

NUCLEAR REGULATORY COMMISSION
Notice of Opportunity To Comment on Model Safety Evaluation on
Technical Specification Improvement To Modify Requirements Regarding
Mode Change Limitations Using the Consolidated Line Item Improvement Process

AGENCY: Nuclear Regulatory Commission.

ACTION: Request for comment.

SUMMARY: Notice is hereby given that the staff of the Nuclear Regulatory Commission (NRC) has prepared a model safety evaluation (SE) relating to the modification of requirements regarding technical specifications (TS) mode change limitations. The NRC staff has also prepared a model no significant hazards consideration (NSHC) determination relating to this matter. The purpose of these models is to permit the NRC to efficiently process amendments that propose to modify requirements that limit changing operational modes. Licensees of nuclear power reactors to which the models apply could then request amendments, confirming the applicability of the SE and NSHC determination to their reactors. The NRC staff is requesting comment on the model SE and model NSHC determination prior to announcing their availability for referencing in license amendment applications.

DATES: The comment period expires [insert date 30 days from date of publication in the *Federal Register*]. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: Comments may be submitted either electronically or via U.S. mail.

Submit written comments to Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, Mail Stop: T-6 D59, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Hand deliver comments to: 11545 Rockville Pike, Rockville, Maryland, between 7:45 a.m. and 4:15 p.m. on Federal workdays. Copies of comments

received may be examined at the NRC's Public Document Room, 11555 Rockville Pike (Room O-1F21), Rockville, Maryland. Comments may be submitted by electronic mail to CLIIP@nrc.gov.

FOR FURTHER INFORMATION CONTACT: Robert Dennig, Mail Stop: O-12H4, Division of Regulatory Improvement Programs, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-1156.

SUPPLEMENTARY INFORMATION:

Background

Regulatory Issue Summary 2000-06, "Consolidated Line Item Improvement Process for Adopting Standard Technical Specification Changes for Power Reactors," was issued on March 20, 2000. The consolidated line item improvement process (CLIIP) is intended to improve the efficiency of NRC licensing processes, by processing proposed changes to the standard technical specifications (STS) in a manner that supports subsequent license amendment applications. The CLIIP includes an opportunity for the public to comment on proposed changes to the STS after a preliminary assessment by the NRC staff and finding that the change will likely be offered for adoption by licensees. This notice solicits comment on a proposed change to the STS that modifies requirements for mode change limitations. The CLIIP directs the NRC staff to evaluate any comments received for a proposed change to the STS and to either reconsider the change or announce the availability of the change for adoption by licensees. Licensees opting to apply for this TS change are responsible for reviewing the staff's evaluation, referencing the applicable technical justifications, and providing any necessary plant-specific information. Each amendment application made in response to the notice of availability will be processed and noticed in accordance with applicable rules and NRC procedures.

This notice involves the modification of TS requirements regarding mode change limitations. This change was proposed for incorporation into the standard technical specifications by the Owners Groups participants in the Technical Specification Task Force (TSTF) and is designated TSTF-359. TSTF-359 can be viewed on the NRC's web page at <http://www.nrc.gov/reactors/operating/licensing/techspecs.html>.

Applicability

This proposal to modify technical specification requirements for mode change limitations is applicable to all licensees who have adopted or will adopt, in conjunction with the proposed change, technical specification requirements for a Bases control program consistent with the TS Bases Control Program described in Section 5.5 of the applicable vendor's STS.

To efficiently process the incoming license amendment applications, the staff requests that each licensee applying for the changes proposed in TSTF-359 include Bases for the proposed TS consistent with the Bases proposed in TSTF-359. In addition, licensees that have not adopted requirements for a Bases control program by converting to the improved STS or by other means, are requested to include the requirements for a Bases control program consistent with the STS in their application for the proposed change. The need for a Bases control program stems from the need for adequate regulatory control of some key elements of the proposal that are contained in the proposed Bases for LCO 3.0.4 and SR 3.0.4. The staff is requesting that the Bases be included with the proposed license amendments in this case because the changes to the TS and the changes to the associated Bases form an integral change to a plant's licensing bases. To ensure that the overall change, including the Bases, includes appropriate regulatory controls, the staff plans to condition the issuance of each license amendment on the licensee's incorporation of the changes into the Bases document and on requiring the licensee to control the changes in accordance with the Bases Control

Program. The CLIP does not prevent licensees from requesting an alternative approach or proposing the changes without the requested Bases and Bases control program. However, deviations from the approach recommended in this notice may require additional review by the NRC staff and may increase the time and resources needed for the review.

Public Notices

This notice requests comments from interested members of the public within 30 days of the date of publication in the *Federal Register*. After evaluating the comments received as a result of this notice, the staff will either reconsider the proposed change or announce the availability of the change in a subsequent notice (perhaps with some changes to the safety evaluation or the proposed no significant hazards consideration determination as a result of public comments). If the staff announces the availability of the change, licensees wishing to adopt the change must submit an application in accordance with applicable rules and other regulatory requirements. For each application the staff will publish a notice of consideration of issuance of amendment to facility operating licenses, a proposed no significant hazards consideration determination, and a notice of opportunity for a hearing. The staff will also publish a notice of issuance of an amendment to operating license to announce the modification of requirements for mode change limitations for each plant that receives the requested change.

Proposed Safety Evaluation

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

Consolidated Line Item Improvement

Technical Specification Task Force (TSTF) Change TSTF-359

Changes to Limiting Condition for Operation 3.0.4 and Surveillance Requirement 3.0.4

Regarding Mode Change Limitations

1.0 INTRODUCTION

On March 9, 2001, the Nuclear Energy Institute (NEI) Risk Informed Technical Specifications Task Force (RITSTF) submitted a proposed change, TSTF-359, Revision 5, to the standard technical specifications (STS) (NUREGs 1430-1434) on behalf of the industry (TSTF-359 Revisions 1 through 4 were internal NEI iterations). TSTF-359, Revision 5, is a proposal to change the STS Limiting Condition for Operation (LCO) 3.0.4 and Surveillance Requirement (SR) 3.0.4 requirements regarding mode change limitations. The proposed change would modify LCO 3.0.4 and SR 3.0.4 by risk informing limitations on entering the mode of applicability of a LCO.

At the July 31, 2001, NRC/RITSTF meeting, the staff provided verbal comments, questions and requests for additional information (RAIs) pertaining to TSTF-359, Revision 5. In response to the staff RAIs and questions, the RITSTF submitted TSTF-359, Revision 6, on February 22, 2002. In a letter of April 26, 2002, the staff suggested specific changes that were needed, and after further discussions, the RITSTF submitted the final TSTF-359, Revision 7, on July 17, 2002. This proposal is one of the industry's initiatives under the risk-informed technical specifications program. These initiatives are intended to maintain or improve safety while

reducing unnecessary burden and to make technical specification requirements consistent with the Commission's other risk-informed regulatory requirements, in particular the maintenance rule.

The current technical specifications (TS) specify that a nuclear power plant cannot go to higher modes of operation¹ (i.e., move towards power operation) unless all TS systems, normally required for the higher mode, are operable. This limitation is included (with several exceptions for some plants) in LCO 3.0.4 and SR 3.0.4. LCO 3.0.4 and SR 3.0.4 in the STS currently state in part that when an LCO or SR is not met, "entry into a MODE or other specified condition in the applicability shall not be made except when the associated actions to be entered permit continued operation in the MODE or other specified condition in the applicability for an unlimited period of time." The industry believes that this requirement is unnecessarily restrictive and can unduly delay plant startup while considerable resources are being used to resolve startup issues that are risk insignificant or low risk. A maintenance activity that takes longer than planned can delay a mode change and adversely impact a utility's orderly plant startup and return to power operation. The objective of the proposed change is to provide additional operational flexibility without compromising plant safety.

The proposed changes to LCO 3.0.4 and SR 3.0.4 would allow, for systems and components, mode changes into a TS condition that has a specific required action and completion time. The licensee will utilize the LCO 3.0.4 or SR 3.0.4 allowance only when they determine that there is a high likelihood that the LCO will be satisfied within the LCO completion time (CT), after the mode change. In addition, the LCO 3.0.4 and SR 3.0.4 allowances can be applied to values and parameters in specifications when explicitly stated in the TS (non-system/component TS such as: Reactor Coolant System Specific Activity). These changes are in addition to the

¹MODE numbers decrease in the transition "up to a higher mode of operation;" power operation is MODE 1.

current mode change allowance when a required action has an indefinite completion time. The LCO 3.0.4 and SR 3.0.4 mode change allowances are not permitted for the systems and components (termed “higher risk”) listed in Section 3.1.1, “Identification of Risk Important TS Systems and Components,” for the modes specified. Two examples are: (1) Westinghouse plants cannot transition from Mode 5 to Mode 4 without a High Head Safety Injection System train operable; and, (2) Westinghouse plants cannot transition up into any mode with an inoperable required emergency diesel generator.

2.0 REGULATORY EVALUATION

In 10 CFR 50.36, the Commission established its regulatory requirements related to the content of TS. Pursuant to 10 CFR 50.36, TS are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. The rule does not specify the particular requirements to be included in a plant’s TS. As stated in 10 CFR 50.36(c)(2)(i), the “Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specification ...” By convention, the LCOs are contained in Sections 3.1 through 3.10 of the TS. TS Section 3.0, on “LCO and SR Applicability,” provide details or ground rules for complying with the LCOs. LCO 3.0.4 and SR 3.0.4 address requirements for LCO compliance when transitioning between modes of operation.

Technical specifications have taken advantage of risk technology as experience and capability have increased. Since the mid-1980's, the NRC has been reviewing and granting improvements to technical specifications that are based, at least in part, on probabilistic risk

assessment (PRA) insights. In its final policy statement on technical specification improvements of July 22, 1993, the Commission stated that it expects that licensees will utilize any plant specific PRA or risk survey in preparing their technical specification related submittals. In evaluating these submittals, the staff applies the guidance in RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," dated July 1998 and in RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998. The staff has appropriately adapted this guidance to assess the acceptability of upward mode changes with equipment inoperable. This review had the following objectives:

- To ensure that the plant risk does not increase unacceptably during the actual implementation of the proposed change (e.g., when the plant enters a higher mode while an LCO is not met). This risk increase is referred to as "temporary."
- To compare and assess the risk impact of the proposed change to the acceptance guidelines of the Commission's Safety Goal Policy Statement, as documented in RG 1.174. The risk impact, which is measured by the average yearly risk increase associated with the change, aims at minimizing the "cumulative" risk associated with the proposed change so that the plant's average baseline risk is maintained within a minimal range.
- To assess the licensee's ability to identify risk significant configurations resulting from maintenance or other operational activities and take appropriate compensatory measures to avoid such configurations.

The staff reviewed the reliance on 10 CFR 50.65(a)(4) for the non-higher risk systems and components, and related guidance to assess and manage the risk of upward mode changes.

The Commission has found that compliance with 10 CFR 50.65(a)(4) satisfies the configuration risk management objectives of RG 1.177 for technical specification surveillance interval and

completion time extensions. Reliance on 10 CFR 50.65(a)(4) processes was also found adequate for managing risk of missed surveillances as described in the Federal Register on September 28, 2001 (66 FR 49714).

The staff review also had the objective of ensuring that existing inspection programs have the necessary controls in place to allow NRC staff to oversee the implementation of the proposed change, reliance on 10 CFR 50.65(a)(4), and the ability to adequately assess the licensee's performance associated with risk assessments. The review encompassed inspection procedures (i.e., NRC Inspection Procedure 62709 (12/28/00), "Configuration Risk Assessment and Risk Management Process," and NRC Inspection Procedure 71111.13 (1/17/02), "Maintenance Risk Assessments and Emergent Work Control"), the significance determination process (SDP) (i.e., draft "Maintenance Risk Assessment and Risk Management Significance Determination Process"), enforcement guidance (i.e., draft Enforcement Manual Section 8.1.11, "Actions Involving the Maintenance Rule"), and the associated reactor oversight process.

2.1 Proposed Change to LCO 3.0.4 and SR 3.0.4

Currently LCO 3.0.4 does not allow entrance into a higher mode (or other specified condition) in the applicability when an LCO is not met, except when the associated actions to be entered permit continued operation in that mode or condition indefinitely or a specific exception is granted. Similarly, when an LCO's surveillances have not been met within their specified frequency, entry into a higher mode (or other specified condition) is not allowed by SR 3.0.4.

The current STS² LCO 3.0.4 reads:

"When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability"

² Plant specific wording for current equivalent LCO 3.0.4 is similar to current STS LCO 3.0.4 wording.

for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

LCO 3.0.4 is only applicable for entry into a MODE or other specified conditions in the Applicability in [MODES 1, 2, 3, and 4 {for PWRs}][MODES 1, 2, and 3 {for BWRs}].”

The revised LCO 3.0.4 will read:

“When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made

- (a) when the associated Actions to be entered permit continued operation in that MODE or other specified condition in the Applicability for an unlimited period of time, or*
- (b) after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or*
- (c) when an allowance is stated in the individual value or parameter Specification.”*

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

LCO 3.0.4 is only applicable for entry into a MODE or other specified conditions in the Applicability in [MODES 1, 2, 3, and 4 {for PWRs}][MODES 1, 2, and 3 {for BWRs}].”

The current STS³ SR 3.0.4 reads:

“Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO’s Surveillances have been met within their specified frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified conditions in the Applicability in [MODES 1, 2, 3, and 4 {for PWRs}][MODES 1, 2, and 3 {for BWRs}].”

The revised SR 3.0.4 will conform to the changes to LCO 3.0.4 and read:

“Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO’s Surveillances have been met within their specified frequency. When an LCO is not met due to a Surveillance not having been met, entry into a MODE or other specified condition in the Applicability shall only be made

(a) when the associated Actions to be entered permit continued operation in that MODE or other specified condition in the Applicability for an unlimited period of time, or

³ Plant specific wording for current equivalent SR 3.0.4 is similar to current STS SR 3.0.4 wording.

- (b) *after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or*
- (c) *when an allowance is stated in the individual value or parameter Specification.*

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified conditions in the Applicability in [MODES 1, 2, 3, and 4 {for PWRs}][MODES 1, 2, and 3 {for BWRs}].”

The proposed LCO 3.0.4(a) retains the current allowance for when the required actions allow indefinite operation. The proposed LCO 3.0.4(b) and SR 3.0.4(b) allow entering modes or other specified conditions in the applicability except when higher risk systems and components (listed in section 3.1.1), for the mode being entered, are inoperable. The decision for entering a higher mode or condition in the applicability of the LCO will be made by plant management after the required risk assessment has been performed and requisite risk management actions established, through the program established to implement 10 CFR 50.65(a)(4). Entry into the modes or other specified conditions in the applicability of the TS shall be for no more than the duration of the applicable required actions completion time or until the LCO is met. Current notes in individual specifications that permitted mode changes are now encompassed by LCO 3.0.4(b) and can be removed. Notes that prohibit mode changes under LCO 3.0.4(b) must be added (i.e., for higher risk systems and components). The proposed LCO 3.0.4(b) and

SR 3.0.4(b) allowances can involve multiple components in a single LCO or in multiple LCOs; however, use of the LCO 3.0.4(b) and SR 3.0.4(b) provisions are always contingent upon completion of a 10 CFR 50.65(a)(4) based risk assessment.

LCO 3.0.4 or SR 3.0.4 allowances related to values and parameters of TS are not typically addressed by LCO 3.0.4(b) or SR 3.0.4(b) risk assessments, and are therefore addressed by a new LCO 3.0.4 (c) and SR 3.0.4 (c). LCO 3.0.4 (c) and SR 3.0.4 (c) refer to allowances already in the TS and annotated in the individual TS. LCO 3.0.4 (c) and SR 3.0.4 (c) also allow for entry into the modes or other specified conditions in the applicability of a TS for no more than the duration of the applicable required actions completion time or until the LCO is met. Examples of LCO 3.0.4 and SR 3.0.4 utilization of required actions and completion times are provided in Appendix A for clarification.

3.0 Technical Evaluation

During the development of the current STS, improvements were made to LCO 3.0.4, such as clarifying its applicability with respect to plant shutdowns, cold shutdown mode and refueling mode. In addition, during the STS development, almost all the LCOs with completion times greater than or equal to 30 days, and many LCOs with completion times greater than or equal to 7 days, were given individual LCO 3.0.4 exceptions. During some conversions to the STS, individual plants provided acceptable justifications for other LCO 3.0.4 exceptions. All of these specific LCO 3.0.4 exceptions allow entry into a mode or other specified condition in the TS applicability while relying on the TS required actions and associated completion times. The proposed change under evaluation would provide standardization and consistency to the use and application of LCO 3.0.4 and SR 3.0.4, both internal to and between each of the specifications and STS NUREGs. This proposed change will also ensure consistency through the utilization of appropriate levels of risk assessment of plant configurations for application of LCO 3.0.4 and SR 3.0.4. However, nothing in this safety evaluation should be interpreted as

encouraging upward mode transition with inoperable equipment. Good practice should dictate that such transitions should normally be initiated only when all required equipment is operable and that mode transition with inoperable equipment should be the exception rather than the rule.

The current LCO 3.0.4(a) and SR 3.0.4(a) allowances are retained in the proposal and do not represent a change in risk from the current situation. The LCO 3.0.4(b) and SR 3.0.4(b) allowances apply to systems and components, and require a risk assessment prior to utilization to ensure an acceptable level of safety is maintained. The LCO 3.0.4(c) and SR 3.0.4(c) allowances apply to parameters and values which have been previously approved by the NRC in a plants specific TS. The licensee will provide in their TS Bases a discussion and list of each NRC approved LCO 3.0.4(c) and SR 3.0.4(c) specific value and parameter allowances. The Bases of LCO 3.0.4 and SR 3.0.4 will be revised to explain the new allowances and their utilization.

The staff did a qualitative assessment of the risk impact of the proposed change in LCO 3.0.4(b) and SR 3.0.4(b) allowances by evaluating how the licensee's implementation of the proposed risk-informed approach is expected to meet the requirements of the applicable RGs. The staff referred to the guidance provided in RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and in RG 1.177, "An approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications." RG 1.177 provides the staff's recommendations on utilizing risk information to assess the impact of proposed changes to nuclear power plant technical specifications on the risk associated with plant operation. Although RG 1.177 does not specifically address the type of generic change in this proposal, the staff considered the approach documented in RG 1.177 in evaluating the risk information provided in support of the proposed changes in LCO 3.0.4 and SR 3.0.4.

The staff's evaluation of how the implementation of the proposed risk-informed approach, used to justify LCO 3.0.4(b) and SR 3.0.4(b) allowances, agrees with the objectives of the guidance outlined in RG 1.177 is discussed in Section 3.1. Oversight of the risk informed approach associated with the LCO 3.0.4(b) and SR 3.0.4(b) allowances is discussed in Sections 3.2.

3.1 Evaluation of Risk Management

Both the temporary and cumulative risk of the proposed change are adequately limited. The temporary risk is limited by the exclusion of higher risk systems and components, and completion time limits contained in technical specifications (Section 3.1.1). The cumulative risk is limited by the temporary risk limitations and by the expected low frequency of the proposed mode changes with inoperable equipment (Section 3.1.2). NRC oversight of a licensee's implementation of 10 CFR 50.65(a)(4) as applied to the proposed change provides adequate assurance of the licensee's ability to use the LCO 3.0.4(b) or SR 3.0.4(b) provisions under appropriate circumstances, i.e., to identify risk significant configurations when entering a higher mode or condition in the applicability of an LCO (Section 3.1.3).

3.1.1 Temporary Risk Increases

RG 1.177 proposes the incremental conditional core damage probability (ICCDP) and the incremental conditional large early release probability (ICLERP) as appropriate measures of the increase in probability of core damage and large early release, respectively, during the period of implementation of a proposed TS change. In addition, RG 1.177 stresses the need to preclude potentially high risk configurations introduced by the proposed change. The ICCDP associated with any specified plant condition, such as the condition introduced by entering a higher mode with plant equipment inoperable, is expressed by the following equation:

$$\text{ICCDP} = \Delta R d = (R_1 - R_0) d \quad (1)$$

where ΔR = the conditional risk increase, in terms of core damage frequency (CDF), caused by the specified condition

d = the duration of the specified plant condition

R_1 = the plant CDF with the specified condition permanently present

R_0 = the plant CDF without the specified condition

The same expression can be used for ICLERP by substituting the measure of risk, i.e., large early release frequency (LERF) for CDF. The magnitude of the ICCDP and ICLERP values associated with plant conditions applicable to LCO 3.0.4(b) and SR 3.0.4(b) allowances can be managed by controlling the conditional risk increase, ΔR (in terms of both CDF and LERF) and the duration, d , of such conditions. The following sections discuss how the key elements of the proposed risk-informed approach, used to justify LCO 3.0.4(b) and SR 3.0.4(b) allowances, are expected to limit ΔR and d and, thus, prevent any significant temporary risk increases.

Identification of Risk Important TS Systems and Components

A major element that limits the risk of the proposed mode change flexibility is the exclusion of certain systems and associated LCOs for the mode change allowance. Technical specifications allow operation in Mode 1 (power operation) with specified levels of inoperability for specified times. This provides a benchmark of currently acceptable risk against which to measure any incremental risk inherent in the proposed LCO 3.0.4(b) and SR 3.0.4(b). If a system inoperability accrues risk at a higher rate in one or more of the transition modes than it would in Mode 1, then an upward transition into that mode should not be allowed without demonstration of a high degree of experience and sophistication in risk management. However, the risk management process evaluated in Section 3.1.3 is adequate if high risk systems/components are excluded from the scope of LCO 3.0.4(b) and SR 3.0.4(b).

The importance of most TS systems in mitigating accidents increases as power increases. However, some TS systems are relatively more important during lower power and shutdown operations, because:

- certain events are peculiar to modes of plant operation other than power operation,
- certain events are more probable at modes of plant operation other than power operation,
- some modes of plant operation have less mitigation system capability than power operation.

The risk information submitted in support of the proposed changes to LCO 3.0.4 and SR 3.0.4 includes qualitative risk assessments performed by each owners group to identify higher risk systems and components at the various modes of operation, including transitions between modes, as the plant moves upward from the refueling mode of operation toward power operation. The owners groups' generic qualitative risk assessments are included as attachments to TSTF-359, Revision 7. Each of the owners groups' generic qualitative risk assessments discuss the technical approach used and the systems/components subsequently determined to be of higher risk significance; the systems/components not to be granted the LCO 3.0.4 or SR 3.0.4 allowances for the various modes listed. The owners groups generic qualitative risk assessments are:

- BWR Owners' Group Risk-informed Technical Specification Committee, "Technical Justification to Support Risk-informed Improvements to Technical Specification Mode Restraints for BWR Plants," General Electric Company GE-NE A13-00464 (Rev[2])
- "B&W Owners Group Qualitative Risk Assessment for Increased Flexibility in MODE Restraints," Framatome Technologies BAW-2383

- Combustion Engineering Owners Group (CEOG) Task 1181, “Qualitative Risk Assessment for Relaxation of Mode Entry Restraints,” CE Nuclear Power LLC, CE NPSD-1207 (Rev[0])
- “WOG Qualitative Risk Assessment Supporting Increased Flexibility in MODE Restraints.”

Following interactions with the staff, all owners groups used the same systematic approach in their qualitative risk assessments to identify the higher risk systems in the STS, consisting of the following steps:

- identification of plant conditions (i.e., plant parameters and availability of key mitigation systems) associated with changes in plant operating modes while returning to power
- identification of key activities that have the potential to impact risk and which are in progress during transitions between modes while the plant is returning to power
- identification of applicable accident initiating events for each mode or other specified condition in the applicability
- identification of the higher risk systems and components by combining the information in the first three steps (qualitative risk assessment)

The risk assessments properly used the results and insights from previous deterministic and probabilistic studies to systematically search for plant conditions in which certain key plant components are more important in mitigating accidents than at power operation (Mode 1). This search was systematic, taking the following factors into account for the various stages of returning the plant to power:

- the status of accident mitigation and normally operating systems
- the status of key plant parameters such as reactor coolant system pressure

- the key activities that are in progress during transitions between modes which have the potential to impact risk (e.g. the transfer from auxiliary to main feedwater at some PWR plants when Mode 1 is entered)
- the applicable accident initiating events for each mode of plant operation
- design and operational differences among plants or groups of plants

The following systems and components were identified by each of the four owners groups as higher risk systems and components, when the plant is entering a new mode.

Boiling Water Reactor Owners Group (BWROG) Plants

<u>System</u>	<u>BWR Type</u>	<u>Entering Mode</u>
High Pressure Coolant Injection (HPCI) System	BWR 3 & 4	2, 1
High Pressure Core Spray (HPCS)	BWR 5 & 6	2, 1
Reactor Core Isolation Cooling (RCIC) System	BWR 3, 4, 5 & 6	2, 1
Isolation Condenser	BWR 2	2, 1
Diesel Generators (including other Emergency/Shutdown AC Power Supplies)	All	All
Hardened Wetwell Vent System	BWR 2, 3 & 4 with Mark I Containment	3, 2, 1
Residual Heat Removal System	All	4

Babcock & Wilcox Owners Group (B&WOG) Plants

<u>System</u>	<u>Entering Mode</u>
Emergency Diesel Generators (EDG) & Hydro-Electric Units for Oconee	5, 4, 3, 2, 1
Emergency Feedwater (EFW) System	1
Decay Heat Removal (DHR) System	5, 4

Combustion Engineering Owners Group (CEOG) Plants

<u>System</u>	<u>Entering Mode</u>
Emergency Diesel Generators (EDGs)	5, 4, 3, 2, 1
Auxiliary Feedwater/Emergency Feedwater (AFW/EFW) System	4, 3, 2, 1
High Pressure Safety Injection (HPSI) System	4, 3 (below 1700 psia)
LTOP/PORVs (when used for Low Temperature Overpressure Protection (LTOP))	5, 4 (below set temperature)
Shutdown Cooling System (Low Pressure Safety Injection (LPSI) pumps)	5

Westinghouse Owners Group (WOG) Plants

<u>System</u>	<u>Entering Mode</u>
Emergency Diesel Generators (EDGs)	5, 4, 3, 2, 1
Auxiliary Feedwater (AFW) System (for plants depending on AFW for startup)	4, 3, 2, 1
High Head Safety Injection System	4
Cold Overpressure Protection System	5, 4
Residual Heat Removal (RHR) System	5

If a licensee identifies a higher risk system for only some of the modes of applicability, the TS for that system would be modified by a Note that reads, for example, "LCO 3.0.4(b) is not applicable when entering MODE 1 from MODE 2." Systems identified as higher risk for modes outside the applicability of LCO 3.0.4 and SR 3.0.4 (Modes 5 and 6 for PWRs, and Modes 4 and 5 for BWRs), are also to be excluded from transitioning up to the mode of higher risk, however, those systems will be addressed by administrative controls.

In summary, the staff's review of the owners groups qualitative risk assessments finds that they are of adequate quality to support the application (i.e., they identify the higher risk systems and components) associated with entering higher modes of plant operation with equipment inoperable while returning to power.

[Plant Specific changes will be described here.]

Limited Time in TS Required Actions

Any temporary risk increase will be limited by, among other factors, duration constraints imposed by the TS CTs of the inoperable systems. For the systems and components which are not higher risk, any temporary risk increase associated with the proposed allowance will be smaller than what is considered acceptable when the same systems and components are inoperable at power. This is due to the fact that CTs associated with the majority of TS systems and components were developed for power operation and pose a smaller plant risk for action statement entries initiated or occurring at lower modes of operation as compared to power operation.

The LCO 3.0.4(b) or SR 3.0.4(b) allowance will be used only when the licensee determines that there is a high likelihood that the LCO will be satisfied following the mode change. This will minimize the likelihood of additional temporary risk increases associated with the need to exit a mode due to failure to restore the unavailable equipment within the CT. As discussed in Section 3.2, the revised reactor oversight process monitors unplanned power changes as a performance indicator. The reactor oversight process thus discourages licensees from entering a mode or other specified condition in the applicability of an LCO, and moving up in power, when there is a likelihood that the mode would have to be subsequently exited due to failure to restore the unavailable equipment within the CT.

3.1.2 Cumulative Risk Increases

The cumulative risk impact of the change to allow the plant to enter a higher mode of operation with one or more safety-related components unavailable (as proposed here), is measured by the average yearly risk increase associated with the change. In general, this cumulative risk increase is assessed in terms of both CDF and LERF (i.e., ΔCDF and ΔLERF , respectively).

The increase in CDF due to the proposed change is expressed by the following equation, which integrates the risk impact from all expected specified conditions (i.e., all expected plant conditions caused by mode changes with various TS systems and components unavailable).

$$\Delta\text{CDF} = \sum(\Delta\text{CDF}_i) = \sum \text{ICCDP}_i f_i \quad (2)$$

where

ΔCDF_i = the CDF increase due to specified condition i

ICCDP_i = the ICCDP associated with specified condition i

f_i = the average yearly frequency of occurrence of specified condition i

A similar expression can be used for ΔLERF by substituting the measure of risk, i.e., LERF for CDF. The magnitude of the ΔCDF and ΔLERF values associated with plant conditions applicable to LCO 3.0.4(b) or SR 3.0.4(b) allowances can be managed by controlling the temporary risk increases, in terms of both CDF and LERF (i.e., ICCDP and ICLERP), and the frequency (f), of each of such conditions. In addition to the points made in the previous section regarding temporary risk increases, the following points put into perspective how the key elements of the proposed risk-informed approach, used to justify an LCO 3.0.4(b) or SR 3.0.4(b) allowance, are expected to prevent significant cumulative risk increases by limiting the frequency of its use:

- The frequency of risk significant conditions will be limited by not providing the LCO 3.0.4(b) and SR 3.0.4(b) allowances to the higher risk systems and components.

- The frequency of risk significant conditions will be limited by the requirement to assess the likelihood that the LCO will be satisfied following the mode change. In addition, the reactor oversight process discourages licensees from entering a mode or other specified condition in the applicability of an LCO and moving up in power when it is likely that the mode would have to be subsequently exited due to failure to restore the unavailable equipment within the completion time.
- The frequency of risk significant conditions is limited by the fact that such conditions can occur only when the plant is returning to power following shutdown, i.e., during a small fraction of time per year (data over the past five years indicates that the plants are averaging 2.1 startups per year).

The addition of the proposed LCO 3.0.4(b) or SR 3.0.4(b) allowances to the plant maintenance activities is not expected to change the plant's average (cumulative) risk significantly.

3.1.3 Risk Assessment and Risk Management of Mode Changes

With all safety systems and components operable, a plant can transition up in mode to power operation. With one or more system(s) or component(s) inoperable, this change permits a plant to transition up in mode to power operation if the inoperable system(s) or component(s) are not in the pre-analyzed higher risk category, a 10 CFR 50.65(a)(4) based risk assessment is performed prior to the mode transition, and the requisite risk management actions are taken.

The proposed TS Bases state, "When an LCO is not met, LCO 3.0.4 also allows entering MODES or other specified conditions in the Applicability following assessment of the risk impact and determination that the impact can be managed. The risk assessment may use quantitative, qualitative, or blended approaches, and the risk assessment will be conducted using the plant program, procedures, and criteria in place to implement 10 CFR 50.65(a)(4), which requires that risk impacts of maintenance activities to be assessed and managed." It should be noted that, the risk assessment, for the purposes of LCO 3.0.4(b) and SR 3.0.4(b), must take into account

all inoperable TS equipment regardless whether the equipment is included in the licensee's normal 10 CFR 50.65(a)(4) risk assessment scope. The risk assessments will be conducted using the procedures and guidance endorsed by Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." The results of the risk assessment shall be considered in determining the acceptability of entering the MODE or other specified condition in the Applicability, and any corresponding risk management actions. ... A risk assessment and establishment of risk management actions, as appropriate, are required for determination of acceptable risk for entering MODES or other specified conditions in the Applicability when an LCO is not met. Elements of acceptable risk assessment and risk management actions are included in Section 11 of NUMARC 93-01 "Assessment of Risk Resulting from Performance of Maintenance Activities," as endorsed by RG 1.182 which addresses general guidance for conduct of the risk assessment, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These risk management actions include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the conditions, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is acceptable.

The guidance references state that a licensee's risk assessment process should be sufficiently robust and comprehensive to assess risk associated with maintenance activities during power operating, low power and shutdown conditions (all modes of operation), including changes in plant conditions. NUMARC 93-01 states that the risk assessment should include consideration of: the degree of redundancy available for performance of the safety function(s) served by the out of service equipment; the duration of the out of service condition; component and system dependencies that are affected; the risk impact of performing the maintenance during shutdown

versus at power; and, the impact of mode transition risk. For power operation, key plant safety functions are those that ensure the integrity of the reactor coolant pressure boundary, ensure the capability to shut down and maintain the reactor in safe shutdown condition, and ensure the capability to prevent or mitigate the consequences of accidents that could result in potentially significant offsite exposures.

While the inoperabilities permitted by the completion times of technical specification required actions take into consideration the safety significance and redundancy of the system or components within the scope of an LCO, the completion times generally do not address or consider concurrent system or component inoperabilities in multiple LCOs. Therefore, the performance of the 10 CFR 50.65(a)(4) risk assessment which looks at the entire plant configuration is essential (and required) prior to changing operational mode. The 10 CFR 50.65(a)(4) risk assessment will confirm (or reject) the appropriateness of transitioning up in mode given the actual status of plant safety equipment.

The risk impact on the plant condition of invoking an LCO 3.0.4(b) or SR 3.0.4(b) allowance will be assessed and managed through the program established to implement 10 CFR 50.65(a)(4).

This program is consistent with RG 1.177 and RG 1.174 in its approach. The Maintenance Rule implementation guidance addresses controlling temporary risk increases resulting from maintenance activities. This guidance, consistent with guidance in RG 1.177, establishes action thresholds based on qualitative and quantitative considerations and risk management actions.

Significant temporary risk increases following an LCO 3.0.4(b) or SR 3.0.4(b) allowance are unlikely to occur unless:

- high risk configurations are allowed (e.g., certain combinations of multiple component outages), or
- risk management of plant operation activities is inadequate.

The requirements associated with the proposed change are established to ensure that such conditions will not occur.

The thresholds of the cumulative (aggregate) risk impacts, assessed pursuant to 10 CFR 50.65(a)(4) and the associated implementation guidance, are based on the permanent change guidelines in NRC RG 1.174. Therefore, licensees will manage the risk exercising LCO 3.0.4 or SR 3.0.4 in conjunction with the risk from other concurrent plant activities to ensure that any increase, in terms of core damage frequency (CDF) and large early release frequency (LERF) will be small and consistent with the Commission's Safety Goal Policy Statement.

3.2 Oversight

The reactor oversight process (ROP) provides a means for assessing the licensee's performance in the application of the proposed mode change flexibility. The adequacy of the licensee's assessment and management of maintenance-related risk is addressed by existing inspection programs and guidance for 50.65(a)(4). Although the current versions of that guidance do not specifically address application of the licensee's (a)(4) program to support risk-informed technical specifications, it is expected that in most cases, risk assessment and management associated with risk-informed technical specifications would be required by (a)(4) anyway.

Adoption of the proposed change will make failure to assess and manage the risk of an upward mode change with inoperable equipment covered by technical specifications, prior to commencing such a mode change, a violation of technical specifications. Further, as explained above in general, under most foreseeable circumstances, such a change in configuration would also require a risk assessment under 10 CFR 50.65(a)(4). Inoperable systems or components will necessitate maintenance to restore them to operability, and hence a 10 CFR 50.65(a)(4) risk assessment would be performed prior to the performance of those maintenance actions (except for immediate plant stabilization and restoration actions if necessary). Further, before altering

the plant's configuration, including plant configuration changes associated with mode changes, the licensee must update the existing (a)(4) risk assessment to reflect those changes.

The Federal Register Notice issuing a revision to the maintenance rule, 10 CFR 50.65, (Federal Register, Vol 64 No 137, Monday, July 19, 1999, pg 38553), along with NRC Inspection Procedure 71111.13, and Section 11, dated February 22, 2000, "Assessment of Risk Resulting from Performance of Maintenance Activities," of NUMARC 93-01, all indicate that to determine the safety impact of a change in plant conditions during maintenance, a risk assessment must be performed before changing plant conditions. The Bases for the proposed TS change mandate that the risk assessment and management of upward mode changes will be conducted under the licensee's program and process for meeting 10 CFR 50.65(a)(4). Oversight of licensee performance in assessing and managing the risk of plant maintenance activities is conducted principally by inspection in accordance with Reactor Oversight Program Baseline Inspection Procedure (IP) 71111.13, "Maintenance Risk Assessment and Emergent Work Control." Supplemental IP 62709, "Configuration Risk Assessment and Risk Management Process," is utilized to evaluate the licensee's process, when necessary. Appendix B of this SE presents excerpts from IP 71111.13 and IP 62709 that provide evidence of how the oversight of licensee risk assessment and risk management activities is accomplished.

The ROP is described in overview in NUREG-1649, Rev 3, "Reactor Oversight Process," and in detail in the NRC Inspection Manual. Inspection Procedure 71111.13 requires verification of performance of risk assessments when they are required by 10 CFR 50.65(a)(4) and in accordance with licensee procedures. The procedure also requires verification of the adequacy of those risk assessments and verification of effective implementation of licensee-prescribed risk management actions. The rule itself requires such assessment and management of risk prior to maintenance activities, including preventive maintenance, surveillance and testing, (and promptly for emergent work) during all modes of plant operation. The guidance documents for

both industry implementation of (a)(4) and NRC oversight of that implementation indicate that changes in plant configuration (which would include mode changes) in support of maintenance activities must be taken into account in the risk assessment and management process.

Revisions to NRC inspection guidance and licensee implementation procedures will be needed to address oversight of risk assessment and management required by TS in support of mode changes that are not already required under the circumstances by (a)(4). This consideration provides performance-based regulatory oversight of the use of the proposed flexibility, and a disincentive to use the flexibility without the requisite care in planning.

In addition, the staff is in the process of developing detailed significance determination process (SDP) guidance for use in assessing inspection findings related to 10 CFR 50.65(a)(4). This guidance was issued in draft for comment and is expected to become final in Fall 2002. The ROP considers inspection findings and performance indicators in evaluating licensee ability to operate safely. The SDP is used to determine the significance of inspection findings related to licensee assessment and management of the risk associated with performing maintenance activities under all plant operating or shutdown conditions. Unplanned reactor shutdowns (automatic and manual) and unplanned power changes are two of the Reactor Safety Performance Indicators that the ROP utilizes to assess licensee performance and inform the public. Thus, the ROP provides a disincentive to entering a mode or other specified condition in the applicability of an LCO and moving up in power, when there is a significant likelihood that the mode would have to be subsequently exited due to failure to restore the unavailable equipment within the completion time.

3.3 Summary

The industry, through the Nuclear Energy Institute (NEI) Risk Informed Technical Specifications Task Force (RITSTF), has submitted a proposed technical specification (TS) change to allow entry into a higher mode of operation, or other specified condition in the TS applicability, while

relying on the TS conditions, and associated required actions and completion times, provided a risk assessment is performed to confirm the acceptability of that action. The proposal revises standard technical specification (STS) LCO 3.0.4 and SR 3.0.4, and their application to the TS. New paragraphs (a), (b), and (c) are proposed for LCO 3.0.4 and SR 3.0.4.

The proposed LCO 3.0.4(a) and SR 3.0.4(a) retain the current allowance, permitting the mode change when the TS required actions allow indefinite operation.

Proposed LCO 3.0.4(b) and SR 3.0.4(b) is the change to allow entry into a higher mode of operation, or other specified condition in the TS applicability, while relying on the TS conditions and associated required actions and completion times, provided a risk assessment is performed to confirm the acceptability of that action for the existing plant configuration. The staff review finds that the process proposed by industry for assessing and managing risk during the implementation of the proposed LCO 3.0.4(b) and SR 3.0.4(b) allowances, meets Commission guidance for technical specification changes. Key elements of this process are listed below.

- A risk assessment shall be performed before any LCO 3.0.4(b) or SR 3.0.4(b) allowance is invoked.
- The risk impact on the plant condition of invoking an LCO 3.0.4(b) or SR 3.0.4(b) allowance will be assessed and managed through the program established to implement 10 CFR 50.65(a)(4) and the associated guidance in RG 1.182. Allowing entry into a higher mode or condition in the applicability of an LCO after an 10 CFR 50.65(a)(4) based risk assessment and appropriate risk management actions are taken for the existing plant configuration will ensure that plant safety is maintained.
- The LCO 3.0.4(b) or SR 3.0.4(b) allowance will be used only when the licensee determines that there is a high likelihood that the LCO will be satisfied within the required action's completion time.

- TS systems and components which may be of higher risk during mode changes have been identified generically by each owner's group for each plant operational mode or condition. Licensees will identify such plant specific systems and components in the individual plant TS. The proposed LCO 3.0.4(b) and SR 3.0.4(b) allowances do not apply to these systems and components for the mode or condition in the applicability of an LCO at which they are of higher risk.
- Plants adopting LCO 3.0.4(b) and SR 3.0.4(b) will ensure that plant procedures in place to implement 10 CFR 50.65(a)(4) address the situation where entering a mode or other specified condition in the applicability is contemplated with plant equipment inoperable. Such plant procedures typically follow the guidance in NUMARC 93-01, Section 11, as revised in February 2000 and endorsed by NRC RG 1.182.

The NRC's reactor oversight process provides the framework for inspectors and other staff to oversee the implementation of 10 CFR 50.65(a)(4) requirements at a specific plant and assess the licensee's actions and performance.

The LCO 3.0.4(b) and SR 3.0.4(b) allowance does not apply to values and parameters of the technical specifications that have their own respective LCOs (e.g., Reactor Coolant System Specific Activity), but instead those values and parameters are addressed by LCO 3.0.4(c) and SR 3.0.4(c). The TS values and parameters for which mode transition allowances apply, will have a note that states LCO 3.0.4(c) or SR 3.0.4(c) is applicable.

The objective of the proposed change is to provide additional operational flexibility without compromising plant safety.

4.0 State Consultation

In accordance with the Commission's regulations, the [] State official was notified of the proposed issuance of the amendment. The State official had [(1) no comments or (2) the following comments - with subsequent disposition by the staff].

5.0 Environmental Consideration

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. [For licensees adding a Bases Control Program: The amendment also changes record keeping, reporting, or administrative procedures or requirements.] The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards considerations, and there has been no public comment on the finding [FR]. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) [and (c)(10)]. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 Conclusion

The Commission has concluded, on the basis of the considerations discussed above, that (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) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Proposed No Significant Hazards Consideration Determination

Description of Amendment Request: A change is proposed to the standard technical specifications (STS)(NUREGs 1430 through 1434) and plant specific technical specifications (TS), to allow entry into a mode or other specified condition in the applicability of a TS, while in a condition statement and the associated required actions of the TS, provided the licensee performs a risk assessment and manages risk consistent with the program in place for complying with the requirements of 10 CFR 50.65(a)(4). LCO 3.0.4 and SR 3.0.4 exceptions in individual TS would be eliminated, and SR 3.0.4 revised to reflect the LCO 3.0.4 allowance.

Basis for proposed no significant hazards consideration determination: As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

Criterion 1—The Proposed Change Does Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated

The proposed change allows entry into a mode or other specified condition in the applicability of a TS, while in a TS condition statement and the associated required actions of the TS. Being in a TS condition and the associated required actions is not an initiator of any accident previously evaluated. Therefore, the probability of an accident previously evaluated is not significantly increased. The consequences of an accident while relying on required actions as allowed by proposed LCO 3.0.4, are no different than the consequences of an accident while entering and relying on the required actions while starting in a condition of applicability of the TS. Therefore, the consequences of an accident previously evaluated are not significantly affected by this change. The addition of a requirement to assess and manage the risk introduced by this change will further minimize possible concerns. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Criterion 2—The Proposed Change Does Not Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed). Entering into a mode or other specified condition in the applicability of a TS, while in a TS condition statement and the associated required actions of the TS, will not introduce new failure modes or effects and will not, in the absence of other unrelated failures, lead to an accident whose consequences exceed the consequences of accidents previously evaluated. The addition of a requirement to assess and manage the risk introduced by this change will further minimize possible concerns. Thus, this change does not create the possibility of a new or different kind of accident from an accident previously evaluated.

Criterion 3—The Proposed Change Does Not Involve a Significant Reduction in the Margin of Safety

The proposed change allows entry into a mode or other specified condition in the applicability of a TS, while in a TS condition statement and the associated required actions of the TS. The TS allow operation of the plant without the full complement of equipment through the conditions for not meeting the TS Limiting Conditions for Operation (LCO). The risk associated with this allowance is managed by the imposition of required actions that must be performed within the prescribed completion times. The net effect of being in a TS condition on the margin of safety is not considered significant. The proposed change does not alter the required actions or completion times of the TS. The proposed change allows TS conditions to be entered, and the associated required actions and completion times to be used in new circumstances. This use is predicated upon the licensee's performance of a risk assessment and the management of plant risk. The change also eliminates current allowances for utilizing required actions and completion

times in similar circumstances, without assessing and managing risk. The net change to the margin of safety is insignificant. Therefore, this change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above and the previous discussion of the amendment request, the requested change does not involve a significant hazards consideration.

Dated at Rockville, Maryland, this 26th day of July 2002.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert L. Dennig, Section Chief
Technical Specifications Section
Operating Improvements Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

times in similar circumstances, without assessing and managing risk. The net change to the margin of safety is insignificant. Therefore, this change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above and the previous discussion of the amendment request, the requested change does not involve a significant hazards consideration.

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ADAMS Template: ADM-0-12

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APPENDIX A

LCO 3.0.4 EXAMPLES

EXAMPLE 1, LCO 3.0.4(a), (NUREG-1431): The plant is in Mode 3 ready to go to Mode 1, power operation, with one power range neutron flux channel inoperable. LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation," Table 3.3.1-1, Function 2.a., requires four power range neutron flux-high channels to be operable, and the applicability is Modes 1 and 2. With one power range neutron flux-high channel inoperable, Condition D, Required Actions D.1.1 and D.1.2 require the inoperable channel to be placed in trip within 6 hours and reduce thermal power to $\leq 75\%$ RTP within 12 hours; or, Required Actions D.2.1 and D.2.2 require placing the inoperable channel in trip within 6 hours and verifying QPTR is within limits (performance of SR 3.2.4.2) once per 12 hours. Verifying QPTR is within limits is only required if the power range neutron flux input to QPTR is inoperable. The plant can proceed to Mode 2 (or further, i.e., Mode 1) as long as the Required Actions of Condition D are met. If the plant has proceeded to Mode 2 (or further, i.e., Mode 1) and the Required Actions of Condition D have not been met, the plant must be placed in Mode 3. No risk assessment is required because the allowance of LCO 3.0.4 (a) applies. However, risk assessment may be required by 10 CFR 50.65 (a)(4).

EXAMPLE 2, LCO 3.0.4(b), (NUREG-1431): The plant is in Mode 5 ready to go to Mode 1, power operation, with one component cooling water (CCW) train inoperable. LCO 3.7.7, "Component Cooling Water (CCW)," requires two CCW trains to be operable and the applicability is Modes 1, 2, 3, and 4. With one CCW train inoperable Required Action A.1 of LCO 3.7.7 requires the inoperable CCW train to be restored and the completion time is 72 hours. There is also a note applied to Required Action A.1 that requires entry into applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops – MODE 4," for residual heat

removal loops made inoperable by CCW. If a residual heat removal loop is being used to comply with LCO 3.4.6, and that loop is made inoperable by the inoperable CCW train, the completion times for the applicable conditions and required actions of LCO 3.4.6 may be more restrictive than those of LCO 3.7.7. The plant can proceed to Mode 4 if there is reasonable assurance that the inoperable CCW train can be restored to operable status within the applicable completion time, and a risk assessment has been performed and requisite risk management actions have been implemented. If the plant has proceeded to Mode 4 (or further, i.e., Mode 3, 2, or 1) and the inoperable CCW train has not been restored within the required completion time, the plant must return to Mode 5. Note that if two trains of CCW are inoperable, the plant cannot proceed to Mode 4 because LCO 3.7.7 does not contain a condition for two inoperable CCW trains.

EXAMPLE 3, LCO 3.0.4(b), (NUREG-1431): The plant is in Mode 5 ready to go to Mode 1, power operation (with steam generators operable). In Case 1, one required Atmospheric Dump Valve (ADV) line is inoperable. In Case 2, two or three required ADV lines are inoperable. Case 1 – LCO 3.7.4, “Atmospheric Dump Valves (ADV),” requires three ADV lines to be operable and the Applicability is Modes 1, 2, and 3 and Mode 4 when steam generator is relied upon for heat removal. With one required ADV line inoperable Required Action A.1 requires the required ADV line to be restored with a Completion Time of seven days. The plant can proceed to Mode 4 (when steam generator(s) are relied on for heat removal) provided there is reasonable assurance that the required ADV line can be restored within 7 days, and a risk assessment has been performed and requisite risk management actions have been implemented. If the plant has proceeded to Mode 4 (or further, i.e., Mode 3, 2, or 1) and the required ADV is not restored within 7 days, the plant must return to Mode 5 (if steam generator(s) are being used for heat removal) or Mode 4 where steam generators are not being used for heat removal, as applicable.

Case 2 – With two or three required ADV lines inoperable, Condition B, Required Action B.1 requires restoration of all but one of the required ADV lines within a Completion Time of 24 hours. The plant can proceed to Mode 4 (when steam generators are relied on for heat removal) provided there is reasonable assurance that the required ADV lines will be restored, and a risk assessment has been performed and requisite risk management actions have been implemented. After the plant has restored all but one of the required ADV lines to operability within 24 hours, the final required ADV line must be restored within seven days from the time of entry into Mode 4. If the plant has proceeded to Mode 4 (or further, i.e., Mode 3, 2 or 1) and the required ADV lines have not been restored within the applicable completion time, the plant must return to Mode 5 or Mode 4 (where steam generators are not relied on for heat removal).

APPENDIX B
REACTOR OVERSIGHT PROCESS
INSPECTION PROCEDURES 71111.13 AND 62709
EXCERPTS

Inspection Procedure (IP) 71111.13, “Maintenance Risk Assessment and Emergent Work Control”

IP 71111.13-02, Inspection Requirements, 02.01, Risk Assessment and Management of Risk

- a. Risk Assessment Performance. Verify performance of risk assessments when required by 10 CFR 50.65(a)(4) and in accordance with licensee procedures, prior to changes in plant configuration for maintenance activities, including preventive maintenance, surveillance and testing, (and promptly for emergent work) during all modes of plant operation. Verify risk assessment performance for configuration changes involving structures, systems or components ...
- b. Risk Assessment Adequacy. Verify the accuracy and completeness of the information considered in the risk assessment. Verify the appropriate use of the risk assessment tool, i.e., that the licensee uses it in a manner consistent with (1) its capabilities and limitations, (2) plant conditions and evolutions, (3) external events and containment status, and (4) licensee procedures. ...
- c. Risk Management. Verify that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category or band according to risk assessment results and licensee procedures. Verify that normal work controls or risk management actions as required

are promptly and effectively implemented commensurate with the risk band in effect and in accordance with licensee procedures. Verify that the key safety functions for the plant mode of operation are preserved. ...

IP 71111.13, Appendix A, Risk Assessment Performance Verification Phase

“Determine if a Risk Assessment (RA) was required using the following criteria:

1. When required. RAs are required by (a)(4) prior to maintenance-related plant configuration changes and are normally performed for scheduled maintenance. However, emergent conditions, such as external events or SSC failures or degraded performance in service or during testing, may require actions prior to performing an RA, or could invalidate the existing RA. In this case, the RA should be performed (or reevaluated) to address the changed plant conditions. The industry guidance, revised Section 11 of NUMARC 93001, as endorsed by RG 1.182, states that if the plant configuration is restored prior to conducting or reevaluating the RA, the RA need not be conducted, or reevaluated if already performed. Nevertheless, to the extent practicable and commensurate with safety, the licensee should perform or reevaluate the RA before changing the plant configuration further, but in any case, promptly and to the extent practicable concurrently with, but without delaying, plant stabilization and restoration. Note that licensee deviation from work schedules and work plans, just as emergent work can, may invalidate risk assessments prepared for the maintenance period (e.g., the common 12-week rolling schedule).
2. Operating Modes When RA Required. RAs are required by (a)(4) for maintenance activities performed during all modes of plant operation and transitions between modes. For (a)(4) purposes, at power means normal steaming (Mode 1) and startup (Mode 2). Shutdown means hot standby (Mode 3 in a pressurized water reactor (PWR) only), hot shutdown (Mode 3 in a boiling water reactor, Mode 4-PWR), cold shutdown (Mode 5), and refueling (Mode 6). Plants without a shutdown probabilistic risk assessment (PRA) must still assess shutdown

maintenance risk by some means, typically an expert panel using a qualitative (key safety function) or blended qualitative/quantitative approach. ...”

Supplemental IP 62709, ‘Configuration Risk Assessment and Risk Management Process’

IP62709

An appropriate assessment would include a review of the current configuration of the plant and the plant configuration expected during the planned maintenance activity. Assessing the current plant configuration as well expected changes to plant configuration due to the planned maintenance activities is intended to insure that the plant is not inadvertently placed in risk-significant configurations. ... Furthermore, assessing the degree of safety function degradation requires that there be an understanding of the impact of maintenance activities on the capability of the plant to prevent or mitigate accidents and transients, as well as the potential impact of external conditions (e.g., inclement weather, electrical grid instability, flooding or seismic events) on plant maintenance configurations. The assessments may range from deterministic judgments to the use of an on-line PSA tool. ... The process for performing these safety assessments should be scrutable and repeatable. Known limitations in the assessment process should be described in the licensee’s Maintenance Rule program documentation. The licensee’s process should be sufficiently robust and comprehensive to assess maintenance activities during power operating conditions and low power and shutdown conditions. The sophistication of the assessment(s) for evaluating the risk of a maintenance configuration should be commensurate with the complexity of the configuration.

IP 62709, 02.02 Configuration Risk Assessments: Determine if the licensee has adequately assessed the overall effect on the performance of safety functions when SSCs are removed from service for surveillance or maintenance activities. Obtain plant operating/maintenance records for at least two or three monthly periods of high maintenance activities during power

operation with a particular focus on periods when trains of components were removed from service or when components of different trains were out of service simultaneously for surveillance or maintenance. In the case of plant shutdown conditions, select two or three weekly periods of plant outage surveillance or maintenance activities with a particular focus on periods of reduced reactor coolant system inventory, reduced shutdown cooling availability, or reduced electrical availability. Evaluate the results of the licensee's safety assessments of those time periods, and verify the licensee's safety assessments encompassed all the SSCs that have significant impact on public health and safety. If the licensee had not kept records of prior assessment results, ... consider performing independent assessments of current maintenance activities.

IP 62709, 02.03 Risk Management: Determine if a licensee is using a reasonable approach to manage risk of the planned configurations when SSCs are removed from service for surveillance or maintenance activities. On the basis of licensee's safety assessments of those selected maintenance configurations, either during power operation or shutdown conditions, verify that the licensee has process controls in place that ensure risk management actions would be implemented for plant maintenance configurations with risk increases that exceed risk management thresholds."