UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 18, 2015

Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT - ISSUANCE OF AMENDMENT RE: ADOPTION OF TSTF-426, REVISION 5, "REVISE OR ADD ACTIONS TO PRECLUDE ENTRY INTO LIMITING CONDITION FOR OPERATION 3.0.3 – RITSTF INITIATIVES 6B AND 6C." (TAC NO. MF4272)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 256 to Renewed Facility Operating License No. DPR-20 for the Palisades Nuclear Plant. The amendment consists of changes to the technical specifications (TSs) in response to your application dated June 11, 2014 (Agencywide Documents Access and Management System Accession No. ML14162A079).

The amendment adopts Technical Specification Task Force (TSTF) traveler TSTF-426, Revision 5, "Revise or Add Actions to Preclude Entry into LCO [Limiting Condition for Operation] 3.0.3 - RITSTF Initiatives 6b and 6c," which is an approved change to the Standard Technical Specifications.

A copy of our related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:
1. Amendment No. 256 to DPR-20
2. Safety Evaluation

cc w/encls: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENTERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-255

PALISADES NUCLEAR PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 256
License No. DPR-20

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Nuclear Operations, Inc. (the licensee), dated June 11, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to the license amendment, and Paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-20 is hereby amended to read as follows:

> The Technical Specifications contained in Appendix A, as revised through Amendment No. 256, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

David L. Pelton, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License No. DPR-20
And Technical Specifications

Date of Issuance: May 18, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 256

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

Replace the following page of the Renewed Facility Operating License No. DPR-20 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating areas of change.

REMOVE	INSERT
Page 3	Page 3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3.4.9-2	3.4.9-2
3.4.9-3	3.4.9-3
3.7.10-2	3.7.10-2
3.7.10-3	3.7.10-3
3.7.11-1	3.7.11-1
3.7.11-2	3.7.11-2
3.7.11-3	3.7.11-3

(1) Pursuant to Section 104b of the Act, as amended, and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," (a) ENP to possess and use, and (b) ENO to possess, use and operate, the facility as a utilization facility at the designated location in Van Buren County, Michigan, in accordance with the procedures and limitation set forth in this license;

(2) ENO, pursuant to the Act and 10 CFR Parts 40 and 70, to receive, possess, and use source and special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Updated Final Safety Analysis Report, as supplemented and amended;

(3) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use byproduct, source, and special nuclear material as sealed sources for reactor startup, reactor instrumentation, radiation monitoring equipment calibration, and fission detectors in amounts as required;

(4) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material for sample analysis or instrument calibration, or associated with radioactive apparatus or components; and

(5) ENO, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operations of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act; to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) ENO is authorized to operate the facility at steady-state reactor core power levels not in excess of 2565.4 Megawatts thermal (100 percent rated power) in accordance with the conditions specified herein.

(2) The Technical Specifications contained in Appendix A, as revised through Amendment No. 256, and the Environmental Protection Plan contained in Appendix B are hereby incorporated in the license. ENO shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Fire Protection

ENO shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated December 12, 2012, as supplemented by letters dated February 21, 2013, September 30, 2013, October 24, 2013, December 2, 2013, April 2, 2014, May 7, 2014, June 17, 2014, August

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. < 375 kW pressurizer heater capacity available from electrical bus 1D, or electrical bus 1E, OR Required pressurizer heater capacity from electrical bus 1E not capable of being powered from an emergency power supply.	B.1 Restore required pressurizer heaters to OPERABLE status.	72 hours
C. ----------NOTE---------- Not applicable when the remaining electrical bus 1D or electrical bus 1E required pressurizer heaters intentionally made inoperable. --- < 375 kW pressurizer heater capacity available from electrical bus 1D, and electrical bus 1E, OR < 375 kW pressurizer heater capacity available from electrical bus 1D, and required pressurizer heater capacity from electrical bus 1E not capable of being powered from an emergency power supply.	C.1 Restore at least electrical bus 1D or electrical bus 1E required pressurizer heaters to OPERABLE status.	24 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition B or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 30 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	----------NOTE---------- Not required to be met until 1 hour after establishing a bubble in the pressurizer and the pressurizer water level has been lowered to within its normal operating band. ---------- Verify pressurizer water level is < 62.8%.	12 hours
SR 3.4.9.2	Verify the capacity of pressurizer heaters from electrical bus 1D, and electrical bus 1E is ≥ 375 kW.	18 months
SR 3.4.9.3	Verify the required pressurizer heater capacity from electrical bus 1E is capable of being powered from an emergency power supply.	18 months

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ----------NOTE---------- Not applicable when second CRV Filtration train intentionally made inoperable. ---------- Two CRV Filtration trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	C.2	Verify LCO 3.4.16, "PCS Specific Activity," is met.	1 hour
	AND		
	C.3	Restore at least one CRV Filtration train to OPERABLE status.	24 hour
D. Required Action and associated Completion Time of Condition A not met during CORE ALTERATIONS, during movement of irradiated fuel assemblies, or during movement of a fuel cask in or over the SFP.	D.1	Place OPERABLE CRV Filtration train in emergency mode.	Immediately
	OR		
	D.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	D.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	D.2.3	Suspend movement of a fuel cask in or over the SFP.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Two CRV Filtration trains inoperable during CORE ALTERATIONS, during movement of irradiated fuel assemblies, or during movement of a fuel cask in or over the SFP. OR One or more CRV Filtration trains inoperable due to an inoperable CRE boundary during CORE ALTERATIONS, during movement of irradiated fuel assemblies, or during movement of a fuel cask in or over the SFP.	E.1	Suspend CORE ALTERATIONS. AND	Immediately
	E.2	Suspend movement of irradiated fuel assemblies. AND	Immediately
	E.3	Suspend movement of a fuel cask in or over the SFP.	Immediately
F. Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3, or 4.	F.1	Be in MODE 3. AND	6 hours
	F.2	Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.11 Control Room Ventilation (CRV) Cooling

LCO 3.7.11 Two CRV Cooling trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4,
During CORE ALTERATIONS,
During movement of irradiated fuel assemblies,
During movement of a fuel cask in or over the Spent Fuel Pool (SFP).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRV Cooling train inoperable.	A.1 Restore CRV Cooling train to OPERABLE status.	30 days
B. ----------NOTE---------- Not applicable when second CRV Cooling train intentionally made inoperable. ---------- Two CRV Cooling trains inoperable in MODE 1, 2, 3, or 4.	B.1 Restore at least one CRV Cooling train to OPERABLE status.	24 hours

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours
D. Required Action and associated Completion Time of Condition A not met during CORE ALTERATIONS, during movement of irradiated fuel assemblies, or movement of a fuel cask in or over the SFP.	D.1	Place OPERABLE CRV Cooling train in operation.	Immediately
	OR		
	D.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	D.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	D.2.3	Suspend movement of a fuel cask in or over the SFP.	Immediately

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Two CRV Cooling trains inoperable during CORE ALTERATIONS, during movement of irradiated fuel assemblies, or movement of a fuel cask in or over the SFP.	E.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	E.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	E.3	Suspend movement of a fuel cask in or over the SFP.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Verify each CRV Cooling train has the capability to remove the assumed heat load.	18 months

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 256 TO RENEWED

FACILITY OPERATING LICENSE NO. DPR-20

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

DOCKET NO. 50-255

1.0 INTRODUCTION

By application dated June 11, 2014 (Agencywide Documents Access and Management System (ADAMS Accession No. ML14162A079), Entergy Nuclear Operations, Inc., (the licensee), requested changes to the technical specifications (TSs) for Palisades Nuclear Plant (PNP).

The proposed changes would adopt U.S. Nuclear Regulatory Commission (NRC)-approved Revision 5 to Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-426, "Revise or Add Actions to Preclude Entry into LCO [Limiting Condition for Operation] 3.0.3 – RITSTF [Risk-Informed TSTF] Initiatives 6b & 6c," dated November 22, 2011 (Reference 1). The licensee stated that the license amendment request (LAR) is consistent with the Notice of Availability of TSTF-426 announced in the *Federal Register* on May 30, 2013 (78 FR 32476). In general, the proposed changes would provide a short completion time to restore an inoperable system for conditions under which existing TSs require a plant shutdown.

Traveler TSTF-426 incorporated the approved Topical Report (TR) WCAP-16125-NP-A, Revision 2, "Justification for Risk-Informed Modifications to Selected TSs for Conditions Leading to Exigent Plant Shutdown" (Reference 2). into NUREG-1432, "Standard Technical Specifications Combustion Engineering [(CE)] Plants." TR WCAP-16125 provided the justification for risk-informed TS Regulatory Information Tracking System (RITS) Initiative 6 for nuclear plants with CE-designed nuclear steam supply systems. RITS Initiative 6 modifies selected exigent shutdown actions to allow a risk-informed operating time prior to shutdown.

2.0 REGULATORY EVALUATION

TR WCAP-16125 justified modifications to various TSs to add a Condition for loss of redundant features representing a loss of safety function for a system or component included within the scope of the plant TSs. It would replace Required Actions requiring either a default shutdown or explicit LCO 3.0.3 entry with a Required Action based on the risk significance for the system's

degraded condition. The Condition being added is for redundant trains discovered to be inoperable. The Condition only applies to discovery of an emergent condition resulting in redundant trains being inoperable, not from the second train intentionally made inoperable. The Completion Times (CTs) associated with the proposed actions are specified. The CTs are intentionally of short duration to allow for restoring the system to an operable condition, thereby avoiding the risk associated with an immediate controlled shutdown. In all TS changes, a 24-hour CT is justified. Table 1 summarizes the TS changes.

Table 1

TS	SYSTEM/COMPONENT	CONDITION	CURRENT CT	PROPOSED CT
3.4.9	Pressurizer	Two groups of heaters inoperable	Implicit LCO 3.0.3	24 hours
3.7.10	Control Room Ventilation (CRV) Filtration	Two trains inoperable (Modes 1-4) for reasons other than an inoperable boundary	Explicit LCO 3.0.3	24 hours*
3.7.11	Control Room Ventilation (CRV) Cooling	Two trains inoperable	Explicit LCO 3.0.3	24 hours

* Must include verification that LCO 3.4.16, "PCS Specific Activity," is met.

The Commission's regulatory requirements related to the content of the TS are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36, "Technical Specifications." Pursuant to 10 CFR 50.36(c), the TSs are required to include items in the following specific categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) LCOs; (3) surveillance requirements; (4) design features; and (5) administrative controls. The regulation at 10 CFR 50.36(c)(2) states: "When [an LCO] of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the [TSs] until the condition can be met."

Regulatory Guide (RG) 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Reference 3), describes a risk-informed approach, acceptable to the NRC, for assessing the nature and impact of proposed permanent licensing-basis changes by considering engineering issues and applying risk insights. RG 1.174 also provides risk acceptance guidelines for evaluating the results of such evaluations.

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 (Reference 4). Section 19.2 of the SRP states that a risk-informed application should be evaluated to ensure that the proposed change meets the following key principles:

- The proposed change meets the current regulations, unless it explicitly relates to a requested exemption.
- The proposed change is consistent with the defense-in-depth philosophy.
- The proposed change maintains sufficient safety margins.

- When proposed changes increase core damage frequency or risk, the increase(s) should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
- The impact of the proposed change should be monitored using performance measurement strategies.

The NRC staff reviewed the licensee's proposed change against (1) the requirements of 10 CFR 50.36, (2) the STS changes approved for adoption in the Notice of Availability of TSTF-426 issued in the FR on May 30, 2013 (78 FR 32476), and (3) the methodology approved in TR WCAP-16125, as documented in a safety evaluation (SE) dated May 24, 2010 (Reference 5). The TR WCAP-16125 was reviewed against the RG 1.174 and the SRP Section 19.2.

3.0 TECHNICAL EVALUATION

3.1 Conformance with the Five Key Principles of SRP Section 19.2 as Summarized in the SE of TR WCAP-16125

The changes proposed in TSTF-426 are consistent with NRC-approved TR WCAP-16125. In its SE (Reference 5), the NRC staff evaluated TR WCAP-16125 for conformance with the five key principles of SRP Section 19.2.

3.1.1 Compliance with Current Regulations

The regulations at 10 CFR 50.36 permit either a plant shutdown or other remedial actions specified by TSs when an LCO is not met. The proposed change provides new action requirements for conditions of equipment inoperability which currently require an immediate plant shutdown. Since such remedial actions are permitted per 10 CFR 50.36, the proposed change continues to comply with current regulations, and therefore, satisfy this key principle.

3.1.2 Defense-in-Depth

The proposed change addresses conditions where both trains of a system are inoperable, resulting in a loss of that system's function and a temporary reduction in the defense-in-depth capabilities of the plant. Each proposed change addresses the remaining available alternative system(s) capable of providing mitigation of events, and, where applicable, includes requirements to assure these required backup systems are operable. The reduced level of defense-in-depth is retained by verification that both trains (if applicable) of the backup system are operable. Therefore, this key principle is satisfied by the unique requirements identified for each proposed TS change.

3.1.3 Safety Margins

The proposed change does not have any impact on the use of NRC-approved codes and standards, nor do the changes impact any acceptance criteria used in a plant's licensing basis. Under the current TSs, if an accident occurs during the 6-hour controlled shutdown time of LCO 3.0.3 caused by two trains of these systems being unavailable, it could potentially result in offsite dose limits that do not meet NRC regulatory limits. Since the changes proposed do not

modify the design basis of the systems evaluated, extending the Allowed Outage Time (AOT) to 24 hours would have no quantitative effect on the dose consequence as compared to the existing condition. As such, the proposed changes would not significantly reduce the plant's available safety margin, and this key principle is satisfied.

3.1.4 Performance Monitoring

The proposed change would permit continued plant operation for short periods to address emergent equipment failures. Degradation of equipment performance could lead to excessive use of the new action requirements. This is adequately addressed by equipment performance monitoring required by 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," and therefore, this key principle is satisfied.

3.1.5 Risk Assessment

The risk of each of the TS LCOs for which action requirements are proposed is evaluated in TR WCAP-16125 by three methods, as described below.

Method 1:

For calculations of changes in the core damage frequency (ΔCDF), a bounding approach was applied to evaluate loss of function of a system by identifying the initiating events for which the system provides mitigation, and assuming that the event goes directly to core damage. No credit was taken for alternate mitigation strategies, and the baseline core damage frequency (CDF) was effectively assumed to be zero. The initiating event frequencies were taken from NUREG/CR-5750, "Rates of Initiating Events at U.S. Nuclear Power Plants: 1987 – 1995" (Reference 6). The licensee verified that initiating frequencies in NUREG/CR-5750 are bounding for PNP.

For calculations of changes in the large early release frequency (ΔLERF), a simplified approach using an event tree was developed to calculate the fraction of core damage events which result in large early releases. The event tree assessed containment isolation status, reactor coolant system (RCS) pressure, secondary side depressurization via the steam generators, thermally-induced steam generator tube rupture (SGTR), and reactor pressure vessel (RPV) lower head failure. Assumptions related to the potential impact on large early release frequency (LERF) for each of these events, and the associated basis for probabilities used in the analysis, are discussed below:

Containment Isolated

This event defines containment integrity prior to the core damage event. If containment is not isolated, then a large early release will result concurrent with core damage. A probability of 3.0E-3 was applied for an unisolated containment, which is identified as the upper end of the range used in the CE probabilistic risk assessment (PRA) models in TR WCAP-16125.

RCS Pressure – High

This event defines the RCS pressure at the time of core damage. If the pressure is low, then large early releases are assumed not to occur (except via an unisolated containment); otherwise, thermally-induced SGTR and high pressure melt ejection events are further evaluated. All core damage events involving loss-of-coolant accidents (LOCAs) are assumed to result in low or intermediate RCS pressure, and all other events result in high RCS pressure.

Steam Generator Depressurization

This event defines the status of the secondary side, and affects the next event which is the potential for induced SGTR. Depressurization of the secondary side occurs either due to prior operator response or due to failure of a safety relief valve. Based on NUREG/CR-1570, "Risk Assessment of Severe Accident Induced SGTR" (Reference 7), a probability of 0.9 is assigned for secondary depressurization.

Thermally-induced SGTR Occurs

This event represents a loss of steam generator tube integrity due to thermal stresses during a severe accident, which is assumed to result in a large early release. Two values are used, based on the status of the prior event, for steam generator depressurization. A probability of 0.5 is assigned when the steam generators are depressurized, and 0.01 otherwise. These values are conservative, based on the assumptions regarding tube age and integrity and based on neglecting operator actions to depressurize the RCS after core damage.

RPV Lower Head Failure Results in Containment Failure

This event represents a high pressure failure of the lower head, with an energetic discharge of the molten fuel and direct containment heating, leading to failure of containment. Based on NUREG/CR-6338, "Resolution of Direct Containment Heating Issue for all Westinghouse Plants with Large Dry Containments or Subatmospheric Containments" (Reference 8), the conditional containment failure probability given the event for CE-designed plants is 0.01, which is considered to be a bounding value.

None of the assessed initiating events include either SGTRs or other containment bypass events because the systems being evaluated do not mitigate these events. The NRC staff concludes that the simplified LERF event tree is reasonable and acceptable to support the evaluation of LERF for the scope of TR WCAP-16125.

Method 2:

For TS 3.4.9, Pressurizer Heaters, an evaluation of the increased likelihood of a plant trip due to degraded pressure control is made in order to calculate ΔCDF. The ΔLERF calculation for this TS is the same simplified approach described above for Method 1.

Method 3:

The remaining systems (and associated TSs) associated with mitigation of radiological releases with magnitudes less than those associated with LERF are CRV Filtration and CRV Cooling. There is no impact to either CDF or LERF, as the systems are provided to meet design basis dose limits. As described in TR WCAP-16125, an evaluation of the frequency of events which challenge the systems was made and compared to the acceptance guidelines of RG 1.174 applicable to ΔLERF in order to characterize the risk of these lesser releases. TR WCAP-16125 provided additional justification based on the availability of other systems which provide a degree of defense-in-depth for prevention of these releases. To assess the impact of the unavailability of these systems, TR WCAP-16125 examined the expected iodine releases for three categories of events:

- Beyond design basis scenarios that lead to large early releases,
- Maximum Hypothetical Accident (MHA), and
- LOCA and non-LOCA design-basis accidents (DBA).

To reduce the impact of an increased CT for the CRV Filtration, TR WCAP-16125 added conditions to verify that RCS specific activity is within limits and to verify that dose mitigating actions are available in the control room. For limited durations, such as the short-term operational conditions proposed by the increased CT for the CRV Filtration, the NRC staff has accepted credit for the use of respirators and potassium iodide on an interim basis to demonstrate that control room dose limits can be met.

Similarly, TR WCAP-16125 added pre-planned actions to ensure that the impact of loss of post-accident temperature control associated with an increased CT for the CRV Cooling is mitigated. Actions can include use of portable fans, temporary opening of doors or use of normal heating, ventilation, and air conditioning systems. To support this change, administrative controls will be provided to monitor the control room temperature to ensure control room habitability and operability of TS equipment. If compensatory measures impact the control room envelope, the operability of containment and auxiliary building post-accident air cleanup systems will be verified. The 24-hour CT proposed in TR WCAP-16125 for the CRV Filtration and the CRV Cooling is consistent with the allowed 24-hour period for the evaluation of a breach of the control room envelope provided in Traveler TSTF-448 (Reference 9).

The NRC staff has reviewed the bases for the increased CT for the CRV Filtration and the CRV Cooling and has determined that the proposed conditions and compensatory measures provide reasonable assurance that control room habitability will be adequately maintained during the proposed 24-hour CT.

External events, including internal fires and floods, were not evaluated in TR WCAP-16125. None of the systems being evaluated provide a primary mitigating function for external events, and therefore these events are not significant to the risk-informed decision.

The TR WCAP-16125 also evaluated sensitivity studies for key areas of uncertainty in the analyses. Specifically, TR WCAP-16125 considered uncertainties in the initiating event frequencies which are the input to the CDF calculations and showed that even assuming a 95

percent upper bound frequency would not result in excessive risk. These were also propagated into the LERF calculations with similar results. The TR WCAP-16125 also addressed uncertainties in the thermally-induced SGTR assumptions and SG depressurization assumptions, and demonstrated that the LERF results are not significantly impacted. These sensitivity studies performed to evaluate the key sources of uncertainty in the risk analyses adequately demonstrate the robustness of the results to support the proposed TS changes.

3.2 NRC Staff Evaluation of Proposed TS Changes

This section provides a description and NRC staff evaluation of each proposed TS change. The NRC staff's evaluation approves only the proposed changes to the TSs as described below.

3.2.1 TS 3.4.9 – Pressurizer

The pressurizer and its electrical heaters maintain a liquid-to-vapor interface to permit RCS pressure control during normal operations and in response to anticipated design basis transients. The PNP pressurizer heaters are designed with one heater group normally powered from a Class 1-E emergency electrical supply, and the second group normally powered from a non-Class 1-E electrical supply with the capability of being powered from an emergency power supply. The licensee stated in its LAR that this difference is administrative and does not affect the applicability of TSTF-426 to the PNP TS.

For clarity, the two groups of electrical pressurizer heaters mentioned in PNP TS 3.4.9, "Pressurizer," will be referred to in this SE as 'PNP TS pressurizer heaters.' Any additional pressurizer heaters not included in PNP TS 3.4.9 will be referred to 'additional heaters.'

The PNP TS pressurizer heaters, with their power provided by emergency alternating current power buses, are used to maintain RCS subcooling during a natural circulation cooldown. The unavailability of the PNP TS pressurizer heaters will extend the time to reach entry conditions for the shutdown cooling system. The unavailability of the PNP TS pressurizer heaters may complicate steady-state RCS pressure control and may increase the potential of an unplanned reactor trip. However, the availability of additional heaters beyond the PNP TS pressurizer heaters permit continued RCS pressure control.

The current TS 3.4.9 does not provide any action requirements for two inoperable PNP TS pressurizer heater groups, and therefore TS 3.0.3 applies, which requires an immediate plant shutdown. The proposed change provides for a 24-hour CT to restore at least one PNP TS pressurizer heater to operable status, to permit continued operation under an existing action requirement. The unavailability of the PNP TS pressurizer heaters would not have any significant impact on plant transient response, and so there is no quantifiable impact to CDF or LERF. While mitigation of a SGTR is enhanced by the availability of PNP TS pressurizer heaters, additional heaters can also function if offsite power is available, and plant procedures provide for mitigation of a SGTR without pressurizer heaters, if necessary.

Conservatively, the risk result due to increased likelihood of a reactor trip was calculated by assuming an order-of-magnitude increase in the reactor trip frequency when both groups of PNP TS pressurizer heaters are inoperable. The risk result is then calculated based on the conditional core damage probability given a reactor trip with no other complications:

Table 2			
ΔCDF	RG 1.174 Guidance	ΔLERF	RG 1.174 Guidance
1.0E-7/yr	<1.0E-6/yr	3.8E-9/yr	<1.0E-7/yr

The ΔCDF and ΔLERF were assessed based on a bounding once per 3-year entry into the proposed action requirement from TR WCAP-16125 and assumed that the entire 24-hour duration of the CT is used. The risk results are well below the acceptance guidelines of RG 1.174 as noted in Table 2.

Minimum PNP TS pressurizer heaters capability is supplemented by the normal availability of additional heaters for normal plant pressure control, and the availability of plant procedures which provide plant shutdown and cooldown guidance with or without pressurizer heaters. If the available heaters are sufficient to maintain RCS pressure control, normal plant operations can continue. Because unavailability of PNP TS pressurizer heaters and additional heaters would physically result in plant shutdown, the NRC staff does not consider it necessary to specify additional TSs or administrative requirements for the additional heaters' availability.

The current TS 3.4.9 does not contain a Condition for two required groups of PNP TS pressurizer heaters inoperable. As a result, this condition would require immediate entry into LCO 3.0.3. A new Condition is being added for two required groups of PNP TS pressurizer heaters inoperable which requires restoration of at least one required PNP TS pressurizer heaters to operable status within 24 hours. The Condition is modified by a note stating it is not applicable when the second group of required PNP TS pressurizer heaters is intentionally made inoperable.

The conservatively-calculated risk result is within the acceptance guidelines of RG 1.174, and there is limited impact of plant shutdown and cooldown without PNP TS pressurizer heaters. Therefore, the NRC staff finds the proposed new action requirement and 24-hour CT acceptable.

3.2.2 TS 3.7.10 – CRV Filtration

The CRV Filtration provides for filtration of outside air delivered to the control room by the ventilation system in the event of radioactive releases of particulates or iodine from containment following an accident involving fuel failures. This is to assure that control room personnel are protected from potential radiation exposures in excess of regulatory limits. The system may also provide protection of control room personnel from chemical or toxic gas releases by isolating the control room air intakes.

The current TS 3.7.10 addresses the condition of two inoperable trains of this system by requiring LCO 3.0.3 entry resulting in an immediate plant shutdown. The proposed change would provide a 24-hour CT to restore at least one train of the CRV Filtration to operable status, to permit continued operation under an action requirement. The current TS provides a 24-hour CT when both trains are inoperable due specifically to control room pressure boundary

inoperability, to verify mitigating actions ensure control room envelope (CRE) occupant radiological exposures will not exceed limits, and CRE occupants are protected from chemical and smoke hazards. It also provides a 90-days CT to restore the CRE boundary to operable status.

In the event of an accident involving radioactive releases without the availability of the CRV Filtration, there would be no direct impact on the capability of the control room staff to perform any actions required to mitigate severe core damage or large early releases, because alternative protective measures would be implemented to reduce the dose impacts. If the accident did not involve severe core damage, control room doses even without the CRV Filtration would be minimal, and therefore the CRV Filtration has no direct role in preventing core damage (i.e., ΔCDF = 0). If a core damage accident did occur with CRV Filtration unavailable, then the bounding impact would be to simply assume the event proceeded to a large early release based on the unavailability of the control room personnel to perform any mitigating actions. This assumption would be very conservative, since large releases occur primarily due to containment bypass accidents, and control room actions following core damage do not prevent the release from occurring.

A bounding estimate for CDF of CE plants was identified as 1E-4/year, so that over a 24-hour period the probability of a significant core damage event, which with the CRV Filtration unavailable is assumed to proceed to a large early release, would be:

(1E-4/year) x (24 hours) x (year/8760 hours) = 2.7E-7

Assuming a once per 3-year entry into the new TS, and assuming the entire 24-hour duration of the CT is used, the conservatively calculated ΔLERF is about 9.0E-8/year. This ΔLERF, and the zero ΔCDF, are below the acceptance guidelines of RG 1.174.

A significant contributor to control room radiological hazards was identified in TR WCAP-16125 from the release of radioactive RCS fluid from a SGTR event. A required TS action to verify LCO 3.4.16, "[Primary Coolant System (PCS)] Specific Activity," is met will be included in the new proposed action to provide additional defense-in-depth.

The TR WCAP-16125 also addressed a TS action to require initiation of mitigating actions to lessen the effects of potential hazards of smoke, chemical, radiological, or toxic gas releases. The NRC staff considers the specific hazards and compensatory measures to be plant-specific, and did not find sufficient information to conclude that the proposed changes are acceptable for these events without a plant-specific evaluation. The request for additional information (RAI) response (Reference 10) identifies that these mitigating actions were previously reviewed and approved by the NRC staff for Traveler TSTF-448 (Reference 9). TSTF-448 authorizes a generic TS change to permit a 24-hour CT when the control room boundary is inoperable, and includes the same mitigating actions to assure protection of the control room staff from non-radiological hazards.

The current TS 3.7.10, Condition F, applies when two CRV Filtration trains are inoperable due to any reason other than an inoperable control room boundary in Modes 1, 2, 3, or 4 and requires entering LCO 3.0.3 immediately. The TR WCAP-161254 justifies a 24-hour CT for two CRV Filtration trains inoperable for any reason, provided that mitigating actions are

implemented immediately and it is verified that LCO 3.4.16, "PCS Specific Activity," is met within 1 hour. Condition F is revised to require restoration of at least one CRV Filtration train to operable status within 24 hours and Condition F is moved to Condition C as Required Action C.3. Proposed Condition C is modified by a note stating it is not applicable when the second CRV Filtration train is intentionally made inoperable. Existing Condition C requires entering Mode 3 in 6 hours and Mode 5 in 36 hours. Existing Condition C is moved to Condition F and is modified to apply to the new Condition C.

The requirement to immediately "initiate action to implement mitigating actions" in Required Action C.1 is the same as in existing Action B.1. Action B.1 was added by approved TSTF-448 (Reference 9). Condition F is equivalent to the action to take mitigating actions in Condition B. Based on the risk result being below the acceptance guidelines of RG 1.174, and the additional restriction on meeting RCS specific activity limits in the TSs, the NRC staff finds the proposed new action requirement and 24-hour CT acceptable.

3.2.3 TS 3.7.11 – CRV Cooling

The CRV Cooling provides for temperature control of the control room when it is isolated during accident conditions. This assures control room temperature will not exceed equipment operability requirements.

The current TS 3.7.11 requires entry into LCO 3.0.3 when both CRV Cooling trains are inoperable. The proposed change would provide a 24-hour CT to restore at least one CRV Cooling train to operable status, to permit continued operation under an existing action requirement.

The TR WCAP-16125 stated that the unavailability of the CRV Cooling has a negligible impact on severe accident risk, based on long room heatup times, availability of alternate cooling strategies, and alternate means to control emergency systems locally. The NRC staff reviewed the basis for this conclusion and considered the potential plant impacts if an accident occurred which isolated the control room while the CRV Cooling was inoperable.

If an accident occurred which isolated the control room without cooling, and core cooling was being maintained by ECCS, then there would be negligible radiological consequences and the operators could simply unisolate and realign the normal control room ventilation system to provide continued cooling of the control room. Therefore, there would be no impact on CDF (i.e., $\Delta CDF = 0$).

If core damage occurred after the accident and the control room needed to remain isolated without cooling, the bounding impact would be to simply assume the event proceeded to a large early release based on the unavailability of the control room personnel to perform any mitigating actions. This assumption would be very conservative, since large releases occur primarily due to containment bypass accidents, and control room actions following core damage do not prevent the release from occurring.

A bounding estimate for CDF of CE plants was identified as 1E-4/year, so that over a 24-hour period, the probability of a significant core damage event, which with the CRV Cooling unavailable is assumed to proceed to a large early release, would be:

(1E-4/year) x (24 hours) x (year/8760 hours) = 2.7E-7

Assuming a once per 3-year entry into the new TS, and assuming the entire 24-hour duration of the CT is used, the conservatively calculated ΔLERF is about 9.0E-8/year. This ΔLERF, and the zero ΔCDF, are below the acceptance guidelines of RG 1.174.

Defense-in-depth is provided by alternative control room cooling actions and by the capability for local operation of equipment, if necessary. These actions are typically found in plant procedures, and are not required to be implemented by TS controls. The licensee confirmed in the LAR that plant procedures can establish temporary alternate means of control room cooling.

TS 3.7.11, Action E, applies when two CRV Cooling trains are inoperable in Mode 1, 2, 3, or 4 and requires entering LCO 3.0.3 immediately. The TR WCAP-16125 justifies a 24-hour CT for two CRV Cooling trains inoperable. Condition E is revised to require restoration of at least one CRV Cooling train to operable status within 24 hours. Condition E is moved to Condition B and the subsequent Actions are renumbered. Proposed Condition B is modified by a note stating it is not applicable when the second CRV Cooling train is intentionally made inoperable. Existing Condition B, now Condition C, which requires entering Mode 3 in 6 hours and Mode 5 in 36 hours, is modified to apply to the new Condition B.

Based on the risk result being below the acceptance guidelines of RG 1.174, the NRC staff finds the proposed new action requirement and 24-hour CT acceptable.

3.3 TS Bases Changes

TSTF-426 included, and the licensee submitted, the following TS Bases changes.

- A reference to the NRC-approved TR WCAP-16125 has been added to the reference section of the TS Bases for each TS affected in TSTF-426.
- Revisions to reflect the changes to the TS.
- For all affected TS, a Note on each applicable condition was added that states: "Not applicable when second [system or component name] intentionally made inoperable." The Bases are revised to provide additional explanation of the Note: "The Condition is modified by a Note stating it is not applicable if the second [system or component name] 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 [system or component name] is inoperable for any reason and the second [system or component name] is discovered to be inoperable, or if both [system or component name] are discovered to be inoperable at the same time."

The NRC staff determined that TS Bases changes are consistent with the proposed TS changes and provide the purpose for each requirement in the specification consistent with the Commission's Final Policy Statement on TSs Improvements for Nuclear Power Reactors, dated July 2, 1993 (58 FR 39132).

3.4 Summary

The NRC staff has reviewed the proposed change against the approved Traveler TSTF-426, which was based on approved TR WCAP-16125 (using the five key principles of risk-informed decision making), and concludes that the proposed change is acceptable. Appropriate TS notes are provided which assure that the loss of safety function action requirements are not applicable for operational convenience and that voluntary entry into these action requirements in lieu of other alternatives that would not result in redundant systems or components being inoperable are prohibited.

The NRC staff further notes that the proposed change does not alter the regulations for notifications and reports required by 10 CFR Part 50 involving the loss of safety function, and that any plant-specific license amendment which provides a condition to address a loss of safety function would not obviate the requirement for a licensee to provide such notifications and reports.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The Michigan State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (79 FR 52062, September 2, 2014). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

1. TSTF-426, Revision 5, "Revise or Add Actions to Preclude Entry into LCO 3.0.3 – RITSTF Initiatives 6b & 6c," dated November 22, 2011 (ADAMS Accession Number ML113260461).

2. TR WCAP-16125-NP-A, Revision 2, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," dated August 2010 (ADAMS Package Accession Number ML110070498).

3. Regulatory Guide 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," USNRC, dated May 2011 (ADAMS Accession Number ML100910006).

4. NUREG-0800, SPR, Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance," dated June 2007 (ADAMS Accession Number ML071700658).

5. Final SE of Pressurized Water Reactor Owners' Group TR WCAP-16125-NP, Revision 2, "Justification For Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," dated May 24, 2010 (ADAMS Accession Number ML093560466).

6. NUREG/CR-5750, "Rates of Initiating Events at U. S. Nuclear Power Plants: 1987 – 1995," dated February 1999 (ADAMS Accession Number ML070580080).

7. NUREG/CR-1570, "Risk Assessment of Severe Accident Induced SGTR," dated March 1998 (ADAMS Legacy Accession Number 8101290745).

8. NUREG/CR-6338, "Resolution of Direct Containment Heating Issue for all Westinghouse Plants with Large Dry Containments or Subatmospheric Containments," dated February 1996 (ADAMS Accession Number ML081920672).

9. TSTF-448-A, Revision 3, "Control Room Habitability," dated August 8, 2006, and corrected pages dated December 29, 2006 (ADAMS Accession Numbers ML062210095 and ML063630467).

10. Responses to the NRC RAI #2 on TR WCAP-16125-NP, Revision 1, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," dated July 8, 2009 (ADAMS Accession Number ML091940063).

Principal Contributor: C. Tilton, NRR

Date: May 18, 2015

A copy of our related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Jennivine K. Rankin, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-255

Enclosures:
1. Amendment No. 256 to DPR-20
2. Safety Evaluation

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