



NUCLEAR ENERGY INSTITUTE

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March 4, 2003

Dr. William D. Beckner, Program Director
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Forwarding of TSTFs

Dear Dr. Beckner:

Enclosed is TSTF-427, Revision 0, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY." The proposed changes address supported system operability impacts for barriers installed to mitigate low frequency initiating events.

We request that NRC reviews of the enclosure be granted a fee waiver pursuant to the provisions of 10 CFR 170.11. Specifically, the request is to support NRC generic regulatory improvements (risk management technical specifications), in accordance with 10 CFR 170.11(a)(1)(iii).

Please contact me at (202) 739-8081 or Biff Bradley at (202) 739-8138 if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Anthony R. Pietrangelo". The signature is written in a cursive, flowing style.

Anthony R. Pietrangelo

Enclosure: TSTF-427, Revision 0

c: Patricia Coates
Stewart L. Magruder, NRR/DRPM
Technical Specification Task Force

Industry/TSTF Standard Technical Specification Change Traveler

Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY

NUREGs Affected: 1430 1431 1432 1433 1434

Classification: 1) Technical Change

Recommended for CLIIP?: Yes

Priority: 1)High

Simple or Complex Change: Complex

Correction or Improvement: Improvement

Industry Contact: Infanger, Paul

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See attached.

Revision History

OG Revision 0

Revision Status: Active

Next Action: NRC

Revision Proposed by: BWOG

Revision Description:
Original Issue

TSTF Review Information

TSTF Received Date: 03-Feb-03

Date Distributed for Review: 03-Feb-03

OG Review Completed: BWOG WOG CEOG BWROG

TSTF Comments:

Several review rounds by the TSTF and RITSTF to develop final product.

TSTF Resolution: Approved Date: 03-Mar-03

NRC Review Information

NRC Received Date: 05-Mar-03

Affected Technical Specifications

1.0	Definitions	Change Description: Definition of OPERABLE / OPERABILITY
LCO 3.0.9	LCO Applicability	Change Description: New
LCO 3.0.9 Bases	LCO Applicability	Change Description: New

28-Feb-03

1.0 Description

A new LCO Applicability rule, LCO 3.0.9, is added to the ISTS NUREGs to address barriers which cannot perform their required support function for Technical Specification systems. LCO 3.0.9 allows barriers to be not able to perform their required support function for up to 30 days before declaring the supported system inoperable.

2.0 Proposed Change

The proposed change adds a new LCO Applicability requirement, LCO 3.0.9, and its associated Bases, to address barriers which cannot perform their required support function for Technical Specification systems.

This new requirement is numbered LCO 3.0.9 because TSTF-372 adds LCO 3.0.8. The definition of OPERABILITY is modified to reflect the allowances provided by LCO 3.0.8 and LCO 3.0.9.

3.0 Background

Risk-Informed Technical Specifications Task Force (RITSTF) Initiative 7a addresses the effect of barriers which cannot perform their required support function on systems governed by Technical Specifications. This Initiative provides for a limited time in which Technical Specification related systems rendered inoperable by barriers which cannot perform their required support function may be considered OPERABLE.

Many systems require barriers in order to perform their 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 prevent steam impingement in case of a high energy line break. Barriers are used to protect systems against missiles, either internally generated or generated by external events.

If a barrier cannot perform its related support function due to some type of failure or due to intentional removal to facilitate plant operation, the supported system may be inoperable under the definition of OPERABILITY. However, the magnitude of plant risk associated with the barrier which cannot perform its required support function does not warrant declaring the supported system inoperable provided at least one train of the system is capable of performing the required function.

Therefore, the proposed change provides a limited period of time to consider the supported system OPERABLE when the barrier is not capable of performing its required support function.

4.0 Technical Analysis

When one or more trains of a multiple train Technical Specification system is made inoperable solely due to inability of one or more barriers (as described below) to perform

its related support function, the supported Technical Specification system LCO(s) are not required to be declared not met for up to 30 days.

Barriers are defined as insulation, doors, walls, floor plugs, curbs, hatches, installed barriers, mechanical devices, or other barriers, not explicitly described in Technical Specifications, which are designed to provide for the performance of the safety function for the Technical Specification system after the occurrence of one or more initiating events.

In determining the acceptability of this allowance, the following low frequency initiators were considered:

1. Small, medium or large loss of coolant accidents
2. High energy line breaks outside containment
3. Feedwater line breaks
4. Internal or external flooding
5. Turbine missile ejection accident
6. Tornados

The analysis also assumed the following conditions:

1. The use of this provision is limited, at a given time, to one train of multiple train systems designed to mitigate the consequences of one or more of the specified initiating events.
2. The provision may be used on more than one system at a given time, as long as at least a single train of mitigation is preserved for the specified initiating events.
3. The provision is not applicable to barriers that protect more than one train of a multiple train Technical Specification system, unless the affected barriers protect against different initiating events.

The barrier which cannot perform its required support function will be evaluated and managed under the maintenance rule plant configuration control requirement, 10 CFR 50.65(a)(4), and associated industry guidance (NUMARC 93-01, Revision 3). This provision is applicable whether the affected barrier is due to planned maintenance or due to a discovered condition. Should the risk assessment and risk management actions for a specific plant configuration, or emergent condition, not support the 30 day allowed time, the (a)(4) risk management action must be implemented or the supported system's LCO be considered not met.

Risk impact of 30 day allowance for barriers

In order to estimate the risk impact of conditions created by a barrier which cannot perform its required support function, the following simplified risk analysis is provided. This analysis is intended to demonstrate the risk impact of a single affected barrier

(within the scope defined above), for a single initiator from the above definition. Its purpose is to show that conditions created by an affected barrier produce small risk impacts within the range of other maintenance activities carried out under 10 CFR 50.65 (a)(4), and that the 30 day limit for restoration of the barrier is appropriate.

This analysis also demonstrates that use of this provision for more than one train of a multiple train supported Technical Specification system is appropriate provided that the affected barriers protect against different categories of initiating events. Multiple, independent categories of initiating events are not assumed to occur simultaneously.

An appropriate value for the allowed time, T_c , can be determined by an expression for the incremental core damage probability (ICDP) that would be attributed to the affected barrier during power operation. This involves the probability of the appropriate initiating event occurring during the allowed time and failing a specific piece of Technical Specification equipment. For example, while curbs used to prevent flooding were removed to permit the transport of some heavy equipment, a flood occurs, which causes the failure of one train of a safety injection system.

This determination will consider three different parameters:

1. The length of time the affected barrier is unavailable, or the allowed time, T_c (hours),
2. The initiating event (frequency) for which the affected barrier is designed to mitigate, IE_i (per year), and
3. The importance (to core damage frequency, CDF) of the Technical Specification equipment (train or component) for which the affected barrier is designed to protect.

The first parameter can be used to estimate the unavailability of the affected barrier over the period of one year. This is estimated as:

$$\frac{T_c}{8766}$$

The second parameter will be accounted for as the ratio of the specific initiating event frequency (e.g., flood) to the total initiating event frequency, i.e., the fraction of the total initiating event frequency that must be considered. This must be multiplied by the unavailability of the affected barrier to account for only the time when the initiating event could damage the protected Technical Specification train or component. Thus, the second parameter, which will account for the change in CDF, is estimated as:

$$\frac{T_c}{8766} \times \frac{\text{Specific Initiating Event Frequency (/ reactor-year), } IE_i}{\text{Total Initiating Event Frequency (/ reactor-year), } IE_T}$$

The third parameter is the risk achievement worth (RAW) for the protected Technical Specification equipment (train or component). This parameter will account for the

increase in CDP as a result of the initiating event occurring while the barrier cannot perform its required support function .

Therefore, the Δ CDP or the Incremental Core Damage Probability (ICDP) can be estimated as follows:

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

where RAW_j is the risk achievement worth for the Technical Specification equipment (train or component) that normally would be protected from the effect of the initiating event (with frequency IE_i) by the affected barrier.

Solving the above equation for T_c (in hours), yields:

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

Regarding the initiating event frequency, IE_i :

The relevant initiating events consist of floods (internal and external), high energy line breaks (HELB), feedwater line breaks, small, medium, and large loss of coolant accidents (LOCAs), tornados, and turbine missiles. Initiating event frequencies for most of these are provided in NUREG/CR-5750, "A Review of Rates of Initiating Events at U.S. Nuclear Power Plants: 1987 – 1995," February 1999. For the initiating event frequencies of turbine missiles, tornados and external floods other sources were required.

A turbine missile frequency of 1.64E-4 per year is provided in EPRI, NSAC-60, June 1984, "A Probabilistic Risk Assessment of Oconee Unit 3," Section N3.1, based on previous work by the Pacific Northwest Laboratories.

This same EPRI reference provides an analysis of external flood events. Various dam failure references are cited, with a final bounding value of 2.5E-5 per year. These values are consistent with, or bound, other studies.

An initiating event frequency for tornados of 1.909E-04 is used. This is the frequency for tornados of intensity f2 or greater within 125 nautical miles of Burlington, KS for the time period from 1950 through 1987 based on data from the National Severe Storms Forecast Center. Guidance from NUREG/CR-4461 was used to estimate the number of "missing" tornados based on the number of "known" tornados. This is considered a bounding frequency for US plants.

Review of the above sources provided the following mean frequencies per reactor-year, for the relevant initiators. The NUREG/CR-5750 data are taken from Table G-1, which excludes the first four months of commercial plant operation. A summary of the initiating event frequencies is provided in the table below:

Initiating Event	NUREG/CR-5750 (Table G-1 Category) or Other Reference	Mean frequency per reactor-year
Large LOCA, BWR	G7	3E-5
Large LOCA, PWR	G7	5E-6
Medium LOCA, BWR	G6	4E-5
Medium LOCA, PWR	G6	4E-5
Small pipe break	G3	5E-4
Very small LOCA/leak	G1	6.3E-3
RCP seal LOCA, PWR	G8	2.5E-3
Steam line break outside containment	K1	9.1E-3
Feedwater line break	K2	3.5E-3
Internal flood	J1	3.5E-3
External Flood	EPRI NSAC-60	2.8E-5*
Turbine missile	EPRI NSAC-60	1.82E-4*
Tornados	See above	1.9E-4

**NSAC-60 values adjusted by industry average capacity factor of approximately 90% to obtain a frequency per reactor year.*

As can be seen, the frequency for steam line breaks outside containment is the bounding case for this application. This initiating event frequency is given as 9.1E-3 per reactor-year (Table G-1, functional impact category K1). Some barriers may protect against multiple initiating events, and in that case, the initiating event frequencies for the relevant initiators should be summed, and the analysis is still applicable as long as it bounds the summed frequencies, and it is verified that there are no dependencies between the summed initiators. However, this analysis demonstrates the limiting case for a single initiator.

In the event that a licensee desires to use LCO 3.0.9 for a barrier protecting against an initiating event not on the above table, but within the frequency ranges considered, this analysis is applicable for that initiator. However, should the initiating event frequency not be bounded by the frequencies given above, plant specific information must be provided for NRC approval.

Given that the initiating event occurs, several other conditions must be considered to determine the impact on core damage frequency, including break size, spatial considerations, remaining mitigation capability and recovery actions. These conditions are discussed below. The effective initiating event frequency relevant to this

application, that is a high energy line break that damages nearby equipment with barriers unable to perform their required support function, is estimated as follows:

The NUREG/CR-5750 initiating event frequency is based on pipe breaks of one inch effective diameter and larger, in any steam, feedwater, or condensate line that contains main turbine working fluid at or above atmospheric saturation conditions, and does not necessarily constitute a design basis HELB. According to EPRI TR-102266, "Pipe Failure Study Update," 85% of all generic pipe failures have an effective diameter of less than six inches. Therefore, the frequency referenced above accounts for all applicable breaks, but is dominated by small breaks, many of which would release insufficient energy to cause damage to other plant systems, even with barriers unable to perform their required support function. It is conservatively assumed that 50% of breaks would be of sufficient effective diameter to potentially affect adjacent equipment.

Another conservative assumption is that the line break consequences would always result in failure of the non-protected safety system function, when in reality, even for those breaks releasing sufficient energy to conceivably cause damage, this would be a function of spatial considerations. Therefore, it is estimated that in 50% of cases the equipment function would be lost.

The net impact of the above factors is an initiating event frequency (leading to failed protected equipment) considerably below the generic "steam line break outside containment" frequency from NUREG/CR-5750.

$$9.1E-3 \times 0.5 \text{ (break size)} \times 0.5 \text{ (spatial considerations)} = 2.28E-3$$

Thus, for the purposes of this application, the initiating event frequency is defined as 2.3E-3.

It is recognized that the above reduction factors are approximate and not easily quantifiable in a generic sense. A table at the conclusion of this justification provides the results of a sensitivity analysis of the risk impact assuming the above reduction factors are not used; that is, the frequency of the equipment functional failure is assumed to equal the bounding initiating event frequency of 9.1E-3.

The total initiating event frequency, i.e., the sum of all initiating events considered in a probabilistic risk assessment (PRA), is on the order of 1.0/reactor-year. For this application, given the IE_i noted above, the ratio IE_i/IE_T is therefore estimated to be 2.3E-3.

The risk impact is a function of baseline CDF (and large early release frequency (LERF)) and the RAW value for the systems normally protected by the affected barrier. Baseline internal events CDF varies over a range of approximately 1E-4 to 1E-6 for existing plants. Baseline LERF values are generally at least an order of magnitude lower.

RAW values for equipment protected by barriers can range over a variety of values. The RAW value would generally be a component RAW for a main component (pump, valve, or other component necessary for system function) of the protected system. The maximum RAW value would be inherently limited due to the limitation of the LCO provision to a single train for a given initiating event category. Single train systems or components (such as the refueling water storage tank), which typically have large RAW values, are precluded from using LCO 3.0.9.

Regarding mitigation, the conditions of this application stipulate that the affected barrier must be limited to one train of a multiple train system for a given initiating event category, so the redundant train(s) would be available. For barriers protecting risk significant components, maintenance unavailabilities would be controlled through the 10 CFR 50.65(a)(4) program (see risk management actions discussion). Thus, the failure probability of the remaining train(s) would be approximately $1E-2$. The RAW values for the equipment with barriers unable to perform their required safety function (see following tables) are normally calculated for the baseline PRA with time-averaged unavailabilities. Given that maintenance unavailabilities for the redundant train(s) would be controlled, the RAW values listed in the table below are conservative with respect to their impact on CDF and LERF.

Recovery actions (manual actions, etc), as modeled in the PRA, would continue to be pertinent for this situation. Recovery actions could result in restoration of equipment damaged by the initiating event.

LERF and incremental large early release probability (ILERP) also need to be considered. It can be conservatively assumed that the delta LERF and ILERP values resulting from the barrier unable to perform its required support function would be generally at least an order of magnitude less than the delta CDF and ICDP values, respectively. Containment bypass scenarios, such as interfacing system LOCA or steam generator tube rupture (which tend to be CDF independent) would not be uniquely affected by this application. Therefore, the delta LERF (and ILERP) would typically correspond to the delta CDF (and ICDP), and all plants have a conditional early containment failure probability of less than 0.1.

The following tables demonstrate the ICDP and ILERP value when T_C is set to 30 days (720 hours), for a range of RAW values, at various baseline CDFs, with the ratio IE_i/IE_T estimated to be $2.3E-3$.

Baseline CDF = 1E-6:

RAW	ICDP	ILERP
2	1.9E-10	1.9E-11
10	1.7E-9	1.7E-10
50	9.3E-9	9.3E-10
100	1.9E-8	1.9E-9

Baseline CDF = 1E-5:

RAW	ICDP	ILERP
2	1.9E-9	1.9E-10
10	1.7E-8	1.7E-9
50	9.3E-8	9.3E-9
100	1.9E-7	1.9E-8

Baseline CDF = 1E-4:

RAW	ICDP	ILERP
2	1.9E-8	1.9E-9
10	1.7E-7	1.7E-8
50	9.3E-7	9.3E-8
100	1.9E-6	1.9E-7

The following tables show the result of the sensitivity analysis conservatively assuming all initiating events result in the failure of the primary function of the equipment protected by the affected barrier (see discussion in previous section):

Baseline CDF = 1E-6:

RAW	ICDP	ILERP
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:

RAW	ICDP	ILERP
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:

RAW	ICDP	ILERP
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

Comparison with the Maintenance Rule, 10 CFR 50.65 (a)(4) guidance:

NRC Regulatory Guide 1.182, "Guidance for Implementation of 10 CFR 50.65(a)(4)," provides the following table of ICDP values and risk management actions:

ICDP and ILERP, for a specific planned configuration, may be considered as follows with respect to establishing risk management actions:

ICDP		ILERP
$> 10^{-5}$	- configuration should not normally be entered voluntarily	$> 10^{-6}$
$10^{-6} - 10^{-5}$	- assess non-quantifiable factors - establish risk management actions	$10^{-7} - 10^{-6}$
$< 10^{-6}$	- normal work controls	$< 10^{-7}$

Conclusion:

These results justify the use of the 30 day allowed time for the conditions created by a barrier unable to perform its required support function for a single train of a multiple train Technical Specification system or systems used to mitigate the listed initiating events or for more than one train of a multiple train Technical Specification system or systems provided the barriers for each train are affected by a different category of initiating event. The ICDP and ILERP values for the range of CDF and RAW values from the above tables are still within the "normal work controls" range for all but the most limiting (i.e., most conservative) case of RAW=100 and baseline CDF=1E-4, and even then, the values are just above the thresholds for establishment of risk management actions. Risk management actions for the above sensitivity study case also remain within the range of "establish risk management actions" range of the NUMARC 93-01 table, even for large RAW values.

It is recognized that the above values are calculated using the internal events PRA. Consideration should also be given to the CDF and LERF contribution from external events. Since these metrics are not quantified, or integrated with internal events at many plants, it is reasonable to provide some margin to account for their contribution. Therefore, it would be prudent to consider risk management actions for the removal of

barriers from components with higher RAW values, even if the ICDP and ILERP are within the “normal work controls” region. In particular, controls on maintenance unavailabilities of the remaining train should be considered.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic change by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of Amendment,” as discussed below:

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

Response: No.

Barriers are not an initiator to any accident previously evaluated. The probability of an accident previously evaluated is not significantly increased. Barriers support the operation of equipment assumed to mitigate the effects of accidents previously evaluated. The proposed relaxation may only be applied to a single train of a multiple train Technical Specification system at a given time for a given category of initiating event, or to multiple trains of a multiple train Technical Specification system provided the affected barriers protect against different categories of initiating events. Therefore, for any given category of initiating event, the ability to perform the assumed safety function is preserved. The consequences of an accident occurring during the time allowed when barriers are not capable of performing their required support function are no different from the consequences of the same accident while relying on the ACTIONS of the supported Technical Specification systems. The proposed change does not involve a significant increase in the consequences of accidents previously evaluated.

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

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

Response: No.

No new or different accidents result from using the proposed change. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements or eliminate any existing requirements. The changes do not alter assumptions made

in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

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

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

Response: No.

The proposed change allows for a limited period of time in which barriers may be unable to perform their required support function without declaring the supported systems inoperable. A risk analysis has shown that this provision will not have a significant effect on plant risk. In addition, regulatory requirements in 10 CFR 50.65(a)(4) require risk assessment and risk management, which will ensure that plant risk is not significantly increased.

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

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

5.2 Applicable Regulatory Requirements/Criteria

The proposed change does not change existing requirements for systems used to meet regulatory requirements to be OPERABLE, except that a limited period of time is allowed for a barrier which cannot perform its required support function without considering the supported system inoperable. The barrier may only affect one train of one or more multiple train Technical Specification systems or for more than one train of one or more multiple train Technical Specification systems provided each train is affected by a different initiating event category. Therefore, the proposed change provides a limited exception to the single failure criterion, consistent with that allowed by Completion Times in the Technical Specifications.

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

6.0 Environmental Consideration

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as

defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

7.0 References

None

Insert 1

LCO 3.0.9 When one or more trains of a system are supported by barriers that cannot provide their related support function(s), any associated LCOs do not have to be declared not met for up to 30 days provided that at least one train of the system is OPERABLE and supported by barriers capable of providing their related support function(s), and risk is assessed and managed. If LCO 3.0.9 is concurrently applied to more than one train of a system, the barriers supporting each of these trains must provide their related support function(s) for different categories of initiating events. At the end of this 30 days, the barriers must be able to perform their required support function(s), or the associated LCO(s) shall be declared not met.

Insert 2

LCO 3.0.9 Bases

LCO 3.0.9 establishes that systems may be considered OPERABLE when associated barriers are not capable of providing their required support function(s).

Barriers are insulation, doors, walls, floor plugs, curbs, hatches, installed barriers, mechanical devices, or other barriers, not explicitly described in Technical Specifications, that support the performance of the function of systems described in the Technical Specifications. This LCO states that the supported system is not considered to be inoperable solely due to required barriers not capable of performing their required support function(s). LCO 3.0.9 allows up to 30 days before declaring the LCOs associated with the supported system(s) not met. A maximum time of 30 days is placed on each use of this allowance to ensure that as barriers are found or are otherwise made unavailable, they are restored. If the 30 days expires and the barrier is unable to perform its associated support function, the supported system's LCO must be declared not met and the ACTIONS followed.

This provision does not apply to barriers which support ventilation systems or to fire barriers. The Technical Specifications for ventilation systems provide specific Conditions for inoperable barriers. Fire barriers are addressed by 10 CFR 50, Appendix R, and associated plant programs.

The provisions of LCO 3.0.9 are justified because of the low risk associated with barriers not being capable of performing their required support function. This provision is based on consideration of the following initiating event categories:

----- Reviewer's Note -----

LCO 3.0.9 may be expanded to other initiating event categories provided plant-specific analysis demonstrates that the frequency of the additional initiating events is bounded by the generic analysis provided in TSTF-421 or plant-specific approval is obtained from the NRC.

- Loss of coolant accidents;
- High energy line breaks outside of containment;
- Feedwater line breaks;
- Internal flooding;
- External flooding;
- Turbine missile ejection; and
- Tornado or high wind.

The risk impact of the barrier(s) which cannot perform their required support function(s) must be addressed pursuant to the risk assessment and management provision of the Maintenance Rule, 10 CFR 50.65 (a)(4), and associated implementation guidance (NRC Regulatory Guide 1.182). This guidance provides for the consideration of dynamic plant configuration issues, emergent conditions, and other aspects pertinent to plant operation with the barrier(s) unable to perform their required support function(s). These considerations may result in risk management and other compensatory actions being required during the 30 day period.

LCO 3.0.9 may be applied to one or more trains of a system supported by barriers that cannot provide their related support function(s), provided that:

- At least one train of the supported system is OPERABLE and not supported by barriers that cannot provide their related support function(s), and
- Risk is assessed and managed.

In addition, if applied concurrently to more than one train of a multiple train supported system, the barriers supporting each of these trains must provide their related support function(s) for different categories of initiating events. For example, LCO 3.0.9 may be applied to more than one train of a multiple train supported system if the compromised barrier for one train protects against internal flooding and the compromised barrier for the other train protects against tornado missiles. In this example, the compromised barrier may be the same physical barrier but serve different protection functions for each train.

except as provided by
[LCO 3.0.8 and LCO
3.0.9]

1.1 Definitions

OPERABLE - OPERABILITY (continued)

perform its specified safety function(s) are also capable of performing their related support function(s).

PHYSICS TESTS

PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation.

These tests are:

- a. Described in Chapter [14, Initial Test Program] of the FSAR,
- b. Authorized under the provisions of 10 CFR 50.59, or
- c. Otherwise approved by the Nuclear Regulatory Commission.

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.

QUADRANT POWER TILT (QPT)

QPT shall be defined by the following equation and is expressed as a percentage of the Power in any Core Quadrant (P_{quad}) to the Average Power of all Quadrants (P_{avg}).

$$QPT = 100 [(P_{quad} / P_{avg}) - 1]$$

RATED THERMAL POWER (RTP)

RTP shall be a total reactor core heat transfer rate to the reactor coolant of [2544] MWt.

REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME

The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until electrical power is interrupted at the control rod drive trip breakers. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and ~~LCO 3.0.6~~, LCO 3.0.6, and LCO 3.0.9.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours,
- b. MODE 4 within 13 hours, and
- c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4 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 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.

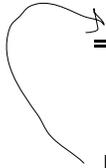
Exceptions to this Specification are stated in the individual Specifications.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.



INSERT 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

3.0.9

LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ul style="list-style-type: none">a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification andb. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. <p>There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.</p>

BASES

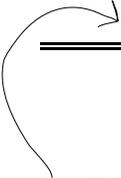
LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.8, 3.1.9, and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.


INSERT 2

1.1 Definitions

MASTER RELAY TEST A MASTER RELAY TEST shall consist of energizing each required master relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required master relay. The MASTER RELAY TEST shall include a continuity check of each associated required slave relay. The MASTER RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.

MODE A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

OPERABLE - OPERABILITY A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

except as provided by
[LCO 3.0.8 and LCO
3.0.9]

PHYSICS TESTS PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:

- a. Described in Chapter [14, Initial Test Program] of the FSAR,
- b. Authorized under the provisions of 10 CFR 50.59, or
- c. Otherwise approved by the Nuclear Regulatory Commission.

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates and the LTOP arming temperature, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and ~~LCO 3.0.6~~, LCO 3.0.6, and LCO 3.0.9.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours,
- b. MODE 4 within 13 hours, and
- c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4 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 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.

LCO 3.0.4 is only applicable for entry into a MODE or others specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.



INSERT 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

3.0.9

LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ul style="list-style-type: none">a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification andb. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. <p>There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.</p>

BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.8 and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.



INSERT 2

1.1 Definitions

LEAKAGE (continued)

2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE, or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System,

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE, and

c. Pressure Boundary LEAKAGE

LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

OPERABLE - OPERABILITY

except as provided by
[LCO 3.0.8 and LCO
3.0.9]

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

PHYSICS TESTS

PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation.

These tests are:

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and ~~LCO 3.0.6~~, LCO 3.0.6, and LCO 3.0.9.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours,
- b. [MODE 4 within 13] hours, and
- c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4 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 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.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

STE LCOs is optional. When an STE LCO is desired to be met but is not met, the ACTIONS of the STE LCO shall be met. When an STE LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.



INSERT 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

3.0.9

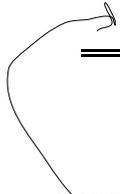
LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ul style="list-style-type: none">a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification andb. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. <p>There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.</p>

BASES

LCO 3.0.7 (continued)

conduct of the special test, those Surveillances need not be performed unless specified by the ACTIONS or SRs of the STE LCO.

ACTIONS for STE LCOs provide appropriate remedial measures upon failure to meet the STE LCO. Upon failure to meet these ACTIONS, suspend the performance of the special test and enter the ACTIONS for all LCOs that are then not met. Entry into LCO 3.0.3 may possibly be required, but this determination should not be made by considering only the failure to meet the ACTIONS of the STE LCO.



INSERT 2

1.1 Definitions

MINIMUM CRITICAL POWER RATIO (MCPR) The MCPR shall be the smallest critical power ratio (CPR) that exists in the core [for each class of fuel]. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.

MODE A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

OPERABLE - OPERABILITY A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

except as provided by [LCO 3.0.8 and LCO 3.0.9]

PHYSICS TESTS PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation.

These tests are:

- a. Described in Chapter [14, Initial Test Program] of the FSAR,
- b. Authorized under the provisions of 10 CFR 50.59, or
- c. Otherwise approved by the Nuclear Regulatory Commission.

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and ~~LCO 3.0.6~~, LCO 3.0.6, and LCO 3.0.9.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 2 within [7] hours,
- b. MODE 3 within 13 hours, and
- c. MODE 4 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, and 3.

- REVIEWER'S NOTE -

The brackets around the time provided to reach MODE 2 allow a plant to extend the time from 7 hours to a plant specific time. Before the time can be changed, plant specific data must be provided to support the extended time.

LCO 3.0.4 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 for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified

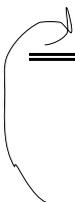
LCO Applicability

LCO 3.0.6 (continued)

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

LCO 3.0.7

Special Operations LCOs in Section 3.10 allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Special Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.



INSERT 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

3.0.9

LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
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LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
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LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ul style="list-style-type: none"> a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. <p>There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.</p>
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BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of the other LCO are not required to be met, unless specified in the Special Operations LCO. If conditions exist such that the Applicability of any other LCO is met, all the other LCO's requirements (ACTIONS and SRs) are required to be met concurrent with the requirements of the Special Operations LCO.

 INSERT 2

1.1 Definitions

MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core [for each class of fuel]. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE - OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: <ol style="list-style-type: none">Described in Chapter [14, Initial Test Program] of the FSAR,Authorized under the provisions of 10 CFR 50.59, orOtherwise approved by the Nuclear Regulatory Commission.
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.

except as provided by [LCO 3.0.8 and LCO 3.0.9]

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and ~~LCO 3.0.6~~, LCO 3.0.6, and LCO 3.0.9.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 2 within 7 hours,
- b. MODE 3 within 13 hours, and
- c. MODE 4 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, and 3.

LCO 3.0.4 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 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.

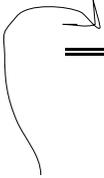
Exceptions to this Specification are stated in the individual Specifications.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

LCO Applicability

LCO 3.0.7 (continued)

Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.



INSERT 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

3.0.9

LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
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LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
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LCO 3.0.2	<p>LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:</p> <ul style="list-style-type: none"> a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. <p>There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.</p>
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BASES

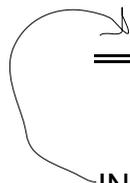
LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of the other LCO are not required to be met, unless specified in the Special Operations LCO. If conditions exist such that the Applicability of any other LCO is met, all the other LCO's requirements (ACTIONS and SRs) are required to be met concurrent with the requirements of the Special Operations LCO.



INSERT 2