WOLF CREEK
NUCLEAR OPERATING CORPORATION

Britt T. McKinney
Vice President Operations

FEB 21 2002

WO 02-0004

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

Subject: Docket No. 50-482: Revision to Technical Specifications Regarding Suspension of Positive Reactivity Additions

Gentlemen:

Wolf Creek Nuclear Operating Corporation (WCNOC) herewith transmits an application for amendment to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS).

The proposed amendment revises several of the Required Actions in the WCGS Technical Specifications (TS) that require suspension of operations involving positive reactivity additions or suspension of operations involving reactor coolant system (RCS) boron concentration reductions. In addition, the proposed amendment revises several Limiting Condition for Operation (LCO) Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required SHUTDOWN MARGIN or refueling boron concentration limits will still be satisfied. This amendment is based on an NRC-approved traveler, TSTF-286 Revision 2.

WCNOC is submitting this license amendment application in conjunction with an industry consortium of six plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Generation Company LG, Union Electric Company, WCNOC, Pacific Gas and Electric Company, STP Nuclear Operating Company, and Arizona Public Service. Union Electric Company is the lead plant for the proposed license amendment and the other members of the STARS group can also be expected to submit plant-specific license amendment requests similar to this one, with the exception of STP Nuclear Operating Company which has already received NRC approval of a license amendment based on TSTF-286, Revision 2.

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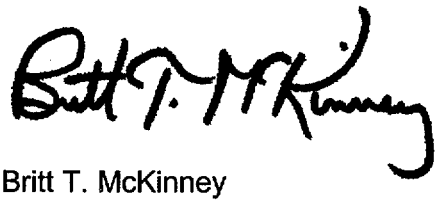
The WCNOC Plant Safety Review Committee and the Nuclear Safety Review Committee have reviewed this amendment application. Attachments I through V provide the Evaluation, Markup of Technical Specifications, Retyped Technical Specifications, Proposed Technical Specification Bases Changes, and List of Commitments, respectively, in support of this amendment request. Attachment IV provides proposed changes to the TS Bases and are included for information only. Final Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specifications (TS) Bases Control Program." Appendix A demonstrates the extent to which TSTF-286, Revision 2, was followed, similar to the Appendix attached to the NRC safety evaluation for H. B. Robinson Unit 2 License Amendment 190.

It has been determined that this amendment application does not involve a significant hazard consideration in accordance with 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental assessment need be prepared in connection with the issuance of this amendment.

Approval of this amendment application is requested by August 1, 2002. Once approved, this amendment will be implemented within 60 days.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Kansas State Official. If you should have any questions regarding this submittal, please contact me at (620) 364-4112, or Mr. Tony Harris at (620) 364-4038.

Very truly yours,



Britt T. McKinney

BTM/rlr
Attachments:
I - Evaluation
II - Markup of Technical Specification pages
III - Retyped Technical Specification pages
IV - Proposed Technical Specification Bases Changes (for information only)
V - List of Commitments

Appendix A – A Correlation of Proposed Changes to Approved TSTF-286, Revision 2, STS Changes

cc: V. L. Cooper (KDHE), w/a
J. N. Donohew (NRC), w/a
W. D. Johnson (NRC), w/a
E. W. Merschoff (NRC), w/a
Senior Resident Inspector (NRC), w/a

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

Britt T. McKinney, of lawful age, being first duly sworn upon oath says that he is Vice President Operations 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 _____
Britt T. McKinney
Vice President Operations

SUBSCRIBED and sworn to before me this 21st day of Feb. , 2002.

_____
Notary Public

NOTARY PUBLIC STATE OF KANSAS CINDY NOVINGER My Appt. Exp. 7/8/02

Expiration Date July 8, 2002

ATTACHMENT I

EVALUATION

EVALUATION

1.0 INTRODUCTION

1.1 This amendment application revises several of the Required Actions in the Wolf Creek Generating Station (WCGS) Technical Specifications (TS) that require suspension of operations involving positive reactivity additions or suspension of operations involving reactor coolant system (RCS) boron concentration reductions. In addition, the proposed amendment revises several Limiting Condition for Operation (LCO) Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required SHUTDOWN MARGIN (SDM) or refueling boron concentration limits will still be satisfied.

1.2 Updated Safety Analysis Report (USAR) Section

There are no changes required to the USAR.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed changes modify the Required Actions and LCO Notes that direct the suspension of activities that involve positive reactivity changes or RCS boron concentration reductions, with the exception of Required Action A.2 of TS 3.9.1 (however, TS Bases changes are attached for that Action). Clarifications are provided in the proposed TS Bases changes as to which plant evolutions are acceptable when operating under a Condition or LCO Note requiring suspension of positive reactivity additions or RCS boron concentration reductions.

The proposed changes will allow limited insertions of positive reactivity that are associated with routine plant operations. The proposed changes will limit the amount of positive reactivity additions that are allowed consistent with assuring appropriate reactivity limits are met, either SDM or refueling boron concentration.

The proposed changes are consistent with License Amendment 190 for H. B. Robinson Unit 2 (Reference 2) and with approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-286, Revision 2, "Define 'Operations Involving Positive Reactivity Additions'," (Reference 3), with exceptions noted in the applicable descriptions of changes below and summarized in Appendix A. References are listed in Section 10 of this Evaluation.

The proposed TS changes are as follows:

1. Add a Note to TS 3.3.1, "RTS Instrumentation," Required Action G.1 that states: "Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed."

Condition G is applicable when the two required Intermediate Range Neutron Flux channels are inoperable. Required Action G.1 currently states: "Suspend operations involving positive reactivity additions." The proposed Note will allow limited plant temperature changes or boron concentration fluctuations associated with RCS temperature control or inventory management.

Required Action G.1 will continue to require suspension of operations involving positive reactivity additions. Therefore, this proposed change simply clarifies the Required Action. The proposed change to TS 3.3.1 Required Action G.1 differs from TSTF-286, Revision 2 (Reference 3). TSTF-286, Revision 2, Insert 1 adds a Note stating: "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM." Our proposed change does not include "...provided the change is accounted for in the calculated SDM." In MODES 1 and 2 with $k_{eff} \geq 1.0$, SDM is not a "calculated" value. Rather, SDM is assured by operation within the rod insertion limits of LCO 3.1.5, "Shutdown Bank Insertion Limits," and LCO 3.1.6 "Control Bank Insertion Limits" and by operating the plant per the requirements of LCO 3.4.2, "RCS Minimum Temperature for Criticality." This clarification is also described in the proposed Bases discussion of the new Note. The use of the words "temperature changes" in lieu of "cooldown" is considered more accurate since the WCGS TS allow positive Moderator Temperature Coefficient (MTC) values at reduced power levels. Under positive MTC conditions a temperature increase would cause a positive reactivity addition. The wording "temperature changes" refers to the fact that the MTC must be considered both during cooldown and heatup operations. The use of the words "Limited boron concentration changes associated with RCS inventory control" in lieu of "boron dilution" is consistent with the intent of TSTF-286, Revision 2, as expressed in Insert B1 of the traveler, and provides further clarification of the Note. This wording is more descriptive of WCGS operations than "boron dilution." This wording is more accurate with regard to the existing plant design which features two independent reactivity control systems: one using the movable control and shutdown rod cluster control assemblies (RCCAs), and the other using the chemical volume and control system (CVCS).

This TS wording is identical to that approved for H. B. Robinson Unit 2 (Reference 2).

2. Add a Note to TS 3.3.1, "RTS Instrumentation," Required Action I.1 that states: "Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed."

Condition I is applicable when one of the two required Source Range Neutron Flux channels is inoperable in MODE 2 below P-6. Required Action I.1 currently states: "Suspend operations involving positive reactivity additions." The proposed Note will allow limited plant temperature changes or boron concentration fluctuations associated with RCS temperature control or inventory management.

Required Action I.1 will continue to require suspension of operations involving positive reactivity additions. Therefore, this proposed change simply clarifies the Required Action. The proposed change to TS 3.3.1 Required Action I.1 differs from TSTF-286, Revision 2, in the same fashion, and for the same reasons, as described above for Required Action G.1 of TS 3.3.1.

This TS wording is identical to that approved for H. B. Robinson Unit 2 (Reference 2).

3. Revise TS 3.4.5, "RCS Loops - MODE 3," LCO Note 1.a; TS 3.4.6, "RCS Loops - MODE 4," LCO Note 1.a; TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," LCO Note 1.a; and TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," LCO Note 1.b, to state: "No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1." These Notes currently state: "No operations are permitted that would cause reduction of the RCS boron concentration." or "No operations are permitted that would cause a reduction of the RCS boron concentration."

   These Notes are intended to preclude dilution of the RCS when no forced mixing (i.e. coolant circulation by residual heat removal (RHR) pumps or reactor coolant pumps) is taking place. The proposed changes allow dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1. These proposed changes are identical to Insert 5 of TSTF-286, Revision 2.

4. Revise TS 3.4.5 Required Action D.2; TS 3.4.6 Required Action B.1; TS 3.4.7 Required Action B.1; and TS 3.4.8 Required Action B.1 to state: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1." These Required Actions currently state: "Suspend all operations involving a reduction of RCS boron concentration," or "Suspend all operations involving reduction in RCS boron concentration."

   These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed changes allow dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1. These proposed changes are identical to Insert 3 of TSTF-286, Revision 2.

5. Revise TS 3.8.2, "AC Sources - Shutdown," Required Actions A.2.3 and B.3; TS 3.8.5, "DC Sources - Shutdown," Required Action A.2.3; TS 3.8.8, "Inverters - Shutdown," Required Action A.2.3; and TS 3.8.10, "Distribution Systems - Shutdown," Required Action A.2.3 to state: "Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration." These Required Actions currently state: "Initiate action to suspend operations involving positive reactivity additions."

   These Required Actions are intended to initiate suspension of operations involving positive reactivity additions based on the loss of required electrical sources and distribution equipment. The proposed changes allow dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1 or the refueling boron concentration of LCO 3.9.1. The proposed changes will also allow temperature changes that could increase reactivity provided the reactivity insertions do not result in a loss of required SDM or required refueling boron concentration. These proposed changes are identical to Insert 8 of TSTF-286, Revision 2.

6. Revise TS 3.9.3, "Nuclear Instrumentation," Required Action A.2 to state: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1." This Required Action currently states: "Suspend positive reactivity additions."

   This Required Action is intended to initiate suspension of operations involving positive reactivity additions when there is a loss of one required Source Range Neutron Flux monitor, thereby rendering inoperable the redundant channel for monitoring core reactivity. The proposed change allows dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. This proposed change also removes the implicit limitation on temperature changes that could result in a positive reactivity addition. No limitation on temperature change-induced reactivity insertion is needed, because appropriate SDM in MODE 6 is maintained by compliance with LCO 3.9.1. This proposed change is identical to Insert 4 of TSTF-286, Revision 2.

7. Revise the LCO Note for TS 3.9.5, "RHR and Coolant Circulation - High Water Level," to state: "The required RHR loop may be removed from operation for $\leq$ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the Reactor Coolant System, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1." This LCO Note currently states: "The required RHR loop may be removed from operation for $\leq$ 1 hour per 8 hour period, provided no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration."

   This note is intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed change allows dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. This proposed change is identical to the markups and Insert 7 of TSTF-286, Revision 2.

8. Revise TS 3.9.5, "RHR and Coolant Circulation - High Water Level," Required Action A.1 and TS 3.9.6, "RHR and Coolant Circulation - Low Water Level," Required Action B.1 to state: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1." These Required Actions currently state: "Suspend operations involving a reduction in reactor coolant boron concentration."

   These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed changes allow dilution of the RCS, but the source of inventory makeup is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. These proposed changes are identical to Insert 4 of TSTF-286, Revision 2.

The associated TS Bases will be revised accordingly; see the proposed changes in Attachment IV. The following two additional TS Bases changes were taken directly from TSTF-286, Revision 2:

1. The Bases for TS 3.9.1, "Boron Concentration," Required Action A.2 will be revised to add the following: "Operations that individually add limited positive reactivity (e.g., temperature fluctuations, inventory addition, or temperature control fluctuations), but

when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action."

2. An editorial change is made to the Bases for TS 3.9.1 Required Action A.3. The discussion regarding immediately suspending CORE ALTERATIONS or positive reactivity additions is corrected. The word "or" between "CORE ALTERATIONS" and "positive reactivity additions" should be "and" consistent with the requirements of the TS 3.9.1 Required Actions.

Finally, the Bases for TS 3.9.3, "Nuclear Instrumentation," Required Action B.2 will be revised for consistency with the changes made to TS 3.9.3 Required Action A.2. This change was not included in TSTF-286, Revision 2, but is needed since the revised Action A.2 would no longer absolutely preclude positive reactivity additions. This was an oversight in TSTF-286. The list of affected TS in TSTF-286 included "Action 3.9.3.B Bases, Nuclear Instrumentation, NUREG-1431 Only"; however, there were no changes to the Action 3.9.3.B Bases marked on page B 3.9-9 of the traveler.

Attachments II and IV provide the TS markups and proposed TS Bases changes, respectively.

3.0 BACKGROUND

WCGS implemented the Improved Technical Specifications (ITS) in December 1999 under Amendment No. 123 (Reference 1). Since then the industry and the NRC staff have been working to improve the Standard Technical Specifications (STS) NUREGs and, as a result, generic changes have been incorporated into Revision 2 of the STS NUREGs. This proposed amendment adopts generic changes from TSTF-286, Revision 2, which was incorporated into the STS by the NRC staff on July 6, 2000.

WCGS has two independent reactivity control systems. One uses the movable control and shutdown RCCAs, and the other uses the CVCS to adjust the soluble boron concentration. In MODES 1 and 2, both systems are used to compensate for the reactivity effects from the fuel and coolant temperature changes in the RCS during power operation from full load to no load conditions. In MODES 3, 4, and 5, the CVCS is used to compensate for the reactivity effects from temperature and xenon changes. In MODE 6, the CVCS is used to maintain the refueling boron concentration within required limits.

The WCGS SDM limit provides sufficient reactivity margin to ensure that the specified acceptable fuel design limits will not be exceeded for normal shutdown and Anticipated Operational Occurrences (AOOs). The SDM definition assumes that the single RCCA with the highest reactivity worth remains fully withdrawn. In MODES 1 and 2 with $k_{eff} \geq 1.0$, the TS satisfy the required SDM (which is the amount of subcriticality that would immediately occur following the insertion of control and shutdown RCCAs that had been withdrawn, assuming the fuel and moderator temperatures are at hot zero power values) by limiting the insertion of the control and shutdown banks. Small reactivity changes due to RCS coolant inventory management and temperature control are also considered in specifying SDM, including MTC effects. In MODES 2 with $k_{eff} < 1.0$, 3, 4, and 5, the TS specify the required SDM (which is the reactivity margin by which the reactor will remain subcritical with the RCCAs fully inserted) by reference to the CORE OPERATING LIMITS REPORT (COLR).

In MODE 6, reactor subcriticality margin is ensured by the limit on the boron concentration of all filled portions of the RCS and the refueling pool that have direct access to the reactor vessel.

The TS will be modified by this amendment to permit the addition of positive reactivity and changes to the RCS boron concentration as long as the change preserves the margin to core criticality as defined by the SDM and refueling boron concentration limit specifications.

NEED FOR CHANGE

The proposed changes are needed to address operational considerations. During Conditions in which these Required Actions are entered, various plant operations must be continued. These activities make it necessary to sometimes add cooler water to the RCS (a positive reactivity change in most cases) or warmer water to the RCS and may involve inventory makeup from sources that are at a boron concentration less than that in the RCS.

Operational considerations may make it necessary or prudent to use a different RHR loop from the one in operation. With the proposed changes, if the newly selected RHR loop is sampled and the boron concentration is slightly lower than that of the RCS, but sufficiently high that SDM and refueling boron concentration limits continue to be met, the switch to a different loop would be acceptable. Alternatively, if the RHR loop is at a different temperature than the RCS average temperature, but the reactivity effects are small enough to assure that SDM and refueling boron concentration limits will continue to be met, again the swap-over to the alternate RHR loop should be allowed.

These activities should not be precluded as long as the required SDM or refueling boron concentration is maintained. The proposed changes provide the flexibility necessary to provide for continued, safe reactor operations while also limiting any potential for excess positive reactivity additions.

4.0 REGULATORY REQUIREMENTS AND GUIDANCE

The regulatory requirements associated with reactivity control include the following:

Criterion 10 -- Reactor design. The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

Criterion 11 -- Reactor inherent protection. The reactor core and associated coolant systems shall be designed so that in the power operating range the net effect of the prompt inherent nuclear feedback characteristics tends to compensate for a rapid increase in reactivity.

Criterion 12 -- Suppression of reactor power oscillations. The reactor core and associated coolant, control, and protection systems shall be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are not possible or can be reliably and readily detected and suppressed.

Criterion 15 – Reactor coolant system design. The reactor coolant system and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences.

Criterion 25 -- Protection system requirements for reactivity control malfunctions. The protection system shall be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of control rods.

Criterion 26 -- Reactivity control system redundancy and capability. Two independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting the rods, and shall be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling the rate of reactivity changes resulting from planned, normal power changes (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions.

Criterion 27 -- Combined reactivity control systems capability. The reactivity control systems shall be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably controlling reactivity changes to assure that under postulated accident conditions and with appropriate margin for stuck rods the capability to cool the core is maintained.

Criterion 28 -- Reactivity limits. The reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary greater than limited local yielding nor (2) sufficiently disturb the core, its support structures or other reactor pressure vessel internals to impair significantly the capability to cool the core. These postulated reactivity accidents shall include consideration of rod ejection (unless prevented by positive means), rod dropout, steam line rupture, changes in reactor coolant temperature and pressure, and cold water addition.

Criterion 29 -- Protection against anticipated operational occurrences. The protection and reactivity control systems shall be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

5.0 TECHNICAL ANALYSIS

Design Basis and Safety Analysis Considerations

The changes in TSTF-286, Revision 2, revise the following: 1) Required Actions that require suspension of operations involving positive reactivity additions or suspension of RCS boron concentration reductions and 2) various LCO Notes precluding reduction in boron concentration. The revised TS limit the introduction into the RCS of reactivity to that which would maintain the TS-required SDM or refueling boron concentrations, as applicable. Additionally, the TS Required Actions that will still require the suspension of positive reactivity changes have Bases additions that clarify the intent is to preclude a "net" positive reactivity operation.

The TS Required Actions and LCO Notes that preclude positive reactivity additions and reductions in boron concentration are intended to maintain the required SDM or refueling boron concentration. During Conditions in which these Required Actions are invoked, various plant

operations (e.g., maintaining RCS inventory and controlling RCS temperature) must be continued. These necessary activities may involve additions to the RCS of different temperature makeup and may involve makeup from borated sources of water that are at boron concentrations less than the RCS boron concentration. These activities should not be precluded if the overall effect would still assure the required SDM or refueling boron concentration is maintained.

Small changes in reactivity occur as a result of temperature changes that accompany RCS inventory management or RCS temperature control. At the beginning of core life below 70% RTP, positive MTC must also be considered.

The RCS boron concentration is maintained greater than or equal to the concentration required to maintain the required SDM in MODES 3, 4, and 5 or to maintain the required minimum refueling boron concentration in MODE 6. The TS Required Actions and LCO Notes that preclude decreasing the RCS boron concentration in the event that the plant has entered the revised TS Conditions are unduly restrictive if the overall effect on the core would still assure that the required LCO 3.1.1 SDM or LCO 3.9.1 boron concentration is maintained. The proposed change would allow using borated water sources that may decrease the RCS boron concentration while assuring the LCO 3.1.1 SDM or LCO 3.9.1 boron concentration limits are maintained.

The TS-required SDM at WCGS is determined during the reload core design and is ensured during plant operation by the positioning of the RCCA control and shutdown rod banks and through adjustments of the soluble boron concentration in the reactor coolant.

The minimum required SDM is assumed as an initial condition in the safety analyses to ensure that the specified acceptable fuel design limits will not be exceeded for normal shutdown and AOOs, assuming that the highest worth RCCA remains stuck out following a reactor scram. The main steamline break (MSLB) is the most limiting event to establish the minimum SDM value for LCO 3.1.1, and this ensures that the departure from nucleate boiling ratio safety limit is not exceeded.

In MODES 3, 4, and 5, the reactivity of the core must be consistent with the initial conditions assumed for the boron dilution accident analysis to ensure the minimum time required for the operator to terminate the event is met. This is satisfied by complying with the requirements of LCO 3.1.1 for the minimum SDM. Additionally, for MODE 6, the required boron concentration of LCO 3.9.1 ensures subcriticality during refueling operations.

As described in the SDM LCO 3.1.1 Bases, a sufficient shutdown margin ensures that: (1) the reactor can be made subcritical from all operating conditions, transients, and Design Basis Events; (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits; and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition. The Bases for the LCO 3.9.1 refueling boron concentration similarly indicate that the limitations on reactivity conditions during refueling ensure that the reactor will remain subcritical during MODE 6. Since the proposed changes will not alter the limits established in these specifications, there will be no effect on the ability to shutdown and maintain the reactor in a subcritical condition.

During certain conditions that are addressed in this proposed change, addition of water with a reduced boron concentration compared to the RCS and temperature changes will be allowed when forced circulation is not occurring. The proposed changes only permit the addition of inventory from sources whose boron concentration is sufficient to maintain the required boron

concentration if the entire RCS inventory was replaced from the selected source. That is, the source of the water being added must be of high enough boron concentration that the effects of stratification, and subsequent mixing upon restoration of forced flow, cannot result in failure to meet the required boron concentration limits. This limitation addresses potential concerns with stratification and subsequent introduction of the "reduced" concentration borated water into the reactor vessel when forced circulation is re-established.

Based on the evaluation above, it is appropriate to make the proposed changes to the affected specifications. The proposed changes will not affect the limits on reactivity control, and will not permit operations that could result in exceeding these limits. Therefore, the proposed change will not affect any safety margin or safety limit applicable to the facility.

Probabilistic Risk Assessment (PRA) Evaluation

There is no impact on the WCGS PRA. That study is concerned mainly with time-averaged equipment functionality during full power operation. In any event, functional capabilities of the systems in the LCOs will continue to be met.

Summary/Conclusion

The proposed amendment revises several of the Required Actions in the WCGS Technical Specifications that require suspension of operations involving positive reactivity additions or suspension of operations involving RCS boron concentration reductions. In addition, the proposed amendment revises several LCO Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required SDM or refueling boron concentration limits will still be satisfied. The analyses presented above assess the potential impact of the proposed changes on applicable safety analyses. The assessments demonstrate that the change will not adversely affect the design basis, safety analyses, or the safe operation of the plant.

6.0 REGULATORY ANALYSIS

There have been no changes to the plant design such that any of the regulatory requirements in Section 4.0 would come into question. This amendment application revises Required Actions and LCO Notes dealing with the suspension of positive reactivity additions or RCS boron concentration reductions. The evaluation performed by WCNOC in Section 5.0 concludes that WCGS will continue to comply with all applicable regulatory requirements.

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 NO SIGNIFICANT HAZARDS DETERMINATION

This amendment application revises several of the Required Actions in the WCGS Technical Specifications that require suspension of operations involving positive reactivity additions or suspension of operations involving RCS boron concentration reductions. In addition, the proposed amendment revises several LCO Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required SDM or refueling boron concentration limits will still be satisfied.

The proposed amendment does not involve a significant hazards consideration for WCGS based on the three standards set forth in 10 CFR 50.92(c) as discussed below:

1. **Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?**

   Response: No

   Overall protection system performance will remain within the bounds of the previously performed accident analyses since there are no hardware changes. The RTS instrumentation and reactivity control systems will be unaffected. Protection systems will continue to function in a manner consistent with the plant design basis. All design, material, and construction standards that were applicable prior to the request are maintained.

   The probability and consequences of accidents previously evaluated in the USAR are not adversely affected because the changes to the Required Actions and LCO Notes assure the limits on SDM and refueling boron concentration continue to be met, consistent with the analysis assumptions and initial conditions included within the safety analysis and licensing basis. The activities covered by this amendment application are routine operating evolutions. The proposed changes do not reduce the capability of reborating the RCS.

   The equipment and processes used to implement RCS boration or dilution evolutions are unchanged and the equipment and processes are commonly used throughout the applicable MODES under consideration. There will be no degradation in the performance of, or an increase in the number of challenges imposed on, safety-related equipment assumed to function during an accident situation. There will be no change to normal plant operating parameters or accident mitigation performance.

   The proposed changes will not alter any assumptions or change any mitigation actions in the radiological consequence evaluations in the USAR.

   Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?**

   Response: No

There are no hardware changes nor are there any changes in the method by which any safety-related plant system performs its safety function. This amendment will not affect the normal method of plant operation or change any operating limits. The proposed changes merely permit the conduct of normal operating evolutions when additional controls over core reactivity are imposed by the Technical Specifications. The proposed changes do not introduce any new equipment into the plant or alter the manner in which existing equipment will be operated. The changes to operating procedures are minor, with clarifications provided that required limits must continue to be met. No performance requirements or response time limits will be affected. These changes are consistent with assumptions made in the safety analysis and licensing basis regarding limits on SDM and refueling boron concentration.

No new accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of this amendment. There will be no adverse effect or challenges imposed on any safety-related system as a result of this amendment.

This amendment does not alter the design or performance of the 7300 Process Protection System, Nuclear Instrumentation System, or Solid State Protection System used in the plant protection systems.

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

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

Response: No

The proposed changes do not alter the limits on SDM or refueling boron concentration. The nominal trip setpoints specified in the Technical Specification Bases and the safety analysis limits assumed in the transient and accident analyses are unchanged. None of the acceptance criteria for any accident analysis is changed.

There will be no effect on the manner in which safety limits or limiting safety system settings are determined nor will there be any effect on those plant systems necessary to assure the accomplishment of protection functions. There will be no impact on the overpower limit, departure from nucleate boiling ratio (DNBR) limits, heat flux hot channel factor (F_Q), nuclear enthalpy rise hot channel factor ($F\Delta H$), loss of coolant accident peak cladding temperature (LOCA PCT), peak local power density, or any other margin of safety. The radiological dose consequence acceptance criteria listed in the Standard Review Plan will continue to be met.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Conclusion:

Based on the above, 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.

8.0 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 or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion 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.

9.0 PRECEDENTS

The TS changes requested in this amendment application were previously approved for H. B. Robinson Steam Electric Plant Unit 2 and are consistent with changes approved in TSTF-286, Revision 2.

10.0 REFERENCES

1. NRC letter dated March 31, 1999, "Conversion to Improved Technical Specifications for Wolf Creek Generating Station – Amendment No. 123 to Facility Operating License No. NPF-42 (TAC NO. M98739)."

2. H. B. Robinson Steam Electric Plant Unit 2 License Amendment 190 dated March 14, 2001.

3. Industry/TSTF Standard Technical Specification Change Traveler TSTF-286, Revision 2, "Define 'Operations Involving Positive Reactivity Additions'."

ATTACHMENT II

MARKUP OF TECHNICAL SPECIFICATION PAGES

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One channel inoperable.	----------NOTE---------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----------	
	E.1 Place channel in trip.	6 hours
	OR	
	E.2 Be in MODE 3.	12 hours
F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6.	24 hours
	OR	
	F.2 Increase THERMAL POWER to > P-10.	24 hours
G. Two Intermediate Range Neutron Flux channels inoperable.	G.1 Suspend operations involving positive reactivity additions.	Immediately
	AND	
	G.2 Reduce THERMAL POWER to < P-6.	2 hours
H. Not Used.		

(continued)

NOTE
Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed.

NOTE
Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One Source Range Neutron Flux channel inoperable.	I.1 Suspend operations involving positive reactivity additions.	Immediately
J. Two Source Range Neutron Flux channels inoperable.	J.1 Open reactor trip breakers (RTBs).	Immediately
K. One Source Range Neutron Flux channel inoperable.	K.1 Restore channel to OPERABLE status. OR K.2.1 Initiate action to fully insert all rods. AND K.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.	48 hours 48 hours 49 hours

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and either:

a. Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

----------NOTES----------

1. All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause ~~reduction of the RCS boron concentration~~; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each steam generator is ≤ 50°F above each of the RCS cold leg temperatures.

---

introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop 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 4.	12 hours
C. One required RCS loop not in operation with Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	OR		
	C.2	Place the Rod Control System in a condition incapable of rod withdrawal.	1 hour
D. Required RCS loops inoperable. OR No RCS loop in operation.	D.1	Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
	AND		
	D.2	~~Suspend all operations involving a reduction of RCS boron concentration.~~	Immediately
	AND		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

----------NOTES----------

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause ~~reduction of the~~ RCS ~~boron concentration~~; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

---

introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status. AND	Immediately (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	----------NOTE---------- Only required if one RHR loop is OPERABLE. ---------- Be in MODE 5.	24 hours
B. Required loops inoperable. OR No RCS or RHR loop in operation.	B.1	~~Suspend all operations involving a reduction of RCS boron concentration.~~	Immediately
	AND		
	B.2	Initiate action to restore one loop to OPERABLE status and operation.	Immediately

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side narrow range water levels are $\geq$ 6% for required RCS loops.	12 hours
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. The secondary side wide range water level of at least two steam generators (SGs) shall be ≥ 66%.

----------NOTES----------

1. The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause ~~reduction of the RCS boron concentration~~ introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. AND Required SGs secondary side water levels not within limits.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG secondary side water levels to within limits.	Immediately Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 ~~Suspend all operations involving a reduction of RCS boron concentration.~~ AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	12 hours

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

----------NOTES----------

1. All RHR pumps may be removed from operation for ≤ 1 hour provided:

   a. The core outlet temperature is maintained at least 10°F below saturation temperature;

   b. No operations are permitted that would cause ~~a reduction of the RCS boron concentration~~ introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   c. Reactor vessel water level is above the vessel flange.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

----------NOTE----------

While this LCO is not met, entry into MODE 5 Loops Not Filled from MODE 5 Loops Filled is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies. AND A.2.3 Initiate action to suspend operations involving positive reactivity additions. AND A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately Immediately Immediately
B. One required DG inoperable.	B.1 Suspend CORE ALTERATIONS. AND B.2 Suspend movement of irradiated fuel assemblies. AND B.3 Initiate action to suspend operations involving positive reactivity additions. AND B.4 Initiate action to restore required DG to OPERABLE status.	Immediately Immediately Immediately Immediately

Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 The Train A or Train B DC electrical power subsystem shall be OPERABLE to support one train of the DC electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required DC electrical power subsystem inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
	A.2.4 Initiate action to restore required DC electrical power subsystem to OPERABLE status.	Immediately

Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

LCO 3.8.8 The Train A or Train B inverters shall be OPERABLE to support one train of the onsite Class 1E AC vital bus electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portion of the Train A or Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support one train of equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	

Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.

(continued)

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required source range neutron flux monitor inoperable.	A.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2	Suspend positive reactivity additions.	Immediately
B. Two required source range neutron flux monitors inoperable.	B.1	Initiate action to restore one source range neutron flux monitor to OPERABLE status.	Immediately
	AND		
	B.2	Perform SR 3.9.1.1.	Once per 12 hours

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

---NOTE---
The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause ~~reduction of the Reactor Coolant System boron concentration.~~ introduction into the Reactor Coolant System, coolant with boron concentration less than ~~required~~ that required to meet the minimum required boron concentration of LCO 3.9.1.

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RHR loop requirements not met.	A.1	Suspend operations ~~involving a reduction in reactor coolant boron concentration~~ that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND		
	A.2	Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND		
	A.3	Initiate action to satisfy RHR loop requirements.	Immediately
	AND		

(continued)

3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

----------NOTE----------
While this LCO is not met, entry into a MODE or other specified condition in the Applicability is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1	Initiate action to restore required RHR loops to OPERABLE status.	Immediately
	OR		
	A.2	Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately
B. No RHR loop in operation.	B.1	Suspend operations involving a reduction in reactor coolant boron concentration.	Immediately
	AND		

Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.

(continued)

ATTACHMENT III

RETYPED TECHNICAL SPECIFICATION PAGES

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. One channel inoperable.	----------NOTE---------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----------		
	E.1	Place channel in trip.	6 hours
	OR		
	E.2	Be in MODE 3.	12 hours
F. One Intermediate Range Neutron Flux channel inoperable.	F.1	Reduce THERMAL POWER to < P-6.	24 hours
	OR		
	F.2	Increase THERMAL POWER to > P-10.	24 hours
G. Two Intermediate Range Neutron Flux channels inoperable.	G.1	----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ----------	
		Suspend operations involving positive reactivity additions.	Immediately
	AND		
	G.2	Reduce THERMAL POWER to < P-6.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Not Used.		
I. One Source Range Neutron Flux channel inoperable.	----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ---------- I.1 Suspend operations involving positive reactivity additions.	Immediately
J. Two Source Range Neutron Flux channels inoperable.	J.1 Open reactor trip breakers (RTBs).	Immediately
K. One Source Range Neutron Flux channel inoperable.	K.1 Restore channel to OPERABLE status. OR K.2.1 Initiate action to fully insert all rods. AND K.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.	48 hours 48 hours 49 hours

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and either:

a. Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

---NOTES---

1. All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each steam generator is ≤50°F above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop 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 4.	12 hours
C. One required RCS loop not in operation with Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	OR		
	C.2	Place the Rod Control System in a condition incapable of rod withdrawal.	1 hour
D. Required RCS loops inoperable. OR No RCS loop in operation.	D.1	Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
	AND		
	D.2	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	AND		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

---NOTES---

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status. AND	Immediately (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	----------NOTE---------- Only required if one RHR loop is OPERABLE. ---------- Be in MODE 5.	 24 hours
B. Required loops inoperable. OR No RCS or RHR loop in operation.	B.1	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	AND		
	B.2	Initiate action to restore one loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify SG secondary side narrow range water levels are ≥ 6% for required RCS loops.	12 hours
SR 3.4.6.3	Verify correct breaker alignment and indicated power are available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. The secondary side wide range water level of at least two steam generators (SGs) shall be ≥ 66%.

----------NOTES----------

1. The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with any RCS cold leg temperature ≤ 368°F unless the secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable. AND Required SGs secondary side water levels not within limits.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG secondary side water levels to within limits.	Immediately Immediately
B. Required RHR loops inoperable. OR No RHR loop in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one RHR loop is in operation.	12 hours

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

---NOTES---

1. All RHR pumps may be removed from operation for ≤ 1 hour provided:

   a. The core outlet temperature is maintained at least 10°F below saturation temperature;

   b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   c. Reactor vessel water level is above the vessel flange.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

---NOTE---

While this LCO is not met, entry into MODE 5 Loops Not Filled from MODE 5 Loops Filled is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required RHR loops inoperable. OR No RHR loop in operation	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one RHR loop is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies. AND A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately Immediately Immediately
B. One required DG inoperable.	B.1 Suspend CORE ALTERATIONS. AND B.2 Suspend movement of irradiated fuel assemblies. AND B.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND B.4 Initiate action to restore required DG to OPERABLE status.	Immediately Immediately Immediately Immediately

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 The Train A or Train B DC electrical power subsystem shall be OPERABLE to support one train of the DC electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required DC electrical power subsystem inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	A.2.4 Initiate action to restore required DC electrical power subsystem to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

LCO 3.8.8 The Train A or Train B inverters shall be OPERABLE to support one train of the onsite Class 1E AC vital bus electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portion of the Train A or Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support one train of equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	

(continued)

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required source range neutron flux monitor inoperable.	A.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
B. Two required source range neutron flux monitors inoperable.	B.1	Initiate action to restore one source range neutron flux monitor to OPERABLE status.	Immediately
	AND		
	B.2	Perform SR 3.9.1.1.	Once per 12 hours

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

---NOTE---

The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the Reactor Coolant System, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RHR loop requirements not met.	A.1	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND		
	A.2	Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND		
	A.3	Initiate action to satisfy RHR loop requirements.	Immediately
	AND		

(continued)

3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

---NOTE---
While this LCO is not met, entry into a MODE or other specified condition in the Applicability is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1	Initiate action to restore required RHR loops to OPERABLE status.	Immediately
	OR		
	A.2	Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately
B. No RHR loop in operation.	B.1	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND		

(continued)

ATTACHMENT IV

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES
(for information only)

BASES

ACTIONS

F.1 and F.2 (continued)

below P-6 and take into account the redundant capability afforded by the redundant OPERABLE channel, the overlap of the Power Range detectors, and the low probability of its failure during this period. This action does not require the inoperable channel to be tripped because the Function uses one-out-of-two logic. Tripping one channel would trip the reactor. Thus, the Required Actions specified in this Condition are only applicable when channel failure does not result in reactor trip.

G.1 and G.2

Condition G applies to two inoperable Intermediate Range Neutron Flux trip channels in MODE 2 when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint. Required Actions specified in this Condition are only applicable when channel failures do not result in reactor trip. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. With no intermediate range channels OPERABLE, the Required Actions are to suspend operations involving positive reactivity additions immediately. This will preclude any power level increase since there are no OPERABLE Intermediate Range Neutron Flux channels. The operator must also reduce THERMAL POWER below the P-6 setpoint within two hours. Below P-6, the Source Range Neutron Flux channels will be able to monitor the core power level. The Completion Time of 2 hours will allow a controlled power reduction to less than the P-6 setpoint and takes into account the low probability of occurrence of an event during this period that may require the protection afforded by the NIS Intermediate Range Neutron Flux trip.

INSERT BASES 1

H.1 Not Used.

I.1

Condition I applies to one inoperable Source Range Neutron Flux trip channel when in MODE 2, below the P-6 setpoint. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the two channels inoperable, operations involving positive reactivity additions shall be suspended immediately.

INSERT BASES 1

Required Action G.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits of LCOs 3.1.1, 3.1.5, 3.1.6, and 3.4.2 are met.

BASES

ACTIONS

I.1 (continued)

This will preclude any power escalation. With only one source range channel OPERABLE, core protection is severely reduced and any actions that add positive reactivity to the core must be suspended immediately.

INSERT BASES 2.

J.1

Condition J applies to two inoperable Source Range Neutron Flux trip channels when in MODE 2, below the P-6 setpoint, or in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With both source range channels inoperable, the RTBs must be opened immediately. With the RTBs open, the core is in a more stable condition.

K.1, K.2.1, and K.2.2

Condition K applies to one inoperable source range channel in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the source range channels inoperable, 48 hours is allowed to restore it to an OPERABLE status. If the channel cannot be returned to an OPERABLE status action must be initiated within the same 48 hours to fully insert all rods, 1 additional hour is allowed to place the Rod Control System in a condition incapable of rod withdrawal (e.g., by de-energizing all CRDMs, by opening the RTBs, or de-energizing the motor generator (MG) sets). Once the ACTIONS are completed, the core is in a more stable condition and outside the Applicability of the Condition. The allowance of 48 hours to restore the channel to OPERABLE status or fully insert all rods, and the additional hour to place the Rod Control System in a condition incapable of rod withdrawal are justified in Reference 6.

L.1, L.2, and L.3

Not Used.

INSERT BASES 2

Required Action I.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits of LCOs 3.1.1, 3.1.5, 3.1.6, and 3.4.2 are met.

BASES

LCO (continued)

a. No operations are permitted that would dilute the RCS boron concentration ~~thereby maintaining the margin to criticality. Boron~~ reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and

INSERT BASES 4

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ 368°F. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

An OPERABLE RCS loop consists of one OPERABLE RCP and one OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.5.2. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

APPLICABILITY

In MODE 3, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. The most stringent condition of the LCO, that is, two RCS loops OPERABLE and two RCS loops in operation, applies to MODE 3 with the Rod Control System capable of rod withdrawal. The least stringent condition, that is, two RCS loops OPERABLE and one RCS loop in operation, applies to MODE 3 with the Rod Control System not capable of rod withdrawal.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2";
LCO 3.4.6, "RCS Loops - MODE 4";
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

INSERT BASES 4

with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1, thereby maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure the SDM is maintained

BASES

ACTIONS

D.1, D.2, and D.3 (continued)

INSERT BASES 5

de-energizing all CRDMs, by opening the RTBs or de-energizing the MG sets). All operations involving a reduction of RCS boron concentration must be suspended, and action to restore one of the RCS loops to OPERABLE status and operation must be initiated. Addition of borated water with a concentration greater than or equal to the minimum required RWST concentration but less than the actual RCS boron concentration shall not be considered a reduction in boron concentration (Ref. 2). Boron dilution requires forced circulation for proper mixing, and defeating the Rod Control System removes the possibility of an inadvertent rod withdrawal. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

INSERT BASES 6

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required loops are in operation. Verification may include flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.

SR 3.4.5.2

SR 3.4.5.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is $\geq$ 6% for required RCS loops. If the SG secondary side narrow range water level is < 6%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink for removal of the decay heat. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a loss of SG level.

INSERT BASES 5

introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1

INSERT BASES 6

Suspending the introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.5.3

Verification that the required RCPs are OPERABLE ensures that safety analyses limits are met. The requirement also ensures that an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to the required RCPs.

REFERENCES

1. USAR, Section 15.4.6.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993, "Wolf Creek Generating Station - Positive Reactivity Addition, Technical Specification Bases Change."

BASES

LCO

The purpose of this LCO is to require that at least two loops be OPERABLE in MODE 4 and that one of these loops be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RCPs or RHR pumps to be removed from operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are required to be performed without flow or pump noise. The 1 hour time period is adequate to perform the necessary testing, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by test procedures:

INSERT BASES 7

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ 368°F. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

An OPERABLE RCS loop is comprised of an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.6.2.

Similarly for the RHR System, an OPERABLE RHR loop comprises an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RCPs and RHR pumps are OPERABLE if they are capable of being powered and are able to provide forced flow if required.

INSERT BASES 7

with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1, thereby maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure the SDM is maintained

BASES

APPLICABILITY

In MODE 4, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of either RCS or RHR provides sufficient circulation for these purposes. However, two loops consisting of any combination of RCS and RHR loops are required to be OPERABLE to meet single failure considerations.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2";
LCO 3.4.5, "RCS Loops - MODE 3";
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1 and A.2

If one required loop is inoperable, redundancy for heat removal is lost. Action must be initiated to restore a second RCS or RHR loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

The unit must be brought to MODE 5 within 24 hours if, as indicated in the Note to Required Action A.2, one RHR loop is OPERABLE. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR loop, it would be safer to initiate that loss from MODE 5 (≤ 200°F) rather than MODE 4 (200 to 350°F). The Completion Time of 24 hours is a reasonable time, based on operating experience, to reach MODE 5 from MODE 4 in an orderly manner and without challenging plant systems.

B.1 and B.2

introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1

If no loop is OPERABLE or in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving a reduction of RCS boron concentration must be suspended and action to restore one RCS or RHR loop to OPERABLE status and operation must be initiated. Addition of borated water with a concentration greater than or

BASES

ACTIONS

B.1 and B.2 (continued)

equal to the minimum required RWST concentration but less than the actual RCS boron concentration shall not be considered a reduction in boron concentration (Ref. 2). Boron dilution requires forced circulation from at least one RCP for proper mixing, so that inadvertent criticality may be prevented. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

INSERT BASES B

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that one RCS or RHR loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS and RHR loop performance.

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is $\geq$ 6% for required RCS loops. If the SG secondary side narrow range water level is < 6%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink necessary for removal of decay heat. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

INSERT BASES 8

Suspending the introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

BASES

REFERENCES

1. USAR, Section 15.4.6

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition; Technical Specification Bases Change."

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops - MODE 5, Loops Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat either to the steam generator (SG) secondary side coolant via natural circulation (Ref. 3) or the component cooling water via the residual heat removal (RHR) heat exchangers. While the principal means for decay heat removal is via the RHR System, the SGs are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 5 with RCS loops filled, the reactor coolant is circulated by means of two RHR loops connected to the RCS, each loop containing an RHR heat exchanger, an RHR pump, and appropriate flow and temperature instrumentation for control, protection, and indication. One RHR pump circulates the water through the RCS at a sufficient rate to prevent boric acid stratification, but is not sufficient for the boron dilution analysis discussed below.

The number of loops in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR loop for decay heat removal and transport. The flow provided by one RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that a second path be available to provide redundancy for heat removal.

The LCO provides for redundant paths of decay heat removal capability. The first path can be an RHR loop that must be OPERABLE and in operation. The second path can be another OPERABLE RHR loop or maintaining two SGs with secondary side wide range water levels above 66% to provide an alternate method for decay heat removal via natural circulation (Ref. 2).

BASES

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event.

The operation of one RCP in MODES 3, 4, and 5 provides adequate flow to ensure mixing, prevent stratification, and produce gradual reactivity changes during RCS boron concentration reductions. With no reactor coolant loop in operation in either MODES 3, 4, or 5, boron dilutions must be terminated and dilution sources isolated. The boron dilution analysis in these MODES take credit for the mixing volume associated with having at least one reactor coolant loop in operation (Ref.1).

RCS Loops - MODE 5 (Loops Filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or two SGs with secondary side wide range water level ≥ 66%. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is two SGs with their secondary side wide range water levels ≥ 66%. Should the operating RHR loop fail, the SGs could be used to remove the decay heat via natural circulation.

Note 1 permits all RHR pumps to be removed from operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are required to be performed without flow or pump noise. The 1 hour time period is adequate to perform the necessary testing, and operating experience has shown that boron stratification is not likely during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met, along with any other conditions imposed by test procedures:

a. No operations are permitted that would dilute the RCS boron concentration ~~therefore maintaining the margin to criticality.~~ Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and

INSERT BASES 9

INSERT BASES 9

with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1, thereby maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure the SDM is maintained

BASES

APPLICABILITY (continued) LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1 and A.2

If one RHR loop is inoperable and the required SGs have secondary side wide range water levels < 66%, redundancy for heat removal is lost. Action must be initiated immediately to restore a second RHR loop to OPERABLE status or to restore the required SG secondary side water levels. Either Required Action A.1 or Required Action A.2 will restore redundant heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1 and B.2

INSERT BASES 10

If no RHR loop is in operation, except during conditions permitted by Notes 1 and 4, or if no loop is OPERABLE, all operations involving a reduction of RCS boron concentration must be suspended and action to restore one RHR loop to OPERABLE status and operation must be initiated. Addition of borated water with a concentration greater than or equal to the minimum required RWST concentration but less than the actual RCS boron concentration shall not be considered a reduction in boron concentration (Ref. 2). To prevent inadvertent criticality during a boron dilution, forced circulation from at least one RCP is required to provide proper mixing. The immediate Completion Times reflect the importance of maintaining operation for heat removal.

INSERT BASES 11

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

INSERT BASES 10

introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1

INSERT BASES 11

Suspending the introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.7.2

Verifying that at least two SGs are OPERABLE by ensuring their secondary side wide range water levels are ≥ 66% ensures an alternate decay heat removal method is available via natural circulation in the event that the second RHR loop is not OPERABLE. If both RHR loops are OPERABLE, this Surveillance is not needed. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level.

SR 3.4.7.3

Verification that a second RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the RHR pump. If secondary side wide range water level is ≥ 66% in at least two SGs, this Surveillance is not needed. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES

1. USAR, Section 15.4.6.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition, Technical Specification Bases Change."

2., 3. NRC Information Notice 95-35, "Degraded Ability of SGs to Remove Decay Heat by Natural Circulation."

BASES

LCO (continued)

Note 1 permits all RHR pumps to be removed from operation for ≤ 1 hour. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short and core outlet temperature is maintained at least 10°F below saturation temperature. The Note requires reactor vessel water level be above the vessel flange to ensure the operating RHR pump will not be intentionally deenergized during mid-loop operations.

INSERT BASES 12.

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System. One RHR loop provides sufficient capability for this purpose. However, one additional RHR loop is required to be OPERABLE to meet single failure considerations.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2";
LCO 3.4.5, "RCS Loops - MODE 3";
LCO 3.4.6, "RCS Loops - MODE 4";
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

The Applicability is modified by a Note stating that entry into MODE 5 - Loops Not Filled from MODE 5 - Loops Filled is not permitted while the LCO is not met. This Note specifies an exception to LCO 3.0.4 and would prevent draining the RCS, which would eliminate the possibility of SG heat removal, while the RHR function was degraded.

INSERT BASES 12

The Note prohibits boron dilution with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1 is maintained or draining operations when RHR forced flow is stopped.

BASES

ACTIONS

A.1

If only one RHR loop is OPERABLE and in operation, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1 and B.2

INSERT BASES 13

If no required RHR loops are OPERABLE or in operation, except during conditions permitted by Note 1, all operations involving a reduction of RCS boron concentration must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. Addition of borated water with a concentration greater than or equal to the minimum required RWST concentration but less than the actual RCS boron concentration shall not be considered a reduction in boron concentration (Ref. 2). Boron dilution requires forced circulation from at least one RCP for proper mixing so that inadvertent criticality can be prevented. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

INSERT BASES 14

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that one loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

SR 3.4.8.2

Verification that a second RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the RHR pump. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

INSERT BASES 13

introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1

INSERT BASES 14

Suspending the introduction into the RCS, coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

BASES

REFERENCES

1. USAR, Section 15.4.6.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition; Technical Specification Bases Change."

BASES

ACTIONS

A.1

An offsite circuit would be considered inoperable if it were not available to one required ESF train. The one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite circuit not available to one required train, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required DG inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions. Addition to the RCS of borated water with a concentration greater than or equal to the minimum required RWST concentration shall not be considered to be a positive reactivity change (Ref. 1).

INSERT BASES 15

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to the required ESF bus, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is

INSERT BASES 15

that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes, including temperature increases when operating with a positive MTC, must also be evaluated to ensure they do not result in a loss of required SDM.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 (continued)

Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

REFERENCES

None.

1. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition; Technical Specification Bases Change."

BASES

APPLICABILITY (continued)

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

INSERT BASES 16

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power subsystem and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystem should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

INSERT BASES 16

that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6)). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes, including temperature increases when operating with a positive MTC, must also be evaluated to ensure they do not result in a loss of required SDM.

BASES

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6 provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

INSERT BASES 17

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a constant voltage (Sola) transformer.

INSERT BASES 17

that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6)). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes, including temperature increases when operating with a positive MTC, must also be evaluated to ensure they do not result in a loss of required SDM.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5 (continued)

reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

INSERT BASES 18

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring RHR inoperable, which results in taking the appropriate RHR actions.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the required AC, DC, and AC vital bus electrical power distribution subsystems are functioning properly, with all the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. USAR, Chapter 6.
2. USAR, Chapter 15.

INSERT BASES 18

that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6)). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes, including temperature increases when operating with a positive MTC, must also be evaluated to ensure they do not result in a loss of required SDM.

BASES

APPLICABILITY (continued)

3.0.4 and prohibits the transition when boron concentration limits are not met. This Note assures that core reactivity is maintained within limits during fuel handling operations.

ACTIONS

A.1 and A.2

Continuation of CORE ALTERATIONS or positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant volume in the filled portions of the RCS, and the refueling canal, that have direct access to the reactor vessel, is less than its limit, all operations involving CORE ALTERATIONS or positive reactivity additions must be suspended immediately.

Suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position.

INSERT BASES 19

A.3

and

In addition to immediately suspending CORE ALTERATIONS or positive reactivity additions, boration to restore the concentration must be initiated immediately.

In determining the required combination of boration flow rate and concentration, no unique Design Basis Event must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions.

Once actions have been initiated, they must be continued until the boron concentration is restored. The restoration time depends on the amount of boron that must be injected to reach the required concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures that the coolant boron concentration in the filled portions of the RCS and the refueling canal, that have direct access to the reactor vessel, is within the COLR limits. The boron concentration of the coolant in each required volume is determined periodically by chemical analysis.

INSERT BASES 19

Operations that individually add limited positive reactivity (e.g., temperature fluctuations, inventory addition, or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

B 3.9 REFUELING OPERATIONS

B 3.9.3 Nuclear Instrumentation

BASES

BACKGROUND

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

The Westinghouse source range neutron flux monitors (SE-NI-0031 and SE-NI-0032) are BF_3 detectors operating in the proportional region of the gas filled detector characteristic curve. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux (1 to 1E+6 cps). The detectors also provide continuous visual indication in the control room. The NIS is designed in accordance with the criteria presented in Reference 1.

APPLICABLE SAFETY ANALYSES

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as an improperly loaded fuel assembly.

The source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. To be OPERABLE, each monitor must provide visual indication in the control room. When any of the safety related busses supplying power to one of the detectors (SE-NI-31 or 32) associated with the source range neutron flux monitors are taken out of service, the corresponding source range neutron flux monitor may be considered OPERABLE when its detector is powered from a temporary nonsafety related source of power, provided the detector for the opposite source range neutron flux monitor is powered from its normal source. (Ref. 2)

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In

BASES

APPLICABILITY (continued)

MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation."

ACTIONS

A.1 and A.2

With only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and positive reactivity additions must be suspended immediately. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position. Addition to the RCS of borated water with a concentration greater than or equal to the minimum required RWST concentration shall not be considered to be a positive reactivity change (Ref. 2).

INSERT BASES 20

B.1

With no source range neutron flux monitor OPERABLE action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued until a source range neutron flux monitor is restored to OPERABLE status.

B.2

With no source range neutron flux monitor OPERABLE, there are no direct means of detecting changes in core reactivity. However, since CORE ALTERATIONS and positive reactivity additions are not to be made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

INSERT BASES 21

The Completion Time of once per 12 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration and ensures that unplanned changes in boron concentration would be identified. The 12 hour Frequency is reasonable, considering the low probability of a change in core reactivity during this time period.

INSERT BASES 20

introduction into the RCS, coolant with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

INSERT BASES 21

boron concentration changes inconsistent with Required Action A.2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

SR 3.9.3.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.

SR 3.9.3.2

SR 3.9.3.2 is the performance of a CHANNEL CALIBRATION every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition; Technical Specification Bases Changes."

3. NRC letter (J. Stone to O. Maynard) dated October 3, 1997: "Wolf Creek Generating Station - Technical Specification Bases Change, Source Range Nuclear Instruments Power Supply Requirements."

BASES

LCO (continued)

removal capability. At least one RHR loop must be OPERABLE and in operation to provide:

a. Removal of decay heat;

b. Mixing of borated coolant to minimize the possibility of criticality; and

c. Indication of reactor coolant temperature.

An OPERABLE RHR loop includes an RHR pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine the RCS temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

The LCO is modified by a Note that allows the required operating RHR loop to be removed from service for up to 1 hour per 8 hour period, provided no operations are permitted that would cause a reduction of the RCS boron concentration. Boron concentration reduction is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling pool.

INSERT BASES 22

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft water level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.7, "Refueling Pool Water Level." Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level < 23 ft are located in LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

RHR loop requirements are met by having one RHR loop OPERABLE and in operation, except as permitted in the Note to the LCO.

INSERT BASES 22

dilute the RCS boron concentration with coolant at boron concentrations less than required to meet the minimum boron concentration of LCO 3.9.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the minimum required RCS boron concentration is maintained

BASES

ACTIONS
(continued)

A.1

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Reduced boron concentrations cannot occur by the addition of water with a lower boron concentration than that contained in the RCS. Therefore, actions that could result in a reduction in the coolant boron concentration must be suspended immediately. Addition to the RCS of borated water with a concentration greater than or equal to the minimum required RWST concentration shall not be considered to be a reduction in boron concentration (Ref. 2).

INSERT BASES 23

A.2

If RHR loop requirements are not met, actions shall be taken immediately to suspend loading of irradiated fuel assemblies in the core. With no forced circulation cooling, decay heat removal from the core occurs by natural convection to the heat sink provided by the water above the core. A minimum refueling water level of 23 ft above the reactor vessel flange provides an adequate available heat sink. Suspending any operation that would increase decay heat load, such as loading a fuel assembly, is a prudent action under this condition. Performance of Required Action A.2 shall not preclude completion of movement of a component to a safe condition.

A.3

If RHR loop requirements are not met, actions shall be initiated and continued in order to satisfy RHR loop requirements. With the unit in MODE 6 and the refueling water level $\geq$ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

A.4

If RHR loop requirements are not met, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures dose limits are not exceeded.

INSERT BASES 23

Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

BASES

ACTIONS

A.4 (continued)

The Completion Time of 4 hours is reasonable, based on the low probability of the coolant boiling in that time.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR System.

REFERENCES

1. USAR, Section 5.4.7.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition, Technical Specification Bases Changes"

BASES

LCO (continued)

c. Indication of reactor coolant temperature.

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path and to determine the RCS temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs. An OPERABLE RHR loop must be capable of being realigned to provide an OPERABLE flow path.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level."

The Applicability is modified by a Note stating that entry into a MODE or other specified condition in the Applicability is not permitted while the LCO is not met. This Note specifies an exception to LCO 3.0.4 and would prevent the transition into MODE 6 with less than 23 feet of water above the top of the vessel flange while the RHR function was degraded.

ACTIONS

A.1 and A.2

If less than the required number of RHR loops are OPERABLE, action shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status and to operation in accordance with the LCO or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is ≥ 23 ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.5, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions.

B.1

If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Reduced boron concentrations can occur by the addition of water with a lower

BASES

ACTIONS

B.1 (continued)

INSERT BASES 24

boron concentration than that contained in the RCS. Therefore, actions that would result in a reduction in the coolant boron concentration must be suspended immediately. Addition to the RCS of borated water with a concentration greater than or equal to the minimum required RWST concentration shall not be considered to be a reduction in boron concentration (Ref. 2).

B.2

If no RHR loop is in operation, actions shall be initiated immediately, and continued, to restore one RHR loop to operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE RHR loops and one operating RHR loop should be accomplished expeditiously.

B.3

If no RHR loop is in operation, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures that dose limits are not exceeded.

The Completion Time of 4 hours is reasonable at water levels above reduced inventory, based on the low probability of the coolant boiling in that time. At reduced inventory conditions, additional actions are taken to provide containment closure in a reduced period of time (Reference 2). Reduced inventory is defined as RCS level lower than 3 feet below the reactor vessel.

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control,

INSERT BASES 24

Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 (continued)

and alarm indications available to the operator for monitoring the RHR System in the control room.

SR 3.9.6.2

Verification that the required pump is OPERABLE ensures that an additional RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

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1. USAR, Section 5.4.7.

2. NRC letter (W. Reckley to N. Carns) dated November 22, 1993: "Wolf Creek Generating Station - Positive Reactivity Addition; Technical Specification Bases Changes."

3. Generic Letter No. 88-17, "Loss of Decay Heat Removal."

LIST OF COMMITMENTS

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation (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. Tony Harris, Manager Regulatory Affairs at Wolf Creek Generating Station, (620) 364-4038.

COMMITMENT	Due Date/Event
Once approved this amendment revision to Technical Specifications regarding suspension of positive reactivity additions will be implemented within 60 days.	Within 60 days of approval

APPENDIX A

A Correlation of Proposed Changes to Approved TSTF-286, Revision 2 STS Changes

The following TSTF-286 changes are applicable to the Wolf Creek Generating Station (WCGS), but required some additional justification or clarification before incorporation, as discussed in Section 2.0 of Attachment 1, "Description of Proposed Amendment." These deviations from TSTF-286, Revision 2, are identical to those previously approved for H. B. Robinson, Unit 2 with an additional reference in the Bases changes to LCO 3.1.1 since that specification identifies SDM limits:

• 3.3.1 Action G.1	RTS Instrumentation
• 3.3.1 Action G.1 Bases	RTS Instrumentation
• 3.3.1 Action I.1	RTS Instrumentation
• 3.3.1 Action I.1 Bases	RTS Instrumentation

The following TSTF-286 Technical Specification (TS) changes are directly applicable to WCGS and are therefore incorporated as written:

• 3.4.5 LCO Note 1.a	RCS Loops – MODE 3
• 3.4.5 Action D.2	RCS Loops – MODE 3
• 3.4.6 LCO Note 1.a	RCS Loops – MODE 4
• 3.4.6 Action B.1	RCS Loops – MODE 4
• 3.4.7 LCO Note 1.a	RCS Loops – MODE 5, Loops Filled
• 3.4.7 Action B.1	RCS Loops – MODE 5, Loops Filled
• 3.4.8 LCO Note 1.b	RCS Loops – MODE 5, Loops Not Filled
• 3.4.8 Action B.1	RCS Loops – MODE 5, Loops Not Filled
• 3.8.2 Action A.2.3	AC Sources – Shutdown
• 3.8.2 Action B.3	AC Sources – Shutdown
• 3.8.5 Action A.2.3	DC Sources – Shutdown
• 3.8.8 Action A.2.3	Inverters – Shutdown
• 3.8.10 Action A.2.3	Distribution Systems – Shutdown
• 3.9.1 Action A.3 Bases	Boron Concentration
• 3.9.3 Action A.2	Nuclear Instrumentation
• 3.9.5 LCO Note	RHR and Coolant Circulation – High Water Level
• 3.9.5 Action A.1	RHR and Coolant Circulation – High Water Level
• 3.9.6 Action B.1	RHR and Coolant Circulation – Low Water Level

The following TSTF-286 TS changes are applicable to WCGS and are incorporated with minor editorial changes identical to those previously approved for H. B. Robinson, Unit 2. Minor editorial changes to some of the TS Bases were made for consistency with the TS wording.

• 3.4.5 LCO Note 1.a Bases	RCS Loops – MODE 3
• 3.4.5 Action D.2 Bases	RCS Loops – MODE 3
• 3.4.6 LCO Note 1.a Bases	RCS Loops – MODE 4
• 3.4.6 Action B.1 Bases	RCS Loops – MODE 4
• 3.4.7 LCO Note 1.a Bases	RCS Loops – MODE 5, Loops Filled
• 3.4.7 Action B.1 Bases	RCS Loops – MODE 5, Loops Filled
• 3.4.8 LCO Note 1.b Bases	RCS Loops – MODE 5, Loops Not Filled
• 3.4.8 Action B.1 Bases	RCS Loops – MODE 5, Loops Not Filled
• 3.8.2 Action A.2.3 Bases	AC Sources – Shutdown
• 3.8.2 Action B.3 Bases	AC Sources – Shutdown
• 3.8.5 Action A.2.3 Bases	DC Sources – Shutdown
• 3.8.8 Action A.2.3 Bases	Inverters – Shutdown
• 3.8.10 Action A.2.3 Bases	Distribution Systems – Shutdown
• 3.9.1 Action A.2 Bases	Boron Concentration
• 3.9.3 Action A.2 Bases	Nuclear Instrumentation
• 3.9.5 LCO Note Bases	RHR and Coolant Circulation – High Water Level
• 3.9.5 Action A.1 Bases	RHR and Coolant Circulation – High Water Level
• 3.9.6 Action B.1 Bases	RHR and Coolant Circulation – Low Water Level

The following change is in addition to those contained in TSTF-286; however, it is directly related to the TSTF-286 change to the 3.9.3 Action A.2 Bases, as discussed in Section 2.0 of Attachment 1, "Description of Proposed Amendment." This was an oversight in TSTF-286. The list of affected TS in TSTF-286 included "Action 3.9.3.B Bases, Nuclear Instrumentation, NUREG-1431 Only"; however, there were no changes to the Action 3.9.3.B Bases marked on page B 3.9-9 of the traveler.

• 3.9.3 Action B.2 Bases	Nuclear Instrumentation

The following TSTF-286 TS changes are <u>not</u> applicable to WCGS and are therefore not incorporated:

• 3.3.1 Action L.1	RTS Instrumentation
• 3.3.1 Action L.1 Bases	RTS Instrumentation
• 3.3.9 Action B.1	Boron Dilution Protection System
• 3.3.9 Action B.1 Bases	Boron Dilution Protection System
• 3.4.18 LCO Note a	RCS Isolated Loop Startup
• SR 3.4.18.2	RCS Isolated Loop Startup
• 3.4.18 Background Bases	RCS Isolated Loop Startup
• SR 3.4.18.2 Bases	RCS Isolated Loop Startup

The following changes in the list of affected TS in TSTF-286 are not applicable to NUREG-1431 (Westinghouse plants) and are therefore not incorporated:

- Action 3.4.5.C — RCS Loops – MODE 3
- Action 3.4.5.C Bases — RCS Loops – MODE 3
- Action 3.9.2.A — Nuclear Instrumentation
- Action 3.9.2.A Bases — Nuclear Instrumentation
- Action 3.9.2.B Bases — Nuclear Instrumentation
- Action 3.3.9.B — Source Range Neutron Flux
- Action 3.3.9.B Bases — Source Range Neutron Flux
- Action 3.3.10.B — Intermediate Range Neutron Flux
- Action 3.3.10.B Bases — Intermediate Range Neutron Flux
- LCO 3.9.4 — DHR and Coolant Circulation – High Water Level
- LCO 3.9.4 Bases — DHR and Coolant Circulation – High Water Level
- Action 3.9.4.A — DHR and Coolant Circulation – High Water Level
- Action 3.9.4.A Bases — DHR and Coolant Circulation – High Water Level
- Action 3.9.5.B — DHR and Coolant Circulation – Low Water Level
- Action 3.9.5.B Bases — DHR and Coolant Circulation – Low Water Level
- Action 3.3.8.A Bases — CRIS (Analog)
- Action 3.3.8.C — CRIS (Analog)
- Action 3.3.9.A Bases — CRIS (Digital)
- Action 3.3.9.C — CRIS (Digital)
- Action 3.3.13.A — [Logarithmic] Power Monitoring Channels (Analog)
- Action 3.3.13.A — [Logarithmic] Power Monitoring Channels (Digital)
- Action 3.3.13.A Bases — [Logarithmic] Power Monitoring Channels (Analog)
- Action 3.3.13.A Bases — [Logarithmic] Power Monitoring Channels (Digital)
- LCO 3.9.4 — SDC and Coolant Circulation – High Water Level
- LCO 3.9.4 Bases — SDC and Coolant Circulation – High Water Level
- Action 3.9.4.A — SDC and Coolant Circulation – High Water Level
- Action 3.9.4.A Bases — SDC and Coolant Circulation – High Water Level
- Action 3.9.5.B — SDC and Coolant Circulation – Low Water Level
- Action 3.9.5.B Bases — SDC and Coolant Circulation – Low Water Level