

From: Klett, Audrey
Sent: Monday, October 5, 2020 8:09 AM
To: Zamber, Maria
Subject: NRC Request for Additional Information - WF3 EAL Scheme Change - L-2020-LLA-0122.docx
Attachments: NRC Request for Additional Information - WF3 EAL Scheme Change - L-2020-LLA-0122.docx

Hi Maria,
Please see attached for the final RAI. NRC is requesting a due date of on or by December 15, 2020.

Thanks,
Audrey

Hearing Identifier: NRR_DRMA
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REQUESTS FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST
EMERGENCY ACTION LEVEL SCHEME CHANGE
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NUMBER 50-382

By letter W3F1-2020-0036 dated June 1, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20153A457), Entergy Operations, Inc. (the licensee) applied for a license amendment to Renewed Facility Operating License NPF-38 for the Waterford Steam Electric Station, Unit 3. The licensee requested U.S. Nuclear Regulatory Commission (NRC) approval for an emergency action level (EAL) scheme change for Waterford Steam Electric Station, Unit 3 (WF3). Based on its review of the application, the NRC staff determined that it needs a response to the following requests for additional information (RAIs) to complete its review. On September 24, 2020, the NRC staff and licensee held a clarification call, which did not result in any changes to the draft RAIs sent to the licensee in preparation for the call. As discussed with Ms. Maria Zamber of the licensee's staff, the NRC staff request the licensee to provide a response to the RAIs on or by December 15, 2020.

Regulatory Requirements/Background

The requirements of Section 50.47(b)(4) to Title 10 of the *Code of Federal Regulations* (10 CFR) state, in part:

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee...

In addition, the requirements of Section IV.B.1 to Appendix E of 10 CFR Part 50 state, in part:

The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring...

The most recent industry EAL scheme development guidance is provided in the Nuclear Energy Institute (NEI) document NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6 (ADAMS Accession Number ML12326A805). By letter dated March 28, 2013 (ADAMS Accession No. ML12346A463), the NRC endorsed NEI 99-01, Revision 6, as acceptable generic (i.e., non-plant specific) EAL scheme development guidance. The licensee proposed to revise its current EAL scheme to one based on NEI 99-01, Revision 6.

RAI 1

The licensee's current AU1.1 includes the Dry Cooling Tower Sumps or Turbine Building Industrial Waste Sump Monitors. However, the proposed AU1.1 does not include the Dry Cooling Tower Sumps nor Turbine Building Industrial Waste Sump Monitors. The licensee's basis in the LAR for the proposed AU1.1 states, "[T]he values used on the Dry Cooling Tower and Turbine Building sump discharge are based on the pathway being aligned to the Storm Water or Discharge Canal vice the circulating water system and are not applicable if the pathway is aligned to the circulating water system." Additionally, the WF3 EAL Comparison Matrix in the LAR provides that the gland steam condenser and main condenser exhausts are not included because they are not normally radioactive. However, the guidance in NEI 99-01, Revision 6, for AU1 provides that listed monitors should include the effluent monitors described in their Offsite Dose Calculation Manual (ODCM) and not simply based on the current line-up or radioactivity level.

Therefore, the NRC staff requests the licensee to provide a justification, in greater detail, that supports removing the Condenser Exhaust, Dry Cooling Tower Sumps, and Turbine Building Industrial Sumps radiation monitors from AU1, including a description of (1) how these effluent flow paths will be monitored by a downstream radiation monitor, or (2) that these flow paths are not effluent flow paths as described in the WF3 ODCM or Updated Final Safety Analysis Report as effluent flow paths. If the licensee determines that this this request identifies a concern with the current LAR, then the staff requests the licensee to either propose a change to the LAR or another solution.

RAI 2

The proposed threshold values for AG1.1, AS1.1, and AA1.1, if approved, would change substantially from the currently approved values for WF3. Additionally, if approved, the threshold values for PRM-IRE-0110-1 to 3 and PRM-IRE-3032-1 to 3 would also change from $\mu\text{Ci}/\text{sec}$ to $\mu\text{Ci}/\text{cc}$ (cubic centimeter).

The NRC staff requests the licensee to provide a justification that clearly indicates why the proposed threshold values have changed from their current values and how the proposed values correspond to the appropriate total effective or committed dose equivalents.

RAI 3

The proposed CS1.1 threshold value includes the condition, "RVLMS [Reactor Vessel Water Level Monitoring System] upper plenum 0%," which appears to be approximately the top of active fuel and not approximately the bottom inner diameter (ID) of the reactor coolant system (RCS) loop. However, this threshold value does not appear to be consistent with a standard EAL scheme in NEI 99-01, Revision 6. As such, the proposed change could result in the licensee delaying a declaration of a site area emergency classification.

The current required threshold, as provided in Rev 5, was based on 0% being approximately the bottom of the RCS loop (i.e., a RVLMS level of 0% was the first observable point below the bottom ID of the RCS loop), which is why the NRC approved Rev 5 (refer to the WF3 submittal letter dated September 16, 2010 (ADAMS Accession No. ML102630124). However, in this LAR, the licensee is now stating that the 0% value is approximately top of active fuel (i.e. the proposed WF3 EAL Comparison Matrix states that the RVLMS 0% sensor is the closest indication of level near top of active fuel), which means that the licensee would inappropriately

delay a site area emergency. It is not clear that a RVLMS upper level plenum indication of 0% is an appropriate threshold value for the proposed threshold value for CS1.1.

The NRC staff requests the licensee to explain the specific characteristics and any limitations on the available level indication unique to WF3 that support the proposed deviation (i.e., using top of active fuel) from the guidance provided by NEI 99-01, Revision 6, and the extent of the deviation from the levels provided by NEI 99-01, Revision 6. If the licensee determines that this request identifies a concern with the current LAR, then the staff requests the licensee to either propose a change to the LAR or another solution.

RAI 4

The proposed EAL threshold value for CS1.2 and CG1.1 includes the condition, "Representative CETs [Core Exit Thermocouples] indicate superheat." In its LAR, the licensee states and the NRC agrees, that superheated conditions in the core can only occur with core uncover. However, given uncertainties associated with establishing superheated conditions and subsequent monitoring of those conditions, the NRC staff finds that superheated conditions represent a core uncover indication and not a specific reactor vessel level indication.

The NRC staff requests the licensee to explain why it treats CETs indicating superheat as an actual level indication and not an indication of core uncover. If the licensee determines that this request identifies a concern with the current LAR, then the staff requests the licensee to either propose a change to the LAR or another solution.

RAI 5

The proposed threshold value for SG1.1 proposes to retain a 4-hour coping time to restore alternating current (AC) power based on the site blackout coping analysis performed in conformance with 10 CFR 50.63. The proposed SG1.1 provides that mitigative strategies using non-safety related power sources may be effective in supplying power to the safety buses. Although 10 CFR 50.63 continues to apply, 10 CFR 50.155, "Mitigation of beyond-design-basis events," also applies. Considering that FLEX strategies should provide the capability to provide core cooling for an extended loss of AC power (ELAP), using a coping time based on 10 CFR 50.63 may result in an unnecessary declaration of an unnecessary General Emergency classification.

- a. The NRC staff requests the licensee to clarify whether WF3 currently has a procedure that could be used to extend the availability of direct current (DC) power, such as a FLEX Implementing Guideline for an Extended Loss of AC power.

If so, then the NRC staff requests the licensee to explain whether the WF3 procedure or guideline provides a strategy that could reasonably provide core cooling (and thus availability of DC power) for a coping time significantly longer than the 10 CFR 50.63 coping time or until an alternate AC power source, such as FLEX, is aligned.

- b. If WF3 has the capability to provide mitigation for greater than the coping time based on the site blackout coping analysis performed in conformance with 10 CFR 50.63, then the NRC staff requests the licensee to explain why WF3 proposes to potentially declare a general emergency when FLEX mitigation strategies could provide a reasonable probability of success. If the licensee determines that this request identifies a

concern with the current LAR, then the staff requests the licensee to either propose a change to the LAR or another solution.

RAI 6

The LAR's Technical Basis section for the proposed changes to SU6.1, SU6.2, SA6.1, and SS6.1 provides that after a successful reactor trip, neutron power should immediately decrease to approximately 6% due to a prompt drop. The licensee further provides in its LAR that, for the purpose of emergency classification, reactor power less than or equal to 5% is used to identify a successful reactor trip.

The NRC staff notes that although the reactor trip neutron power should immediately decrease due to a prompt drop, neutron power will be approximately 6% of the reactor neutron power prior to the trip and may be significantly below 5% due to the prompt drop. As such, a power level of 5% does not provide positive indication that reactor power is lowering and that the reactor is shutdown. Additionally, the guidance provided in NEI 99-01, Revision 6, discusses power in relation to EAL mode applicability and does not include a reactor power level as a threshold value. However, NEI 99-01, Revision 6, does provide that developers may include site-specific emergency operating procedure criteria indicative of a reactor trip. As such, the entry criteria for a site-specific anticipated transient without scram procedure would be appropriate criteria indicating whether a reactor was successfully shutdown or if the reactor was not successfully shutdown and further actions were required to assure reactor shutdown and maintain positive control of reactivity.

The NRC staff requests the licensee to justify why a reactor power value of 5% or less is the only criteria that is used to determine whether the licensee should enter the WF3 site-specific procedure. If the licensee determines that this request identifies a concern with the current LAR, then the staff requests the licensee to either propose a change to the LAR or another solution.