved fire protection program."

Comment: Citing a licensee for a violation of regulations merely because there was no prior NRC approval of a manual action is entirely inappropriate. NRC has accepted via the inspection process licensee programs that included manual actions to achieve redundant shutdown.