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W3F1-2018-0056

September 12, 2018

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

SUBJECT: Reply to Notice of Violation EA-18-020  
Waterford Steam Electric Station, Unit 3 (Waterford 3)  
License No. NPF-38  
Docket No. 50-382

REFERENCES: NRC Letter, "WATERFORD STEAM ELECTRIC STATION, UNIT 3 –  
INSPECTION OF THE IMPLEMENTATION OF MITIGATION STRATEGIES  
AND SPENT FUEL POOL INSTRUMENTATION ORDERS AND  
EMERGENCY PREPAREDNESS COMMUNICATION/STAFFING/MULTI-  
UNIT DOSE ASSESSMENT PLANS-INSPECTION REPORT  
05000382/2017009," July 20, 2018, [Accession Number: ML18201A492].

Dear Sir or Madam:

This letter provides the Entergy Operations, Inc. (EOI) reply to Notice of Violation EA-18-020 (Reference), issued by the NRC to the Waterford Steam Electric Station, Unit 3 on July 20, 2018. This information is provided pursuant to the provisions of Title 10 Code of Federal Regulations 2.201.

Should you have questions regarding this report, please contact John P. Jarrell, Regulatory Assurance Manager, at (504) 739-6685.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Jarrell III".

JR/JRRD

Attachment: Reply to Notice of Violation EA-18-020

cc: Mr. Kriss Kennedy, Regional Administrator  
U.S. NRC, Region IV  
[RidsRgn4MailCenter@nrc.gov](mailto:RidsRgn4MailCenter@nrc.gov)

Mr. Anton Vogel, Director of Reactor Projects  
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**Attachment**

**to**

**W3F1-2018-0056**

**Reply to Notice of Violation EA-18-020  
(4 pages)**

## Reply to Notice of Violation EA-18-020

In U.S. Nuclear Regulatory Commission (NRC) letter to Entergy Operations, Inc. "Waterford Steam Electric Station, Unit 3 – Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communications/Staffing/Multi-Unit Dose Assessment Plans - NRC Integrated Inspection Report 05000382/2017009 and Notice of Violation," dated July 20, 2018 (ADAMS Accession No. ML 18201A492), the NRC issued Notice of Violation EA-18-020 to Entergy Operations' Waterford Steam Electric Station, Unit 3 (Waterford 3).

Pursuant to the provisions of 10 CFR 2.201, this enclosure provides Entergy's reply to Notice of Violation EA-18-020.

### Description of Violation

#### *Violation*

During an NRC inspection conducted from September 18, 2017, through June 7, 2018, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events," dated March 12, 2012, Section IV.A.2, requires, in part, that all licensees identified in Attachment 1 to this Order comply with the requirements described in Attachment 2 of this Order except to the extent that a more stringent requirement is set forth in the license.

Order EA-12-049, Attachment 1, identified Entergy Operations, Inc., Waterford Steam Electric Station, Unit 3, (Waterford 3) as a power reactor licensee subject to Section IV of the Order.

Order EA-12-049, Attachment 2, requires, in part, that licensees develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and spent fuel pool cooling capabilities following a beyond-design-basis external event. The transition phase requires providing sufficient, portable, on-site equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from off site. Licensees must also provide reasonable protection for the associated equipment from external events, and full compliance includes, in part, the staging or installation of equipment needed for the strategies.

ENTGWF081-REPT-001, "Waterford Steam Electric Station Unit 3 Final Integrated Plan," Revision 1, dated July 20, 2016, provides the necessary guidance on strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event.

- Section 2.2, "Strategies," states, in part, that Phase 2 strategies support the transition from installed plant equipment to FLEX equipment which is deployed by the on-shift personnel to maintain essential functions.

- Section 2.3.2, “Phase 2 Strategy,” states, in part, that the capability for reactor core cooling is accomplished from a pre-staged FLEX core cooling pump to provide feedwater to the steam generators in the event the turbine-driven emergency feedwater pump fails or sufficient steam pressure is no longer available to drive the turbine-driven emergency feedwater pump turbine, and that the FLEX core cooling pump is powered by the FLEX diesel generator. Section 2.3.2 also states, in part, that reactor coolant system inventory control involves the use of refueling water storage pool or boric acid makeup tank inventory through a repowered charging pump which receives its power from the FLEX diesel generator. Section 2.3.2 further states, in part, that the FLEX diesel generator is capable of supplying power to a battery charger such that DC power for controls and instrumentation continues to be available to support the reactor coolant system core cooling function.
- Section 2.4.2, “Phase 2 Strategy Modes 1-4,” states in part, that the capability to provide spent fuel pool make-up and/or spray during Phase 2 is accomplished using the component cooling water make-up pumps which are powered by the FLEX diesel generator.
- Section 2.7, “Planned Protection of FLEX Equipment,” states, in part, that in order to assure reliability and availability of the FLEX equipment required by the FLEX strategy, Waterford 3 has sufficient equipment to address all functions on-site, plus one additional spare (i.e., an “N+1” capability). Section 2.7 further states, in part, that the “N+1” diesel generator provides the capability to restore the “N” function by relocating the “N+1” diesel generator to the reactor auxiliary building from the “N+1” storage building.
- Section 2.15.1, “Method of Storage and Protection of FLEX Equipment,” states, in part, that to assist with unanticipated unavailability of the “N” set, evaluations have been performed and pre-planned strategies have been developed to provide reasonable protection of specific “N+1” equipment for predictable external events with pre-warning (i.e., Mississippi River flood and hurricanes) and instances where the “N” set is unavailable for conditions other than conduct of routine maintenance and testing during normal operations.

Contrary to the above, from June 1, 2016, to June 7, 2018, the licensee failed to adequately develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and spent fuel pool cooling capabilities following a beyond-design basis external event. Specifically, the licensee failed to establish appropriate design and procedures associated with providing electrical power using the “N+1” FLEX diesel generator to support transition phase (Phase 2) strategies necessary to maintain or restore the core cooling and spent fuel pool cooling capabilities in mitigating a beyond-design-basis external event.

This violation is associated with a Green Significance Determination Process finding.

*End of Violation*

### **Reason For the Violation**

The reason for the violation described above is during the development of the station's Final Integrated Plan (FIP) Waterford 3 personnel inappropriately interpreted the guidance in NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," revision 0, regarding what was required to maintain "N" FLEX capability (in this case the FLEX diesel generator) when the "N" becomes unavailable.

NEI 12-06, revision 0, step 11.5.3, states:

- Portable equipment may be unavailable for 90 days provided that the site FLEX capability (N) is available.
- Portable equipment that is expected to be unavailable for more than 90 days or expected to be unavailable during forecast site specific external events (e.g., hurricane) should be supplemented with alternate suitable equipment.
- If portable equipment becomes unavailable such that the site FLEX capability (N) is not maintained, initiate actions within 24 hours to restore the site FLEX capability (N) and implement compensatory measures (e.g., use of alternate suitable equipment or supplemental personnel) within 72 hours.

Waterford personnel did not fully understand that to maintain "N" FLEX capability, the equipment replacing the "N", in this case the "N+1" diesel generator (DG), had to be fully protected from all site specific external hazards. This would be in compliance with step 11.3 of NEI 12-06, revision 0, which states "FLEX mitigation equipment should be stored in a location or locations informed by evaluations performed per Sections 5 through 9 [of NEI 12-06, revision 0] such that no one external event can reasonably fail the site FLEX capability."

Additionally, during the development of Waterford's FIP, Waterford personnel learned through industry sources that NEI was developing guidance to be endorsed by the NRC which would be incorporated into revision 2 of NEI 12-06. This revision, in part, allowed for required FLEX equipment unavailability for 45 days provided that the site's FLEX capability ("N") was met but not protected for all of the site's applicable hazards. Waterford personnel assumed that incorporating this alternative into the station's Technical Requirements Manual (TRM) to comply with the FLEX strategy was acceptable. However, because Waterford failed to identify that this alternative needed to be reviewed and approved by the NRC, it was unacceptable to incorporate it.

### **Corrective Steps That Have Been Taken and the Results Achieved**

Current station procedures for severe weather direct the relocation of the "N+1" DG to inside the Nuclear Plant Island Structure (NPIS) as a precaution for flooding and hurricanes.

On January 10, 2018, Operations Department issued the following Standing Order:

Since the current TRM 3.13.2, [Diverse and Flexible Coping Strategies (FLEX) Equipment,] Action b.2 may not be allowed, more restrictive administrative controls are being put in place to suspend use of this TRM action until this condition is resolved. In the interim, should the FLEX "N" Diesel become Inoperable, the following actions should be taken:

1. Relocate the FLEX "N+1" Diesel to inside the Protected Area within 72 hours. Although it would not be able to be credited per the TRM, this remains a safe, conservative action to potentially mitigate some ELAP events.
2. Enter TRM 3.13.2 Action c. This is the most appropriate interim action although the FLEX "N+1" Diesel could still be utilized to mitigate some ELAP events.
3. If the FLEX "N" Diesel is not restored within the 72 hr requirement of TRM 3.13.2 Action c, then enter TRM 3.0.3. Seasonal considerations (such as no Hurricane threats and or river flooding threats) could potentially be utilized under TRM 3.0.3 to support justification of continued operation.

### **Corrective Steps That Will Be Taken**

Actions have been issued to develop the design, modification, and procedural guidance to provide the ability to stage and operate the "N+1" FLEX DG inside the NPIS when the "N" FLEX DG is out of service. These actions shall ensure that the "N+1" FLEX DG can be staged and operated where it is protected from all site specific external hazards ensuring "N" FLEX capability can be maintained when the "N" FLEX DG is out of service.

An action has been issued to revise the TRM and associated bases for Diverse and Flexible Coping Strategies (FLEX) Equipment to align with the FLEX Final Integrated Plan Safety Evaluation.

These corrective actions have been entered into Entergy's corrective action program.

### **Date When Full Compliance Will Be Achieved**

Waterford 3 will be in full compliance by November 8, 2019.