



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 94 TO FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By submittal dated June 8, 1994, as superseded April 20, 1995,¹ and supplemented August 18, 1995, Northern States Power Company, the licensee for Monticello Nuclear Generating Plant, proposed changes to plant Technical Specifications (TSs) 4.7.B.1, 4.7.B.2.a. and b., 3.7.B.2.a(3), 3.7.B.2.b(2), and 3.7.B.2.b(3) which deal with the standby gas treatment system (SGTS) for the plant, and TSs 3.7.C.4. and 4.7.C.1. which deal with secondary containment for the plant. The licensee stated that the proposed changes would provide consistency with improved standard technical specifications (STS) for BWR [boiling-water reactor]/4 reactors (NUREG-1433), promote operational flexibility, correct a typographical error in the existing TS, provide consistency with original design-basis requirements, and clarify the testing performed to demonstrate secondary containment capability. The staff's evaluation of the proposed TS changes is given below.

The April 20 and August 18, 1995, submittals provided additional clarifying information within the scope of the original application. These submittals did not change the initial no significant hazards considerations determination.

2.0 EVALUATION

The Monticello reactor building includes a secondary containment system to handle the potential radioactive releases which may occur within the building during an accident. The handling of the releases is accomplished by a low leakage building and an SGTS which has a design capacity greater than the building leak rate. The SGTS filters the air from the reactor building and exhausts it via the offgas stack to the environs at an elevated release point, thus maintaining a negative pressure in the secondary containment and assuring that leakage flows into the containment, and that no significant exfiltration of untreated gases exists. The secondary containment and SGTS perform this safety function to ensure that radioactive releases to the environment

¹ The April 20, 1995, letter contains the same information as the original application but with changes identified by sidebars.

resulting from a design-basis accident such as a loss-of-coolant accident (LOCA) or refueling accident do not exceed the limits established by 10 CFR Part 100 or 10 CFR Part 50, Appendix A, General Design Criterion 19. Each of the proposed TS changes identified above is evaluated below separately.

2.1 Change to TS 4.7.B.1.

Currently, the TS Surveillance Requirement (SR) 4.7.B.1. reads as follows:

"At least once per month, initiate from the control room 3500 cfm ($\pm 10\%$) flow through both circuits of the standby gas treatment system."

The licensee proposes to replace the above wording as follows:

"Once per month, operate each train of the standby gas treatment system for ≥ 10 continuous hours with the inline heaters operating."

The licensee stated that the proposed periodic operation of the system heaters will prevent condensation and moisture buildup in the adsorbers and thereby eliminate degradation of adsorber efficiency for adsorbing radioiodine from the effluent stream. The licensee justified deletion of specific flow demonstration for the proposed TS stating that such demonstration will require special ventilation line-ups frequently (i.e., monthly) and that it can have an adverse effect on plant operations. The licensee further added that the needed fan flow is verified once per operating cycle per existing TS SRs 4.7.B.2.b.(1), and 4.7.C.1.a. Also, the licensee stated that the above change to TS 4.7.B.1 is consistent with NUREG-1433. The staff agrees with the above TS change and the licensee's justification for the same, and it is therefore acceptable.

2.2 Change to TS 4.7.B.2.a.

Currently, the TS SR 4.7.B.2.a. erroneously uses the words, "charcoal absorbers" instead of "charcoal adsorbers." The licensee proposes to correct the mistake and the staff agrees with the proposed correction.

2.3 Change to TS 4.7.B.2.b.

Currently, the TS SR 4.7.B.2.b. calls for the demonstration of the operational readiness of the SGTS at least once per operating cycle, but not to exceed 18 months. Specifically, the SR calls for measurement of pressure drop across the combined filters of each SGTS train at design fan flow rate (SR 4.7.B.2.b.(1)), verification of heater operability at nominal rated power (SR 4.7.B.2.b.(2)), and verification of automatic initiation capability for each SGTS train (SR 4.7.B.2.b.(3)), at the frequency specified above. The licensee has proposed deletion of SR 4.7.B.2.b.(3). In lieu of the deleted SR, the licensee has proposed a new SR namely, SR 4.7.B.2.c. The new SR also calls for verification of automatic initiation capability for each SGTS train at least once per operating cycle; however, it does not impose any 18-month

time limit between successive surveillance tests. The licensee justified the replacement of existing SR 4.7.B.2.b.(3) by the proposed SR 4.7.B.2.c. stating that: (1) it is consistent with existing SR frequencies for equipment which receive automatic initiation signals from the reactor protective instrumentation system (RPIS) such as primary containment isolation valves, emergency core cooling systems (ECCS), and emergency diesel generators; (2) added assurance of automatic initiation capability of the SGTS is provided by additional testing (quarterly or monthly, as appropriate - see TS SR Tables 4.2.1 and 4.1.1 and 4.1.2 for Monticello plant) performed on the SGTS instrumentation per the RPIS SRs, (3) it provides enhanced flexibility of surveillance scheduling and removes the potential for surveillance performance being required of testing which may have an adverse impact on plant operation; and (4) the operating history of the SGTS has demonstrated excellent reliability of the system. The staff agrees with the above justification, and it is therefore acceptable.

2.4 Change to TS 3.7.B.2.a.(3)

The licensee has proposed increased methyl iodide removal efficiency of 94% (instead of 90% as stated in the existing TS) as an acceptance criterion for laboratory testing of SGTS carbon adsorber samples. The licensee justified the proposed removal efficiency stating that it is conservative since it enhances the safety margin against possible adsorber degradation between successive tests. In this context, the staff notes that it used 90% iodine removal efficiency for the SGTS charcoal adsorbers in its original evaluation of the radiological consequences of a design-basis LOCA for Monticello (see staff's Safety Evaluation Report for the Monticello Provisional Operating License, March 18, 1970). Additionally, the licensee has proposed to change the laboratory testing temperature from the currently specified 130°C to 30°C. The licensee justified the change stating that it is conservative since methyl iodide removal efficiency by carbon adsorber decreases with decreases in test temperature. The licensee further stated that the proposed laboratory testing at 30°C and 95% relative humidity (RH) (current TS 3.7.B.2.a.(3): test condition 130°C and 95% RH) is consistent with the revised guidance for laboratory testing of carbon adsorber samples provided in the document ASTM D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon." The licensee has proposed revised Bases to SR 4.7 to reflect use of ANSI N510-1989, "Nuclear Power Plant Air Cleaning Units and Components," for in-place testing procedures for high-efficiency particulate air (HEPA) filters and carbon adsorbers in the SGTS and ASTM D3803-1989 for laboratory testing procedures for carbon adsorbers in the SGTS. The staff currently uses the above guidance for testing procedures provided in the above documents. For the reasons stated above, the staff agrees with the licensee's proposed change identified above to TS 3.7.B.2.a.(3), and the Bases for TS 4.7 as they relate to testing of SGTS HEPA filters and carbon adsorbers. These changes are, therefore, acceptable.

2.5 Change to TS 3.7.B.2.b.(2)

Currently, the above TS reads as follows:

"The system shall be shown to be operable with: Inlet heater power output \geq 15 kW."

The licensee has proposed to change 15 kW to 18 kW in the above specification. The licensee stated that its design review showed that the currently specified

power output of 15 kW was insufficient to limit the RH of the influent stream through the adsorber to 70% under the most limiting conditions assumed. Controlling RH to no more than 70% ensures optimum gaseous iodine adsorption within the charcoal adsorber units. The licensee stated that the inlet heaters have a nominal rating of 20 kW and that a surveillance test history of the heater shows that the heaters have continually exceeded a power output of 18 kW, the minimum power output the licensee has calculated for ensuring the above-mentioned humidity control. For the reasons stated above, the staff finds that the licensee's proposed change will ensure that the SGTS testing requirements are in accordance with the original design requirements for the system performance and is therefore acceptable.

2.6 Change to TS 3.7.B.2.b.(3)

TS Table 3.2.4, "Instrumentation that Initiates Reactor Building Ventilation Isolation and Standby Gas Treatment System (SGTS) Initiation," includes a setpoint for low-low (Level 2) reactor water level initiation of SGTS. The SGTS is also initiated on high drywell pressure, high radiation in the reactor building ventilation plenum, and high radiation on the refueling floor. TS 3.7.B.2.b.(3) lists the inputs for auto-initiation signals for SGTS. The licensee has proposed to add to the above list the low-low reactor water level input. The change will make TS 3.7.B.2.b.(3) consistent with the previously approved low-low reactor water level setpoint given in TS Table 3.2.4 (Monticello License Amendment #91, September 9, 1994). Addition of the input is conservative with respect to the expanded range over which the SGTS will be required to be operable. The purpose of the low-low reactor water level input is to provide redundant, diverse means of ECCS initiation in response to a LOCA event. The low-low reactor water level setpoint is a backup to the high drywell pressure setpoint. During a LOCA, the high drywell pressure setpoint will provide an ECCS/SGTS initiation before water level is able to decrease to Level 2. General Electric, in SIL-131, also recommended to its BWR customers that the reactor vessel water level setpoint for SGTS initiation be selected as the same as that for ECCS systems initiation (Level 2). The SIL also noted that this recommendation was being implemented in BWR/4, 5, and 6 plants. On these bases, the staff finds that addition of the low-low reactor water level as an initiation setpoint for SGTS will not adversely affect continued safe operation of the plant and is acceptable.

2.7 Change to TS 3.7.C.4.

TS 3.7.B.1. requires the SGTS to be operable whenever secondary containment integrity (i.e., operability) is required. TS 3.7.B.1.b. calls for placing the reactor in a condition for which the SGTS is not required (i.e., in the condition which does not require secondary containment integrity) within 36 hours, when the SGTS is not operable per the allowed limiting conditions for operation of the SGTS. However, the existing TS 3.7.C.4. calls for placing the reactor in the cold shutdown condition within 24 hours, if secondary containment is not operable per the allowed limiting conditions for operation of the secondary containment. To eliminate the anomaly which renders the completion time (i.e., 36 hours) specified in TS 3.7.B.1.b. unrealizable (because of the more limiting completion time of 24 hours specified in TS 3.7.C.4.), the licensee has proposed to change the completion

time of 24 hours specified in TS 3.7.C.4. to 36 hours. The licensee stated that the proposed change is consistent with the importance of the system in mitigating the consequence of postulated accidents. The licensee further stated that the proposed completion time is consistent with NUREG-1433 STS 3.6.4.1 for secondary containment. Furthermore, the change is consistent with the allowed completion times of 36 hours to restore secondary containment integrity for other BWRs. Based on the above discussion, the staff finds the licensee's proposed change to TS 3.7.C.4. acceptable.

2.8 Change to TS 4.7.c.1.

Regarding the capability of the secondary containment to maintain a negative pressure of 1/4-inch water gauge (with respect to surrounding space) with a SGTS filter train flow rate of ≤ 4000 scfm, the existing TS 4.7.C.1. calls for a periodic verification test of such capability under calm wind conditions (i.e., $2 < u < 5$ mph, where u is the wind speed). The proposed TS deletes the lower bound 2 mph of the wind speed range specified above and adds the following:

"If calm wind conditions do not exist during this testing, the test data is to be corrected to calm wind conditions."

Additionally, the licensee proposed the following addition to the BASES for TS 4.7.B. and C. to identify the basis to be used for correcting the test data obtained under non-calm wind conditions:

"Secondary Containment Capability Test data obtained under non-calm wind conditions is to be extrapolated to calm wind conditions using information in "Summary Technical Report to the United States Atomic Energy Commission, Directorate of Licensing, on Secondary Containment Leak Rate Test," submitted by letter dated July 23, 1973."

The licensee justified the proposed deletion of the lower bound for the currently specified wind speed range stating that the deletion recognizes that the secondary containment capability test data obtained during wind speeds below 5 mph do not require corrections for non-calm wind conditions, as the wind under such conditions is calm. On staff's request for clarification on how the corrections to test data obtained under non-calm wind conditions will be assessed, by letter dated August 18, 1995, the licensee provided the requested clarification and referenced the above letter in its proposed change to the BASES for TS 4.7.B. and C. The letter states that during the secondary containment capability test, meteorological data will be obtained for every 15-minute period and that the data will be used to plot secondary containment differential pressure as a function of wind speed. The letter further states that the curve thus plotted will be compared with a copy of the "northerly" wind curve provided in Figure 5.1 of the summary technical report referenced above, to assess corrections to test data obtained under non-calm wind conditions. Figure 5.1 contains plots (i.e., "northerly" and "southerly" wind curves) of the secondary containment differential pressure as a function of wind speed for constant SGTS flow rate. The letter states that the secondary containment pressure drawdown capability specified in TS 4.7.C.1. is

demonstrated for the case, when the test data plots below the "northerly" wind curve. Also, the letter states that the use of the "northerly" wind curve provides the most limiting and conservative curve for extrapolating secondary containment capability test data to calm wind conditions and provides reasons for the above conclusion.

The staff has reviewed the technical report including Figure 5.1 curves and the reasons given in the August 18, 1995, letter for the use of the "northerly" curve. Based on such a review, the staff finds the licensee's proposed deletion of the lower bound 2 mph of the wind speed range specified in the existing TS 4.7.C.1. acceptable, since it is more conservative to include wind speeds ≤ 2 mph in the secondary containment capability demonstration tests. Also, the staff finds the licensee's statement that test data obtained during wind speeds below 5 mph do not require corrections for non-calm wind conditions is acceptable. Further, the staff has determined that the licensee should always use the "northerly" curve, as stated above, for determining when and how the corrections to test data have to be applied. Based on the above discussion, the staff finds the licensee's proposed additions to TS 4.7.C.1. and its associated BASES as they relate to secondary containment capability tests acceptable.

In its April 20, 1995, submittal, the licensee has also proposed several minor editorial changes to TS 4.7.C. The staff has reviewed these changes and finds them acceptable.

3.0 CONCLUSION

Based on the above findings, the staff concludes that the licensee's proposed changes to TS 4.7.B.1., 4.7.B.2.a., 4.7.B.2.b., 3.7.B.2.a.(3), 3.7.B.2.b.(2) and 3.7.B.2.b.(3) for the SGTS, as identified in the licensee's April 20, 1995, submittal, acceptable. Also, the staff concludes that the licensee's proposed changes to TS 3.7.C.4. and 4.7.C.1. for the secondary containment, acceptable. The staff further finds the licensee's proposed changes to the BASES for TS 4.7.B. and C., acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding

(59 FR 37075). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: October 2, 1995