May 16, 2012

TSTF-12-11
PROJ0753

Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Transmittal of TSTF-540, Revision 0, "Provide Completion Times in Lieu of Immediate Shutdown (RITSTF Initiative 6)"

Enclosed for NRC review is Revision 0 of TSTF-540, "Provide Completion Times in Lieu of Immediate Shutdown (RITSTF Initiative 6)." TSTF-540 is applicable to Boiling Water Reactor plants.

We request that NRC review of the TSTF-540 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 managed technical specifications), in accordance with 10 CFR 170.11(a)(1)(iii). This request is consistent with the NRC letter to A. R. Pietrangelo on this subject dated January 10, 2003 (ADAMS accession number ML030100090).

Should you have any questions, please do not hesitate to contact us.

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Enclosure

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PWROG
PWR Owners Group

BWR
OWNERS' GROUP

Technical Specifications Task Force
Improved Standard Technical Specifications Change Traveler

Provide Completion Times in Lieu of Immediate Shutdown (RITSTF Initiative 6)

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

Classification 1) Technical Change | Recommended for CLIIP?: Yes

Correction or Improvement: Improvement | NRC Fee Status: Exempt

Benefit: Avoids a Plant Shutdown | Changes Marked on ISTS Rev 4.0

See attached.

Revision History

OG Revision 0 Revision Status: Active

Revision Proposed by: LC

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 10-Apr-12

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 26-Apr-12

TSTF Review Information

TSTF Received Date: 30-Apr-12 Date Distributed for Review 30-Apr-12

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 16-May-12

NRC Review Information

NRC Received Date: 16-May-12

Affected Technical Specifications

Action 3.6.4.3.B	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed C	
Action 3.6.4.3.B	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	New Action	
Action 3.6.4.3.B Bases	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	New Action	
Action 3.6.4.3.B Bases	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed C	
Action 3.6.4.3.C	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed D	
Action 3.6.4.3.C Bases	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Renamed D	
Action 3.6.4.3.D	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Deleted	
Action 3.6.4.3.D Bases	SGT System		NUREG(s)- 1433 1434 Only
	Change Description:	Deleted	
Action 3.7.4.C	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	New Action	
Action 3.7.4.C	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Renamed D	
Action 3.7.4.C Bases	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Renamed D	
Action 3.7.4.C Bases	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	New Action	
Action 3.7.4.D	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Renamed E	
Action 3.7.4.D Bases	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Renamed E	
Action 3.7.4.E	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Deleted	
Action 3.7.4.E Bases	[MCREC] System		NUREG(s)- 1433 Only
	Change Description:	Deleted	
Action 3.7.4.C	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Renamed D	
Action 3.7.4.C	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	New Action	

Action 3.7.4.C Bases	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	New Action	
Action 3.7.4.C Bases	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Renamed D	
Action 3.7.4.D	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Renamed E	
Action 3.7.4.D Bases	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Renamed E	
Action 3.7.4.E	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Deleted	
Action 3.7.4.E Bases	[CRFA] System		NUREG(s)- 1434 Only
	Change Description:	Deleted	

1.0 Summary Description

The proposed change provides risk-informed Technical Specifications (TS) modifications which will improve plant safety by precluding certain unnecessary, exigent plant shutdowns. It revises the current TS for the Standby Gas Treatment System and the control room environmental control system in the Improved Standard Technical Specifications (ISTS) NUREGs (NUREG-1433 and NUREG-1434) when both subsystems are inoperable to provide a 24 hour Completion Time (CT) to restore at least one subsystem to Operable status.

2.0 Detailed Description

In response to the Nuclear Regulatory Commission (NRC) initiative to improve plant safety by developing risk-informed TS, the industry has undertaken a program for defining and obtaining risk-informed TS modifications. This proposed change will modify the Required Actions applicable when both trains of the Standby Gas Treatment (SGT) System and the control room environmental control system are inoperable to provide a 24 hour completion Time to restore at least one train to Operable status.

The TS modified by the proposed change are:

NUREG-1433, BWR/4 Plants

- 3.6.4.3, Standby Gas Treatment (SGT) System; and
- 3.7.4, [Main Control Room Environmental Control (MCREC)] System.

NUREG-1434, BWR/6 Plants

- 3.6.4.3, Standby Gas Treatment (SGT) System; and
- 3.7.3, [Control Room Fresh Air (CRFA)] System.

The Bases are modified to reflect the changes to the Specifications.

The MCREC and CRFA systems perform similar functions. Licensees may utilize a different name for the system. For the purposes of this document, the control room environmental control system will be referred to as the MCREC System.

For BWR/4 plants, the SGT System Required Actions will require one MCREC subsystem to be Operable in order to use the 24 hour Completion Time. The MCREC System Required Actions will require one SGT subsystem to be Operable in order to use the 24 hour Completion Time.

For BWR/6 plants, the SGT System Required Actions will require one Residual Heat Removal (RHR) Containment Spray subsystem to be Operable in order to use the 24 hour Completion Time. The MCREC System Required Actions will require one SGT subsystem or one RHR Containment Spray subsystem to be Operable in order to use the 24 hour Completion Time.

Risk assessments performed to support the proposed change are consistent with the general guidance of Regulatory Guide (RG) 1.174 and RG 1.177 (References 1 and 2). RG 1.174 provides the basic general framework for risk-informed decision-making based on five key principles and RG 1.177 provides specific guidance for risk-informed TS changes consistent with the guidance given in RG 1.174.

Radiological assessments using realistic assumptions determined that offsite and control room doses would be within regulatory limits with the SGT System or MCREC System unavailable when following the proposed Required Actions.

Attachment 1 contains the proposed model application for plant-specific adoption of the change.

3.0 Technical Evaluation

3.1 Risk Assessment

The SGT and MCREC systems have no direct effect on either core damage or large early release. For this reason, these systems are not normally modeled in probabilistic risk assessments (PRAs). The evaluation of the acceptability of the proposed change examines the "challenge frequency" for the subject systems. It is important to note that the "challenge frequency" or "challenge probability" discussed in this document are not a regulatory metric, but rather a means of providing a quantitative measure of the term "low probability."

The SGT System scrubs fission products from the secondary containment prior to offsite release, while the MCREC System isolates the normal control room ventilation system and provides a protected environment to control room occupants. Both systems perform a mitigation function in response to a radiation release. In addition to mitigating the design basis accident events, these systems are designed to ensure that the regulatory dose criteria will be met following a Maximum Hypothetical Accident (MHA). The MHA can be viewed as an event beyond the design basis Loss of Coolant Accident (LOCA) resulting from a temporary interruption or significant degradation of Emergency Core Cooling System (ECCS) injection that would prolong the duration of core uncovery. The loss of cooling is assumed sufficient to result in significant iodine releases from the fuel. The releases are considered typical of what may be expected for a Three Mile Island (TMI-2) type event. MHA events can be seen as events in which core damage has started, but its progression is subsequently stopped. In PRAs this event is a subset of the core damage event. Therefore, the frequency of MHA is conservatively bounded by the Core Damage Frequency (CDF). A CDF value of 1.0E-4/year conservatively bounds the CDF values for all of the operating BWRs. In the following evaluation, this value is used as a bounding estimate for the MHA.

The expected challenge probability during the proposed CT can be calculated as follows:

System Challenge Probability During CT= (CF) (CT/8760)

The system Challenge Frequency (CF) is calculated as the frequency of a MHA. The resulting system challenge probability, assuming a 24-hour CT, is presented in Table 3-1.

Table 3-1 Probability of System Challenge During Proposed Completion Time

System	Proposed CT for Inoperable System (hrs)	Challenge Frequency (per year)	System Challenge Probability during Proposed CT
Standby Gas Treatment (SGT) System	24	1.0E-04	2.7E-07
Main Control Room Environmental Control (MCREC) System	24	1.0E-04	2.7E-07

It can be seen from the above table that the challenge probabilities during the proposed CT for the SGT and MCREC systems are very low.

The proposed 24 hour CT is intended to provide the operating staff additional time to restore at least one subsystem to Operable status while the plant remains at power. The low probability of system challenge during the proposed CT compared to qualitative considerations of transition risk from Mode 1 to Mode 3 support allowing a limited period of time to restore at least one subsystem of the inoperable system.

3.2 Radiological Assessment

A radiological assessment was performed to determine the consequences of limiting events with the SGT System or the MCREC System unavailable. The radiological assessment considered BWR plants with all three types of containments: Mark I, II and III. A BWR/4 plant with a Mark II containment is used to generically represent all BWR plants with Mark I and II containments, and a BWR/6 plant with a Mark III containment models the remaining plants. In the case of Mark III plants, the evaluation considered the effect of SGTS with and without crediting the RHR Containment Spray function for activity removal.

For each of the plant types, the following cases were examined:

1. MHA with conservative assumptions (referred to as the "Base Case"): The MHA is an event beyond the LOCA with a short duration of fuel uncovery resulting from at least temporary interruption or significant degradation of ECCS injection. The MHA is the accident addressed in 10CFR100.11 and 10CFR50.67 and can be judged to be similar to the Three Mile Island (TMI) accident. The SGTS is designed to mitigate

such accidents. The radiological assessment is based on the conservative assumptions required by NRC regulations and regulatory guidance for nuclear plant licensing.

2. MHA with realistic assumptions: For this case, the same degree of core damage (and activity release to the Primary Containment) is assumed as was assumed for the Base Case, but the accident has been analyzed with more realistic assumptions. For example, a more realistic atmospheric dispersion is assumed rather than the 95th percentile value assumed during the early period of the Base Case.

3. LOCA with successful ECCS and minimal core damage: This is a design basis large break LOCA in which the ECCS is largely effective in preventing damage to the reactor core. Some minimal core damage is assumed. The offsite and control room dose limits are met without the SGT System or the MCREC System. Therefore, this case is not discussed further.

4. LOCA-induced Severe Accident: A core melt accident with reactor vessel melt-through and impairment of the Primary Containment function. The SGTS and MCREC are not designed to mitigate such accidents. The offsite and control room dose limits are not met with or without the SGT System or the MCREC System. Therefore, this case is not discussed further.

There are two types of standard MHA source terms (activity release to the Primary Containment) and associated dose rate calculation methodologies that are approved by the NRC. The first is that described in TID-14844 (Ref. 6) and Regulatory Guide 1.3 (Ref. 7) (the "TID" source term). The TID source term assumes an instantaneous release to the Primary Containment of all of the reactor core noble gas and half of the radioiodine with the physical form of the radioiodine being predominately gaseous. The dose effect of the TID source term is measured by the acute whole body dose and the committed dose to the thyroid. The licensing dose limits for the MHA using the TID source term are 25 rem whole body and 300 rem thyroid for specified offsite locations and 5 rem whole body and 30 rem thyroid for the Control Room.

The second approved source term type is the Alternative Source Term of Regulatory Guide 1.183 (Ref. 8); the "AST". The AST is assumed to be the time-dependent release of all of the reactor core noble gas and 30% of the radioiodine (as well as smaller percentages of other radionuclides) with the physical form of the release being predominately particulate. The licensing dose limits for the MHA using the AST are 25 rem Total Effective Dose Equivalent (TEDE) for the offsite locations and 5 rem TEDE for the control room.

The AST source term was evaluated, but the results and conclusions are also valid for the TID source term. Although the timing and physical form of the activity released to the containment and the dose metric (e.g., thyroid dose or TEDE) are different, the amount of activity released is similar. One could expect the absolute doses for the TID source term to be greater (in terms of fraction of dose limit), but the relative effectiveness of the SGT System for the various sequences would be similar. In the case of the TID source term dominated by gaseous iodine, the filtration impact for a typical 95% efficient charcoal

adsorber would be about a factor of 20 reduction in the committed thyroid dose due to inhalation. For the particulate-dominated AST, the HEPA filtration impact on inhalation dose would typically be greater, as much as a factor of 100; but the TEDE dose metric also considers external exposure which is largely due to unfilterable noble gas. Therefore, there are compensating impacts of SGT System on dose for each metric.

Control room doses were not explicitly calculated. Rather, the relative contributions of immersion and inhalation to the 30-day Low Population Zone TEDE have been identified and used to determine the dose to the control room occupants. The effect of CR emergency filtration was quantified by normalizing the estimated dose without emergency filtration by the estimated dose with filtration to determine a value called "MCREC effectiveness."

The Tables 3-2 and 3-3 describe the results of the evaluation. The following acronyms are used in the tables:

CEDE	Committed Effective Dose Equivalent
TEDE	Total Effective Dose Equivalent
CR	Control Room
EAB	Exclusion Area Boundary
LPZ	Low Population Zone

The following Notes apply to Tables 3-2 and Tables 3-3

1. Doses are cumulative for 720 hours.

2. EAB doses are “worst two-hour” doses.

3. MCREC Effectiveness is the ratio of Estimated CR dose without filtration to dose with filtration (estimated CR doses are rounded off; MCREC effectiveness value is based on unrounded CR dose values).

4. EAB and the LPZ TEDE dose limits are 25 rem; CR TEDE dose limit is 5 rem.

Table 3-2: Results for BWR/4 Cases							
Case Number and Accident Type	**Location**	**Whole Body (rem)**	**CEDE (rem)**	**TEDE (rem)**	**MCREC Effectiveness**	**Est. CR TEDE w/MCREC (rem)**	**Est. CR TEDE w/o MCREC (rem)**
Case 1: Base Case MHA, with SGTS	EAB	2.91	6.08	8.99	-	-	-
	LPZ	2.07	1.24	3.31	-	-	-
	CR	-	-	-	6.3	2	10
Case 2: Base Case MHA, without SGTS	EAB	7.17	90.3	97.5			
	LPZ	3.52	47.3	50.8			
	CR	-	-	-	9.9	50	470
Case 3: MHA with realistic assumptions, with SGTS	LPZ	0.59	0.09	0.68	-	-	-
	CR	-	-	-	3.3	0.3	1
Case 4: MHA with realistic assumptions, without SGTS	LPZ	0.68	2.60	3.28	-	-	-
	CR	-	-	-	9.3	3	30

Table 3-3: Results for BWR/6 Cases

Case Number and Accident Type	Location	Whole Body (rem)	CEDE (rem)	TEDE (rem)	MCREC Effectiveness	Est. CR TEDE w/MCREC (rem)	Est. CR TEDE w/o MCREC (rem)
Case 1: Base Case MHA, no sprays, with SGTS	EAB	5.94	14.7	20.6	-	-	-
	LPZ	2.68	7.11	9.79	-	-	-
	CR	-	-	-	14	5	70
Case 2: Base Case MHA, no sprays, without SGTS	EAB	5.98	41.5	47.5	-	-	-
	LPZ	3.66	37.9	41.6	-	-	-
	CR	-	-	-	18	20	380
Case 3: Base Case MHA, with sprays, with SGTS	EAB	5.30	13.0	18.3	-	-	-
	LPZ	2.48	2.25	4.73	-	-	-
	CR	-	-	-	8.9	3	20
Case 4: Base Case MHA, with sprays, without SGTS	EAB	6.72	27.5	34.2	-	-	-
	LPZ	3.01	19.4	22.4	-	-	-
	CR	-	-	-	17	10	190
Case 5: MHA with realistic assumptions, no sprays, with SGTS	LPZ	0.39	0.15	0.54	-	-	-
	CR	-	-	-	5.5	0.3	2
Case 6: MHA with realistic assumptions, no sprays, without SGTS	LPZ	0.4	0.69	1.09	-	-	-
	CR	-	-	-	12	0.6	7
Case 7: MHA with realistic assumptions, with sprays, with SGTS	LPZ	0.39	0.12	0.5	-	-	-
	CR	-	-	-	4.6	0.3	1
Case 8: MHA with realistic assumptions, with sprays, without SGTS	LPZ	0.39	0.45	0.84	-	-	-
	CR	-	-	-	10	0.5	5

The evaluation determined the following with regard to the effect of the SGTS on offsite doses:

- Without SGTS, the offsite dose for the MHA Base Case, using the conservative regulatory analysis, exceeds the 25 rem TEDE limit for all BWR plant models considered. This is expected because the SGTS was incorporated into the plant design to provide dose mitigation for such an event.

- Without SGTS, the offsite dose for the MHA when evaluated with a realistic dispersion value (χ/Q) and other more realistic assumptions is within the acceptance limits (about 10% of the limit or less).

The evaluation determined the following with regard to the effect of the SGTS on control room doses:

- For the Base Case MHA, both the SGTS and the MCREC System are needed to meet the control room dose limit.

- When the control room doses are evaluated with a realistic χ/Q and other more realistic assumptions, the MHA doses are within the acceptance limit with either SGTS or MCREC being available. For the BWR/6 MHA case with realistic assumptions, when RHR Containment Spray is credited, neither the SGTS nor MCREC is required to meet the control room dose.

The evaluation determined the following with regard to the effect of the MCREC on control room doses:

- For the Base Case MHA, both the SGTS and the MCREC System are needed to meet the control room dose limit.

- When the control room doses are evaluated with a realistic χ/Q and other more realistic assumptions, the MHA doses are within the acceptance limit with either SGTS or MCREC being available. For the BWR/6 MHA case with realistic assumptions, when RHR Containment Spray is credited, neither the SGTS nor MCREC is required to meet the control room dose.

Table 3-4 summaries the Technical Specification Required Actions necessary to meet control room and offsite dose limits. Table 3-5 summarizes the most limiting Required Actions, which are included in the proposed revisions to the Technical Specifications.

Table 3-4 Summary of Required Actions Needed to Meet Dose Limits

Location / Analysis	BWR/4 SGT Inoperable	BWR/4 MCREC Inoperable	BWR/6 SGT Inoperable	BWR/6 MCREC Inoperable
Control Room - MHA Base Case	Dose Limits not met	Dose Limits not met	Dose Limits not met	Dose Limits not met
Control Room - Realistic MHA	One MCREC subsystem required	One SGT subsystem required	One RHR Containment Spray subsystem or MCREC subsystem required	One RHR Containment Spray subsystem or SGT subsystem required
Offsite - MHA Base Case	Dose Limits not met	MCREC does not affect offsite dose	One RHR Containment Spray subsystem required	MCREC does not affect offsite dose
Offsite - Realistic MHA	No Required Actions needed	MCREC does not affect offsite dose	No Required Actions needed	MCREC does not affect offsite dose

Table 3-5 Summary of Proposed Required Actions

	SGT Inoperable	MCREC Inoperable
BWR/4	One MCREC subsystem required	One SGT subsystem required
BWR/6	One RHR Containment Spray subsystem required	One RHR Containment Spray subsystem or SGT subsystem required

3.3 System Evaluations

The proposed change does not modify the existing design basis for the systems. Rather, the changes are related to risk-informed improvements to the CTs when a system is inoperable. The revised CTs remain consistent with the basic principles established in TS for dealing with inoperable equipment.

The proposed changes are intended to be used for emergent conditions and not for planned removal of redundant systems from service. This is consistent with the Bases of LCO 3.0.2, which state, "[I]f intentional entry into ACTIONS would result in redundant equipment being inoperable, alternatives should be used instead. Doing so limits the time both subsystems/trains of a safety function are inoperable and limits the time conditions exist which may result in LCO 3.0.3 being entered." The proposed change modifies the new Conditions which a Note which states that the Conditions are not applicable when the second subsystem is intentionally made inoperable. The proposed Bases contain the following explanation of the Note:

> "The Condition is modified by a Note stating it is not applicable if the second [SGT or MCREC] subsystem is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one subsystem is inoperable for any reason and the second subsystem is discovered to be inoperable, or if both subsystem are discovered to be inoperable at the same time. "

3.3.1 Standby Gas Treatment (SGT) System

Description: The SGT System consists of two redundant subsystems, each with its own set of ductwork, dampers, charcoal filter train, and controls. The function of the SGT System during Modes 1, 2, and 3 is to ensure that radioactive materials that leak from the primary containment into the secondary containment following a Design Basis Accident (DBA) are filtered and adsorbed prior to air being exhausted to the environment. In addition, the SGT System maintains the reactor-building (secondary containment) atmosphere at a negative pressure.

Limiting Condition for Operation (LCO): Two SGT subsystems shall be operable.

Applicability: Modes 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [primary or secondary] containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

Typical Licensing Basis for LCO: The SGT System is designed to fulfill 10 CFR 50, Appendix A, GDC 41, "Containment Atmosphere Cleanup." The design basis for the SGT System is to mitigate the consequences of a loss of coolant accident and fuel handling accident. For all events analyzed, the SGT System is automatically initiated to reduce, via filtration and adsorption, the radioactive material released to the environment.

Condition Requiring Entry into Shutdown Action Statement: Condition D applies when two SGT subsystems are inoperable while in Mode 1, 2, or 3. It requires being in Mode 3 in 12 hours.

Proposed Modification to Shutdown Required Actions: Condition D is deleted. A new Condition, Condition B, is added which is applicable when two SGT subsystems are inoperable in Mode 1, 2, or 3. New Condition B requires at least one SGT subsystem to

be restored to Operable status within 24 hours. New Condition B is modified by a Note which states the Condition is not applicable when second SGT subsystem is intentionally made inoperable. For BWR/4 plants, new Condition B requires verification within 1 hour that one MCREC subsystem is Operable. For BWR/6 plants, new Condition B requires verification within 1 hour that one RHR Containment Spray subsystem is Operable.

Reason for Proposed Change

The proposed 24-hour CT for both SGT subsystems inoperable provides time to address emergent conditions including planning, resource reallocation, parts procurement, corrective maintenance, etc. The considered scenario is one SGT subsystem inoperable for preplanned maintenance and the second subsystem to fail unexpectedly. The licensee must determine which subsystem can be returned to service more readily, based upon the nature of the failure, parts availability, repair time, etc., and then proceed to restore one of the inoperable subsystems. The proposed change provides a limited time for the licensee to restore at least one subsystem of the inoperable system.

Engineering Evaluation

a. Defense-in-Depth Considerations

The system is specifically designed to ensure regulatory dose criteria will be met following LOCA and Non-LOCA design basis events. The SGT System is not designed to mitigate large releases associated with severe core damage events. To understand the safety issues associated with the SGT system, it is useful to consider the plant challenges when the SGT System is inoperable.

It should be noted that should either primary or secondary containment be inoperable, restoration is required by the Technical Specifications within a very short period of time or the plant is shutdown. The proposed change does not affect those requirements.

As discussed in Section 3.2, on a realistic basis the offsite doses are well within the acceptance limits without the SGT System and with no other compensatory measures. Using the MHA Base Case, offsite doses are within limits with an inoperable SGT System if a RHR Containment Spray subsystem is Operable.

As discussed in Section 3.2, on a realistic basis the control room doses are well within the acceptance limits with an inoperable SGT System if the MCREC System is Operable. For BWR/6 plants, the RHR Containment Spray subsystem is also effective in limiting the control room doses.

Considering both the offsite and control room doses and the MHA Base Case and realistic analyses, the BWR/4 proposed Required Actions will require that one MCREC subsystem is Operable in order to utilize the proposed 24 hour Completion time. For BWR/6 plants, the Required Actions will require that at least one RHR Containment

Spray subsystem is Operable to utilize the proposed 24 hour Completion Time. This provides effective defense-in-depth.

The following addresses the specific defense-in-depth considerations given in RG 1.174 and RG 1.177.

- *A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation.*

  During the proposed CT, the balance between prevention of core damage (e.g., ECCS response to a pipe break) and consequence mitigation (fission product release) is shifted slightly to rely more on prevention of core damage. The proposed Required Actions lessen the effect on consequence mitigation. Prevention of containment failure is not affected. Given the short duration of the CT discussed above, the overall balance is still reasonable.

- *Over-reliance on programmatic activities as compensatory measures associated with the change in the LB is avoided.*

  Programmatic activities are not presently used, or proposed to be used, to compensate for weaknesses in related plant design. Therefore, this change does not result in any over-reliance on programmatic activities.

- *System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers).*

  The proposed CT only applies during a loss of function of the SGT System, which results in a loss of the SGT System redundancy and independence. The existing system design does not provide diversity. However, no risk outliers are created due to the demonstrated low probability of a system challenge and offsite releases.

- *Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed.*

  The proposed change does not increase the potential for common cause failure in the SGT system. System failure is assumed to occur prior to use of the proposed CT.

- *Independence of barriers is not degraded.*

  The proposed change has no impact on plant design and therefore no effect on the independence of fission product barriers. Neither primary nor secondary containment integrity requirements are being modified in a manner that would degrade the existing independence.

- *Defenses against human errors are preserved.*

  No compensatory operator actions have been identified. Therefore, the proposed change has no effect on the defense against human errors.

- *The intent of the plant's design criteria is maintained.*

  The proposed change does not affect the design, fabrication, construction, testing, or performance requirements for structures, systems, and components important to safety. The proposed change revises a CT within the TS. The plant's design criteria do not address CTs for inoperable systems. Therefore, the proposed change has no effect on the plant's compliance with the design criteria.

b. Safety Margins

The following addresses the specific safety margin considerations given in RG 1.174 and RG 1.177.

- *Codes and standards or their alternatives approved for use by the NRC are met.*

  The applicable Codes and Standards are used to design and test the SGT System. The proposed CT change has no effect on the application of approved codes and standards relevant to the subject system.

- *Safety analysis acceptance criteria in the LB (e.g., FSAR, supporting analyses) are met, or proposed revisions provide sufficient margin to account for analysis and data uncertainty.*

  The safety analysis acceptance criteria are not affected by the proposed change. The safety analysis is based on the system design and the proposed change does not affect the design of the system.

c. Three-Tiered Implementation Approach

- *Tier 1: PRA capability and risk insights*

  The SGT System has no direct contribution to CDF or Large Early Release Frequency (LERF) and is therefore not normally modeled in PRAs. Thus, PRA capability is not relevant. Risk insights (i.e., challenge frequency) support the implementation of the proposed change.

- *Tier 2: Avoidance of risk-significant plant configurations*

  The SGT System has no direct contribution to CDF or LERF and is therefore not normally modeled in PRAs. There are no risk-significant configurations during the time SGT System is inoperable, but configurations that could affect defense-in-depth are addressed.

- *Tier 3: Risk-informed configuration risk management*

  The SGT System has no direct contribution to CDF or LERF and is therefore not normally modeled in PRAs. However, it does fall within the scope of the Maintenance Rule and is considered in evaluations performed in accordance with 10 CFR 50.65(a)(4).

3.3.2 Main Control Room Environmental Control (MCREC) System

The following evaluation applies to the MCREC system, as well as to systems with different names that perform the same control room environmental control function.

Description: The MCREC System provides a protected environment from which occupants can control the plant following an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

This evaluation addresses the primary safety function (i.e., protect the control room operators from radiological consequences during normal operation and design basis accident conditions). The function to protect the control room operators from other events, such as internal or external fire and smoke, external toxic gas clouds, etc. is provided by the control room envelope. While the control room envelope is part of the same LCO as the MCREC System, inoperability of the envelope and the MCREC System are governed by separate Conditions within the TS. No changes are being proposed for the Required Actions and CT for the inoperable MCREC System due to inoperable control room boundary. However, to reduce the risk to the control room occupants while both trains of the MCREC are inoperable for reasons other than an inoperable control room envelope, a Required Action is proposed which requires implementing mitigating actions immediately when both MCREC trains are inoperable. These are the same mitigating actions currently required by Required Action B.1 for an inoperable boundary.

Limiting Condition for Operation (LCO): Two MCREC subsystems shall be operable.

Applicability: Modes 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [primary or secondary] containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

Typical Licensing Basis for LCO: The MCREC System is designed to fulfill 10 CFR 50, Appendix A, GDC 19, "Control room." It is designed to provide a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity hazardous chemicals, or smoke. The safety related function of the MCREC System is provided by two independent and redundant high efficiency air filtration subsystems for treatment of recirculated air or outside supply air. The MCREC System is designed to maintain a habitable environment in the control room envelope for a 30 day continuous occupancy after a DBA, without exceeding operator dose limits.

Condition Requiring Entry into Shutdown Action Statement: Condition E applies when two MCREC subsystems are inoperable for reasons other than an inoperable control room envelope while in Mode 1, 2, or 3. It requires being in Mode 3 in 12 hours.

Proposed Modification to Shutdown Required Actions: Condition E is deleted. A new Condition, Condition C, is added which is applicable when two MCREC subsystems are inoperable in Mode 1, 2, or 3 for reasons other than an inoperable control room envelope. New Condition C requires restoration of least one MCREC subsystem to Operable status within 24 hours. New Condition C is modified by a Note which states the Condition is not applicable when second MCREC subsystem is intentionally made inoperable. For BWR/4 plants, new Condition C requires verification within 1 hour that one SGT subsystem is Operable. For BWR/6 plants, new Condition C requires verification within 1 hour that one RHR Containment Spray subsystem or SGT subsystem is Operable.

Reason for Proposed Change:

The proposed 24-hour CT for both MCREC subsystems inoperable provides time to address emergent conditions including planning, resource reallocation, parts procurement, corrective maintenance, etc. The considered scenario is one MCREC subsystem inoperable for preplanned maintenance and the second subsystem to fail unexpectedly. The licensee must determine which subsystem can be returned to service more readily, based upon the nature of the failure, parts availability, repair time, etc., and then proceed to restore one of the inoperable subsystems. The proposed change provides a limited time for the licensee to restore at least one subsystem of the inoperable system.

Engineering Evaluation

a. Defense-in-Depth Considerations

The MCREC system has no effect on offsite dose. As discussed in Section 3.2, on a realistic basis the control room doses are well within the acceptance limits when the MCREC System is inoperable provided one SGT subsystem is Operable. For BWR/6 plants, the RHR Containment Spray subsystem is also effective in limiting the control room doses.

The MCREC System has no direct contribution to the core damage and large early release. The likelihood of having a radiation release that challenges the MCREC System during the proposed CT is low.

The BWR/4 proposed Required Actions will require that one SGT subsystem is Operable in order to utilize the proposed 24 hour Completion time. For BWR/6 plants, the Required Actions will require that one SGT subsystem or one RHR Containment Spray subsystem is Operable to utilize the proposed 24 hour Completion Time. This provides effective defense-in-depth.

The following addresses the specific defense-in-depth considerations given in RG 1.174 and RG 1.177.

- *A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation.*

  During the proposed CT, the balance between prevention of core damage (e.g., ECCS response to a pipe break) and consequence mitigation (fission product filtering) is shifted slightly to rely more heavily on prevention of core damage. The proposed Required Actions lessen the effect on consequence mitigation. Prevention of containment failure is not affected. Given the short duration of the CT discussed above, the overall balance is still reasonable.

- *Over-reliance on programmatic activities as compensatory measures associated with the change in the LB is avoided.*

  Programmatic activities are not presently used, or proposed to be used, to compensate for weaknesses in related plant design. Therefore, this change does not result in any over-reliance on programmatic activities

- *System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers).*

  The proposed CT only applies during a loss of function of MCREC System, which results in a loss of MCREC System redundancy and independence. The existing system design does not provide diversity in this circumstance. However, no risk outliers are created due to the demonstrated low probability of a system challenge.

- *Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed.*

  The proposed change does not increase the potential for common cause failure in the MCREC System. System failure is assumed to occur prior to use of the proposed CT.

- *Independence of barriers is not degraded.*

  The proposed change has no impact on the control room boundary. The TS requirements on the control room boundary are not affected by the proposed change.

- *Defenses against human errors are preserved.*

  No revised operator actions have been assumed in the evaluation. Therefore, the proposed change has no effect on the defense against human errors.

- *The intent of the plant's design criteria is maintained.*

  The proposed change does not affect the design, fabrication, construction, testing, or performance requirements for structures, systems, and components important to safety. The proposed change revises a CT within the TS. The plant's design criteria

do not address CTs for inoperable systems. Therefore, the proposed change has no effect on the plant's compliance with the design criteria.

b. Safety Margins

During the proposed CT for an inoperable MCREC system, mitigating actions will protect the control room personnel in the unlikely event of a radiation release. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

The following addresses the specific safety margin considerations given in RG 1.174 and RG 1.177.

- *Codes and standards or their alternatives approved for use by the NRC are met.*

  The applicable Codes and Standards are used to design and test the MCREC system. The proposed CT change has no effect on the application of approved codes and standards relevant to the subject system.

- *Safety analysis acceptance criteria in the LB (e.g., FSAR, supporting analyses) are met, or proposed revisions provide sufficient margin to account for analysis and data uncertainty.*

  The safety analysis acceptance criteria are not affected by the proposed change. The safety analysis is based on the system design and the proposed change does not affect the design of the system.

c. Three-Tiered Implementation Approach

- *Tier 1: PRA capability and risk insights*

  The MCREC System has no direct contribution to CDF or LERF and is therefore not normally modeled in PRAs. Thus PRA capability is not relevant. Risk insights (i.e., challenge frequency) support the implementation of the proposed change.

- *Tier 2: Avoidance of risk-significant plant configurations*

  The MCREC System has no direct contribution to CDF or LERF and is therefore not normally modeled in PRAs. There are no risk-significant configurations during the time MCREC System is inoperable, but configurations that could affect defense-in-depth are addressed.

- *Tier 3: Risk-informed configuration risk management*

  The MCREC System has no direct contribution to CDF or LERF and is therefore not normally modeled in PRAs. However, it does fall within the scope of the Maintenance Rule and is considered in evaluations performed in accordance with

10 CFR 50.65(a)(4). Thus, application of configuration risk management is not necessary.

4.0 Regulatory Evaluation

4.1 Applicable Regulatory Requirements/Criteria

General guidance for evaluating the technical basis for proposed risk-informed changes is provided in Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance," of the NRC Standard Review Plan (SRP), NUREG-0800. More specific guidance related to risk-informed TS changes, including changes to TS CTs, is provided in SRP Section 16.1, "Risk-Informed Decisionmaking: Technical Specifications." The proposed change is consistent with the acceptance criteria in the SRP for risk-informed changes.

10 CFR 50.36 provides the requirement for all licenses to contain Technical Specifications. 10 CFR 50.36(c)(2) states that when a limiting condition for operation is not met, the licensee shall shut down the plant or follow any remedial action permitted by the technical specifications until the condition can be met. Thus, the regulatory requirements are not specific regarding the actions to be followed when Technical Specification requirements are not met. The proposed change to the Technical Specification Actions does not affect regulatory requirements.

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.

4.2 No Significant Hazards Consideration Determination

The proposed change provides risk-informed Technical Specifications (TS) modifications which will improve plant safety by precluding certain unnecessary, exigent plant shutdowns. It revises the current TS for the Standby Gas Treatment (SGT) System and the [Main Control Room Environmental Control] System when both subsystems are inoperable to provide a 24 hour Completion Time (CT) to restore at least one subsystem to Operable status.

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.

The proposed change provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. Entering into Technical Specification Actions is not an initiator of any accident previously evaluated. As a result, the probability of an accident previously evaluated is not significantly increased. The consequences of any accident previously evaluated that may occur during the proposed Completion Times are no different from the consequences of the same accident during the existing Completion Time. As a result, the consequences of any accident previously evaluated are not significantly increased.

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.

   The proposed change provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. No new or different accidents result from utilizing 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. The changes do not alter assumptions made in the safety analysis.

   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 provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. The justification demonstrates that there is an acceptably small likelihood of an event that would require the subject systems during the limited period of the proposed Completion Time. As a result, the change to the margin of safety is not significant.

   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.

5.0 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 effluents 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.

6.0 References

1. Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Revision 2 May 2011.
2. Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," Revision 1, May 2011.
3. WCAP-16125-NP-A, Revision 2, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown", August 2010.
4. Regulatory Guide 1.196, Revision 1, "Control Room Habitability at Light-Water Nuclear Power Reactors," January 2007.
5. NEI 99-03, "Control Room Habitability Assessment," June 2001.
6. J.J. DiNunno et al., “Calculation of Distance Factors for Power and Test Reactor Sites,” USAEC TID-14844, U.S. Atomic Energy Commission, 1962.
7. Regulatory Guide 1.3, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors”, June 1974.
8. Regulatory Guide 1.183, “Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors”, July 2000.

Attachment 1

Model Application for Adoption

[DATE] 10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

PLANT NAME
DOCKET NO. 50-[xxx]
SUBJECT: APPLICATION TO REVISE TECHNICAL SPECIFICATIONS TO ADOPT TSTF-540, "PROVIDE COMPLETION TIMES IN LIEU OF IMMEDIATE SHUTDOWN (RITSTF INITIATIVE 6)," USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS

Pursuant to 10 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 to adopt the changes described in TSTF-540, Revision 0, "Provide Completion Times in Lieu of Immediate Shutdown (RITSTF Initiative 6)."

Attachment 1 provides a description and assessment of the proposed changes and the requested confirmation of applicability. Attachment 2 provides the existing TS pages marked up to show the proposed changes. Attachment 3 provides revised (clean) TS pages. Attachment 4 provides existing TS Bases pages marked up to show the proposed changes.

Approval of the proposed amendment is requested by [date]. Once approved, the amendment shall be implemented within [ ] days.

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

[In accordance with 10 CFR 50.30(b), a license amendment request must be executed in a signed original under oath or affirmation. This can be accomplished by attaching a notarized affidavit confirming the signature authority of the signatory, or by including the following statement in the cover letter: "I declare under penalty of perjury that the foregoing is true and correct. Executed on (date)." The alternative statement is pursuant to 28 USC 1746. It does not require notarization.]

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

Sincerely,

[Name, Title]

Attachments:
1. Description and Assessment
2. Proposed Technical Specification Changes (Mark-Up)
3. Revised Technical Specification Pages
4. Proposed Technical Specification Bases Changes (Mark-Up)

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

ATTACHMENT 1 - DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

The proposed change improves plant safety by revising the current TS for the Standby Gas Treatment System and the [Main Control Room Environmental Control] System when both subsystems are inoperable to provide a 24 hour Completion Time (CT) to restore at least one subsystem to Operable status. The proposed amendment is consistent with TSTF-540, Revision 0, "Provide Completion Times in Lieu of Immediate Shutdown (RITSTF Initiative 6)."

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

[LICENSEE] has reviewed the model safety evaluation dated [DATE] as part of the Federal Register Notice of Availability. This review included a review of the Nuclear Regulatory Commission (NRC) staff evaluation, as well as the information provided in TSTF-540, Revision 0. As described in the subsequent paragraphs,][LICENSEE] has concluded that the justifications presented in the TSTF-540 proposal and the model 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] Technical Specifications.

2.2 Optional Changes and Variations

[LICENSEE is not proposing any variations or deviations from the Technical Specifications changes described in the TSTF-540, Revision 0, or the applicable parts of the NRC staff's model safety evaluation dated [DATE].] [LICENSEE is proposing the following variations from the Technical Specifications changes described in the TSTF-540, Revision 0, or the applicable parts of the NRC staff's model safety evaluation dated [DATE].]

[The [PLANT] Technical Specifications utilize different [numbering][and][titles] than the Standard Technical Specifications on which TSTF-540 was based. Specifically, [describe differences between the plant-specific Technical Specifications numbering and/or titles and the TSTF-540 numbering and titles.] These differences are administrative and do not affect the applicability of TSTF-540 to the [PLANT] Technical Specifications.]

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

[LICENSEE] requests adoption of TSTF-540, Revision 0, "Add Actions to Preclude Entry into LCO 3.0.3 - RITSTF Initiatives 6b & 6c," which is an approved change to the standard technical specifications (STS), into the [PLANT NAME, UNIT NOS] Technical Specifications. The proposed change revises the current Technical Specifications (TS) for the Standby Gas Treatment (SGT) System and the [Main Control Room Environmental Control] System when both subsystems are inoperable to provide a 24 hour Completion Time (CT) to restore at least one subsystem to Operable status.

[LICENSEE] has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) 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.

   The proposed change provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. Entering into Technical Specification Actions is not an initiator of any accident previously evaluated. As a result, the probability of an accident previously evaluated is not significantly increased. The consequences of any accident previously evaluated that may occur during the proposed Completion Times are no different from the consequences of the same accident during the existing Completion Time. As a result, the consequences of any accident previously evaluated are not significantly increased.

   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.

   The proposed change provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. No new or different accidents result from utilizing 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. The changes do not alter assumptions made in the safety analysis.

   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 provides a short Completion Time for the SGT System and the [MCREC] System Technical Specifications to restore an inoperable subsystem for conditions under which the existing Technical Specifications require a plant shutdown. The justification demonstrates that there is an acceptably small likelihood of an event that

would require the subject systems during the limited period of the proposed Completion Time. As a result, the change to the margin of safety is not significant.

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

Based on the above, [LICENSEE] 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.

4.0 ENVIRONMENTAL EVALUATION

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 effluents 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.

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 [Two] SGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [secondary] containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGT subsystem inoperable.	A.1 Restore SGT subsystem to OPERABLE status.	7 days
B. ---------- NOTE ---------- Not applicable when second SGT subsystem intentionally made inoperable. ---------- Two SGT subsystems inoperable in MODE 1, 2, or 3.	*B.1 Verify at least one [Main Control Room Environmental Control] subsystem is OPERABLE.* AND *B.2 Restore at least one SGT subsystem to OPERABLE status.*	*1 hour* *24 hours*
~~C~~B. Required Action and associated Completion Time of Condition A *or B* not met in MODE 1, 2, or 3.	~~C~~B.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.	12 hours
~~D~~C. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~D~~C.1 Place OPERABLE SGT	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
assemblies in the [secondary] containment or during OPDRVs.	subsystem in operation. OR *DC*~~C~~.2.1 Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. AND	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	DC.2.2 Initiate action to suspend OPDRVs.	Immediately
~~D. Two SGT subsystems inoperable in MODE 1, 2, or 3.~~	~~D.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.~~	~~12 hours~~
E. Two SGT subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.	E.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. AND	Immediately
	E.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ [10] continuous hours [with heaters operating].	[31 days OR In accordance with the Surveillance Frequency Control Program]

3.7 PLANT SYSTEMS

3.7.4 [Main Control Room Environmental Control (MCREC)] System

LCO 3.7.4 Two [MCREC] subsystems shall be OPERABLE.

----------NOTE----------
The main control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [secondary] containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One [MCREC] subsystem inoperable for reasons other than Condition B.	A.1	Restore [MCREC] subsystem to OPERABLE status.	7 days
B. One or more [MCREC] subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. *---------- NOTE ----------* *Not applicable when second [MCREC] subsystem intentionally made inoperable.* *----------* *Two [MCREC] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.*	*C.1* *Verify at least one Standby Gas Treatment subsystem is OPERABLE.* *AND* *C.2* *Restore at least one [MCREC] subsystem to OPERABLE status.*	*1 hour* *24 hours*
D~~C~~. Required Action and associated Completion Time of Condition A*, B* or *C~~B~~* not met in MODE 1, 2, or 3.	*D~~C~~.1* ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.	 12 hours
E~~D~~. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- *E~~D~~.1* ----------NOTE---------- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] ---------- Place OPERABLE [MCREC] subsystem in [pressurization] mode. OR *E~~D~~.2.1* Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.	 Immediately Immediately

	AND *ED*~~D~~.2.2 Initiate action to suspend OPDRVs.	Immediately
~~E. Two [MCREC] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.~~	~~E.1 NOTE LCO 3.0.4.a is not applicable when entering MODE 3.~~ ~~Be in MODE 3.~~	 ~~12 hours~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two [MCREC] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. OR One or more [MCREC] subsystems inoperable due to an inoperable CRE boundary during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment. AND F.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate each [MCREC] subsystem for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].	[31 days OR In accordance with the Surveillance Frequency Control Program]
SR 3.7.4.2	Perform required [MCREC] filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]

BASES

ACTIONS (continued)

subsystem could result in the radioactivity release control function not being adequately performed. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SGT System and the low probability of a DBA occurring during this period.

B.1 and B.2

If both SGT subsystems are inoperable in MODE 1, 2, or 3, at least one SGT subsystem must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second SGT subsystem is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one subsystem is inoperable for any reason and the second subsystem is discovered to be inoperable, or if both subsystems are discovered to be inoperable at the same time. In addition, at least one [Main Control Room Environmental Control (MCREC)] subsystem must be verified to be OPERABLE within 1 hour. In the event of an accident, the [MCREC] subsystem will reduces the consequences to occupants of the control room due to the inoperable SGT subsystems. At least one SGT subsystem must be returned to OPERABLE status within 24 hours. The 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

C~~B~~.1

----------REVIEWER'S NOTE ----------
Adoption of a MODE 3 end state requires the licensee to make the following commitments:

1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.

2. [LICENSEE] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

If the SGT subsystem*(s)* cannot be restored to OPERABLE status within the required Completion Time in MODE 1, 2, or 3, the plant must be

brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 3) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action C~~B~~.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

BASES

ACTIONS (continued)

The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

DC.1, *DC*.2.1, and *DC*.2.2

During movement of [recently] irradiated fuel assemblies, in the [secondary] containment or during OPDRVs, when Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE SGT subsystem should immediately be placed in operation. This action ensures that the remaining subsystem is OPERABLE, that no failures that could prevent automatic actuation have occurred, and that any other failure would be readily detected.

An alternative to Required Action *DC*.1 is to immediately suspend activities that represent a potential for releasing a significant amount of radioactive material to the [secondary] containment, thus placing the plant in a condition that minimizes risk. If applicable, movement of [recently] irradiated fuel assemblies must immediately be suspended. Suspension of these activities must not preclude completion of movement of a component to a safe position. Also, if applicable, actions must immediately be initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

The Required Actions of Condition *DC* have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving [recently] irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of [recently] irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

~~D.1~~

~~REVIEWER'S NOTE~~

~~Adoption of a MODE 3 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.~~

~~BASES~~

~~ACTIONS (continued)~~

~~2. [LICENSEE] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.~~

~~If both SGTS subsystems are inoperable in MODE 1, 2, or 3, the SGT system may not be capable of supporting the required radioactivity release control function. Therefore, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.~~

~~Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 3) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low risk state.~~

~~Required Action D.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.~~

~~The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.~~

E.1 and E.2

When two SGT subsystems are inoperable, if applicable, movement of [recently] irradiated fuel assemblies in [secondary] containment must immediately be suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must immediately be initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

BASES

ACTIONS (continued)

Required Action E.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving [recently] irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of [recently] irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ [10] continuous hours ensures that [both] subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation [with the heaters on (automatic heater cycling to maintain temperature)] for ≥ [10] continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters. [The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

OR

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

----------REVIEWER'S NOTE----------
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.
----------]

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

BASES

ACTIONS (continued)

C.1 and C.2

If both [MCREC] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable control room boundary (i.e., Condition B), at least one [MCREC] subsystem must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second [MCREC] subsystem is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. In addition, at least one Standby Gas Treatment (SGT) subsystem must be verified to be OPERABLE within 1 hour. In the event of an accident, the SGT subsystem will reduce the consequences to occupants of the control room and to the public due to the inoperable [MCREC] subsystems. At least one [MCREC] subsystem must be returned to OPERABLE status within 24 hours. The 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

DC.1

----------REVIEWER'S NOTE----------
Adopt of a MODE 3 end state requires the licensee to make the following commitments:

1. [Licensee] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.

2. [Licensee] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

In MODE 1, 2, or 3, if the inoperable [MCREC] subsystem*(s)* or the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 7) and because the time spent in MODE 3 to perform the necessary repairs to

restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action *DC*~~C~~.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

The allowed Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

ACTIONS (continued)

~~E~~.1, ~~E~~.2.1 and ~~E~~.2.2

The Required Actions of Condition ~~E~~ are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs, if the inoperable [MCREC] subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE [MCREC] subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

[Required Action ~~E~~.1 is modified by a Note alerting the operator to [place the system in the toxic gas protection mode if the toxic gas protection mode automatic transfer capability is inoperable.]

An alternative to Required Action ~~E~~.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [secondary] containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

~~E.1~~

~~REVIEWER'S NOTE~~

~~Adoption of a MODE 3 end state requires the licensee to make the following commitments:~~

~~1. [Licensee] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.~~

BASES

ACTIONS (continued)

2. [Licensee] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

If both [MCREC] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE boundary (i.e., Condition B), the [MCREC] System may not be capable of performing the intended function. Therefore, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 7) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action E.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1 and F.2

The Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

BASES

ACTIONS (continued)

During movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs, with two [MCREC] subsystems inoperable or with one or more [MCREC] subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [secondary] containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.]
[Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

OR

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

----------REVIEWER'S NOTE----------
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.
----------]

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 Two SGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment],
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGT subsystem inoperable.	A.1 Restore SGT subsystem to OPERABLE status.	7 days
B. ---------- NOTE ---------- Not applicable when second SGT subsystem intentionally made inoperable. ---------- Two SGT subsystems inoperable in MODE 1, 2, or 3.	*B.1 Verify at least one Residual Heat Removal Containment Spray subsystem is OPERABLE.* AND *B.2 Restore at least one SGT subsystem to OPERABLE status.*	*1 hour* *24 hours*
CB. Required Action and associated Completion Time of Condition A *or B* not met in MODE 1, 2, or 3.	*CB*.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.	12 hours
DC. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- *DC*.1 Place OPERABLE SGT	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
assemblies in the [primary or secondary containment] or during OPDRVs.	subsystem in operation. OR *DC*~~C~~.2.1 Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment]. AND	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	DC.2.2 Initiate action to suspend OPDRVs.	Immediately
~~D. Two SGT subsystems inoperable in MODE 1, 2, or 3.~~	~~D.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.~~	~~12 hours~~
E. Two SGT subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.	E.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment]. AND E.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ [10] continuous hours [with heaters operating].	[31 days OR In accordance with the Surveillance Frequency Control Program]

3.7 PLANT SYSTEMS

3.7.3 [Control Room Fresh Air (CRFA)] System

LCO 3.7.3 Two [CRFA] subsystems shall be OPERABLE.

----------NOTE----------
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment],
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One [CRFA] subsystem inoperable for reasons other than Condition B.	A.1	Restore [CRFA] subsystem to OPERABLE status.	7 days
B. One or more [CRFA] subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. *---------- NOTE ----------* *Not applicable when second [CRFA] subsystem intentionally made inoperable.* *----------* *Two [CRFA] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.*	*C.1.1* *Verify at least one Standby Gas Treatment subsystem is OPERABLE.* *OR* *C.1.2* *Verify at least one Residual Heat Removal Containment Spray subsystem is OPERABLE.* *AND* *C.2* *Restore at least one [CRFA] subsystem to OPERABLE status.*	*1 hour* *1 hour* *24 hours*
D~~C~~. Required Action and associated Completion Time of Condition A*, B* or *C~~B~~* not met in MODE 1, 2, or 3.	*D~~C~~.1* ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ---------- Be in MODE 3.	 12 hours
E~~D~~. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- *E~~D~~.1* ----------NOTE---------- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] ---------- Place OPERABLE [CRFA] subsystem in [isolation] mode. OR *E~~D~~.2.1* Suspend movement of	 Immediately Immediately

	[recently] irradiated fuel assemblies in the [primary and secondary containment]. AND	
	E~~D~~.2.2 Initiate action to suspend OPDRVs.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E. Two [CRFA] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.~~	~~E.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 3. ----------~~ ~~Be in MODE 3.~~	~~I~~ ~~12 hours~~
F. Two [CRFA] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs. OR One or more [CRFA] subsystems inoperable due to inoperable CRE boundary during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment]. AND F.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

BASES

ACTIONS

A.1

With one SGT subsystem inoperable, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE SGT subsystem is adequate to perform the required radioactivity release control function. However, the overall system reliability is reduced because a single failure in the OPERABLE subsystem could result in the radioactivity release control function not being adequately performed. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SGT subsystem and the low probability of a DBA occurring during this period.

B.1 and B.2

If both SGT subsystems are inoperable in MODE 1, 2, or 3, at least one SGT subsystem must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second SGT subsystem is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one subsystem is inoperable for any reason and the second subsystem is discovered to be inoperable, or if both subsystems are discovered to be inoperable at the same time. In addition, at least one Residual Heat Removal (RHR) Containment Spray subsystem must be verified to be OPERABLE within 1 hour. In the event of an accident, a RHR Containment Spray subsystem will reduce the consequences to occupants of the control room and the public due of the inoperable SGT subsystems. At least one SGT subsystem must be returned to OPERABLE status within 24 hours. The 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

C~~B~~.1

----------REVIEWER'S NOTE ----------
Adoption of a MODE 3 end state requires the licensee to make the following commitments:

1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.

2. [LICENSEE] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

If the SGT subsystem*(s)* cannot be restored to OPERABLE status within the required Completion Time in MODE 1, 2, or 3, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 4) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action *C*~~B~~.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the

BASES

ACTIONS (continued)

results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

DC.1, *DC*.2.1, and *DC*.2.2

During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs, when Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE SGT subsystem should be immediately placed in operation. This Required Action ensures that the remaining subsystem is OPERABLE, that no failures that could prevent automatic actuation have occurred, and that any other failure would be readily detected.

An alternative to Required Action *DC*.1 is to immediately suspend activities that represent a potential for releasing a significant amount of radioactive material to the secondary containment, thus placing the unit in a Condition that minimizes risk. If applicable, movement of [recently] irradiated fuel assemblies must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until OPDRVs are suspended.

The Required Actions of Condition *DC* have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving [recently] irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of [recently] irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

BASES

ACTIONS (continued)

D.1

----------REVIEWER'S NOTE ----------
Adoption of a MODE 3 end state requires the licensee to make the following commitments:

1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.

2. [LICENSEE] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

If both SGT subsystems are inoperable in MODE 1, 2, or 3, the SGT system may not be capable of supporting the required radioactivity release control function. Therefore, the plant must be brought to a MODE in which the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 4) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action D.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

E.1 and E.2

When two SGT subsystems are inoperable, if applicable, movement of [recently] irradiated fuel assemblies in the [primary and secondary containment] must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until OPDRVs are suspended.

Required Action E.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving [recently] irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of [recently] irradiated fuel assemblies would not be sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ [10] continuous hours ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation [with the heaters on (automatic heater cycling to maintain temperature)] for ≥ [10] continuous hours eliminates moisture on the adsorbers and HEPA filters. [The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

OR

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

----------REVIEWER'S NOTE----------
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.
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BASES

ACTIONS (continued)

C.1.1, C.1.2, and C.2

If both [CRFA] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable control room boundary (i.e., Condition B), at least one [CRFA] subsystem must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second [CRFA] subsystem is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time.. In addition, at least one Standby Gas Treatment (SGT) subsystem or one subsystem Residual Heat Removal (RHR) Containment Spray subsystem must be verified to be OPERABLE within 1 hour. In the event of an accident, a SGT subsystem or a RHR Containment Spray subsystem will reduce the consequences to occupants of the control room and the public due to the inoperable [CRFA] subsystems. At least one [CRFA] subsystem must be returned to OPERABLE status within 24 hours. The 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

DC.1

----------REVIEWER'S NOTE----------
Adoption of a MODE 3 end state requires the licensee to make the following commitments:

1. [Licensee] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.

2. [Licensee] will follow the guidance established in TSTF-IG-05-02, Implementation Guidance for TSTF-423, Revision 2, "Technical Specifications End States, NEDC-32988-A," November 2009.

In MODE 1, 2, or 3, if the inoperable [CRFA] subsystem*(s)* or the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 7) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action *DC*~~.~~.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.

The allowed Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

ACTIONS (continued)

~~E~~D.1, ~~E~~D.2.1 and ~~E~~D.2.2

The Required Actions of Condition ~~E~~D are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs, if the inoperable [CRFA] subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE [CRFA] subsystem may be placed in the isolation mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

[Required Action ~~E~~D.1 is modified by a Note alerting the operator to [place the system in the toxic gas protection mode if the toxic gas protection mode, automatic transfer capability is inoperable.]

An alternative to Required Action ~~E~~D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [primary and secondary containment] must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

~~E.1~~

~~If both [CRFA] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE boundary (i.e., Condition B), the [CRFA] System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, the plant must be brought to a MODE in which the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.~~

BASES

ACTIONS (continued)

~~Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 5) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.~~

~~Required Action E.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, 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.~~

~~The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.~~

F.1 and F.2

The Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs, with two [CRFA] subsystems inoperable or with one or more [CRFA] subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [primary and secondary containment] must be suspended immediately. Suspension of these activities shall not preclude completion of movement

BASES

ACTIONS (continued)

of a component to a safe position. If applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.] [Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

OR

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

----------REVIEWER'S NOTE----------
Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.
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SR 3.7.3.2

This SR verifies that the required CRFA testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test Frequencies and additional information are discussed in detail in the [VFTP].