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10 CFR 50.90

W3F1-2016-0055

September 1, 2016

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

Subject: License Amendment Request to Revise Technical Specification 3/4.3.2 to Relocate Surveillance Frequency Requirements for Engineered Safety Features Actuation System (ESFAS) Subgroup Relays to the Surveillance Frequency Control Program (SFCP)
Waterford Steam Electric Station, Unit 3 (Waterford 3)
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, "Application for amendment of license, construction permit or early site permit," Entergy Operations, Inc. (Entergy) hereby requests an amendment to Operating License NFP-38 for Waterford Steam Electric Station, Unit 3 (Waterford 3). This License Amendment Request (LAR) proposes to revise Technical Specification (TS) 3/4.3.2, “Engineered Safety Features Actuation System Instrumentation.”

The proposed change would revise the Table Notation for Table 4.3-2, “Engineered Safety Features Actuation System Instrumentation Surveillance Requirements” to provide consistency with the existing licensee-controlled SFCP which is implemented in accordance with Nuclear Energy Institute (NEI) 04-10, “Risk Informed Technical Specification Initiative 5B, Risk-Informed Method for Control of Surveillance Frequencies.” Part of this revision is needed to support the ESFAS Single Point Vulnerability (SPV) Trip Hardening Modification, which will diminish the likelihood of an inadvertent component actuation caused by a single failure.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using the criteria in 10 CFR 50.92(c); it was determined that the changes involve no significant hazards consideration. The bases for these determinations are included in Attachments 1 and 5.

This letter contains no new commitments.

Entergy requests approval of the proposed license amendment by March 28, 2017 to support implementation of the ESFAS SPV Trip Hardening Modification during the Waterford 3 spring 2017 refueling outage (RF21). Once approved, the amendment will be implemented prior to entering Mode 4 following RF21.

If you have any questions or require additional information, please contact John Jarrell, Regulatory Assurance Manager, at 504-739-6685.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 1, 2016.

Sincerely,

MRC/JPJ/mmz

Attachments:
1. Analysis of Proposed Technical Specification Change and Addition of New ESFAS Permissive Relays to the Surveillance Frequency Control Program
2. Markup of Technical Specification Page
3. Clean (Revised) Technical Specification Page
4. Cross Reference of Current to Historical Equipment Descriptions and Designations Related to ESFAS SPV Trip Hardening Modification
5. Proposed No Significant Hazards Consideration

cc: Mr. Kriss Kennedy, Regional Administrator
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Attachment 1

to

W3F1-2016-0055

Waterford 3 Steam Electric Station
License Amendment Request to Revise Technical Specification 3/4.3.2
Analysis of Proposed Technical Specification Change and
Addition of New ESFAS Permissive Relays to the
Surveillance Frequency Control Program

(12 Pages)

Waterford 3 Steam Electric Station
License Amendment Request to Revise Technical Specification 3/4.3.2
Analysis of Proposed Technical Specification Change and
Addition of New ESFAS Permissive Relays to the
Surveillance Frequency Control Program

Waterford 3 Steam Electric Station
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1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend Facility Operating License No. NPF-38 for Waterford Steam Electric Station, Unit 3 (Waterford 3).

Entergy Operations, Inc. (Entergy) proposes to revise Technical Specification (TS) 3/4.3.2, "Engineered Safety Features Actuation System Instrumentation." The proposed change provides consistency with the existing licensee-controlled program which is implemented in accordance with Nuclear Energy Institute (NEI) 04-10, "Risk Informed Technical Specification Initiative 5B, Risk-Informed Method for Control of Surveillance Frequencies." The Waterford 3 Surveillance Frequency Control Program (SFCP) was approved by the NRC via License Amendment 249 on July 26, 2016; implementation is underway.

These changes were identified during a change evaluation of TS 3/4/.3.2 that was performed in support of the ESFAS Single Point Vulnerability (SPV) Trip Hardening Modification. This modification provides ESFAS SPV Trip Hardening which will diminish the likelihood of an inadvertent component actuation caused by a single failure.

TS 3/4.3.2 Table 4.3-2 Table Notation (3) documents that certain ESFAS subgroup relays are not tested during power operation. Additional subgroup relays that are being added to the ESFAS as part of the modification will be subject to the same testing frequency. The note will be revised in order to remove information that is being included in the licensee-controlled SFCP. Following completion of the ESFAS SPV Trip Hardening Modification, the additional relays will be added to the SFCP to the group that is not tested during power operation. This change proposal includes the addition of these relays to the SFCP. Changes to other items in the Table Notation are proposed in order to remove information that is being included in the SFCP and to remove redundancy between the table and the notation.

The ESFAS SPV Trip Hardening Modification is supported by Westinghouse Electric Company LLC (Westinghouse) report WNA-CT-00180-SWTR3, Revision 0, "Waterford 3 MSIS [Main Steam Isolation Signal] and CSAS [Containment Spray Actuation Signal] ESFAS SPV Trip Hardening Technical Description," December 2008. This document contains information that is proprietary to Westinghouse Electric Company and is not included in this transmittal; however, details of the modification pertinent to this License Amendment Request (LAR) are included in the following sections. Hardware changes to the ESFAS will be implemented in accordance with 10 CFR 50.59, "Changes, tests, and experiments." In addition, associated instrumentation surveillance procedures will be revised to reflect the additional relays.

The ESFAS SPV Trip Hardening Modification is scheduled to be installed for Train A during the Waterford 3 spring 2017 refueling outage (RF21) and for Train B during a future refueling outage. A general description of the modification is provided in section 3.0. Where a relay is listed without the specific train designation, it should be understood that the statement applies to both trains, i.e., A and B.

Approval of this amendment application is requested by March 28, 2017, to support implementation of the ESFAS SPV Trip Hardening Modification during RF21. Once approved, the amendment will be implemented prior to entering Mode 4 following RF21.

2.0 DETAILED DESCRIPTION

TS 3/4.3.2 will be changed as follows:

- Table Notation (1) will be deleted. Prior to Amendment 249, this annotated the Actuation Subgroup Relays that are tested on a staggered test basis. This staggered test basis surveillance frequency is now included in the SFCP, which is referenced in the table. The note is now redundant and is therefore not needed. The "Channel Functional Test" column in the body of Table 4.3-2 will be renumbered accordingly.

- Table Notation (2) will be renumbered to (1). The "Channel Functional Test" column in the body of Table 4.3-2 will be renumbered accordingly.

- Table Notation (3) will be renumbered to (2) and revised to delete the second sentence. The frequency for the relays that are not tested during power operation will be included in the SFCP. There will be no change to the first sentence. The "Channel Functional Test" column in the body of Table 4.3-2 will be renumbered accordingly.

- Table Notation (4) will be renumbered to (3). The "Channel Functional Test" column in the body of Table 4.3-2 will be renumbered accordingly.

- Table Notation (5) will be deleted. The information in this note is a component of the surveillance frequency for the Control Valve Logic and will be included in the SFCP. References to Table Notation (5) in the "Channel Functional Test" column in the body of Table 4.3-2 will be deleted accordingly.

- Table Notation (6) will be deleted. Prior to Amendment 249, this annotated that the Safety Injection Actuation System Actuation Subgroup Relays are tested on a staggered test basis, with the exemption of K110, K410, and K412, and that these relays are exempt from testing on a staggered test basis. These frequencies will be included in the SFCP, which is referenced in the table. The note is now redundant and therefore not needed. References to Table Notation (6) in the "Channel Functional Test" column in the body of Table 4.3-2 will be deleted accordingly.

Attachments 2 and 3 contain the mark-up and clean (revised) TS pages for the proposed change.

Attachment 4 contains a cross reference between historical and current equipment descriptions and designations for the equipment related to ESFAS SPV Trip Hardening Modification.

Attachment 5 contains the No Significant Hazards Consideration for the changes detailed above.

3.0 BACKGROUND

The information in this section applies to the portion of this change proposal related to the addition of the new ESFAS Permissive Relays to the SFCP.

ESFAS Single Point Vulnerability Trip Hardening Modification

The following single points of vulnerability in the ESFAS have been identified and singled out for trip hardening because of the potentially severe consequences of their inadvertent actuations:

- Feedwater and Main Steam Isolation actuation by the MSIS.
- CCW containment isolation valve closure actuation on a CSAS.

The ESFAS actuation logic deenergizes the subgroup relays upon ESFAS function actuation. Subgroup relay failure, ESFAS ARC power supply failure, a short circuit failure around the subgroup relay, or opening of a power supply circuit breaker may also de-energize one or more subgroup relays, depending on the nature of the failure, resulting in an unwanted and unwarranted closure of the MSIV(s) and associated feedwater train valves. If the Unit is at power when closure of a single MSIV occurs, then an asymmetric steam generator transient (ASGT) will occur, requiring intervention by the Delta T_C algorithm in the Core Protection Calculator System (CPCS) to maintain the DNBR Safety Limit, resulting in a CPC Auxiliary Trip (reactor trip) on Low DNBR and High Local Power Density. If both MSIVs are affected (K305 and K313), then there will be a complete loss of heat sink, and the RCS pressure safety limit will be challenged, requiring a reactor trip on High Pressurizer Pressure. Similarly, inadvertent actuation of K114 will result in loss of Component Cooling Water (CCW) flow to the Reactor Coolant Pumps (RCPs) and Control Element Drive Mechanism Coolers. Loss of seal cooling to the RCP can result in serious RCP damage, with the potential for seal failures.

Trip hardening will consist of connecting the contact outputs from the affected existing “primary” MSIS and CSAS component actuation (subgroup) relays with those of a second “permissive” relay actuated by the same ESFAS function (MSIS or CSAS, as applicable). MSIS (for K305 and K313) will use K105 as the permissive relay. K105 is already actuated on MSIS but has no current component assignments. Trip hardening of K114 for CSAS will involve reassigning K306 from the “spare” ESFAS bus to the CSAS bus, and arranging the contacts of K306 in a logical AND with those of K114. Thus it will require actuation of two relays rather than one within any single train in order to actuate the trip hardened components. The ESFAS SPV Trip Hardening Modification includes capability to test each primary subgroup relay, permissive subgroup relay, and the combination of primary and permissive subgroup relays.

The hardware changes associated with the ESFAS SPV Trip Hardening Modification are being implemented in accordance with 10 CFR 50.59. The 50.59 evaluation performed concludes that the likelihood of occurrence of a malfunction by implementing this modification is not more than minimal. The likelihood of an accident or consequences of malfunction are not increased as long as testing of the new configuration is not performed during power operation, as required by the initial condition of the applicable Waterford 3 ESFAS subgroup relay test procedure.

Table 1 lists the three subgroup relays (note that there are three relays each for Train A and Train B) that have been selected for trip hardening along with the components that are actuated when the associated relay is deenergized:

Table 1. Subgroup Actuation Relays and Affected Components

Actuation Relay		Affected Component	
Train A	Train B		
K305A	K305B	MS-124A	Main Steam Isolation Valve 1
		FW-184A	SG1 Main Feedwater Isolation Valve
		FW -173A	SG1 Main Feedwater Regulating Valve
		FW-166A	SG1 Startup Feedwater Regulating Valve
K313A	K313B	MS-124B	Main Steam Isolation Valve 2
		FW-184B	SG2 Main Feedwater Isolation Valve
		FW -173B	SG2 Main Feedwater Regulating Valve
		FW-166B	SG2 Startup Feedwater Regulating Valve
K114A		CC-710	CCW Return Header Inside Containment Isolation Valve
	K114B	CC-713	CCW Return Header Outside Containment Isolation Valve
		CC-641	CCW to Containment Outside Containment Isolation Valve

TS 3/4.3.2. Table 4.3-2 Table Notation (3) History

The existing TS 3/4.3.2 Table 4.3-2 Table Notation (3) was included in the Waterford 3 TS as originally amended. It was included as the result of a review performed following an NRC request (letter from G.W. Knighton to L.V. Maurin, "Waterford 3 Engineered Safety Features Actuation System Surveillance Requirements," dated May 10, 1983, ADAMS Accession No. 8306020687). This requested that Waterford 3 review its ESFAS testing commitments against the provisions of Institute of Electrical and Electronics Engineers (IEEE) Standard 338-1971, "Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems" and Regulatory Guide (RG) 1.22, "Periodic Testing of Protection System Actuation Functions." Specifically, it was asked that Waterford 3 provide a list of any ESFAS actuation devices, and actuated equipment associated with each, that cannot be tested during plant operation.

In letter W3P83-2273, F. J. Drummond to G. W. Knighton, "Engineered Safety Features Actuation System (ESFAS) Surveillance Requirements," dated July 21, 1983 (ADAMS Accession No. 8307260489), Waterford 3 responded to the NRC's request, stating that the system complies with General Design Criterion 21, "Protection system reliability and testability," in that the protection system as defined by IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations" and RG 1.22 is designed to permit testing (up to the input to the actuation devices) with the reactor in operation. Additionally, it was explained that a few subgroup relays (actuation devices per RG 1.22) however, could not be tested without adverse consequences for plant safety and/or operability. The actuated equipment listed in the response could not be operated during reactor operation without adverse and unwarranted impact on plant safety and/or operability; however, the equipment could be tested when the reactor is shut down. Additionally, letter W3P84-1328, K. W. Cook to G. W. Knighton, "Engineered Safety Features Actuation System (ESFAS) Subgroup Relay Testing Meeting 4/26/84," dated May 14, 1984 (ADAMS Accession No. 8405180062), documented a meeting between Waterford 3 and the NRC's Instrumentation and Controls Branch (ICSB) to discuss ESFAS subgroup relay testing. The letter states that the meeting resulted in the ICSB's concurrence of Waterford 3's ESFAS subgroup relay test program and updated original letter W3P83-2273 to include a current listing of subgroup relays that are not tested at power but are tested during applicable cold shutdown periods.

Note the following:

1. K114 was listed in letter W3P83-2273 as “not used” but was included in the update letter W3P84-1328.

2. Additional relays are listed in TS 3/4.3.2 Table 4.3-2 Table Notation (3) and in letter W3P83-2273; however, these relays are not associated with ESFAS SPV Trip Hardening Modification and therefore are not included in this discussion.

3. The descriptions and designations of the valves affected as stated in letters W3P83-2273 and W3P84-1328 differ from that currently in use. A cross reference is provided in Attachment 4.

Relays K305, K313, and K114 were subsequently listed in TS 3/4.3.2 Table 4.3-2 Table Notation (3) (as originally amended) as “exempt from testing during power operation but shall be tested at least once per 18 months and during each COLD SHUTDOWN condition unless tested within the previous 62 days.” The phrase “at least once per 18 months” was replaced with “in accordance with the Surveillance Frequency Control Program” by Amendment 249.

4.0 TECHNICAL EVALUATION

The evaluation in this section relates to the testing of the relays affected by the ESFAS SPV Trip Hardening Modification.

TS 3/4.3.2 Table 4.3-2 Table Notation (3) allows for ESFAS relays K305, K313, and K114 to not be tested during power operation. Deenergization of K305 or K313 causes the valves listed in Table 1 to isolate and plant operation cannot continue. Severe plant transients and reactor trip would occur if these valves were isolated during power operation. Inadvertent actuation of K114 will result in loss of CCW flow to the RCPs, which could result in serious RCP damage, with the potential for seal failures.

Table Notation (3) has been reviewed relative to the planned ESFAS SPV Trip Hardening Modification. The installation of the ESFAS SPV Trip Hardening Modification and associated test circuitry diminishes the likelihood of inadvertent actuation. Component actuation will occur only if the primary relay (K305, K313, or K114) and associated permissive (K105 or K306, as applicable) are both actuated; however, actuation during testing is still possible due to inadvertent actuation of or unknown dropout of the relay that is not undergoing testing.

This includes:

- System design does not allow for detection of dropout of either a permissive or a primary relay. Dropout could be detected by performing a direct reading; however, breaking the plane of the relay cabinet during reactor operation introduces the likelihood of an inadvertent plant transient due to human error.

- An incorrect test command input to the test circuitry introduces the likelihood of actuation due to human error.

- Inadvertent actuation resulting from testing coincident with a pre-existing failed “off” relay or trip path.

Specific failures that can occur within an actuating logic circuit are listed below. Failing “off” results in inadvertent actuation. Failing “on” results in failure to actuate when required.

- The relays can fail “on” (not actuated) or “off” (actuated).

- Opening the actuation logic power supply return circuit breaker on the affected trip leg results in a failed “off” condition.

- Any failure leading to a short across the component actuation subgroup relays results in a failed “off” condition of the shorted actuation relays.

- Loss of auctioneered actuation logic power supplies results in a failed “off” condition of the actuation logic circuit.

The primary and permissive relays will continue to be tested in accordance with the SFCP (not tested during power operation but shall be tested at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days), thus assuring a failed “off” primary or permissive relay during testing will not result in the initiation of an event described in the UFSAR.

5.0 REGULATORY EVALUATION

5.1 Applicable Regulatory Requirements/Criteria

The proposed license amendment has been evaluated to determine whether applicable regulations and requirements continue to be met. A description of the proposed changes and their relationship to applicable regulatory requirements is provided in TSTF-425, Revision 3, and the NRC’s model safety evaluation published in the Notice of Availability dated July 6, 2009 (74 FR 31996). Entergy has modified the TS by the relocation of specific surveillance frequencies to the licensee-controlled SFCP, identified in TS section 6.5.18, which references NEI 04-10, Revision 1. Entergy has concluded that the relationship of the proposed changes to the applicable regulatory requirements presented in the Federal Register notice is applicable to Waterford 3.

The remaining evaluation in this section relates to the testing of the relays affected by the ESFAS SPV Trip Hardening Modification. The ESFAS complies with 10 CFR 50 Appendix A, General Design Criteria (GDC) related to protection system reliability and testability (GDC 21). Surveillance requirements for the testing of the ESFAS system relate to requirements of 10 CFR 50.36, Technical specifications.

As discussed below, the change provided in this LAR does not affect the conclusions provided in the UFSAR, and the ESFAS continues to comply with the regulation.

GDC 21 – Protection system testability: This GDC requires that the protection system be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

The protection system as defined by IEEE Standard 279-1971 and RG 1.22 is designed to permit testing (up to the input to the actuation devices) with the reactor in operation. Testing is in compliance with IEEE 338-1971 and consistent with the recommendations of RG 1.22 (Feb. 1972). Current design precludes testing of relays (actuation devices per RG 1.22) K114, K305, and K313 with the reactor in operation without adverse consequences for plant safety and/or operability.

RG 1.22 allows exceptions in cases where testing actuated equipment at power could cause unsafe plant conditions/operations as long as sufficient justification is provided. The guidance states that where actuated equipment is not tested during reactor operation, it should be shown that: a. There is not practicable system design that would permit operation of the actuated equipment without adversely affecting the safety or operability of the plant; b. The probability that the protection system will fail to initiate the operation of the actuated equipment is, and can be maintained, acceptably low without testing the actuated equipment during reactor operation; and c. The actuated equipment can be routinely tested when the reactor is shut down.

As originally amended, TS section 3/4.3 Table 4.3-2 Table Notation (3) specifically identifies relays K114, K305, and K313 as exempt from testing during power operation, but required testing at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days. The basis of Table Notation (3), as explained in letters W3P83-2273 and W3P84-1328, is that these relays cannot be tested during power operation without adverse consequences for plant safety and/or operability as allowed by the RG 1.22 exception described above. (The phrase “at least once per 18 months” was replaced with “in accordance with the Surveillance Frequency Control Program” by Amendment 249.)

This license amendment proposes to revise Table Notation (3) by deleting the second sentence. The relays that are not tested during power operation will be included in the SFCP. Following completion of the ESFAS SPV Trip Hardening Modification, the additional relays will be added to the SFCP as part of the group that is not tested during power operation.

The ESFAS SPV Trip Hardening Modification will allow testing of the primary relays without actuation of the permissive relays. Individual actuation of any one of these relays will not result in an ESFAS component actuation. Actuation will occur only if the primary and associated permissives are both actuated; this could occur if one of the relays in an actuation pair has failed “off” coincident with testing the other relay in the pair (see section 4.0 for discussion on failure modes). Testing the state of the relays prior to testing using intrusive means introduces the likelihood of an inadvertent plant transient due to human error. Because of this, it is deemed necessary to continue to not test K114, K305, and K313 during power operation as allowed by RG 1.22 and add K105 and K306 to this list of relays that are not tested during power operation due to the

fact that there is still potential to cause unsafe plant conditions/operations and subsequent occurrence of an accident described in Chapter 15 of the Waterford 3 UFSAR. Therefore, there is no practicable system design that would permit operation of the actuated equipment without adversely affecting the safety or operability of the plant.

The primary and permissive relays will continue to be tested in accordance with the SFCP, therefore the probability that the protection system will fail to initiate the operation of the actuated equipment is, and can be maintained, acceptably low without testing the actuated equipment during reactor operation, and the actuated equipment can be routinely tested when the reactor is shut down.

10 CFR 50.36(c)(3) requires that TSs include surveillance requirements, which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. No modifications to trip setpoints, surveillance frequencies, or channel responses are associated with this change.

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

5.2 Precedents

The Waterford 3 SFCP was approved by the NRC via License Amendment 249 on July 26, 2016.

As originally amended, TS section 3/4.3 Table 4.3-2 Table Notation (3) specifically identifies relays K114, K305, and K313 as exempt from testing during power operation, but required testing at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days. The basis of Table Notation (3), as explained in letters W3P83-2273 and W3P84-1328, is that these relays cannot be tested during power operation without adverse consequences for plant safety and/or operability as allowed by the RG 1.22 exception described in section 5.1.

5.3 No Significant Hazards Consideration

The proposed license amendment will modify Waterford 3 TS 3/4.3.2 Table 4.3-2 Table Notation to provide consistency with the existing licensee-controlled SFCP. Following completion of the ESFAS SPV Trip Hardening Modification, the additional relays will be added to the SFCP to the group that is not tested during power operation. Changes to other items in the Table Notation are proposed in order to remove information that is being included in the SFCP and to remove redundancy between the table and the notation. Entergy has reviewed the proposed no significant hazards consideration determination (NSHC) published in the Federal Register dated July 6, 2009, (74 FR 31996). Entergy has concluded that the proposed NSHC presented in the Federal Register notice is applicable to Waterford 3 and is provided as Attachment 5 to this amendment request, which satisfies the requirements of 10 CFR 50.91(a).

In addition, Waterford 3 has evaluated whether or not a significant hazards consideration is involved with the addition of relays K105 and K306 to the group that is not tested during power operation by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change will allow relays K105 and K306 to not be tested during power operation but shall be tested in accordance with the same frequency identified in the SFCP for the primary relays, which currently requires that they be tested at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days. The probability of an accident previously evaluated remains unchanged since the primary relays K114, K305, and K313 are currently tested in accordance with the SFCP (not tested during power operation but are tested at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days), K105 and K306 are currently not tested during power operation, and K105 and K306 will be tested in accordance with the SFCP (at least once per 18 months and during each cold shutdown condition unless tested within the previous 62 days). Not testing relays K105 and K306 during power operation and testing during cold shutdown cannot initiate an accident because the specific accidents which inadvertent ESFAS actuation is an initiator (Loss of External Load, Loss of Normal Feedwater Flow, Asymmetric Steam Generator Transient, and Loss of Component Cooling to the RCPs) are not possible during cold shutdown.

   The proposed change to allow relays K105 and K306 to not be tested during power operation have been evaluated for impact on the accident analyses. The accident analyses remain within the regulatory acceptance criteria.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   Moreover, testing of the modified relay scheme during power operation could result in inadvertent actuation and subsequent occurrence of an accident if either the permissive or primary relay has failed "off," or actuated. Continued testing in accordance with the SFCP assures inadvertent actuation during testing resulting from a failed "off" relay will not result in an accident described in the UFSAR.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change allows relays K105 and K306 to be tested in accordance with the SFCP (not tested during power operation but shall be tested at least once per 18 months and during each cold shutdown condition unless tested

within the previous 62 days). This surveillance frequency does not change the design function or operation of the ESFAS. There are no credible new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases that can be created by implementing the proposed change.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The inclusion of relays K105 and K306 in the list of relays in the SFCP that are not tested during power operation as proposed in this TS 3/4.3.2 amendment request has been determined to not exceed or alter a design basis or safety limit and therefore has no significant impact on the accident analyses described in the UFSAR, therefore this change does not involve a significant reduction in the existing margins of safety for the fuel, the fuel cladding, the reactor coolant system boundary, or the containment building.

5.4 Conclusion

Based on this analysis, it was determined that the proposed change does not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any previously evaluated; nor (3) involve a significant reduction in a margin of safety. Therefore, the amendment does not involve a significant hazards consideration.

6.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment has been evaluated for environmental considerations. The review has resulted in the determination that the proposed amendment would change requirements with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22, paragraph (b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

7.0 REFERENCES

1) TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b," March 18, 2009 (ADAMS Accession Number: ML ML080280275).

2) NRC Notice of Availability of Technical Specification Improvement to Relocate Surveillance Frequencies to Licensee Control - Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b**,** Technical Specification Task Force - 425, Revision 3, published on July 6, 2009 (74 FR 31996).

3) NEI 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b**,** Risk- Informed Method for Control of Surveillance Frequencies," April 2007 (ADAMS Accession Number: ML071360456).

4) Waterford Steam Electric Station Unit 3, Technical Specifications, through Amendment 249.

5) Waterford Steam Electric Station Unit 3, Updated Final Safety Analysis Report (UFSAR), Revision 309.

6) Westinghouse Electric Company LLC, WNA-CT-00180-SWTR3, Revision 0, "Waterford 3 MSIS and CSAS ESFAS Trip Hardening Technical Description," December 2008 (Proprietary).

7) Letter from G.W. Knighton to L.V. Maurin, “Waterford 3 Engineered Safety Features Actuation System Surveillance Requirements,” May 10, 1983 (ADAMS Accession No. 8306020687).

8) Letter W3P83-2273, F. J. Drummond to G. W. Knighton, “Engineered Safety Features Actuation System (ESFAS) Surveillance Requirements,” July 21, 1983 (ADAMS Accession No. 8307260489).

9) Letter W3P84-1328, K. W. Cook to G. W. Knighton, “Engineered Safety Features Actuation System (ESFAS) Subgroup Relay Testing Meeting 4/26/84,” May 14, 1984 (ADAMS Accession No. 8405180062).

Attachment 2

to

W3F1-2016-0055

Revised (Markup) Technical Specification Pages

(3 Pages)

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. SAFETY INJECTION (SIAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
c. Pressurizer Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	~~SFCP(2)~~ (1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	~~SFCP(3) (6)~~ (2)	1, 2, 3
2. CONTAINMENT SPRAY (CSAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure -- High - High	SFCP	SFCP	SFCP	1, 2, 3
c. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	~~SFCP(2)~~ (1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	~~SFCP(1) (3)~~ (2)	1, 2, 3
3. CONTAINMENT ISOLATION (CIAS)				
a. Manual CIAS (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
c. Pressurizer Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	~~SFCP(2)~~ (1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	~~SFCP(1) (3)~~ (2)	1, 2, 3
4. MAIN STEAM LINE ISOLATION				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3
b. Steam Generator Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
c. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	~~SFCP(2)~~ (1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	~~SFCP(1) (3)~~ (2)	1, 2, 3

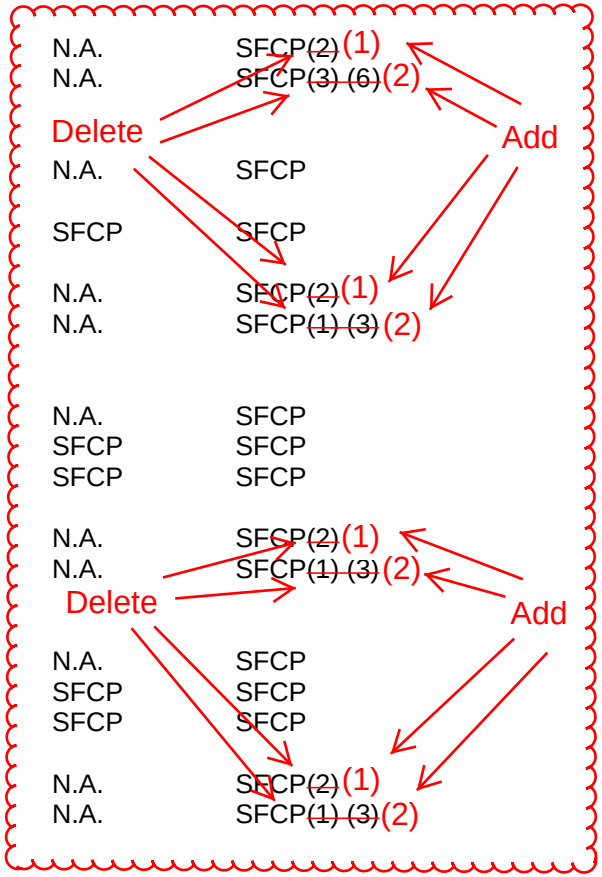

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
5. SAFETY INJECTION SYSTEM RECIRCULATION (RAS)				
a. Manual RAS (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Refueling Water Storage Pool - Low	SFCP	SFCP	SFCP	1, 2, 3, 4
c. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP~~(2)~~ (1)	1, 2, 3, 4
Actuation Subgroup Relays	N.A.	N.A.	SFCP~~(1) (3)~~ (2)	1, 2, 3, 4
6. LOSS OF POWER (LOV)				
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	N.A.	SFCP	SFCP~~(4)~~ (3)	1, 2, 3
b. 480 V Emergency Bus Undervoltage (Loss of Voltage)	N.A.	SFCP	SFCP~~(4)~~ (3)	1, 2, 3
c. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	N.A.	SFCP	SFCP~~(4)~~ (3)	1, 2, 3

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TABLE 4.3.-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
7. EMERGENCY FEEDWATER (EFAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3
b. SG Level (1/2) - Low and △P (1/2) - High	SFCP	SFCP	SFCP	1, 2, 3
c. SG Level (1/2) - Low and No Pressure - Low Trip (1/2)	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	~~SFCP(2)~~ (1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A	~~SFCP(1) (3)~~ (2)	1, 2, 3
e. Control Valve Logic (Wide Range SG Level - Low)	SFCP	SFCP	~~SFCP(5)~~	1, 2, 3

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TABLE NOTATION

~~(1)~~ ~~Each train or logic channel shall be tested in accordance with the Surveillance Frequency Control Program.~~

~~(2)~~ (1) Testing of Automatic Actuation Logic shall include the energization/deenergization of each initiation relay and verification of the OPERABILITY of each initiation relay.

~~(3)~~ (2) A subgroup relay test shall be performed which shall include the energization/deenergization of each subgroup relay and verification of the OPERABILITY of each subgroup relay. ~~Relays K109, K114, K202, K301, K305, K308 and K313 are exempt from testing during power operation but shall be tested in accordance with the Surveillance Frequency Control Program and during each COLD SHUTDOWN condition unless tested within the previous 62 days~~

Renumber

~~(4)~~ (3) Using installed test switches.

~~(5)~~ ~~To be performed during each COLD SHUTDOWN if not performed in the previous 6 months.~~

~~(6)~~ ~~Each train shall be tested, with the exemption of relays, K110, K410 and K412, in accordance with the Surveillance Frequency Control Program. Relays K110, K410 and K412 shall be tested in accordance with the Surveillance Frequency Control Program.~~

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Attachment 3

to

W3F1-2016-0055

Revised (Clean) Technical Specification Pages

(3 Pages)

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. SAFETY INJECTION (SIAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
c. Pressurizer Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	SFCP(2)	1, 2, 3
2. CONTAINMENT SPRAY (CSAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure -- High - High	SFCP	SFCP	SFCP	1, 2, 3
c. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	SFCP(2)	1, 2, 3
3. CONTAINMENT ISOLATION (CIAS)				
a. Manual CIAS (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
c. Pressurizer Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	SFCP(2)	1, 2, 3
4. MAIN STEAM LINE ISOLATION				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3
b. Steam Generator Pressure - Low	SFCP	SFCP	SFCP	1, 2, 3
c. Containment Pressure - High	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A.	SFCP(2)	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
5. SAFETY INJECTION SYSTEM RECIRCULATION (RAS)				
a. Manual RAS (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3, 4
b. Refueling Water Storage Pool - Low	SFCP	SFCP	SFCP	1, 2, 3, 4
c. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3, 4
Actuation Subgroup Relays	N.A.	N.A.	SFCP(2)	1, 2, 3, 4
6. LOSS OF POWER (LOV)				
a. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	N.A.	SFCP	SFCP(3)	1, 2, 3
b. 480 V Emergency Bus Undervoltage (Loss of Voltage)	N.A.	SFCP	SFCP(3)	1, 2, 3
c. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	N.A.	SFCP	SFCP(3)	1, 2, 3

TABLE 4.3.-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
7. EMERGENCY FEEDWATER (EFAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	SFCP	1, 2, 3
b. SG Level (1/2) - Low and $\triangle$P (1/2) - High	SFCP	SFCP	SFCP	1, 2, 3
c. SG Level (1/2) - Low and No Pressure - Low Trip (1/2)	SFCP	SFCP	SFCP	1, 2, 3
d. Automatic Actuation Logic (except subgroup relays)	N.A.	N.A.	SFCP(1)	1, 2, 3
Actuation Subgroup Relays	N.A.	N.A	SFCP(2)	1, 2, 3
e. Control Valve Logic (Wide Range SG Level - Low)	SFCP	SFCP	SFCP	1, 2, 3

TABLE NOTATION

(1) Testing of Automatic Actuation Logic shall include the energization/deenergization of each initiation relay and verification of the OPERABILITY of each initiation relay.

(2) A subgroup relay test shall be performed which shall include the energization/deenergization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.

(3) Using installed test switches.

Attachment 4

to

W3F1-2016-0055

Cross Reference of Current to Historical Equipment Descriptions and Designations Related to ESFAS SPV Trip Hardening Modification

(1 Page)

Cross Reference of Current to Historical Equipment Descriptions and Designations Related to ESFAS SPV Trip Hardening Modification

The following provides a cross reference between the historical equipment descriptions and designations used in Letters W3P83-2273 and W3P84-1328 and those used in current Waterford 3 plant documentation.

Actuation Relay		Actuated Equipment			
		Designation		Description	
Train A	Train B	Historical	Current	Historical	Current
K305A MSIS	K305B MSIS	2MS-V602A	MS-124A	SG #1 Main Steam Isolation Valve	Main Steam Isolation Valve 1
		2FW-V823A	FW-184A	SG #1 Feedwater Isolation Valve	SG1 Main Feedwater Isolation Valve
		5FW-FM833	FW-173A	SG #1 Feedwater Control Valve	SG1 Main Feedwater Regulating Valve
		5FW-FM835	FW-166A	SG #1 Feedwater Control Bypass Valve	SG1 Startup Feedwater Regulating Valve
K313A MSIS	K313B MSIS	2MS-V604B	MS-124B	SG #2 Main Steam Isolation Valve	Main Steam Isolation Valve 2
		2FW-V824B	FW-184B	SG #2 Feedwater Isolation Valve	SG2 Main Feedwater Isolation Valve
		5FW-FM834	FW-173B	SG #2 Feedwater Control Valve	SG2 Main Feedwater Regulating Valve
		5FW-FM836	FW-166B	SG #2 Feedwater Control Bypass Valve	SG2 Startup Feedwater Regulating Valve
K114A		2CC-F243A/B	CC-710	CCW to RCPs Containment Isolation Valve	CCW Return Header Inside Containment Isolation Valve
	K114B	2CC-F147A/B	CC-713	CCW from RCP's Containment Isolation Valve[s]	CCW Return Header Outside Containment Isolation Valve
		2CC-F146A/B	CC-641		CCW to Containment Outside Containment Isolation Valve

Attachment 5

to

W3F1-2016-0055

Proposed No Significant Hazards Consideration

(2 Pages)

Attachment 5
Proposed No Significant Hazards Consideration

Description of Amendment Request:

This license amendment requests the adoption of an approved change to the standard technical specifications (STS) for Combustion Engineering Pressurized Water Reactors (NUREG-1432), to allow relocation of specific technical specification (TS) surveillance frequencies to a licensee-controlled program. The proposed change is described in Technical Specification Task Force (TSTF) Traveler, TSTF-425, Revision 3 (Rev. 3) (ADAMS Accession No. ML080280275), related to the Relocation of Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b and is described in the Notice of Availability published in the Federal Register on July 6, 2009 (74 FR 31996).

The proposed change is consistent with NRC-approved Industry/TSTF Traveler, TSTF-425, Rev. 3, "Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b." The proposed change relocates surveillance frequencies to a licensee-controlled program, the Surveillance Frequency Control Program (SFCP). This change is applicable to licensees using probabilistic risk guidelines contained in NRC-approved NEI 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," (ADAMS Accession No. 071360456).

Basis for proposed no significant hazards consideration: As required by 10 CFR 50.91(a), Entergy's analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No.

   The proposed change relocates the specified frequencies for periodic surveillance requirements to licensee control under a new SFCP. Surveillance frequencies are not an initiator to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not significantly increased. The systems and components required by the TSs for which the surveillance frequencies are relocated are still required to be operable, meet the acceptance criteria for the surveillance requirements, and be capable of performing any mitigation function assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly increased.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

   Response: No.

   No new or different accidents result from utilizing the proposed change. The movement of the surveillance frequencies to an owner-controlled program do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a

change in the methods governing normal plant operation. (The hardware changes associated with the ESFAS SPV Trip Hardening Modification are being implemented in accordance with 10 CFR 50.59. The evaluation performed concludes that the modification cannot create the possibility of an accident of a different type.) In addition, the changes do not impose any new or different requirements. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

   Response: No.

   The design, operation, testing methods, and acceptance criteria for systems, structures, and components (SSCs), specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis (including the final safety analysis report and bases to TS), since these are not affected by changes to the surveillance frequencies. Similarly, there is no impact to safety analysis acceptance criteria as described in the plant licensing basis. To evaluate a change in the relocated surveillance frequency, Entergy will perform a probabilistic risk evaluation using the guidance contained in NRC approved NEI 04-10, Rev. 1, in accordance with the TS SFCP. NEI 04-10, Rev. 1, methodology provides reasonable acceptance guidelines and methods for evaluating the risk increase of proposed changes to surveillance frequencies consistent with Regulatory Guide 1.177.

   Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, Entergy concludes that the requested change does not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), Issuance of Amendment.