

NUCLEAR REGULATORY COMMISSION

NOTICE OF OPPORTUNITY TO COMMENT ON MODEL SAFETY EVALUATION ON  
TECHNICAL SPECIFICATION IMPROVEMENT TO MODIFY REQUIREMENTS REGARDING  
THE ADDITION OF LCO 3.0.9 ON THE UNAVAILABILITY OF BARRIERS  
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) and model application relating to the modification of requirements regarding the impact of unavailable hazard barriers, not explicitly addressed in technical specifications, but required for operability of supported systems in technical specifications (TS). 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 add an LCO 3.0.9 that provides a delay time for entering a supported system TS when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed. 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 [CLIP@nrc.gov](mailto:CLIP@nrc.gov).

FOR FURTHER INFORMATION CONTACT: T. R. Tjader, Mail Stop: O-12H4, Division of Inspection and Regional Support, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone 301-415-1187.

#### 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 (CLIP) 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 CLIP includes an opportunity for the public to comment on a proposed change to the STS after a preliminary assessment by the NRC staff and a finding that the change will likely be offered for adoption by licensees. This notice solicits comments on a proposed change that allows a delay time for entering a supported system TS when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed. The CLIP 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 addition of LCO 3.0.9 to the TS which provides a delay time for entering a supported system TS when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed. 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-427, Revision 1 (Rev 1). TSTF-427, Rev 1, 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 by the addition of LCO 3.0.9, as proposed in TSTF-427, Rev 1, is applicable to all licensees.

To efficiently process the incoming license amendment applications, the staff requests that each licensee applying for the changes proposed in TSTF-427, Rev 1, to use the CLIP. The CLIP does not prevent licensees from requesting an alternative approach or proposing the changes without the requested Bases and Bases control program. Variations 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. Significant variations from the approach, or inclusion of additional changes to the license, will result in staff rejection of the submittal. Instead, licensees desiring significant variations and/or additional changes should submit a LAR that does not claim to adopt TSTF-427, Rev 1.

## 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 an operating license to announce the modification of requirements related to systems in TS, due to unavailable non-technical specification barriers, for each plant that receives the requested change.

Dated at Rockville, Maryland, this 26<sup>th</sup> day of May 2006.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA/**

Timothy J. Kobetz, Chief  
Technical Specifications Branch  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

MODEL SAFETY EVALUATION  
U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
CONSOLIDATED LINE ITEM IMPROVEMENT  
TECHNICAL SPECIFICATION TASK FORCE (TSTF) CHANGE TSTF-427  
THE ADDITION OF LIMITING CONDITION FOR OPERATION (LCO) 3.0.9 ON  
THE UNAVAILABILITY OF BARRIERS

1.0 INTRODUCTION

On February 6, 2006, the Nuclear Energy Institute (NEI) Risk Informed Technical Specifications Task Force (RITSTF) submitted a proposed change, TSTF-427, Revision 1, to the standard technical specifications (STS) (NUREGs 1430-1434) on behalf of the industry (TSTF-427, Revision 0 was a prior draft iteration). TSTF-427, Revision 1, is a proposal to add an STS Limiting Condition for Operation (LCO) 3.0.9, allowing a delay time for entering a supported system technical specification (TS), when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed. The postulated initiating events which may require a functional barrier are limited to those with low frequencies of occurrence, and the overall TS system safety function would still be available for the majority of anticipated challenges.

This proposal is one of the industry's initiatives being developed under the risk-informed TS program. These initiatives are intended to maintain or improve safety through the incorporation of risk assessment and management techniques in TS, while reducing unnecessary burden and making TS requirements consistent with the Commission's other risk-informed regulatory requirements.

The proposed change adds a new limiting condition of operation, LCO 3.0.9, to the TS. LCO 3.0.9 allows licensees to delay declaring an LCO not met for equipment supported by barriers unable to perform their associated support function, when risk is assessed and managed. This new LCO 3.0.9 states:

*“When one or more required barriers are unable to perform their related support function(s), any affected supported system LCO(s) are not required to be declared not met solely for this reason for up to 30 days provided that at least one train or subsystem of the supported system is OPERABLE and supported by barriers capable of providing their related support function(s), and risk is assessed and managed. This specification may be concurrently applied to more than one train or subsystem of a multiple train or subsystem supported system provided at least one train or subsystem of the supported system is OPERABLE and the barriers supporting each of these trains or subsystems provide their related support function(s) for different categories of initiating events.*

*[BWR only: For the purposes of this specification, the [High Pressure Coolant Injection / High Pressure Core Spray] system, the [Reactor Core Isolation Cooling] system, and the [Automatic Depressurization System] are considered independent subsystems of a single system.]*

*If the required OPERABLE train or subsystem becomes inoperable while this specification is in use, it must be restored to OPERABLE status within 24 hours or the provisions of this specification cannot be applied to the trains or subsystems supported by the barriers that cannot perform their related support function(s).*

*At the end of the specified period, the required barriers must be able to perform their related support function(s), or the affected supported system LCO(s) shall be declared not met.”*

## 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 ... ." TS Section 3.0, on "LCO and SR Applicability," provides details or ground rules for complying with the LCOs.

Barriers are doors, walls, floor plugs, curbs, hatches, mechanical devices, or other devices, not explicitly described in TS, that support the performance of the functions of systems described in the TS. For purposes of this TS, the term "barrier" refers to one or more devices which protect one train of a safety system from a given initiating event. A "degraded barrier" refers to a barrier that has been found to be degraded and must be repaired, or to a barrier that is purposefully removed or reconfigured to facilitate maintenance activities. As stated in NEI 04-08, LCO 3.0.9 specifically does not apply to fire barriers, snubbers, barriers which support ventilation systems or non-TS systems, or barriers which support TS systems where the unavailability of the barrier does not render the supported system inoperable.

Some TS required systems may require one or more functional barriers in order to perform their intended function(s) for certain initiating events for which the barriers provide some protective support function. For example, there are barriers to protect systems from the effects of internal flooding, such as floor plugs and retaining walls, and barriers are used to

protect equipment from steam impingement in case of high energy line breaks. Barriers are also used to protect systems against missiles, either internally generated, or generated by external events.

Barriers are not explicitly described in the TS, but are required to be capable of performing their required support function by the definition of OPERABILITY for the supported system which is described in the TS. Therefore, under the current STS, the supported system must be declared inoperable when the related barrier(s) are unavailable. However, the magnitude of plant risk associated with the barrier which cannot perform its related support function is much less than the risk associated with direct unavailability of the supported system, since barriers are only required for specific, low frequency initiating events.

Some potential undesirable consequences of the current TS requirements include:

1. When maintenance activities on the supported TS system require removal and restoration of barriers, the time available to complete maintenance and perform system restoration and testing is reduced by the time spent maneuvering the barriers within the time constraints of the supported system LCO;
2. Restoration of barriers following maintenance may be given a high priority due to time restraints of the existing supported system LCO, when other activities may have a greater risk impact and should therefore be given priority; and
3. Unnecessary plant shutdowns may occur due to discovery of degraded barriers which require more time than provided by the existing supported system LCO to complete repairs and restoration of the barrier.

To improve the treatment of unavailable barriers and enhance safety, the TSTF proposed a risk-informed TS change that introduces a delay time before entering the actions for the supported equipment, when one or more barriers are found to be degraded, or are removed



or reconfigured to support maintenance activities, if risk is assessed and managed. Such a delay time will provide needed flexibility in the performance of maintenance and at the same time will enhance overall plant safety by:

1. Performing system maintenance and restoration activities, including post-maintenance testing, within the existing TS LCO time, and allowing barrier removal and restoration to be performed outside of the TS LCO, providing more time for the safe conduct of maintenance and testing activities on the supported TS system;
2. Requiring barrier removal and restoration activities to be assessed and prioritized based on actual plant risk impacts; and
3. Avoiding unnecessary unscheduled plant shutdowns and thus minimizing plant transition and realignment risks.

### 3.0 TECHNICAL EVALUATION

The industry submitted TSTF-427, Revision 1 (Reference 1), "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY" in support of the proposed TS change. This submittal documents a risk-informed analysis of the proposed TS change. Probabilistic risk assessment (PRA) methods are used, in combination with deterministic and defense-in-depth arguments, to identify and justify delay times for entering the actions for the supported equipment associated with unavailable barriers at nuclear power plants. The industry also submitted implementation guidance NEI 04-08, November 2005 (Reference 2). This submittal provides detailed guidance on assessing and managing risk associated with unavailable barriers. This is in accordance with guidance provided in Regulatory Guides (RGs) 1.174 (Reference 3) and 1.177 (Reference 4).

The risk impact associated with the proposed delay times for entering the TS actions for the supported equipment can be assessed using the same approach as for allowed completion time (CT) extensions. Therefore, the risk assessment was performed following the three-tiered

approach recommended in RG 1.177 for evaluating proposed extensions in currently allowed CTs:

1. The first tier involves the assessment of the change in plant risk due to the proposed TS change. Such risk change is expressed (1) by the change in the average yearly core damage frequency ( $\Delta CDF$ ) and the average yearly large early release frequency ( $\Delta LERF$ ) and (2) by the incremental conditional core damage probability (ICCDP) and the incremental conditional large early release probability (ICLERP). The assessed  $\Delta CDF$  and  $\Delta LERF$  values are compared to acceptance guidelines, consistent with the Commission's Safety Goal Policy Statement as documented in RG 1.174, so that the plant's average baseline risk is maintained within a minimal range. The assessed ICCDP and ICLERP values are compared to acceptance guidelines provided in RG 1.177, which aim at ensuring that the plant risk does not increase unacceptably during the period the equipment is taken out of service.
2. The second tier involves the identification of potentially high-risk configurations that could exist if equipment in addition to that associated with the change were to be taken out of service simultaneously, or other risk-significant operational factors such as concurrent equipment testing were also involved. The objective is to ensure that appropriate restrictions are in place to avoid any potential high-risk configurations.
3. The third tier involves the establishment of an overall configuration risk management program (CRMP) to ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified. The objective of the CRMP is to manage configuration-specific risk by appropriate scheduling of plant activities and/or appropriate compensatory measures.

A simplified risk assessment was performed to justify the proposed addition of LCO 3.0.9 to the TS. This approach was necessitated by (1) the general nature of the proposed TS change (i.e., it applies to all plants and is associated with an undetermined number of barriers that are not able to perform their function), and (2) the lack of detailed modeling in most plant-specific PRAs which do not include passive structures such as barriers.

The simplified risk assessment considers three different parameters:

1. The length of time the affected barrier is unavailable,
2. The initiating event frequency for which the affected barrier is designed to mitigate, and
3. The importance to CDF (or LERF) of the TS equipment (train, subsystem, or component) for which the affected barrier is designed to protect, measured by the risk achievement worth of the equipment.

The ICCDP can be calculated based on the following equation:

$$ICCDP = \left[ \frac{T_c}{8766} \times \frac{IE_i}{IE_T} \right] \times \left[ \left( RAW_j \times CDF_{base} \right) - CDF_{base} \right]$$

where:

- $T_c$  is the time the barrier is unavailable (hours)
- $T_c/8766$  is therefore the fraction of the year during which the barrier is unavailable,
- $IE_i/IE_T$  is the ratio of the initiating event frequency for which the affected barrier is designed to mitigate,  $IE_i$ , and the total initiating event frequency,  $IE_T$ ,
- $RAW_j$  is the risk achievement worth of the component(s) for which the barrier provides protection, and
- $CDF_{base}$  is the baseline core damage frequency (per year).

ICLERP also may be similarly determined, using baseline LERF and RAW values with respect to LERF. It is assumed that the magnitude of the LERF risk resulting from the barrier unable to perform its related support function would be generally at least one order of magnitude less than the corresponding CDF risk. Containment bypass scenarios, which are typically the significant contributors to LERF, would not be uniquely affected by application of LCO 3.0.9, and initiating events which would be significant LERF contributors, such as steam generator tube rupture and interfacing systems LOCA, are not typically associated with barriers within the scope of LCO 3.0.9. Therefore, the assumption regarding LERF risk is reasonable and acceptable for the generic risk evaluation, provided that LERF risk impacts are considered on a plant-specific basis for unavailable barriers, as described in section 3.3.

The relevant initiating events (i.e., events for which barriers subject to LCO 3.0.9 provide protection) are:

- internal and external floods
- high energy line breaks
- feedwater line breaks
- loss of coolant accident (small, medium, and large)
- tornados and high winds
- turbine missiles.

Generic frequencies for most of these initiating events were obtained from NUREG/CR-5750 (Reference 5). For external floods, turbine missiles, and tornados, other industry source documents were referenced. The most limiting (highest frequency) initiating event was obtained for a high energy line break from NUREG/CR-5750, with a frequency of  $9.1\text{E-}3$  per year. The risk assessment is therefore based on this limiting frequency, and the proposed methodology to apply LCO 3.0.9 is similarly restricted to barriers protecting against initiating events whose total frequency is no more than  $9.1\text{E-}3$  per year.

### 3.1 Risk Assessment Results and Insights

The results and insights from the implementation of the three-tiered approach of RG 1.177 to support the proposed addition of LCO 3.0.9 to the TS are summarized and evaluated in the following Sections 3.1.1 to 3.1.3.

#### 3.1.1 Risk Impact

The bounding risk assessment approach, described in Section 3.0, was developed for a range of plant baseline CDF values and for a range of protected component RAW values. The maximum allowable 30-day outage time was used. The results are summarized in Table 1.

**Table 1 Risk Assessment Results for a Postulated 30-Day Barrier Outage.**

Baseline CDF = 1E-6 per year

RAW	ICCDP	ICLERP
2	7.5E-10	7.5E-11
10	6.7E-09	6.7E-10
50	3.7E-08	3.7E-09
100	7.4E-08	7.4E-09

Baseline CDF = 1E-5 per year

RAW	ICCDP	ICLERP
2	7.5E-09	7.5E-10
10	6.7E-08	6.7E-09
50	3.7E-07	3.7E-08
100	7.4E-07	7.4E-08

Baseline CDF = 1E-4 per year

RAW	ICCDP	ICLERP
2	7.5E-08	7.5E-09
10	6.7E-07	6.7E-08
50	3.7E-06	3.7E-07
100	7.4E-06	7.4E-07

The above results represent a sensitivity analysis covering the expected range of plant baseline CDF values and component RAW values. The most limiting configurations involving very high risk components (RAW > 10) would not be anticipated to occur for most planned maintenance activities.

The calculations conservatively assume the most limiting (highest frequency) initiating event and the longest allowable outage time (30 days). Occurrence of the initiating event during unavailability of the barrier is conservatively assumed to directly fail the protected equipment; no credit is taken for event-specific circumstances which may result in the equipment remaining functional even with the barrier unavailable. (For example, a barrier required to protect equipment from steam impingement for high energy line breaks may only be required for breaks occurring in specific locations and orientations relative to the protected equipment, and only for large size breaks.) No credit is taken for avoided risk identified in Section 2.

The risk assessment results of Table 1 were compared to guidance provided in the revised Section 11 of NUMARC 93-01, Revision 2 (Reference 6), endorsed by RG 1.182 (Reference 7), for implementing the requirements of paragraph (a)(4) of the Maintenance Rule, 10 CFR 50.65. Such guidance is summarized in Table 2. Guidance regarding the acceptability of conditional risk increase in terms of CDF for a planned configuration is provided. This guidance states that a specific configuration that is associated with a CDF higher than 1E-3 per year should not be entered voluntarily. The staff notes that the higher risk configurations

documented in Table 1 would exceed this guidance, and would therefore not be permitted to be entered voluntarily. For example, with a baseline CDF of 1E-4 per year, a component with a RAW greater than 10 would exceed the 1E-3 per year criteria. Therefore, the sensitivity analyses presented in Table 1 are understood to include higher risk configurations which would not be permitted under the guidance of Reference 6.

**Table 2      Guidance for Implementing 10 CFR 50.65(a)(4).**

$\Delta R_{CDF}$		Guidance
Greater than 1E-3/year		Configuration should not normally be entered voluntarily
ICCDP	Guidance	ICLERP
Greater than 1E-5	Configuration should not normally be entered voluntarily	Greater than 1E-6
1E-6 to 1E-5	Assess non-quantifiable factors Establish risk management actions	1E-7 to 1E-6
Less than 1E-6	Normal work controls	Less than 1E-7

Guidance regarding the acceptability of ICCDP and ICLERP values for a specific planned configuration and the establishment of risk management actions is also provided in NUMARC 93-01. This guidance, as shown in Table 2, states that a specific plant configuration that is associated with ICCDP and ICLERP values below 1E-6 and 1E-7, respectively, is considered to require “normal work controls.” Table 1 shows that for the majority of barrier outage configurations the conservatively assessed ICCDP and ICLERP values are within the limits for what is recommended as the threshold for the “normal work controls” region.

As stated in the implementation guidance for LCO 3.0.9 (Reference 2), plants are required to commit to the guidance of NUMARC 93-01 Section 11, and therefore the above limits would be applicable. Plant configurations including out of service barriers may therefore be entered voluntarily if supported by the results of the risk assessment required by 10 CFR 50.65(a)(4), and by LCO 3.0.9.

RG 1.177 (Ref. 4) provides guidance of  $5E-7$  ICDP and  $5E-8$  ILERP as the limit for a TS allowed outage time. As shown in Table 1, the guidance is met for the typically anticipated configurations, unless either the baseline CDF for the plant approaches  $1E-4$  per year or the RAW of the protected components is well above 10. Such configurations may exceed the criteria described in Ref. 6 (Table 2) and would not be voluntarily entered. Such configurations are not expected to be frequently encountered, and may be addressed on a case-by-case plant-specific basis by limiting the allowed outage time and by implementing plant-specific risk management actions, as per the implementing guidance (Reference 2).

RG 1.174 (Ref. 3) provides guidance of  $1E-5$  per year  $\Delta$ CDF and  $1E-6$  per year  $\Delta$ LERF. The ICCDP calculations demonstrated that each individual 30-day barrier outage is anticipated to be low risk. Although there is no explicit limit on the number of times per year that LCO 3.0.9 may be applied, even assuming barrier outages occurred continuously over the entire year, the risk incurred would still be anticipated to be below the limits of the guidance.

The staff finds that the risk assessment results support the proposed addition of LCO 3.0.9 to the TS. The risk increases associated with this TS change will be insignificant based on guidance provided in RGs 1.174 and 1.177 and within the range of risks associated with normal maintenance activities.

### 3.1.2 Identification of High-Risk Configurations

The second tier of the three-tiered approach recommended in RG 1.177 involves the identification of potentially high-risk configurations that could exist if equipment, in addition to that associated with the TS change, were to be taken out of service simultaneously. Insights from the risk assessments, in conjunction with important assumptions made in the analysis and defense-in-depth considerations, were used to identify such configurations. To avoid these



potentially high-risk configurations, specific restrictions to the implementation of the proposed TS changes were identified.

When LCO 3.0.9 is applied, at least one train or subsystem is required to be operable with required barriers in place, such that this train or subsystem would be available to provide mitigation of the initiating event. LCO 3.0.9 may be applied to multiple trains of the same system only for barriers which provide protection for different initiating events, such that at least one train or subsystem is available to provide mitigation of the initiating event. The use of LCO 3.0.9 for barriers which protect all trains or subsystems from a particular initiating event is not permitted. Therefore, potentially high-risk configurations involving a loss of function required for mitigation of a particular initiating event are avoided by the restrictions imposed on applicability of LCO 3.0.9.

LCO 3.0.9 also addresses potential emergent conditions where unplanned failures or discovered conditions may result in the unavailability of at least one train or subsystem for a particular initiating event. Such conditions may result during application of LCO 3.0.9 from equipment failure on the operable train, or discovery of degraded barriers. In such cases, a 24-hour allowed time is provided to restore the conditions to permit continued operation with unavailable barriers, after which the applicability of LCO 3.0.9 ends, and the supported system LCO becomes effective. This allowed time is provided so that emergent conditions with low risk consequences may be effectively managed, rather than requiring immediate exit of LCO 3.0.9 and the potential for an unplanned plant shutdown.

A limit of 30 days is applied to the LCO 3.0.9 allowed outage time for each barrier, after which the barrier must be restored to an available status, or the supported system TS must be applied. This 30-day backstop applies regardless of the risk level calculated, and provides assurance that installed plant barriers will be maintained available over long periods of time, and that the application of LCO 3.0.9 will not result in long term degradation of plant barriers.

The staff finds that the restrictions on the applicability of LCO 3.0.9 assuring that one safety train remains available to mitigate the initiating event, along with the 30-day limit applicable to each barrier, assure that potentially high-risk configurations are avoided in accordance with the guidance provided in RGs 1.174 and 1.177.

### 3.1.3 Configuration Risk Management

The third tier of the three-tiered approach recommended in RG 1.177 involves the establishment of an overall configuration risk management program (CRMP) to ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified. The objective of the CRMP is to manage configuration-specific risk by appropriate scheduling of plant activities and/or appropriate compensatory measures. This objective is met by licensee programs to comply with the requirements of paragraph (a)(4) of the Maintenance Rule (10 CFR 50.65) to assess and manage risk resulting from maintenance activities, and by LCO 3.0.9 requiring risk assessments and management using (a)(4) processes if no maintenance is in progress. These programs can support licensee decision making regarding the appropriate actions to manage risk whenever a risk-informed TS is entered.

The implementation guidance for LCO 3.0.9 (Reference 2) requires that the risk determination for an unavailable barrier be performed per the ICCDP calculation as described in Section 3.1 using the plant-specific configuration as the basis for determining the protected component RAW value. Further, the calculations are to be updated whenever emergent conditions occur. These requirements assure that the configuration-specific risk associated

with unavailable barriers is assessed and managed prior to entry into LCO 3.0.9 and during its applicability as conditions change.

These evaluations for the unavailable barrier are performed as part of the assessment of plant risk required by 10CFR50.65(a)(4). The numerical guidance identified in Table 2 are applicable to implementation of LCO 3.0.9, using the results of the configuration-specific risk assessment which addresses the risk impact of the unavailable barrier along with all other out of service components and plant alignments.

Risk management actions are required to be considered when the calculated risk exceeds specific thresholds per NUMARC 93-01 Section 11, as identified in Table 2. Additional guidance on risk management actions are provided in the implementation guidance for LCO 3.0.9.

The allowed outage time for a barrier is calculated based on an ICCDP limit of  $1E-6$ . This is the NUMARC 93-01 Section 11 guidance for applicability of normal work controls, and is conservatively lower than the guidance of  $1E-5$  for voluntary maintenance activities. The use of  $1E-6$  will result in conservatively short allowed outage times for barriers compared to allowed times for other maintenance activities.

If the scope of the PRA model used to support the plant-specific CRMP does not include the initiating event for which a barrier provides protection, then LCO 3.0.9 applicability is limited to one barrier on a single train. Multiple barriers for such initiating events may not be unavailable under LCO 3.0.9, and in such situations the LCO(s) associated with the protected components would be applicable. Applicability of LCO 3.0.9 to the single barrier for an initiating

event that is not modeled in the plant PRA is acceptable based on the generic risk analysis provided by TSTF-427, as described in Section 3.1.

Assessment of the LERF risk impact on an unavailable barrier is required to be performed in accordance with NUMARC 93-01 Section 11. If an unavailable barrier provides protection to equipment which is relevant to the containment function, or which protects equipment from the effects of an initiating event which is a contributor to LERF, then the methodology requires a calculation for ICLERP similar to the calculations performed for ICCDP, described in Section 3.1, or the applicability of LCO 3.0.9 must be limited to that one barrier.

The staff finds that the risk evaluations required to support the applicability of LCO 3.0.9 appropriately consider the risk from unavailable barriers in an integrated manner based on the overall plant configuration. Therefore potentially high-risk configurations can be identified and managed in accordance with the guidance provided in RGs 1.174 and 1.177.

### 3.2 Summary and Conclusions

The unavailability of barriers which protect TS required components from the effects of specific initiating events is typically a low risk configuration which should not require that the protected components be immediately declared inoperable. The current TS require that when such barriers are unavailable, the protected component LCO is immediately entered. Some potential undesirable consequences of the current TS requirements include:

1. When maintenance activities on the supported TS system requires removal and restoration of barriers, the time available to complete maintenance and perform system restoration and testing is reduced by the time spent maneuvering the barriers within the time constraints of the supported system LCO;

2. Restoration of barriers following maintenance must be given a high priority due to time restraints of the existing supported system LCO, when other more risk important activities may have a greater risk impact and should therefore be given priority; and
3. Unnecessary plant shutdowns due to discovery of degraded barriers which may require more than the existing supported system LCO time to complete repairs and restoration.

To remove the overly restrictive requirements in the treatment of barriers, licensees are proposing a risk-informed TS change which introduces a delay time before entering the actions for the supported equipment when one or more barriers are found degraded or removed to facilitate planned maintenance activities. Such a delay time will provide needed flexibility in the performance of maintenance during power operation and at the same time will enhance overall plant safety by (1) performing system maintenance and restoration activities, including post-maintenance testing, within the existing TS LCO time, and allowing barrier removal and restoration to be performed outside of the TS LCO, providing more time for the safe conduct of maintenance and testing activities on the supported system; (2) requiring barrier removal and restoration activities to be assessed and prioritized based on actual plant risk impacts; and (3) avoiding unnecessary unscheduled plant shutdowns, thus minimizing plant transition and realignment risks.

The risk impact of the proposed TS changes was assessed following the three-tiered approach recommended in RG 1.177. A simplified bounding risk assessment was performed to justify the proposed TS changes. This bounding assessment was selected due to the lack of detailed plant-specific risk models for most plants which do not include failure modes of passive

structures such as barriers. The impact from the addition of the proposed LCO 3.0.9 to the TS on defense-in-depth was also evaluated in conjunction with the risk assessment results.

Based on this integrated evaluation, the staff concludes that the proposed addition of LCO 3.0.9 to the TS would lead to insignificant risk increases. Indeed, this conclusion is true without taking any credit for the removal of potential undesirable consequences associated with the current conservative treatment of barriers.

Consistent with the staff's approval and inherent in the implementation of TSTF-427, licensees interested in implementing LCO 3.0.9 must, as applicable, operate in accordance with the following stipulations:

1. The licensee must commit to the guidance of NUMARC 93-01, Section 11 (Reference 6) and to NEI 04-08 (Reference 2).
2. Licensee procedures must be revised to ensure that the risk assessment and management process described in NEI 04-08 is used whenever a barrier is considered unavailable and the requirements of LCO 3.0.9 are to be applied. This must be done in accordance with an overall CRMP to ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified and avoided.

#### 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. 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.

## 7.0 REFERENCES

1. TSTF-427, Revision 1, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY," February 3, 2006.

2. NEI 04-08, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY (TSTF-427) Industry Implementation Guidance", March 2006.
3. Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," USNRC, August 1998.
4. Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," USNRC, August 1998.
5. "Rates of Initiating Events at U.S. Nuclear Power Plants," NUREG/CR-5750, Idaho National Engineering and Environmental Laboratory, February 1999.
6. Nuclear Energy Institute, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", NUMARC 93-01, Revision 2, Section 11.
7. "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants ", Regulatory Guide 1.182.



### 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 a delay time for entering a supported system technical specification (TS) when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed consistent with the program in place for complying with the requirements of 10 CFR 50.65(a)(4). LCO 3.0.9 will be added to individual TS providing this 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 a delay time for entering a supported system technical specification (TS) when the inoperability is due solely to an unavailable hazard barrier if risk is assessed and managed. The postulated initiating events which may require a functional barrier are limited to those with low frequencies of occurrence, and the overall TS system safety function would still be available for the majority of anticipated challenges. Therefore, the probability of an accident previously evaluated is not significantly increased, if at all. The consequences of an accident while relying on the allowance provided by proposed LCO 3.0.9 are no different than the consequences of an accident while relying on the TS required actions in effect without the allowance provided by proposed LCO 3.0.9. 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). Allowing delay times for entering supported system TS when inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed, 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 a delay time for entering a supported system TS when the inoperability is due solely to an unavailable hazard barrier, if risk is assessed and managed. The postulated initiating events which may require a functional barrier are limited to those with low frequencies of occurrence, and the overall TS system safety function would still be available for the majority of anticipated challenges. The risk impact of the proposed TS changes was assessed following the three-tiered approach recommended in RG 1.177. A bounding risk

assessment was performed to justify the proposed TS changes. This application of LCO 3.0.9 is predicated upon the licensee's performance of a risk assessment and the management of plant 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 no-significant-hazards consideration.

Dated at Rockville, Maryland, this     day of

FOR THE NUCLEAR REGULATORY COMMISSION

Timothy J. Kobetz, Branch Chief  
Technical Specifications Branch  
Division of Inspection and Regional Support  
Office of Nuclear Reactor Regulation

FOR INCLUSION ON THE TECHNICAL SPECIFICATIONS WEB PAGE

**The following example of an application was prepared by the NRC staff to facilitate use of the consolidated line item improvement process (CLIIP). The model provides the expected level of detail and content for an application to revise technical specifications regarding the addition of LCO 3.0.9 on the unavailability of barriers using CLIIP. Licensees remain responsible for ensuring that their actual application fulfills their administrative requirements as well as nuclear regulatory commission regulations.**

---

U. S. Nuclear Regular Commission  
Document Control Desk  
Washington, D.C. 20555

SUBJECT: PLANT NAME  
DOCKET NO. 50-  
APPLICATION FOR TECHNICAL SPECIFICATION CHANGE TO ADD LCO 3.0.9  
ON THE UNAVAILABILITY OF BARRIERS USING THE CONSOLIDATED LINE  
ITEM IMPROVEMENT PROCESS

Gentleman:

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (CFR) 50.90, [LICENSEE] is submitting a request for an amendment to the technical specifications (TS) for [PLANT NAME, UNIT NOS.].

The proposed amendment would modify TS requirements for unavailable barriers by adding LCO 3.0.9.

Enclosure 1 provides a description of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Enclosure 2 provides the existing TS pages marked up to show the proposed change. Enclosure 3 provides revised (clean) TS pages. Enclosure 4 provides a summary of the regulatory commitments made in this submittal.

[LICENSEE] requests approval of the proposed License Amendment by [DATE], with the amendment being implemented [BY DATE OR WITHIN X DAYS].

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

I declare under penalty of perjury under the laws of the United States of America that I am authorized by [LICENSEE] to make this request and that the foregoing is true and correct. (Note that request may be notarized in lieu of using this oath or affirmation statement).

If you should have any questions regarding this submittal, please contact [NAME, TELEPHONE NUMBER]

Sincerely,

[Name, Title]

Enclosures:   1. Description and Assessment  
                  2. Proposed Technical Specification Changes  
                  3. Revised Technical Specification Pages  
                  4. Regulatory Commitments  
                  5. Proposed Technical Specification Bases Changes

cc: NRC Project Manager  
      NRC Regional Office  
      NRC Resident Inspector  
      State Contact

## **ENCLOSURE 1**

### **Description and Assessment**

#### **1.0 DESCRIPTION**

The proposed amendment would modify technical specifications (TS) requirements for unavailable barriers by adding LCO 3.0.9.

The changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) STS change TSTF-427 Revision 1. The availability of this TS improvement was published in the *Federal Register* on [DATE] as part of the consolidated line item improvement process (CLIIP).

#### **2.0 ASSESSMENT**

##### **2.1 Applicability of Published Safety Evaluation**

[LICENSEE] has reviewed the safety evaluation dated [DATE] as part of the CLIIP. This review included a review of the NRC staff's evaluation, as well as the supporting information provided to support TSTF-427. [LICENSEE] has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to [PLANT, UNIT NOS.] and justify this amendment for the incorporation of the changes to the [PLANT] TS.

##### **2.2 Optional Changes and Variations**

[LICENSEE] is not proposing any variations or deviations from the TS changes described in the TSTF-427 Revision 1 or the NRC staff's model safety evaluation dated [DATE].

#### **3.0 REGULATORY ANALYSIS**

##### **3.1 No Significant Hazards Consideration Determination**

[LICENSEE] has reviewed the proposed no significant hazards consideration determination (NSHCD) published in the *Federal Register* as part of the CLIIP. [LICENSEE] has concluded that the proposed NSHCD presented in the Federal Register notice is applicable to [PLANT] and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

##### **3.2 Verification and Commitments**

As discussed in the notice of availability published in the *Federal Register* on [DATE] for this TS improvement, plant-specific verifications were performed as follows:

1. [LICENSEE] commits to the guidance of NUMARC 93-01 Section 11, which provides guidance and details on the assessment and management of risk during maintenance.
2. [LICENSEE] will revise procedures to ensure that the risk assessment and management process described in NEI 04-08 is used whenever a barrier is considered unavailable and the requirements of LCO 3.0.9 are to be applied, in accordance with an overall CRMP to

ensure that potentially risk-significant configurations resulting from maintenance and other operational activities are identified and avoided.

#### **4.0 ENVIRONMENTAL EVALUATION**

[LICENSEE] has reviewed the environmental evaluation included in the model safety evaluation dated [DATE] as part of the CLIIP. [LICENSEE] has concluded that the staff's findings presented in that evaluation are applicable to [PLANT] and the evaluation is hereby incorporated by reference for this application.

---

#### **ENCLOSURE 2**

#### **PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)**

---

#### **ENCLOSURE 3**

#### **PROPOSED TECHNICAL SPECIFICATION PAGES**

---

#### **ENCLOSURE 4**

#### **LIST OF REGULATORY COMMITMENTS**

The following table identifies those actions committed to by [LICENSEE] in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to [CONTACT NAME].

<b>REGULATORY COMMITMENTS</b>	<b>DUE DATE/EVENT</b>
[LICENSEE] commits to the guidance of NUMARC 93-01, Revision 2, Section 11, which provides guidance and details on the assessment and management of risk during maintenance.	[Ongoing or implement with amendment]
[LICENSEE] commits to the guidance of NEI 04-08, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY (TSTF-427) Industry Implementation Guidance," March 2006.	[Implement with amendment, when barrier(s) are unavailable]

---

#### **ENCLOSURE 5**

#### **PROPOSED CHANGES TO TECHNICAL SPECIFICATION BASES PAGES**

---

## 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 an operating license to announce the modification of requirements related to systems in TS, due to unavailable non-technical specification barriers, for each plant that receives the requested change.

Dated at Rockville, Maryland, this 26<sup>th</sup> day of May 2006.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA/**

Timothy J. Kobetz, Chief  
Technical Specifications Branch  
Division Inspection and Regional Support  
Office of Nuclear Reactor Regulation

**DISTRIBUTION:**

TSTF r/f  
TRTjader

**ADAMS ACCESSION NUMBER: ML061460020**

**ADAMS Template: ADM-0-12**

**\*\*Technical Branch reviewed and determined their concurrence was not needed.**

OFFICE	ITSB:DIRS	BC:APLB:DSSA	BC:IRIB:DIRS	BC:EMEB:DE
NAME	TRTjader	LMROWCA	RGIBBS	KMANOLY
DATE	04/06/2006	05/12/2006	Not Required**	Not Required**
OFFICE	BC:SBWB:DSS	BC:SPWB:DSS	BC:SBPB:DSS	OGC
NAME	GCRANSTON	JNAKOSKI	DSOLORIO	SHamrick*
DATE	05/02/2006	Not Required**	Not Required**	05/24/2006
OFFICE	SC:ITSB:DIRS			
NAME	TKobetz			
DATE	05/26/2006			

**OFFICIAL RECORD COPY**