



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 5, 2021

Mrs. Mandy Halter
Vice President, Regulatory
Assurance
Entergy Services, LLC
M-ECH-29
1340 Echelon Parkway
Jackson, MS 39213

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2; GRAND GULF NUCLEAR STATION, UNIT 1; INDIAN POINT NUCLEAR GENERATING UNIT NO. 3; AND RIVER BEND STATION, UNIT 1 – STATUS OF CLOSEOUT OF BULLETIN 2012-01, “DESIGN VULNERABILITY IN ELECTRIC POWER SYSTEM” (EPID L-2017-CRS-0063)

Dear Mrs. Halter,

The purpose of this letter is to inform you that the U.S. Nuclear Regulatory Commission (NRC) staff has verified that Entergy Operations, Inc. (Entergy, the licensee) has provided the necessary information requested in NRC’s Bulletin (BL) 2012-01, “Design Vulnerability in Electric Power System,” dated July 27, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12074A115), for Arkansas Nuclear One (ANO), Units 1 and 2; Indian Point Nuclear Generating Unit No. 3¹ (Indian Point, Unit 3); and River Bend Station, Unit 1 (River Bend). The NRC staff has completed its review of BL 2012-01 for ANO, Units 1 and 2; Indian Point, Unit 3; and River Bend, and considers the open phase bulletin closed at these power plants.

By letter dated December 30, 2020 (ADAMS Accession No. ML20365A070), Entergy informed the NRC that the commitment date associated with the monitoring period and “active” actuation features of the open phase isolation system at Grand Gulf Nuclear Station, Unit 1 (Grand Gulf), was being changed to April 30, 2022. As such, closure of BL 2012-01 for Grand Gulf will remain in abeyance until the automatic protection features of the system are enabled. A future letter from the NRC will document the BL 2012-01 closure for Grand Gulf, Unit 1, accordingly.

The NRC issued BL 2012-01 and requested information about each facility's electric power system designs to verify the system’s capability to address open phase conditions (OPCs). Specifically, the NRC requested licensees to provide the following information:

- A description of how the protection scheme for engineered safety features buses (Class 1E for current operating plants or non-Class 1E for passive plants) is designed to detect and automatically respond to a single-phase open circuit condition or high impedance ground fault condition on offsite power circuits or another power source; and

¹ Indian Point Generating Unit No. 2 has since permanently shut down and no further review action is planned for that unit.

- A description of the operating configuration of engineered safety features buses (Class 1E for current operating plants or non-Class 1E for passive plants) at power (i.e., normal operating condition).

In 2012 and 2014, the licensee responded to BL 2012-01 and to the NRC's subsequent request for additional information (RAI) dated December 20, 2013 (ADAMS Accession No. ML13351A314), respectively, for ANO, Units 1 and 2; Grand Gulf; Indian Point, Units 2 and 3; and River Bend.

By letters dated October 9, 2013, and March 16, 2015 (ADAMS Accession Nos. ML13333A147 and ML15075A454, respectively), the Nuclear Energy Institute submitted a voluntary industry initiative to address OPCs at nuclear power plants. The Nuclear Energy Institute letter dated March 16, 2015, stated, in part, that "The initiative is a formal commitment by the companies that operate nuclear power plants to follow a specific policy or plan of action. The initiative calls for a proactive plan and schedule for addressing the potential design vulnerabilities to the open phase condition."

To evaluate the adequacy of the open phase isolation systems designs, the NRC staff inspected four nuclear power plants with four distinct open phase isolation system designs using NRC's Temporary Instruction (TI) 2515/194, "Inspection of the Licensee's Implementation of Industry Initiative Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (NRC Bulletin 2012-01)," Revision 0, dated October 31, 2017 (ADAMS Accession No. ML17137A416). A summary of the NRC staff's preliminary observations and issues needing additional clarity were discussed with industry representatives in two public meetings conducted on September 19, 2018, and October 17, 2018. The meeting summaries can be found in ADAMS at Accession Nos. ML18268A342 and ML18309A227, respectively.

In June 2019, January 2019, December 2019, and February 2018, the NRC staff performed TI 2515/194, Revision 0, inspections at ANO, Units 1 and 2; Grand Gulf; Indian Point, Unit 3; and River Bend, respectively, to verify the licensee's implementation of Revision 1 of the voluntary industry initiative. To address the OPC design vulnerability issue at these power plants, the licensee implemented open phase isolation system plant modifications, which provide detection, alarm, and automatic protective features. The NRC's inspection reports, as identified below for each power plant, documented the results of these TI 2515/194 inspections. No findings or violations of more than minor significance were identified.

The NRC staff has reviewed the information submitted by the licensee and the results of the inspection reports for ANO, Units 1 and 2; Indian Point, Unit 3; and River Bend, and concludes that the licensee has provided the necessary information requested in BL 2012-01 to complete its review of BL 2012-01 for these power plants. The NRC staff considers the open phase bulletin closed for ANO, Units 1 and 2; Indian Point, Unit 3; and River Bend. As described above, BL 2012-01 will remain open for Grand Gulf, until the automatic protective features of the open phase isolation system are activated, and a future NRC letter will be issued accordingly.

The following references pertain to the OPC issue for these power plants:

- For ANO, Units 1 and 2:
 - Letter dated October 25, 2012 (ADAMS Accession No. ML12299A391) in response to BL 2012-01.

- Letter dated February 3, 2014 (ADAMS Accession No. ML14034A412) in response to an RAI.
- NRC Inspection Report 05000313/2019013 and 05000368/2019013, “Arkansas Nuclear One, Units 1 and 2 – Temporary Instruction 2515/194 Report 05000313/2019013 and 05000368/2019013,” dated June 26, 2019 (ADAMS Accession No. ML19178A249).
- For Grand Gulf:
 - Letter dated October 24, 2012 (ADAMS Accession No. ML12299A394) in response to BL 2012-01.
 - Letter dated February 3, 2014 (ADAMS Accession No. ML14034A359) in response to an RAI.
 - NRC Inspection Report 05000416/2019011, “Grand Gulf Nuclear Station, Unit 1 – NRC Inspection of Temporary Instruction 2515/194, Inspection Report 05000416/2019011,” dated February 4, 2019 (ADAMS Accession No. ML19036A958).
 - Letter dated December 30, 2020 (ADAMS Accession No. ML20365A070), “Schedule Change to Open Phase Condition Detection Implementation.”
- For Indian Point, Unit 3:
 - Letter dated October 25, 2012 (ADAMS Accession No. ML12311A014) in response to BL 2012-01.
 - Letter dated February 3, 2014 (ADAMS Accession No. ML14043A170) in response to an RAI.
 - NRC Inspection Report 05000247/2019012 and 05000286/2019012, “Indian Point Nuclear Generating, Units 2 and 3 – Temporary Instruction 2515/194 Inspection Report 05000247/2019012 AND 05000286/2019012,” dated January 9, 2020 (ADAMS Accession No. ML20010D444).
- For River Bend:
 - Letter dated October 24, 2012 (ADAMS Accession No. ML12312A127) in response to BL 2012-01.
 - Letter dated January 31, 2014 (ADAMS Accession No. ML14041A215) in response to an RAI.
 - NRC Inspection Report 05000458/2018010, “River Bend Station – NRC Inspection of Temporary Instruction 2515/194, Inspection of the Licensee’s Implementation of Industry Initiative Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (NRC Bulletin 2012-01) – Inspection Report 05000458/2018010,” dated March 26, 2018 (ADAMS Accession No. ML18085B197).

M. Halter

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If you have any questions, please contact me at 301-415-1564 or by e-mail at Siva.Lingam@nrc.gov.

Sincerely,

/RA/

Siva P. Lingam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-313, 50-368, 50-416,
50-286, and 50-458

cc: Listserv

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ADAMS Accession No. ML21049A307

***by e-mail**

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