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1CAN061201

June 19, 2012

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request
Technical Specification Change Associated with Main Feedwater Valves
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Arkansas Nuclear One, Unit 1 (ANO-1). Currently, entry into 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," Condition E is initiated when any two valves in a given flow path to an associated Steam Generator (SG) are inoperable. This includes valves parallel to one another, even if the flow path can be isolated automatically by an operable valve. The purpose of entry into Condition E is to ensure sufficient remedial action is initiated in the event a common mode failure exists. Note that Condition E does not provide for a determination of common mode failure, but assumes one exists. Condition E also does not provide sufficient opportunity to complete a common mode failure determination or to restore valves to an operable status, having a Completion Time of only 8 hours followed by a unit shutdown. As concluded in Attachment 1 of this letter, the only practical common mode failure that could result in failure to isolate a SG flow path is with regard to the Main Feedwater (MFW) Block Valve and the MFIV for a given SG. Therefore, the proposed change will revise Condition A for MFIVs and Condition B for MFW Block Valves to allow 24 hours to determine if a potential common mode failure exists.

Because common mode failures between other MFW valves could not reasonably result in failure to isolate the associated SG, Condition E is modified to encompass multiple inoperable valves only when the MFIV in the affected flow path is also inoperable. This is acceptable because the safety function for isolating the SG in the event of a MFW or Main Steam line break is maintained provided the MFIV remains operable for an affected flow path. As described in the revised TS Bases, Condition E is immediately applicable upon determination that a common mode failure exists involving a MFIV and a MFW Block Valve in the same flow path, regardless of whether the 24-hour allowance of Required Action A.1 or B.1 has expired. Establishing a Required Action for common mode failure determination is consistent with TS 3.6.3, "Reactor Building Isolation Valves" and TS 3.8.1, "AC Sources – Operating."

The requirement to enter current TS 3.7.3 Required Action E.1 for parallel valves is found only in the associated TS 3.7.3 Bases. This Condition appeared in the first issue of the improved standard TS (ITS) NUREGs (Revision 0). Research and discussion with Excel Services Corporation (the industry custodian of the ITS) revealed no information justifying the common mode failure concern or the extremely short Completion Time associated with this Required Action (8 hours). Because the MFW valves vary significantly from plant-to-plant, the Condition may have been a "catch-all" in the event some designs were highly susceptible to common mode failures affecting all required valves.

Manual operation of the control valves (from the Control Room hand-indicating controllers) occurred in 2010 to support MFW testing, which resulted in entry in Condition E. A TS change was submitted thereafter to revise the TS Bases, permitting manual operation of parallel valves provided the MFIV remained operable. The basis for this request was that manual valve operation (from the Control Room) did not constitute a common mode failure. Following discussions with the NRC staff, the letter was withdrawn and the associated Bases revised in accordance with 10 CFR 50.59 to address manual operation of parallel valves with respect to common mode failures. However, in February 2012, a control system failure resulted in two parallel valves being incapable of automatic closure (inoperable). A request for enforcement discretion was initiated due to the short Completion Time of Condition E. Based on such circumstances and the fact that SG automatic isolation capability (via the MFIV) was never lost, Entergy is proposing the aforementioned changes to TS 3.7.3.

A description of the proposed change and the basis thereof is provided in Attachment 1. A markup of the affected TS page and TS Bases pages is contained in Attachments 2 and 3, respectively. Attachment 4 contains the revised (clean) version of the affected TS page.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that the change involves no significant hazards consideration. The basis for this determination is included in the attached submittal.

The proposed change includes one new commitment to revise the associated TS Bases in conjunction with implementation of this amendment, once approved, in accordance with TS 5.5.14, Technical Specification (TS) Bases Control Program (refer to Attachment 5).

Entergy requests approval of the proposed amendment by July 1, 2013. Once approved, the amendment shall be implemented within 90 days. Although this request is neither exigent nor emergency, your prompt review is requested.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Arkansas State Official.

If you have any questions or require additional information, please contact Stephenie Pyle at 479-858-4704.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 19, 2012.

Sincerely,

ORIGINAL SIGNED BY CHRISTOPHER J. SCHWARZ

CJS/dbb

Attachments:

1. Analysis of Proposed Technical Specification Change
2. Proposed Technical Specification Change (mark-up)
3. Proposed Technical Specification Bases Change (mark-up)
4. Revised (clean) Technical Specification Pages
5. List of Regulatory Commitments

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Attachment 1

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Analysis of Proposed Technical Specification Change

1.0 SUMMARY DESCRIPTION

This letter is a request to amend Technical Specification (TS) and TS Bases associated with Operating License DPR-51 for Arkansas Nuclear One, Unit 1 (ANO-1).

The proposed change revises 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 to permit a reasonable opportunity to determine if a common mode failure exists that could prevent isolation of the associated Steam Generator (SG) should an event occur. Establishing a Required Action for common mode failure determination is consistent with TS 3.6.3, “Reactor Building Isolation Valves” and TS 3.8.1, “AC Sources – Operating.” In addition, other modifications to this specification are made to address two or more valve inoperabilities where SG automatic isolation capability is maintained.

2.0 DETAILED DESCRIPTION

The proposed change will revise 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 recover or isolate individual inoperable valves. Currently, entry into TS 3.7.3 Condition E is required when any two valves in a given flow path to the associated SG are inoperable. This includes valves parallel to one another, even when the flow path can be isolated automatically by an operable valve. Entry into Condition E (8-hour Completion Time) is required regardless of whether a common mode failure actually exists. The Completion Time is not sufficient to support a determination of common mode failure or to take corrective action to restore an inoperable valve. As discussed in the Technical Evaluation section below, a common mode failure for the ANO-1 MFW system that would result in a significant challenge to the MFW isolation safety function is essentially only credible with regard to the Main Feedwater (MFW) Block Valve and the MFIV for a given SG. Therefore, the proposed change will revise Condition A for MFIVs and Condition B for MFW Block Valves to allow 24 hours to determine if a potential common mode failure exists.

Because common mode failures between other MFW valves could not reasonably result in failure to isolate the associated SG, Condition E is modified to encompass multiple inoperable valves only when the MFIV in the affected flow path is also inoperable. This is acceptable because the safety function for isolating the SG in the event of a MFW or Main Steam line break is maintained provided the MFIV remains operable for an affected flow path. As described in the revised TS Bases (Attachment 3), Condition E is immediately applicable upon determination that a common mode failure exists involving a MFIV and a MFW Block Valve in the same flow path, regardless of whether the 24-hour allowance of Required Action A.1 or B.1 has expired. Following is a markup of the Conditions, Required Actions, and Completion Times associated with TS 3.7.3, followed by an example scenario.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MFIV in one or more flow paths inoperable.	<u>A.1</u> Determine MFIV in opposite flow path and MFW Block Valves are not inoperable due to common cause failure.	<u>24 hours</u>
	<u>AND</u>	
	<u>A.12</u> Close or isolate <u>inoperable</u> MFIV(s).	72 hours
	<u>AND</u>	
	<u>A.23</u> Verify <u>inoperable</u> MFIV(s) <u>is</u> closed or isolated.	Once per 7 days
B. One MFW in Feedwater Block Valve in one or more flow paths inoperable.	<u>B.1</u> Determine MFW Block Valve in opposite train and MFIVs are not inoperable due to common cause failure.	<u>24 hours</u>
	<u>AND</u>	
	<u>B.12</u> Close or isolate <u>inoperable</u> MFW in Feedwater Block Valve(s).	72 hours
	<u>AND</u>	
	<u>B.23</u> Verify <u>inoperable</u> MFW in Feedwater Block Valve is closed or isolated.	Once per 7 days

<p>C. One Low Load Feedwater Control Valve in one or more flow paths inoperable.</p>	<p>C.1 Close or isolate <u>inoperable</u> Low Load Feedwater Control Valve(s).</p> <p><u>AND</u></p> <p>C.2 Verify <u>inoperable</u> Low Load Feedwater Control Valve(s) is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>
<p>D. One Startup Feedwater Control Valve in one or more flow paths inoperable.</p>	<p>D.1 Close or isolate <u>inoperable</u> Startup Feedwater Control Valve(s).</p> <p><u>AND</u></p> <p>D.2 Verify <u>inoperable</u> Startup Feedwater Control Valve(s) is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>
<p>E. <u>MFIV inoperable</u></p> <p><u>AND</u></p> <p><u>Any other required MFW valves in the same flow path inoperable that is not closed or isolated for one or more flow paths.</u></p>	<p>E.1 <u>Close or isolate affected MFW Block Valve(s), Low Load Feedwater Control Valve(s), and/or Startup Feedwater Control Valve(s) flow path.</u></p>	<p>8 hours</p>
<p>F. <u>-----NOTE-----</u> <u>Not applicable to Required Actions A.1 and B.1.</u> <u>-----</u></p> <p>Required Actions and associated Completion Times of Conditions A, B, C, D, or E not met.</p>	<p>F.1 Be in MODE 3.</p> <p><u>AND</u></p> <p><u>F.2.1 Isolate MFW flow to affected Steam Generator(s).</u></p> <p><u>OR</u></p> <p>F.2.2 Be in MODE 4.</p>	<p>6 hours</p> <p><u>12 hours</u></p> <p>12 hours</p>

Based on the proposed changes, if an MFIV were declared inoperable, Condition A is entered and a common mode (cause) analysis is commenced in accordance with Required Action A.1. If it is determined 6 hours later that a common mode failure exists, additional Conditions are entered, depending on the valves affected. For example, if one or more MFW Block Valves are determined to be inoperable from a common mode perspective, Conditions B and E would be entered at the point in time. Condition E would require inoperable MFW Block Valves to be closed or isolated within 8 hours; otherwise, Condition F must be entered.

Given the above scenario, if a common mode failure was found not to exist, the remaining Required Actions of Condition A will be performed within the designated Completion Times.

Establishing a Required Action for common mode failure determination is consistent with TS 3.6.3, "Reactor Building Isolation Valves" and TS 3.8.1, "AC Sources – Operating." Note, however, that these TSs utilize the expression common "cause" failure. For consistency, the proposed changes to TS 3.7.3 and its associated TS Bases will use the common "cause" failure expression.

A markup of the affected TS page and affected TS Bases pages is included in Attachments 2 and 3, respectively. Attachment 4 contains the revised (clean) version of the affected TS page. The revised TS Bases will be implemented in conjunction with the TS 3.7.3 changes following approval of this amendment (see Attachment 5).

BACKGROUND

The ANO-1 TSs are consistent with NUREG-1430, Revision 1, "Standard Technical Specifications for Babcock and Wilcox Plants." When adopting the improved technical specifications (ITS), TS 3.7.3 and its associated TS Bases were also adopted.

The Bases for TS 3.7.3 Condition E contains a statement that applies the Condition to even those MFW valves parallel to one another in the same flow path (MFW train). The Condition also assumes a common mode failure exists, regardless of the different valve designs that may be installed at various facilities. Unlike other specifications, Condition E does not permit a determination of common mode failure to be performed. To accommodate the "assumed" common mode failure, all affected valves, except one, would be required to be restored to an operable status within 8 hours; otherwise, the MFW flow path to the respective SG must be isolated. Isolation of the flow path would require unit shutdown.

The requirement to enter current TS 3.7.3 Required Action E.1 for parallel valves is found only in the associated TS 3.7.3 Bases. This Condition appeared in the first issue of the improved standard TS (ITS) NUREGs (Revision 0). Research and discussion with Excel Services Corporation (the industry custodian of the ITS) revealed no information justifying the common mode failure concern or the extremely short Completion Time associated with this Required Action (8 hours). Because the MFW valves vary significantly from plant-to-plant, the Condition may have been a "catch-all" in the event some designs were highly susceptible to common mode failures affecting all required valves.

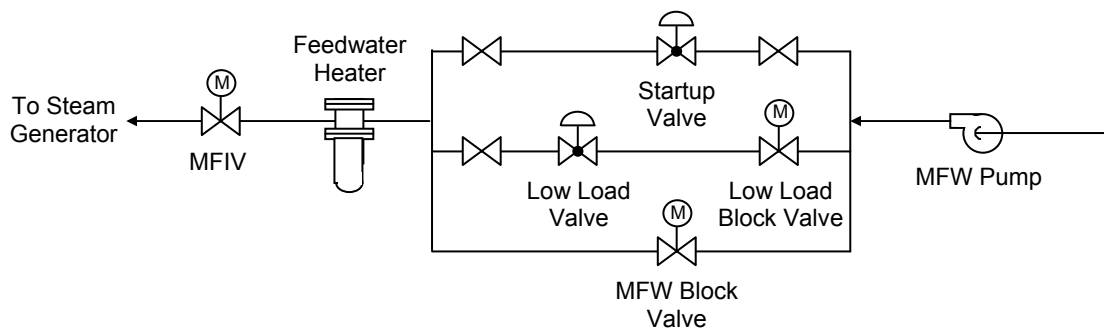
Manual operation of the control valves (from the Control Room hand-indicating-controllers) occurred in 2010 to support MFW testing, which resulted in entry in Condition E. A TS change was submitted thereafter to revise the TS Bases, permitting manual operation of parallel valves provided the MFIV remained operable. The basis for this request was that manual valve operation (from the Control Room) did not constitute a common mode failure. Following discussions with the NRC staff, the letter was withdrawn and the associated Bases revised in accordance with 10 CFR 50.59 to address manual operation of parallel valves with respect to common mode failures. However, in February 2012, a control system failure resulted in two parallel valves being incapable of automatic closure (inoperable). A request for enforcement discretion was initiated due to the short Completion Time of Condition E. Based on such circumstances and the fact that SG automatic isolation capability (via the MFIV) was never lost, Entergy is proposing the aforementioned changes to TS 3.7.3.

Description of ANO-1 MFW System

At lower power levels, SG level is maintained through modulation of the Startup and Low Load Feedwater Control Valves (see simplified drawing). The control valves are sequenced in operation so that the Startup Control Valve opens first, followed by the Low Load Control Valve. Differential pressure across the control valves is maintained through modulation of MFW pump speed.

When feedwater demand increases to approximately 50%, the MFW Block Valve opens, the Startup and Low Load Control Valve demands are held constant, and the MFW pump transfers from controlling valve differential pressure to directly controlling MFW flow. This sequence is reversed for power reductions, except that the MFW Block Valve closes at approximately 45% feedwater demand.

To ensure feedwater is isolated to the SG following a Main Steam Line Break (MSLB), a predetermined pressure set-point associated with a lowering SG pressure triggers an automatic Main Steam Line Isolation (MSLI) signal, which is initiated from the Emergency Feedwater Initiation and Control (EFIC) system. The MSLI signal closes the downstream MFIV. The Startup Control Valves, Low Load Control Valves, and MFW Block Valves close upon MSLI and/or reactor trip and the Startup Control and Low Load Control Valves are prevented from re-opening by the MSLI signal (not required for the MFW Block Valves since the reactor trip assures power is below 45% as described above). All of the aforementioned control and transient response functions are processed via the Integrated Control System (ICS), except those functions associated with the MFIVs.



In addition to the above, an editorial change is proposed to further the use of acronyms common to ANO-1. Specifically, "Main Feedwater" is abbreviated "MFW." A comma is also inserted for ease in reading. These changes affect the header, the TS statement, the Limiting Condition for Operation (LCO), Condition B (acronym only), and both Surveillance Requirements (SRs). The Conditions and Required Actions are also modified to refer to "inoperable" valves where the current TSs either use the term "affected" or contain no specific designation. In addition, Condition F is modified to be consistent with other TSs by adding reference to the "Conditions" that are not met. Finally, an "s" is added to the Completion Time of Required Action A.2 (new Required Action A.3). These changes are editorial in nature and have no technical impact on the existing or proposed requirements.

3.0 TECHNICAL EVALUATION

TS 3.7.3 Condition E currently states that, with two valves in the same flow path inoperable for one or more flow paths, the flow path must be isolated within 8 hours. Isolation of a feedwater flow path would require unit shutdown. The extremely short Completion Time is based on the assumption that a common mode failure exists, i.e., a failure that would prevent isolation of the affected SG upon receipt of a MSLI signal. The proposed change will revise Condition A for MFIVs and Condition B for MFW Block Valves to allow 24 hours to determine if a potential common mode failure exists.

Because common mode failures between other MFW valves could not reasonably result in failure to isolate the associated SG, Condition E is modified to encompass multiple inoperable valves only when the MFIV in the affected flow path is also inoperable. This is acceptable because the safety function for isolating the SG in the event of a MFW or Main Steam line break is maintained provided the MFIV remains operable for an affected flow path. With respect to common mode failures and as described in the revised TS Bases, Condition E is immediately applicable upon determination that a common mode failure exists involving a MFIV and a MFW Block Valve in the same flow path, regardless of whether the 24-hour allowance of Required Action A.1 or B.1 has expired.

As discussed in the above Background section, the Startup Control, Low Load Control, and MFW Block Valves serve as a backup to the MFIV for defense-in-depth purposes. The valves are not safety-related, but will close upon MSLI and/or reactor trip and remain closed when a MSLI signal via EFIC is present, as a backup method of isolation, should the respective MFIV fail to automatically close on demand (see ANO-1 Safety Analysis Report (SAR) Section 14.2.2.1.3.1).

Discussion of Common Mode Failure

The following table provides the make and model of each valve, including its motive force.

Valve	Make/Model	Operator
Startup Control Valve	Fisher 6" Globe / Model Type ED	Fisher Air Operator / Type 476L-1-5
Low Load Control Valve	Bailey 10" Globe / Type VBJ-204AX	Bailey Air Operator / Type J Piston Actuator
MFW Block Valve	Anchor Darling 18" Gate / Model DWG 93-13079	Limiterque Motor Operator / Type SMB-4
MFIV	Anchor Darling 18" Gate / Model DWG 93-13095	Limiterque Motor Operator / Type SB-4

Control Failure

As stated previously, all but the MFIV receive control signals via the ICS. With the exception of the MFIV, which is unaffected by the ICS, internal ICS failures can degrade a single control valve (CV) or all three of the CVs. The following table focuses on those failures that result in degradation of control/transient response to all three parallel valves.

Failure Mode	Startup CV	Low Load CV	MFW Block Valve
Loss of ICS DC Power	50% Demand	Close	As Is
Loss of ICS AC Power	Close (0% Demand)	Close	Close
Internal Faults	Loss of Auto ¹	Loss of Auto ¹	Loss of Auto ¹

¹ Loss of automatic valve control. Valves will not automatically close upon receipt of signals from EFIC or ICS. Valves may be manipulated from the Control Room with the HIC stations in "manual."

Note that closure of a valve is the safe condition and does not prevent the specified safety function from being met. However, closure of all three valves above very low power levels will result in a reactor trip and subsequent Emergency Feedwater (EFW) initiation. Depending on power level, the loss of ICS DC power could cause two of the three valves to remain open. While the loss of ICS DC power does not prevent the Operator from closing the valves from the HIC stations in the Control Room, the valves will not respond automatically to control or transient response signals. Nevertheless, ICS failures cannot affect the downstream MFIV. Therefore, an ICS common mode failure cannot prevent the SG isolation safety function from being met.

Failure of EFIC (MSLI) to effect closure of the MFIV and maintain the Startup and Low Load CVs closed following a reactor trip could result in a feed path being re-established following the trip. However, the MFIV is actuated by one EFIC (MSLI) relay while one or more of the in-series MFW valves are actuated by other relays. Therefore, a failure of an EFIC (MSLI) relay would not prevent automatic isolation of the SG during an event. In addition, Operators remain capable of closing the valves from the HIC stations in the Control Room and are instructed to do so, if necessary, by Emergency Operating Procedures. Failure of EFIC (MSLI) with respect to the MFW system is governed by TS 3.3.11, "Emergency Feedwater Initiation and Control (EFIC) System Instrumentation," TS 3.3.12, "Emergency Feedwater Initiation and Control (EFIC) Manual Initiation," and TS 3.3.13, "Emergency Feedwater Initiation and Control (EFIC) Logic." Note that failure of a logic channel (TS 3.3.13) is equivalent to the 72-hour Completion Time provided in the MFW TS. This is because, while the isolation safety function continues to be met, single failure of the remaining logic channel could prevent automatic isolation of the SG (see ANO-1 SAR Section 7.1.4).

With regard to the EFIC function, it is unlikely a failure of two or more specific relays that would prevent the automatic MFW isolation function of a particular SG would occur in any 24-hour period (the proposed Completion Time to evaluate common mode failure applicability for inoperable MFIV or MFW Block Valve inoperability). Failure of a single EFIC (MSLI) relay does not prevent the automatic SG isolation. In addition, failure of an EFIC logic train requires restoration within 72-hours in accordance with TS 3.3.13, consistent with TS 3.7.3 for conditions where single failure criterion is not met. Therefore, the potential for a common mode failure that would prevent automatic isolation of a MFW train due to failures of the EFIC system is low. Based on the above, the proposed change to TS 3.7.3 when considering EFIC-related failures does not present a significant adverse impact to nuclear or public safety.

Mechanical Failure

As identified in the valve-type table above, the Startup Control Valve, the Low Load Control Valve, and the MFW Block Valve are configured in parallel and have valve types that are mechanically dissimilar in design. A mechanical common mode failure of these valves is unlikely due to the dissimilar design of the valves/operators configured in parallel. The MFW Block Valve and the MFIV, however, are identical in size, make, and model, although the MFW Block Valve operators have been fitted with the 2-speed clutch to allow rapid closure over 95% of the valve stroke.

Based on above, the only practical common mode failure that could result in failure to isolate a SG flow path is with regard to the Main Feedwater (MFW) Block Valve and the MFIV for a given SG. Potential common mode failures between the air-operated valves or common to ICS are addressed within the ANO corrective action program and need not be addressed in the TSs because 1) such a failure does not prevent fulfillment of a safety function, and 2) the current and proposed TSs require the affected valves to be returned to an operable status within 72 hours, sufficiently limiting the time the plant is exposed to this condition.

Industry operating experience and 10 CFR Part 21 requirements that require NRC and industry notification of manufacturer defects are effective in alerting utilities of potential failure modes. 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. It is likewise unlikely that a MSLLB event would occur within this same

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. In addition, the current Condition E 8-hour Completion Time is not sufficient to effect repairs or make a determination of common mode failure, which would likely result in a unit shutdown, exposing the unit to unnecessary transient risks where a common mode failure may not have existed.

The proposed 24-hour Completion Time of new Required Action A.1 and B.1 ensures the common mode failure potential is promptly assessed. Where a common mode failure is determined not to exist, the affected valve(s) must still be restored to an operable status within 72 hours of initial inoperability, in accordance with Conditions A and B; otherwise, a unit shutdown will be required in accordance with Condition F. When a potential common mode failure is determined to exist, Conditions A, B, and/or E are entered, depending on the valves determined to be inoperable due to common mode failure. Required Action E.1 will require the MFW Block Valves to be closed or isolated within 8 hours, consistent with the current Required Action E.1 Completion Time.

Condition E is also modified to envelop any combination of inoperable MFW valves that would result in a significant challenge to the MFW isolation safety function (an MFIV and any other required MFW valve in the same flow path inoperable simultaneously). Of course, if an inoperable MFW valve is closed or isolated, the significance of one or more MFIVs being inoperable is reduced and the 72-hour Completion Time of Required Action A.1 (new Required Action A.2) sufficiently limits plant operation under these circumstances. Regardless of the common mode failure potential, the proposed change will continue to limit the time in which the plant may be operated in a configuration where single failure criterion may not be met to a maximum of 72 hours.

As stated previously, Condition F is modified to be consistent with generic ITS wording by specifying the Condition is applicable when the Required Actions and associated Completion Times of Conditions A, B, C, or D are not met. This is an editorial change. However, a Note is added stating that Condition F is not applicable to Required Actions A.1 and B.1. This is appropriate because Conditions A, B, and E provide the necessary remedial actions should a common mode failure be found to exist. In addition, Condition F is modified to add a new Required Action F.2.1 (which revises existing Required Action F.2 to new number F.2.2) to permit closing inoperable valves or isolating inoperable flow paths in lieu of entry into Mode 4. This is acceptable since the MFW isolation safety function is maintained when the affected flow path is isolated (or inoperable valve closed). For all Conditions, acceptable isolation is met when the inoperable valve is closed or when at least one isolation valve is closed in the associated flow path.

Although the proposed change provides a reasonable time period to evaluate common mode failure potential relevant to the MFIVs and MFW Block Valves, Entergy believes the intent of the current TS is maintained because prompt action is required where a common mode failure is determined to be present, in accordance with Conditions A, B, and/or E, as applicable. Therefore, the proposed change does not result in a significant impact to nuclear or public safety and provides a reasonable period to accommodate recovery efforts while avoiding the unnecessary risk of a plant shutdown.

In addition to the above, an editorial change is proposed to further the use of acronyms common to ANO-1. Specifically, "Main Feedwater" is abbreviated "MFW." A comma is also inserted for ease in reading. These changes affect the header, the TS statement, the LCO, Conditions A and B (acronym only), and both SRs. The Conditions and Required Actions are also modified to refer to "inoperable" valves where the current TSs either use the term "affected" or contain no specific designation. In addition, Condition F is modified to be consistent with other TSs by adding reference to the "Conditions" that are not met. Finally, an "s" is added to the Completion Time of Required Action A.2 (new Required Action A.3). These changes are editorial in nature and have no technical impact on the existing or proposed requirements.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements / Criteria

10 CFR 50, Appendix A, General Design Criterion (GDC) 29, requires, in part, that the single failure of a structure, system, or component (SSC) not result in the loss of function. The primary function of the various MFW valves is to isolate feedwater from a SG affected by a main steam or feedwater pipe break. The TSs are established to limit the time a plant may operate in a condition where single failure criteria is not met. The proposed change establishes the reasonable time period (24 hours) to evaluate the potential for a common mode failure prior to requiring a unit shutdown. Where a common mode failure is determined to exist that presents a challenge to the MFW isolation safety function, the TS continues to require isolation of the affected flow path within 8 hours. This is also true for conditions involving an inoperable MFIV in conjunction with inoperability of any other required MFW valve in the same flow path that is not closed or isolated. Flow path isolation may be accomplished by closing inoperable valves or isolating an inoperable valve(s) using at least one isolation valve in the respective flow path. Where a common mode failure cannot or is determined to not exist that would present a challenge to the MFW isolation safety function, the TS continues to require any inoperable valve to be restored to an operable status (or the valve closed or isolated) within 72 hours; otherwise, unit shutdown to Mode 3 is required within 6 hours thereafter. Condition F is also modified to permit closing or isolating inoperable valves in lieu of entry into Mode 4. Providing a reasonable time period to determine the common mode failure potential can prevent an unnecessary shutdown of the unit, thereby avoiding unnecessary transient risks. In addition, it is unlikely a main steam or feedwater line break would occur, associated with the affected SG, in any 24 hour period.

Therefore, based on the considerations discussed above:

- 1) There is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner;
- 2) Such activities will be conducted in compliance with the Commission's regulations;
and
- 3) Issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

In conclusion, Entergy has determined that the proposed change does not require any exemptions or relief from regulatory requirements, other than the TS, and does not affect conformance with any GDC differently than described in the Safety Analysis Report (SAR).

4.2 No Significant Hazards Consideration

A change is proposed to the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specifications (TSs) and TS Bases to avoid unnecessary plant shutdown that could result due to an overly-restrictive TS Required Action related to two or more Main Feedwater (MFW) valves in the same flow path being inoperable and a common mode failure assumed to exist. The proposed change will revise TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs), Main Feedwater Block Valves, Low Load Feedwater Control Valves and Startup Feedwater Control Valves" Conditions A and B to provide a 24-hour period for common mode failure determination, thus avoiding a potential unnecessary unit shutdown and the inherent risks associated with any plant transient. Based on MFW valve design, the only two valves in a flow path that have a reasonable common mode failure potential that would challenge the MFW isolation safety function are the MFIV and the MFW Block Valve. Because common mode failures between other MFW valves could not reasonably result in failure to isolate the associated SG, Condition E is modified to encompass multiple inoperable valves only when the MFIV in the affected flow path is also inoperable. This is acceptable because the safety function for isolating the SG in the event of a MFW or Main Steam line break is maintained provided the MFIV remains operable for an affected flow path. As described in the revised TS Bases, Condition E is immediately applicable upon determination that a common mode failure exists involving a MFIV and a MFW Block Valve in the same flow path, regardless of whether the 24-hour allowance of Required Action A.1 or B.1 has expired. Condition F is also permit closing or isolating inoperable valves in lieu of entry into Mode 4. Editorial changes are also made (addition of commas and "Condition" references, use of acronyms, etc.) that have no technical impact on the requirements of the specification and, therefore, are not evaluated under the three criteria below.

Entergy Operations, Inc. (Entergy) has evaluated whether or not a significant hazards consideration is involved with the proposed change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The associated MFW valves are required to isolate during conditions where SG secondary-side integrity has been challenged, thus limiting the impacts of a Reactor Coolant System (RCS) overcooling event. The MFW valves are not associated with any accident precursors and the proposed TS changes, therefore, do not involve a significant increase in the probability of an accident previously evaluated. The proposed change does not involve the addition or removal of any equipment, or any design changes to the facility.

Where a common mode failure may exist, the current TS would require all but one affected valve to be restored to operable status within 8 hours, or the unit shutdown within 6 hours thereafter. The proposed change will provide a reasonable period

(24 hours) to evaluate whether a common mode failure exists that presents a significant challenge to the MFW isolation safety function, and if so, action to close or isolate the affected flow path must be completed with 8 hours, consistent with the current Required Action E.1 Completion Time. If a common mode failure is determined to not exist that presents a significant challenge to the MFW isolation safety function, affected valves must be restored to an operable status or closed/isolated, consistent with the current provisions of the TS (72 hours from initial inoperability). For all Conditions, closing or isolating the affected flow path ensures the MFW isolation safety function can be met; therefore, a unit shutdown or cooldown is not required under these circumstances. This is acceptable because the operable valves in the flow path remain capable of performing the feedwater isolation function upon a reactor trip or via a signal from the Emergency Feedwater Initiation and Control (EFIC) system. Because the TSs limit plant operation in this configuration, no additional failure is assumed to occur during this 72-hour period.

The 24-hour period proposed for common mode failure determination is reasonable based on the low probability of a common mode failure resulting in the failure of more than one in-series valve in any 24-hour period, and the low probability that a main steam or feedwater line break would occur on the affected SG in any 24-hour period.

The consequences of an accident previously evaluated are unaffected by the proposed change in that the consequences of a failure to isolate feedwater from an affected SG remain unchanged.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The loss of non-safety related MFW is assumed and mitigated by the Emergency Feedwater (EFW) System, which automatically actuates at pre-designated parameter setpoints to ensure secondary cooling is maintained. The proposed change does not introduce a new accident initiator, accident precursor, or accident-related malfunction mechanism. Therefore, the proposed change does not create the possibility of an accident or a different kind than previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed change will provide a reasonable period (24 hours) to evaluate whether a common mode failure exists that presents a significant challenge to the MFW isolation safety function, and if so, action to close or isolate the affected flow path must be completed with 8 hours, consistent with the current Required Action E.1 Completion Time. If a common mode failure is determined to not exist that presents a significant challenge to the MFW isolation safety function, affected valves must be restored to an operable status or isolated, consistent with the current provisions of the TS (72 hours from initial inoperability). For all Conditions, closing or isolating the affected flow path ensures the MFW isolation safety function can be met; therefore, a unit shutdown or cooldown is not required under these circumstances. In addition, the

proposed change will permit more than one valve of each description to be inoperable for up to 72 hours, where a common mode failure cannot or has been determined to not exist that would present a significant challenge to the MFW isolation safety function. This is acceptable because the operable valves in the flow path remain capable of performing the MFW isolation safety function upon a reactor trip or via a signal from the EFIC system. Because the TSs limit plant operation in this configuration, no additional failure is assumed to occur during this 72-hour period.

The 24-hour period proposed for common mode failure determination is reasonable based on the low probability of a common mode failure resulting in the failure of more than one in-series valve in any 24-hour period, and the low probability that a main steam or feedwater line break would occur on the affected SG in any 24-hour period.

Therefore, because the current TS 72-hour Completion Times is maintained for conditions where the safety function (automatic SG isolation capability) continues to be met and because the likelihood of common mode failure rendering the MFIV and upstream MFW Block Valve inoperable in conjunction with a main steam or feedwater line break in any 24-hour period is unlikely, the proposed change does not involve a significant reduction in a margin of safety. In addition, the proposed change will limit continued plant operation to 8 hours where two in-series valves in the same flow path are inoperable and at least one in-series valve is not closed or isolated (safety function not met), consistent with the current Completion Time of Required Action E.1.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 2

1CAN061201

Proposed Technical Specification Change (mark-up)

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater (MFW) Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves

LCO 3.7.3 All MFIVs, MFW~~ain Feedwater~~ Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MFIV in one or more flow paths inoperable.	<u>A.1 Determine MFIV in opposite flow path and MFW Block Valves are not inoperable due to common cause failure.</u>	<u>24 hours</u>
	<u>AND</u>	
	<u>A.12 Close or isolate inoperable MFIV(s).</u>	72 hours
	<u>AND</u>	
	<u>A.23 Verify inoperable MFIV(s) is closed or isolated.</u>	Once per 7 days

ACTIONS (continued)

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
B. One MFW ain Feedwater Block Valve in one or more flow paths inoperable.	<u>B.1 Determine MFW Block Valve in opposite train and MFIVs are not inoperable due to common cause failure.</u>	<u>24 hours</u>
	<u>AND</u>	

	<p>B.42 Close or isolate <u>inoperable</u> MFWain Feedwater Block Valve(s).</p> <p><u>AND</u></p> <p>B.23 Verify <u>inoperable</u> MFWain Feedwater Block Valve is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>
C. One Low Load Feedwater Control Valve in one or more flow paths inoperable.	<p>C.1 Close or isolate <u>inoperable</u> Low Load Feedwater Control Valve(s).</p> <p><u>AND</u></p> <p>C.2 Verify <u>inoperable</u> Low Load Feedwater Control Valve(s) is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
D. One Startup Feedwater Control Valve in one or more flow paths inoperable.	<p>D.1 Close or isolate <u>inoperable</u> Startup Feedwater Control Valve(s).</p> <p><u>AND</u></p> <p>D.2 Verify <u>inoperable</u> Startup Feedwater Control Valve(s) is closed or isolated.</p>	<p>72 hours</p> <p>Once per 7 days</p>

ACTIONS (continued)

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<p>E. <u>MFIV inoperable</u></p> <p><u>AND</u></p> <p><u>Any other required</u></p>	<p>E.1 <u>Close or isolate inoperableaffected MFW Block Valve(s), Low Load Feedwater Control Valve(s), and/or Startup</u></p>	<p>8 hours</p>

<p>MFWTwo valves in the same flow path inoperable <u>that is not closed or isolated</u> for one or more flow paths.</p>	<p><u>Feedwater Control Valve(s)</u>flow path.</p>	
<p>F. <u>-----NOTE-----</u> <u>Not applicable to Required Actions A.1 and B.1.</u> <u>-----</u> Required Actions and associated Completion Times <u>of Conditions A, B, C, D, or E</u> not met.</p>	<p>F.1 Be in MODE 3. <u>AND</u> F.2.1 <u>Isolate MFW flow to affected Steam Generator(s).</u> <u>OR</u> F.2.2 Be in MODE 4.</p>	<p>6 hours <u>12 hours</u> 12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.1 -----NOTE----- Only required to be performed in MODES 1 and 2. -----</p> <p>Verify the isolation time of each MFIV, MFWain-Feedwater Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve is within the limits provided in the Inservice Testing Program.</p>	<p>In accordance with the Inservice Testing Program</p>
<p>SR 3.7.3.2 -----NOTES----- 1. Only required to be performed in MODES 1 and 2. 2. Not required to be met when SG pressure is < 750 psig. -----</p> <p>Verify that each MFIV, MFWain-Feedwater Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve actuates to the isolation position on an actual or simulated actuation signal.</p>	<p>18 months</p>

Attachment 3

1CAN061201

Proposed Technical Specification Bases Change (mark-up)

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater (MFW) Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves

BASES

BACKGROUND

The ~~M~~ain ~~F~~eedwater ~~I~~solation ~~V~~alves (MFIVs), ~~Main-F~~~~eedwater~~ Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves isolate ~~main feedwater~~ (MFW) flow to the secondary side of the Steam Generators (SGs). Closing the MFIVs, ~~Main-F~~~~eedwater~~ Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves effectively terminates the addition of feedwater to an affected SG, limiting the mass and energy release for ~~main~~ steam line breaks (~~MSLBs~~) or feedwater line breaks (FWLBs) inside the reactor building and reducing the cooldown effects ~~for SLBs~~.

The MFIVs close on receipt of a main steam line isolation (MSLI) signal as described in LCO 3.3.11, "Emergency Feedwater Initiation and Control (EFIC) System Instrumentation." EFIC (~~MSLI~~) maintains the Low Load Feedwater Control Valves and Startup Feedwater Control Valves closed by sending a signal to the Rapid Feedwater Reduction (RFR) circuit of the Integrated Control System (ICS). The ~~Main-F~~~~eedwater~~ Block Valves are independently closed by a signal from the Reactor Protection System (RPS) upon a reactor trip. The MFIVs, ~~Main-F~~~~eedwater~~ Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves can also be closed manually.

APPLICABLE SAFETY ANALYSES

The design basis of the MFIVs, ~~M~~~~F~~~~W~~ain-~~F~~eedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves is established by the analysis for the ~~M~~SLB as discussed in SAR Section 14.2.2.1 (Ref. 1).

Failure of an MFIV, and an associated ~~M~~~~F~~~~W~~ain-~~F~~eedwater Block Valve, Low Load Feedwater Control Valve, or Startup Feedwater Control Valve to close following an ~~M~~SLB, can result in additional mass being delivered to the SGs, contributing to cooldown.

In MODES 1 and 2, the MFIVs, ~~M~~~~F~~~~W~~ain-~~F~~eedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves satisfy Criterion 3 of 10 CFR 50.36 (Ref. 2). In MODE 3, the MFIVs, ~~M~~~~F~~~~W~~ain-~~F~~eedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves satisfy Criterion 4 of 10 CFR 50.36.

With the exception of the MFIVs, the valves are non-Q and powered from non-vital sources. This is acceptable when crediting feedwater isolation during a MSLB since off-site power is assumed to remain available during this event.

LCO

This LCO ensures that the MFIVs, ~~MFW~~ain Feedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves will isolate MFW flow to the SGs following a MSLB~~main steam line break~~.

All MFIVs, ~~MFW~~ain Feedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves are required to be OPERABLE. For an MFIV, ~~MFW~~ain Feedwater Block Valve, Low Load Feedwater Control Valve, or Startup Feedwater Control Valve to be considered OPERABLE, the isolation times must be within limits and the valves must close on an isolation actuation signal when required.

Failure to meet the LCO requirements can result in a more severe cooldown transient and in additional mass and energy being released to the reactor building following an MSLB inside the reactor building.

APPLICABILITY

The MFIVs, ~~MFW~~ain Feedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves must be OPERABLE in MODES 1, 2, and 3 to ensure that, in the event of an MSLB, the amount of feedwater provided to the affected SG is limited. Their closure terminates normal feedwater flow to limit the overcooling transient and to limit the amount of energy that could be added to the reactor building in the case of a secondary system pipe break inside the reactor building.

In MODES 4, 5, and 6, SG energy is low. Therefore, the MFIVs, ~~MFW~~ain Feedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each valve.

A.1

With one MFIV in one or more flow paths inoperable, action must be taken determine if a common cause failure may exist. This is because the MFIV and its associated MFW Block Valve are identical in design and manufacturer. A common cause failure that could affect the OPERABILITY of these valves could result in the failure to isolate the

associated SG should a MSLB occur. Where a common cause failure is determined to be present, Conditions A, B, and/or E must be immediately entered, as applicable. This is required regardless of whether the 24-hour Completion Time of Required Action A.1 has expired.

ACTIONS (continued)

A.1 and A.2 (continued)

The 24-hour Completion Time to evaluate the potential for common cause failure is reasonable based on the low probability that a common cause mechanism would cause simultaneous failure of both the MFIV and the upstream MFW Block Valve, and the low probability that a MSLB event would occur on the affected SG in any 24-hour period. The 24-hour Completion Time is reasonable to permit a common cause evaluation to be performed and permit repairs, while avoiding the inherent risks associated with an unnecessary plant shutdown.

A.2 and A.3

With one or more MFIVs in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable ~~affected~~ valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function. If the inoperable valve is not closed, at least one isolation valve must be closed in the inoperable valve(s) flow path to meet the isolation requirement.

The ~~72-~~hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The ~~72-~~hour Completion Time is reasonable to allow repairs and, if unsuccessful, to isolate the flow path. Inoperable MFIVs that are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7-day Completion Time is reasonable in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

B.1 and B.2

With one or more MFW Block Valves in one or more flow paths inoperable, action must be taken determine if a common cause failure may exist. This is because the MFW Block Valve and its associated MFIV are identical in design and manufacturer. A common cause failure that could affect the OPERABILITY of these valves could result in the failure to isolate the associated SG should an MSLB occur. Where a common cause failure is determined to be present, Conditions A, B, and/or E must be immediately entered, as applicable. This is required regardless of whether the 24-hour Completion Time of Required Action B.1 has expired.

The 24-hour Completion Time to evaluate the potential for common cause failure is reasonable based on the low probability that a common cause mechanism would cause simultaneous failure of both the MFIV and the upstream MFW Block Valve, and the low probability that a MSLB event would occur on the affected SG in any 24-hour period. The 24-hour Completion Time is reasonable to permit a common cause evaluation to be performed and permit repairs, while avoiding the inherent risks associated with an unnecessary plant shutdown.

ACTIONS (continued)

B.24 and B.32

With one or more ~~MFW~~in-Feedwater Block Valves in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable ~~affected~~ valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function. If the inoperable valve is not closed, at least one isolation valve must be closed in the inoperable valve(s) flow path to meet the isolation requirement.

The ~~72~~-hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE associated MFIV and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.

Inoperable ~~MFW~~in-Feedwater Block Valves that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The ~~7~~-day Completion Time is reasonable in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

C.1 and C.2

With one or more Low Load Feedwater Control Valves in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable ~~affected~~ valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function. If the inoperable valve is not closed, at least one isolation valve must be closed in the inoperable valve(s) flow path to meet the isolation requirement.

The ~~72~~-hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE associated MFIV and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.

Inoperable Low Load Feedwater Control Valves that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The ~~7~~-day Completion Time is

reasonable in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

ACTIONS (continued)

D.1 and D.2

With one or more Startup Feedwater Control Valves in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable ~~affected~~ valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function. If the inoperable valve is not closed, at least one isolation valve must be closed in the inoperable valve(s) flow path to meet the isolation requirement.

The ~~72~~-hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE associated MFIV and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.

Inoperable Startup Feedwater Control Valves that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The ~~7~~-day Completion Time is reasonable in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

E.1

With two inoperable in-series valves in the same flow path there ~~is~~ may be no redundant system to operate automatically and perform the required safety function. ~~Although the containment can be isolated with the failure to two valves in parallel in the same flow path, the double failure can be an indication of a common mode failure in the valves of this flow path and as such is treated the same as a loss of the isolation capability of this flow path.~~ Under these conditions, the inoperable MFW Block Valve, Low Load Feedwater Control Valve, and/or Startup Feedwater Control Valve affected valves, as applicable, in each affected flow path must be restored to OPERABLE status, or closed or the affected flow path isolated within 8 hours. The 8 hour Completion Time is reasonable to complete closure or isolation of the aforementioned valves the affected flow path.

Manual operation of the feedwater valves (where manual operation is not the result of a failure of a valve component) does not constitute a failure of the valve and is not assumed to be a common mode failure concern. Therefore, when two or more valves parallel to one another in one or more flow paths are being controlled manually, Condition E is not applicable provided the downstream MFIV remains OPERABLE. ~~However,~~ the in-parallel valves are inoperable while being operated manually (i.e., cannot be assured of closure within time assumed in the SAR) and, therefore, the appropriate Conditions (B, C, and/or D) must be entered. This is acceptable because no common mode failure exists

and the TS 3.7.3 ACTIONS Note states that separate entry condition is allowed for each valve. Condition E remains applicable when two valves in a given flow path that are in series with one another are inoperable for any reason (manual operation or otherwise) since the SG isolation safety function is significantly challenged in this condition.

ACTIONS (continued)

F.1, F.2.1, and F.2.2

Condition F is modified by a Note which excepts Required Actions A.1 and B.1. This is acceptable because Conditions A, B, and/or E, as applicable, provide the remedial actions necessary where common cause failures are determined to exist.

If the Required Actions and associated Completion Times are not met, the unit must be in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours. In addition, the affected flow path must be closed or isolated, or the unit placed in MODE 4 within 12 hours. Closing an inoperable valve(s) or isolating the affected flow path achieves the MFW isolation safety function and, therefore, entry into Mode 4 is not required where the affected flow paths are closed or isolated. If the inoperable valve is not closed, at least one isolation valve must be closed in the inoperable valve(s) flow path to meet the isolation requirement. The ~~allowed~~ Completion Times are reasonable to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

This SR verifies that the closure time of each MFIV, ~~MFW~~ain-Feedwater Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve is as specified in the Inservice Testing (IST) Program.

The MFIV, ~~MFW~~ain-Feedwater Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve isolation time is assumed in the accident and reactor building analyses. This Surveillance is normally performed prior to returning the unit to power operation, e.g., during MODE 3, following a refueling outage. The MFIVs, ~~MFW~~ain-Feedwater Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves are not tested at power since even a partial stroke exercise increases the risk of a valve closure with the unit generating power.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR.

The Frequency for this SR is in accordance with the ~~IST~~nservice-Testing Program.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.2

This SR verifies that each MFIV, ~~MFW~~ain Feedwater Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve can close on an actual or simulated actuation signal. This Surveillance is normally performed upon returning the unit to operation following a refueling outage.

The Frequency for this SR is every 18 months. The ~~18-~~month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the ~~18-~~month Frequency. Therefore, this Frequency is acceptable from a reliability standpoint.

This SR is modified by two Notes. The first Note allows entry into and operation in MODE 3 prior to performing the SR. This allows delaying testing until MODE 3 in order to establish conditions consistent with those under which the acceptance criterion was established.

SR 3.7.3.2 is also modified by a second Note which indicates that the automatic closure capability is not required to be met when the SG pressure is < 750 psig. At < 750 psig, the ~~MSL~~main steam line isolation function of EFIC may be disabled to prevent automatic actuation on low SG pressure during a unit shutdown.

REFERENCES

1. SAR, Section 14.2.2.1.
 2. 10 CFR 50.36.
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Attachment 4

1CAN061201

Revised (clean) Technical Specification Pages

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater (MFW) Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves

LCO 3.7.3 All MFIVs, MFW Block Valves, Low Load Feedwater Control Valves, and Startup Feedwater Control Valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MFIV in one or more flow paths inoperable.	A.1 Determine MFIV in opposite flow path and MFW Block Valves are not inoperable due to common cause failure.	24 hours
	<u>AND</u>	
	A.2 Close or isolate inoperable MFIV(s).	72 hours
	<u>AND</u>	
	A.3 Verify inoperable MFIV(s) closed or isolated.	Once per 7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One MFW Block Valve in one or more flow paths inoperable.	B.1 Determine MFW Block Valve in opposite train and MFIVs are not inoperable due to common cause failure.	24 hours
	<u>AND</u>	
	B.2 Close or isolate inoperable MFW Block Valve(s).	72 hours
	<u>AND</u>	
	B.3 Verify inoperable MFW Block Valve is closed or isolated.	Once per 7 days
C. One Low Load Feedwater Control Valve in one or more flow paths inoperable.	C.1 Close or isolate inoperable Low Load Feedwater Control Valve(s).	72 hours
	<u>AND</u>	
	C.2 Verify inoperable Low Load Feedwater Control Valve(s) closed or isolated.	Once per 7 days
D. One Startup Feedwater Control Valve in one or more flow paths inoperable.	D.1 Close or isolate inoperable Startup Feedwater Control Valve(s).	72 hours
	<u>AND</u>	
	D.2 Verify inoperable Startup Feedwater Control Valve(s) closed or isolated.	Once per 7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. MFIV inoperable</p> <p><u>AND</u></p> <p>Any other required MFW valve in the same flow path inoperable that is not closed or isolated for one or more flow paths.</p>	<p>E.1 Close or isolate inoperable MFW Block Valve(s), Low Load Feedwater Control Valve(s), and/or Startup Feedwater Control Valve(s).</p>	<p>8 hours</p>
<p>F. -----NOTE----- Not applicable to Required Actions A.1 and B.1. -----</p> <p>Required Actions and associated Completion Times of Conditions A, B, C, D, or E not met.</p>	<p>F.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>F.2.1 Isolate MFW flow to affected Steam Generator(s).</p> <p>OR</p> <p>F.2.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p> <p>12 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	<p>-----NOTE----- Only required to be performed in MODES 1 and 2. -----</p> <p>Verify the isolation time of each MFIV, MFW Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve is within the limits provided in the Inservice Testing Program.</p>	In accordance with the Inservice Testing Program
SR 3.7.3.2	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Only required to be performed in MODES 1 and 2. 2. Not required to be met when SG pressure is < 750 psig. <p>-----</p> <p>Verify that each MFIV, MFW Block Valve, Low Load Feedwater Control Valve, and Startup Feedwater Control Valve actuates to the isolation position on an actual or simulated actuation signal.</p>	18 months

Attachment 5

1CAN061201

List of Regulatory Commitments

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
The affected TS Bases shall be revised in accordance with TS 5.5.14, Technical Specification (TS) Bases Control Program.	✓		In conjunction with implementation of the amendment request