

May 30, 1989

Docket No. 50-263

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Mr. D. M. Musolf, Manager
Nuclear Support Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Dear Mr. Musolf:

SUBJECT: AMENDMENT NO. 65 TO FACILITY OPERATING LICENSE NO. DPR-22:
(TAC NO.56977)

The Commission has issued the enclosed Amendment No. 65 to Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated April 3, 1984 as amended by letters dated August 17, 1984, August 30 and November 27, 1985, February 19, 1987, June 6 and July 5, 1988.

The amendment revises the plant Technical Specifications to add Limiting Conditions for Operation and Surveillance requirements for installed post-accident sampling and control room habitability equipment in accordance with the provisions of TMI Action Plan Item III.D.3.4 (NUREG-0737).

A copy of our related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/s/

John J. Stefano, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Enclosures:

1. Amendment No. 65 to License No. DPR-22
2. Safety Evaluation

cc w/enclosures:
See next page

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5/17/89

for
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 30, 1989

Docket No. 50-263

Mr. D. M. Musolf, Manager
Nuclear Support Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

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A copy of our related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read "John J. Stefano".

John J. Stefano, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Enclosures:

1. Amendment No. 65 to License No. DPR-22
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. D. M. Musolf
Northern States Power Company

Monticello Nuclear Generating Plant

cc:

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

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 65
License No. DPR-22

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northern States Power Company (the licensee) dated April 3, 1984, as amended by letters dated August 17, 1984, August 30 and November 27, 1985, February 19, 1987, June 6 and July 5, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2 of Facility Operating License No. DPR-22 is hereby amended to read as follows:

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P FDC

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 65, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Lawrence A. Yandell, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 30, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 65

FACILITY OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

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3.0 LIMITING CONDITIONS FOR OPERATION

4.0 SURVEILLANCE REQUIREMENTS

F. Recirculation Pump Trip and Alternate Rod Injection Initiation.

Whenever the reactor is in the RUN mode, the Limiting Conditions for Operation for the instrumentation listed in Table 3.2.5 shall be met.

G. Safeguards Bus Voltage Protection

Whenever the safeguards auxiliary electrical power system is required to be operable by Specification 3.9, the Limiting Conditions for Operation for the Instrumentation listed in Table 3.2.6 shall be met.

H. Instrumentation for Safety/Relief Valve Low-Low Set Logic

Whenever the safety/relief valves are required to be operable by Specification 3.6.E, the Limiting Conditions for Operation for the Instrumentation listed in Table 3.2.7 shall be met.

I. Instrumentation for Control Room Habitability Protection

1. Whenever the control room ventilation system is required to be operable by Specification 3.17.A, the Limiting Conditions for Operation for the chlorine instrumentation listed in Table 3.2.9 shall be met.

2. Whenever the emergency filtration system is required to be operable by Specification 3.17.B, the Limiting Conditions for Operation for the radiation instrumentation listed in Table 3.2.9 shall be met.

3.2/4.2

TABLE 3.2.9

Instrumentation for Control Room Habitability Protection

Function	Trip Settings	Total No. of Instrument Channels per Trip System	Minimum No. of Operable or Operating Instrument Channels per Trip System (1)	Minimum No. of Trip Systems	Required Conditions*
Chlorine	≤ 1.0 ppm	2(2)	2	2	A or B
Radiation	≤ 2 mR/hr	1	1	2	A or C

Notes:

(1) An instrument channel may be bypassed for testing or preventative maintenance for up to eight hours.

(2) All instrument channels are shared by both trip systems.

* Required conditions when minimum conditions for operation are not satisfied.

- A) Within 1 hour initiate and maintain operation of at least one control room ventilation system subsystem in the isolation mode of operation for an inoperable chlorine detector or the control room emergency filtration system subsystem in the pressurization mode of operation for an inoperable radiation monitor.
- B) Within 24 hours reduce reactor water temperature to below 212°F and suspend core alterations, fuel handling and activities having the potential for draining the reactor vessel.
- C) Within 24 hours reduce reactor water temperature to below 212°F.

Table 4.2.1 - Continued

Minimum Test and Calibration Frequency for Core Cooling,
Rod Block and Isolation Instrumentation

Instrument Channel	Test (3)	Calibration (3)	Sensor Check (3)
<u>SAFEGUARDS BUS VOLTAGE</u>			
1. Degraded Voltage Protection	Once/month	Quarterly	Not applicable
2. Loss of Voltage Protection	Once/month	Once/Operating Cycle	Not applicable
<u>SAFETY/RELIEF VALVE LOW-LOW SET LOGIC</u>			
1. Reactor Scram Sensing	Once/Shutdown (Note 8)	-	-
2. Reactor Pressure - Opening	Once/3 months (Note 5)	Once/Operating Cycle	Once/day
3. Reactor Pressure - Closing	Once/3 months (Note 5)	Once/Operating Cycle	Once/day
4. Discharge Pipe Pressure	Once/3 months (Note 5)	See Table 4.14.1	See Table 4.14.1
5. Inhibit Timer	Once/3 months (Note 5)	Once/Operating Cycle	-
<u>CONTROL ROOM HABITABILITY PROTECTION</u>			
1. Chlorine	Monthly (Note 5)	18 months	Daily
2. Radiation	Monthly (Note 5)	18 months	Daily

Bases:

- 3.2 In addition to reactor protection instrumentation which initiates a reactor scram, protective instrumentation has been provided which initiates action to mitigate the consequences of accidents which are beyond the operators ability to control, or terminate a single operator error before it results in serious consequences. This set of specifications provides the limiting conditions of operation for the primary system isolation function, initiation of the emergency core cooling system, and other safety related functions. The objectives of the Specifications are (i) to assure the effectiveness of the protective instrumentation when required by preserving its capability to tolerate a single failure of any component of such systems even during periods when portions of such systems are out of service for maintenance, testing, or calibration, and (ii) to prescribe the trip settings required to assure adequate performance. This set of Specifications also provides the limiting conditions of operation for the control rod block system.

Isolation valves are installed in those lines that penetrate the primary containment and must be isolated during a loss of coolant accident so that the radiation dose limits are not exceeded during an accident condition. Actuation of these valves is initiated by protective instrumentation shown in Table 3.2.1 which senses the conditions for which isolation is required. Such instrumentation must be available whenever primary containment integrity is required. The objective is to isolate the primary containment so that the guidelines of 10 CFR 100 are not exceeded during an accident.

The instrumentation which initiates primary system isolation is connected in a dual bus arrangement. Thus, the discussion given in the bases for specification 3.1 is applicable here.

The low reactor water level instrumentation is set to trip when reactor water level is 10'6" (7" on the instrument at 100% rated thermal power) above the top of the active fuel. This trip initiates closure of group 2, and 3 primary containment isolation valves. Reference Section 7.7.2.2 FSAR. For a trip setting of 10'6" above the top of the active fuel, the valves will be closed before perforation of the clad occurs even for the maximum break in that line and therefore the setting is adequate.

The low low reactor water level instrumentation is set to trip when reactor water level is 6'6" above the top of the active fuel. This trip initiates closure of the Group 1 Primary containment isolation valves, Reference Section 7.7.2.2 FSAR, and also activates the ECC systems and starts the emergency diesel generator.

Bases Continued:

open and instrumentation drift has caused the nominal 80-psi blowdown range to be reduced to 60 psi. Maximum water leg clearing time has been calculated to be less than 6 seconds for the Monticello design. Inhibit timers are provided for each valve to prevent the valve from being manually opened less than 10 seconds following valve closure. Valve opening is sensed by pressure switches in the valve discharge line. Each valve is provided with two trip, or actuation, systems. Each system is provided with two channels of instrumentation for each of the above described functions. A two-out-of-two-once logic scheme ensures that no single failure will defeat the low-low set function and no single failure will cause spurious operation of a safety/relief valve. Allowable deviations are provided for each specified instrument setpoint. Setpoints within the specified allowable deviations provide assurance that subsequent safety/relief valve actuations are sufficiently spaced to allow for discharge line water leg clearing.

Control room habitability protection assures that the control room operators will be adequately protected against the effects of accidental releases of toxic substances and of radioactive leakage which may bypass secondary containment following a loss of coolant accident or radioactive releases from a steam line break accident, thus assuring that the Monticello Nuclear Generating Plant can be operated or shutdown down safely. A study conducted by Bechtel Power Corporation concluded that of the onsite and offsite potential toxic chemical hazards, only chlorine required automatic detection and isolation to prevent incapacitation of control room operators. All other chemicals were determined to have at least two minutes between detection and possible incapacitation. Protection for these toxic chemicals is provided through operator training.

Although the operator will set the setpoints within the trip settings specified in Tables 3.2.1 through 3.2.9, the actual values of the various set points can differ appreciably from the value the operator is attempting to set. The deviations could be caused by inherent instrument error, operator setting error, drift of the set point, etc. Therefore, these deviations have been accounted for in the various transient analyses and the actual trip settings may vary by the following amounts:

References:

1. "Average Power Range Monitor, Rod Block Monitor and Technical Specifications Improvement (ARTS) Program for Monticello Nuclear Generating Plant", NEDC-30492-P, April, 1984.

3.0 LIMITING CONDITIONS FOR OPERATION

4.0 SURVEILLANCE REQUIREMENTS

3.17 CONTROL ROOM HABITABILITY

Applicability:

Applies to the control room ventilation system equipment necessary to maintain habitability.

Objectives:

To assure the control room is habitable both under normal and accident conditions.

Specification:

A. Control Room Ventilation System

1. Except as specified in 3.17.A.2 and 3.17.A.3 below, both trains of the control room ventilation system shall be operable.
2. With one control room ventilation train inoperable, restore the inoperable train to operable status within seven days or be in hot shutdown within the next 12 hours following the seven days and either initiate and maintain the operable control room ventilation train in the recirculation mode or be in cold shutdown and suspend core alterations, fuel handling and activities having the potential for draining the reactor vessel within the following 24 hours.

4.17 CONTROL ROOM HABITABILITY

Applicability:

Applies to the periodic testing requirements of systems required to maintain control room habitability.

Objectives:

To verify the operability of equipment related to control room habitability.

Specification:

A. Control Room Ventilation System

- *1. At least once per shift, check control room temperature.
2. At least once per 18 months verify that the control room isolates on detection of chlorine.

* Not to be effective until 180 days after receipt of license amendment.

3.17/4.17

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Amendment No. 65

3.0 LIMITING CONDITIONS FOR OPERATION

3. With both control room ventilation trains inoperable, restore at least one train to operable status within 24 hours or be in hot shutdown within the next 12 hours following the 24 hours and in cold shutdown and suspend core alterations, fuel handling and activities having the potential for draining the reactor vessel within the following 24 hours.

B. Control Room Emergency Filtration System

1. Except as specified in 3.17.B.1.a or 3.17.B.1.b below, two control room emergency filtration system filter trains shall be operable whenever irradiated fuel is in the reactor vessel and reactor coolant temperature is greater than 212°F.
 - a. When one control room emergency filtration system filter train is made or found to be inoperable, for any reason, restore the inoperable train to operable status within seven days or be in hot shutdown within the next 12 hours following the seven days and either reduce the reactor coolant temperature to below 212°F or initiate and maintain the operable emergency filtration system filter train in the pressurization mode within the following 24 hours.

4.0 SURVEILLANCE REQUIREMENTS

B. Control Room Emergency Filtration System

1. At least once per month, initiate from the control room 1000 cfm ($\pm 10\%$) flow through both trains of the emergency filtration treatment system. The system shall operate for at least 10 hours with the heaters operable.

3.0 LIMITING CONDITIONS FOR OPERATION

- b. When both filter trains of the control room emergency filtration system are inoperable, restore at least one train to operable status within 24 hours or be in hot shutdown within the next 12 hours following the 24 hours and reduce the reactor coolant water temperature to below 212°F within the following 24 hours.

2. Performance Requirements

a. Periodic Requirements

- (1) The results of the in-place DOP tests at 1000 cfm ($\pm 10\%$) on HEPA filters shall show $\leq 1\%$ DOP penetration.
- (2) The results of in-place halogenated hydrocarbon tests at 1000 cfm ($\pm 10\%$) on charcoal banks show $\leq 1\%$ penetration.
- (3) The results of laboratory carbon sample analysis shall show $>98\%$ methyl iodide removal efficiency when tested at 80°C, 95% R.H.

3.17/4.17

4.0 SURVEILLANCE REQUIREMENTS

2. Performance Requirement Test

- a. At least once per 720 hours of system operation; or once per operating cycle, but not to exceed 18 months, whichever occurs first; or following painting, fire, or chemical release while the system is operating that could contaminate the HEPA filters or charcoal adsorbers, perform the following:
 - (1) In-place DOP test the HEPA filter banks.
 - (2) In-place test the charcoal adsorber banks with halogenated hydrocarbon tracer.
 - (3) Remove one carbon test canister from the charcoal adsorber. Subject this sample to a laboratory analysis to verify methyl iodide removal efficiency.
 - (4) Initiate from the control room 1000 cfm ($\pm 10\%$) flow through both trains of the emergency filtration treatment system.

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3.0 LIMITING CONDITIONS FOR OPERATION

- b. The system shall be shown to be operable with:
- (1) Combined filter pressure drop ≤ 8 inches water.
 - (2) Inlet heater power output 5kw $\pm 10\%$.
 - (3) Automatic initiation upon receipt of a high radiation signal.

3. Post Maintenance Requirements

- a. After any maintenance or testing that could affect the HEPA filter or HEPA filter mounting frame leak tight integrity, the results of the in-place DOP tests at 1000 cfm ($\pm 10\%$) on HEPA filters shall show $\leq 1\%$ DOP penetration.
- b. After any maintenance or testing that could affect the charcoal adsorber leak tight integrity, the results of in-place halogenated hydrocarbon tests at 1000 cfm ($\pm 10\%$) on charcoal adsorber banks shall show $\leq 1\%$ penetration.

3.17/4.17

4.0 SURVEILLANCE REQUIREMENTS

- b. At least once per operating cycle, but not to exceed 18 months, the following conditions shall be demonstrated for each emergency filtration system train:

- (1) Pressure drop across the combined filters of each train shall be measured at 1000 cfm ($\pm 10\%$) flow rate.
- (2) Operability of inlet heater at nominal rated power shall be verified.
- (3) Verify that on a simulated high radiation signal, the train switches to the pressurization mode of operation and the control room is maintained at a positive pressure with respect to adjacent areas at the design flow rate of 1000 cfm ($\pm 10\%$).

3. Post Maintenance Testing

- a. After any maintenance or testing that could affect the leak tight integrity of the HEPA filters, perform in-place DOP tests on the HEPA filters.
- b. After any maintenance or testing that could affect the leak tight integrity of the charcoal adsorber banks, perform halogenated hydrocarbon tests on the charcoal adsorbers.

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Amendment No. 65

3.17 Bases

A. Control Room Ventilation System

The Control Room Ventilation System provides air conditioning and heating as required to maintain a suitable environment in the main control room and portions of the first and second floors of the Emergency Filtration Train (EFT) building. The main control room is normally slightly pressurized and it is possible to have 0 to 100% recirculation of conditioned air. The system is designed to maintain 50% relative humidity and a temperature of 78°F dry bulb in the summer and 72°F dry bulb in the winter. The Control Room Ventilation System may be isolated from external air supply by manual action from the control room or automatic action. Automatic action includes isolation on detection of chlorine.

B. Control Room Emergency Filtration System

The Control Room Emergency Filtration System assures that the control room operators will be adequately protected against the effects of radioactive leakage which may by-pass secondary containment following a loss of coolant accident or radioactive releases from a steam line break accident. The system is designed to isolate and slightly pressurize the control room on a radiation signal in the ventilation air. Two completely redundant trains are provided.

Each train has a filter unit consisting of a prefilter, HEPA filters, and charcoal adsorbers. The HEPA filters remove particulates from the Control Room pressurizing air and prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to remove any radioiodines from the pressurizing air. The in-place test results should indicate a HEPA filter leakage of less than 1% through DOP testing and a charcoal adsorber leakage of less than 1% through halogenated hydrocarbon testing. The laboratory carbon sample results should indicate a radioactive methyl iodide removal efficiency of at least 98% under test conditions similar to expected accident conditions. System flows should be near their design values. The verification of these performance parameters combined with the qualification testing conducted on new filters and adsorbers provide a high level of assurance that the Emergency Filtration System will perform as predicted in reducing doses to plant personnel below those levels stated in Criterion 19 of Appendix A to 10 CFR 50.

Dose calculations have been performed for the Control Room Emergency Filtration System which show that, assuming 90% standby gas treatment system adsorption and filtration efficiency and 90% control room emergency filtration system adsorption and filtration efficiency and radioiodine plateout, whole body and organ doses remain within the NRC guidelines of 5 rem and 30 rem, respectively.

4.17 Bases

A. Control Room Ventilation System

Control room air temperature is checked each shift to ensure that the continuous duty rating for the instrumentation and equipment cooled by this system is not exceeded.

Demonstrating automatic isolation of the control room using simulated accident signals assures control room isolation under accident conditions.

B. Control Room Emergency Filtration System

Air flow through the filters and charcoal adsorbers each month assures operability of the system.

The frequency of tests and sample analysis is necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber tray is installed which can accommodate a sufficient number of representative adsorber sample modules for estimating the amount of penetration the system adsorbs through its life. Sample modules will be installed with the same batch characteristics as the system adsorbent and will be withdrawn for the methyl iodide removal efficiency tests. Each module withdrawn will be replaced or blocked off. In-place testing procedures will be established utilizing applicable sections of Regulatory Guide 1.52, Revision 2 and ANSI N510-1980 standards as procedural guidelines only. If test results are unacceptable, all adsorbent in the train is replaced. Any HEPA filters found defective are replaced.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 8 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter.

Demonstrating automatic control room pressurization using simulated accident signals assures control room pressurization with respect to adjacent areas under accident conditions.

2. A program shall be implemented to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. This program shall include the following:
 - a. Provisions establishing preventive maintenance and periodic visual inspection requirements, and
 - b. Integrated leak test requirements for each system at a frequency not to exceed refueling cycle intervals.

A program acceptable to the Commission was described in a letter dated December 31, 1979, from L O Mayer, NSP, to Director of Nuclear Reactor Regulation, "Lessons Learned Implementation".

3. A program shall be implemented which will ensure the capability to accurately determine the airborne iodine concentration in essential plant areas under accident conditions. This program shall include the following:
 - a. Training of personnel,
 - b. Procedures for monitoring, and
 - c. Provisions for maintenance of sampling and analysis equipment.

A program acceptable to the Commission was described in a letter dated December 31, 1979, from L O Mayer, NSP, to Director of Nuclear Reactor Regulation, "Lessons Learned Implementation".

4. A program shall be implemented which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines, and particulates in plant gaseous effluents and containment atmosphere samples under accident conditions. The Program shall include:
 - a. Training of personnel
 - b. Procedures for sampling and analysis
 - c. Provisions for maintenance of sampling and analysis equipment



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 65 TO FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

The Northern States Power Company (NSP) submitted a letter dated January 30, 1981, in response to NUREG-0737 (the Three Mile Island Action Plan), Item III.D.3.4, "Control Room Habitability," for the Monticello Nuclear Generating Plant. In this submittal, the licensee included the design of the new emergency filter treatment (EFT) building which was to be attached to the original control room. The NRC staff reviewed the submittal and issued a safety evaluation (SER) by letter dated February 4, 1983, that approved the combined control room habitability systems. The building was completed and put into service in 1983.

Subsequently, on November 1, 1983, the NRC transmitted Generic Letter 83-36 to the licensee providing guidance on Technical Specifications (TS) required by NUREG-0737. By letter dated April 3, 1984, in response to Generic Letter 83-36, the licensee submitted proposed changes to its Technical Specifications. Based on discussions with the staff, the licensee submitted a letter dated August 17, 1984, that included a study of toxic chemicals and an evaluation of control room dose assessments, which were based on lower filter efficiencies for the standby gas treatment system (SGTS) and the control room ventilation system.

By letter dated April 25, 1985, the staff provided comments to the licensee regarding the August 17, 1984 submittal. The staff provided comments on the analysis of the control room dose assessments to the licensee by letter dated April 4, 1988.

In a submittal dated June 6, 1988, the licensee responded to NRC comments 1, 2, and 3 of the April 4, 1988 letter. The licensee responded to the rest of the NRC comments in a submittal dated July 5, 1988.

The staff has reviewed these submittals and evaluated the licensee's revised changes of the control room habitability system and its proposed changes to the TS to ensure compliance with NUREG-0737, Item III.D.3.4.

2.0 DISCUSSION AND EVALUATION

As mentioned above, the staff approved Monticello's control room modifications in 1983. Subsequently, the licensee proposed TS for the control room habitability system in response to NRC Generic Letter 83-36. The staff commented that some of the proposed changes to the TS were inconsistent

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with NRC criteria. The licensee responded to the staff's comments in two submittals dated June 6 and July 5, 1988. In the following evaluation, the staff has used the same format for numbering items as the licensee used in its submittals of June 6 and July 5, 1988.

Item 1: Basis For Control Room Dose Assessment

In the licensee's original submittal, the calculated doses were 20 rem thyroid and 3 rem whole-body on the basis of 99 percent and 95 percent filter efficiencies for the control room ventilation filter system and the SGTS. However, in its submittal of August 17, 1984, the calculated doses were much lower at 3.6 rem thyroid and 0.0126 rem whole-body and were based on 90 percent filter efficiencies for both filters.

In its submittal of June 6, 1988, the licensee indicated that the original radiological dose calculations were submitted before the EFT building modifications were completed. In the submittal of August 17, 1984, the licensee used corrected filter efficiencies to perform the dose analysis as permitted by NRC Generic Letters 83-13 and 83-36 and had taken credit in the revised dose analysis for plateout on pipe surfaces of elemental and particulate iodines. This calculation resulted in lower doses despite the lower charcoal and high-efficiency particulate air (HEPA) efficiencies.

The original design basis assumptions for the LOCA doses were documented in the AEC staff's Safety Evaluation dated March 18, 1970. These included the assumptions in Regulatory Guide 1.3, which are still considered to be conservative by the NRC staff.

For our independent assessment, the same assumptions were used. Key parameters were defined as follows:

- ° Power level = 1670 Mwt.
- ° 100% of the noble gases and 25% of the radioiodines in the core are available for leakage from the containment at zero time.
- ° Containment leak rate = 1.2%/day.
- ° All containment leakage is processed by the standby gas treatment system (SGTS) in the reactor building. Charcoal bed removal efficiency for radioiodine is 90%.
- ° SGTS flow is released out the 100 m stack to the atmosphere, with no plume rise.
- ° The control room ventilation air intake is fumigated by the release for one-half hour, after which the release is elevated at 100 m for 30 days.

- ° The removal efficiency for radioiodine by the control room air intake charcoal bed is 90%. Removal efficiency for these beds will be demonstrated by measurement to be at least 98%. However, because of unfiltered air circulation and a presumed unfiltered inleakage of 10 cfm, an iodine protection factor of 9 (rather than 10) is presumed for the control room envelope.

Using these assumptions as input to the TACT5 computer code (NUREG/CR-5106), the following doses were estimated for control room operators:

	<u>Operator Dose (rem)</u>	<u>GDC 19 Dose Criterion (rem)</u>
Thyroid	0.8	30
Whole Body	< 1.0	5

Thus, the control room operator doses are within the GDC 19 dose guidelines, and are acceptable.

In the above analysis, no credit for non-safety grade systems was assumed (except for the stack, which is acceptable).

Item 2: Control Room Ventilation System Operation

In the event that air handling unit V-EAC-14A fails, unit V-EAC-14B would be realigned to provide air to the main control room (MCR) and the EFT building, but not to the technical support center (TSC). Therefore, it was not clear whether or not the TSC could become a source of unfiltered inleakage into the control room envelope.

In its submittal of June 6, 1988, the licensee indicated that the design of the control room ventilation system provides for isolating the return air from the TSC in the event that air handling unit V-EAC-14A fails. The return air dampers, VD-9261 and VD-9177B, close automatically when recirculation unit V-EAC-14B is realigned to serve only the control room. In this mode of operation, emergency filter train V-FG-11 or V-FE-12 discharges 120 cfm pressurizing air into the TSC; thus, the TSC could not develop a negative pressure causing unfiltered inleakage.

During a site visit, the staff verified the locations and connections of these dampers, air handling units and emergency filter trains, and agreed that the 120 cfm pressurizing air discharged into the TSC will prevent unfiltered inleakage.

Item 3: System Design Issues

- a. Air handling units may have inadequate capacity to maintain the control room at a positive pressure.

In its submittal of June 6, 1988, the licensee noted that the control room envelope is supplied with 1000 cfm of pressurizing air for the volume of 123,000 ft³. The 1000 cfm pressurizing air is commensurate with other operating control rooms of similar volume. The Monticello control room test indicated that the four existing pressure gauges in different locations in the control room envelope all showed positive pressure relative to their adjacent areas during an emergency filter train operation test. On the basis of this test, the staff concludes that the air handling units have adequate capacity to maintain the control room at positive pressure as required.

- b. The heating, ventilation, and air conditioning (HVAC) system may not meet the single-failure criterion for dampers VD-9051B, VD-9051A, and VD-9261.

In its June 6, 1988 submittal, the licensee indicated that dampers VD-9216B and VD-9216A are in series with dampers VD-9051B and VD-9051A, respectively. These dampers fail closed. Each damper is fed from a diverse division of power and is controlled from separate control logic. Therefore, this damper isolation system meets the single-failure criterion. The staff had further commented that damper VD-9261 (TSC return air) is not provided with redundancy. The licensee indicated that VD-9177B provides backup to VD-9261 to isolate TSC return air. The TSC ventilation system is not required to meet the safety-related system design standards that are applied to the control room ventilation system. VD-9261 is, therefore, not safety related. However, because TSC return air isolation is only required in case of failure of the safety-related A train control room ventilation system, redundant backup to VD-9261 is beyond the single-failure criterion. The staff verified the locations of these components while on site and found that dampers VD-9216B and VD-9216A have redundant backup dampers to meet single failure criterion, and damper VD-9261 for TSC return air is not required to meet safety-related design criteria. Therefore, the staff found these dampers meet single failure criterion and are acceptable.

- c. The HVAC system may not completely isolate the control room envelope upon initiation of a toxic gas signal.

In its submittal of June 6, 1988, the licensee indicated that 800 cfm is ventilated through the battery rooms and exhausted to the atmosphere through fan V-EF-40A or fan V-EF-40B during toxic gas isolation modes. Because this ducted air comes from the same outside air inlet as the EFT air inlet, it may appear that 800 cfm could be part of the control room HVAC flow. However, none of this flow is ventilated into the control room pressure envelope. Therefore, the staff concludes that the control room envelope is completely isolated upon initiation of a toxic gas signal.

The licensee also proposed changes to technical specifications which are discussed below.

1. TS 3.2.I-Instrumentation for Control Room Habitability Protection

In its submittal of July 5, 1988, the licensee indicated that TS 3.2.I has been revised in accordance with staff criteria provided in the memorandum dated November 26, 1986. Instrumentation for control room habitability will be operable for all modes of operation, except for cold shutdown and refueling. In these modes, the standby gas treatment system (SGTS) in the secondary containment would filter the outlet air following a postulated fuel-handling accident. In the staff's independent assessment, it is recognized that the fuel handling accident is less limiting than the design basis LOCA. The release would occur via the 100 m. stack and doses would be less than the LOCA doses, and are therefore acceptable.

2. TS 3.17.A-Control Room Ventilation System

- a. In its submittal of July 5, 1988, the licensee stated that TS 3.17.A has been revised to require control room ventilation system operability in all modes of operation in the same way that TS 3.2.I was revised. The staff finds this revision acceptable for the reasons indicated above.
- b. In its submittal of July 5, 1988, the licensee stated that the surveillance requirements have been revised to include a statement that at least once per 12 hours, verification should be made that the system is maintaining the temperature in the control room below the limiting equipment qualification temperature. An appropriate statement in this regard was also added to the Bases. The staff finds this proposed change to the TS acceptable because it ensures that components in the control room are maintained at the required temperature and humidity.

3. TS 3.17.B-Control Room Emergency Filtration System

- a. In its submittal of July 5, 1988, the licensee indicated that it has complied with the staff's request and revised proposed TS 3.17.B to reflect control room emergency filtration system operability under all modes of operation, including cold shutdown and refueling. The staff finds this proposed change to the TS acceptable.
- b. In its submittal of July 5, 1988, the licensee indicated that it would revise the TS to include charcoal filter heater test operation for 10 hours to dryout any moisture trapped in the filters. The staff agrees with this change and finds it to be acceptable.

The daily operability demonstration of the filter train will be dropped from the proposed TS. The staff finds this change acceptable since it is not required by Standard Technical Specifications.

- c. In its submittal of July 5, 1988, the licensee indicated that for TS 3.17.B.2.a.1 and TS 3.17.B.2.a.2, the acceptance criteria is specified as 1 percent DOP penetration for a system credited for 90 percent efficiency and that this is consistent with the recent guidelines of Generic Letters 83-13 and 83-36. The staff, therefore, finds this TS change acceptable.

The licensee indicated in its submittal of July 5, 1988 that it has committed to the guidelines of ANSI N510-1975 for the SGTS. The control room habitability system was also designed to meet the guidelines of ANSI N510-1980 and this will be specified in the Bases of the proposed TS. The overall control room emergency filtration system operability test is specified in TS 4.17.B.2.b, and is consistent with the existing TS for the SGTS. The staff, therefore, finds this TS change acceptable.

- d. In its submittal of July 5, 1988, the licensee indicated that the control room ventilation system filter charcoal is tested in accordance with the guidelines of ANSI/ASME N510, which refers to ASTM D3803 for laboratory test methods. Test method 3.2, "Methyl Iodine Penetration at 80°C and 95% Relative Humidity" is used for conservative test results. The licensee further stated that the 90 percent methyl iodine removal efficiency in the proposed TS is consistent with the guidelines of Generic Letter 83-13 for a system in which an absorber efficiency of 90 percent is credited. To account for charcoal degradation, a 98-percent methyl iodine removal efficiency is specified. The staff finds that the above response meets staff criteria and is, therefore, acceptable.
- e. The staff commented that it is not necessary to perform an in-place DOP or halogenated hydrocarbon test after 720 hours of system operation unless system integrity is violated in order to obtain a charcoal sample. However, it could be necessary to perform such a test following complete or partial replacement of the HEPA filters or charcoal absorbers (TS 4.17.B). The licensee's response stated that the proposed TS are conservative in this regard and consistent with existing TS for the SGTS. The staff finds this response acceptable since the proposed TS is more conservative than was recommended in staff guidelines.
- f. The staff commented that the charcoal sample taken from the filter system should be verified within 31 days after removal and a laboratory analysis if it showed a penetration meeting the limits of TS 3.17.2.a.(3). The licensee stated that it will control the prompt sample analysis by a procedure similar to the analysis requirement on the SGTS. The staff finds this procedural control to obtain a prompt sample analysis acceptable. This control does not need to be specified in the TS.

- g. In its submittal of July 5, 1988, the licensee indicated that the system flow tests are specified at monthly intervals in the proposed TS (TS 3.17.A and TS 4.17.A). The licensee further stated that it has complied with the staff's request and revised the proposed TS to include a system flow test once per operating cycle. The staff finds this change acceptable.
- h. In its submittal of July 5, 1988, the licensee indicated that the control room ventilation system was designed to have a pressure drop of 8 inches of water for the combined HEPA filter and charcoal adsorber (TS 3.17.2.b.1). The staff finds this TS change to be consistent with the system design and, therefore, acceptable.
- i. In its submittal of July 5, 1988, the licensee revised TS 3.17.2.b.2 which stated "Inlet heater power output greater than or equal to 4kw" to "Inlet heater power output 5kw \pm 10%." The staff finds this change consistent with the system design and, therefore, acceptable.
- j. The staff observed the positive pressure measurements of the control room envelope during an emergency filter train operation test at the Monticello plant. There were four pressure gauges measuring pressure differentials for five locations of the control room envelope. The results ranged from 0.12 to 0.005-inch water positive pressure relative to the adjacent area of the control room envelope with the lowest reading occurring at the TSC.

The licensee explained that the TSC has an outside wall with a row of windows having sealed glass panels, while other parts of the control room envelope are adjacent to building interiors. The licensee found that it is unworkable to maintain a 0.125-inch water positive pressure in the TSC for all expected wind velocities. The licensee has performed a preliminary calculation based on a 25 mph wind. Under this condition, there will be 2-3 cfm unfiltered inleakage from the windows, which will increase the control room envelope dose by less than 0.2 rem. This increase is not significant compared with the calculated dose.

The staff concludes that the licensee's proposed TS for ensuring positive pressure in the control room is acceptable since the Monticello control room envelope is capable of preventing any significant unfiltered inleakage.

- k. The licensee stated that the Bases in the proposed TS include a discussion of all significant TS requirements. The staff concurs with the licensee's statement and finds the Bases acceptable.

On the basis of the above findings and determinations, the staff concludes that the licensee has complied with the staff guidelines in response to TMI Action Plan Item III.D.3.4 and GL 83-36 except in those instances where it was necessary to be consistent with the system design and with the licensee's original commitment to the guidelines of ANSI N510-1975. Therefore, the staff finds the Monticello's proposed changes to the TS for the control room ventilation system to be acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes an inspection or surveillance requirement. We have 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 published a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

4.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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