



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

July 29, 2022

Mr. Christopher P. Domingos
Site Vice President
Northern States Power Company - Minnesota
Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – CLOSEOUT OF BULLETIN
2012-01, “DESIGN VULNERABILITY IN ELECTRIC POWER SYSTEM”

Dear Mr. Domingos:

The purpose of this letter is to inform you that the U.S. Nuclear Regulatory Commission (NRC) staff has verified that Northern States Power Company (the licensee) has provided the necessary information requested in NRC’s Bulletin 2012-01, “Design Vulnerability in Electric Power System” dated July 27, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12074A115), for Monticello Nuclear Generating Plant (Monticello). The NRC staff has completed its review of this information and this letter closes out Bulletin 2012-01 for Monticello.

The NRC issued Bulletin 2012-01 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 22, 2012 (ML12297A138), the licensee provided its response to Bulletin 2012-01 for Monticello. By letter dated January 30, 2014 (ML14031A088), 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 letter 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. NEI also submitted NEI 19-02, “Guidance for Assessing Open Phase Condition Implementation Using Risk Insights” on June 20, 2019 (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 August 2021, the NRC staff performed an inspection at Monticello 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 Monticello, the licensee implemented open phase isolation system plant modifications, which provide detection and alarm in the control room, and necessary plant procedures that allow operators to diagnose and take manual action to mitigate an open phase condition. The NRC staff documented the results of the TI 2515/194 inspection in a report dated September 29, 2021 (ML21272A212).

The NRC staff reviewed the information submitted by the licensee and the results of the TI 2515/194 inspection for Monticello. 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 closes Bulletin 2012-01 for Monticello.

If you have any questions, please contact me at 301-415-3733 or Robert.Kuntz@nrc.gov.

Sincerely,

/RA/

Robert Kuntz, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

cc: Listserv

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – CLOSEOUT OF BULLETIN
2012-01, “DESIGN VULNERABILITY IN ELECTRIC POWER SYSTEM” DATED
JULY 29, 2022

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