



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064**

April 15, 2002

Craig G. Anderson, Vice President
Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, Arkansas 72801-0967

**SUBJECT: RESPONSE TO BACKFIT CLAIM REGARDING NRC INSPECTION
REPORT 50-313/01-06; 50-368/01-06**

Dear Mr. Anderson:

As documented in NRC Inspection Report 50-313;-368/01-06, dated August 20, 2001, the NRC identified an unresolved item in the Unit 1 emergency diesel generator corridor and the Unit 1 north electrical switchgear room concerning use of manual actions in lieu of providing protection for cables associated with equipment necessary for achieving and maintaining hot shutdown as specified in 10 CFR Part 50, Appendix R, Section III.G.2. This issue was considered unresolved pending further NRC review and the determination of its risk. Subsequently, in an exit meeting held on August 30, 2001, the NRC informed Entergy Operations, Inc., that the existing configurations did not conform to the requirements of 10 CFR Part 50, Appendix R, Section III.G.2. However, the issue remained unresolved pending the completion of the NRC's risk determination.

Your letter of September 28, 2001, claimed that our position that manual actions cannot be used to comply with 10 CFR Part 50, Appendix R, Section III.G.2, was a backfit. At issue is your use of manual actions for achieving and maintaining hot shutdown conditions in the event of a fire in the Unit 1 emergency diesel generator corridor (Fire Zone 98J) and north switchgear room (Fire Zone 99M). In this letter, you asserted that the NRC has accepted such manual actions in the past, and stated that our position with respect to disallowing the use of manual actions for complying with Section III.G.2 of Appendix R should be considered a backfit that is generic to all plants.

On October 26, 2001, and again on January 17, 2002, we convened a backfit panel in accordance with NRC Management Directive 8.4, "NRC Program for Management of Plant-Specific Backfitting of Nuclear Power Plants," to review your backfit claim as stated in your letter of September 28, 2001. After careful consideration of your appeal, we have determined that (1) the NRC did not impose a regulatory staff position that is new or different from a previously applicable staff position relative to the requirements of 10 CFR Part 50, Appendix R, Section III.G.2; (2) the NRC did not approve the use of manual actions for complying with 10 CFR Part 50, Appendix R, Section III.G.2, in the Unit 1 diesel generator corridor and north electrical switchgear room in lieu of meeting the requirements of 10 CFR Part 50, Appendix R, Section III.G.2.a, III.G.2.b, or III.G.2.c; and (3) your methodology for using manual actions (in the event of a fire in the Unit 1 diesel generator corridor and north switchgear room), in lieu of

ensuring that one train of redundant cables and equipment of systems needed for achieving and maintaining hot shutdown conditions was free of fire damage, does not comply with the requirements of 10 CFR Part 50, Appendix R, Section III.G.2. Your claim that our position (that manual actions cannot be used to comply with 10 CFR Part 50, Appendix R, Section III.G.2) is a generic backfit will be addressed by the NRC's Office of Nuclear Reactor Regulation in their response to a letter from the Nuclear Energy Institute dated January 11, 2002. Accordingly, Unresolved Item 50-313;368/0106-02 has been reclassified as an Apparent Violation pending NRC's assessment of the risk significance associated with this finding. When completed, the results of the risk determination will be forwarded to you by separate correspondence. The basis for our conclusion regarding your backfit claim is enclosed.

If you disagree with this evaluation of your backfit claim, you may submit a written appeal to the Director, Office of Nuclear Reactor Regulation in accordance with NRC Management Directive 8.4, "NRC Program for Management of Plant-Specific Backfitting of Nuclear Power Plants." A copy of the applicable portion of this management directive is enclosed for your convenience.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/ADAMS.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Ellis W. Merschoff
Regional Administrator

Enclosures: As stated

Dockets: 50-313; 50-368
Licenses: DPR-51; NPF-6

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RIV:DRS/PSB	C:EMB	D:DRS	C:DRP/D	D:DRP	D:DNMS
RLNease/lmb	CSMarschall	ATHowell III	LJSmith	KEBrockman	DDChamberlain
/RA/	/RA/	/RA/	/RA/	/RA/	/RA/
2/1/2002	2/11/2002	2/27/2002	3/12/2002	3/12/2002	3/15/2002
RC	D:ACES	OGC	NRR/DLPM	DRA	RA
KDSmith	GFSanborn	GSMizuno	SARichards	TPGwynn	EW Merschhoff
/RA/	/RA/	/RA/	/RA/		/RA/
3/5/2002	3/12/2002	3/20/2002	4/11/2002		4/15/2002

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ENCLOSURE

In a letter dated September 28, 2001, Entergy Operations, Inc. (Entergy), claimed that Region IV's position that manual actions cannot be used to comply with 10 CFR Part 50, Appendix R, Section III.G.2. was a backfit, generic to all plants¹. Backfitting is defined in 10 CFR 50.109 "as the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position"

On October 26, 2001, the NRC convened a backfit panel to review Entergy's backfit claim as presented in their letter of September 28, 2001, and accompanying attachments. As a result of that meeting, the panel requested an evaluation of the following four key points presented in Entergy's backfit claim.

I. NRC's Past and Present Positions Regarding the Use of Manual Actions for Meeting the Requirements of 10 CFR Part 50, Appendix R, Section III.G

In their letter dated September 28, 2001, Entergy stated that the NRC had accepted on many occasions, including at Arkansas Nuclear One (ANO), the use of manual actions for complying with 10 CFR Part 50, Appendix R, Section III.G.2. Entergy stated that NRC generic Appendix R guidance documents, the NRC's Triennial Fire Protection Inspection Procedure 71111.05, and recent NRC fire protection reports all supported this position.

Entergy claimed that certain statements in NRC fire protection inspection reports and inspection procedures provide an NRC position that permits the use of manual actions for achieving post-fire safe shutdown. With respect to NRC inspection reports, the statements quoted by Entergy were taken from the description of the scope of the inspection, not from the inspection findings section of the reports. The triennial fire protection inspection scope consists of a review of the licensee's methodology for reaching safe shutdown, including any manual actions that are credited in that methodology. These scope statements are not an endorsement for the use of manual actions for meeting Section III.G.2 of Appendix R, rather they are statements describing what the inspectors reviewed. As described in NUREG 1409, NRC inspection procedures are not approved NRC positions².

¹ Entergy's claim that this position is a backfit generic to all plants will be addressed by the NRC's Office of Nuclear Reactor Regulation, in their response to a letter from the Nuclear Energy Institute dated January 11, 2002.

² In response to a question regarding whether NRC Inspection Manual guidance is considered an approved position, Section 3.3 of NUREG 1409, "Backfitting Guidelines," states, "No, inspection procedures are not approved staff positions, which is the reason they are not reviewed by CRGR." NUREG 1409 further states, "Licensees cannot be required to implement positions discussed in an inspection procedure or manual unless the same positions exist in the

In 1981, the NRC issued 10 CFR 50.48, "Fire protection," and Appendix R to 10 CFR Part 50, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979." ANO, Unit 1 was licensed in 1974, and Unit 2 was licensed in 1978; therefore, for both units, the licensee was required to meet the provisions of 10 CFR Part 50, Appendix R, Sections III.G, III.J, and III.O.

10 CFR Part 50, Appendix R, Section III.G, "Fire Protection of Safe Shutdown Capability," provides the requirements for ensuring that at least one train of equipment needed for safe shutdown is free of fire damage. As discussed in the Statements of Consideration for 10 CFR 50.48 and 10 CFR Part 50, Appendix R, it is not possible to predict the conditions under which fires may occur and propagate; therefore, the Commission established three specific methods for protecting safe shutdown equipment so that at least one train remains free of fire damage. These three methods are specified in Section III.G.2 of Appendix R. The first method is separation of redundant safe shutdown trains and associated circuits by 3-hour fire rated barriers. The second method is a combination of separation of redundant safe shutdown trains and associated circuits by 20 feet or more of space with no intervening combustibles or fire hazards, plus area-wide automatic fire suppression and detection. The third method is a combination of separation of redundant safe shutdown trains and associated circuits by a 1-hour fire-rated barrier plus automatic fire suppression and detection capability. If these conditions cannot be met, an exemption from Section III.G.2, or an alternative or dedicated safe shutdown capability specified in 10 CFR Part 50, Appendix R, Section III.G.3, is required. Specific requirements for alternative or dedicated shutdown are provided in 10 CFR Part 50, Appendix R, Section III.L.

The requirements for ensuring that at least one train of equipment needed for safe shutdown is free of fire damage is described and discussed in numerous generic NRC documents such as:

- Statements of Consideration for 10 CFR 50.48 and 10 CFR Part 50, Appendix R
- Generic Letter 81-12, "Fire Protection Rule (45 FR 76602, November 19, 1980)"
- Clarification of Generic Letter 81-12
- Information Notice 84-09, "Lessons Learned from NRC Inspections of Fire Protection Safe Shutdown Systems (10 CFR 50, Appendix R)"
- NUREG 0800, Standard Review Plan 9.5.1, "Fire Protection Program"

In addition, in ANO-specific licensing basis documents, such as safety evaluation reports and exemptions, the NRC staff described the same specific requirements for ensuring one train of safe shutdown equipment is free of fire damage. In these documents, the NRC restated the requirements of 10 CFR Part 50, Appendix R,

form of an approved regulatory staff position. Examples of approved staff positions are described in Manual Chapter 0514 and include the SRP [Standard Review Plan], branch technical positions, regulatory guides, generic letters, and bulletins."

Section III.G, and discussed the three methods for ensuring that one train of equipment and cables for systems necessary for achieving and maintaining hot shutdown conditions was free of fire damage, as required by Section III.G.2. The NRC further explained that if these methods could not be met, then an alternative fire protection configuration must be provided in accordance with Section III.G.3 (alternative or dedicated shutdown), of Appendix R. Specific requirements for meeting Section III.G.3 (alternative or dedicated shutdown) are provided in 10 CFR Part 50, Appendix R, Section III.L.

Conclusion: The regulations, statements of consideration, and generic correspondence, as well as ANO-specific documentation, are in agreement concerning the use of manual actions for achieving and maintaining hot shutdown conditions as required in Section III.G of Appendix R to 10 CFR Part 50. As these documents show, the NRC has not in the past and does not currently consider manual actions to be acceptable for complying with 10 CFR Part 50, Appendix R, Section III.G.2, unless specifically reviewed and approved. The panel concludes that the position to disallow the use of manual actions for meeting 10 CFR Part 50, Appendix R, Section III.G.2 is not an imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position. Therefore, this position is not a backfit specific to ANO. Entergy's claim that NRC inspection report statements constitute a basis for their backfit claim is addressed in Section IV of this enclosure.

II. ANO's Position Regarding 10 CFR Part 50, Appendix R, Section III.G

In a letter dated September 28, 2001, Entergy summarized their positions concerning the use of manual actions as:

- "1. *The use of manual actions to operate necessary components . . . outside the identified fire areas is permitted by 10CFR50 Appendix R, Section III.G.1 and does not violate 10 CFR 50, Section III.G.2;*
- "2. *Compliance with 10CFR50 Appendix R, Section III.G.2 does not require protective features on circuits that are not required to function and, therefore, are not necessary systems required to achieve safe shutdown conditions and, regardless of fire damage cannot prevent the ability to achieve safe shutdown conditions."*

Section III.G.1 of Appendix R to 10 CFR Part 50 provides the overall fire protection objective to protect equipment so that in the event of a fire in any fire area, (a) one train of systems necessary for reaching hot shutdown conditions (from either the control room or emergency control stations) is free of fire damage; and (b) systems necessary for reaching cold shutdown conditions (from either the control room or emergency control stations) can be repaired within 72 hours. Section III.G.1.a. can be met by ensuring one train of safe shutdown systems is free from fire damage as specified in Section III.G.2 of Appendix R, or by using an alternative safe shutdown capability specified in Section III.G.3. While Section III.G.1.a. contemplates the use of manual actions, these are provided in the context of alternative or dedicated shutdown under Section III.G.3.

Section III.G.2 of Appendix R to 10 CFR Part 50 provides three acceptable methods for ensuring cables and equipment associated with one train of systems necessary for achieving and maintaining hot shutdown conditions is free of fire damage. None of the three methods in Section III.G.2 describes the use of manual actions to mitigate the effects of a fire on safe shutdown equipment and cables. Rather, these methods have the objective of preventing fire damage through the use of specific protection features. Section III.G.2 also requires these same fire protection features for circuits whose damage (by fire) could adversely affect the accomplishment of safe shutdown functions. Contrary to Entergy's position (2) above, cables associated with systems necessary for safe shutdown are required to be free of fire damage, whether the cables themselves are considered "necessary" or not. In addition, certain circuits which may not be required to function, but whose maloperation could adversely affect safe shutdown, must also be free of fire damage.

If a licensee cannot meet the requirements of 10 CFR Part 50, Appendix R, Section III.G.2 for certain fire areas, then an alternative or dedicated shutdown capability is required as outlined in Section III.G.3. Under Section III.G.3, manual actions may be taken. The goals and requirements associated with alternative and dedicated shutdown capability under Section III.G.3 are specified in Section III.L of Appendix R, and include a requirement that alternative shutdown capability be implemented by procedures. Another option would be to request an exemption from those portions of Section III.G.2 that cannot be met.

Conclusion: For the ANO plant, Entergy must meet the requirements of 10 CFR Part 50, Section III.G.1. In addition, where a fire area contains redundant trains of systems necessary to achieve and maintain hot shutdown conditions, Entergy must meet either Section III.G.2 or Section III.G.3 for the protection of cables and equipment associated with systems necessary for achieving and maintaining hot shutdown conditions, or obtain an exemption. Section III.G.2 provides three specific methods for preventing fire damage to equipment and cables associated with systems necessary for achieving and maintaining hot shutdown, and to circuits whose maloperation could adversely affect the licensee's ability to achieve hot shutdown. Section III.G.3 provides the option of using alternative or dedicated shutdown capability for those fire areas in which the licensee cannot meet the requirements of Section III.G.2. Therefore, the use of manual actions for meeting the requirements of Section III.G.2 is not permitted, unless these actions were specifically reviewed and approved by the NRC and documented in a safety evaluation report.

III. NRC Review and Approval of Manual Actions for Meeting the Requirements of 10 CFR Part 50, Appendix R, Section III.G in 14 Fire Zones at ANO

In their letter of September 28, 2001, Entergy stated that the use of manual actions to achieve safe shutdown conditions in the event of a fire has been a standard practice at ANO since the inception of Appendix R. In support of this position, Entergy cited an August 31, 1982, meeting between NRC and Arkansas Power and Light (documented by the NRC in a meeting summary dated September 3, 1982) and an Arkansas Power and Light response to an NRC request for additional information (RAI), dated October 5, 1982.

While we acknowledge that the NRC staff was aware that the ANO strategy for post-fire safe shutdown included some manual actions, the docketed NRC correspondence on the subject was written in the context of alternative shutdown, 10 CFR Part 50, Appendix R, Section III.G.3. For example, the subject line of the September 3, 1982, meeting summary reads, "Summary of Meeting with Arkansas Power and Light Company (AP&L) on August 31, 1982, Concerning the Alternate Safe Shutdown Capability in the Event of a Fire at Arkansas Nuclear One Units Nos. 1 & 2 (ANO-1 & 2)." Clearly, this meeting was held and manual actions discussed in the context of alternate shutdown, which is governed by 10 CFR Part 50, Appendix R, Section III.G.3 and Section III.L (specific requirements for meeting Section III.G.3 shutdown are provided in Section III.L). The RAI (to which the licensee responded via a letter dated October 5, 1982) was transmitted to the licensee by letter dated September 3, 1982, which stated, "We have reviewed your submittal dated July 1, 1982, with regard to your review of the alternate shutdown capability for Arkansas Nuclear One, Units Nos. 1 and 2 and we discussed our review with you at the meeting of August 31, 1982. As a result of that review and the meeting of August 31, 1982, we have identified the additional information (Enclosure 1) which we need to complete our review." In this letter, the NRC stated that the RAI was in support of the staff's review of the licensee's alternate shutdown capability.

The NRC subsequently issued a safety evaluation report (SER) dated May 13, 1983, which provided the staff's review of the licensee's methodology for meeting 10 CFR Part 50, Appendix R, Sections III.G.3 and III.L. The SER was entitled, "Safety Evaluation by the Office of Nuclear Reactor Regulation, Arkansas Nuclear One - Units 1 and 2, Dockets Nos. 50-313 and 50-368, Appendix R to 10 CFR 50, Items III.G.3 and III.L," and referenced the meeting of August 31, 1982, and the licensee's response of October 5, 1982. In this SER, the NRC reviewed manual actions credited in the context of Sections III.G.3 and III.L, stating, "All other areas of the plant not required to have alternate safe shutdown will comply with the requirements of Section III.G.2 of Appendix R, unless an exemption request has been approved by the staff." The licensee did not identify Fire Zones 98J and 99M as requiring manual action, and did not request an exemption from Section III.G.2.

Upon review of these statements, we believe that they should be interpreted as constituting NRC's review and approval of the use of manual actions for alternative shutdown, in accordance with 10 CFR Part 50, Appendix R, Sections III.G.3 and III.L.

Conclusion: The NRC requested additional information from the licensee in the context of alternative shutdown (10 CFR Part 50, Appendix R, Section III.G.3) for 14 fire zones in which manual actions were credited. In their response to the request, the licensee did not identify Fire Zones 98J and 99M as requiring manual action, and did not request an exemption from Section III.G.2 for these two fire zones. As stated in a subsequent safety evaluation report concerning alternative shutdown, for all other areas, the NRC expected the licensee to either comply with Section III.G.2 or request an exemption. Therefore, the use of manual actions for achieving and maintaining hot shutdown conditions for Fire Zones 98J and 99M, was not reviewed and approved by the NRC.

IV. NRC's Alleged Tacit Approval of the Licensee's Methodology for Complying with 10 CFR Part 50, Appendix R, Section III.G

In their letter of September 28, 2001, Entergy stated that in 1982, they submitted to the NRC a description of their methodology for complying with Appendix R, which included a statement that under certain conditions credit for manual operation of equipment was taken. Entergy also stated that because this statement was not challenged in subsequent NRC correspondence (such as inspection reports) or safety evaluation reports, this silence constituted tacit approval of the use of manual actions, thus, making it part of the ANO licensing basis.

As discussed in NUREG 1409³, simply not challenging a licensee's practice in inspection reports would not be considered tacit approval. Furthermore, contrary to Entergy's claim, the NRC was not silent regarding the use of manual actions. In an August 31, 1982, meeting between NRC and Arkansas Power and Light Company, as documented by the NRC in a letter dated September 3, 1982, the NRC requested additional information for fire zones that required some sort of manual action or non-routine operation. Fire Zones 98J and 99M were not identified by the licensee as requiring manual actions. By this licensee omission, the NRC staff would have concluded that no manual actions would be credited for mitigating fires in Fire Zones 98J and 99M.

In submitting the results of their Appendix R compliance review in a letter dated July 1, 1982, the licensee stated, that in certain cases, credit for manual operation of equipment was taken if controls (and power for valves) could be damaged by a fire. *"Such credit was taken only if:*

- a. the component to be operated is not located in the affected fire zone, although the cable may be damaged by fire;*
- b. sufficient time is available to perform the required manual actions; and*
- c. personnel are available, beyond the fire brigade and minimum operations shift crew limitations, to perform the manual actions."*

Contrary to the above conditions, the licensee did not perform an analysis that demonstrated sufficient time was available and sufficient trained personnel were available to take all the actions required to mitigate all the failures, which could occur as a result of fires in Fire Zones 98J and 99M. As discussed in Section III of this enclosure, manual actions were reviewed and approved for use in alternative shutdown areas (10 CFR Part 50, Appendix R, Section III.G.3). Even if the NRC's approval of manual actions could be construed as acceptable for meeting the requirements of 10 CFR Part 50, Appendix R, Section III.G.2 (which, as discussed in Section III, there

³ Section 3.3 of NUREG 1409, "Backfitting Guidelines," states, "Cases where an inspector provides tacit approval are relatively rare. Simply not challenging a licensee's practice would not be considered tacit approval."

was no such approval), it appears that the licensee did not comply with their own criteria for the use of manual actions.

Conclusion: Even if, as Entergy claims, the NRC approved (tacitly or otherwise) the use of manual actions for meeting Section III.G.2 of Appendix R (which it did not), this approval would have been dependent on the licensee doing so under the conditions described in their Appendix R compliance methodology. However, for Fire Zones 98J and 99M, the licensee did not meet their own conditions set forth for the use of manual actions.