WOLF CREEK
NUCLEAR OPERATING CORPORATION

Matthew W. Sunseri
Vice President Oversight

August 25, 2006
WM 06-0033

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Subject: Docket No. 50-482: Revision to Technical Specification (TS) 3.7.2, "Main Steam Isolation Valves (MSIVs)," and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)"

Gentlemen,

Pursuant to 10 CFR 50.90, Wolf Creek Nuclear Operating Corporation (WCNOC) hereby requests an amendment to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS). The proposed change will revise Technical Specification (TS) 3.7.2, "Main Steam Isolation Valves (MSIVs)" and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)," to incorporate the MSIV actuator trains and MFIV actuator trains into the Limiting Condition for Operation (LCO) and provide associated Conditions and Required Actions. Additionally, Surveillance Requirement (SR) 3.7.2.2 and SR 3.7.3.2 are revised to clearly identify that the MSIV actuator trains and MFIV actuator trains are required to be tested in accordance with these SRs. These changes are considered to be necessary based on the NRC staff interpretation that SR 3.7.2.2 and SR 3.7.3.2 requires both actuator trains for a single valve to be surveillance tested. The NRC staff interpretation results in declaring an MSIV or MFIV inoperable with one actuator train inoperable. The Completion Times of 8 hours for an inoperable MSIV and 4 hours for an inoperable MFIV due to an inoperable actuator train is not commensurate with the safety significance of an inoperable actuator train. Therefore, new Conditions/Required Actions/Completion Times for inoperable actuator train(s) are being proposed.

At WCGS one MSIV is installed in each of the four main steam lines outside the containment and downstream of the safety valves. The MSIVs prevent uncontrolled blowdown from more than one steam generator in the event of a postulated design basis accident. On MFIV is installed in each of the four main feedwater lines outside the containment and downstream of the feedwater control valves. The MFIVs are installed to prevent uncontrolled blowdown from more than one steam generator in the event of a feedwater pipe rupture in the turbine building. Each MSIV and MFIV is equipped with dual-redundant actuator trains such that either actuator train can effect closure of its associated valve on demand.

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Attachments I through V provide the Evaluation, Markup of Technical Specifications Pages, Retyped Technical Specification Pages, Proposed TS Bases Changes (for information only), and Summary of Regulatory Commitments, respectively, in support of this amendment request. Final TS Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specification Bases Control Program," at the time the amendment is implemented.

It has been determined that this amendment application does not involve a significant hazard consideration as determined per 10 CFR 50.92. The amendment application was reviewed by the WCNOC Plant Safety Review Committee. In accordance with 10 CFR 50.91, a copy of this amendment application is being provided to the designated Kansas State official.

WCNOC requests review and approval of this proposed license amendment on an expedited basis, i.e., within 90 days of NRC receipt of the proposed license amendment request. WCNOC is requesting approval in this time frame based on the potential concerns for the failure of an actuator train and the short Completion Times to restore OPERABILITY or close an MFIV. It is anticipated that the license amendment, as approved, will be effective upon issuance, to be implemented within 30 days from the date of issuance.

If you have any questions concerning this matter, please contact me at (620) 364-4008, or Mr. Kevin Moles, Manager Regulatory Affairs at (620) 364-4126.

Very truly yours,

M W Sunseri

Matthew W. Sunseri

MWS/rlt

Attachments:
I - Evaluation
II - Markup of Technical Specification pages
III - Retyped Technical Specification pages
IV - Proposed TS Bases Changes (for information only)
V - Summary of Regulatory Commitments

cc: T. A. Conley (NRC), w/a
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W. B. Jones (NRC), w/a
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Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) **SS**
COUNTY OF COFFEY)

Matthew W. Sunseri, of lawful age, being first duly sworn upon oath says that he is Vice President Oversight of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Matthew W. Sunseri
Matthew W. Sunseri
Vice President Oversight

SUBSCRIBED and sworn to before me this 25th day of Aug, 2006.

MARY E. GIFFORD
Notary Public - State of Kansas
My Appt. Expires 12/09/2007

Mary E. Gifford.
Notary Public

Expiration Date 12/09/2007

ATTACHMENT I

EVALUATION

EVALUATION

1.0 DESCRIPTION

Wolf Creek Nuclear Operating Corporation (WCNOC) requests an amendment to Operating License NPF-42 for the Wolf Creek Generating Station (WCGS) to incorporate changes to Technical Specification (TS) 3.7.2, "Main Steam Isolation Valves (MSIVs)" and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)." This amendment application proposes to incorporate the MSIV actuator trains and MFIV actuator trains into the Limiting Condition for Operation (LCO) and provide associated Conditions and Required Actions. Additionally, Surveillance Requirement (SR) 3.7.2.2 and SR 3.7.3.2 are revised to clearly identify that the MSIV actuator trains and MFIV actuator trains are required to be tested in accordance with these SRs.

2.0 PROPOSED CHANGES

TS 3.7.2, "Main Steam Isolation Valves (MSIVs)," and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)," specifies OPERABILITY and Surveillance requirements for the MSIVs and MFIVs, and includes Conditions and Required Actions to be entered when one or more MSIVs or MFIVs are declared inoperable. Currently, these specifications do not specifically address or provide specific requirements for the MSIV and MFIV actuator trains. Inoperability of one of the two actuator trains associated with an MSIV or MFIV does not by itself make the valve incapable of closing since the remaining OPERABLE actuator train can alone effect valve closure on demand. Declaring an MSIV or MFIV inoperable and having to enter the Condition(s) and Required Action(s) for an inoperable valve due only to an inoperable actuator train(s), is unnecessarily restrictive. Therefore, WCNOC proposes to incorporate requirements specifically for the MSIV and MFIV actuator trains within TS 3.7.2 and TS 3.7.3 such that these specifications would include Conditions and Required Actions to address inoperable MSIV and MFIV actuator trains.

The following changes are proposed:

- LCO 3.7.2 and LCO 3.7.3 are revised to include the actuator trains in the LCO. LCO 3.7.2 is revised to state: "Four MSIVs and their associated actuator trains shall be OPERABLE." LCO 3.7.3 is revised to state: "Four MFIVs and their associated actuator trains shall be OPERABLE."

- New Conditions A through E are added to TS 3.7.2 and TS 3.7.3 to address inoperable MSIV and MFIV actuator trains, respectively, and the existing Conditions that address inoperable valves are relabeled such that those Conditions would become Conditions F through I for TS 3.7.2 and Conditions F and G for TS 3.7.3. The proposed new Conditions related specifically to the actuator trains would address various degrees or combinations of inoperable actuator trains as follows:

    - New Condition A would address the condition of having one MSIV or MFIV actuator train inoperable (for a single valve). The proposed Required Action for this Condition would require restoring the inoperable actuator train to OPERABLE status within 7 days.

- New Condition B would address the condition of having two MSIV or MFIV actuator trains inoperable for different valves (i.e., one actuator inoperable for each of two MSIVs or MFIVs) such that the actuator trains are not in the same separation group. The proposed Required Action for this Condition would require restoring at least one actuator train to OPERABLE status within 72 hours.

- New Condition C would address the situation when two MSIV or MFIV actuator trains are inoperable (for different valves) and the inoperable actuator trains are both in the same separation group. The proposed Required Action for this Condition would require restoring at least one actuator train to OPERABLE status within 24 hours.

- New Condition D would address the situation when both actuator trains for one MSIV or MFIV are inoperable. The Required Action proposed for this Condition would require immediately declaring the affected valve inoperable.

- New Condition E would address the condition of having three or more MSIV or MFIV actuator trains inoperable, or the condition when, after entering Conditions A, B, or C, it is determined that the Required Action and Completion Time of any of those Conditions cannot be met. The Required Action for this Condition would require immediately declaring each affected valve inoperable.

- Surveillance Requirement (SR) 3.7.2.2 and SR 3.7.3.2 are revised to clearly identify that the MSIV actuator trains and MFIV actuator trains are required to be tested in accordance with these SRs. SR 3.7.2.2 is revised to state: "Verify each actuator train actuates the MSIV to the isolation position of an actual or simulated actuation signal." SR 3.7.3.2 is revised to state: "Verify each actuator train actuates the MFIV to the isolation position of an actual or simulated actuation signal."

Proposed revisions to the TS Bases are also included in this application. The changes to the affected TS Bases pages will be incorporated in accordance with TS 5.5.14, "Technical Specifications (TS) Bases Control Program."

3.0 BACKGROUND

On July 13, 2006 at a NRC inspection exit meeting, the NRC identified a potential non-cited green violation for a violation of TS 3.7.2 in that ABHV-0017 was not restored to OPERABLE status within the 8 hour Completion Time as required by TS 3.7.2, Required Action A.1 on April 13, 2006. Shortly after the exit meeting, WCNOC requested a meeting with the NRC staff to present information regarding the WCGS analyses and compliance with Technical Specification. WCNOC was notified subsequent to the exit meeting and prior to a meeting with the NRC staff that the potential non-cited green violation was being withdrawn pending further review.

On August 16, 2006, WCNOC and Callaway Plant personnel met with the NRC staff (NRR and Region IV personnel) to provide information on the MSIV/MFIV operation, design bases, safety analyses, and Technical Specifications. The meeting was an informational meeting and the NRC did not provide a specific position at the meeting.

On August 21, 2006, the NRC Project Manager communicated to WCNOC the position that SR 3.7.2.2 is interpreted by the NRC staff that the SR requires both actuation trains be surveillance tested. Since SR 3.0.1 requires SRs to be met and that failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be a failure to meet the LCO. Therefore, the failure of an actuation train is a failure to meet the SR which results in LCO 3.7.2 not being met and the MSIV should be declared inoperable absent any specific Conditions associated to actuator trains.

The NRC staff interpretation results in declaring an MSIV or MFIV inoperable with one actuator train inoperable. While WCNOC does not agree with the NRC staff interpretation, the Completion Times of 8 hours for an inoperable MSIV and 4 hours for an inoperable MFIV does not provide a reasonable amount of time to effect repairs to an inoperable actuator train. Declaring an MSIV or MFIV inoperable and having to enter the Condition(s) and Required Action(s) for an inoperable valve due only to an inoperable actuator train(s), is unnecessarily restrictive. Therefore, WCNOC proposes to incorporate requirements specifically for the MSIV and MFIV actuator trains within TS 3.7.2 and TS 3.7.3 such that these specifications would include Conditions and Required Actions to address inoperable MSIV and MFIV actuator trains.

Main Steam Isolation Valves (MSIVs)

One MSIV is installed in each of the four main steam lines outside the containment and downstream of the main steam safety valves. The MSIVs prevent uncontrolled blowdown from more than one steam generator in the event of a postulated design basis accident. The valves are bidirectional, double disc, parallel slide gate valves. The valves are designed to close between 1.5 to 5 seconds against the flows associated with line breaks on either side of the valve, assuming the most limiting normal operating conditions prior to occurrence of the break. Each MSIV is equipped with two redundant actuator trains such that either actuator train can independently perform the safety function to fast-close the valve on demand. (Reference 1)

Main Feedwater Isolation Valves (MFIVs)

One main feedwater isolation valve (MFIV) is installed in each of the four main feedwater lines outside the containment and downstream of the feedwater control valve. The MFIVs are installed to prevent uncontrolled blowdown from more than one steam generator in the event of a feedwater pipe rupture in the turbine building. The main feedwater check valve provides backup isolation. The MFIVs isolate the nonsafety-related portions from the safety-related portions of the system. In the event of a secondary cycle pipe rupture inside the containment, the MFIV limits the quantity of high energy fluid that enters the containment through the broken loop and provides a pressure boundary for the controlled addition of auxiliary feedwater to the three intact loops. (Reference 2)

MSIV/MFIV Actuator Train

An actuation train consists of a hydraulic accumulator controlled by solenoid valves on the associated MSIV or MFIV. For each MSIV or MFIV, one actuator train is associated with separation group 4 (yellow), and one actuator train is associated with separation group 1 (red).

The main steam and feedwater isolation valves are operated by hydraulic actuators. These actuators are controlled by a combination of hydraulic fluid and/or compressed nitrogen gas accumulators, which are controlled by solenoid valves. Each main steam and feedwater isolation valve has one actuator with two separate nitrogen accumulators. Each accumulator is controlled from a separate Class IE electrical system, and each is capable of closing the valve independently of the other. (Reference 3)

Main Steam and Feedwater Isolation System (MSFIS)

The MSFIS controls the hydraulic actuators for eight actuation valves, four valves (MSIVs) control the main steam lines and four valves (MFIVs) for the feedwater lines. The MSFIS controls four solenoids in each hydraulic actuator, through four contacts of separate actuation relays, installed in the MSFIS cabinets. Overall, each separation group in its dedicated cabinet contains 32 (4x8) actuation relays.

4.0 TECHNICAL ANALYSIS

Consistent with other Technical Specifications, the proposed Completion Times for inoperable MSIV or MFIV actuator trains are to be based on a hierarchy of Conditions such that shorter Completion Times would be specified for increasingly degraded conditions. Conditions addressing inoperable actuator trains would be specified first in TS 3.7.2 and TS 3.7.3, i.e., before the Conditions that are currently in place for addressing inoperability of the MSIVs and MFIVs themselves. The intent is that when only an actuator train(s) is declared inoperable, the applicable Condition for the inoperable actuator train(s) would be entered first. Then, depending on the number of actuator trains that are concurrently inoperable and what the associated Required Action requires for the applicable Condition, or if the applicable Required Action and Completion Time cannot be met, the MSIV(s) or MFIV(s) associated with the inoperable actuator train(s) would be declared inoperable so that the Condition(s) addressing inoperability of the MSIV(s) or MFIV(s) would thus be entered.

Justification for the Completion Times to be specified for Required Actions A.1, B.1, and C.1 is as follows:

- Condition A - With only a single actuator train inoperable on one MSIV or MFIV, a Completion Time of 7 days for Required Action A.1 is reasonable in light of the fact that with one actuator train inoperable, and because of the dual-redundant actuator design, the affected valve would still be capable of closing on demand (assuming no additional failures) via the remaining OPERABLE actuator train. The proposed 7-day Completion Time takes into account the design redundancy, only 3 of 4 MSIVs and MFIVs are assumed to close in the accident analyses, reasonable time for repairs, and the low probability of a design basis accident occurring during this period. Additionally, this Completion Time is consistent with Required Action A.1 of TS 3.7.5, "Auxiliary Feedwater (AFW) System," which provides a 7-day Completion Time to restore one inoperable steam supply to the turbine driven AFW pump (the turbine driven AFW pump has redundant steam supplies).

- Condition B - With an inoperable actuator train on one MSIV or MFIV and one inoperable actuator train on another MSIV or MFIV, such that the actuator trains are not in the same separation group, a Completion Time of 72 hours for Required Action B.1 is reasonable

since, again, the dual-redundant actuator train design ensures that with only one actuator train inoperable on each of the affected MSIVs, each MSIV would still be capable of closing on demand, assuming no additional failures and only 3 of 4 MSIVs and MFIVs are assumed to close in the accident analyses. Compared to Condition A however, it is appropriate to have a shorter Completion Time for Condition B since with an actuator train inoperable on each of two MSIVs or MFIVs, there is an increased likelihood that an additional failure (such as the failure of an actuation logic train) would cause an MSIV to fail to close.

- Condition C - With an inoperable actuator train on one MSIV or MFIV and one inoperable actuator train on another MSIV or MFIV, but with both inoperable actuator trains in the same separation group, a Completion Time of 24 hours for Required Action C.1 is appropriate. Like the above cases, the dual-redundant actuator train design for each MSIV and MFIV ensures that a single inoperable actuator train for any valve would not prevent the affected valve from closing on demand. In this regard, 24 hours is reasonable and conservative since only one actuator train per valve is permitted to be inoperable (for two MSIVs or MFIVs), so that the remaining OPERABLE actuator train on each affected MSIV or MFIV remains capable of effecting valve closure on demand (assuming no additional failures). A Completion Time of 24 hours is also considered conservative with respect to only 3 of 4 MSIVs and MFIVs are assumed to close in the accident analyses and the low probability of an event occurring during such an interval that would demand MSIV or MFIV closure. Additionally, Completion Time is consistent with Condition G of TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," which provides a 24-hour Completion Time for restoring one train to OPERABLE status. Condition G is applicable to Function 4.b (Steam Line Isolation – Automatic Actuation Logic and Actuation Relays) which provides the actuation logic from the Solid State Protection System through the MSFIS cabinets to the actuator trains. A loss of one actuation logic train would be equivalent to a loss of 4 actuator trains in the same separation group.

  However, compared to the Required Action for Condition B above, a shorter Completion Time for Condition C is appropriate since with two actuator trains inoperable in the same separation group, an additional failure such as the failure of an actuation logic train in the other separation group could cause both affected MSIVs or MFIVs to fail to close on demand.

For Conditions D and E, the Completion Time of "immediately" is conservative and appropriate. For Condition D, for example, when both actuator trains for one MSIV or MFIV are inoperable, it is appropriate to require immediately declaring the valve inoperable since having both actuator trains inoperable would constitute a condition that renders the affected MSIV or MFIV incapable of closing on demand.

With respect to Condition E, for the Condition when the Required Action and associated Completion Time of Condition A, B, or C is not met, it follows that the affected MSIV(s) or MFIV(s) should immediately be declared inoperable since the assumption is that the Completion Time(s) of Condition A, B, or C has expired or cannot be met. This "default" Condition is in keeping with the intent that when only the actuator trains for affected MSIVs or MFIVs are inoperable (and not the valves themselves), the Conditions and Required Actions for the inoperable valve actuator trains should be entered first, and then if those Required Actions cannot be met, the affected MSIVs or MFIVs should be declared inoperable so that the Conditions and Required Actions for the inoperable valves are then entered. Required Action

E.1 ensures the affected MSIV(s) or MFIV(s) are promptly declared inoperable. This format or approach is consistent with other Technical Specifications and the format of the Improved Standard Technical Specifications (NUREG-1431).

For the other portion of Condition E, i.e., for the condition when three or more actuator trains are inoperable, it is conservative and appropriate as well to immediately declare the affected MSIVs or MFIVs inoperable for this condition. For the situation of having three actuator trains inoperable, for example, such a condition could involve two inoperable actuator trains on one valve and one inoperable actuator train on another valve, or an inoperable actuator train on each of three valves. In each case, the inoperable actuator trains could all be in the same separation group or be staggered among the two separation groups. In the former case, a single assumed failure such as an instrument logic train failure could cause one or two valves to fail to close on demand. In the latter case, such a single failure could cause either none of the valves to fail to close on demand, or all three to fail to close on demand. Thus, immediately declaring the affected MSIVs or MFIVs inoperable is either appropriate or conservative. In any case, the conditions addressed by Condition E would constitute an inoperability that exceeds the scope of any of the conditions addressed by Conditions A, B. or C, and it is conservative in this case to simply require declaring all of the affected MSIVs or MFIVs inoperable.

Surveillance Requirement (SR) 3.7.2.2 and SR 3.7.3.2 are revised to clearly identify that the MSIV actuator trains and MFIV actuator trains are required to be tested in accordance with these SRs. Since the current SRs do not clearly articulate applicability to the actuator trains and the NRC staff interpretation is that the actuator trains are encompassed within the SRs, a revision to the SRs is appropriate.

A probabilistic safety assessment (PSA) evaluation was performed to bound the risk associated with Completion Times for concurrent inoperable MSIV and MFIV actuator trains. This evaluation was not used to establish the proposed Completion Times (for proposed Conditions A, B, and C), but it was used to gauge the acceptability of the Completion Times being proposed, which were based on engineering judgment and consistency with other Technical Specifications, as described above. The PSA evaluation performed used the Regulatory Guide 1.174 and Regulatory Guide 1.177 metrics to determine a maximum Completion Time. Results of the evaluation showed that the proposed Completion Times are very conservative when compared to the PSA evaluation. For example, the most severe condition of two actuator trains inoperable when the inoperable actuator trains are in the same separation group has a proposed Completion Time of 24 hours," the PSA evaluation calculated a Completion Time value of greater 4 days.

5.0 REGULATORY ANALYSIS

This section addresses the standards of 10 CFR 50.92 as well as the applicable regulatory requirements and acceptance criteria.

5.1 No Significant Hazards Consideration

This license amendment request proposes to revise Technical Specification (TS) 3.7.2, "Main Steam Isolation Valves (MSIVs)" and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)," to incorporate the MSIV actuator trains and MFIV actuator trains into the Limiting Condition for

Operation (LCO) and provide associated Conditions and Required Actions. Additionally, Surveillance Requirement (SR) 3.7.2.2 and SR 3.7.2.3 are revised to clearly identify that the MSIV actuator trains and MFIV actuator trains are required to be tested in accordance with these SRs. Wolf Creek Nuclear Operating Corporation (WCNOC) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," Part 50.92(c), 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 proposed changes to incorporate requirements for the MSIV and MFIV actuator trains do not involve any design or physical changes to the facility, including the MSIVs, MFIVs, and actuator trains themselves. The design and functional performance requirements, operational characteristics, and reliability of the MSIVs, MFIVs, and actuator trains are thus unchanged. There is therefore no impact on the design safety function of the MSIVs and MFIVs to close (as an accident mitigator), nor is there any change with respect to inadvertent closure of an MSIV or MFIV (as a potential transient initiator). Since no failure mode or initiating condition that could cause an accident (including any plant transient) evaluated per the Updated Safety Analysis Report-described safety analyses is created or affected, the change cannot involve a significant increase in the probability of an accident previously evaluated.

With regard to the consequences of an accident and the equipment required for mitigation of the accident, the proposed changes involve no design or physical changes to the MSIVs, MFIVs, or any other equipment required for accident mitigation. With respect to MSIV and MFIV actuator train Completion Times, the consequences of an accident are independent of equipment Completion Times as long as adequate equipment availability is maintained. The proposed MSIV and MFIV actuator Completion Times take into account the redundancy of the actuator trains, only 3 of 4 MSIVs and MFIVs are assumed to close in the accident analyses, and are limited in extent consistent with other Completion Times specified in the Technical Specifications. Adequate equipment availability would therefore continue to be required by the Technical Specifications. On this basis, the consequences of applicable, analyzed accidents (such as a main steam line break) are not significantly impacted by the proposed changes.

Based on all of the above, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously analyzed.

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

Response: No

The proposed changes to incorporate requirements for the MSIV and MFIV actuator trains do not involve any design or physical changes to the facility, including the MSIVs, MFIVs, and actuator trains themselves. No physical alteration of the plant is involved, as no new or different type of equipment is to be installed. The proposed changes do not alter any assumptions made in the safety analyses, nor do they involve any changes to plant procedures

for ensuring that the plant is operated within analyzed limits. As such, no new failure modes or mechanisms that could cause a new or different kind of accident from any previously evaluated are being introduced.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No

The proposed change to incorporate requirements for the MSIV and MFIV actuator trains does not alter the manner in which safety limits or limiting safety system settings are determined. No changes to instrument/system actuation setpoints are involved. The safety analysis acceptance criteria are not impacted by this change and the proposed change will not permit plant operation in a configuration outside the design basis.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Conclusion:

Based on the above evaluation, WCNOC concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

The portion of the Main Steam Supply System from the steam generator to the steam generator isolation valves is safety related and is required to function following a design basis accident and to achieve and maintain the plant in a post accident safe shutdown condition. The portion of the Condensate and Feedwater System from the steam generator to the steam generator isolation valves is safety related and is required to function following a design basis accident and to achieve and maintain the plant in a post accident safe shutdown condition.

General Design Criterion (GDC) 2, "Design bases for protection against natural phenomena," requires that the safety related portion of the Main Steam Supply System and Condensate and Feedwater System be protected from the effects of natural phenomena, such as earthquakes, tornadoes, hurricanes, floods, and external missiles.

GDC 4, "Environmental and dynamic effects design bases," requires that the Main Steam Supply System and Condensate and Feedwater System be designed to remain functional after a safe shutdown earthquake or to perform its intended function following postulated hazards such as internal missiles, or pipe break.

GDC 34, "Residual heat removal," requires that component redundancy be provided for the Main Steam Supply System and Condensate Feedwater System so that safety functions can be performed, assuming a single active component failure coincident with the loss of offsite power.

The proposed TS change does not affect the MSIVs, MFIVs, and associated actuator train design and compliance with the above regulatory requirements and criteria. Thus, for the proposed amendment, 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, 2) activities will continue to be conducted in compliance with the Commission's regulations, and 3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

WCNOC has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. WCNOC has evaluated the proposed change and has determined that the change does not involve (i) a significant hazards consideration, (ii) a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

7.0 REFERENCES

7.1 References

1. USAR Section 10.3.2.2.

2. USAR Section 10.4.7.2.2.

3. USAR Section 7.3.7.1.

7.2 Precedent

A similar change was approved for the Callaway Plant, Unit 1, in Amendment No. 172 on June 16, 2006. The differences between Callaway Plant Amendment No. 172 and the WCNOC proposed changes are longer Completion Times for new Conditions A, B, and C in TS 3.7.2; proposed changes to TS 3.7.3, "Main Feedwater Isolation Valve(s)," for actuator trains, and proposed changes to Surveillance Requirements (SR) 3.7.2.2 and SR 3.7.3.2.

ATTACHMENT II

MARKUP OF TECHNICAL SPECIFICATION PAGES

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3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

and their associated actuator trains

APPLICABILITY: MODE 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
INSERT 3.7-5 A. One MSIV inoperable in MODE 1. (F.)	A.1 Restore MSIV to OPERABLE status. (F.)	8 hours
B. Required Action and associated Completion Time of Condition A not met. (G.) (F)	B.1 Be in MODE 2. (G.)	6 hours
C. (H.) ----------NOTE---------- Separate Condition entry is allowed for each MSIV. ---------- One or more MSIV inoperable in MODE 2 or 3.	C.1 Close MSIV. AND (H.)	8 hours
	C.2 Verify MSIV is closed.	Once per 7 days

(continued)

INSERT 3.7-5

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV actuator train inoperable.	A.1 Restore MSIV actuator train to OPERABLE status.	7 days
B. Two MSIV actuator trains inoperable for different MSIVs when the inoperable actuator trains are not in the same separation group.	B.1 Restore one MSIV actuator train to OPERABLE status.	72 hours
C. Two MSIV actuator trains inoperable when the inoperable actuator trains are in the same separation group.	C.1 Restore one MSIV actuator train to OPERABLE status.	24 hours
D. Two actuator trains for one MSIV inoperable.	D.1 Declare the affected MSIV inoperable.	Immediately
E. Three or more MSIV actuator trains inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 Declare each affected MSIV inoperable.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. Required Action and associated Completion Time of Condition H not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify the isolation time of each MSIV is ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.7.2.2	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each ~~MSIV actuates~~ actuator train actuates the MSIV to the isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs)

LCO 3.7.3 Four MFIVs shall be OPERABLE.

and their associated actuator trains

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE
Separate Condition entry is allowed for each ~~valve~~ MFIV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
INSERT 3.7-7 A. One or more MFIVs inoperable.	A.1 Close MFIV. AND F. A.2 Verify MFIV is closed.	4 hours Once per 7 days
B. Required Action and associated Completion Time not met. of Condition F G.	B.1 Be in MODE 3. AND G. B.2 Be in MODE 4.	6 hours 12 hours

INSERT 3.7-7

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MFIV actuator train inoperable.	A.1 Restore MFIV actuator train to OPERABLE status.	7 days
B. Two MFIV actuator trains inoperable for different MFIVs when the inoperable actuator trains are not in the same separation group.	B.1 Restore one MFIV actuator train to OPERABLE status.	72 hours
C. Two MFIV actuator trains inoperable when the inoperable actuator trains are in the same separation group.	C.1 Restore one MFIV actuator train to OPERABLE status.	24 hours
D. Two actuator trains for one MFIV inoperable.	D.1 Declare the affected MFIV inoperable.	Immediately
E. Three or more MFIV actuator trains inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 Declare each affected MFIV inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.3.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify the isolation time of each MFIV is ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.7.3.2	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each MFIV actuates to the isolation position on an actual or simulated actuation signal.	18 months

actuator train actuates the MFIV

ATTACHMENT III

RETYPED TECHNICAL SPECIFICATION PAGES

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 Five MSSVs per steam generator shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more steam generators with one MSSV inoperable and the Moderator Temperature Coefficient (MTC) zero or negative at all power levels.	A.1 Reduce THERMAL POWER to ≤ 87% RTP.	4 hours
B. One or more steam generators with two or more MSSVs inoperable. OR One or more steam generators with one MSSV inoperable and the MTC positive at any power level.	B.1 Reduce THERMAL POWER to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs. AND	4 hours (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 ----------NOTE---------- Only required in MODE 1. ---------- Reduce the Power Range Neutron Flux-High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.	36 hours
C Required Action and associated Completion Time not met. OR One or more steam generators with ≥ 4 MSSVs inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within ± 1%.	In accordance with the Inservice Testing Program

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus Maximum Allowable Power

NUMBER OF OPERABLE MSSVs PER STEAM GENERATOR	MAXIMUM ALLOWABLE POWER (% RTP)
4	87
3	65
2	44

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER				LIFT SETTING (psig ± 3%)
STEAM GENERATOR				
#1	#2	#3	#4	
AB-V0055	AB-V0065	AB-V0075	AB-V0045	1185
AB-V0056	AB-V0066	AB-V0076	AB-V0046	1197
AB-V0057	AB-V0067	AB-V0077	AB-V0047	1210
AB-V0058	AB-V0068	AB-V0078	AB-V0048	1222
AB-V0059	AB-V0069	AB-V0079	AB-V0049	1234

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs and their associated actuator trains shall be OPERABLE.

APPLICABILITY: MODE 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV actuator train inoperable.	A.1 Restore MSIV actuator train to OPERABLE status.	7 days
B. Two MSIV actuator trains inoperable for different MSIVs when the inoperable actuator trains are not in the same separation group.	B.1 Restore one MSIV actuator train to OPERABLE status.	72 hours
C. Two MSIV actuator trains inoperable when the inoperable actuator trains are in the same separation group.	C.1 Restore one MSIV actuator train to OPERABLE status.	24 hours
D. Two actuator trains for one MSIV inoperable.	D.1 Declare the affected MSIV inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Three or more MSIV actuator trains inoperable. OR Required Action and associated Completion Time of Condition A, B, or C not met.	E.1	Declare each affected MSIV inoperable.	Immediately
F. One MSIV inoperable in MODE 1.	F.1	Restore MSIV to OPERABLE status.	8 hours
G. Required Action and associated Completion Time of Condition A not met.	G.1	Be in MODE 2.	6 hours
H. ----------NOTE---------- Separate Condition entry is allowed for each MSIV. ---------- One or more MSIV inoperable in MODE 2 or 3.	H.1 AND H.2	Close MSIV. Verify MSIV is closed.	8 hours Once per 7 days
I. Required Action and associated Completion Time of Condition H not met.	I.1 AND I.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.2.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify the isolation time of each MSIV is ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.7.2.2	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each actuator train actuates the MSIV to the isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs)

LCO 3.7.3 Four MFIVs and their associated actuator trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MFIV actuator train inoperable.	A.1 Restore MFIV actuator train to OPERABLE status.	7 days
B. Two MFIV actuator trains inoperable for different MFIVs when the inoperable actuator trains are not in the same separation group.	B.1 Restore one MFIV actuator train to OPERABLE status.	72 hours
C. Two MFIV actuator trains inoperable when the inoperable actuator trains are in the same separation group.	C.1 Restore one MFIV actuator train to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two actuator trains for one MFIV inoperable.	D.1 Declare the affected MFIV inoperable.	Immediately
E. Three or more MFIV actuator trains inoperable. OR Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 Declare each affected MFIV inoperable.	Immediately
F. One or more MFIVs inoperable.	F.1 Close MFIV. AND F.2 Verify MFIV is closed.	4 hours Once per 7 days
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3. AND G.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.3.1	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify the isolation time of each MFIV is ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.7.3.2	----------NOTE---------- Only required to be performed in MODES 1 and 2. ---------- Verify each actuator train actuates the MFIV to the isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Relief Valves (ARVs)

LCO 3.7.4 Four ARV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ARV line inoperable for reasons other than excessive leakage.	A.1 Restore required ARV line to OPERABLE status.	7 days
B. Two ARV lines inoperable for reasons other than excessive leakage.	B.1 Restore all but one required ARV line to OPERABLE status.	72 hours
C. Three or more ARV lines inoperable for reasons other than excessive leakage.	C.1 Restore all but two ARV lines to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. With one or more of the ARVs inoperable because of excessive seat leakage.	D.1 Initiate action to close the associated block valve(s). AND D.2 Restore ARV(s) to OPERABLE staus.	Immediately 30 days
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ARV.	In accordance with the Inservice Testing Program
SR 3.7.4.2	Verify one complete cycle of each ARV block valve.	18 months

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
LCO 3.0.4b. is not applicable when entering MODE 1.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to turbine driven AFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. One AFW train inoperable for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time for Condition A or B not met. OR Two AFW trains inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours
D. Three AFW trains inoperable.	D.1 ----------NOTE---------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ---------- Initiate action to restore one AFW train to OPERABLE status.	 Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	----------NOTE---------- Not required to be performed for the AFW flow control valves until the system is placed in standby or THERMAL POWER is > 10% RTP. ---------- Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	 31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.7.5.2	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. ---------- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Test Program
SR 3.7.5.3	Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.5.4	----------NOTE---------- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 900 psig in the steam generator. ---------- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.7.5.5	Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5 or 6 for > 30 days

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST contained water volume shall be ≥ 281,000 gal.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CST contained water volume not within limit.	A.1	Verify by administrative means OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
	AND		
	A.2	Restore CST contained water volume to within limit.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST contained water volume is ≥ 281,000 gal.	12 hours

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CCW train inoperable.	A.1	----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by CCW. ---------- Restore CCW train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 AND B.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.7.1	----------NOTE---------- Isolation of CCW flow to individual components does not render the CCW System inoperable. ---------- Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.7.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.7.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.8 Essential Service Water (ESW) System

LCO 3.7.8 Two ESW trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ESW train inoperable.	A.1 ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency diesel generator made inoperable by ESW System. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by ESW System. ---------- Restore ESW train to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	----------NOTE---------- Isolation of ESW System flow to individual components does not render the ESW System inoperable. ---------- Verify each ESW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.8.2	Verify each ESW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months
SR 3.7.8.3	Verify each ESW pump starts automatically on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Plant inlet water temperature of UHS not within limit.	A.1	Verify water level of main cooling lake ≥ 1075 ft. mean sea level.	1 hour AND Once per 12 hours thereafter
	AND		
	A.2	Verify plant inlet water temperature of UHS is ≤ 94°F.	Once per hour
B. Required Action and associated Completion Time not met. OR UHS inoperable for reasons other than Condition A.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify water level of UHS is ≥ 1070 ft mean sea level.	24 hours
SR 3.7.9.2	Verify plant inlet water temperature of UHS is ≤ 90°F.	24 hours

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.10 Two CREVS trains shall be OPERABLE.

---NOTE---
The control room boundary may be opened intermittently under administrative controls.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREVS train inoperable.	A.1	Restore CREVS train to OPERABLE status.	7 days
B. Two CREVS trains inoperable due to inoperable control room boundary in MODES 1, 2, 3, and 4.	B.1	Restore control room boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	D.1.1 Place OPERABLE CREVS train in CRVIS mode. AND	Immediately
	D.1.2 Verify OPERABLE CREVS train is capable of being powered by an emergency power source. OR	Immediately
	D.2.1 Suspend CORE ALTERATIONS. AND	Immediately
	D.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	E.1 Suspend CORE ALTERATIONS. AND	Immediately
	E.2 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREVS train pressurization filter unit for ≥ 10 continuous hours with the heaters operating and each CREVS train filtration filter unit for ≥ 15 minutes.	31 days
SR 3.7.10.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.10.3	Verify each CREVS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	Verify one CREVS train can maintain a positive pressure of ≥ 0.25 inches water gauge, relative to the outside atmosphere during the CRVIS mode of operation.	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.11 Control Room Air Conditioning System (CRACS)

LCO 3.7.11 Two CRACS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRACS train inoperable.	A.1 Restore CRACS train to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies .	C.1.1 Place OPERABLE CRACS train in operation. AND C.1.2 Verify OPERABLE CRACS train is capable of being powered by an emergency power source. OR C.2.1 Suspend CORE ALTERATIONS. AND C.2.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately Immediately Immediately
D. Two CRACS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	D.1 Suspend CORE ALTERATIONS. AND D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CRACS trains inoperable in MODE 1, 2, 3, or 4.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Verify each CRACS train has the capability to remove the assumed heat load.	18 months

3.7 PLANT SYSTEMS

3.7.12 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)

NOT USED

3.7 PLANT SYSTEMS

3.7.13 Emergency Exhaust System (EES)

LCO 3.7.13 Two EES trains shall be OPERABLE.

---NOTE---
The auxiliary building or fuel building boundary may be opened intermittently under administrative controls.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of irradiated fuel assemblies in the fuel building.

---NOTE---
The SIS mode of operation is required only in MODES 1, 2, 3, and 4. The FBVIS mode of operation is required only during movement of irradiated fuel assemblies in the fuel building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EES train inoperable in MODE 1, 2, 3, or 4.	A.1 Restore EES train to OPERABLE status.	7 days
B. Two EES trains inoperable due to inoperable auxiliary building boundary in MODE 1, 2, 3, or 4.	B.1 Restore auxiliary building boundary to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. OR Two EES trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours
D. One EES train inoperable during movement of irradiated fuel assemblies in the fuel building.	D.1	Place OPERABLE EES train in operation in FBVIS mode.	Immediately
	OR		
	D.2	Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately
E. Two EES trains inoperable due to inoperable fuel building boundary during movement of irradiated fuel assemblies in the fuel building.	E.1	Restore fuel building boundary to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition E not met. OR Two EES trains inoperable during movement of irradiated fuel assemblies in the fuel building for reasons other than Condition E.	F.1 Suspend movement of irradiated fuel assemblies in the fuel building.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Operate each EES train for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.13.2	Perform required EES filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.3	Verify each EES train actuates on an actual or simulated actuation signal.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.13.4	Verify one EES train can maintain a negative pressure ≥ 0.25 inches water gauge with respect to atmospheric pressure in the auxiliary building during the SIS mode of operation.	18 months on a STAGGERED TEST BASIS
SR 3.7.13.5	Verify one EES train can maintain a negative pressure ≥ 0.25 inches water gauge with respect to atmospheric pressure in the fuel building during the FBVIS mode of operation.	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.14 Penetration Room Exhaust Air Cleanup System (PREACS)

NOT USED

3.7 PLANT SYSTEMS

3.7.15 Fuel Storage Pool Water Level

LCO 3.7.15 The fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool water level not within limit.	A.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify the fuel storage pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	7 days

3.7 PLANT SYSTEMS

3.7.16 Fuel Storage Pool Boron Concentration

LCO 3.7.16 The fuel storage pool boron concentration shall be ≥ 2165 ppm.

APPLICABILITY: When fuel assemblies are stored in the fuel storage pool and a fuel storage pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Fuel storage pool boron concentration not within limit.	----------NOTE---------- LCO 3.0.3 is not applicable. ----------		
	A.1	Suspend movement of fuel assemblies in the fuel storage pool.	Immediately
	AND		
	A.2.1	Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately
	OR		
	A.2.2	Verify by administrative means that a non-Region 1 fuel storage pool verification has been performed since the last movement of fuel assemblies in the fuel storage pool.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify the fuel storage pool boron concentration is within limit.	7 days

3.7 PLANT SYSTEMS

3.7.17 Spent Fuel Assembly Storage

LCO 3.7.17 The combination of initial enrichment and burnup of each spent fuel assembly stored in Region 2 or 3 shall be within the Acceptable Domain of Figure 3.7.17-1 or in accordance with Specification 4.3.1.1.

APPLICABILITY: Whenever any fuel assembly is stored in Region 2 or 3 of the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Initiate action to move the noncomplying fuel assembly to Region 1.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.17-1 or Specification 4.3.1.1.	Prior to storing the fuel assembly in Region 2 or 3

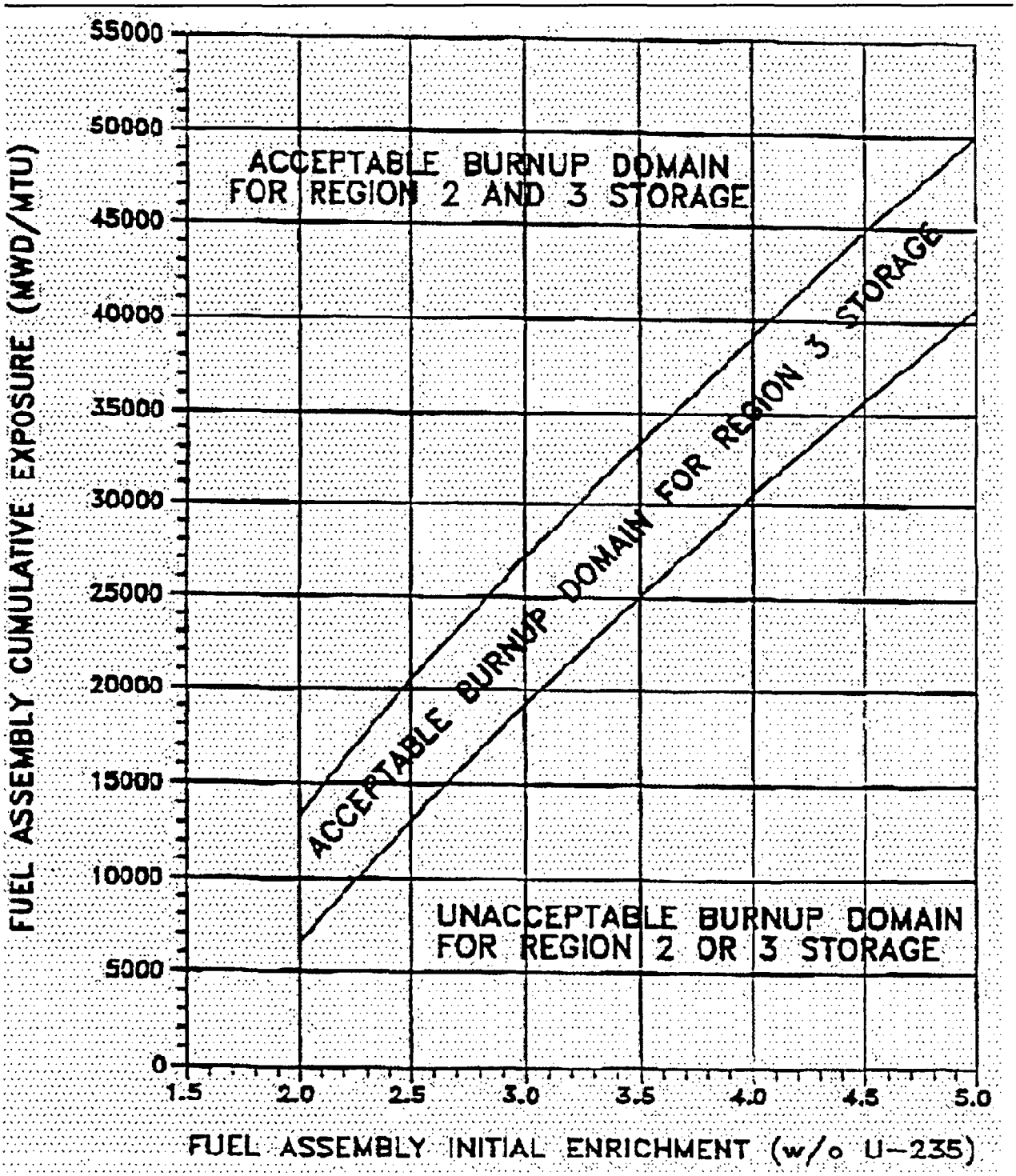

Figure 3.7.17-1 (page 1 of 1)
Minimum Required Fuel Assembly Burnup as a Function
of Initial Enrichment to Permit Storage in Regions 2 and 3

3.7 PLANT SYSTEMS

3.7.18 Secondary Specific Activity

LCO 3.7.18 The specific activity of the secondary coolant shall be ≤ 0.10 µCi/gm DOSE EQUIVALENT I-131.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify the specific activity of the secondary coolant is ≤ 0.10 µCi/gm DOSE EQUIVALENT I-131.	31 days

ATTACHMENT IV

PROPOSED TS BASES CHANGES
(for information only)

B 3.7 PLANT SYSTEMS

B 3.7.2 Main Steam Isolation Valves (MSIVs)

BASES

BACKGROUND

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generators to the break.

One MSIV is located in each main steam line outside, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs) and auxiliary feedwater (AFW) pump turbine steam supply, to prevent MSSV and AFW isolation from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the others, and isolates the turbine, Turbine Bypass System, and other auxiliary steam supplies from the steam generators.

INSERT B 3.7.2-1

The MSIVs close on a main steam isolation signal generated by low steam line pressure, high steam line negative pressure rate or High-2 containment pressure. The MSIVs fail as is on loss of control or actuation power.

Each MSIV has an MSIV bypass valve. Although these bypass valves are normally closed, they receive the same emergency closure signal as do their associated MSIVs. The MSIVs may also be actuated manually.

A description of the MSIVs is found in the USAR, Section 10.3 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment, discussed in the USAR, Section 6.2.1.4 (Ref. 2). It is also affected by the accident analysis of the SLB events presented in the USAR, Section 15.1.5 (Ref. 3). The design precludes the blowdown of more than one steam generator, assuming a single active component failure (e.g., the failure of one MSIV to close on demand).

The limiting case for the containment pressure analysis is the SLB inside containment, with initial reactor power at approximately 50% with loss of offsite power and the failure of one emergency diesel generator. At lower powers, the steam generator inventory and temperature are at their maximum, maximizing the analyzed mass and energy release to the containment. Due to reverse flow and failure of the MSIV to close,

INSERT B 3.7.2-1

The MSIV is a 28-inch gate valve with dual-redundant hydraulic actuation trains. Either actuation train can independently perform the safety function to fast-close the MSIV on demand. Each actuator train consists of a hydraulic accumulator controlled by solenoid valves on the associated MSIV. For each MSIV, one actuator train is associated with separation group 4 ("yellow"), and one actuator train is associated with separation group 1 ("red").

No changes this page
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BASES

APPLICABLE SAFETY ANALYSES (continued)

the additional mass and energy in the steam headers downstream from the other MSIV contribute to the total release. With the most reactive rod cluster control assembly assumed stuck in the fully withdrawn position, there is an increased possibility that the core will become critical and return to power. The core is ultimately shut down by the boric acid injection delivered by the Emergency Core Cooling System.

The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power is the limiting case for a post trip return to power. The analysis includes scenarios with offsite power available, and with a loss of offsite power following turbine trip. With offsite power available, the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System cooldown. With a loss of offsite power, the response of mitigating systems is delayed. Significant single failures considered include failure of an MSIV to close.

The MSIVs serve only a safety function and remain open during power operation. These valves operate under the following situations:

a. An HELB inside containment. In order to maximize the mass and energy release into containment, the analysis assumes that the MSIV in the affected steam generator remains open. For this accident scenario, steam is discharged into containment from all steam generators until the remaining MSIVs close. After MSIV closure, steam is discharged into containment only from the affected steam generator and from the residual steam in the main steam header downstream of the closed MSIVs in the unaffected loops. Closure of the MSVIs isolates the break from the unaffected steam generators.

b. A break outside of containment and upstream from the MSIVs is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break and limits the blowdown to a single steam generator.

c. A break downstream of the MSIVs will be isolated by the closure of the MSIVs.

BASES

APPLICABLE SAFETY ANALYSES (continued)

d. Following a steam generator tube rupture, closure of the MSIVs isolates the ruptured steam generator from the intact steam generators to minimize radiological releases.

e. The MSIVs are also utilized during other events such as a feedwater line break. This event is less limiting as far as MSIV OPERABILITY is concerned.

The MSIVs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

and their associated actuator trains

LCO

This LCO requires that four MSIVs ~~in the steam lines~~ be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal.

INSERT B 3.7.2-3

An MSIV is not inoperable due to one actuator train on a valve being inoperable since at least three of the MSIVs will close assuming a single failure.

With both actuator trains on the same MSIV inoperable, that MSIV is inoperable; and the applicable Condition should be entered.

A valve actuator is considered OPERABLE provided:

a. Accumulator pressure is within limits,

b. Instrument air supply and pressure to the valve regulator is within limits, and

c. All train-related test switches (Panel SA075A/B) associated with the actuator are in the OPERATE position, and no test lights are lit.

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 (Ref. 4) limits or the NRC staff approved licensing basis.

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1, and in MODES 2 and 3 due to significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing the safety function.

In MODE 4, the steam generator energy is low.

The MSIV actuator trains must be OPERABLE in MODES 1, 2, and 3 to support operation of the MSIV.

INSERT B 3.7.2-3

An MSIV actuator train is considered OPERABLE when it is capable of fast-closing the associated MSIV on demand and within the required isolation time. This includes having adequate accumulator pressure to support fast-closure of the MSIV within the required isolation time and instrument air supply and pressure to the valve regulator is within limits.

BASES

APPLICABILITY (continued)

In MODE 5 or 6, the steam generators do not contain much energy because their temperature is below the boiling point of water; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

INSERT B 3.7.2-4A

F. A.1

With one MSIV inoperable in MODE 1, action must be taken to restore OPERABLE status within 8 hours. Some repairs to the MSIV can be made with the unit hot. The 8 hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require a closure of the MSIVs.

INSERT B 3.7.2-4B

The 8 hour Completion Time is consistent with that allowed for containment isolation valves that isolate a closed system penetrating containment. This time is reasonable due to the relative stability of the closed system which provides an additional passive means for containment isolation.

G. B.1

If the MSIV cannot be restored to OPERABLE status within 8 hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition H would be entered. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging unit systems.

H. E.1 and E.2

H

Condition E is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis.

The 8 hour Completion Time is consistent with that allowed in Condition A.

F.

INSERT B 3.7.2-4A

The LCO specifies OPERABILITY requirements for the MSIVs as well as for their associated actuator trains. The Conditions and Required Actions for TS 3.7.2 separately address inoperability of the MSIV actuator trains and inoperability of the MSIVs themselves.

A.1

With a single actuator train inoperable on one MSIV, action must be taken to restore the inoperable actuator train to OPERABLE status within 7 days. The 7-day Completion Time is reasonable in light of the dual-redundant actuator train design such that with one actuator train inoperable, the affected MSIV is still capable of closing on demand via the remaining OPERABLE actuator train. The 7-day Completion Time takes into account the redundant OPERABLE actuator train to the MSIV, reasonable time for repairs, and the low probability of an event occurring that requires the inoperable actuator train to the affected MSIV.

B.1

With an actuator train on one MSIV inoperable and an actuator train on an additional MSIV inoperable, such that the inoperable actuator trains are not in the same separation group, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 72 hours. With two actuator trains inoperable on two MSIVs, there is an increased likelihood that an additional failure (such as the failure of an actuation logic train) could cause one MSIV to fail to close. The 72-hour Completion Time is reasonable since the dual-redundant actuator train design ensures that with only one actuator train on each of two affected MSIVs inoperable, each MSIV is still capable of closing on demand.

C.1

With an actuator train on one MSIV inoperable and an actuator train on an additional MSIV inoperable, but with both inoperable actuator trains in the same separation group, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 24 hours. The 24-hour Completion Time provides a reasonable amount of time for restoring at least one actuator train since the dual-redundant actuator train design for each MSIV ensures that a single inoperable actuator train cannot prevent the affected MSIV(s) from closing on demand. With two actuator trains inoperable in the same separation group, an additional failure (such as the failure of an actuation logic train in the other separation group) could cause both affected MSIVs to fail to close on demand. The 24 hour Completion Time takes into the redundant OPERABLE actuator trains to the affected MSIVs and the low probability of an event occurring that requires the inoperable actuator trains to the affected MSIVs.

INSERT B 3.7.2-4A (continued)

D.1

Required Action D.1 provides assurance that the appropriate Action is entered for the affected MSIV if its associated actuator trains become inoperable. Failure of both actuator trains for a single MSIV results in the inability to close the affected MSIV on demand.

E.1

With three or more MSIV actuator trains inoperable or when Required Action A.1, B.1, or C.1 cannot be completed within the required Completion Time, the affected MSIVs may be incapable of closing on demand and must be immediately declared inoperable. Having three actuator trains inoperable could involve two inoperable actuator trains on one MSIV and one inoperable actuator train on another MSIV, or an inoperable actuator train on each of three MSIVs, for which the inoperable actuator trains could all be in the same separation group or be staggered among the two separation groups.

Depending on which of these conditions or combinations is in effect, the condition or combination could mean that all of the affected MSIVs remain capable of closing on demand (due to the dual-redundant actuator train design), or that at least one MSIV is inoperable, or that with an additional single failure up to three MSIVs could be incapable of closing on demand. Therefore, in some cases, immediately declaring the affected MSIVs inoperable is conservative (when some or all of the affected MSIVs may still be capable of closing on demand even with a single additional failure), while in other cases it is appropriate (when at least one of the MSIVs would be inoperable, or up to three could be rendered inoperable by an additional single failure). Required Action E.1 is conservatively based on the worst-case condition and therefore requires immediately declaring all the affected MSIVs inoperable. Declaring two or more MSIVs inoperable while in MODE 1 requires entry into LCO 3.0.3.

INSERT B 3.7.2-4B

Condition F is entered when one MSIV is inoperable in MODE 1, including when both actuator trains for one MSIV are inoperable. When only one actuator train is inoperable on one MSIV, Condition A applies.

BASES

ACTIONS H.1 and H.2 (continued)

For inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, the inoperable MSIVs must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid.

The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

I.1 and I.2

If the MSIVs cannot be restored to OPERABLE status or are not closed within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed at least in MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

on an actual or simulated actuation signal from each actuator train

This SR verifies that MSIV isolation time is ≤ 5.0 seconds. The MSIV isolation time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage.

The Frequency is in accordance with the Inservice Testing Program.

This test can be conducted in MODE 3 with the unit at operating temperature and pressure. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated.

SR 3.7.2.2

actuator train

its respective MSIV

This SR verifies that each MSIV can close on an actual or simulated actuation signal. The manual fast close hand switch in the control room provides an acceptable actuation signal. This Surveillance is normally

No changes this page
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BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.2.2 (continued)

performed upon returning the plant to operation following a refueling outage. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated.

The frequency of MSIV testing 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.

REFERENCES

1. USAR, Section 10.3.
2. USAR, Section 6.2.
3. USAR, Section 15.1.5.
4. 10 CFR 100.11.

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Isolation Valves (MFIVs)

BASES

BACKGROUND

The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). The Main Feedwater Regulation Valves (MFRVs) function to control feedwater flow to the SGs.

The MFIV is a 14-inch gate valve with a dual-redundant hydraulic actuator. The assumed single active failure of one of the redundant MFIV actuators will not prevent the MFIV from closing.

INSERT B 3.7.3-1

The MFRVs are air-operated angle valves used to control feedwater flow to the SGs from between 20% and full power. The MFRV bypass valves are air-operated globe valves used to control flow to the SGs up to 25% power.

Closure of the MFIVs terminates main feedwater flow to the steam generators, terminating the event for feedwater line breaks (FWLBs) occurring upstream of the MFIVs. The consequences of events occurring in the main steam lines or in the MFW lines downstream from the MFIVs will be mitigated by their closure. Closure of the MFIVs effectively terminates the addition of main feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs.

The MFIVs isolate the nonsafety related portions from the safety related portions of the system. In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loops.

One MFIV is located on each MFW line, outside but close to containment. The MFIVs are located upstream of the AFW injection point so that AFW may be supplied to the steam generators following MFIV closure. The piping volume from these valves to the steam generators is accounted for in calculating mass and energy releases, and refilled prior to AFW reaching the steam generator following either an SLB or FWLB.

The MFIVs close on receipt of any safety injection signal, a T_{avg} - Low coincident with reactor trip (P-4), a low-low steam generator level, or steam generator water level - high high signal. They may also be actuated manually. In addition to the MFIVs, a check valve inside

INSERT B 3.7.3-1

Either actuation train can independently perform the safety function to fast-close the MFIV on demand. Each actuator train consists of a hydraulic accumulator controlled by solenoid valves on the associated MFIV. For each MFIV, one actuator train is associated with separation group 4 ("yellow"), and one actuator train is associated with separation group 1 ("red").

no changes this page
included for information only

BASES

BACKGROUND (continued)

containment is available. The check valve isolates the feedwater line, penetrating containment, and ensures the pressure boundary of any intact loop not receiving auxiliary feedwater.

The MFIV actuators consist of two separate pneumatic-hydraulic power trains each receiving an actuation signal from one of the redundant ESFAS channels. A single active failure in one power train would not prevent the other power train from functioning. The MFIVs provide the primary success path for events requiring feedwater isolation and isolation of nonsafety related portions from the safety related portion of the system, such as, for auxiliary feedwater addition.

A description of the MFIVs and MFRVs is found in the USAR, Section 10.4.7 (Ref. 1).

APPLICABLE SAFETY ANALYSES

Credit is taken in accident analysis for the MFIVs to close on demand. The safety function of the MFRVs and associated bypass valves credited in accident analysis is to provide a backup to the MFIVs for the potential failure of an MFIV to close even though the MFRVs are located in the nonsafety related portion of the feedwater system. Further assurance of feedwater flow termination is provided by the SGFP trip function; however, this is not credited in accident analysis. The accident analysis credits the main feedwater check valves as backup to the MFIVs to prevent SG blowdown for pipe ruptures in the non-seismic Category I portions of the feedwater system outside containment.

Criterion 3 of 10 CFR 50.36(c)(2)(ii) indicates that components that are part of the primary success path and that actuate to mitigate an event that presents a challenge to a fission product barrier should be in Technical Specifications. The primary success path of a safety sequence analysis consists of the combination and sequences of equipment needed to operate (including consideration of the single failure criteria) so that the plant response to the event remains within appropriate acceptance criteria. The primary success path does not include backup and diverse equipment. The MFIVs, with their dual-redundant actuators, are the primary success path for feedwater isolation; the MFRVs, bypass valves, and the SGFP trip are backup and diverse equipment. Therefore, only the MFIVs are incorporated into Technical Specifications. The MFIVs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

This LCO ensures that the MFIVs will isolate MFW flow to the steam generators, following an FWLB or main steam line break. These valves will also isolate the nonsafety related portions from the safety related portions of the system. and their associated actuator trains

This LCO requires that four MFIVs be OPERABLE. The MFIVs are considered OPERABLE when isolation times are within limits and they close on an isolation actuation signal.

INSERT B 3.7.3-3

An MFIV is not inoperable due to one actuator train on a valve being inoperable since at least three of the MFIVs will close assuming a single failure.

With both actuator trains on the same MFIV inoperable, that MFIV is inoperable; and the applicable Condition should be entered.

A valve actuator is considered OPERABLE provided:

a. Accumulator pressure is within limits,

b. Instrument air supply and pressure to the valve regulator is within limit, and

c. All train-related test switches (Panel SA075A/B) associated with the actuator are in the OPERATE position, and only the A test light is lit.

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. A feedwater isolation signal on high steam generator level is relied on to terminate an excess feedwater flow event, and failure to meet the LCO may result in the introduction of water into the main steam lines.

APPLICABILITY

The MFIVs must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and steam generators. In MODES 1, 2, and 3, the MFIVs are required to be OPERABLE to perform their isolation function and limit the amount of available fluid that could be added to containment in the case of a secondary system pipe break inside containment. When the valves are closed, they are already performing their safety function.

In MODES 4, 5, and 6, steam generator energy is low. Therefore, the MFIVs can be closed since MFW is not required.

The MFIV actuator trains must be OPERABLE in MODES 1, 2, and 3 to support operation of the MFIV.

INSERT B 3.7.3-3

An MFIV actuator train is considered OPERABLE when it is capable of fast-closing the associated MFIV on demand and within the required isolation time. This includes having adequate accumulator pressure to support fast-closure of the MFIV within the required isolation time and instrument air supply and pressure to the valve regulator is within limits.

BASES

ACTIONS

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

INSERT B 3.7.3-4A

~~A.1 and A.2~~ F.1 and F.2

With one MFIV 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 4 hours. When these valves are closed, they are performing their required safety function.

INSERT B 3.7.3-4B

The 4 hour Completion Time takes into account the redundancy afforded by the dual-redundant actuators on the MFIVs and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The 4 hour Completion Time is reasonable, based on operating experience.

Inoperable MFIVs that are closed must be verified on a periodic basis that they are closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed.

~~B.1 and B.2~~ G.1 and G.2

If the MFIV(s) cannot be restored to OPERABLE status, or closed, within the associated Completion Time, the unit must be placed 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, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, 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 is ≤ 5 seconds on an actual or simulated main feedwater isolation actuation signal from each actuator train. The MFIV closure time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. This is consistent with Regulatory Guide 1.22 (Ref. 4)

INSERT B 3.7.3-4A

The LCO specifies OPERABILITY requirements for the MFIVs as well as for their associated actuator trains. The Conditions and Required Actions for TS 3.7.3 separately address inoperability of the MFIV actuator trains and inoperability of the MFIVs themselves.

A.1

With a single actuator train inoperable on one MFIV, action must be taken to restore the inoperable actuator train to OPERABLE status within 7 days. The 7-day Completion Time is reasonable in light of the dual-redundant actuator train design such that with one actuator train inoperable, the affected MFIV is still capable of closing on demand via the remaining OPERABLE actuator train. The 7-day Completion Time takes into account the redundant OPERABLE actuator train to the MFIV, reasonable time for repairs, and the low probability of an event occurring that requires the inoperable actuator train to the affected MFIV.

B.1

With an actuator train on one MFIV inoperable and an actuator train on an additional MFIV inoperable, such that the inoperable actuator trains are not in the same separation group, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 72 hours. With two actuator trains inoperable on two MFIVs, there is an increased likelihood that an additional failure (such as the failure of an actuation logic train) could cause one MFIV to fail to close. The 72-hour Completion Time is reasonable since the dual-redundant actuator train design ensures that with only one actuator train on each of two affected MFIVs inoperable, each MFIV is still capable of closing on demand.

C.1

With an actuator train on one MFIV inoperable and an actuator train on an additional MFIV inoperable, but with both inoperable actuator trains in the same separation group, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 24 hours. The 24-hour Completion Time provides a reasonable amount of time for restoring at least one actuator train since the dual-redundant actuator train design for each MFIV ensures that a single inoperable actuator train cannot prevent the affected MFIV(s) from closing on demand. With two actuator trains inoperable in the same separation group, an additional failure (such as the failure of an actuation logic train in the other separation group) could cause both affected MFIVs to fail to close on demand. The 24 hour Completion Time takes into the redundant OPERABLE actuator trains to the affected MFIVs and the low probability of an event occurring that requires the inoperable actuator trains to the affected MFIVs.

INSERT B 3.7.3-4A (continued)

D.1

Required Action D.1 provides assurance that the appropriate Action is entered for the affected MFIV if its associated actuator trains become inoperable. Failure of both actuator trains for a single MFIV results in the inability to close the affected MFIV on demand.

E.1

With three or more MFIV actuator trains inoperable or when Required Action A.1, B.1, or C.1 cannot be completed within the required Completion Time, the affected MFIVs may be incapable of closing on demand and must be immediately declared inoperable. Having three actuator trains inoperable could involve two inoperable actuator trains on one MFIV and one inoperable actuator train on another MFIV, or an inoperable actuator train on each of three MFIVs, for which the inoperable actuator trains could all be in the same separation group or be staggered among the two separation groups.

Depending on which of these conditions or combinations is in effect, the condition or combination could mean that all of the affected MFIVs remain capable of closing on demand (due to the dual-redundant actuator train design), or that at least one MFIV is inoperable, or that with an additional single failure up to three MFIVs could be incapable of closing on demand. Therefore, in some cases, immediately declaring the affected MFIVs inoperable is conservative (when some or all of the affected MFIVs may still be capable of closing on demand even with a single additional failure), while in other cases it is appropriate (when at least one of the MFIVs would be inoperable, or up to three could be rendered inoperable by an additional single failure). Required Action E.1 is conservatively based on the worst-case condition and therefore requires immediately declaring all the affected MFIVs inoperable.

INSERT B 3.7.3-4B

Condition F is entered when one or more MFIV is inoperable in MODE 1, including when both actuator trains for one MFIV are inoperable. When only one actuator train is inoperable on one MFIV, Condition A applies.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1 (continued)

The Frequency for this SR is in accordance with the Inservice Testing Program. Operating experience has shown that these components usually pass the Surveillance when performed at the Inservice Testing Program Frequency. This test is conducted in MODE 3 with the unit at nominal operating temperature and pressure, as discussed in Reference 2. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated.

SR 3.7.3.2 actuator train its respective MFIV

This SR verifies that each MFIV can close on an actual or simulated actuation signal. The manual close hand switch in the control room provides an acceptable actuation signal. This Surveillance is normally performed upon returning the plant to operation following a refueling outage. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated

The frequency of MFIV testing 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.

REFERENCES

1. USAR, Section 10.4.7.
2. ASME, Boiler and Pressure Vessel Code, Section XI.
3. USAR, Table 7.3-14.
4. Regulatory Guide 1.22, Rev. 0.

SUMMARY OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by WCNOC in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Kevin Moles at (620) 364-4126.

COMMITMENT	Due Date/Event
The license amendment will be implemented within 30 days of issuance. Final TS Bases changes will be implemented pursuant to TS 5.5.14 at the time the amendment is implemented.	Within 30 days of NRC issuance