

WATTS BAR TRIENNIAL FIRE PROTECTION INSPECTION REPORT INPUT, Rev. 0 5/6/04

Inspector: M. Thomas
Report No.: 50-390,391/2004-006
Inspection Dates: 3/29 - 4/2/2004 and 4/12-16/2004

1. REACTOR SAFETY

CORNERSTONES: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (71111.05T)

.05 Operational Implementation of Post-Fire Safe Shutdown Capability

a. Inspection Scope

The team reviewed the operational implementation of the SSD capability for an Appendix R fire in Fire Areas 14, 27, 33, or 48 to verify that: (1) the training program for licensed personnel included main control room (MCR) and alternative safe shutdown capability; (2) personnel required to achieve and maintain the plant in hot standby, from the MCR or auxiliary control room (ACR), following a fire could be provided from normal onsite staff, exclusive of the fire brigade; (3) the licensee had incorporated the operability of alternative shutdown transfer and control functions into plant Technical Specifications (TS); and (4) the licensee periodically performed operability testing of the alternative shutdown instrumentation, and transfer and control functions. The team reviewed abnormal operating instructions (AOI) AOI-30.1, Plant Fires; and AOI-30.2, Fire Safe Shutdown. The reviews focused on ensuring that all required functions for post-fire safe shutdown, and the corresponding equipment necessary to perform those functions, were included in the procedures.

b. Findings

Introduction: The team identified a non-cited violation (NCV) of Operating License Condition 2.F for inadequate implementation of the approved fire protection program (FPP). The licensee's process for evaluating the impact of design changes on the FPP (i.e., local manual operator actions) was not adequate to ensure that the changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The team identified a green non-cited violation (NCV) of Operating License Condition 2.F for inadequate implementation of the approved fire protection program (FPP). The licensee made a change to the FPP, which had the potential to adversely affect the ability to achieve and maintain safe shutdown in the event of a fire in Room 757-A5 (Fire Area 27), without obtaining prior NRC approval. This is a violation of NRC requirements.

Description: The licensee's process for evaluating the impact of design changes on the FPP was addressed in several procedures. This included procedures FPDP-3, Management of the Fire Protection Report; SPP-9.3, Plant Modifications and Engineering Change Control; and TI-277, Modification Compliance Review - Fire

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Protection. During review of these procedures, the team noted that the process for evaluating the impact of design changes on FPP local manual operator actions only addressed whether emergency lighting was affected (e.g., changes to emergency light positions or additional emergency lights required). The team noted that evaluating the availability of emergency lighting alone was not sufficient to determine if the local manual operator actions were feasible and could be satisfactorily performed within the required time. The process did not consider other conditions such as location of the manual actions with respect to the fire, complexity, accessibility, environmental considerations, etc., which could affect whether the manual action was feasible. This process could result in the licensee inappropriately implementing changes to the FPP which could adversely affect the ability to achieve and maintain safe shutdown in the event of a fire, without receiving prior NRC approval.

An example of this process was noted during the team's review of design change notice (DCN) 39742-A. The licensee implemented DCN 39742-A in December 1997, which added a new local manual operator action for a fire in Room 757-A5 (Fire Area 27). The licensee performed a safety assessment/safety evaluation (WBPLEE-97-154-0) to evaluate this DCN for impact on the fire protection program. The impact of the DCN was evaluated against the design and licensing bases and was found to be acceptable by the licensee. The 10 CFR 50.59 safety evaluation for this DCN stated that the DCN was being implemented to correct an Appendix R control circuit interaction which could have caused the loss of both MCR air handling units (AHUs) A-A and B-B (0-MTR-31-12-A and 0-MTR-31-11-B, respectively) because the control circuits for both of the AHUs were routed in the same fire zone. A fire could cause the control power fuses to blow for both AHUs, resulting in their loss. The DCN added manual switches to the control circuits for each AHU and identified new local manual operator actions for restarting the AHUs. The switches could be used to transfer the essential control circuit to a different set of fuses. The new manual operator action was incorporated into Section C.23 of AOI-30.2. This procedure section provided MCR and local manual operator actions for a fire in Room 757-A5. During in-plant walkdowns of procedure AOI-30.2, Section C.23, the team observed that the new switch for AHU A-A and the associated new local manual operator action were located in Room 757-A2 of the auxiliary building, which was adjacent to Room 757-A5 (Fire Area 27).

The team used the guidance in Enclosure 2 of NRC Inspection Procedure 7111.05 to assess the feasibility of the new local manual operator action. The team initially questioned whether this new manual action was feasible based on the potential impact of the fire brigade activities in the immediate vicinity of Room 757-A2, and possible smoke migration from Room 757-A5 into Room 757-A2. However, after additional walkdowns of AOI-30.2, Section C.23, and discussions with licensee fire operations personnel, the team concluded that the new manual operator action could be performed within the time required by the Fire Protection Report (FPR). The team noted that the location of the previous manual action for restarting AHU A-A was in Room 755-C1 of the control building. The previous manual operator action was included in the licensee's Fire Protection Report and was reviewed by the NRC during the licensing process for Watts Bar Unit 1 in 1995. However, the new manual action added by DCN 39742-A was subsequent to Watts Bar Unit 1 licensing. The licensee implemented this manual operator action without obtaining prior NRC approval.

Analysis: The finding adversely impacted the reliability and capability of equipment required to achieve and maintain a safe shutdown condition following an Appendix R fire. The finding is greater than minor because it is associated with the protection against external factors attribute and degraded the reactor safety mitigating systems cornerstone objective. The team determined that this finding was of very low safety significance (green), because the manual operator action was considered feasible and could be reasonably accomplished within the 15-minute time specified in the Fire Protection Report. This determination was based on the guidance in Enclosure 2, Inspection Criteria for Fire Protection Manual Actions, of NRC Inspection Procedure 71111.05.

Enforcement: Operating License Condition 2.F requires that the licensee shall implement and maintain in effect all provisions of the approved fire protection program, as described in the Fire Protection Report for Watts Bar Unit 1, as approved in Supplements 18 and 19 of the SER (NUREG-0847). License Condition 2.F further states that the licensee may changes to the approved fire protection program without prior NRC approval, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Contrary to the above, the licensee implemented DCN 39742-A in December 1997, which added a new local manual operator action for restarting the MCR AHU A-A in the event of a fire in Room 757-A5 (Fire Area 27). This new local manual operator action was incorporated into Section C.23 of Procedure AOI-32. Use of local manual operator actions in lieu of providing physical protection of equipment required for safe shutdown is a change to the fire protection program that could adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Therefore, this new local manual operator action required NRC approval prior to implementation. This finding is a violation of NRC requirements will be identified as NCV 50-390/2004-006-001, Adding Local Manual Operator Actions Which Could Affect Safe Shutdown Without Obtaining Prior NRC Approval. This finding was entered into the licensee corrective action program as PER 34252.

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Davis, Fire Operations Support

J. Young, Operations Procedures Group

LIST OF DOCUMENTS REVIEWED

Procedures

AOI-30.1, Plant Fires, Rev. 6
 AOI-30.2, Fire Safe Shutdown, Rev. 15
 SOI-236.01, 125V DC Vital Battery Board 1, Rev. 16
 FPDP-3, Management of the Fire Protection Report, Rev. 4
 SPP-9.3, Plant Modifications and Engineering Change Control, Rev. 9
 TI-277, Modification Compliance Review - Fire Protection, Rev. 0

Completed Surveillance Procedures

1-SI-0-53-A, 18-Month Verification of Remote Shutdown Transfer Switches for Train A, Rev. 14
 1-SI-0-53-B, 18-Month Verification of Remote Shutdown Transfer Switches for Train B, Rev. 18

Lesson Plans/Job Performance Measures (JPM)

TO BE ADDED BY KATHLEEN

Problem Evaluation Report (PER)

WBN-00-016440-000, Revise Note in AOI-30.2, Section C.69, to be consistent with the FPR

Drawings

1-47W801-1, Main and Reheat Steam Flow Diagram, Rev. 38
 1-47W803-2, Auxiliary Feedwater Flow Diagram, Rev. 49
 1-47W809-1, Chemical and Volume Control System Flow Diagram, Rev. 48
 1-47W813-1, Reactor Coolant System Flow Diagram, Rev. 39
 1-47W845-3, Essential Raw Cooling Water Flow Diagram, Rev. 20
 1-47W859-1, Component Cooling System Flow Diagram, Rev. 44
 1-47W859-2, Component Cooling System Flow Diagram, Rev. 34

Calculations

WB-DC-40-51, Fire Protection of Safe Shutdown Capability, Rev. 3
 WBN-OSG4-031, Equipment Required for Safe Shutdown Per 10CFR50 Appendix R, Rev. 32

Miscellaneous Documents

Technical Specification 3.3.4, Remote Shutdown System Instrumentation
 DCN 38919-A, Appendix R Manual Action Requirements
 DCN 39742-A, Add Manual Switches to Resolve Appendix R Control Circuit Interaction