

I. OVERVIEW / SIGNATURES

Facility: Waterford 3

Document Reviewed: ER-W3-2005-0019-000

Change/Rev.: 0

OP-009-003 R12	OP-500-009 R10	OP-901-502 R9	OP-901-504 R2	OP-902-000 R9
OP-902-001 R10	OP-902-002 R9.1	OP-902-003 R4.1	OP-902-004 R9.1	OP-902-005 R11
OP-902-006 R9.1	OP-902-007 R10.1	OP-902-008 R12.1	OP-902-009 R1.2	OP-903-107 R15
MI-003-513 R4	MI-003-514 R11	MI-003-515 R11	MI-005-463 R2-2	MI-005-290 R6

System Designator(s)/Description:

Emergency Feedwater System (EFW), Steam Generator (SG), Emergency Feedwater Actuation System (EFAS), Diverse Emergency Feedwater Actuation System (DEFAS), Steam Generator Blowdown (BD), Reactor Protection System (RPS)

Description of Proposed Change:

The steam generator (SG) level setpoints providing EFW control of steam generator level are increased by this modification to provide the capability of controlling SG level above the tubes, by a combination of automatic and manual control of EFW, during mitigation of events requiring EFW operation. This change is made to provide EFW level control consistent with tube coverage considerations in the Alternate Source Term (AST) analysis of radioactive release from the steam generator. The EFW level control setpoints are field-adjustable requiring no hardware changes to the plant equipment.

The automatic RPS trip/EFAS bistable reset on increasing steam generator level is changed to occur at a higher SG level to ensure that the RPS trip/EFAS bistable signal does not reset within the new EFW steam generator level control band. The RPS trip/EFAS bistable reset is hardware configured within PPS logic cards requiring replacement with cards having a wider reset dead band to implement the new reset level.

Although the Alternate Source Term analysis assumption that SG level is maintained above the SG tubes is the basis for this change, the change can be implemented independent of the ER that establishes AST applicability as well as the Extended Power Uprate modification that relies on AST without adverse impact on the operation of Waterford 3.

Design analysis, provided by ER-W3-2005-0019-000, revises SG level control bands for manual operation of EFW; providing the ability to control steam generator level above the tubes. The revised control bands support operation of EFW using normal and emergency operating procedures (EOP). The ER identifies affected operating procedures that require change and it provides a tracking mechanism to ensure the changes are implemented.

The specific required procedure changes are:

OP-500-009 EFAS Actuation Annunciator Response will add the new reset value.

OP-009-003 Section 8.1 Return to Normal after EFAS Initiation will change the level that SG needs to be verified at prior to reset.

OP-901-502 lists the EFW normal level control band and this must be updated.

OP-901-504 Inadvertent EFAS Actuation does not currently specify level range that assures reset and will need to identify level required to reset EFAS.

OP-902-000 through 009 series of Emergency Operating Procedures contains information on the EFW level control and SG fill requirements. The EOPs will be updated to identify that the SGs levels will be verified using the SG NR instruments and that all SGs available for steaming will be required to be within these bands.

OP-903-107 will be updated to include the higher EFAS reset value to ensure that in all surveillance situations EFAS is able to be reset.

The following maintenance procedures will be updated to specify calibration values required to maintain the instrumentation settings consistent with the values established by this modification.

MI-003-513 R4 MI-003-514 R11 MI-003-515 R11 MI-005-463 R2-2 MI-005-290 R6

50.59 REVIEW FORM

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This ER replaces discussion of specific steam generator level control values presented in FSAR Sections 15.6.3.2.3.2 and 15.6.3.2.3.3 with a general discussion that steam generator level is controlled to a level above the tubes using WR and NR level instrumentation while removing specific reference to control setpoints. This clarification is consistent with the content guidelines of RG 1.70. FSAR Figure 7.3-12 is revised updating the EFW level control and RPS trip/EFAS bistable reset values to the new values established by this modification.

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

<input type="checkbox"/>	EDITORIAL CHANGE of a Licensing Basis Document	Section I
<input type="checkbox"/>	SCREENING	Sections I and II required
<input type="checkbox"/>	50.59 EVALUATION EXEMPTION	Sections I, II, and III required
<input checked="" type="checkbox"/>	50.59 EVALUATION (#: <u>05-008</u>)	Sections I, II, and IV required

Preparer: Albert V. Wineman & James R. Schott | Enercon | 13-10-05
 Name (print) / Signature / Company / Department / Date

Reviewer: Ralph K. Schwartzbeck | Enercon | 13-10-05
 Name (print) / Signature / Company / Department / Date

OSRC: R.A. Dodds | 10 MAR 2005
 Chairman's Name (print) / Signature / Date
 [Required only for Programmatic Exclusion Screenings and 50.59 Evaluations.]

Safety Analysis contributor concerning RCS over cooling and FSAR Chapter 15 analysis.

Paul M. Melancon | Paul M. Melancon | 3-10-05
 Name | Signature | Date

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
TS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
NRC Orders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

If "YES", obtain NRC approval prior to implementing the change by initiating an LBD change in accordance with NMM ENS-LI-113. (See Section 5.2[13] for exceptions.)

LBDs controlled under 50.59	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
FSAR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DRN 05-359, Section 15.6.3.2.3.2, 15.6.3.2.3.3 and DRN 05-408 Figure 7.3-12
TS Bases	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Technical Requirements Manual	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Core Operating Limits Report	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
NRC Safety Evaluation Report and supplements for the initial FSAR ¹	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
NRC Safety Evaluations for amendments to the Operating License ¹	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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 ENS-LI-113.

LBDs controlled under other regulations	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
Quality Assurance Program Manual ²	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Emergency Plan ^{2, 3}	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Fire Protection Program ^{3, 4} (includes the Fire Hazards Analysis)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Offsite Dose Calculations Manual ^{3, 4}	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

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.

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.

An electronic search of Licensing Basis Documents was conducted using the LRS Retrieval function of Autonomy (WF3) with the 50.59 Search filter applied, Quality set to 20%, and using the search terms listed in Section II.A.4. Some hits were redundant to documents that had already been manually reviewed. The remaining hits were either not relevant to the scope of the reviewed revision or only provided confirmatory or peripheral information. FSAR sections identified by the electronic search were reviewed as well as Change Notices (DRNs) against those FSAR sections. Identified applicability to or impact upon the proposed changes and Change Notices under this portion of the 50.59 review were reconciled in the change proposed for this modification. There were no conflicts found between the evaluated change items and the Environmental Protection Plan, Security Plan, or the QAPM.

FSAR Section 5.4.2.1

This section specifies that the SGs are designed for twenty cycles of EFW injection of 40 °F water at 700 gpm following loss of normal feedwater events. The control setpoint changes and EFAS reset change do not change the flow control settings and the temperature of condensate is not affected by the change; therefore, the temperature and flow considerations for the SGs are not impacted.

FSAR Section 7.2.1.1.1.7

This section discusses the function of Reactor Trip on Low Steam Generator Water Level, providing specific reference to the low level trip setpoint. It also provides a general discussion of the pre-trip alarms. The pre-trip alarm is not used to determine the status of the SG Lo Level RPS trip/EFAS bistable trip and reset. Separate indication is provided for SG Lo Level RPS trip/EFAS Bistable status. The FSAR does not identify any coordination between the bistable reset and the pre-trip alarm resets; therefore, coordination of the pre-trip alarm reset with the trip bistable reset is below the level of detail specified by the FSAR.

FSAR Section 7.3.1.1.6.2 and Figure 7.3-12

The discussion of EFW level control does not provide specific level control setpoint, nor does it provide specific objective criteria for the level control other than heat removal; therefore, the change in level control setpoints do not change the EFW function as described in the text of this section. The text description of RPS trip/EFAS bistable reset does not discuss specific levels for reset or any functional criteria for reset that is affected by raising the reset level; however, Figure 7.3-12 provides a specific reference to control setpoints and Lo Level bistable reset levels showing the coordination of this reset with the EFW control setpoints, and Hi-Hi Level trip setpoints. Although the reset function is not explicitly described in the text discussion of Section 7.3, the potential of the modification to impact an implicit relationship reflected in Figure 7.3-12 is addressed further in Section IV of this 50.59 review.

FSAR Table 7.5-3 and Section 7.5.2.7

The changes made to establish SG level control and RPS trip/EFAS bistable reset above the SG tubes, including the indicator banding changes made to ensure unambiguous indication at the new EFW level control point, do not affect the indication range, accuracy or functional requirements for the indications as described for the steam generator level indications.

FSAR Section 7.8

This section describes the Diverse Emergency Feedwater Actuation System (DEFAS) and, although it describes that the existing EFW level control is relied on to regulate level to a predetermined value, the changes made by this activity are below the level of detail discussed and the changes have no impact on the initiation logic or setpoints of DEFAS.

FSAR Section 10.4.7

This section discusses the relationship between the Feedwater and Condensate system and the Emergency Feedwater System but the changes made by this activity are below the level of detail described for the interfaces.

FSAR Section 10.4.9

Although the specific control of steam generator level and RPS trip/EFAS bistable reset is below the level of detail described in FSAR Section 10.4.9, subsections 10.4.9.1 and 10.4.9.2 describe the volume requirements for both the CSP and the WCT basin to support EFS operation. The discussions present specific capacity information and state that makeup via manual action from either WCT basin is sufficient to cool the reactor to SDC entry conditions after maintaining hot shutdown for 2 hours and following design basis accident. The increase in the control point for steam generator level will require additional makeup volume to fill the steam generator to a higher level creating a potential impact to this discussion. This consideration is further evaluated in Section IV of this 50.59 review.

FSAR Sections 13.5, 13.5.1.3, and 13.5.2.1

These FSAR sections list and discuss the operating procedures required for normal, off-normal and emergency operations. The procedures prescribed for control room operations are described as providing instructions for the integrated operations of the plant. The changes made by this activity, to both equipment function and procedures addressed in these sections, are below the level of detail described; therefore, there is no explicit impact to the information described.

The changes to operating procedures required to implement the new EFW level control setpoints and RPS trip/EFAS bistable reset do not result in a deviation from any procedures described in the FSAR and do not require any new methods such as, manual operation versus automatic response, to mitigate accidents or transients.

FSAR Sections 15.1.1.2 and 15.1.2.2

These sections assume that normal feedwater control would compensate for startup of the EFW and the consequence would be the change in enthalpy due to EFW from the CSP; a change of no more than 20 btu/lb. Increasing the EFW level control setpoints and the level at which the RPS trip/EFAS bistable reset occurs has the potential for different interactions should EFW be started with normal feedwater in manual or automatic. This consideration is further evaluated in Section IV of this 50.59 review.

FSAR Section 15.6.3.2

Sections 15.6.1.3.2.3.2 and 15.6.1.3.2.3.3 each specify specific values for the SG level control points which are changed by this activity. Specific reference to level control points is replaced with objective information supporting the sequences evaluated as follows:

15.6.1.3.2.3.2 The operator controls SG level above of the tubes using NR and WR instrumentation.

15.6.1.3.2.3.3 The operator controls SG level above of the tubes using NR and WR instrumentation.

The effect of increasing level in the unaffected SG, by automatic or manual action, is further evaluated in Section IV of this 50.59 review.

FSAR Chapter 15 Incidents and Accidents Crediting EFW Operation.

The analysis of the FSAR chapter 15 incidents and accidents not previously discussed above credit operator action to reach RCS cool down and entry to shutdown cooling (SDC) using EFW. The changes to the level control system resulting in a higher steady state level are below the level of detail described in these sections and the cool down capability of the steam generators is not adversely impacted by controlling level above the tubes. The new automatic control setpoints and control bands provide the capability of controlling level above the SG tubes which is consistent with the AST assumptions for maintaining SG tube coverage; therefore, the change is not a change to the analysis in these sections.

The capability to control SG level above the SG tubes provided by this ER requires a combination of automatic and manual action; a consideration evaluated further in Section IV of this 50.59 review.

Technical Specifications

Technical Specification 3/4.3.1 specifies the SG Level Lo Reactor Protection System trip function and its applicability. Technical Specification 3/4.3.2 presents the Engineered Safety Features SG Level Lo trip function setpoint values, the EFW control valve logic requirement and SG Lo-Lo setpoint values for priority open. The affected level control setpoints and RPS trip/EFAS bistable resets are not controlled by these specifications.

Technical Specification 3/4.3.3 identifies SG Level Indication associated with both narrow and wide range measurement associated with RPS trip/EFAS bistable reset and EFW level control. The indication banding is updated to provide operator information consistent with the new level control bands; however, these changes are below the level of detail controlled by the Technical Specifications.

Technical Specification 3/4.7.1.2 describes the requirements for EFW system operability. The level control setpoint and the EFW trip reset changed by this activity are below the level of detail controlled in the Technical Specifications and no change to this Technical Specification is required for this change.

Technical Specifications 3/4.7.1.3 and 3/4.7.4 specify minimum water levels in the CSP and Wet Cooling Tower basin which is relied on to support EFW operation. The margin in water inventories is sufficient to support the increase in SG level and the LCO values are not affected.

Technical Specification 3/4.3.1, 3/4.3.2, 3/4.3.3, 3/4.4.8 specifies a maximum cool down rate of 100 °F/hour at all times and this LCO is addressed by operating procedure, both normal and emergency. The cool down rate increases as the SG fills to the new level; however, the plant response with steady state level control raised to above the SG tubes has been modeled and analyzed in DAR-OA-05-5. The cool down trends provided by DAR-OA-05-5 show that the effect of establishing a higher level following a transient has a minimal affect on cool down rate and the 100 °F/hour limit specified in the Technical Specification is not exceeded. No changes to LCOs or operator actions are required as a result of the increase in the SG level automatic control setpoints and control bands.

Technical Specification (TS) Section 6.8 provides administrative controls for procedures and programs. TS 6.8.1 and RG 1.33 only provide that operating procedures are required. It does not provide specifics on what is to be included in the procedures or specific equipment information. Thus, the proposed changes are above the level of detail that is explicitly required.

NRC SER Supplement and OL Amendment SEs

The NRC addressed the question of capability to prevent overfilling of a SG resulting from single failure of the EFW level control instrumentation in safety evaluations. The most recent evaluation, NPF-38 License Amendment No 173, credited operator action to take control of EFW to prevent overfilling. The evaluation is based upon information submitted that demonstrated sufficient time is available from the time SG High Level alarm actuates to the time operator action closes the valves. The new level control setpoints and EFW trip reset level remain below the high level alarm setpoint and do not prevent the operator from initiating manual actions required to prevent overfill.

Operating License

The operating license does not have any restrictions on activities within the scope of this change. None of the license conditions contained in the operating license are impacted by the activity within the scope of this ER; therefore, the proposed activity does not impact the Waterford 3 operating license.

Test Or Experiment Not Described In The FSAR:

This activity does not require operation of the EFW system in a way that deviates from the operation previously evaluated in the FSAR and it does not require any special testing. The testing required involves completion of routine calibration only; therefore, this activity does not involve an experiment or test not described in the FSAR.

Conclusion

This activity has no impact on the Operating License, Technical Specifications or NRC Orders. The LBD discussions in this section, where further evaluation of the activity in Section IV of this 50.59 review is necessary, include a statement to that effect. Otherwise, the activity does not affect the information and

requirements contained in the Waterford 3 Licensing Basis Documents discussed.

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 5.5.1[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: Keywords:

Autonomy LRS search of index LBD_5059 "Steam Generator", "Steam Generator Level", EFW, "cool down", Cooldown, Overfill, "over fill", "Narrow Range", NR, "Wide Range", WR, EFAS, DEFAS, "EFAS reset", reset, "emergency feedwater", "condensate storage pool", CSP

LBDs/Documents reviewed manually:

Specified sections were reviewed entirely, including associated subsections unless otherwise stated.

FSAR Sections, Tables and Figures

Section 5.2.2.4, Appendix 5.2A, 5.4.2, Table 5.4-1, 5.4-2 5.4-4, 5.4-6, Section 6.2.1.4, Table 6.3-3, Section 7.2, 7.2.1.1.1.7, 7.2.1.1.2, 7.2.1.2, 7.2.2.2.7, 7.2.2.3.2, Table 7.2-2, 7.2-4, 7.2-5, 7.2-6, Section 7.3 through 7.3.1.1, 7.3.1.1.1 only, 7.3.1.1.1.4, 7.3.1.1.1.5, 7.3.1.1.5, 7.3.1.1.6, 7.3.2.1.2, Table 7.3-1, 7.3-2, 7.3-3, 7.3-9, 7.3-10, 7.3-11, 7.3-12, 7.3-13, Figure 7.3-12, Table 7.4-1, Section 7.5.1.8.1, 7.5.1.8.2, 7.5.2.7, Table 7.5-3, Section 7.7.1.3, 7.8, 9.2.6, 10.4.7, 10.4.9, Table 10.4-12, 10.4-14, Appendix 10.4.9B, Table 10.4-14, Section 13.5, Section 15.1.1.2, 15.1.1.4, 15.1.2.2, 15.1.2.3, 15.1.3.1, 15.6.1.3.2.3.2, 15.6.1.3.2.3.3 Table 15.1-3, 15.1-8, 15.1-8a, 15.1-19, 15.1-23.

Tech Specs

3/4.3.1, 3/4.3.2, 3/4.3.3, 3/4.4.8, 3/4.7.1.2, 3/4.7.1.3, 3/4.7.4, 6.8

Tech Spec Bases

3/4.3.1, 3/4.3.2, 3/4.3.3, 3/4.7.1.2, 3/4.7.1.2, 3/4.7.4

NRC Safety Evaluation Reports

NUREG 0737 Supplement SSER6 Section 7.3
License Amendment 173

5. Is the validity of this Review dependent on any other change?

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.

B. ENVIRONMENTAL SCREENING

If any of the following questions is answered "yes," an Environmental Review must be performed in accordance with NMM Procedure ENS-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:

- | | <u>Yes</u> | <u>No</u> | |
|-----|--------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve a land disturbance of undisturbed land areas (i.e., grading activities, construction, excavations, reforestation, creating, or removing ponds)? |
| 3. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve dredging activities in a lake, river, pond, or stream? |
| 4. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase the amount of thermal heat being discharged to the river or lake? |
| 5. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase the concentration or quantity of chemicals being discharged to the river, lake, or air? |
| 6. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharge any chemicals new or different from that previously discharged? |
| 7. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| 8. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of the cooling tower that will change water or air flow characteristics? |
| 9. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify existing stationary fuel burning equipment (i.e., diesel fuel oil, butane, gasoline, propane, and kerosene)? ¹ |
| 11. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 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. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve the installation or use of equipment that will result in a new or additional air emission discharge? |
| 13. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve the installation or modification of a stationary or mobile tank? |
| 14. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve the use or storage of oils or chemicals that could be directly released into the environment? |
| 15. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burial or placement of any solid wastes in the site area that may affect runoff, surface water, or groundwater? |

¹ See NMM Procedure ENS-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:

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

IV. 50.59 EVALUATION

License Amendment Determination

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

Does the proposed Change:

1. Result in more than a minimal increase in the frequency of occurrence of an accident Yes
previously evaluated in the FSAR? No

BASIS:

Except during testing, the EFW system is maintained in standby and only operates during transients. The potential for spurious ESF actuations is not affected by raising the level control band or by raising the RPS trip/EFAS bistable reset level. The method of EFW operation and testing is not changed. The cool down rate increases as the SG fills to the new level; however, the plant response with steady state level control raised to above the SG tubes has been modeled and analyzed in DAR-OA-05-5. The cool down trends provide by DAR-OA-05-5 show that the effect of establishing a higher level following a transient has a minimal affect on cool down rate and the cool down rate limitations for the RCS and thermal cycle limitations for the SG, are acceptable. The frequency of accidents is not affected by this activity since it does not affect any accident initiators.

2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a Yes
structure, system, or component important to safety previously evaluated in the FSAR? No

BASIS:

The change to the automatic control band for steam generator level during EFW system operation results in control within the range of the Wide Range Level instrumentation and is a field adjustment that does not result in a hardware modification. The new control band remains within the performance range for the steam generator and supporting SSCs. The revised automatic control setpoint and manual control bands have been established considering the effect of instrument uncertainty and environmental effects. The change does not affect the EFW flow control settings active during loss of normal feedwater events and the limiting flow rates described in FSAR Section 5.4.2 for the SGs are not exceeded as a result of this change. Analysis documented in DAR-OA-05-5 shows that the control system, operating with the flow control valves full open (priority open), will not result in excessive cool down such that a loss of pressurizer level occurs impacting RCS pressure control. The increase of SG level from the current EFW control bands to a level above the SG tubes increases the rate of heat transfer across the tubes since the area covered by water increases. The cool down rate increases as the SG fills to the new level; however, the plant response with steady state level control raised to above the SG tubes has been modeled and analyzed in DAR-OA-05-5. The cool down trends provide by DAR-OA-05-5 show that the effect of establishing a higher level following a transient has a minimal affect on cool down rate and the cool down rate limitations for the RCS and thermal cycle limitations for the SG, are acceptable. Based on these considerations, the new control band does not affect the likelihood of a malfunction of a SSC.

The increased RPS trip/EFAS bistable reset on increasing level will occur within the operating range of the steam generator and prior to reaching an overfill condition in the steam generator. Manual operation of the EFW Isolation valves will be available when EFAS resets to prevent SG overfill. The nominal offset between automatic EFW control and the RPS trip/EFAS bistable reset remains the same ensuring that EFW control can function without interference from spurious RPS trip/EFAS bistable reset. The modification of the RPS trip/EFAS bistable to raise the reset is implemented using the same PPS component type and the changes are made by the NSSS vendor that controls component configuration to establish a new part fully qualified for the intended application. The changes to the RPS trip/EFAS bistables do not affect the likelihood of common mode failure since they are qualified and tested demonstrating proper function. Based on these considerations, the change of the EFW actuation reset dead band does not result in more than a minimal increase in the likelihood of a malfunction of associated SSCs important to safety previously evaluated in the FSAR.

Although the control band for operator actions using normal, off-normal and EOP procedures are changed by this modification, the functional operation and method of operation is no different with the new control band; therefore, there is no impact on the likelihood of a malfunction of SSCs. The manual action required to establish the capability to control SG level above the tubes during events that credit EFW operation is not different from the manual actions 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:

This activity provides the capability of EFW level control above the SG tubes, by a combination of automatic and manual action, to be consistent with SG level assumptions considered in the Alternate Source Term dose analysis of events for which EFW is credited. The level automatic control setpoints and the RPS trip/EFAS bistable reset level result in EFW level control below normal feedwater operating level and below the high level alarm setpoint. The RPS trip/EFAS bistable reset will occur removing the interlock of EFW isolation valves permitting their closure to prevent overfill. The consequences of the Increase Feedwater Flow incident, as described in FSAR Sections 15.1.1.2 and 15.1.2.2, are not changed since the EFW flow rates are not changed and the EFW level control setpoints are established below SG level during normal operation. The curie release calculations assumed that SG level would be controlled above the top of the SG U-tubes; therefore, changing the EFW control setpoints and control bands to achieve control above the top of the tubes does not negatively impact these analyses. In conclusion, this change does not increase the release of radioactivity via the steam generator during operation of EFW to achieve shutdown cooling and does not affect the change of enthalpy assumed for the Increase Feedwater Flow event.

The curie release calculations assumed that SG level would be controlled above the top of the SG tubes; therefore, changing the EFW control setpoints and control bands to achieve control above the top of the tubes does not negatively impact these analyses.

The analysis described in DAR-OA-05-5 shows that EFW operation at the new control points does not result in excessive RCS cool down such that a loss of pressurizer level would result in an adverse impact to RCS pressure control.

Evaluation of condensate sources available demonstrates that sufficient storage exists in the CSP and Wet Cooling Tower (WCT) basin to fill and control the steam generator levels above the SG tubes until conditions required for shutdown cooling are reached. Previous evaluations of accident consequences relying on these sources of water, including EFW operation, are not affected by the increased SG level to cover the SG tubes since the actual water volume margin bounds the volume of water required to fill to the new level.

Although manual actions are required to establish the capability to control SG level above the tubes during events that credit EFW operation these manual actions are no different from the manual actions previously evaluated in the FSAR.

Based on these considerations, the consequences of accidents evaluated in the FSAR are not changed by this activity.

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 failure modes and effects for EFW as described in FSAR Table 10.4-12, Table 10.4-14, and Appendix 10.4.9B are not changed by increasing the EFW steady state level control setpoints. This analysis evaluates the limiting failure modes for each component. In the case of the EFW valves affected by the EFW level controller and RPS trip/EFAS bistable reset, the failure mode evaluated is full closed isolation of one or both flow paths with operator action being credited. The modification of the RPS trip/EFAS bistable to raise the reset is implemented using the same PPS component type and the changes are made by the NSSS vendor that controls component configuration to establish a new part fully qualified for the intended application with no change to the failure modes results. The evaluated failure modes remain limiting with respect to the failure that can occur as a result of this activity. Automatic controls, as well as operator actions, are not changed from those previously evaluated in the FSAR as a result controlling level above the SG tubes. Control bands and RPS trip/EFAS bistable reset level remain coordinated with each other, normal operating levels and SG Hi-Hi level trip as depicted on FSAR Figure 7.3-12; therefore, the consequence of EFW component and system failures considered in the FSAR is not changed.

The curie release calculations assumed that SG level would be controlled above the top of the SG tubes; therefore, changing the EFW control setpoints and control bands to achieve control above the top of the tubes does not negatively impact these analysis and the consequences evaluated in these analysis are not increased.

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

BASIS:

The new EFW level control settings and RPS trip/EFAS bistable reset result in EFW operation within the design requirements and capabilities of affected systems and no new accident initiators are created by the change of control setpoints and bistable reset. The fundamental method of EFW operation, both manual and automatic modes, remains unchanged with implementation of the new control setpoints and bistable reset. Automatic controls, as well as operator actions, are not changed from those previously evaluated in the FSAR as a result controlling level above the SG tubes. Control bands and RPS trip/EFAS bistable reset level remain coordinated with each other, normal operating levels and SG Hi-Hi level trip as depicted on FSAR Figure 7.3-12; therefore, these changes do not result in the initiation of accidents of a different type.

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 failure modes and effects evaluation provided in FSAR Appendix 10.4.9B considers the failure of one or both EFW control valves to open resulting in partial or full loss of EFW flow to one steam generator. The RPS trip/EFAS bistable reset will continue to occur at a SG level below the Steam Generator High alarm ensuring the capability to operate emergency feedwater isolation valves to prevent overfill of the SGs. The setpoint change is made to achieve a higher SG level control point above the tubes and to maintain the RPS trip/EFAS bistable reset coordinated below the SG Hi-Hi Level trip as depicted on FSAR Figure 7.3-12. This change does not influence the result of failed closed or open valves. The result of instrument failures, fail to trip, reset or control at the setpoint does not change with the new settings.

Although manual actions are required to implement the capability of controlling EFW level above the SG tubes, no manual actions or action times different than previously evaluated in the FSAR are required.

The increase in volume supplied to the SGs from the CSP and WCT basins, relies on margin in the actual stored volume in the WCT basin and on interface considerations previously credited in the safety analyses; therefore, this activity does not create the possibility of an SSC failure with a different result.

Based on these considerations the possibility of a malfunction of SSCs important to safety with a different result than previously considered in the FSAR is not created by this activity.

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

BASIS:

The increase of SG level from the current EFW control bands to a level above the SG tubes increases the rate of heat transfer across the tubes since the area covered by water increases. The cool down rate increases as the SG fills to the new level; however, the plant response with steady state level control raised to above the SG tubes has been modeled and analyzed in DAR-OA-05-5. The cool down trends provide by DAR-OA-05-5 show that the effect of establishing a higher level following a transient has a minimal affect on cool down rate and the cool down rate limitations for the RCS and thermal cycle limitations for the SG, are acceptable. The effect on cool down rate is minimal and does not result in a reduction of any margin to the design basis limits for the RCS pressure boundary and fuel. DAR-OA-05-5 also shows that the impact on excessive cool down considerations for RCS pressure control does not result in a loss of pressurizer level and subsequent loss of RCS pressure control.

Analysis provided in ER-W3-2005-0019-000, and supported by input from CN-SGDA-05-18, demonstrates that the existing water inventory supports filling the SGs to the new levels without impacting a design basis limit for RCS pressure boundary or fuel design limits. The functions of the RPS trip/EFAS bistable reset action do not impact design basis limits for fission product barriers.

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 change of EFW control points affected the analysis of RCS cool down due to secondary system response to transients and the analysis of water inventory available to the EFW system during transients requiring EFW. The analysis methods and results remain consistent with the original analysis. The analysis of the effect of increased SG level on over cooling concerns documented in DAR-OA-05-5 was conducted with the same analysis codes and methods used to perform previous analyses. The new level control points, combined with input required for EPU, are changes to the inputs of the analysis only. The SG level control setpoints are established to provide the capability of controlling SG level above the SG tubes, by a combination of automatic control and manual action, consistent with the AST analysis assumptions which are consistent with the guidance provided in RG 1.183. The analysis performed to evaluate and support the proposed activity does not depart from any methods of evaluation described in the FSAR for establishing design bases or safety analysis.

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.

Additional References:

ER-W3-2005-0019-000 Rev 0, "Steam Generator Level Lo EFW & RPS Trip Reset and EFW Level Control Setpoints"
NUREG-0800 U.S. Nuclear Regulatory Commission Standard Review Plan
NRC Branch Technical Position RSB 5-1
MNQ9-9 Rev 4, "Wet Cooling Tower Losses During LOCA."
ECM03-002 Rev 0, "Water Inventory Needed For Cooling the RCS via EFW"
W3F1-2000-0010 Dated 1/31/2000, "Technical Specification Change Request NFP-38-206 Revision 1, Emergency Feedwater"
W3F1-2000-0101 Dated 7/27/2000, "W3 SES Docket Number 50-382 License Number NFP-38 Response to Request For Additional Information Related To Technical Specification Change Request NFP-38-206 Regarding The Emergency Feedwater System TAC Number MA2189"
DAR-OA-05-5 DRN 05-420, "Waterford-3 3716 MWt Extended Power Uprate: Evaluation of Emergency Feedwater Actuation Signal Reset"
CN-SGDA-05-18 DRN 05-419, "Secondary Side Volumes in the Waterford 3 Steam Generators"
ECI95-019 Rev 4 DRN 05-333, "Plant Protection System Indication and Recording Loop Uncertainty Calculation"
NUREG 0737 Supplement SER 6 section 7.3
NPF-38 License Amendment No 173
ECS98-001 Rev 2 DRN 05-248, "EOP Action Value Bases"
CN-TAS-03-30 Rev 4 DRN 04-1246, "W3 EPU Project Chapter EAB and LPZ Dose Consequences and Control Room Dose Consequences"
CN-TAS-03-31 Rev 1 DRN 04-1575, "Waterford 3 3716 MWTH Power Uprate Project SGTR Dose Consequences"
L-90-041 Dated Dec. 13, 1990, "WSES-3 Steam Generator Tube Rupture Analysis Final Report"