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WHITE PAPER ON THE USE OF SYMPTOM BASED PROCEDURES FOR FIRE PROTECTION SAFE SHUTDOWN

BACKGROUND

Neither 10 CFR Part 50, Appendix R, Section III.G.2 nor NUREG 0800, Section 9.5.1 permit crediting the use of manual action in lieu of ensuring that equipment and cabling for redundant trains of systems required to accomplish post-fire safe shutdown which are located within the same fire area will be free of fire damage. However, during the initial licensee fire protection program reviews, in some cases, the staff reviewed and approved the use of certain feasible manual actions instead of requiring licensees to protect this safe shutdown equipment and cabling from fire damage as defined in Section III.G.2.

During the early 1990's the qualification testing of Thermolag fire barrier material was found to be deficient. Letters were sent to all licensees crediting the use of Thermolag fire barrier material which required the licensees to bring their facility into compliance with their licensing basis. During recent inspections, regional inspectors identified that several licensees had implemented the use of manual actions in lieu of providing protection from fire damage (as required by Section III.G.2) without receiving prior approval from the NRC. . During a public meeting on June 20, 2002, NEI stated that numerous licensees believed that III.G.2 of Appendix R allowed the use of manual actions and that feasible manual actions were implemented at these licensee's facilities without receiving prior NRC approval. NEI believed that the staff could be placed in the position of receiving numerous exemption and deviation requests for feasible manual actions which would be unnecessary regulatory burden for licensees and be waste of staff resources.

As a result of the June 20, 2002 meeting, the staff decided to propose a rulemaking to allow feasible manual actions. As an interim step, until the rulemaking is approved, the staff developed inspection criteria, for inspector use, to aid the regional inspectors in handling such a finding in view of pending rulemaking and in evaluating the risk associated with the use of manual actions in lieu of meeting the protection requirements of Section III.G.2.

ISSUE

Subsequent to the June 20, 2002 meeting, the staff has received repeated questions concerning the use of symptom based procedures instead of event based procedures for accomplishing manual actions. The apparent concern was that the rule would not allow symptom based procedures.

STAFF RESPONSE

The proposed rule does not differentiate between event based and symptom based procedures in evaluating a manual action. The staff recognizes that certain differences exist in a safe shutdown analysis when symptom based procedures are used. In event based procedures, T=0, the time when procedural activities commence, is defined by the event. For example, a number of manual actions would be performed when the event occurs to prevent mal-operation of certain valves. The operators would have received no indication that the valves had mal-operated. In a symptom based procedure, T=0, for the manual action under consideration, occurs when the valve mal-operation occurs. A symptom based approach has to ensure that adequate diagnostic instrumentation is provided, unaffected by the postulated fire in the area,

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to determine that the valve repositioned and that the manual action needs to be taken. In both cases, the analysis would have also have to demonstrate that the valve will not be damaged by the spurious actuation, should it occur in the time between fire initiation and the manual action for event based procedures or from the actuation occurrence in symptom based procedures. Each analysis would have to demonstrate that the manual action will be effective in accomplishing the required objective.