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

September 30, 2008

Mr. David A. Christian
President and Chief Nuclear Officer
Dominion Nuclear Connecticut, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NOS. 2 AND 3 - ISSUANCE OF AMENDMENT RE: TECHNICAL SPECIFICATIONS REGARDING REACTOR COOLANT SYSTEM LEAKAGE DETECTION SYSTEMS (TAC NOS. MD6640 AND MD6641)

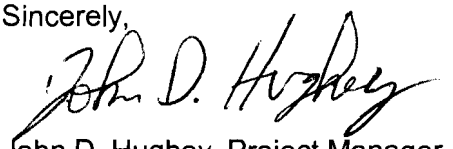
Dear Mr. Christian:

The Commission has issued the enclosed Amendment Nos. 306 and 244 to Renewed Facility Operating License No. DPR 65 for the Millstone Power Station, Unit No. 2, and to Renewed Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3, respectively, in response to your application dated August 15, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072330309), as supplemented by letters dated May 27, 2008, July 24, 2008, and September 3, 2008 (ADAMS Accession Nos. ML081490537, ML082060625, and ML082470693, respectively).

The amendment revises Technical Specification (TS) TS 3.3.3.1, "Radiation Monitoring," and TS 3.4.6.1, "Reactor Coolant System Leakage Detection Systems," at each unit to remove the requirement for one operable containment atmosphere gaseous radioactivity monitor, leaving the requirement for one containment atmosphere particulate radioactivity monitor to be operable in Modes 1, 2, 3 and 4. Corresponding changes to Surveillance Requirements 4.3.3.1 and 4.4.6.1 are also proposed at each unit. Additionally, the proposed change includes modifications to existing TS 3.4.6.1 Action requirements and a new TS 3.4.6.1 Action to address the condition where all specified leakage detection system instruments are inoperable.

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

Sincerely,



John D. Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-336 and 50-423

Enclosures:
1. Amendment No. 306 to DPR-65
2. Amendment No. 244 to NPF-49
3. Safety Evaluation

cc w/encls: See next page

Millstone Power Station, Unit Nos. 2 and 3

cc:

Distribution via Listserv

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

DOMINION NUCLEAR CONNECTICUT, INC., ET AL.

DOCKET NO. 50-336

MILLSTONE POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 306
Renewed License No. DPR-65

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the applicant dated August 15, 2007, as supplemented by letters dated May 27, 2008, July 24, 2008, and September 3, 2008, 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 Renewed Facility Operating License No. DPR-65 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 306 , are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License
and Technical Specifications

Date of Issuance: September 30, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 306

RENEWED FACILITY OPERATING LICENSE NO. DPR-65

DOCKET NO. 50-336

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove	Insert
Page 3	Page 3

Replace the following pages of the Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
3/4 3-25	3/4 3-25
3/4 3-27	3/4 3-27
3/4 4-8	3/4 4-8
----------	3/4 4-8a

Connecticut, in accordance with the procedures and limitations set forth in this renewed operating license;

(2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter 1: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 2700 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 306, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION
1. AREA MONITORS					
a. Deleted					
b. Control Room Isolation	2	ALL MODES	2 mR/hr	10^{-1} - 10^{4} mR/hr	16
c. Containment High Range	1	1, 2, 3, & 4	100 R/hr	10^{0} - 10^{8} R/hr	17
2. PROCESS MONITORS					
a. Containment Atmosphere-Particulate	1	1, 2, 3, & 4	NA	10 - 10^{+6} cpm	14
b. Deleted					
c. Noble Gas Effluent Monitor (high range) (Unit 2 stack)	1	1, 2, 3, & 4	2 x 10^{-1} uci/cc	10^{-3} - 10^{5} uci/cc	17

TABLE 4.3-3
RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. AREA MONITORS				
a. Deleted				
b. Control Room Isolation	S	R	M	ALL MODES
c. Containment High Range	S	R*	M	1, 2, 3, & 4
2. PROCESS MONITORS				
a. Containment Atmosphere-Particulate	S	R	M	1, 2, 3, & 4
b. Deleted				
c. Noble Gas Effluent Monitor (high range) (Unit 2 Stack)	S	R	M	1, 2, 3, & 4

* Calibration of the sensor with a radioactive source need only be performed on the lowest range. Higher ranges may be calibrated electronically.

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE:

a. One of two containment atmosphere particulate radioactivity monitoring channels, and

b. The containment sump level monitoring system.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With both of the containment atmosphere particulate radioactivity monitoring channels inoperable, operation may continue for up to 30 days provided:

   1. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity at least once per 24 hours, or

   2. A Reactor Coolant System water inventory balance is performed at least once per 24 hours during steady state operation.

   Otherwise, be in COLD SHUTDOWN within the next 36 hours.

b. With the containment sump level monitoring system inoperable, operation may continue for up to 30 days provided:

   1. A Reactor Coolant System water inventory balance is performed at least once per 24 hours during steady state operation.

   Otherwise, be in COLD SHUTDOWN within the next 36 hours.

c. With both the containment atmosphere particulate radioactivity monitoring channels inoperable and the containment sump level monitoring system inoperable, operation may continue for up to 72 hours provided:

   1. Immediate action is initiated to restore either a containment atmosphere particulate radioactivity monitoring channel or the containment sump level monitoring system to OPERABLE status, and

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

2. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity within 6 hours and at least once per 6 hours thereafter, and

3. A Reactor Coolant System water inventory balance is performed within 6 hours and at least once per 6 hours thereafter.

Otherwise, be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.1 The leakage detection systems shall be demonstrated OPERABLE by:

a. Containment atmosphere particulate monitoring system-performance of CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3, and

b. Containment sump level monitoring system-performance of CHANNEL CALIBRATION TEST at least once per 18 months.

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

DOMINION NUCLEAR CONNECTICUT, INC., ET AL.

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 244
Renewed License No. NPF-49

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the applicant dated August 15, 2007, as supplemented by letters dated May 27, 2008, July 24, 2008, and September 3, 2008, 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 Renewed Facility Operating License No. NPF-49 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, revised through Amendment No. 244 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated into the license. DNC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance, and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License
and Technical Specifications

Date of Issuance: September 30, 2008

ATTACHMENT TO LICENSE AMENDMENT NO. 244

RENEWED FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove	Insert
Page 4	Page 4

Replace the following pages of the Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
3/4 3-43	3/4 3-43
3/4 3-45	3/4 3-45
3/4 4-21	3/4 4-21
----------	3/4 4-21a

(2) Technical Specifications

The Technical Specifications contained in Appendix A, revised through Amendment No. 244 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated into the license. DNC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) DNC shall not take any action that would cause Dominion Resources, Inc. (DRI) or its parent companies to void, cancel, or diminish DNC's commitment to have sufficient funds available to fund an extended plant shutdown as represented in the application for approval of the transfer of the licenses for MPS Unit No. 3.

(4) Immediately after the transfer of interests in MPS Unit No. 3 to DNC, the amount in the decommissioning trust fund for MPS Unit No. 3 must, with respect to the interest in MPS Unit No. 3, that DNC would then hold, be at a level no less than the formula amount under 10 CFR 50.75.

(5) The decommissioning trust agreement for MPS Unit No. 3 at the time the transfer of the unit to DNC is effected and thereafter is subject to the following:

(a) The decommissioning trust agreement must be in a form acceptable to the NRC.

(b) With respect to the decommissioning trust fund, investments in the securities or other obligations of Dominion Resources, Inc. or its affiliates or subsidiaries, successors, or assigns are prohibited. Except for investments tied to market indexes or other non-nuclear-sector mutual funds, investments in any entity owning one or more nuclear power plants are prohibited.

(c) The decommissioning trust agreement for MPS Unit No. 3 must provide that no disbursements or payments from the trust, other than for ordinary administrative expenses, shall be made by the trustee until the trustee has first given the Director of the Office of Nuclear Reactor Regulation 30 days prior written notice of payment. The decommissioning trust agreement shall further contain a provision that no disbursements or payments from the trust shall be made if the trustee receives prior written notice of objection from the NRC.

(d) The decommissioning trust agreement must provide that the agreement can not be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

TABLE 3.3-6
RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

FUNCTIONAL UNIT	CHANNELS TO TRIP/ALARM	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1. Containment					
a. Deleted					
b. RCS Leakage Detection					
1) Particulate Radioactivity	N.A.	1	1, 2, 3, 4	N.A.	29
2) Deleted					
2. Fuel Storage Pool Area Monitors					
a. Radiation Level	1	2	*	≤ 15 mR/h	28

TABLE 4.3-3
RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Containment				
a. Deleted				
b. RCS Leakage Detection				
1) Particulate Radio-activity	S	R	Q	1, 2, 3, 4
2) Deleted				
2. Fuel Storage Pool Area Monitors				
a. Radiation Level	S	R	Q	*

TABLE NOTATIONS

* With fuel in the fuel storage pool area.

REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.6.1 The following Reactor Coolant System Leakage Detection Systems shall be OPERABLE:

a. The Containment Atmosphere Particulate Radioactivity Monitoring System, and

b. The Containment Drain Sump Monitoring System

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With the Containment Atmosphere Particulate Radioactivity Monitor inoperable, operations may continue for up to 30 days provided:

1. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity at least once per 24 hours, or

2. A Reactor Coolant System water inventory balance is performed at least once per 24 hours during steady state operation.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the Containment Drain Sump Monitoring System inoperable, operation may continue for up to 30 days provided:

1. A Reactor Coolant System water inventory balance is performed at least once per 24 hours during steady state operation.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With the Containment Atmosphere Particulate Radioactivity Monitor inoperable and the Containment Drain Sump Monitoring System inoperable, operation may continue for up to 72 hours provided:

1. Immediate action is initiated to restore either the Containment Atmosphere Particulate Radioactivity Monitor or the Containment Drain Sump Monitoring System to OPERABLE status, and

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

2. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity within 6 hours and at least once per 6 hours thereafter, and

3. A Reactor Coolant System water inventory balance is performed within 6 hours and at least once per 6 hours thereafter.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.1 The Leakage Detection Systems shall be demonstrated OPERABLE by:

a. Containment Atmosphere Particulate Radioactivity Monitoring System-performance of CHANNEL CHECK, CHANNEL CALIBRATION, and ANALOG CHANNEL OPERATIONAL TEST at the frequencies specified in Table 4.3-3, and

b. Containment Drain Sump Monitoring System-performance of CHANNEL CALIBRATION at least once per 24 months.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 306 AND 244

TO RENEWED FACILITY OPERATING LICENSE NOS. DPR-65 AND NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.

MILLSTONE POWER STATION, UNIT NOS. 2 AND 3

DOCKET NOS. 50-336 AND 50-423

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC) dated August 15, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML072330309), as supplemented by letters dated May 27, 2008, July 24, 2008, and September 3, 2008 (ADAMS Accession Nos. ML081490537, ML082060625, and ML082470693, respectively), Dominion Nuclear Connecticut, Inc. (DNC or the licensee), submitted a request for changes to the Millstone Power Station, Unit Nos. 2 and 3 (MPS2 and MPS3) Technical Specifications (TSs). This proposed amendment requests to remove TS credit for one of the three Reactor Coolant System (RCS) leakage detection systems currently credited in TS. Specifically, the proposed amendment would remove credit for the gaseous radiation monitor for RCS leakage detection. Improvements in nuclear fuel reliability over time have resulted in the reduction of effectiveness of the gaseous monitors in detecting very small leaks and changes in leak rate. The proposed amendment request also addresses required actions and allowed outage times for the inoperability of the remaining leakage detection systems, the particulate radioactivity monitoring system and the containment sump level monitoring system.

The supplements dated May 27, 2008, July 24, 2008, and September 3, 2008, clarified the application, did not expand the scope of the application as originally noticed and did not change the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

General Design Criterion (GDC) 30, "Quality of reactor coolant pressure boundary," of Appendix A to Title 10 of the *Code of Federal Regulations* Part 50 (10 CFR 50), addresses in part, the means for providing, detecting, and to the extent practical, identifying the location of the source of reactor coolant leakage. Regulatory Guide (RG) 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," describes acceptable methods of implementing GDC 30 with regard to the selection of leakage detection systems for the reactor coolant pressure boundary (RCPB). Position C.3 of RG 1.45, Revision 0, states that at least three different detection methods should be employed. Two of these methods should be sump level and flow monitoring and airborne particulate radioactivity monitoring. The third method may involve either monitoring of condensate flow rate from air coolers or monitoring of gaseous radioactivity.

RG 1.45 recommended that the sensitivity and response time of each leakage detection system employed for unidentified leakage should be adequate to detect a leakage rate, or its equivalent, of 1 gallon per minute (gpm) in less than 1 hour.

In May 2008, the NRC staff issued Revision 1 to RG 1.45. Section B, "Discussion," of RG 1.45, Revision 1, describes that the effectiveness of airborne gaseous radioactivity monitors depends primarily on the activity of the reactor coolant and also, in part, on the containment volume and the background activity level. Because of improvements in fuel integrity, many operating plants have reported experiencing very long gaseous radioactivity monitor response times to RCS leakage, considering realistic coolant activities. Accordingly, Position C.2.3 of RG 1.45, Revision 1, states that plant TSs should identify at least two independent and diverse methods and recommends considering the following leakage detection methods for incorporation in the TSs: monitoring containment sump level or flow; monitoring airborne particulate radioactivity; and monitoring condensate flow rate from air coolers. That position also recommended considering several other methods for supplemental detection of leakage, including containment gaseous radioactivity monitoring.

The MPS2 RCS leakage detection systems consist of a containment atmosphere particulate radioactivity monitoring system (two channels), a containment atmosphere gaseous radioactivity monitoring system (two channels), as well as the containment sump level and sump pump instrumentation. The containment atmosphere particulate radioactivity monitoring system and the containment atmosphere gaseous radioactivity monitoring system are used as part of the RCPB leakage detection system. These two systems provide indirect measurement of RCS leakage. The containment airborne gaseous and particulate radioactivity monitoring systems continuously monitor samples from the containment atmosphere, which are drawn outside the containment in a closed system. The particulate activity increase is indirectly related to the magnitude of RCPB leakage into the containment.

In Appendix 1A of the MPS2 Final Safety Analysis Report (FSAR), the licensee describes the degree of conformance with the intent of GDC 30. This section states that containment sump instrumentation is used to detect RCS leakage by providing information on rate of rise of sump levels and frequency of sump pump operation. Also, flow instrumentation indicates and records makeup flow rate and volumes from the primary water system. The licensee states that this instrumentation allows detection of suddenly occurring leaks or those which are gradually increasing. The containment air radiation monitoring system provides an additional means of RCS leakage detection.

The MPS3 RCS leakage detection systems consist of the containment atmosphere gaseous monitoring system, the particulate radioactivity monitoring system, as well as the containment drain sump level and sump pump run time. The containment atmosphere particulate radioactivity monitoring system and the containment atmosphere gaseous radioactivity monitoring system are used as part of the RCPB leakage detection system. These two systems provide indirect measurement of RCS leakage. The containment airborne gaseous and particulate radioactivity monitoring systems continuously monitor samples from the containment atmosphere. The particulate activity increase is indirectly related to the magnitude of RCPB leakage into the containment.

In Section 3.1.2.30 of the MPS3 FSAR, the licensee describes the degree of compliance with GDC 30, and in Table 1.8 of the MPS3 FSAR, the licensee describes the degree of compliance with RG 1.45, Revision 0. The licensee describes that leakage is detected by an increase in the amount of makeup water required to maintain a normal level in the pressurizer. Leakage into the reactor containment is drained to the reactor building sump where it is monitored by a level or pumped capacity monitoring system with a sensitivity to detect a 1-gpm leak within 1 hour. Leakage is also detected by measuring the containment airborne particulate and gaseous activity, but the sensitivity is dependent on the equilibrium activity of the reactor coolant. Finally, monitoring the inventory of reactor coolant in the system at the pressurizer, volume control tank and coolant drain collection tanks make available an accurate indication of integrated leakage.

General Design Criterion (GDC) 4 states that "...dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrated that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping..." The NRC allows the application of leak-before-break (LBB) technology on the primary piping systems under the broad-scope revision to 10 CFR Part 50, Appendix A, GDC 4 (Volume 52 of the *Federal Register* pages 41288-41295, October 27, 1987). Specific guidance on LBB evaluation is discussed in Standard Review Plan (SRP) Section 3.6.3, "Leak-Before-Break Evaluation Procedures." Section 3.6.3 of the SRP specifies that leak detection systems be reliable, redundant, diverse and sensitive, and that substantial margin exists to detect the leakage from the through-wall flaw used in the deterministic fracture mechanics evaluation.

The MPS2 and MPS3 FSARs identify that the NRC staff accepted LBB analyses for several piping segments at MPS2, including the main RCS piping and certain branch piping, and for the main RCS piping at MPS3. In accepting these LBB analyses, the NRC staff considered the performance of the available leak detection systems.

3.0 TECHNICAL EVALUATION

3.1 Specific Changes Requested

The requested changes would modify TS 3.3.3.1, "Radiation Monitoring," and TS 3.4.6.1, "Reactor Coolant System Leakage Detection Systems," at each unit to remove the requirement for one operable containment atmosphere gaseous radioactivity monitor, leaving the requirement for one containment atmosphere particulate radioactivity monitor to be operable in Modes 1, 2, 3 and 4. Corresponding changes to Surveillance Requirements 4.3.3.1 and 4.4.6.1 are also proposed at each unit. Additionally, the proposed change includes modifications to existing TS 3.4.6.1 Action requirements and a new TS 3.4.6.1 Action to address the condition where all specified leakage detection system instruments are inoperable.

3.2 Removal of Containment Gaseous Radioactivity Monitor from Technical Specifications

The proposed TS change would change the required RCS leakage instrumentation by removing reference to the containment atmosphere gaseous radioactivity monitor from TS Limiting Condition for Operation (LCO) 3.3.3.1, "Monitoring Instrumentation," and TS LCO 3.4.6.1, "Reactor Coolant System Leakage." In addition, the proposed change to MPS2 TS LCO 3.4.6.1 clarifies that only one of the two containment atmosphere particulate radioactivity monitoring

channels is required to be operable in MODES 1, 2, 3, and 4, and the proposed change to MPS3 TS LCO 3.4.6.1 clarifies the description of the sump monitoring system. The proposed change to MPS2 TS LCO 3.4.6.1 would require one of two containment atmosphere particulate radioactivity monitoring channels and the containment sump level monitoring system to be operable in Modes 1, 2, 3, and 4. The proposed change to MPS3 TS LCO 3.4.6.1 would require the containment atmosphere particulate radioactivity monitoring system and the containment sump level monitoring system to be operable in Modes 1, 2, 3, and 4. These proposed changes are consistent with the guidance of Regulatory Position C.2.3 of RG 1.45, Revision 1; NUREG-1431, "Standard Technical Specifications – Westinghouse Plants," Revision 3.1, TS 3.4.15; and NUREG-1432, "Standard Technical Specifications – Combustion Engineering Plants," Revision 3.1, TS 3.4.15. Therefore, the NRC staff finds the proposed changes to TS LCO 3.4.6.1 acceptable.

The proposed change to TS 3.3.3.1 deletes the containment atmosphere gaseous radioactivity instrumentation from MPS2 and MPS3 TS Tables 3.3-6 and 4.3-3, which specify the instrumentation subject to TS LCO 3.3.3.1 and the associated surveillance requirements, respectively. Since the proposed change to remove the MPS2 and MPS3 containment atmosphere gaseous radioactivity monitors from TS LCO 3.4.6.1 is acceptable, it is consistent to also remove these monitors from TS LCO 3.3.3.1. Therefore, the proposed removal of the containment atmosphere gaseous radioactivity monitor from TS LCO 3.3.3.1 is acceptable.

3.3 Revised Actions for Inoperable Leakage Detection Instrumentation

The current MPS2 and MPS3 TS Actions 3.4.6.1.a. and 3.4.6.1.b. address inoperability of the required containment radioactivity monitors and the containment sump monitors, respectively. The proposed revisions to MPS2 and MPS3 TS Action 3.4.6.1.a. retain an allowance for operation to continue for up to 30 days with an inoperable containment atmosphere radiation monitor when the containment sump monitor is operable.

The proposed revisions to MPS2 and MPS3 TS Actions 3.4.6.1.a. include an action to either obtain and analyze appropriate containment atmosphere grab samples for particulate radioactivity or perform an RCS water inventory balance once every 24 hours. This proposed TS Action completion time is a change from the current MPS3 TS Action 3.4.6.1.a. requirement to obtain an appropriate containment atmosphere sample once every 12 hours, but the change is consistent with NUREG-1431, Revision 3.1, TS 3.4.15, Action B, which specifies a completion time of once every 24 hours for analysis of the samples. Therefore, the NRC staff finds the proposed change to MPS3 TS Action 3.4.6.1.a completion time acceptable.

The proposed revisions to MPS2 and MPS3 TS Actions 3.4.6.1.b. include an allowance for operation to continue for up to 30 days with an inoperable containment sump monitor. This proposed TS Action completion time is a change from the current MPS2 TS Action 3.4.6.1.b., which requires that the containment sump monitor be restored to operable status within 7 days. However, the proposed MPS2 TS Action 3.4.6.1.b. completion time is consistent with NUREG-1432, Revision 3.1, TS 3.4.15, Action A, which specifies a completion time of 30 days for restoration of the containment sump monitor. In addition, the proposed revisions to MPS2 and MPS3 TS Actions 3.4.6.1.a. and 3.4.6.1.b. include the addition of an action to complete an RCS water inventory balance. The proposed change requires the performance of this Surveillance Requirement at least once every 24 hours during steady state operation when the containment

sump level monitoring system is inoperable or as an alternative to grab samples when the containment atmosphere particulate radioactivity monitoring system is inoperable. An integrated leakage calculation for RCS water inventory balance is normally required to be performed per TS Surveillance Requirement 4.4.6.2.1 at least once every 72 hours, beginning 12 hours after reaching steady state power conditions. The RCS leakage calculation program measures the inventory changes in the RCS, the chemical and volume control system, and associated system drain tanks. The inventory change in the systems is used to calculate identified and unidentified leak rates using the time interval of the inventory measurement. The water inventory balance calculation can provide indication of a 1-gpm leak during steady state operations, but, because it is based on differences over time, it may not provide indication of a 1-gpm leak within 1 hour. However, the increased RCS water inventory balance frequencies, in conjunction with the alternate leakage detection methods in the proposed TS change, provide adequate monitoring for an allowed outage time of 30 days. These proposed changes to MPS2 and MPS3 TS Actions 3.4.6.1.a. and 3.4.6.1.b. are also consistent with TS 3.4.15 Actions A and B of NUREG-1431 and NUREG-1432. Therefore, the NRC staff finds the proposed changes to TS Actions 3.4.6.1.a. and 3.4.6.1.b acceptable.

The licensee proposed a new TS Action for both MPS2 and MPS3 addressing the condition where all RCS leakage detection systems required by the proposed TS LCO 3.4.6.1 are inoperable. The proposed Action statement (TS 3.4.6.1 Action c) provides a 72-hour completion time to restore either the containment atmosphere particulate radioactivity monitoring system or the containment sump level monitoring system to operable status when both systems are inoperable. The 72-hour completion time of the proposed action applies provided:

1. Immediate action is initiated to restore either the containment atmosphere particulate radioactivity monitor or the containment drain sump monitoring system to operable status, and

2. Appropriate grab samples of the containment atmosphere are obtained and analyzed for particulate radioactivity within 6 hours and at least once per 6 hours thereafter, and

3. An RCS water inventory balance is performed within 6 hours and at least once per 6 hours thereafter.

Otherwise, the proposed action for MPS2 requires that the plant be placed in cold shutdown within 36 hours. For MPS3, the proposed action requires that the plant be placed in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.

The proposed actions provide effective means to identify RCS leakage in excess of the unidentified leakage limit of 1 gpm (TS LCO 3.4.6.2). Implementation of the RCS water inventory balance is the primary method of verifying that the requirements of TS LCO 3.4.6.2 are satisfied with respect to unidentified leakage. As discussed above, the RCS water inventory balance is sensitive enough to detect a 1 gpm leak rate. However, because the calculation determines leak rate by dividing the difference in water inventory measurements taken at two discrete times by the time between the measurements, the calculation results may not indicate that a 1 gpm leak has developed within 1 hour. Nevertheless, by specifying the performance of the RCS water inventory balance within 6 hours and at least once every 6 hours thereafter, there

will be no significant loss of monitoring capability during the limited time period allowed by the proposed TS Action 3.4.6.1.c.

Indications other than those required by TS LCO 3.4.6.1 are available in the control room to identify changes in RCS inventory. Volume control tank (VCT) level, which is a key input to the RCS water inventory balance, may be monitored in both control rooms by means of a level indicator or the plant process computer. The licensee stated that a decrease in VCT level would be readily detected by control room operators. For MPS2, a loss of 60 gallons over a 1-hour period, which would be the result of a continuous 1 gpm leak, would result in a VCT level decrease of 1.8% at steady state conditions. Similarly, for MPS3, a loss of 60 gallons over a 1-hour period at steady state conditions would result in a 3.1% decrease in VCT level. Unless the plant is maintained at a steady state condition following entry into the proposed TS Action 3.4.6.1.c, the plant must shutdown because the RCS water inventory balance could not be completed. Accordingly, the VCT level provides a continuous, meaningful indication of RCPB integrity while operating under the provisions of the proposed TS Action 3.4.6.1.c.

The analyses of the containment grab samples provide a diverse means of identifying an increase in RCS leak rate. This diverse indication combined with the control room indication of VCT level necessary to support completion of the RCS water inventory balance satisfy the intent of Regulatory Position C.2.3 of RG 1.45, Revision 1, during the 72-hour completion time. Therefore, the NRC staff finds the proposed TS Action 3.4.6.1.c acceptable.

3.4 Leak-Before-Break

The basic concept of leak-before-break (LBB) is that certain piping material has sufficient fracture toughness (i.e., ductility) to resist rapid flaw propagation. A postulated flaw in such piping would not lead to pipe rupture and potential damage to adjacent safety related systems, structures and components before the plant could be placed in a safe, shutdown condition. Before pipe rupture, the postulated flaw would lead to limited but detectable leakage which would be identified by the leak detection systems in time for the operator to take action.

The NRC staff reviews the application of LBB methodology to primary system piping to ensure that certain safety margins are satisfied to assure the structural integrity of the pipe. SRP Section 3.6.3 specifies a margin of the square-root of 2 be applied to the loads to assure that leakage-size flaws are stable at the normal load plus safe-shutdown earthquake load. A margin of 10 is to be applied to leakage so that detection of leakage from the postulated flaw size is ensured when the pipe is subjected to normal operational loads. In addition, the critical flaw size should be twice as large as the leakage flaw size (i.e., a margin of 2 on leakage flaw size). SRP Section 3.6.3 also specifies that leakage detection systems for LBB applications be sufficiently redundant, diverse, and sensitive. It further specifies that leak detection systems for LBB applications be equivalent to RG 1.45 for piping inside the containment. RG 1.45 specifies a time frame of 1-hour or less to detect a 1-gpm leak. This time frame ensures that plant operators have timely information about unidentified leakage.

The unavailability of both the containment atmosphere particulate radioactivity monitoring system and containment sump level monitoring system affects the leakage detection assumption in the LBB analysis. The licensee evaluated the flaw propagation during the limited time period (6 hours) between leakage determinations when both leakage monitoring systems are

inoperable. The NRC approved the LBB analysis for MPS2 and MPS3 on the basis that leakage monitoring systems in both units are capable of detecting RCS leakage at a certain leak rate. The NRC has approved LBB application for the loop piping and the 12-inch branch piping at MPS2 and the loop piping at MPS3.

The condition that needs to be addressed is the magnitude of flaw growth that would lead to a catastrophic pipe failure during the 6 hours between leakage determinations when leakage detection systems are inoperable. To that end, the licensee evaluated the flaw growth in the LBB piping based on the credible degradation mechanisms of fatigue and primary water stress corrosion cracking (PWSCC). Recent operating experience in the pressurized water reactor (PWR) environment has shown that PWSCC has occurred in the dissimilar metal butt welds which are fabricated with nickel-based Alloy 82/182 metal. The Class 1 piping at MPS2 and MPS3 contain Alloy 82/182 dissimilar metal butt welds.

For the flaw growth rate due to PWSCC, the licensee used the upper bound crack growth rate of 1.0E-09 meters/second which was obtained from the Electrical Power Research Institute (EPRI) report, MRP-55 (*Materials Reliability Program: Crack Growth Rates for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) of Thick-Wall Alloy 600 Material, July 18, 2002*). The NRC staff notes that this crack growth rate is based on the data from nickel-based Alloy 600 material, not from Alloy 82/182 material. The MRP-115 report (*Materials Reliability Program: Crack Growth Rates for Evaluating Primary Water Stress Corrosion Cracking (PWSCC) of Alloy 82, 182, and 132 Welds, November 2004, EPRI*) provides the flaw growth data for the Alloy 82 and Alloy 182 material. The crack growth rates for Alloy 82 and Alloy 182 as shown in Chapters 4 and 5 of MRP-115 are higher than the growth rate of Alloy 600 material. Because both units have Alloy 82/182 welds, the NRC staff finds that the flaw growth rate data in MRP-115 should be used in lieu of the MRP-55 data. MRP-115 shows that the flaw growth rate of Alloy 182 is higher than that of Alloy 82. The maximum flaw growth rate of Alloy 182, as shown in Chapter 4 of MRP-115, could be as high as 2E-09 meters/second (8E-08 inches/second). For this evaluation, the NRC staff used a conservative upper bound growth rate of 4E-07 inches/second, which would result in an upper bound PWSCC crack growth of 8.5E-03 inches in 6 hours, corresponding to the leakage monitoring periodicity with both the containment atmosphere particulate radioactivity monitoring system and containment sump level monitoring system inoperable per proposed TS 3.4.6.1, Action c.

The LBB application allows a through wall flaw to exist and the pipe to leak on the basis that the pipe material will have sufficient fracture toughness to resist catastrophic failure and that the leakage detection system(s) will be able to detect the leakage early to allow the operator to take corrective actions. For a postulated flaw to grow to affect the structural integrity of the pipe, the flaw must have grown to a size that causes a leak rate of about 10 gpm. The licensee stated that the flaw size that would allow a 10 gpm leak rate is about 5 inches long for a branch pipe and larger for the loop piping. In addition, the flaw size that causes the 10 gpm leakage will need to grow to twice its size in order to reach to the critical crack size beyond which the pipe would fail catastrophically. The licensee set a flaw extension of 0.25 inches as a reasonable measure of flaw growth significance. The NRC staff finds that a flaw growth of 0.25 inches is a reasonable acceptance criterion as compared to the leakage flaw size of 5 inches. The potential PWSCC growth of 8.5E-03 inches during the 6 hours is within the acceptable flaw growth of 0.25 inches.

As for the flaw growth due to fatigue, the licensee concluded that the significant flaw growth due to fatigue in a 6-hour period is not credible. The NRC staff notes that the fatigue crack growth in a 6-hour period is credible, but that the flaw growth is insignificant because the fatigue crack growth rate is less than the crack growth rate due to PWSCC and that loading due to transients and operational cycles during the 6-hour period will not lead to significant fatigue flaw growth.

Based on review of the licensee's evaluation as described above, the NRC staff finds that during the 6-hour monitoring period when both the containment atmosphere particulate radioactivity monitoring system and containment sump level monitoring system could be inoperable and no leakage rate determination is available, the potential crack growth in the Class 1 piping will not lead to significant flaw extension and, thus, will not challenge the structural integrity of the piping. In addition, the NRC staff notes that the PWR owners, including the licensee, have performed repairs and/or applied mitigative methods such as weld overlays on the dissimilar metal butt welds to protect the structural integrity of the piping. PWR licensees, including the licensee, also have increased inspections of the dissimilar metal welds in Class 1 piping per the guidance in the MRP-139 report (*Materials Reliability Program: Primary System Piping Butt Weld Inspection and Evaluation Guideline, July 14, 2005, EPRI*) to monitor PWSCC in the subject welds. Therefore, the structural integrity of the subject piping will be ensured during the 6-hour monitoring period associated with proposed TS 3.4.6.1, Action c and the NRC staff finds the proposed TS Action acceptable.

3.5 Summary

The NRC staff has reviewed the licensee's submittal and supporting documentation. Based on its review, the NRC staff concludes that the required RCS leak detection systems will continue to provide diverse methods of leak detection that satisfy the intent of GDC 30 and Regulatory Guide 1.45 as described by the MPS2 and MPS3 FSAR. The required leakage detection capability is adequate to support the application of the leak-before-break methodology at MPS2 and MPS3. Therefore, the proposed changes to TS 3.4.6.1 and the proposed deletion of the containment atmosphere gaseous radiation monitor from TS 3.3.3.1 are acceptable. On this basis, the NRC staff concludes that the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Connecticut State official was notified of the proposed issuance of the amendment. The State official provided the following comments:

- What measures are taken to compensate for the loss of the RCS leakage detection systems?

- How long is the plant allowed to operate with the RCS leakage detection systems out of service?

The State official's comments are addressed in section 3.3 of this safety evaluation.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC 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 (73 FR 34341). 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 Commission has concluded, based on the considerations discussed above, that the proposed changes maintain adequate safety, and 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.

Principal Contributor: S. Jones
J. Tsao

Date: September 30, 2008

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

Sincerely,
/ra/

John D. Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-336 and 50-423

Enclosures:
1. Amendment No. 306 to DPR-65
2. Amendment No. 244 to NPF-49
3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION:

PUBLIC	LPLI-2 R/F	RidsAcrsAcnw_MailCTRResource
RidsNrrDirsItsbResource	RidsNrrDorlDprResource	RidsNrrDorlLpl1-2Resource
RidsNrrDciCpnbResource	RidsNrrPMJHugheyResource	RidsNrrLAABaxterResource
RidsOgcRpResource	RidsRgn1MailCenterResource	GHill, OIS
RidsNrrDssSbpbResource	RidsNrrDssSrxbResource	

Accession No.: ML082261529;
* via electronic mail

Office	NRR/LPL1-2/PM	NRR/LPL1-2/LA	NRR/DCI/CPNB	NRR/DIRS/ITSB
Name	JHughey	ABaxter *	TChan (KHoffman for)	RElliot
Date	9/29/2008	09/17/2008	09/12/2008	09/12/2008
Office	NRR/DSS/SBPB	OGC (NLO)	NRR/DSS/SRXB	NRR/LPL1-2/BC
Name	DHarrison (MRahimi for)	LSubin	GCranston	HChernoff
Date	09/16/2008	09/26/2008	09/15/2008	9/30/2008

Official Record Copy