

Industry/TSTF Standard Technical Specification Change Traveler

LCO 3.6.2.5 and 3.6.3.3 Applicability

Classification: 1) Technical Change

Priority: 2) Medium

NUREGs Affected: ☐ 1430 ☐ 1431 ☐ 1432 ☒ 1433 ☐ 1434

Description:

For LCO 3.6.2.5, "Drywell-to-Suppression Chamber Differential Pressure," and LCO 3.6.3.3, "Primary Containment Oxygen Concentration," the Applicability is modified by deleting "following startup" from the "a" item, and deleting "prior to the next scheduled reactor shutdown" from the "b" item. The associated Bases are revised accordingly. The inconsistent use of inequality is also corrected.

Justification:

Background

The Applicability for LCO 3.6.2.5 and 3.6.3.3 states:

MODE 1 during the time period:

- a. From [24] hours after THERMAL POWER is > [15]% RTP following startup, to
- b. [24] hours prior to reducing THERMAL POWER to < [15]% RTP prior to the next scheduled reactor shutdown.

Need for Change

The Applicability for LCO 3.6.2.5 and 3.6.3.3 contain conditional criteria ("following startup" and "prior to the next scheduled reactor shutdown") that require interpretation, which typically leads to overly conservative limitations.

The Applicability for LCOs 3.6.2.5 and 3.6.3.3 allows 24 hours prior to reducing to < 15% RTP (which is being revised to ≤ 15% RTP to agree with Required Action B.1) and 24 hours after increasing to > 15% RTP before requiring the drywell pressure limit be met and the primary containment to be inerted. However, these time allowances only apply if "prior to the next scheduled reactor shutdown" and/or "following startup." Since the generic terms "shutdown" and "startup" are not specifically defined, they can be interpreted in a variety of ways. For example, "shutdown" can be interpreted as cold shutdown, hot shutdown, or any reduction in power, such as in interpreting the 10 CFR 50.72 requirement to report commencing a 'shutdown' required by Tech Specs. Conversely, startup can be interpreted as entering MODE 2 from MODE 3 or 4, going critical, or any power increase. Additionally, "next scheduled" reactor shutdown involves additional interpretive possibilities further complicating both literal compliance and compliance with the intent.

Proposed Change

The proposed change eliminates the qualifiers "following startup" and "prior to the next scheduled reactor shutdown" from the Applicability conditions of LCO 3.6.2.5 and 3.6.3.3. Both the lack of clarity and the potential for overly conservative restrictions are eliminated with this change.

5/19/2001

Justification

NOTE: Throughout this discussion, references to "inerted" are synonymous with meeting the LCO requirement to be <4 volume percent oxygen.

Periodically, scenarios may occur while operating > 15% RTP (after establishing an inerted atmosphere) that require drywell entry for repair or inspection (e.g., steam leaks, equipment malfunction, etc.). This drywell entry typically requires (for dose rate considerations) reactor power to be reduced to ~10% RTP, and for personnel safety considerations, dictate de-inerting the drywell atmosphere. For plant availability considerations, considerations for minimizing transients on plant systems, and possibly the need to maintain power-operating conditions to effectively inspect and/or identify the necessary repairs, it is typically desired to avoid a complete plant shutdown. However, based on the possible interpretations of the Applicability, the de-inerting and re-inerting may not be allowed by the Specification while > 15% RTP. This could add a significant number of days to the maintenance activity delaying a return to full power operation. In the event the allowance to utilize 24 hours "following startup" is interpreted to apply after a startup from MODE 3 or 4, LCO 3.0.4 will require plant operation remain < 15% RTP until the primary containment is fully inerted.

The Bases discusses the 24 hour allowance as a reasonable time to allow plant personnel to perform inerting or de-inerting recognizing that "the potential for an event that generates significant hydrogen is low" during this 24 hour window while > 15% RTP. The considerations outlined in the Bases for this allowance are based solely on providing flexibility for "an operational problem" and on probabilities of an event during these windows. Certainly the number of "windows" presented (i.e., the number of occurrences of de-inerting for 24 hours while > 15% RTP) is related to the overall probability assumption. However, it is completely unrelated to past or future operating history that is whether or not the plant shutdowns completely and plans/schedules the shutdown, or whether the plant holds at ~10% RTP. Given that these infrequent scenarios that require drywell entry for repair or inspection could be performed as part of a complete shutdown (which would allow utilizing the 24-hour allowance) allowing the 24-hour flexibility in conjunction with a partial shutdown to 10 % RTP does not invalidate the Bases assumptions.

Since the time when the NRC has granted this 24-hour allowance for plants that require inerting, the overall industry-wide frequency of mid-cycle plant shutdowns has been dramatically reduced. This reflects a dramatic reduction in the frequency of these 24-hour windows being presented for application. As such, even if this change broadens the scope of scenarios when the flexibility could be utilized, the overall frequency of utilization of these windows is still anticipated to be minimal.

Furthermore, since the existing allowance does not lend itself to consistent interpretation, this change would likely result in some minimal reduction in regulatory interaction (including reduced probability of NOEDs, cited violations, and requests for interpretation).

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Determination of No Significant Hazards Considerations

A change is proposed to the Applicability statements of LCO 3.6.2.5 and 3.6.3.3 which eliminates the use of a [24] allowance to perform or remove inerting of the containment only "following startup" and "prior to the next scheduled reactor shutdown."

In accordance with the criteria set forth in 10 CFR 50.92, the Industry has evaluated these proposed Improved Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

A change is proposed to the Applicability statements of LCO 3.6.2.5 and 3.6.3.3 which eliminates the use of a [24] hour allowance to perform or remove inerting of the containment only "following startup" and "prior to the next scheduled reactor shutdown." Inerting or the removal of inerting of the containment is not an initiator to any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The consequences of an accident during use of the revised allowance to perform or remove inerting are no different than the consequences of an accident during the use of the current allowance. Therefore, the consequences of an accident previously evaluated are not significantly increased by this change. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

A change is proposed to the Applicability statements of LCO 3.6.2.5 and 3.6.3.3 which eliminates the use of a [24] hour allowance to perform or remove inerting of the containment only "following startup" and "prior to the next scheduled reactor shutdown." The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

A change is proposed to the Applicability statements of LCO 3.6.2.5 and 3.6.3.3 which eliminates the use of a [24] hour allowance to perform or remove inerting of the containment only "following startup" and "prior to the next scheduled reactor shutdown." In current plant operation, mid-cycle shutdowns are rare events. Therefore, the slightly more frequent use of this allowance will result in a slightly higher risk of an accident occurring while the containment is not inerted. However, this effect of on the margin of safety is not considered significant. Therefore, this change does not involve a significant reduction in a margin of safety.

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Revision Description:
Original Issue

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OG Revision 0**Revision Status: Active****Next Action: NRC****Owners Group Review Information**

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Affected Technical Specifications

Appl. 3.6.2.5 Drywell-to-Suppression Chamber Differential Pressure

Appl. 3.6.2.5 Bases Drywell-to-Suppression Chamber Differential Pressure

Appl. 3.6.3.3 Primary Containment Oxygen Concentration

Appl. 3.6.3.3 Bases Primary Containment Oxygen Concentration

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Drywell-to-Suppression Chamber Differential Pressure
3.6.2.5

3.6 CONTAINMENT SYSTEMS

3.6.2.5 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.5 The drywell pressure shall be maintained \geq [1.5] psid above the pressure of the suppression chamber.

APPLICABILITY: MODE 1 during the time period:

- a. From [24] hours after THERMAL POWER is $>$ [15]% RTP ~~following~~ ~~status~~ to
- b. [24] hours prior to reducing THERMAL POWER to \leq [15]% RTP ~~prior to the next scheduled reactor shutdown.~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-suppression chamber differential pressure not within limit.	A.1 Restore differential pressure to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to \leq [15]% RTP.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.5.1	Verify drywell-to-suppression chamber differential pressure is within limit.	12 hours

3.6 CONTAINMENT SYSTEMS

3.6.3.3 Primary Containment Oxygen Concentration

LCO 3.6.3.3 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODE 1 during the time period:

- a. From [24] hours after THERMAL POWER is $> [15]\%$ RTP following startup to
- b. [24] hours prior to reducing THERMAL POWER to $\leq [15]\%$ RTP prior to the next scheduled reactor shutdown

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment oxygen concentration not within limit.	A.1 Restore oxygen concentration to within limit.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to $\leq [15]\%$ RTP.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.3.1 Verify primary containment oxygen concentration is within limits.	7 days

BASES

APPLICABILITY

at $\geq 15\%$ RTP

Drywell-to-suppression chamber differential pressure must be controlled when the primary containment is inert. The primary containment must be inert in MODE 1, since this is the condition with the highest probability for an event that could produce hydrogen. It is also the condition with the highest probability of an event that could impose large loads on the primary containment.

a power increase to $> 15\%$ RTPa power decrease $\leq 15\%$ RTPbefore a power decrease $\leq 15\%$ RTP

Inerting primary containment is an operational problem because it prevents primary containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the unit startup and is de-inerted as soon as possible in the unit shutdown. As long as reactor power is $\leq 15\%$ RTP, the probability of an event that generates hydrogen or excessive loads on primary containment occurring within the first [24] hours following a startup or within the last [24] hours prior to a shutdown is low enough that these "windows," with the primary containment not inerted, are also justified. The [24] hour time period is a reasonable amount time to allow plant personnel to perform inerting or de-inerting.

of a power increase $> 15\%$ RTP

ACTIONS

A.1

If drywell-to-suppression chamber differential pressure is not within the limit, the conditions assumed in the safety analyses are not met and the differential pressure must be restored to within the limit within 8 hours. The 8 hour Completion Time provides sufficient time to restore differential pressure to within limit and takes into account the low probability of an event that would create excessive suppression chamber loads occurring during this time period.

B.1

If the differential pressure cannot be restored to within limits within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. This is done by reducing power to $\leq 15\%$ RTP within 12 hours. The 12 hour Completion Time is reasonable, based on operating experience, to reduce reactor power from full power conditions in an orderly manner and without challenging plant systems.

BASES

APPLICABILITY

When increasing power to 715% RTP or decreasing power to $\leq 15\%$ RTP

The primary containment oxygen concentration must be within the specified limit when primary containment is inerted, except as allowed by the relaxations during startup and shutdown addressed below. The primary containment must be inert in MODE 1, since this is the condition with the highest probability of an event that could produce hydrogen.

at 715% RTP

Inerting the primary containment is an operational problem because it prevents containment access without an appropriate breathing apparatus.

a power increase $> 15\%$ RTP

Therefore, the primary containment is inerted as late as possible in the plant startup and de-inerted as soon as possible in the plant shutdown.

As long as reactor power is $\leq 15\%$ RTP, the potential for an event that generates significant hydrogen is low and the primary containment need not be inert. Furthermore, the probability of an event that generates hydrogen occurring within the first [24] hours of a startup or within the last [24] hours before a shutdown, is low enough that these "windows," when the primary containment is not inerted, are also justified. The [24] hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting.

a power decrease $\leq 15\%$ RTP

ACTIONS

A.1

If oxygen concentration is ≥ 4.0 v/o at any time while operating in MODE 1, with the exception of the relaxations allowed during startup and shutdown, oxygen concentration must be restored to < 4.0 v/o within 24 hours. The 24 hour Completion Time is allowed when oxygen concentration is ≥ 4.0 v/o because of the availability of other hydrogen mitigating systems (e.g., hydrogen recombiners) and the low probability and long duration of an event that would generate significant amounts of hydrogen occurring during this period.

B.1

If oxygen concentration cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, power must be reduced to $\leq [15]\%$ RTP within 8 hours. The 8 hour Completion Time is reasonable, based on operating experience, to reduce reactor power from full power conditions in an orderly manner and without challenging plant systems.