



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

May 26, 2022

Mr. Joel P. Gebbie  
Senior Vice President and  
Chief Nuclear Officer  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 – CLOSEOUT OF  
BULLETIN 2012-01, "DESIGN VULNERABILITY IN ELECTRIC POWER  
SYSTEM"

Dear Mr. Gebbie:

The purpose of this letter is to inform you that the U.S. Nuclear Regulatory Commission (NRC) staff has verified that Indiana Michigan Power Company (the licensee) has provided the necessary information requested in Bulletin 2012-01, "Design Vulnerability in Electric Power System" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12074A115), for Donald C. Cook Nuclear Plant, Units 1 and 2 (D.C. Cook). The NRC staff has completed its review of this information and has closed out Bulletin 2012-01 for this facility.

The NRC issued Bulletin 2012-01 on July 27, 2012, to all holders of operating licenses and combined licenses for nuclear power reactors, except those who have permanently ceased operation and have certified that fuel has been removed from the reactor vessel. The bulletin requested information about each facility's electric power system designs that would allow the NRC staff to verify the system's capability to address open phase conditions. 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
- 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).

By letter dated October 25, 2012 (ML12312A465), the licensee provided its response to Bulletin 2012-01 for D.C. Cook. By letter dated January 31, 2014 (ML14035A213), the licensee provided supplemental information for this facility in response to an NRC staff request for additional information issued on December 20, 2013 (ML13351A314).

By letters dated October 9, 2013 (ML13333A147), and March 16, 2015 (ML15075A454), the Nuclear Energy Institute (NEI) submitted a voluntary industry initiative to address open phase conditions at nuclear power plants. The NEI letter dated March 16, 2015, stated, in part: "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 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 the NRC Temporary Instruction (TI) 2515/194, "Inspection of the Licensees' Implementation of Industry Initiative Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (NRC Bulletin 2012-01)," dated October 31, 2017 (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 under Package Accession Nos. ML18268A342 and ML18309A226, respectively.

By email dated June 6, 2019 (ML19163A176), NEI submitted Revision 3 of the voluntary industry initiative to include an option for plants to perform a risk evaluation under certain boundary conditions to support manual response to an open phase condition. By email dated June 20, 2019, NEI submitted NEI 19-02, "Guidance for Assessing Open Phase Condition Implementation Using Risk Insights" (ML19172A086). On August 18, 2020, the NRC staff issued Revision 2 of TI 2515/194 (ML20230A328), which provided temporary inspection instructions for the purpose of verifying that licensees appropriately implemented Revision 3 of the NEI voluntary industry initiative.

In October 2021, the NRC staff performed an inspection at D.C. Cook using TI 2515/194, Revision 2. The inspection was performed to verify the licensee's implementation of the voluntary industry initiative at this facility. To address the open phase condition design vulnerability issue at D.C. Cook, the licensee implemented open phase isolation system plant modifications, which provide detection and alarm in the control room, and plant procedures for operators to diagnose and take manual action to mitigate an open phase condition. The results of the TI 2515/194 inspection are provided in NRC inspect report 05000315/2021013 and 05000316/2021013, dated December 6, 2021 (ML21340A240). The inspection report states that the NRC inspectors had reasonable assurance that the licensee was appropriately implementing the voluntary industry initiative at D.C. Cook, with one exception. Specifically, the NRC inspectors noted that the Updated Final Safety Analysis Report did not include a complete description of the as-built configuration of the open phase detection system. The licensee entered this issue into its corrective action program.

The NRC staff reviewed the information submitted by the licensee and the results of the TI 2515/194 inspection for D.C. Cook. Based on this review, the NRC staff concludes that the licensee provided the necessary information requested in Bulletin 2012-01 and has completed the implementation of its open phase isolation system. Therefore, the NRC staff has closed Bulletin 2012-01 for D.C. Cook.

If you have any questions, please contact me at 301-415-2855 or [Scott.Wall@nrc.gov](mailto:Scott.Wall@nrc.gov).

Sincerely,

***/RA BPurnell for/***

Scott P. Wall, Project Manager  
Plant Licensing Branch III  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

cc: Listserv

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BULLETIN 2012-01, “DESIGN VULNERABILITY IN ELECTRIC POWER  
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**ADAMS Accession No.: ML22146A113**

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