I. OVERVIEW / SIGNATURES

Facility: Waterford 3 SES

Document Reviewed: ER-W3-2001-1149-009, 3716 MWt Extended Power Uprate Evaluation of FSAR Chapter 9 **Change/Rev.:** 0/0

System Designator(s)/Description: Fuel Pool Cooling System, Fuel Pool Purification System, Component Cooling Water System, Auxiliary Component Cooling Water System, Ultimate Heat Sink, Condensate Storage Facility, Essential Services Chilled Water System, Primary and Secondary Sampling Systems, Post Accident Sampling System, Equipment and Floor Drain System, Chemical and Volume Control System, Boric Acid Makeup System, Shutdown Cooling System, Control Room Air Conditioning System, Fuel Handling Building Ventilation System, RAB Personnel and Decontamination Area Ventilation System, Emergency Diesel Generator Ventilation System, RAB HVAC Equipment Room Ventilation System, RAB Cable Vault and Switchgear Area Ventilation System, RAB Air Condition System, RAB Fan Coolers, Turbine Building Ventilation System, Airborne Radioactivity Removal System, Containment Atmosphere Purge System, Shield Building Ventilation System, and Diesel Generator Fuel Oil and Transfer System.

Description of Proposed Change

Waterford 3 will implement 3716 MWt. Extended Power Uprate (EPU) under ER-W3-2001-1149-000 after receiving NRC approval of Licensing Amendment Request NPF-38-249, Extended Power uprate.

Engineering request ER-W3-2001-1149-009 is an interdiscipline ER used for evaluating Extended Power Uprate (EPU) and its impact on FSAR Chapter 9 systems. The outcome of the evaluation, including changes to licensing documents, design bases, and engineering calculations, are discussed herein. The outcome of the review is also used to support the information discussed in base engineering request ER-W3-2001-1149-000.

A selected number of FSAR Chapter 9 systems have been excluded from the EPU evaluations addressed in ER-W3-2001-1149-009. These selected systems are evaluated for EPU in engineering request ER-W3-2001-1149-001. The Reader is directed to ER-W3-2001-1149-001 for the evaluations on these selected systems.

The following FSAR Chapter 9 systems are evaluated by this ER:

- Fuel Pool Cooling System
- Fuel Pool Purification System
- Component Cooling Water (CCW) System
- Auxiliary Component Cooling Water (ACCW) System
- Ultimate Heat Sink (UHS)
- Condensate Storage Facility
- Essential Services Chilled Water System, including Water Chillers (RFR)
- Primary, Secondary, and Post Accident Sampling Systems
- Equipment and Floor Drain System
- Chemical and Volume Control System
- Boric Acid Makeup System
- Shutdown Cooling System
- Control Room Air Conditioning System
- Fuel Handling Building Ventilation System
- RAB Personnel and Decontamination Area Ventilation System
- Emergency Diesel Generator Ventilation System
- RAB HVAC Equipment Room Ventilation System
- RAB Air Condition System
- RAB Fan Coolers
- Turbine Building Ventilation System
- Airborne Radioactivity Removal System
- Containment Atmosphere Purge System
- Shield Building Ventilation System
- Diesel Generator Fuel Oil and Transfer System
- Heat Tracing System

The following calculations are converted to study calculations by this ER and are included in this review:

- ECM97-037 (DRN04-1961), Volume Control Tank Design Requirements
- ECM98-042 (DRN05-10), Time to Shutdown Cooling Conditions – Modes 5 & 6

The FSAR changes associated with ER-W3-2001-1149-009 are described below:

1. FSAR Sections 9.1.3.1, 9.1.3.3 and Figure 9.1-22: Changes the number of spent fuel assemblies that can be stored in the spent fuel pool, which is dependent on the decay heat loads of the fuel assemblies and the thermal performance of the fuel pool cooling system. Provides additional details with regard to reactor power levels associated with each cycle of spent fuel assemblies. Updates the number of spent fuel assemblies that are expected to be placed in the pool after reactor shutdown and the number of batches from previous refueling cycles. Changes the assumed single failure scenario to failure of a divisional electrical bus. Revise the time-to-boil value assuming cooling is lost to the limiting value of a full core offload starting three days after reactor shutdown. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
2. FSAR Table 9.1-3 (Sheets 5, 6, 7 and 8): changes are made to delete information from sheet 6 that is duplicated on sheet 7 (Fuel pool heat exchanger 'heat transferred' value); *this change is an FSAR-Only change as per LI-113 Attachment 9.6 Criteria A3.2.* Additionally, the footnote on sheet 6 is relocated to the appropriate place on sheet 7; *this change is editorial as per LI-101 3.0 Definition [18](b)(5)a.* These two changes do not require further review under 50.59. Changes are also made to operating parameters for the fuel pool heat exchanger and for the backup fuel pool heat exchanger to reflect system capability. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
3. FSAR Sections 9.2.5 2 and 9.2.5.3.2: changes are made to the number of days the wet cooling towers are needed after a LOCA and to the amount of make up water required for the WCT basin if only one UHS train is available. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
4. FSAR Table 9.2-3: changes are made to the various operating modes with regard to cooling water flow requirements, heat loads imposed on the component cooling water system during various plant operating modes, number of previous batches assumed to be in the pool and number of days after shutdown when the offload is assumed to be installed in the pool, and number of units operating. *Portions of this change satisfy 50.59 Review Screening Criteria as discussed in Section II, while other portions of the change satisfy 50.59 Exemption Evaluation Criteria as discussed in Section III..*
5. FSAR Table 9.2-9: changes are made to the wet and dry cooling tower estimated heat dissipation values for normal operation, refueling, normal shutdown and accident conditions. *portions of this change satisfies 50.59 Review Screening Criteria as discussed in Section II, while other portions of the change satisfy 50.59 Exemption Evaluation Criteria as discussed in Section III.*
6. FSAR Table 9.2-10: changes are made to the wet cooling tower water losses after a LOCA to reflect EPU conditions, to the number of days the wet cooling towers are needed after a LOCA, and to the amount of make up water required for the WCT basin if only one UHS train is available. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
7. FSAR Figures 9.2-4 and 9.2-4A: changes are made to the heat loads dissipated by the ultimate heat sink after a LOCA. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
8. FSAR Figure 9.2-5: a change is made to the heat loads imposed on the dry cooling tower during various plant operating modes. *This change satisfies 50.59 Exemption Evaluation Criteria as discussed in Section III.*
9. FSAR Figure 9.2-5a: changes are made to the acceptable dry bulb and wet bulb temperatures for the design basis heat loads on the ultimate heat sink. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
10. FSAR Section 9.3.4.2.2 and Table 9.3-11: a change is made to the minimum boron concentration in the boric acid make up tanks from 2.5 weight percent to 2.8 weight percent and to the normal letdown temperature from RCS. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
11. FSAR Section 9.3.6.1.2, 9.3.6.2.1, 9.3.6.2.2, 9.3.6.3.1, and Table 9.3-17: changes are made to reflect the shutdown cooling time needed to cool the RCS to 200°F and 140°F under EPU. The parameters describing the shutdown cooling heat exchanger flows and heat loads are changed in Table 9.3-17. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*

12. FSAR Section 9.3.6.3.3: changes are made to the performance evaluation of the shutdown cooling system to reflect flow rates, temperatures, decay heat load and time periods needed to cool the RCS under EPU. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
13. FSAR Section 9.3.6.3.4: changes are made to the approximate time for a steam generator to boil dry (with no makeup) upon a loss of shutdown cooling with a closed RCS, and to the minimum time before core uncovery will occur upon a loss of shutdown cooling with an open RCS. *This change is evaluated in Section IV.*
14. FSAR Figures 9.3-7 and 9.3-8 are deleted. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*
15. FSAR Figures 9.3-8A and 9.3-8B: the curves showing the cooldown temperatures and times are changed to show the conditions for power uprate. *This change satisfies 50.59 Review Screening Criteria as discussed in Section II.*

Check the applicable review(s): (Only the sections indicated must be included in the Review.)

☒	**EDITORIAL CHANGE of a Licensing Basis Document**	**Section I**
☒	**SCREENING**	**Sections I and II required**
☒	**50.59 EVALUATION EXEMPTION**	**Sections I, II, and III required**
☒	**50.59 EVALUATION (#: 05-002)**	**Sections I, II, and IV required**

Preparer: R. S. Nobles R S Nobles ENERCON/Design/ 1-13-05
Name (print) / Signature / Company / Department / Date

Reviewer: Ralph Schwartzbeck Ralph K. Schwartzbeck ENERCON/Design/ 1-13-05
Name (print) / Signature / Company / Department / Date

Section IV Co-Reviewer: Ed Weigert Edward D Weigert Entergy/Safety Analysis/ 1-13-05
Name (print) / Signature / Company / Department / Date

OSRC: R. A DODDS R A Dodds 1/13/2005
Chairman's Name (print) / Signature / Date
[Required only for Programmatic Exclusion Screenings (see Section 5.8) and 50.59 Evaluations.]

II. SCREENINGS

A. Licensing Basis Document Review

1. Does the proposed activity impact the facility or a procedure as described in any of the following Licensing Basis Documents?

Operating License	YES	NO	CHANGE # and/or SECTIONS IMPACTED
Operating License	☐	☒	
TS	☐	☒	
NRC Orders	☐	☒	
If "YES", obtain NRC approval prior to implementing the change by initiating an LBD change in accordance with NMM LI-113. (See Section 5.2[13] for exceptions.)			

LBDs controlled under 50.59	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
FSAR	☒	☐	DRN 03-2063 (FSAR Sections 9.1.3.1, 9.1.3.3, 9.2.5.2, 9.2.5.3.2, 9.2.5.3.3, 9.3.4.2.2, 9.3.6.1.2, 9.3.6.2.1, 9.3.6.2.2, 9.3.6.3.1, 9.3.6.3.3, 9.3.6.3.4; Tables 9.1-3, 9.2-3, 9.2-9, 9.2-10, 9.3-11, 9.3-17; Figures 9.1-22, 9.2-4, 9.2-4A, 9.2-5, 9.2-5a, 9.3-7, 9.3-8, 9.3-8A, and 9.3-8B)
TS Bases	☐	☒	DRN 04-1243, to be issued by ER-W3-2001-1149-000 (Sections B3/4.1.2, B3/4.7.1.3, B3/4.7.4, B3/4.8.1, B3/4.8.2, B3/4.8.3)
Technical Requirements Manual	☐	☒	
Core Operating Limits Report	☐	☒	
NRC Safety Evaluation Report and supplements for the initial FSAR[1]	☐	☒	
NRC Safety Evaluations for amendments to the Operating License[1]	☐	☒	
If "YES", perform an Exemption Review per Section III OR perform a 50.59 Evaluation per Section IV OR obtain NRC approval prior to implementing the change. If obtaining NRC approval, document the LBD change in Section II.A.5; no further 50.59 review is required. However, the change cannot be implemented until approved by the NRC. AND initiate an LBD change in accordance with NMM LI-113.			

LBDs controlled under other regulations	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
Quality Assurance Program Manual[2]	☐	☒	
Emergency Plan[2, 3]	☐	☒	
Fire Protection Program[3, 4] (includes the Fire Hazards Analysis)	☐	☒	
Offsite Dose Calculations Manual[3, 4]	☐	☒	

[1] If "YES," see Section 5.2[5]. No LBD change is required.
[2] If "YES," notify the responsible department and ensure a 50.54 Evaluation is performed. Attach the 50.54 Review.
[3] Changes to the Emergency Plan, Fire Protection Program, and Offsite Dose Calculation Manual must be approved by the OSRC in accordance with NMM OM-119.
[4] If "YES," evaluate the change in accordance with the requirements of the facility's Operating License Condition or under 50.59, as appropriate.

If "YES", evaluate any changes in accordance with the appropriate regulation AND initiate an LBD change in accordance with NMM LI-113. No further 50.59 review is required.

2. **Does the proposed activity involve a test or experiment not described in the FSAR?** ☐ Yes ☒ No

   If "yes," perform a 50.59 Evaluation per Section IV OR obtain NRC approval prior to implementing the change AND initiate an LBD change in accordance with NMM LI-113. If obtaining NRC approval, document the change in Section II.A.5; no further 50.59 review is required. However, the change cannot be implemented until approved by the NRC.

3. **Basis**

Explain why the proposed activity does or does not impact the Operating License/Technical Specifications and/or the FSAR and why the proposed activity does or does not involve a new test or experiment not previously described in the FSAR. Discuss other LBDs if impacted. Adequate basis must be provided within the Screening such that a third-party reviewer can reach the same conclusions. Simply stating that the change does not affect TS or the FSAR is not an acceptable basis. See EOI 50.59 Guidelines Section 5.3.2 for guidance.

Engineering request ER-W3-2001-1149-009 is an interdiscipline ER used for evaluating Extended Power Uprate (EPU) and its impact on FSAR Chapter 9 systems. The ER documents the results of the EPU evaluation, identifies any needed physical modifications, and describes the changes to licensing and design documents. The ER does not implement any physical plant changes.

Engineering request ER-W3-2001-1149-000 is the nuclear change ER that implements EPU. Engineering requests that will make the actual plant modifications necessary for EPU will be tracked by ER-W3-2001-1149-000.

Operating License

The Waterford Unit 3 operating license is impacted by the Extended Power Uprate, however, License Amendment Request NPF-38-249 for the extended power uprate addresses those applicable changes. None of the license conditions contained in the operating license are impacted by the activity within the scope of this ER beyond those beyond those changes addressed in the LAR. Therefore, the proposed activity does not impact the Waterford Unit 3 operating license.

Technical Specifications

Implementation of EPU is dependent upon NRC acceptance of changes to the Waterford 3 operating license as addressed in LAR NPF 38-249. Since the ER is an integral part of EPU, NRC approval of the license amendment request is required for implementation of this activity.

Technical Specification changes included in LAR NPF 38-249 that are associated with changes made by this ER are as follows:

- Tech Spec 3.1.2.2, Flow Path
- Tech Spec 4.1.2.1, Surveillance Requirements
- Tech Spec 4.1.2.2, Surveillance Requirement
- Tech Spec 3/4.1.2.7, Borated Water Sources – Shutdown
- Tech Spec 3/4.1.2.8, Borated Water Sources – Operating
- Tech Spec Figure 3.1-1, Required Stored Boric Acid Volume as a Function of Concentration (Volume of One BAMT)
- Tech Spec Figure 3.1-2, Required Stored Boric Acid Volume as a Function of Concentration Combined Volume of Two BAMT)
- Tech Spec 3.7.1.3, Condensate Storage Pool
- Tech Spec 4.7.1.3.1, Surveillance Requirements

The changes within the scope of ER-W3-2001-1449-009 do not require revision to the Technical Specification beyond those included in LAR NPF-38-249, including supplements. The activities within the

scope of this ER will not adversely affect the mode of operation of any important to safety equipment or Technical Specification associated equipment. In addition, the activities will not create a system configuration or operating condition such that a Technical specification LCO or surveillance requirement is no longer adequate. Likewise, the activities will not result in a condition that would bypass or invalidate automatic actuation features required to be operable by the Technical specification or exceed any limit specified in the Operating License and Technical Specifications. Therefore, the proposed changes do not require an Operating License or Technical Specification change outside the bounds of LAR NPF-38-249.

FSAR

The FSAR sections, tables and figures revised by DRN 03-2063 are addressed below.

1. FSAR Sections 9.1.3.1, 9.1.3.3 and Figure 9.1-22: Changes the number of spent fuel assemblies that can be stored in the spent fuel pool, which is dependent on the decay heat loads of the fuel assemblies and the thermal performance of the fuel pool cooling system. Provides additional details with regard to reactor power levels associated with each cycle of spent fuel assemblies. Updates the number of spent fuel assemblies that are expected to be placed in the pool after reactor shutdown and the number of batches from previous refueling cycles. Changes the assumed single failure scenario to the failure of a divisional electrical bus. Revise the time-to-boil value, assuming cooling is lost, to the limiting value of a full core offload starting three days after reactor shutdown. (Note: This value remains unchanged under EPU). The changes are based on calculations ECM98-022, ECM98-067 and ECS96-003 which were revised for EPU, and which provide the basis for LAR NPF-38-249 statements that indicate the spent fuel pool cooling system is adequate for EPU (PUR Section 2.5.5.1 and supplemental letters W3F1-2004-0035, W3F1-2004-0102 and W3F1-2004-0117).
2. FSAR Table 9.1-3 (Sheets 5, 6, 7 and 8): Changes are made to operating parameters for the fuel pool heat exchanger and for the backup fuel pool heat exchanger to reflect system capability. The changes are based on calculations ECM98-022, ECM98-067 and ECS96-003 which were revised for EPU, and which provide the basis for LAR NPF-38-249 statements that indicate the spent fuel pool cooling system is adequate for EPU (PUR Section 2.5.5.1 and supplemental letters W3F1-2004-0035, W3F1-2004-0102 and W3F1-2004-0117).
3. FSAR Sections 9.2.5 2 and 9.2.5.3.2: a change is made to the number of days the wet cooling towers are needed after a LOCA and to the amount of make up water required for the WCT basin if only one UHS train is available. Operation of the wet cooling tower is extended from 5 to 8 days after the postulated LOCA. Additional water volume is lost from the WCT due to the increased operating time, so make up water requirements are increased from 44,000 gallons to 96,362 gallons. These changes are based on calculations MNQ9-3 and MNQ9-9 which are revised for EPU, and which provide the basis for LAR NPF 38-249 statements that indicate the UHS and Wet/Dry Cooling Towers will continue to meet design requirements (PUR Section 2.5.5.4 and supplemental letter W3F1-2004-0035).
4. FSAR Table 9.2-3: changes have been made to the cooling water flow requirements and heat loads imposed on the component cooling water system during various plant operating modes.

   The heat load during normal plant operations from the fuel pool cooling system increase from 11.2 x 10^6 Btu/hr to 20.17 x 10^6 Btu/hr due to an increase in the number of fuel assemblies to be stored in the fuel pool, an increase in the decay heat from the higher energy fuel assemblies, and a reduction in refueling outage duration to 15 days. This change is consistent with LAR NPF-38-249. In addition, the heat loads imposed on the component cooling water system by the Containment Fan Coolers and Chillers are adjusted to reflect values found in existing design basis documents, and the number of operating CCW filters is added. *These additional changes are not addressed in the LAR and are, therefore, discussed further in Section III.*

   The heat loads transferred to the component cooling water system during shutdown operation increased for EPU due to higher decay heat loads generated in the reactor core and the spent fuel pool (as discussed in PUR 2.5.5.3). These changes are consistent with LAR NPF-38-249. In addition, the heat loads imposed on the component cooling water system by the Containment Fan Coolers and Chillers , and the flow requirement for the Reactor Coolant Pumps and Motors, are changed to reflect values found in existing design basis documents. *These additional changes are not addressed in the LAR and are, therefore, discussed further in Section III.*

   During refueling, the decay heat from 217 fuel assemblies is divided and transferred to the component cooling water system by the shutdown heat exchanger and the fuel pool cooling system. In addition, the background decay heat from 21 previous fuel batches is also added to the fuel pool cooling system heat load. The shutdown heat exchanger load is changed from 36.0 x 10^6 Btu/hr to 23.90 x 10^6 Btu/hr. The heat load from the fuel pool cooling system is changed from 5.2 x 10^6 Btu/hr

to 29.0 x 10^6 Btu/hr. A note is also added to state the fuel pool heat load during refueling will be administratively controlled. These changes are consistent with LAR NPF-38-249. In addition, the heat load imposed on the component cooling water system by the Containment Fan Coolers, Chillers, Letdown Heat Exchanger, and Sample Coolers are adjusted to reflect values found in design basis documents, and the number of operating CCW filters is added. *These additional changes are not addressed in the LAR and are, therefore, discussed further in Section III.*

The major heat loads on the component cooling water system during the postulated LOCA are from the shutdown heat exchanger and the containment fan coolers. The total heat load for both components is changed from 180 x 10^6 Btu/hr to 150 x 10^6 Btu/hr. (The EPU containment analysis lumped the two components together to establish a single heat load value for both components.) The lower heat load value reflects the use of the GOTHIC software model in running the containment pressure and temperature analyses.

These changes are based on calculations ECM95-008, MNQ9-3, and MNQ9-10 which were revised for EPU, and which provide the basis for LAR NPF 38-249 statements that indicate the Component Cooling Water System evaluation is based on a "more detailed evaluation of CCW heat loads...the heat load on the CCW and ACCW systems following the EPU is bounded by heat loads that were considered in the design of these systems for the pre-EPU conditions" and will continue to meet design requirements, and which discuss the use of GOTHIC software (vs CONTEMPT) in the analysis, as well as a reduction in refueling outage duration to 15 days (PUR Sections 2.5.2, 2.5.2.5, 2.5.5, 2.5.5.1, 2.5.5.4, supplemental letters W3F1-2004-0035 and W3F1-2004-0037).

5. FSAR Table 9.2-9: changes have been made to the estimated UHS heat loads for accident conditions to reflect an overall reduction in the heat removal requirements. These changes are based on calculation MNQ9-10 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the 'peak total head for the UHS at EPU operating conditions decreases from the pre-EPU peak heat load due to a more detailed evaluation of CCW LOCA heat loads', and that the UHS will continue to meet design requirements (PUR Section 2.5.5.4 and supplemental letter W3F1-2004-0035). *The changes to normal operations, refueling, and normal shutdown values are discussed further in Section III.*
6. FSAR Table 9.2-10: changes are made to the wet cooling tower water losses after a LOCA to reflect EPU conditions, to the number of days the wet cooling towers are needed after a LOCA, and to the amount of make up water required for the WCT basin if only one UHS train is available. These changes reflect an overall reduction in water requirements for essential loads and are based on calculation MNQ9-9 which was revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the UHS will continue to meet design heat removal and water usage requirements (PUR Section 2.5.5.4 and supplemental letter W3F1-2004-0035).
7. FSAR Figures 9.2-4 and 9.2-4A: changes have been made to the heat loads dissipated by the ultimate heat sink during a LOCA. These changes are based on calculation MNQ9-3 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the UHS will continue to meet design requirements (PUR Section 2.5.5.4 and supplemental letter W3F1-2004-0035).
8. FSAR Figure 9.2-5: a change has been made to the heat loads imposed on the dry cooling tower during normal operating, refueling and shutdown conditions. *These changes are discussed further in Section III.*
9. FSAR Figure 9.2-5a: changes are made to the acceptable dry bulb and wet bulb temperatures for the design basis heat loads on the ultimate heat sink. These changes are based on calculation ECM95-008 which was revised for EPU, and which provides the basis for LAR NPF 38-249 statements that indicate the UHS will continue to meet design requirements (PUR Section 2.5.5.4 and supplemental letter W3F1-2004-0035).
10. FSAR Section 9.3.4.2.2 and Table 9.3-11: changes are made to the minimum boron concentration in the boric acid make up tanks and to the normal letdown temperature from RCS. The minimum boron concentration has been changed from 2.25 weight percent (3950 ppm) to 2.8 weight percent (4900 ppm). The increase in boron ensures shutdown margin requirements will be met for the higher core power. The Technical Specifications have been changed to describe boron concentration in parts per million (ppm) instead of weight percent. These changes are consistent with changes to Technical Specifications 3/4.1.37 and 3/4.1.2.8 as addressed in LAR NPF 38-249, and with PUR section 2.1.11 which states that effects of changes in reactor coolant temperature and their effects on the CVCS due to the proposed EPU have been adequately addressed and it has been demonstrated that the CVCS will maintain its design function.
11. FSAR Sections 9.3.6.1.2, 9.3.6.3.3, and Table 9.3-17: A change is made in the time period when

shutdown cooling can maintain the RCS at 140°F. The reduction in time to maintain refueling temperature is changed from 27-1/2 hours to 17-1/2 hours; the change is based on the methodology found in calculation MNQ9-1 using EPU decay heat values. The parameters describing the shutdown cooling heat exchanger flows and heat loads are changed in Table 9.3-17. These changes are based on calculation MNQ9-1 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the Shutdown Cooling System will continue to meet design requirements. The changes are consistent with PUR 2.6.4.4 which states, "The results of the performance evaluation as described in the FSAR conclude that while the cooldown capability is achieved, the duration of each condition evaluated may be extended, depending on actual operating conditions". The analyses use a refueling temperature of 140°F which is consistent with the Technical Specification definition of Mode 6 – Refueling, and with various places in the submittal that also use the 140°F pool temperature value (e.g., PUR 2.5.5.1 and letter W3F1-2004-0102 Response 6).

12. FSAR Sections 9.3.6.1.2, 9.3.6.2.1, 9.3.6.2.2, 9.3.6.3.1 and 9.3.6.3.3: changes are made to the shutdown cooling system performance when cooling the RCS from 350°F to 200°F and 140°F. These changes are based on calculation CN-PS-03-15 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the Shutdown Cooling System will continue to meet design requirements. The changes are consistent with: PUR 2.6.4.4 which states, "The results of the performance evaluation as described in the FSAR conclude that while the cooldown capability is achieved, the duration of each condition evaluated may be extended, depending on actual operating conditions", and with supplemental letter W3F1-2004-0061 which provides additional discussion of shutdown cooling under EPU conditions. The analyses use a refueling temperature of 140°F which is consistent with the Technical Specification definition of Mode 6 – Refueling, and with various places in the submittal that also use the 140°F pool temperature value (e.g., PUR 2.5.5.1 and letter W3F1-2004-0102 Response 6).
13. FSAR Section 9.3.6.3.4: changes are made to the approximate time for a steam generator to boil dry (with no makeup) upon a loss of shutdown cooling with a closed RCS, and to the minimum time before core uncovery will occur upon a loss of shutdown cooling with an open RCS. *This change is evaluated in Section IV.*
14. FSAR Figures 9.3-7 and 9.3-8 are deleted. The figures reflect duplicative information that is presented in textual format in FSAR Section 9.3.6.3.3 and which has been updated for EPU as per Change Item 12 above. The textual description updates are based on calculation CN-PS-03-15 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the Shutdown Cooling System will continue to meet design requirements. The changes are consistent with: PUR 2.6.4.4 which states, "The results of the performance evaluation as described in the FSAR conclude that while the cooldown capability is achieved, the duration of each condition evaluated may be extended, depending on actual operating conditions", and with supplemental letter W3F1-2004-0061 which provides additional discussion of shutdown cooling under EPU conditions.
15. FSAR Figures 9.3-8A and 9.3-8B: the curves showing the cool down temperatures and times have been changed to show the new conditions for power uprate. These changes are based on calculation CN-PS-03-14 which is revised for EPU, and which provides the basis for LAR NPF-38-249 statements that indicate the Shutdown Cooling System will continue to meet design requirements (PUR 2.6.4.4 and supplemental letter W3F1-2004-0061).

Technical Specification Bases

Technical Specification Bases changes associated with EPU and FSAR Chapter 9 are addressed in, and will be implemented by, ER-W3-2001-1149-000 via DRN 04-1243. The changes associated with Chapter 9 are:

B3/4.1.2, Boration Systems

B3/4.7.1.3, Condensate Storage Pool

B3/4.7.4, Ultimate Heat Sink

B3/4.8.1, B3/4.8.2, and B3/4.8.3, A.C. Sources, D.C. Sources, and Onsite Power Distribution Systems

Test or Experiment not described in the FSAR:

This activity does not involve a test or experiment that is not described in the FSAR. The activities are restricted to evaluations of FSAR Chapter 9 systems with regard to EPU impacts and associated FSAR changes. There are no tests included within the scope of this ER.

Calculations ECM97-037 and ECM98-042 (as listed in Section I) were converted to study calculations by this ER. ECM97-037 is simply a sizing calculation for the Volume Control Tank and its conversion to a study calculation has no impact on licensing basis documents. ECM98-042 expands on design information that is found in calculation MNQ9-1 but does not provide any additional design basis, nor is it used to support any operating procedures. The conversion of ECM98-042 to a study calculation has no impact on licensing basis documents.

4. References

Discuss the methodology for performing LBD searches. State the location of relevant licensing document information and explain the scope of the review such as electronic search criteria used (e.g., key words) or the general extent of manual searches per Section 5.4.1[5]](d) of LI-101. **NOTE: Ensure that manual searches are performed using controlled copies of the documents. If you have any questions, contact your site Licensing department.**

LBDs/Documents reviewed via keyword search:

FSAR, Technical Specifications/Bases, TRM, ODCM, OL, SER

Keywords: Loss of shutdown cooling, loss of SDCS, boil dry, boiling dry, core uncovery, containment closure, compensatory

Additionally, a full review of FSAR Chapter 9 was performed on a page by page basis to identify necessary changes. Other LBD impacts will be performed with the ER-W3-2001-1149 family.

LBDs/Documents reviewed manually:

FSAR Chapter 9, Section 10.4.9; Tech Spec Sections 3/4.1.1, 3/4.1.2, 3/4.6.6, 3/4.7.1, 3/4.7.4, 3/4.7.6, 3/4.7.7, 3/4.9.1, 3/4.9.8

5. Is the validity of this Review dependent on any other change? (See Section 5.3.4 of the EOI 10 CFR 50.59 Program Review Guidelines.) ☒ Yes ☐ No

If "YES", list the required changes/submittals. The changes covered by this 50.59 Review cannot be implemented without approval of the other identified changes (e.g., license amendment request). Establish an appropriate notification mechanism to ensure this action is completed.

Although this ER does not initiate any Operating License or Technical Specification changes, some of the changes within the scope of this ER are dependent on changes included in the Extended Power Uprate License Amendment Request NPF-38-249 (including all supplements). The license amendment request is currently awaiting NRC approval and the approved NRC Safety Evaluation Report addressing this request must be reviewed to ensure that the assumptions made in this evaluation remain valid. An ERD action has been created for ER-W3-2001-1149-000 to review this ER against the approved/issued NRC SER to ensure that the ER remains in agreement with the approved SER. Validity of this review is also dependent on concurrent implementation of ER-W3-2001-1149-000, Waterford 3 Extended Power Uprate.

B. ENVIRONMENTAL SCREENING

If any of the following questions is answered "yes," an Environmental Review must be performed in accordance with NMM Procedure EV-115, "Environmental Evaluations," and attached to this 50.59 Review. Consider both routine and non-routine (emergency) discharges when answering these questions.

Will the proposed Change being evaluated:

	Yes	No	
1.	☐	☒	Involve a land disturbance of previously disturbed land areas in excess of one acre (i.e., grading activities, construction of buildings, excavations, reforestation, creation or removal of ponds)?
2.	☐	☒	Involve a land disturbance of undisturbed land areas (i.e., grading activities, construction, excavations, reforestation, creating, or removing ponds)?
3.	☐	☒	Involve dredging activities in a lake, river, pond, or stream?
4.	☐	☒	Increase the amount of thermal heat being discharged to the river or lake?
5.	☐	☒	Increase the concentration or quantity of chemicals being discharged to the river, lake, or air?
6.	☐	☒	Discharge any chemicals new or different from that previously discharged?
7.	☐	☒	Change the design or operation of the intake or discharge structures?
8.	☐	☒	Modify the design or operation of the cooling tower that will change water or air flow characteristics?
9.	☐	☒	Modify the design or operation of the plant that will change the path of an existing water discharge or that will result in a new water discharge?
10.	☐	☒	Modify existing stationary fuel burning equipment (i.e., diesel fuel oil, butane, gasoline, propane, and kerosene)?[1]
11.	☐	☒	Involve the installation of stationary fuel burning equipment or use of portable fuel burning equipment (i.e., diesel fuel oil, butane, gasoline, propane, and kerosene)?[1]
12.	☐	☒	Involve the installation or use of equipment that will result in a new or additional air emission discharge?
13.	☐	☒	Involve the installation or modification of a stationary or mobile tank?
14.	☐	☒	Involve the use or storage of oils or chemicals that could be directly released into the environment?
15.	☐	☒	Involve burial or placement of any solid wastes in the site area that may affect runoff, surface water, or groundwater?

[1] See NMM Procedure EV-117, "Air Emissions Management Program," for guidance in answering this question.

C. SECURITY PLAN SCREENING

If any of the following questions is answered "yes," a Security Plan Review must be performed by the Security Department to determine actual impact to the Plan and the need for a change to the Plan.

Could the proposed activity being evaluated:

	Yes	No	
1.	☐	☒	Add, delete, modify, or otherwise affect Security department responsibilities (e.g., including fire brigade, fire watch, and confined space rescue operations)?
2.	☐	☒	Result in a breach to any security barrier(s) (e.g., HVAC ductwork, fences, doors, walls, ceilings, floors, penetrations, and ballistic barriers)?
3.	☐	☒	Cause materials or equipment to be placed or installed within the Security Isolation Zone?
4.	☐	☒	Affect (block, move, or alter) security lighting by adding or deleting lights, structures, buildings, or temporary facilities?
5.	☐	☒	Modify or otherwise affect the intrusion detection systems (e.g., E-fields, microwave, fiber optics)?
6.	☐	☒	Modify or otherwise affect the operation or field of view of the security cameras?
7.	☐	☒	Modify or otherwise affect (block, move, or alter) installed access control equipment, intrusion detection equipment, or other security equipment?
8.	☐	☒	Modify or otherwise affect primary or secondary power supplies to access control equipment, intrusion detection equipment, other security equipment, or to the Central Alarm Station or the Secondary Alarm Station?
9.	☐	☒	Modify or otherwise affect the facility's security-related signage or land vehicle barriers, including access roadways?
10.	☐	☒	Modify or otherwise affect the facility's telephone or security radio systems?

Documentation for accepting any "yes" statement for these reviews will be attached to this 50.59 Review or referenced below.

D. INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) SCREENING

If any of the following questions is answered "yes," an ISFSI Review must be performed in accordance with NMM Procedure LI-112, "72.48 Review," and attached to this Review.

Will the proposed Change being evaluated:

	Yes	No	
1.	☐	☒	Any activity that directly impacts spent fuel cask storage or loading operations?
2.	☐	☒	Involve the Independent Spent Fuel Storage Installation (ISFSI) including the concrete pad, security fence, and lighting?
3.	☐	☒	Involve a change to the on-site transport equipment or path from the Fuel Building to the ISFSI?
4.	☐	☒	Involve a change to the design or operation of the Fuel Building fuel bridge including setpoints and limit switches?
5.	☐	☒	Involve a change to the Fuel Building or Control Room(s) radiation monitoring?
6.	☐	☒	Involve a change to the Fuel Building pools including pool levels, cask pool gates, cooling water sources, and water chemistry?
7.	☐	☒	Involve a change to the Fuel Building handling equipment (e.g., bridges and cask cranes, structures, load paths, lighting, auxiliary services, etc)?
8.	☐	☒	Involve a change to the Fuel Building electrical power?
9.	☐	☒	Involve a change to the Fuel Building ventilation?
10.	☐	☒	Involve a change to the ISFSI security?
11.	☐	☒	Involve a change to off-site radiological release projections from non-ISFSI sources?
12.	☐	☒	Involve a change to spent fuel characteristics?
13.	☐	☒	Redefine/change heavy load pathways?
14.	☐	☒	Fire and explosion protection near or in the on-site transport paths or near the ISFSI?
15.	☐	☒	Involve a change to the loading bay or supporting components?
16.	☐	☒	New structures near the ISFSI?
17.	☐	☒	Modifications to any plant systems that support dry fuel storage activities?
18.	☐	☒	Involve a change to the nitrogen supply, service air, demineralized water or borated water system in the Fuel Building?

III. 50.59 EVALUATION EXEMPTION

Enter this section only if a "yes" box was checked in Section II.A.1, above.

A. Check the applicable boxes below. If any of the boxes are checked, clearly document the basis in Section II.B, below. If none of the boxes are appropriate, perform a 50.59 Evaluation in accordance with Section IV. Provide supporting documentation or references as appropriate.

☒ The proposed activity meets all of the following criteria regarding design function per Section 5.5[1](a):

The proposed activity does not adversely affect the design function of an SSC as described in the FSAR; **AND**

The proposed activity does not adversely affect a method of performing or controlling a design function of an SSC as described in the FSAR; **AND**

The proposed activity does not adversely affect a method of evaluation that demonstrates intended design function(s) of an SSC described in the FSAR will be accomplished.

☐ An approved, valid 50.59 Review(s) covering associated aspects of the proposed activity already exists per Section 5.5[1](b). Reference 50.59 Evaluation # _____ (if applicable) or attach documentation. Verify the previous 50.59 Review remains valid.

☐ The NRC has approved the proposed activity or portions thereof per Section 5.5[1](c). Reference: _____

B. Basis

Provide a clear, concise basis for determining the proposed activity may be exempted such that a third-party reviewer can reach the same conclusions. See Section 5.6.6 of the EOI 10 CFR 50.59 Review Program Guidelines for guidance.

Portions of Changes 4, 5 and 8 require an Exemption Evaluation, as discussed in Section II:

Changes 4 and 8:

Some of the heat loads imposed on the component cooling water system during normal plant operations, normal shutdown operations and refueling operations, as listed on FSAR Table 9.2-3 and shown on FSAR Figure 9.2-5, are adjusted to reflect values found in existing design basis documents.

For normal plant operations, the containment fan cooler heat load is changed from 4.1 x 10^6 BTU/HR to 4.7 x 10^6 BTU/HR, and chiller heat load is changed from 8.8 x 10^6 BTU/HR to 6.3 x 10^6 BTU/HR. The changes are based on calculation MNQ9-10 and reflect a net decrease in CCW heat loads of 1.9 x 10^6 BTU/HR. Therefore, this change does not adversely change the design function of the CCW design function [Note: The net increase in total CCW heat load and flow is discussed in Section II of this 50.59]. The increase in containment fan cooler load is based on including the RCS unidentified leakage as a heat input. This change is not considered adverse since the new containment fan cooler heat load (4.7 x 10^6 BTU/Hr) is within the design capability (5.1 x 10^6 Btu/hr) of the unit; therefore containment temperature will remain below the Tech. Spec. 3.6.1.5 limit of 120°F. The decrease in chiller heat load is based on newer vendor information and does not impact the operation or the design basis function of the essential chillers. The essential chillers will be capable of maintaining room spaces within the assumed temperatures. One additional correction to Table 9.2-3 is to add the number of operating CCW filters (two) during normal operation. The table already indicates the flow associated with the operating filters, but the number of filters is missing. This change has no effect on CCW design functions.

For normal shutdown operations, the containment fan cooler heat load is changed from 4.1 x 10^6 BTU/HR to 4.7 x 10^6 BTU/HR, and chiller heat load is changed from 8.8 x 10^6 BTU/HR to 6.3 x 10^6 BTU/HR. These changes do not adversely impact any system or component design function as discussed above. The flow requirement for Reactor Coolant Pumps and Motors is changed from 780 to 1560 gpm. The change to Reactor Coolant Pumps and Motors CCW flow is a correction to the table data because, even though only 2 RCPs are in operation during shutdown, CCW will continue to flow through the two idle pumps as indicated by current operating procedures. The total maximum CCW train flow requirement of 6527.5 remains below the pump design capacity of 6800 gpm as noted in footnote 5, therefore this change is neutral with respect to system design functions. [Note: The net increase in total CCW heat load is discussed in Section II of this 50.59].

For refueling operations, the containment fan cooler heat load is changed from 4.1 x 10^6 BTU/HR to 0 x 10^6 BTU/HR, chiller heat load is changed from 8.8 x 10^6 BTU/HR to 6.3 x 10^6 BTU/HR, Letdown Heat Exchanger heat load is changed from 0.8 x 10^6 BTU/HR to 0 x 10^6 BTU/HR, and the Sample Coolers heat load is changed from 2.4 x 10^6 BTU/HR to 0 x 10^6 BTU/HR. The change to the essential chiller heat load does not adversely impact any design function as discussed above. The change to the remaining heat loads is a correction to indicate that at refueling conditions, heat loads are not generated from these components. This does not impact the design function of these components or the CCW system. One additional correction is to add the number of operating CCW filters. The table already indicates the flow associated with the operating filters, but the number of filters is missing. This change also has no effect on CCW design functions. [Note: The net increase in total CCW heat load and flow is discussed in Section II of this 50.59].

Based on the above, the changes to FSAR Table 9.2-3 and FSAR Figure 9.2-5 do not adversely affect the design function of an SSC as described in the FSAR, do not adversely affect a method of performing or controlling a design function of an SSC as described in the FSAR, and do not adversely affect a method of evaluation that demonstrates intended design function(s) of an SSC described in the FSAR will be accomplished.

Change 5:

The estimated Wet-Dry Cooling Tower heat dissipation values listed on FSAR Table 9.2-9 for normal operation, refueling, and normal shutdown conditions are changed. The changes to estimated Wet-Dry Cooling Tower heat dissipation values listed on FSAR Table 9.2-9 are derived from FSAR Table 9.2-3 and these changes do not impact any component or system design function as discussed above. The ambient wet-bulb temperature is conservatively changed from 76°F to 83°F to be consistent with FSAR Table 2.3-2(a). As indicated in FSAR Table 2.3-2(a), the 83°F value is based on the maximum wet-bulb temperature of record at Moisant Field for the period between 1946 and 1977, and was determined to adequately bound the impact of the wet-bulb temperatures experienced for the period 1997 to 2001 (Reference EC-M03-007). Therefore, the changes to FSAR Table 9.2-9 do not adversely affect the design function of an SSC as described in the FSAR, do not adversely affect a method of performing or controlling a design function of an SSC as described in the FSAR, and do not adversely affect a method of evaluation that demonstrates intended design function(s) of an SSC described in the FSAR will be accomplished.

IV. 50.59 EVALUATION

License Amendment Determination

Background:

Change 13 requires a 50.59 Evaluation.

Change 13 - FSAR Section 9.3.6.3.4 is revised as follows: the approximate time for a steam generator to boil dry (with no makeup) upon a loss of shutdown cooling with a closed RCS is changed from 6 hours to 5 hours, and the minimum time before core uncovery will occur upon a loss of shutdown cooling with an open RCS is changed from 1.5 hours to 1.4 hours. The existing FSAR values are based on calculation ECS89-005, which is revised to reflect the increase in core decay heat as a result of EPU. The FSAR changes noted above are based on this revised calculation (DRN04-570). These analysis changes are the result of the higher decay heat for power uprate which increases the water boil off rate.

As indicated in Waterford-3's original response to NRC GL 87-12, the loss of shutdown cooling scenarios described in the FSAR are within Waterford's procedural and design basis capability to mitigate without fuel damage or the release of radioactive material. Operating procedures provide Operators with instructions for responding to various shutdown cooling system malfunctions including loss of shutdown cooling flow and loss of shutdown cooling heat removal capability. The procedures specify containment closure time requirements that must be complied with if a loss of shutdown cooling event occurs. The times are based on plant conditions such as operating mode, RCS level, system/equipment operability, etc. to ensure that primary containment is re-established within a time period that is appropriate to current conditions. The procedures also provide directions for the Operators in specific actions for make-up of lost RCS inventory, and to re-establish shutdown cooling flow and/or heat removal capability. Operating procedures also require assignment of a dedicated Licensed Operator to monitor shutdown cooling and respond to indications of a shutdown cooling malfunction, and require the containment equipment hatch to be closed and secured within specific time limits, dependent on plant conditions. These procedural requirements provide adequate compensatory measures should a loss of shutdown cooling event occur.

Does the proposed Change being evaluated represent a change to a method of evaluation ONLY? If "Yes," Questions 1 – 7 are not applicable; answer only Question 8. If "No," answer all questions below.

☐ Yes
☒ No

Does the proposed Change:

1. **Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the FSAR?**

☐ Yes
☒ No

BASIS:

The proposed change does not affect any accident initiators. The potential for causing a loss of shutdown cooling is not affected by these changes. The changes do not affect overall system performance or reliability, nor do they cause systems to be operated outside of their design or test limits. Therefore the changes do not result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the FSAR.

2. **Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR?**

☐ **Yes**
☒ **No**

BASIS:

The proposed change does not affect the design or operation of any SSCs that are either accident initiators or accident mitigators. The likelihood of a malfunction of an SSC associated with a loss of shutdown cooling event or mitigation of same is not affected by these changes, therefore the changes do not result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR.

3. **Result in more than a minimal increase in the consequences of an accident previously evaluated in the FSAR?** ☐ Yes ☒ No

BASIS:

The higher decay heat for power uprate reduces the time to core uncovery for a loss of shutdown cooling. However, the postulated loss of shutdown cooling scenario is within the Waterford 3 procedural and design basis capability to mitigate without fuel damage or the release of radioactive material. The proposed changes do not affect the function of equipment designed to control the release of radioactive material and do not result in a new pathway for release of radioactive material. Additionally, the changes will not affect onsite dose in a way that restricts access to vital areas or impedes mitigating actions. Therefore, the change will not result in more than a minimal increase in the consequences of an accident previously evaluated in the FSAR.

4. **Result in more than a minimal increase in the consequences of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR?** ☐ Yes ☒ No

BASIS:

The higher decay heat for power uprate reduces the time to core uncovery for a loss of shutdown cooling. However, the postulated loss of shutdown cooling scenario is within the Waterford 3 procedural and design basis capability to mitigate without fuel damage or the release of radioactive material. Operations procedures ensure that compensatory measures are utilized to preclude core boiling in the unlikely event that the shutdown cooling system should be lost, and sufficient time is available for implementation of those compensatory measures after power uprate. Procedures require re-establishment of primary containment so that the effects of boil off, should it occur, are contained within the primary containment envelope. The existing time requirements for these procedurally-controlled actions are not affected by the changes, and the actions will continue to be required under EPU. A revision of calculation ECS02-004 (DRN04-2059) incorporates the effects of EPU and determined that the inventory released during the boil off following a loss of shutdown cooling event continues to be bounded by the release from a Fuel Handling Accident; since the inventory released is bounded, the dose consequences are also bounded. There is no change to those procedures or equipment used to mitigate a loss of shutdown cooling as a result of this change for power uprate. The changes do not cause a greater reliance to be placed on a specific SSC to perform a safety function, nor do they affect the design or operation of any SSC. Therefore, the change will not result in more than a minimal increase in the consequences of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR.

5. **Create a possibility for an accident of a different type than any previously evaluated in the FSAR?** ☐ Yes ☒ No

BASIS:

The effects of the proposed changes are associated with a postulated scenario that is evaluated in the FSAR. The changes will not affect any systems or equipment in a manner that will cause equipment response or interaction in a manner that is not already evaluated. Therefore, effects of the proposed changes are bounded by an existing analysis found in the FSAR, and there are no accidents of a different type created by these changes.

6. **Create a possibility for a malfunction of a structure, system, or component important to safety with a different result than any previously evaluated in the FSAR?** ☐ Yes ☒ No

BASIS:

The reactor vessel internals (including fuel), RCS and steam generators are SSC's important to safety. The effects of the proposed changes are associated with a postulated loss of shutdown cooling scenario that is evaluated in FSAR Section 9.3.6.3.4. The proposed changes do not introduce a new failure mode or failure mechanism. Likewise, the results of analyzed failures remain the same as those in the existing analysis, although the time frame in which the results occur are revised; the effects on the time changes are specifically evaluated in response to questions 3 and 4 above. As result, the change does not introduce any new failure modes for associated equipment and does not create the possibility for a malfunction of a structure, system, or component important to safety with a different result than any

previously evaluated in the FSAR.

7. **Result in a design basis limit for a fission product barrier as described in the FSAR being exceeded or altered?** ☐ Yes ☒ No

BASIS:

Operational configurations are based on an acceptable time limit for core uncovery that must be greater than 1-hour in order to provide adequate time for performing mitigative actions. Although the core uncovery calculated time under EPU of 1.4 hours is reduced from the pre-EPU value of 1.5 hours, it still meets the acceptance limit of greater than 1-hour. The postulated scenario is within the Waterford 3 procedural and design basis capability to mitigate without fuel damage or the release of radioactive material. Therefore, the changes do not affect any design basis limits for fission product barriers including fuel cladding, RCS boundary, or containment pressure, as described in the FSAR.

8. **Result in a departure from a method of evaluation described in the FSAR used in establishing the design bases or in the safety analyses?** ☐ Yes ☒ No

BASIS:

The changes are based on standard calculation methodology previously used that incorporates effects of EPU (increased decay heat load). The changes do not affect any methods of evaluation used in analyses that demonstrate that design basis limits of fission product barriers are met, methods of evaluation used in FSAR safety analyses to demonstrate that consequences of accidents do not exceed regulatory limits, or methods of evaluation for other analyses that demonstrate intended design functions will be accomplished. Therefore, the changes will not result in a departure from a method of evaluation described in the FSAR used in establishing the design bases or in the safety analyses.

If any of the above questions is checked "YES", obtain NRC approval prior to implementing the change by initiating a change to the Operating License in accordance with NMM Procedure ENS-LI-113.