

NUCLEAR REGULATORY COMMISSION

Opportunity for Public Comments

**Draft Criteria for Determining Feasibility of Manual Actions
to Achieve Post-Fire Safe Shutdown**

SUMMARY: The U. S. Nuclear Regulatory Commission (NRC) is considering a revision to the fire protection regulations in 10 CFR Part 50, Appendix R, Paragraph III.G.2 to allow the use of manual actions by nuclear power plant operators to achieve hot shutdown conditions in the event of fires in certain areas provided the actions are evaluated against specific criteria and determined to be acceptable. The NRC is seeking comments from interested parties on the adequacy and clarity of these acceptance criteria. For complying with the requirements of Appendix R, Paragraph III.G.2, licensees who rely on operator manual actions which have not been reviewed and approved by the NRC are generally considered to be in non-compliance. However, the NRC believes that most of the unreviewed manual actions relied upon by licensees are safe and effective. Accordingly, until the fire protection regulations are revised, the NRC is planning to issue an interim enforcement policy to exercise enforcement discretion for non-compliant licensees if their manual actions meet the NRC's interim acceptance criteria. The NRC will consider the comments received in response to this notice in determining the interim acceptance criteria for interim enforcement discretion policy.

DATES: Comment period expires January 26, 2004.

ADDRESSES: Submit written comments to the Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, U. S. Nuclear Regulatory Commission, Mail Stop T6-D59, Washington, DC 20555-0001. Comments may be submitted by email to nrcprep@nrc.gov. Comments may be delivered to the NRC's headquarters at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Richard Dudley, Office of Nuclear Reactor Regulation, Washington DC 20555-0001, telephone (301) 415-1116, e-mail rfd@nrc.gov or Ray Gallucci, telephone (301) 415-1255, email rhg@nrc.gov.

SUPPLEMENTARY INFORMATION:

Nuclear power plant fire protection regulations and associated guidelines prescribe 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. The NRC has concluded that a fire protection regulatory compliance problem exists at many nuclear power plants. This problem involves fire protection of redundant safe shutdown trains when these trains are located within the same fire area. Regional inspections, in conjunction with industry discussions, indicate that rather than using fire barriers or physical separation to maintain safe shutdown capability, many licensees rely on operator manual actions that have not been approved¹ by the NRC. Operator manual actions refer to those actions taken by operators to manipulate components and equipment from outside the main control room to achieve and maintain post-fire safe shutdown. These actions are performed locally by operators typically at the equipment. Operator manual actions are not permitted in 10 CFR Part 50, Appendix R, Paragraph III.G.2, for plants licensed to operate before 1979 unless a specific exemption has been granted. For plants licensed to operate after 1979, there is uncertainty as to whether operator manual actions can be used without NRC approval as Appendix R is not required by regulation for those plants (although most plants committed to Appendix R-equivalent guidance in their fire protection programs). It is the staff's understanding that most of the licensees who rely on unapproved operator manual actions have done so under the belief that the use of operator manual actions to achieve safe shutdown is acceptable, without NRC prior approval,

¹The NRC does not consider this situation to be a significant safety problem since the staff has frequently reviewed and approved manual actions relied on by licensees under the exemption process. The NRC believes that manual actions are safe and effective in achieving plant shutdown when performed under appropriate conditions.

as long as the reliance on operator manual actions does not adversely affect the ability of a plant to achieve and maintain safe shutdown. The staff believes that use of unapproved manual actions (for both pre- and post-1979 plants) is a compliance issue but is not normally a significant safety issue. The NRC has chosen to resolve this issue generically through rulemaking because rulemaking provides the most efficient and effective process to align regulatory requirements and safety objectives. Although the use of operator manual actions has been reviewed and found acceptable by the NRC in many instances, the staff is concerned that there might be a few situations which have not been evaluated by the NRC where these manual actions might not be feasible to accomplish when factors such as complexity, timing, environmental conditions, staffing, and training are considered. Therefore, manual actions will only be considered acceptable if they meet the interim acceptability criteria.

This situation was evaluated by the NRC in SECY-03-0100 dated June 17, 2003, (ADAMS Document Accession No. ML023180599) in which the staff recommended that a rulemaking activity be undertaken by the Commission to develop and codify acceptance criteria on the use of operator manual actions as a means of protecting the safe shutdown train's functionality during a fire in an area where redundant shutdown trains are located. Since the NRC believes that using licensee operator actions to achieve safe shutdown is safe and acceptable under appropriate conditions, the staff proposed to develop an interim enforcement policy which would be in effect while the rulemaking was being undertaken to codify final acceptance criteria. This policy would exercise discretion and refrain from taking enforcement action for those licensees that rely on operator manual actions, provided these licensees have demonstrated and documented the feasibility of their operator manual actions in accordance with interim acceptance criteria developed by the staff. The Commission approved the staff recommendations that included a provision that the staff would engage stakeholders in at least one public meeting to discuss the interim manual action acceptability criteria and how they

would be used in interim enforcement policy. (See Commission Memorandum dated September 12, 2003, ADAMS Accession No. ML032550222).

The NRC has developed its preliminary interim acceptance criteria for manual actions. These draft criteria are provided below. They are an extension of the "*Inspection Criteria for Fire Protection Manual Actions*" issued by the NRC in March 2003 as Inspection Procedure 71111.05. The NRC held a public meeting on November 12, 2003, in the NRC's headquarters in Rockville, Maryland to allow members of the public to comment on the preliminary draft criteria which are provided below. Additional written comments may be submitted to the NRC during the comment period.

During the rulemaking process to codify the final acceptance criteria for manual actions, additional public notices will be issued and additional public comments will be solicited to further ensure that public stakeholder input is considered.

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Office of Nuclear Reactor Regulation

DATE: December 12, 2003

**Criteria for Determining the Acceptability of Manual Actions
to Achieve Safe Shutdown in Case of Fire.**

Licensees who have relied on operator manual actions to comply with Paragraph III.G.2 of Appendix R may be allowed enforcement discretion if the area where the fire occurs has fire detectors and an automatic fire suppression system installed in the fire area and if the manual actions relied upon are consistent with all of the following acceptance criteria²:

1. Available Indications

Diagnostic indication, if credited to support operator manual actions, shall be capable of:

- Confirming that the action is necessary;
- Being unaffected by the postulated fire;
- Providing a means for the operator to detect whether spurious operation of safety-related equipment has occurred; and
- Verifying that the operator manual action accomplished the intended objective.

2. Environmental Considerations

Environmental conditions encountered while accessing and performing operator manual actions shall be demonstrated to be consistent with the following human factor considerations for visibility and habitability:

- Emergency lighting shall be provided as required in Appendix R, Section III.J, or by the licensee's approved fire protection program, [e.g., lit with 8-hr battery-backed emergency lighting], and sufficient lighting shall be provided for paths to and from locations requiring any actions.
- Radiation shall not exceed 10 CFR Part 20, Section 20.1201, limits.
- Temperature and humidity conditions shall be evaluated to ensure that temperature and humidity do not adversely affect the capability to perform the operator manual action (See, e.g., NUREG/CR-5680, Vol. 2, "The Impact of Environmental Conditions on

²The criteria are not listed in any particular order.

Human Performance") or the licensee shall provide an acceptable rationale for why temperature/humidity do not adversely affect performing the manual actions.

- Fire effects shall be evaluated to ensure that smoke and toxic gases from the fire do not adversely affect the capability to access the required equipment or to perform the operator manual action.

3. Staffing and Training

There shall be a sufficient number of plant operators, under all staffing levels, to perform all of the required actions in the times required for a given fire scenario. The use of operators to perform actions shall be independent from any collateral fire brigade or control room duties they may need to perform as a result of the fire. Operators required to perform the manual actions shall be qualified and continuously available to perform the actions required to achieve and maintain safe shutdown. A training program on the use of operator manual actions and associated procedures during a postulated fire shall demonstrate that operators can successfully achieve these objectives.

4. Communications

To achieve and maintain safe shutdown, adequate communications capability shall be demonstrated for operator manual actions that must be coordinated with other plant operations, with this communications capability continuously available.

5. Special Equipment

Any special equipment required to support operator manual actions, including keys, self-contained breathing apparatus (SCBA), and personnel protective equipment, shall be readily available, easily accessible and demonstrated to be effective.

6. Procedures

Procedural guidance on the use of required operator manual actions shall be readily available, easily accessible and demonstrated to be effective.

7. Local Accessibility

All locations where operator manual actions are performed shall be assessed as accessible without hazards to personnel, with controls needed to assure availability of any special equipment, such as keys or ladders, being demonstrated..

8. Demonstration

The capability to successfully accomplish required operator manual actions within the time allowable using the required procedures and equipment shall be demonstrated using the same personnel/crews who will be required to perform the actions during the fire; documentation of the demonstration shall be provided.

9. Complexity and Number

The degree of complexity and total number of operator manual actions required to effect safe shutdown shall be limited such that their successful accomplishment under realistically severe conditions is assured for a given fire scenario. The need to perform operator manual actions in different locations shall be considered when sequential actions are required. Analyses of the postulated fire time line shall demonstrate that there is sufficient time to travel to each action location and perform the action required to support the associated shutdown function(s) such that an unrecoverable condition does not occur.

10. Equipment Pre-conditions

Possible failure modes and damage that may occur to equipment used during a fire shall be considered to the extent that the equipment's subsequent use could be prevented, or at least made difficult. Credit for using equipment whose operability may have been adversely affected by the fire due to smoke, heat, water, combustion products or spurious actuation effects shall account for such possibilities (e.g., over-torquing an MOV due to a spurious signal, as discussed in Information Notice 92-18).