

December 30, 2003

Mr. David A. Christian  
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SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 - SCHEDULAR EXEMPTION  
FROM THE REQUIREMENTS OF TITLE 10 OF THE CODE OF FEDERAL  
REGULATIONS, SECTION 54.17(C) (TAC NO. MB7039)

Dear Mr. Christian:

The Commission has approved the enclosed schedular Exemption from specific requirements of Title 10 of the *Code of Federal Regulations*, Section 54.17(c). This action is in response to your application of December 13, 2002, as supplemented on April 28, 2003 and September 3, 2003, that requested a schedular exemption from the subject regulation regarding requirements on the timing of submission of application for operating license renewal.

A copy of the Exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

*/RA/*

Victor Nerses, Senior Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosure: As stated

cc w/encl: See next page

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\*Input to exemption transmitted by memo of 11/3/03

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
DOMINION NUCLEAR CONNECTICUT, INC.  
MILLSTONE POWER STATION, UNIT NO. 3  
DOCKET NO. 50-423  
EXEMPTION

1.0 BACKGROUND

Dominion Nuclear Connecticut, Inc. (DNC or the licensee) is the holder of Facility Operating License Nos. DPR-65 and NPF-49, which authorize operation of Millstone Power Station, Unit Nos. 2 and 3 (MP2 and MP3), respectively. The licenses provide, among other things, that the licensee is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of two pressurized-water reactors (PWRs) located in New London County in Connecticut; this exemption addresses only MP3. The nuclear steam system supplier for MP2 is Combustion Engineering, and the supplier for MP3 is Westinghouse Electric Corporation.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 54.17(c) stipulates that an application for a renewed license may not be submitted to the Commission earlier than 20 years before the expiration of the operating license currently in effect.

DNC, however, requested by application dated December 13, 2002, as supplemented by letters dated April 28, 2003, and September 3, 2003, a schedular exemption from the 20-year restriction specified in 10 CFR 54.17(c) to allow it to submit a renewal application for MP3 earlier than 20 years before expiration of its operating license. Such an exemption would

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allow DNC to submit one application for renewal of the operating licenses of both MP2 and MP3, with the goal of attaining efficiencies for preparation and review of the application. The current operating license for MP2 (DPR-65) expires on July 31, 2015, whereas the current operating license for MP3 (NPF-49) expires on November 25, 2025. At the time the exemption request was filed, MP2 had more than 29 years of operating experience and MP3 had more than 18 years experience.

### 3.0 DISCUSSION

Pursuant to 10 CFR 54.15, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 54, in accordance with the provisions of 10 CFR 50.12, when (1) the exemptions are authorized by law, (2) will not present an undue risk to public health or safety, and (3) are consistent with the common defense and security. However, an exemption will not be granted unless special circumstances are present, as defined in Section 50.12(a)(2).

#### 3.1 Authorized by Law

The Commission's basis for establishing the 20-year limit contained in 10 CFR 54.17(c) is discussed in the 1991 Statements of Consideration for Part 54 of 10 CFR (56 FR 64963). The limit was established to ensure that substantial operating experience was accumulated by a licensee before a renewal application is submitted such that any plant-specific concerns regarding aging would be disclosed. In amending the rule in 1995, the Commission sought public comment on whether the 20-year limit should be reduced. The Commission determined that sufficient basis did not exist to generically reduce the 20-year limit. However, the Commission did indicate in the Statements of Consideration for the amended rule (60 FR 22488), that it was willing to consider plant-specific exemption requests by applicants who believe that sufficient information is available to justify applying for license renewal prior to 20 years from expiration of the current license. DNC's exemption request is consistent with the

Commission's intent to consider plant-specific requests and is permitted by 10 CFR 54.15.

The current operating licenses for MP2 and MP3, were issued in accordance with the Atomic Energy Act of 1954, as amended (AEA), and 10 CFR 50.51 which limit the duration of an operating license to a maximum of 40 years. In accordance with 10 CFR 54.31, the renewed license will be of the same class as the operating license currently in effect and cannot exceed a term of 40 years. Therefore, the terms of the renewed licenses for MP2 and MP3, are limited both by law and the Commission's regulations to 40 years. Additionally, 10 CFR 54.31(b) states that:

A renewed license will be issued for a fixed period of time, which is the sum of the additional amount of time beyond the expiration of the operating license (not to exceed 20 years) that is requested in a renewal application plus the remaining number of years on the operating license currently in effect. The term of any renewed license may not exceed 40 years.

The potential exists that because DNC's decision to apply early for license renewal for MP3, DNC may not obtain the maximum 20-year period of extended operation permitted by 10 CFR 54.31(b). Any actual reduction will depend on the date the renewed licenses are issued. If a reduction in the 20-year extension is required, and DNC desires further extension of MP3's operating licenses in the future, an additional renewal application can be submitted in accordance with 10 CFR Part 54.

Therefore, should the Commission determine to renew the MP3 operating license, the term of the license will not exceed 40 years, and granting of MP3's exemption request will not result in violation of the AEA or the Commission's regulations.

### 3.2 No Undue Risk to Public Health and Safety

DNC's exemption request seeks only schedular relief regarding the date of submittal, and not substantive relief from the requirements of 10 CFR Parts 51 or 54. DNC must still conduct all environmental reviews required by 10 CFR Part 51 and all safety reviews and evaluations required by 10 CFR Part 54 when preparing the applications for MP2 and MP3. The staff's review will verify that all applicable Commission regulations have been met before issuing the renewed licenses. Therefore, the staff finds that granting this scheduler exemption will not represent an undue risk to public health and safety.

### 3.3 Consistent with the Common Defense and Security

As discussed previously, the exemption requested is only a schedular exemption. The NRC staff will review the license renewal application DNC submits pursuant to the requested exemption, to determine whether all applicable requirements are fully met. Accordingly, granting the requested exemption will be consistent with the common defense and security.

### 3.4 Special Circumstances Supporting Issuance of the Exemption

An exemption will not be granted unless special circumstances are present as defined in 10 CFR 50.12(a)(2). Specifically, 10 CFR 50.12(a)(2)(ii) states that a special circumstance exists when "application of the regulation in the particular circumstances ... is not necessary to achieve the underlying purpose of the rule." In initially promulgating 10 CFR 54.17(c) in 1991, the Commission stated that the purpose of the time limit was "to ensure that substantial operating experience is accumulated by a licensee before it submits a renewal application" (56 FR 64963). At that time, the NRC found that 20 years of operating experience provided a sufficient basis for renewal applications. However, in issuing the amended 10 CFR Part 54 in 1995, the Commission indicated it would consider an exemption to this requirement if sufficient

information was available on a plant-specific basis to justify submission of an application to renew a license before completion of 20 years of operation (60 FR 22488).

The 20-year limit was imposed by the NRC to ensure that sufficient operating experience was accumulated to identify any plant-specific aging concerns. As set forth below, MP2 is sufficiently similar to MP3, such that the operating experience for MP2 applies to MP3. In addition, MP3 has accumulated significant operating experience. Accordingly, under the requested exemption, sufficient operating experience will have been accumulated to identify any plant-specific aging concerns for both units.

DNC states that the two units at the Millstone site are similar in materials of construction and operating environments, many of the aging analyses to be performed for the structures, systems, and components (SSCs) of MP2 will be directly applicable to the SSCs of MP3. Both units are PWR units that utilize recirculating, U-tube type steam generators that produce saturated steam to drive turbine-generators. DNC states that the materials of construction for SSCs on both units are typically identical or similar. The materials used and the environments to which these materials are subjected determine the existence of aging effects. Both units at the Millstone site share common facilities/environments and have many similar components and materials.

DNC also stated that many of the procedures that govern site activities are not unit-specific and require the consideration of operating experience at both Millstone units. Both units share many of the same maintenance activities and other existing aging management programs, making them more effective by relying on the experience at both units. The Millstone site organization shares a common operating experience review department, such that operating experience and corrective actions are continually shared between the units. The Millstone site also utilizes their Corrective Action Program (CAP), in which a multi-disciplinary team reviews Condition Reports (CRs). As part of this review, the team identifies CRs that

could affect other operating units and that need to be evaluated for both units. The direct exchange of operating experience by this common operating experience review and by the CAP ensures the evaluation of MP2 aging issues that could be applicable to MP3. The shared operating experience and dedicated system engineering responsibilities also result in a continual evaluation of the effectiveness of plant programs used to manage the effects of aging of plant equipment for both units.

While the units at the Millstone site have common operation, maintenance, use of operating experience, and environment, MP2 and MP3 are of different PWR design. MP2 is a Combustion Engineering PWR design and MP3 is a Westinghouse 4-Loop PWR design. The nuclear steam supply system (NSSS) design, thermal output, containment and Category 1 structures, of these two designs are significantly different. In a letter dated April 28, 2003, the applicant provided supplemental information to justify the applicability of MP2's operating experience as the basis for the exemption request or to discuss how industry-wide Westinghouse 4-Loop operating experience can supplement MP3's operating experience. In addition, on July 18, 2003, the NRC requested additional information to justify the applicability of MP2's containment and Category 1 structures operating experience as the basis for the exemption or to discuss how industry-wide operating experience can supplement MP3's operating experience.

#### 3.4.1 NSSS Design

The staff reviewed the supplemental information provided by the applicant in its letter to the NRC dated April 28, 2003. DNC compared the MP2 and MP3 NSSS SSCs to those in the applicable sections of the Generic Aging Lessons Learned (GALL) Report and listed the comparative results in the attachment to the letter. Based on Section II.A of the attachment and its related discussions, the applicant stated that the operating experience from MP2 is applicable to MP3 with regard to identifying NSSS-related aging effects. The staff reviewed the

contents of Section II.A and determined that although there are differences in NSSS design and configuration between MP2 and MP3, both units do exhibit similar aging effects, and their aging effects are comparable to those of the GALL Report. The staff also reviewed the applicant's assertions that: (1) MP3 has the benefit of industry operating experience, particularly for those PWRs that have the same NSSS design (Surry and North Anna); (2) as of the date of their submittal, nine Westinghouse 4-Loop PWRs have accumulated at least 20 years of operating experience and five other plants have close to 20 years of operating experience; and (3) the MP3 license renewal application (LRA) will also reflect industry experience identified in the GALL Report as well as other industry programs.

The staff finds that the justifications provided by the applicant for these assertions are based on factual information and are reasonable. Based on the above discussion, the staff concludes that with respect to MP2 and MP3 NSSS design, configuration, and management of NSSS-related aging effects, the applicant has provided adequate justifications for the NRC consideration of granting MP3's request for exemption from the requirements of 10 CFR 54.17(c)

#### 3.4.2 Thermal Output

The staff reviewed the supplemental response provided by the applicant in its letter to the NRC dated April 28, 2003. The staff noted that DNC compared MP2 and MP3 thermal outputs, which results in differences in neutron flux and fluence to which the reactor vessels and the reactor vessel internals (RVI) are exposed. DNC indicated that the differences in thermal output do not significantly affect the reactor coolant temperature. In addition, it was noted that the MP2 and MP3 reactor vessel operating temperatures are similar and closely match those specified in the GALL Report for the PWR reactor vessel environment. The staff compared the operating temperatures through the reactor vessel integrity database with those in the GALL Report and found that the licensee's justification was reasonable.

In addition, DNC indicated that the higher core power density and correspondingly, a higher fluence for MP3 which may result in the emergence of certain aging effects earlier in plant life than would be the case for MP2. However, it was noted that there are no unique aging effects for the MP3 RVI and that the same aging effects would require management for both units.

The licensee also stated that on an industry-wide basis, the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP) addresses aging effects associated with PWR RVI. It was noted that the EPRI MRP reviewed the function of each internal PWR component (including Westinghouse and CE). For those internals that could impact safety, the EPRI MRP considered the aging mechanisms that could cause degradation of RVI component and is developing strategies to manage the resulting aging effects. Therefore, the licensee indicated that the operating experience gained from the EPRI MRP could be applied to MP3 in assisting in the identification of plant-specific concerns regarding aging. The staff finds this approach acceptable.

The staff finds that the justification provided by the applicant for these assertions are based on factual information and are reasonable. Based on the above discussion, the staff concludes that with respect to MP2 and MP3 thermal output differences, the applicant has provided adequate justification for the staff's consideration of granting the MP3 request for exemption from the requirements of 10 CFR 54.17(c).

#### 3.4.3 Containment and Category 1 Structures

The staff reviewed the additional information provided by the applicant in its letter to the NRC dated September 3, 2003. In the attachment to the letter, DNC compared the MP2 and MP3 containment and Category 1 structures and components in Table 1; MP3 and other Stone and Webster Engineering Corp. plants' containment and Category 1 structures and components in Table 2; and MP3 and the applicable sections of the GALL Report containment

and Category 1 structures and components in Table 3. Based on the Table 1 comparisons and its related discussions, the applicant stated that the operating experience from MP2 is applicable to MP3 with identifying containment and Category 1 structure-related aging effects, except when there were differences such as in the architect-engineer, containment type, and groundwater protection. For the differences previously noted, the applicant relied on the operating experience from plants (Table 2) that have the same architect-engineer, containment type, and groundwater protection such as North Anna Units 1 and 2, Surry Units 1 and 2, Beaver Valley Unit 1, and Haddam Neck. Even though these plants have the same architect-engineer, containment type, and groundwater protection as MP3, the environments are different. MP3 is located in a coastal area and the other plants are located in inland environments. For the environmental difference, the applicant relied on the GALL Report for additional operating experience. The staff reviewed the applicant's assertions that MP3 also has the benefit of industry operating experience, particularly for those PWRs with the same architect engineer, containment type, and groundwater protection; and the MP3 LRA will also reflect industry experience identified in the GALL Report, as well as other industry programs.

The staff finds that the justifications provided by the applicant for these assertions are based on factual information and are reasonable. Based on the above discussion, the staff concludes that, with respect to MP2 and MP3 containment and Category 1 structures design, structural configuration and management of structural-related aging effects, the applicant has provided adequate justifications for the NRC's consideration of granting MP3's request for exemption from the requirements of 10 CFR 54.17(c).

Therefore, sufficient combined operating experience from MP2 and industry exists to satisfy the intent of 10 CFR 54.17(c), and the application of the regulation in this case is not

necessary to achieve the underlying purpose of the rule. The staff finds that DNC's request meets the requirement, in 10 CFR 50.12(a)(2), that special circumstances exist to grant the exemption.

### 3.5 Summary

Based on the foregoing, the staff finds that the requested exemption is acceptable in that it is authorized by law; will not present an undue risk to public health and safety; is consistent with the common defense and security; and that special circumstances are present, under 10 CFR 50.12(a)(2)(ii). Should DNC submit an application to renew the licenses for MP2 and MP3, the application must demonstrate full compliance with 10 CFR Parts 51 and 54 for both units and include information addressing the similarity in design, operation, maintenance, operating experience, and environments of the units to support submittal of the dual-unit application. In the course of its review of an application to renew the licenses for the units at the Millstone site, the NRC staff will examine how the actual operating experience, available from both units and from industry, applies to the particular SSCs evaluated.

### 4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants DNC a schedular exemption from the requirements of 10 CFR 54.17(c). Specifically, this schedular exemption allows DNC to apply for a renewed license for MP3 earlier than 20 years before the expiration of the operating license currently in effect.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (68 FR 7529).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 30<sup>th</sup> day of December.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Cornelius Holden, Acting Director  
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Millstone Power Station, Unit No. 3

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