UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

April 02, 2024

EA-24-036

Khalil Dia, Site Vice President
Nebraska Public Power District
Cooper Nuclear Station
72676 648A Avenue
P.O. Box 98
Brownville, NE 68321

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION FOR COOPER NUCLEAR STATION (EPID: L-2024-LLD-0003)

Dear Khalil Dia:

By letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24091A003) dated March 31, 2024, Nebraska Public Power District requested that the U.S. Nuclear Regulatory Commission (NRC) exercise discretion to not enforce compliance with the actions required by Cooper Nuclear Station (CNS) Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.1.1 “Reactor Protection System (RPS) Instrumentation.”

This letter documents information previously discussed with the NRC in a telephone conference on March 29, 2024, at 5:00 p.m. Central Daylight Time (CDT). The principal NRC staff members who participated in the telephone conference are listed in the Enclosure. The NRC staff determined that the information contained in your letter requesting the Notice of Enforcement Discretion (NOED) was consistent with your oral request. The NRC first became aware of the potential for this NOED request on March 29, 2024, at approximately 2:50 p.m. CDT through communication with the NRC Senior Resident Inspector stationed at CNS.

Without enforcement discretion, TS LCO 3.3.1.1 would require that CNS take action to reduce power to less than 29.5% beginning at 2:37 a.m. CDT on March 30, 2024. The licensee requested that a NOED be granted pursuant to the NRC’s policy regarding exercise of discretion for an operating power reactor, set out in the NRC Enforcement Manual, Appendix F, “Notices of Enforcement Discretion,” and that the NOED be effective for seven days past the LCO 3.3.1.1 Condition A expiration date on March 30, 2024 (i.e., until 2:37 a.m. CDT on Saturday, April 6, 2024). This letter documents the events leading up to the diagnosis of the plant condition, and our telephone conversation on March 29, 2024, when we orally granted this NOED request.

Summary

During inspection activities following a series of surveillance failures related to the main turbine stop valve limit switches at CNS, the resident inspectors identified a potential issue related to the design and configuration of the limit switches.

CNS utilizes a GE BWR-4 (Mark 1) reactor with a Westinghouse turbine. Unlike GE turbines, the Westinghouse turbine only has two stop valves. One of the scram trip functions at CNS is the turbine stop valve closure scram. In effect, if both stop valves of the main turbine begin to close, the reactor will receive a signal to automatically scram. This scram signal is accomplished by having two limit switches on each stop valve that sense the position of the stop valve and actuate when the stop valve begins to close. Each limit switch provides a signal to two relays in the reactor scram circuit. The RPS logic for this scram is “1 out of 2, taken twice” meaning that one of the two limit switches for each stop valve must actuate on stop valve closure to cause the scram signal. The turbine stop valve closure scram’s function is to scram the reactor prior to reactor vessel pressure rising and causing void collapse with a resultant spike in power.

Due to only having two stop valves (SV1 and SV2), the licensee linked one limit switch to the stop valve (A1 for SV1, and B1 for SV2)and attached the other limit switch (A2 for SV1, and B2 for SV2) to the first switch. To clarify, limit switches A1 and A2 are ganged together via a bolted connection, and limit switches B1 and B2 are similarly ganged together. Neither limit switch A2 nor B2 receives a direct input to stop valve position from their respective stop valves.

The FSAR for CNS in Section VII, 2.3.6.4, states: “the switches on each valve are mechanically and electrically separated and satisfy IEEE-279”. Additionally, TS 3.3.1.1, Table 3.3.1.1-1, Function 8 requires two channels per trip system to be operable when rated thermal power is greater than or equal to 29.5%.

The switch configuration at CNS creates three potential issues: A) the limit switches are not mechanically separated as stated in the FSAR; B) the limit switches are vulnerable to a single point failure (for example, if an active component in the linkage from the stop valve to the A1(B1) limit switch fails, neither limit switch will actuate); and, C) the configuration of the limit switches does not allow for proper channel separation as required by the technical specifications.

During the teleconference held on March 29, 2024, the licensee requested enforcement discretion for the period of time required to process an emergency TS License Amendment Request (LAR) under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.91(a)(5). This TS LAR proposes an amendment to add a temporary footnote to TS Table 3.3.1.1-1, “Reactor Protection System Instrumentation,” that is applicable to Function 8, Turbine Stop Valve – Closure. The temporary footnote allows NPPD to not enter TS 3.3.1.1, Condition A or B for the channel independence condition. NPPD requested approval of the proposed amendment by April 5, 2024. This is a one-time request that will remain in effect through Cycle 33, until startup from refueling outage RE33 in the fall of 2024, to allow the licensee time to resolve the channel independence issue. During internal NRC discussions, the office of Nuclear Reactor Regulation, Division of Operating Reactor Licensing expressed confidence in completing the LAR review based on the low-risk increase associated with the loss of this specific system redundancy.

The licensee indicated that the calculated increase in CNS incremental conditional core damage probability (ICCDP), using the zero-maintenance probability model, for the requested seven-day enforcement discretion period was 1.98E-11. The licensee also indicated that the increase in CNS incremental conditional large early release probability (ICLERP) was 7.14E-13. These values were less than the SE-07 ICCDP and SE-08 ICLERP guidance thresholds specified in the NRC Enforcement Manual, Appendix F.

During the requested period of enforcement discretion, the licensee proposed to implement compensatory risk management measures to reduce the likelihood of risk significant initiating events and protect risk significant equipment and actions. These measures included, but were not limited to the following:

- The work schedule will be reviewed and any work that increases the chances of a turbine trip will be avoided.

- Actions will be taken to remove any planned work activities from the schedule which result in a Yellow or higher Probabilistic Risk Assessment (PRA) risk window.

- The Protected Equipment Program will be utilized to drive heightened sensitivity and risk management actions associated with equipment with elevated potential for initiating a Main Turbine trip.

The licensee's Station Operating Review Committee approved submission of the NOED request on March 29, 2024, prior to the verbal request for a NOED.

Based on the NRC staff's evaluation of the licensee's request, the staff determined that granting this NOED was consistent with the NRC's Enforcement Policy and staff guidance. The NOED request met the criteria specified in NRC's Enforcement Manual, Appendix F, "Notices of Enforcement Discretion," Sections 2.2 and 2.5. Specifically, the NRC determined that it was appropriate to exercise discretion for the brief period of time required for the licensee and the NRC staff to process an emergency TS LAR under the provisions of 10 CFR 50.91(a)(5) and avoid an unnecessary reduction in reactor power without a corresponding benefit to public health and safety or the environment. Therefore, as communicated orally to the licensee at 6:04 p.m. CDT on March 29, 2024, the NRC exercised discretion to not enforce compliance with TS LCO 3.3.1.1 Condition A and B for a period of seven days.

In accordance with the granted NOED, the licensee submitted the emergent TS LAR on April 1, 2024 (ADAMS Accession No. ML24092A376) to modify TS 3.3.1.1 by adding a footnote to not enter Condition A and B through Cycle 33 until startup from refueling outage RE33 to allow time to correct the lack of mechanical separation of the turbine stop valve relays.

As stated in the NRC Enforcement Policy, enforcement action may be taken to the extent that violations were involved for the root cause that led to the noncompliance for which this NOED was necessary.

This letter, its enclosure, and its enclosures will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.”

Sincerely,

Signed by Miller, Geoffrey
on 04/02/24

Geoffrey Miller, Director
Division of Operating Reactor Safety

Docket No. 05000298
License No. DPR-46

Enclosure:
List of Key NRC Personnel

cc w/ encl: Distribution via LISTSERV

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DOCUMENT NAME: NOTICE OF ENFORCEMENT DISCRETION FOR COOPER NUCLEAR STATION (EPID: L-2024-LLD-0003)
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LIST OF KEY NRC PERSONNEL

NRC Region IV

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Jeffrey Josey, Chief, Reactor Projects Branch C
Rick Deese, Senior Reactor Analyst
Kent Chambliss, Senior Resident Inspector
Geoffrey Birkemeier, Resident Inspector

NRC Office of Nuclear Reactor Regulation

Omar Lopez-Santiago, Director, Division of Construction Oversight
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Sam Lee, Senior Project Manager, DORL Plant Licensing Branch 4
Ed Miller, Senior Project Manager, DORL NOED Process Owner
David Rahn, Senior Electronics Engineer, Long Term OPS and Modernization
John Hannah, Senior Reactor Analyst, PRA Oversight Branch
Khadijah West, Safety and Plant Systems Engineer, TS Branch
Robert Elliott, Senior Safety and Plant Systems Engineer, TS Branch
Samson Lee, Senior Project Manager, Plant Licensing Branch-4
Santosh Bhatt, Nuclear Engineer