



December 21, 1990

2CAN129013

U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station PI-137
Washington, D. C. 20555

Subject: Arkansas Nuclear One-Unit 2
Docket No. 50-368
License No. NPI-6
Response to Generic Letter 90-06

Gentlemen:

Generic Letter 90-06, Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors" was issued on June 25, 1990 (0CNA069027) to advise licensees of the NRC Staff positions with respect to resolution of these Generic Issues. The Staff positions are delineated in Enclosures A and B to the Generic Letter.

With respect to the Staff positions delineated in Enclosure A, Entergy Operations, Inc. commits to implement the intent of the improvements identified in Section 3 of Enclosure A. Since the design of Arkansas Nuclear One-Unit 2 does not utilize power-operated relief valves for low-temperature overpressure protection, the specific actions of Enclosure A cannot be totally implemented. However, a majority of the improvement actions identified in the Staff positions have already been implemented at Arkansas Nuclear One-Unit 2 for the installed low-temperature overpressure protection system components. As such, the intent of the improvement actions has been satisfied with the exception of Technical Specification requirements. Information regarding the unique design configuration and current status of Arkansas Nuclear One-Unit 2 with respect to the Staff positions are provided in the enclosed Attachment to this letter.

Entergy Operations, Inc. will propose Technical Specification changes for Arkansas Nuclear One-Unit 2 that provide limiting conditions for operation in Modes 4, 5 and 6 for the low-temperature overpressure protection system based on the guidance provided in Attachment B-1 of Enclosure B. As discussed above, the proposed Technical Specification changes can only utilize the guidance provided in Enclosure B since Arkansas Nuclear One-Unit 2 has a unique design for low-temperature overpressure protection.

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Entergy Operations, Inc. will also propose Technical Specification changes for Arkansas Nuclear One-Unit 2 that consider block valve operability in Modes 1, 2 and 3 for the low-temperature overpressure protection system. Since the design of Arkansas Nuclear One-Unit 2 for low-temperature overpressure protection is unique when compared to other Combustion Engineering designed plants, the Technical Specification changes provided in Attachment A-1 of Enclosure A are not directly applicable.

Generic Letter 90-06 requests that the proposed Technical Specification changes be submitted prior to startup from the first refueling outage that occurs six months after the date of the Generic Letter. Entergy Operations, Inc. proposes an alternate schedule due to the near term constraint on Arkansas Nuclear One-Unit 2 outage resources (outage to begin in February 1991) and to utilize consistent timing on submittal of Technical Specification changes for revised pressure-temperature operating limits.

Submittal of Technical Specification changes for the low-temperature overpressure protection system components will coincide with a currently planned submittal of Technical Specification changes to modify the pressure-temperature operating limits for Arkansas Nuclear One-Unit 2. This submittal schedule has been selected since the revised pressure-temperature operating limits may modify the low-temperature overpressure protection setpoints part way into Cycle 9 operation. The proposed schedule for submittal of these Technical Specification changes is June 1, 1991.

This information is being provided under affirmation pursuant to 10 CFR 50.54(f). Please advise if you require any additional information.

Very truly yours,



James J. Fisicaro
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JJF/SAB/sgw
Attachment

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STATE OF ARKANSAS)
) SS
COUNTY OF LOGAN)

I, J. J. Fiscaro, being duly sworn, subscribe to and say that I am Manager, Licensing, ANO for Entergy Operations, Inc.; that I have full authority to execute this oath; that I have read the document numbered 2CAN129013 and know the contents thereof; and that to the best of my knowledge, information and belief, the statements in it are true.

J. J. Fiscaro
J. J. Fiscaro

SUBSCRIBED AND SWORN TO before me, a Notary Public in and for the County and State above named, this 21st day of December, 1990.

Sandy Siebenmorgen
Notary Public

My Commission Expires:
May 11, 2000

Arkansas Nuclear One-Unit 2 Low-Temperature Overpressure Protection Design:

The design of the LTOP system at Arkansas Nuclear One-Unit 2 (ANO-2) is unique when compared to other Combustion Engineering designed plants since the design does not employ power-operated relief valves on the pressurizer or relief valves on the shutdown cooling system to provide low-temperature overpressure protection of the reactor vessel. As described in Sections 5.2.2.4, 5.5.13, 7.6.1.3 and 7.6.2.3 of the ANO-2 Safety Analysis Report (SAR), overpressure protection of the reactor coolant system (RCS) during low temperature operation is provided by two redundant Low-Temperature Overpressure Protection (LTOP) relief valves through a single discharge header. Each relief valve has the capacity to accommodate a worst case full safety injection initiation from a water solid RCS condition.

Each LTOP relief valve is mounted to the top of the RCS pressurizer through two isolation (or block) valves and connecting piping. The LTOP relief valves are operator enabled (by opening the block valves) during cooldown when the RCS corresponds to the temperature conditions where LTOP is required, and isolated from the RCS during heatup when the RCS is above the LTOP temperature conditions. An alarm circuit is provided to alert the operator if the RCS temperature drops to the LTOP temperature condition and any block valve is not fully open. The design only requires that the operator line up the relief valves during cooldown and isolate during heatup. No other operator action is required to prevent an overpressurization event at low temperature.

SAFETY FUNCTIONS OF PORVs AND BLOCK VALVES (GL 90-06, Enclosure A, Section 2):

Generic Letter 90-06 Enclosure A, Section 2 states that over a period of time the role of PORVs has changed such that PORVs are now relied upon by many plants to perform one, or more, of the following safety-related functions:

1. Mitigation of a design-basis steam generator tube rupture accident,
2. Low-temperature overpressure protection of the reactor vessel during startup and shutdown, or
3. Plant cooldown in compliance with Branch Technical Position kSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) System."

Section 2 further states that where PORVs are used or could be used to perform one, or more, of these safety-related functions or to perform any other safety-related function in the future, it is appropriate to reconsider the safety classification of PORVs and the associated block valves.

Arkansas Nuclear One-Unit 2 Response:

As described above, the unique design of the LTOP system for ANO-2 employs relief valves and block valves mounted to the top of the RCS pressurizer. As such, the design does not rely upon power-operated relief valves to perform any of the safety-related functions identified in Section 2 of Enclosure A. However, the LTOP system components are relied upon to provide low-temperature overpressure protection of the reactor vessel during startup and shutdown. The block valves also function as passive reactor coolant pressure boundary integrity valves during operation in Modes 1, 2 and 3. The following provides a description of the ANO-2 design with respect to reliance upon LTOP system components for each safety-related function:

1. Mitigation of a design-basis steam generator tube rupture accident.

Section 15.1.18 of the ANO-2 SAR describes the analysis and the results for the Steam Generator Tube Rupture accident. Since the design of the LTOP system for ANO-2 does not incorporate PORVs, the LTOP system components are not relied upon to perform this safety-related function.

2. Low-temperature overpressure protection of the reactor vessel during startup and shutdown.

As described above, the ANO-2 design of the LTOP system includes relief valves and associated block valves which are relied upon to perform this safety-related function.

3. Plant cooldown in compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) System."

ANO-2 was licensed prior to issuance of the Standard Review Plan and Branch Technical Position RSB 5-1. Therefore, the licensing basis for ANO-2 does not require compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Design Requirements of the Residual Heat Removal (RHR) System."

IMPROVEMENTS TO ALL PORVs AND BLOCK VALVES (GL 90-06, Enclosure A, Section 3):

Generic Letter 90-06 Enclosure A, Section 3 provides the NRC Staff position with respect to actions which should be taken by licensees to improve the reliability of PORVs and block valves. Even though the LTOP system does not incorporate PORVs, information regarding the LTOP relief valves and associated block valves for ANO-2 are provided below to address the three separate actions presented in Section 3.

NRC Staff Position 3.1, Item 1:

Include PORVs and block valves within the scope of an operational quality assurance program that is in compliance with 10 CFR Part 50, Appendix B. This program should include the following elements:

- a. The addition of PORVs and block valves to the plant operational Quality Assurance List.
- b. Implementation of a maintenance/refurbishment program for PORVs and block valves that is based on the manufacturer's recommendations or guidelines and is implemented by trained plant maintenance personnel.
- c. When replacement parts and spares, as well as complete components, are required for existing non-safety-grade PORVs and block valves (and associated control systems), it is the intent of this generic letter that these items may be procured in accordance with the original construction codes and standards.

Arkansas Nuclear One-Unit 2 Response:

The ANO-2 LTOP relief valves and associated block valves are within the scope of the Arkansas Nuclear One Quality Assurance Manual Operations (QAMO). The QAMO meets the requirements of 10 CFR Part 50, Appendix B.

- a. The LTOP relief valves (2PSV-4732 and 2PSV-4742) are included in the ANO-2 Component Level Q-List which is maintained current in the Station Information Management System (SIMS) Component Data Base. The relief valves are classified as QA Category S, Safety Class 2 components (non-Q, non-Fire protection equipment/components subject to the QA Program requirements of 10CFR50 Appendix B as imposed by the NRC and/or committed to by Entergy Operations, Inc.) with a Q-Function of T1 (docketed NRC correspondence, commitments including SAR). The relief valves were originally procured (valve manufacturer was the J. E. Lonergan Company) as Seismic Class I, ASME Section III, Class II valves.

The LTOP block valves (2CV-4730-1, 2CV-4731-2, 2CV-4740-2 and 2CV-4741-1) are also included in the ANO-2 Component Level Q-List in the SIMS Component Data Base. These valves are classified as QA Category Q, Safety Class 1 components with a Q-Function of C4 (RCS Pressure Boundary Integrity; Passive). The valve manufacturer (Borg-Warner Corporation) is on the ANO QVL and has an approved ASME Section III NCA QA program.

- b. Maintenance and repair activities which affect quality and safety at Arkansas Nuclear One are implemented through controlled procedures by trained plant personnel as described in the QAMO. Each procedure is sufficiently detailed such that a qualified individual may perform the required functions without direct supervision. Maintenance or refurbishment of the LTOP relief valves is controlled through Mechanical Maintenance Procedure No. 2402.087 which was prepared using the manufacturer's technical manual. Maintenance or refurbishment of the associated block valves is controlled through the issuance of specific Work Plans in accordance with Administrative Procedure No. 1000.006. Work Plans meet the review and approval requirements of existing procedures.
- c. Replacement parts and spares, as well as complete components for the LTOP Relief valves and block valves (and associated control systems) are procured in accordance with the applicable codes and standards as required by the QAMO.

NRC Staff Position 3.1, Item 2:

Include PORVs, valves in PORV control air systems, and block valves within the scope of a program covered by Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants," of Section XI of the ASME Boiler and Pressure Vessel Code. Stroke testing of PORVs should only be performed during Mode 3 (HOT STANDBY) or Mode 4 (HOT SHUTDOWN) and in all cases prior to establishing conditions where the PORVs are used for low-temperature overpressure protection. Stroke testing of the PORVs should not be performed during power operation. Additionally, the PORV block valves should be included in the licensees' expanded MOV test program discussed in NRC Generic Letter 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," dated June 28, 1989.

Arkansas Nuclear One-Unit 2 Response:

As described above, the LTOP system for ANO-2 does not incorporate PORVs (or control air systems). The ANO-2 LTOP relief valves and associated block valves are within the scope of the Inservice Testing Program of pumps and valves for ANO-2 (Engineering Programs Procedure No. 1092.033). This program is in compliance with Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants," of Section XI of the ASME Boiler and Pressure Vessel Code with exceptions authorized by the NRC.

LTOP relief valves 2PSV-4732 and 2PSV-4742 are classified as Category C valves per Subsection IWV in the SIMS Component Data Base. The setpoints of the relief valves are tested in accordance with Mechanical Periodic Tests Procedure No. 2306.09 during each refueling outage.

Block valves 2CV-4730-1, 2CV-4731-2, 2CV-4740-2 and 2CV-4741-1 are classified as Category B valves per Subsection IWV in the SIMS Component Data Base and will be stroke time tested in the open and close directions during cold shutdown. The procedure that will be used for stroke time testing of the block valves is currently under development and will be issued and implemented during the 2R8 refueling outage.

The LTOP block valves are included in the ANO Motor Operated Valve Testing and Surveillance (MOVATS) program (Maintenance Administrative Procedure No. 1025.011) in response to NRC Generic Letter 89-10.

NRC Staff Position 3.1, Item 3:

For operating PWR plants, modify the limiting conditions of operation of PORVs and block valves in the technical specifications for Modes 1, 2, and 3 to incorporate the position adopted by the staff in recent licensing actions. Attachments A-1 through A-3 are provided for guidance. The staff recognizes that some recently licensed PWR plants already have technical specifications in accordance with the staff position. Such plants are already in compliance with this position and need merely state that in their response. These recent technical specifications require that plants that run with the block valves closed (e.g., due to leaking PORVs) maintain electrical power to the block valves so they can be readily opened from the control room upon demand. Additionally, plant operation in Modes 1, 2, and 3 with PORVs and block valves inoperable for reasons other than seat leakage is not permitted for periods of more than 72 hours.

Arkansas Nuclear One-Unit 2 Response:

Entergy Operations, Inc. will propose Technical Specification changes for ANO-2 that provide limiting conditions for operation in Modes 4, 5 and 6 for the low-temperature overpressure protection system based on the guidance provided in Attachment B-1 of Enclosure B. The proposed Technical Specification changes can only utilize the guidance provided in Enclosure B since ANO-2 has a unique design for low-temperature overpressure protection. The specification changes will address requirements for the LTOP relief valves and associated block valves that are consistent with the intent of the requirements for PORVs and block valves identified in Attachment B-1 of Enclosure B to Generic Letter 90-06, the Bases (Attachment B-2) for these requirements and the guidance provided in Attachment B-3.

Entergy Operations, Inc. will also propose Technical Specifications changes for ANO-2 that consider block valve operability in Modes 1, 2 and 3 for the low-temperature overpressure protection system. Since the design of ANO-2 for low-temperature overpressure protection is unique when compared to other Combustion Engineering designed plants, the Technical Specification changes provided in Attachment A-1 of Enclosure A are not directly applicable. The specification changes will address requirements for the block valves and the Bases for these requirements.