PROPOSED MODEL SAFETY EVALUATION FOR PLANT-SPECIFIC ADOPTION OF TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER TSTF-505, REVISION 1, "PROVIDE RISK-INFORMED EXTENDED COMPLETION TIMES - RITSTF INITIATIVE 4B"

1.0 INTRODUCTION

By letter dated [DATE], [LICENSEE] (the licensee) proposed changes to the Technical Specifications (TSs) for [PLANT] to adopt U.S. Nuclear Regulatory Commission (NRC)-approved Revision 1 to Technical Specifications Task Force (TSTF) Standard Technical Specifications (STS) Change Traveler TSTF-505, "Provide Risk-Informed Extended Completion Times - RITSTF [Risk-Informed TSTF] Initiative 4b" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111650552, Reference 1).

When implemented, TSTF-505 revises the TS to (1) add a new Risk-Informed Completion Time (RICT) Program to the Administrative Controls of TS, (2) modify selected Required Actions to permit extending the Completion Times (CTs), provided risk is assessed and managed within an acceptable configuration risk management program (CRMP), (3) add new Conditions, Required Actions, and CTs to address conditions not currently addressed in TS, and (4) add a new example in TS Section 1.3, to describe application of the RICT Program.

The licensee stated that the license amendment request (LAR) is consistent with the Notice of Availability of TSTF-505, Revision 1, announced in the *Federal Register* on [DATE] ([ ] FR [ ]).

{NOTE: Insert discussion of any requested variations/deviations.}

A new program is added to the Administrative Controls of TS as Specification [5.5.15 (NUREG-1433 and 1434)][5.5.18 (NUREG-1430, -1431, and -1432)]. The new program is called the RICT Program and describes the requirements which would permit a licensee to extend the selected Required Action CTs. The TS Bases for each affected Required Action is revised to state that the CT can be determined in accordance with the RICT Program. Various editorial changes have been made to the TS Bases to facilitate the addition of the TS Bases changes. The proposed changes to the Administrative Controls of the TS to incorporate the RICT Program includes a specific reference to Nuclear Energy Institute (NEI) 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0 (Reference 2), as the basis for extending the applicable CTs.

In a letter dated May 17, 2007 (Reference 3), the NRC staff approved NEI 06-09, Revision 0, as acceptable for referencing in licensing actions to the extent specified and under the limitations delineated in NEI 06-09, and the safety evaluation providing the basis for NRC approval of NEI 06-09.

2.0 REGULATORY EVALUATION

2.1 Applicable Commission Policy Statements

In the ''Final Policy Statement: Technical Specifications for Nuclear Power Plants'' published in the *Federal Register* (58 FR 39132-39139, July 22, 1993), the NRC addressed the use of Probabilistic Safety Analysis (PSA, currently referred to as Probabilistic Risk Assessment or PRA) in STS. In this 1993 publication, the NRC states, in part:

> The Commission believes that it would be inappropriate at this time to allow requirements which meet one or more of the first three criteria [of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36] to be deleted from technical specifications based solely on PSA (Criterion 4). However, if the results of PSA indicate that technical specifications can be relaxed or removed, a deterministic review will be performed.
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> The Commission Policy in this regard is consistent with its Policy Statement on 'Safety Goals for the Operation of Nuclear Power Plants', 51 FR 30028, published on August 21, 1986. The Policy Statement on Safety Goals states in part,…probabilistic results should also be reasonably balanced and supported through use of deterministic arguments. In this way, judgments can be made… about the degree of confidence to be given these [probabilistic] estimates and assumptions. This is a key part of the process for determining the degree of regulatory conservatism that may be warranted for particular decisions. This defense-in-depth approach is expected to continue to ensure the protection of public health and safety.
>
> The Commission will continue to use PSA, consistent with its policy on Safety Goals, as a tool in evaluating specific line item improvements to Technical Specifications, new requirements, and industry proposals for risk-based Technical Specification changes.

Approximately two years later, the NRC provided additional detail concerning the use of PRA in the ''Final Policy Statement: Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities'' published in the *Federal Register* (60 FR 42622-42629, August 16, 1995). In this publication, the NRC states, in part:

> The Commission believes that an overall policy on the use of PRA methods in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that would promote regulatory stability and efficiency. In addition, the Commission believes that the use of PRA technology in NRC regulatory activities should be increased to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach.
>
> PRA addresses a broad spectrum of initiating events by assessing the event frequency. Mitigating system reliability is then assessed, including the potential for multiple and common-cause failures. The treatment therefore goes beyond the single failure requirements in the deterministic approach. The probabilistic approach to regulation is, therefore, considered an extension and enhancement of traditional regulation by considering risk in a more coherent and complete manner.

Therefore, the Commission believes that an overall policy on the use of PRA in nuclear regulatory activities should be established so that the many potential applications of PRA can be implemented in a consistent and predictable manner that promotes regulatory stability and efficiency. This policy statement sets forth the Commission's intention to encourage the use of PRA and to expand the scope of PRA applications in all nuclear regulatory matters to the extent supported by the state-of-the-art in terms of methods and data.

Therefore, the Commission adopts the following policy statement regarding the expanded NRC use of PRA:

(1) The use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.

(2) PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. Where appropriate, PRA should be used to support the proposal for additional regulatory requirements in accordance with 10 CFR 50.109 (Backfit Rule). Appropriate procedures for including PRA in the process for changing regulatory requirements should be developed and followed. It is, of course, understood that the intent of this policy is that existing rules and regulations shall be complied with unless these rules and regulations are revised.

(3) PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

(4) The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties in making regulatory judgments on the need for proposing and backfitting new generic requirements on nuclear power plant licensees.

2.2 Applicable Regulations

In 10 CFR 50.36, the NRC established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance

requirements; (4) design features; and (5) administrative controls. As stated in 10 CFR 50.36(c)(2), "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee will shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

These categories will remain in TS. The new TS RICT Program provides the necessary administrative control to require that the CTs applicable to the Required Actions may be extended consistent with the approved methodology as an acceptable remedial action. Extension of CTs are made using the methodology contained in NEI 06-09, including consideration of the results of risk analyses, appropriate risk management actions (RMAs), periodic performance monitoring, and documentation requirements.

The maintenance rule, 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," requires licensees to monitor the performance or condition of structures, systems, and components (SSCs) against licensee established goals, in a manner sufficient to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. In addition, 10 CFR 50.65(a)(4) requires the assessment and management of the increase in risk that may result from a proposed maintenance activity. TR NEI 06-09 uses processes which are consistent with and complementary to the requirements of 10 CFR 50.65(a)(4).

2.2 Applicable Regulatory Guidelines and Review Plans

Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Reference 4), 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. This RG also provides risk acceptance guidelines for evaluating the results of such evaluations.

RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" (Reference 5), describes an acceptable risk-informed approach specifically for assessing proposed TS changes. RG 1.177 identifies a three-tiered approach for the licensees' evaluation of the risk associated with a proposed CT TS change, as discussed below.

- Tier 1 assesses the risk impact of the proposed change in accordance with acceptance guidelines consistent with the Commission's Safety Goal Policy Statement, as documented in RG 1.174 and RG 1.177. The first tier assesses the impact on operational plant risk based on the change in core damage frequency (ΔCDF) and change in large early release frequency (ΔLERF). It also evaluates plant risk while equipment covered by the proposed CT is out-of-service, as represented by incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP). Tier 1 also addresses PRA quality, including the technical adequacy of the licensee's plant-specific PRA for the subject application. Cumulative risk of the present TS change in light of past related applications or additional applications under review are also considered along with uncertainty/sensitivity analysis with respect to the assumptions related to the proposed TS change.

- Tier 2 identifies and evaluates any potential risk-significant plant equipment outage configurations that could result if equipment, in addition to that associated with the proposed license amendment, is taken out-of-service simultaneously, or if other risk-significant operational factors, such as concurrent system or equipment testing, are also involved. The purpose of this evaluation is to ensure that there are appropriate restrictions in place such that risk-significant plant equipment outage configurations will not occur when equipment associated with the proposed CT is implemented.

- Tier 3 addresses the licensee's overall CRMP to ensure that adequate programs and procedures are in place for identifying risk-significant plant configurations resulting from maintenance or other operational activities and appropriate compensatory measures are taken to avoid risk significant configurations that may not have been considered when the Tier 2 evaluation was performed. Compared with Tier 2, Tier 3 provides additional coverage to ensure risk-significant plant equipment outage configurations are identified in a timely manner and that the risk impact of out of service equipment is appropriately evaluated prior to performing any maintenance activity over extended periods of plant operation. Tier 3 guidance can be satisfied by the Maintenance Rule (10 CFR 50.65(a)(4)), which requires a licensee to assess and manage the increase in risk that may result from activities such as surveillance testing and corrective and preventive maintenance, subject to the guidance provided in RG 1.177, Section 2.3.7.1, and the adequacy of the licensee's program and PRA model for this application. The CRMP is to ensure that equipment removed from service prior to or during the proposed extended CT will be appropriately assessed from a risk perspective.

RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (Reference 6), describes an acceptable approach for determining whether the quality of the PRA, in total or the parts that are used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision making for light water-reactors.

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 7). Guidance on evaluating PRA technical adequacy is provided in Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (Reference 8). More specific guidance related to risk-informed TS changes is provided in SRP Section 16.1, "Risk-Informed Decisionmaking: Technical Specifications" (Reference 9), which includes CT changes as part of risk-informed decision making. Section 19.2 of the SRP states that a risk-informed application should be evaluated to ensure that the proposed changes meet 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.

3.0 TECHNICAL EVALUATION

[LICENSEE] adoption of TSTF-505 for [PLANT] provides for the addition of a RICT Program to the Administrative Controls of TS, and modifies selected Required Action CTs to permit extending the CTs, provided risk is assessed and managed as described in NEI 06-09. In accordance with NEI 06-09, PRA methods are used, to justify each extension to a Required Action CT based on the specific plant configuration which exists at the time of the applicability of the Required Action, and updated when plant conditions change. The licensee's application for the changes proposed in TSTF-505 included documentation regarding the technical adequacy of the PRA models used in the CRMP, consistent with the requirements of RG 1.200.

Most TS LCOs identify one or more Conditions for which the LCO may not be met, to permit a licensee to perform required testing, maintenance, or repair activities. Each Condition has an associated Required Actions for restoration of the LCO or for other actions, each with some fixed time interval, referred to as the CT, which identifies the time interval permitted to complete the Required Action. Upon expiration of the CT, the licensee is required to shut down the reactor or follow the remedial action(s) stated in TS. The RICT Program provides the necessary administrative controls to permit extension of CTs and thereby delay reactor shutdown or remedial actions, if risk is assessed and managed within specified limits and programmatic requirements. The specified safety function or performance levels of TS required SSCs are unchanged, and the remedial actions, including the requirement to shut down the reactor, are also unchanged; only the CTs for the Required Actions are extended by the RICT Program.

3.1 Detailed Description of the Proposed Change

This section identifies the specific TS LCOs and Required Actions to which the RICT Program may be applied.

Administrative Controls Section [5.5.18], which describes the RICT Program, is added to TS and reads as follows:

> Risk Informed Completion Time Program
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> This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:
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> a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODE 1, 2 [, and 3, and MODE 4 while relying on steam generators for heat removal] [, and MODE 3 while relying on the main condenser for heat removal];

c. When a RICT is being used, any plant configuration change within the scope of the Risk Informed Completion Time Program must be considered for the effect on the RICT.

1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

3. Revising the RICT is not required if the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for voluntary entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. Use of a RICT is permitted for emergent conditions which represent a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE if one or more of the trains are considered "PRA functional" as defined in Section 2.3.1 of NEI 06-09.

Individual LCO Required Actions modified by the proposed change are identified below.

{NOTE: Identify the plant-specific LCOs and Required Actions that are proposed to be in the scope of the RICT Program. Example:

LCO 3.X.X Title of LCO 3.X.X
- Required Action X.1 (Describe Condition)}

The licensee has also proposed to establish new Conditions and Required Actions which permit application of a RICT when multiple trains are inoperable. Under the existing TS, such configurations would result in applicability of LCO 3.0.3 and an immediate reactor shutdown. The licensee has added new Conditions and Required Actions which allow one hour to determine a RICT in accordance with the RICT Program, or require a reactor shutdown. Therefore, the new proposed Required Actions are consistent with the existing actions of LCO 3.0.3 if a RICT is not used. In accordance with NEI 06-09, the use of a RICT when all trains of a TS system are inoperable is restricted to conditions in which the TS system retains PRA functionality and the CRMP can discern which TS functions are available and which are failed due to the inoperability.

3.2 Review Methodology

RG 1.177 identifies five key safety principles required for risk-informed changes to TS. Each of these principles is addressed by the industry methodology document, NEI 06-09.

3.2.1 Key Principle 1: Compliance with Current Regulations

The regulation at 10 CFR 50.36(c) provides that TSs will include LCOs which are "the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee will shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

The proposed changes provide a risk-informed determination of the CT applicable to the actions of the LCO by permitting the application of an NRC-approved methodology for assessing and managing the configuration-specific risk. The LCOs themselves would remain unchanged, as would the required remedial actions or shut down requirements in accordance with 10 CFR 50.36(c). Thus, this proposed change meets the first key safety principle of RG 1.177 and is therefore acceptable.

3.2.2 Key Principle 2: Evaluation of Defense in Depth

Consistency with the defense-in-depth philosophy is maintained by the following:

- A reasonable balance is preserved among avoidance of core damage, avoidance of containment failure, and consequence mitigation.
- Over-reliance on programmatic activities as compensatory measures is avoided.
- System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system (e.g., there are no risk outliers).
- Defenses against potential common cause failures are maintained and the potential for the introduction of new common cause failure mechanisms is assessed.
- Independence of physical barriers is not degraded.
- Defenses against human errors are maintained.
- The intent of the plant's design criteria is maintained.

The proposed change represents a more robust technical approach that preserves a reasonable balance among avoidance of core damage, avoidance of containment failure, and consequence mitigation. The three-tiered approach to risk-informed TS CT changes discussed in Sections 3.2.4.1, 3.2.4.2, and 3.2.4.3 below provides additional assurance that defense-in-depth will not be significantly impacted by such changes to the licensing basis. [LICENSEE] is

proposing no changes to the design of the plant or any operating parameter, no new operating configurations, and no new changes to the design-basis in the proposed changes to the TS. The effect of the proposed changes when implemented will be that the RICT Program will allow CTs to vary based on the risk significance of the given plant configuration (i.e., the equipment out-of-service at any given time). Further, the restrictions on loss of a specified safety function or inoperability of all required trains of a system, and consideration of PRA functional conditions ensure defense-in-depth capabilities are maintained.

The proposed RICT Program uses plant-specific operating experience for component reliability and availability data. Thus, the allowances permitted by the RICT Program are directly reflective of actual component performance in conjunction with component risk significance. In some cases, the RICT Program may use compensatory actions to reduce calculated risk in some configurations. Where credited in the PRA, these actions are incorporated into station procedures or work instructions and have been modeled using appropriate human reliability considerations. Application of the RICT Program determines the risk significance of plant configurations. It also permits the operator to identify the equipment that has the greatest effect on the existing configuration risk. With this information, the operator can manage the out-of-service duration and determine the consequences of removing additional equipment from service. The application of the RICT Program places high value on key safety functions and works to ensure they remain a top priority over all plant conditions. Application of the RICT Program provides a structure to assist the operator in identifying effective compensatory actions for various plant maintenance configurations to maintain and manage acceptable risk levels.

In addition, the risk assessment for determining a RICT will adequately consider defense-in-depth, quantitatively in the PRA model and by a qualitative assessment of the specific configuration. The proposed TS changes preserve the existing balance between avoidance of core damage, avoidance of containment failure, and consequence mitigation by ensuring that CTs do not result in a loss of all these multiple barriers associated with current plant configuration. The RICT Program, in conjunction with the PRA, measures and accounts for the level of defense-in-depth on both an instantaneous and a cumulative basis. It considers plant design features, operating philosophy, and equipment capability.

Use of Compensatory Measures to Retain Defense in Depth

NEI 06-09, addresses potential compensatory actions and risk management action measures by stating, in generic terms, that compensatory measures may include but are not limited to the following:

- Reduce the duration of risk sensitive activities.
- Remove risk sensitive activities from the planned work scope.
- Reschedule work activities to avoid high risk-sensitive equipment outages or maintenance states that result in high risk plant configurations.
- Accelerate the restoration of out-of-service equipment.
- Determine and establish the safest plant configuration.

NEI 06-09 requires that compensatory measures be initiated when the PRA calculated risk management action (RMA) time (RMAT) is exceeded, or for preplanned maintenance for which the RMAT is expected to be exceeded, RMAs shall be implemented at the earliest appropriate time. Therefore, quantitative risk analysis, the qualitative considerations, and the restrictions related to loss of a safety function or loss of all trains of a required system assure a reasonable balance of defense-in-depth is maintained to ensure protection of public health and safety. Thus, this proposed change meets the second key safety principle of RG 1.177 and is therefore acceptable.

3.2.3 Key Principle 3: Evaluation of Safety Margins

In accordance with RG 1.177, sufficient safety margins are maintained when:

- Codes and standards or their alternatives approved for use by the NRC are met.
- Safety analysis acceptance criteria in the final safety analysis report are met, or proposed revisions provide sufficient margin to account for analysis and data uncertainty.

Use of the RICT Program to determine a RICT will not affect [PLANT] commitment to the codes and standards used in the design of [PLANT]. [LICENSEE] is not proposing in this application to change any quality standard, material, or operating specification. Acceptance criteria for operability of equipment are not changed. The design-basis analyses for [PLANT] remain applicable. Although [LICENSEE] will be able to have design-basis equipment out-of-service longer than the current TS allow, the actual expected increase in unavailability will be insignificant with respect to design-basis assumptions regarding accident mitigation and are addressed by the consideration of the single failure criterion in the design basis analyses. Therefore, safety margins are maintained by the implementation of the RICT Program. Thus, this proposed change meets the third key safety principle of RG 1.177 and is therefore acceptable.

3.2.4 Key Principle 4: Change in Risk Consistent with the Commission's Safety Goal Policy Statement

The evaluation presented below addresses the NRC staff's philosophy of risk-informed decision making: that when the proposed changes result in a change in CDF or risk, the increase should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.

3.2.4.1 Tier 1: PRA Capability and Insights

The first tier evaluates the impact of the proposed changes on plant operational risk. The Tier 1 NRC staff review involves two aspects: (1) evaluation of the validity of the [PLANT] PRA models and their application to the proposed changes, and (2) evaluation of the PRA results and insights based on the licensee's proposed application.

3.2.4.1.1 PRA Quality

The objective of the PRA quality review is to determine whether the [PLANT] PRA used to implement the RICT Program is of sufficient scope, level of detail, and technical adequacy for this application.

The NRC staff evaluated the PRA quality information provided by the licensee in its submittal dated [DATE], including industry peer review results and the licensee self-assessment of the [PLANT] PRA models for internal and external events, including fires [seismic, other external hazards] against the requirements of currently applicable revision of RG 1.200, [Revision 2].

{NOTE: Insert the plant-specific evaluation of each PRA model. This is a detailed discussion of the peer reviews and other internal self-assessments to determine the conformance of the PRA models to capability category II of the relevant PRA standards. Failure of a PRA model to conform to one or more supporting requirements of a standard at capability category II should be dispositioned for acceptability for use in the RICT Program.}

Based on the NRC staff's review of the licensee's submittal and assessments, the NRC staff determined that the [PLANT] PRA models for internal and external events, fires [seismic, other external hazards] used to implement the RICT Program satisfy the guidance of RG 1.200. Additionally the NRC staff determined that the [PLANT] PRA models adequately conform to capability Category II of the ASME/ANS standard for the supporting requirements. Therefore, the [PLANT] PRA models were determined to be of sufficient technical adequacy to support implementation of the RICT Program.

The NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Sections 2.3.1, 2.3.2, and 2.3.3), RG 1.174 (Sections 2.2.3 and 2.5), and SRP Section 19.1; and that the quality of the [PLANT] PRA is sufficient to implement RMTS in accordance with the RICT Program and NEI 06-09.

3.2.4.1.2 Scope of the PRA

NEI 06-09, requires a quantitative assessment of the potential impact on risk due to impacts from internal and external events, including internal fires, floods, and other significant external events. As discussed in Section 3.2.4.1.1, the [PLANT] PRA used for the RICT Program includes contributions from internal and external events, including internal fires and floods [, seismic events, and other external events].

{NOTE: Provide a detailed description of how the PRA used for the RICT Program addresses seismic events and other external hazards if a full scope plant-specific PRA model is not used. This may be a justification that the contribution from these hazards is not significant to the RICT calculations, or a justification for the use of bounding quantitative analyses, or a justification for a limited scope PRA model which is assessed using relevant parts of the applicable PRA standard.}

[The licensee has limited the mode applicability of the RICT Program to Modes 1 and 2 for which its existing PRA models are considered applicable. The RICT Program cannot therefore be applied in Mode[s] 3 [and 4].][The licensee has evaluated the applicability of its PRA models

for Mode[s] 3 [and 4], as permitted by NEI 06-09.] {NOTE: Provide plant-specific discussion of the applicability of the PRA models for these modes.}

Because the RICT Program is not applicable in Modes [4 and 5][5 and 6], risk evaluations for these modes are not relevant to the proposed change.

Based on the above, the NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Section 2.3.2), RG 1.174 (Section 2.2.3) and SRP Section 19.1, and that the scope of the PRA model is appropriate for this application.

3.2.4.1.3 PRA Modeling

To evaluate a RICT for a given TS LCO action requirement, the specific systems or components involved should be modeled in the PRA. For each TS LCO to which the RICT Program is proposed to apply, the licensee identified that: (1) the system is included in the [PLANT] PRA models; (2) the success criteria used in the PRA models are consistent with the [PLANT] licensing basis [or acceptable plant-specific analyses used to support the PRA are justified]; and (3) the CRMP provides the capability to select the system as out of service in order to calculate a RICT and the CRMP is maintained consistent with the baseline PRA model. In addition, the licensee identified the RICT applicable to each Condition for which a RICT may be applied.

{NOTE: Provide a detailed, LCO-by-LCO, description of the CRMP system modeling, success criteria, user interface, and calculated RICT compared to the existing (front-stop) CT.}

The NRC staff reviewed the licensee's information and concluded that the scope of SSCs to which the RICT Program are applied are appropriately included in the PRA models and in the CRMP, and that the plant staff is able to promptly determine the applicable RICT for a given plant configuration. Further, the NRC staff notes that no single out-of-service SSC results in a RICT that is more restrictive than the current front-stop CTs. This confirms the suitability of the existing front-stop CTs as the dividing point in time between the existing TS requirements and the RICT Program implementation.

Issues related to the level of detail of the PRA model, common-cause modeling, screening criteria and truncation limits have been addressed by the conformance of the licensee's PRA model to the currently applicable version of RG 1.200, and capability category II of the ASME/ANS PRA standards.

Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Section 2.3.3), RG 1.174 (Section 2.2.3), and SRP Section 19.1, and that the PRA modeling is appropriate for this application.

3.2.4.1.4 Assumptions

Using PRAs to evaluate TS changes requires consideration of a number of assumptions made within the PRA that can have a significant influence on the ultimate acceptability of the proposed changes. With regard to changes to CTs, the following assumptions were evaluated:

{NOTE: Insert the plant-specific PRA assumptions, and disposition of each for the RICT Program. This should include a description of the methods used to identify assumptions.}

Based on the identification and disposition of the significant PRA assumptions described above, the NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Section 2.3.4), and that the assumptions for risk evaluation of extended CTs are appropriate for this application.

3.2.4.1.5 Sensitivity and Uncertainty Analyses

Risk-informed analyses of TS changes can be affected by uncertainties regarding the assumptions made during the PRA model's development and application. The risk resulting from TS CT changes is relatively insensitive to uncertainties because the uncertainties tend to similarly affect both the base case and the changed case. Licensees should consider PRA modeling uncertainties and their potential impact on the RICT Program and, as necessary, identify applicable RMAs to limit the impact of these uncertainties. RG 1.200 defines sources of uncertainty and assumptions.

[PLANT] performed an evaluation of its PRA model to identify the key assumptions and sources of uncertainty for this application consistent with the RG 1.200 definitions, using sensitivity and importance analyses to place bounds on uncertain processes, to identify alternate modeling strategies, and to provide information to users of the PRA.

{NOTE: Insert the plant-specific PRA uncertainties, and disposition of each for the RICT Program. This should also include a description of the methods used to identify uncertainties.}

The NRC staff review indicates the licensee performed a reasonable and credible assessment to identify the potential sources of uncertainty, and the identification of the key assumptions and sources of uncertainty was appropriate. The licensee's evaluation of the potential impact of these sources of uncertainty on the RICT Program is acceptable.

Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Section 2.3.5), RG 1.174 (Section 2.2.2), and that the treatment of model uncertainties for risk evaluation of extended CTs is appropriate for this application, and consistent with the guidance identified in NEI 06-09.

3.2.4.1.6 PRA Results and Insights

The proposed change implements a process to determine TS RICTs rather than specific changes to individual TS CTs. NEI 06-09 requires periodic assessment of the risk incurred due to operation beyond the front-stop CTs due to implementation of a RICT Program, and comparison to the guidance of RG 1.174 for small increases in risk.

As with other unique risk-informed applications, supplemental risk acceptance guidelines that complement the RG 1.174 guidance are appropriate. NEI 06-09 requires that configuration risk be assessed to determine the RICT, and establishes the criteria for ICDP and ILERP on which to base the RICT. An ICDP of 10^{-5} and an ILERP of 10^{-6} are used as the risk measures for calculating individual RICTs. These limits are consistent with NUMARC 93-01 guidance for managing the risk of on-line maintenance activities. This guidance was endorsed by the NRC staff in RG 1.182 for compliance with the Maintenance Rule, 10 CFR 50.65(a)(4). The use of these limits in NEI 06-09, Revision 0, aligns the TS CTs with the risk management guidance used to support plant programs for the Maintenance Rule, and the staff accepted these supplemental risk acceptance guidelines for RMTS programs in its approval of NEI 06-09.

The licensee has committed to NEI 06-09, Revision 0, in the RICT Program of TS [5.5.18], and therefore calculates the RICT consistently with its criteria, and assesses the RICT Program to assure any risk increases are small per the guidance of RG 1.174.

Therefore, the NRC staff finds that the licensee has satisfied the intent of RG 1.177 (Section 2.4), RG 1.174 (Sections 2.2.4 and 2.2.5), and SRP Chapter 19.

3.2.4.1.7 Administrative Controls

Because NEI 06-09 involves the real-time application of PRA results and insights by the licensee, the NRC staff reviewed the licensee programs, procedures, and training of personnel as they relate to implementation of the RICT Program.

{NOTE: Provide a detailed description of these programs, procedures, and training.}

The NRC staff found that the licensee has established appropriate programmatic and procedural controls for its RICT Program, consistent with the guidance of NEI 06-09. Training of plant personnel has been provided throughout all levels of the organization, commensurate with each position's responsibilities within the RICT Program. The NRC staff notes that the licensed operators in the control room have responsibility for assuring compliance with the TS, and that the RICT Program training provided assures the licensee's staff understands risk concepts, and provides them with the necessary skills to determine the appropriate RICT when operating under an extended CT within the RICT program. Therefore, the NRC staff finds that the licensee has appropriate administrative controls in place to assure proper implementation of the RICT Program.

3.2.4.2 Tier 2 - Avoidance of Risk-Significant Plant Configurations

The second tier provides that a licensee should provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when specific plant equipment is taken out-of-service in accordance with the proposed TS change.

NEI 06-09 does not permit high risk configurations, which would exceed instantaneous CDF and LERF limits of 10^{-3}/year and 10^{-4}/year, respectively. It further requires implementation of RMAs when the actual or anticipated risk accumulation during a RICT will exceed one-tenth of the ICDP or ILERP limit. Such RMAs may include rescheduling planned activities to lower risk periods or implementing risk reduction measures. The limits established for entry into a RICT and for RMA implementation are consistent with the guidance of NUMARC 93-01 endorsed by RG 1.182 as applicable to plant maintenance activities. The RICT Program requirements are consistent with the principle of Tier 2 to avoid risk-significant configurations.

Based on the licensee's incorporation of NEI 06-09 in the TS, and consistent with the guidance of RG 1.177, the NRC staff finds the licensee's Tier 2 program is acceptable and supports the proposed implementation of the RICT Program.

3.2.4.3 Tier 3 – Risk-Informed Configuration Risk Management

The third tier provides that a licensee should develop a program that ensures that the risk impact of out-of-service equipment is appropriately evaluated prior to performing any maintenance activity.

NEI 06-09 directly addresses this consideration by requiring assessment of the RICT to be based on the specific plant configuration for all SSCs within the scope of the CRMP, including both safety-related and non-safety-related systems. If a risk-significant plant configuration exists, based on the expectation of exceeding a threshold of one-tenth of the risk on which the RICT is based, then compensatory measures and RMAs are required to be implemented. Thus, the RICT Program provides a methodology to assess and address risk-significant configurations. Further, reassessment of any plant configuration changes is also required to be completed in a timely manner, based on the more restrictive limit of any applicable TS action requirement or a maximum of 12 hours after the configuration change occurs.

Based on the licensee's incorporation of NEI 06-09 in the TS, and consistent with the guidance of RG 1.177, the NRC staff finds the licensee's Tier 3 program is acceptable and supports the proposed implementation of the RICT Program.

3.2.4.4 Conclusions

The licensee has demonstrated the technical adequacy and scope of its PRA models, and that the models can support implementation of the RICT Program for determining CTs. Proper consideration of key assumptions and sources of uncertainty has been made. The risk metrics are consistent with the approved methodology of NEI 06-09, and the RICT Program is administratively controlled through plant procedures and training. Therefore, the NRC staff concludes that the RICT Program satisfies the fourth key safety principle of RG 1.177. Thus, this proposed change meets the fourth key safety principle of RG 1.177 and is therefore acceptable.

3.2.5 Key Principle 5: Performance Measurement Strategies – Implementation and Monitoring Program

RG 1.174 and RG 1.177 establish the need for an implementation and monitoring program to ensure that extensions to TS CTs do not degrade operational safety over time and that no adverse degradation occurs due to unanticipated degradation or common-cause mechanisms. An implementation and monitoring program is intended to ensure that the impact of the proposed TS change continues to reflect the reliability and availability of SSCs impacted by the change. RG 1.174 states that monitoring performed in conformance with the Maintenance Rule, 10 CFR 50.65, can be used when the monitoring performed is sufficient for the SSCs affected by the risk-informed application. NEI 06-09 provides for a periodic evaluation of any increase in risk due to the use of the RMTS Program to extend the CTs. This evaluation assesses any increase in CDF and LERF against the criteria of RG 1.174 to assure that RMTS Program implementation meets RG 1.174 guidance for small risk increases. If the program causes risk increases in excess of RG 1.174, the licensee's corrective action program is used to address the issue. [LICENSEE] is implementing NEI 06-09 without exception, via the RICT Program and therefore complies with this RMTS Program requirement.

Therefore, the NRC staff concludes that the RICT Program satisfies the fifth key safety principle of RG 1.177. Thus, this proposed change meets the fifth key safety principle of RG 1.177 and is therefore acceptable.

3.3 Comparison with Regulatory Guidance

The licensee's proposed changes for implementation of the RICT Program are consistent with the NRC staff-approved guidance of NEI 06-09, Revision 0, which was found to be consistent with the guidance of RG 1.174 and RG 1.177, and the guidance in SRP Sections 19.2 and 16.1.

[3.4 Evaluation of Plant-Specific Changes]

{NOTE: Under certain conditions specified in NEI 06-09 it is acceptable to operate for short periods of time with all trains of equipment, which are required by a TS LCO, inoperable, provided that one or more trains are considered to be PRA functional. The number and identity of instrumentation and control (I&C) channels (or functions) required to be PRA functional is highly dependent on the specific plant and associated equipment design. Since NEI 06-09 did not address the required actions related to I&C, licensees choosing to adopt these specific changes may need to provide plant-specific implementation guidance for NRC staff review. If these changes were included in the LAR, insert NRC staff technical evaluation here. Be sure to modify Regulatory Evaluation Section and Conclusions Section appropriately.}

4.0 SUMMARY AND CONCLUSIONS

4.1 NRC Staff Findings and Conclusions

The NRC staff finds that the licensee's proposed implementation of the RICT Program for the identified scope of TS LCO action requirements is consistent with the guidance of the NRC staff-approved NEI 06-09, Revision 0. The licensee's methodology for assessing the risk impact of extended CTs, including the individual CT extension impacts in terms of ICDP and ILERP, and the overall program impact in terms of ΔCDF and ΔLERF, is accomplished using PRA models of sufficient scope and technical adequacy as described in NEI 06-09, Revision 0, and based on consistency with the guidance of RG 1.200, Revision 2. [The licensee has not proposed to use any conservative or bounding analyses in lieu of quantitative PRA models.][The licensee has proposed to use conservative bounding analyses for {enter plant-specific hazard groups}, and the NRC staff has determined that these analyses are acceptable in lieu of realistic PRA models.] The assessment of configuration-specific risk to support the extension of CTs, the requirement to reassess configuration changes in a timely manner, and the requirement to implement compensatory measures and RMAs at the appropriate risk thresholds, are acceptable. The licensee's proposed implementation of the RICT Program is consistent with Tier 1, Tier 2, and Tier 3 guidelines of RG 1.177. In addition, the NRC staff finds that defense-in-depth and safety margins are adequately maintained, that compliance with current regulations and regulatory guidance are maintained, and that adequate procedural and performance monitoring programs are in place to safely implement this initiative.

4.2 Conclusions of Technical Evaluations

The potential risk impacts for [PLANT] implementation of the RICT Program are determined consistent with the NRC staff-approved NEI 06-09, Revision 0, methodology, and are

reasonably expected to be small and consistent with the guidance of RG 1.174 and RG 1.177. The licensee's CRMP is consistent with NEI 06-09, Revision 0, guidance with regard to its scope and technical adequacy, and therefore satisfies RG 1.177 CRMP guidelines. The application of the CRMP for the RICT Program will assure timely identification of any risk-significant configurations, and prompt implementation of appropriate compensatory measures and RMAs, satisfying Tier 2 and Tier 3 of RG 1.177. The NRC staff therefore concludes that the proposed changes satisfy the key principles of risk-informed decision-making identified in RG 1.174 and RG 1.177, and therefore the requested adoption of TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b" by [PLANT] is acceptable.

5.0 STATE CONSULTATION

{NOTE: Per LIC-101, the PM is responsible for contacting the state official and verifying that this statement is correct.}

In accordance with the Commission's regulations, the [Name of State] State official was notified of the proposed issuance of the amendment. The State official had [no] comments. [If comments were provided, they should be addressed here].

6.0 ENVIRONMENTAL CONSIDERATION

{NOTE: Caution per LIC-101: The environmental consideration discussed below is written for a categorical exclusion based on 10 CFR 51.22(c)(9). The PM is responsible to ensure that this is accurate for the specific amendment being issued.}

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding ([ ] FR [ ]). Accordingly, the amendments meet 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 amendments.

7.0 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) such activities will be conducted in compliance with the

Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b," June 14, 2011. (ADAMS Accession Number ML111650552)

2. Topical Report NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines," November 2006. (ADAMS Accession Number ML063390639)

3. Final Safety Evaluation For Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines" May 17, 2007. (ADAMS Accession Number ML071200238)

4. 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," May 2011. (ADAMS Accession Number ML100910006)

5. Regulatory Guide 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," May 2011. (ADAMS Accession Number ML100910008)

6. Regulatory Guide 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," March 2009. (ADAMS Accession Number ML090410014)

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

8. NUREG-0800, Standard Review Plan Section 19.1, "Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 2, June 2007. (ADAMS Accession Number ML071700657)

9. NUREG-0800, Standard Review Plan Section 16.1, "Risk-Informed Decision Making: Technical Specifications," Revision 1, March 2007. (ADAMS Accession Number ML070380228)

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Date: