



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 29, 2012

Vice President, Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 – LICENSE AMENDMENT REQUEST
REGARDING TECHNICAL SPECIFICATION CHANGE ASSOCIATED WITH
MAIN FEEDWATER VALVES (TAC NO. ME8911)

Dear Sir or Madam:

By letter dated June 19, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12172A040), Entergy Operations, Inc. (Entergy, the licensee), submitted a license amendment request (LAR) for Arkansas Nuclear One, Unit 1 (ANO-1). The proposed change would revise Technical Specification (TS) 3.7.3, "Main Feedwater Isolation Valves (MFIVs), Main Feedwater Block Valves, Low Load Feedwater Control Valves and Startup Feedwater Control Valves," and its associated Bases. TS 3.7.3 Conditions A, B, C, and D permit 72 hours to close or isolate individual inoperable valves. In addition, other modifications to this specification are proposed to address two or more valve inoperabilities where steam generator (SG) automatic isolation capability is maintained.

The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the technical specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

The NRC staff has reviewed your application and concluded that it did not provide technical information in sufficient detail to enable the NRC staff to complete its detailed review and make an independent assessment regarding the acceptability of the proposed amendment in terms of regulatory requirements and the protection of public health and safety and the environment.

This informational need was conveyed to you by phone call on August 15, 2012. In the telephone call, the NRC staff identified that the following deficiencies based upon its review of the LAR in accordance with LIC-109, Appendix B, "Guide for Performing Acceptance Reviews," Section 3.1.2:

- Completeness of Scope – Significant analyses/evaluation necessary for staff review are missing from the LAR.
- Sufficiency of Information – Information provided in the LAR lacks a level of detail that is appropriate and necessary for the staff to perform an acceptance review.
- Regulatory Basis – Applicable regulations and criteria consistent with regulatory vehicles were not applied properly in the licensee request.

Thus, in light of the deficiencies explained below, the NRC staff concludes that the LAR does not provide sufficient and complete information for determining appropriate completion times and action statements for main feedwater isolation.

1. The proposed new "E" specification for two valves inoperable in a flow path constitutes a loss of safety function to isolate feedwater to a steam generator. When a safety function is lost, typically, the licensee is directed to enter TS 3.0.3, which directs shutting down the unit. Standard TS (STS) guidance suggests an 8-hour completion time in order to perform a controlled unit shutdown from full power conditions for plants with only one MFIV, when it becomes inoperable. For plants with redundant valves, STS also suggest an 8-hour completion time to isolate the flow path when the two valves are inoperable in the same flow path. Thus, when a safety function is lost, guidance requires that the plant be safely shut down, the flowpath isolated, and the operation discontinued.

The licensee's proposed required action would only require operators to close the failed control valve (startup or low flow) when the MFIV and another valve are inoperable in the same flow path (specification "E"). The proposed required action does not include an action to close the inoperable MFIV. Since the proposed required action does not require closing all control valves or closing the MFIV in that flow path, the licensee can, based on specification "A," stay at full power with a failure of two valves for up to 72 hours.

This proposed required action deviates from the STS for two valves inoperable in the same flow path. STS requires the flow path to the SG be isolated within 8 hours, which, in effect, requires restoration of the valves to operable status or start a controlled shutdown of the plant. The bases of the STSs state that the actions are appropriate given the potential for common causes of valve failure and, in the event of a main steam line break, the continued addition of main feedwater into a faulted steam generator could challenge safety limits.

The LAR lacks sufficient basis for allowing valve configurations consistent with continued operation in the case where two valves are inoperable since common causes of valve failure are not limited by valve design.

2. When the safety function is lost and not restored, the licensee proposes specification "F.2.1," which directs the operators to take action to isolate the flow path and allows the unit to remain in a Mode 3 indefinitely. Mode 3 is an applicable mode for this LCO. The NRC staff notes that with the flow path isolated, the safety function is maintained. However, the expectation is that the licensee will take corrective actions to restore the functionality of the valve(s). The LAR does not describe explicitly how the safety function will be maintained in this configuration and maintenance activities to be performed, such as flow path isolated with manual valves closed or power/air removed from control valves with valves shut.
3. In the LAR, the licensee states that it made changes to the TS bases under the provisions of 10 CFR 50.59 to address manual operation of parallel valves with respect to common mode failures. The LAR does not describe whether the control valves, when in manual, will close automatically when required, or will they be considered inoperable when in manual, and whether the MFIV can be placed in a manual mode where it will not auto close.
4. The licensee proposes a "B" specification action for an inoperable block valve that has the licensee isolate the block valve. The submittal does not describe if there are manual valves to perform the isolation function. The LAR does not explain what the intended action would be to isolate the block valve.
5. On page 8 of the submittal, the licensee states, in part, that

Therefore, the potential for a common mode failure that would prevent automatic isolation of a MFW train due to failures of the EFIC [Emergency Feedwater Initiation and Control] system is low.

This statement implies that a common mode failure may exist. However, the LAR does not provide a provision to evaluate a failure of the low flow or start up control valves for a common failure or an explanation on the statement that the potential for a common mode failure is "low" or whether it is not credible.

6. On page 8 of the submittal the licensee states, in part, that

If a common mode failure were identified with respect to the MFW Block Valve and MFIV, it is extremely unlikely the failure would occur on both valves in the same MFW train in any 24-hour period.... Therefore, although the MFW Block Valves and the MFIV are identical with similar valve operators, a 24-hour period to determine the potential for a common mode failure does not have a significant adverse impact on the margin of safety."

If the licensee permits maintenance to be done on both similar valves during the same outage, then a defect part can affect both valves. The LAR does not provide justification of the position that a failure on either the MFIV or block valve will be "extremely unlikely" to occur on the other valve.

Because of the extensive nature of the information needed, the NRC staff concludes that the request for approval of the proposed action is unacceptable for NRC review pursuant to 10 CFR 2.101. Additionally, other aspects of the LAR may also be insufficient but were not reviewed or identified due to the significance of the aforementioned information insufficiency. NRC staff activities on the review have ceased and the associated Technical Assignment Control number has been closed.

If you have any questions, please contact me at (301) 415-1480 or by e-mail at kaly.kalyanam@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "N. Kaly Kalyanam". The signature is fluid and cursive, with a horizontal line underlining the name.

N. Kaly Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosure:
As stated

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Sincerely,

/RA/

N. Kaly Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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