Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

December 16, 2004

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No.	04-670
MPS Lic/MAE	R0
Docket No.	50-423
License No.	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
REQUEST FOR A LICENSE AMENDMENT TO REVISE BURNUP LIMIT FOR ONE LEAD TEST ASSEMBLY (LBDCR LBC-MP3-04-004)

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC), hereby requests an amendment to Facility Operating License NPF-49. The proposed amendment would revise the current fuel rod average licensing basis burnup limit for one lead test assembly (LTA) containing advanced zirconium based alloys to a limit not exceeding 71,000 MWD/MTU.

There is no specific Technical Specification or license condition that imposes a limit on fuel rod burnup; however, the Nuclear Regulatory Commission (NRC) has approved 62,000 MWD/MTU as the end of life lead rod average burnup of the LTAs in the Millstone Unit 3 core. The proposed amendment will permit DNC to irradiate a LTA in Millstone Unit 3 Cycle 12 to an end of life lead rod average burnup of 71,000 MWD/MTU. Irradiation of this fuel assembly will provide data on fuel and material performance that will support industry goals of extending the current fuel burnup limits and address NRC questions related to fuel performance at higher burnups.

In a letter dated February 11, 2004 (Reference 1), the NRC approved the use of up to eight LTAs containing fuel rods, guide thimbles, and instrument tubes fabricated with Optimized ZIRLO™ up to an irradiation limit of 62,000 MWD/MTU. Reference 1 established 62,000 MWD/MTU as a design basis limit for the fuel. Per NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation," and 10 CFR 50.59, activities that alter a design basis limit for a fission product barrier require NRC approval.

In addition, the current design basis radiological analysis for the Fuel Handling Accident utilizes the Alternative Radiological Source Term assumptions as specified in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," July 2000. The extended burnup will exceed the burnup range for release fractions specified in this Regulatory Guide. It is proposed that the conservative release fractions for the standard source term as specified in Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors," March 23, 1972 and NUREG/CR-5009, "Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors," February 1988 be used for this LTA. Also, per NEI 96-07 and 10 CFR 50.59, activities that result in a departure from a method of evaluation used in the safety analysis described in the FSAR require NRC approval.

The assembly to be used for this program is one of eight LTAs fabricated by Westinghouse that will have been irradiated for two cycles. In the third cycle, this assembly will be placed in a location where it will exceed the current lead rod average burnup limit of 62,000 MWD/MTU, therefore requiring this amendment request. The LTAs use Optimized ZIRLO™ clad rods, guide thimbles and instrument tubes. In Reference 1, the NRC approved exemptions from specific requirements of 10 CFR Section 50.44, Section 50.46 and Appendix K to allow use of up to eight LTAs containing fuel rods, guide thimble tubes, and instrument tubes fabricated with Optimized ZIRLO™, a cladding material that contains a nominally lower tin content than the already approved ZIRLO™ material. This approval was in part based upon the lead rod average burnup remaining within the applicable licensed limits of ZIRLO™ specified as 62,000 MWD/MTU.

Enclosure 1 provides a discussion of the proposed license amendment and the Safety Summary, including the analyses demonstrating the proposed changes do not involve a Significant Hazards Consideration. As discussed in Enclosure 1, the use of this fuel assembly will be fully evaluated as part of the normal reload design process. In support of this amendment request, Westinghouse has provided a Safety Evaluation that addresses the use of the LTAs under the proposed conditions (Reference 12). It is expected that all design criteria will be satisfied. The proposed irradiation of this LTA to high burnup will not compromise the safe operation of the unit. The Millstone Unit 3 Technical Specification Design Features Section 5.3 already allows the placement of a limited number of LTAs in non-limiting core locations.

Site Operations Review Committee and Management Safety Review Committee

The Millstone Site Operations Review Committee and the DNC Management Safety Review Committee have reviewed and concurred with the determinations.

Schedule

Cycle 12 operation is scheduled to begin in May 2007. Accordingly, design efforts for the Cycle 12 core are expected to begin in the fourth quarter of 2005. DNC requests that the NRC provide approval of this irradiation program by December 1, 2005 to support completion of the Millstone Unit 3 design under the normal reload design and fuel procurement schedule. In the event that this schedule cannot be met, DNC will need to evaluate the purchase of an additional currently approved Robust Fuel Assembly with ZIRLO™ cladding and consequently, extended burnup data would not be available from the LTA program.

State Notification

In accordance with 10 CFR 50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

Commitments

Commitments made in this submittal are listed in Enclosure 2.

If you have any questions or require additional information, please contact Mr. Paul R. Willoughby at (804) 273-3572.

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering

Attachments:
Enclosure 1, Evaluation of proposed Changes and Safety Summary
Enclosure 2, List of Regulatory Commitments

cc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Mr. G. F. Wunder
Project Manager – Millstone Unit 3
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 8B1A
Rockville, MD 20852-2738

Mr. S. M. Schneider
NRC Senior Resident Inspector
Millstone Power Station

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Dominion Nuclear Connecticut, Inc. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 16TH day of December, 2004.

My Commission Expires: May 31, 2006.

Vicki L. Hull
Notary Public

(SEAL)

Serial No. 04-670
Docket No. 50-423

ENCLOSURE 1

LICENSING BASIS DOCUMENT CHANGE REQUEST (LBDCR) LBC-MP3-04-004
LICENSE AMENDMENT TO REVISE BURNUP LIMIT FOR ONE LEAD TEST ASSEMBLY

EVALUATION OF PROPOSED CHANGES AND SAFETY SUMMARY

MILLSTONE POWER STATION UNIT 3
DOMINION NUCLEAR CONNECTICUT, INC

LICENSING BASIS DOCUMENT CHANGE REQUEST (LBDCR) LBC-MP3-04-004 LICENSE AMENDMENT TO REVISE BURNUP LIMIT FOR ONE LEAD TEST ASSEMBLY

EVALUATION OF PROPOSED CHANGES AND SAFETY SUMMARY

Subject: Application for a License Amendment to allow an increase in the lead rod average burnup in one lead test assembly to a limit of 71,000 MWD/MTU.

1.0 DESCRIPTION

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC), hereby requests an amendment to Facility Operating License NPF-49 for Millstone Power Station Unit 3. The proposed amendment would revise the current fuel rod average licensing basis lead rod average burnup limit for one lead test assembly (LTA) containing advanced zirconium based alloys to a value not exceeding 71,000 MWD/MTU.

2.0 PROPOSED CHANGE

There is no specific Technical Specification or license condition that imposes a limit on fuel rod burnup; however, the NRC has established 62,000 MWD/MTU as the end of life lead rod average burnup of the LTAs in the Millstone Unit 3 core. Fuel burnup is a design basis parameter for a fission product barrier for which the design basis limit for the lead rod average burnup is currently set at 62,000 MWD/MTU. This limit was specified in the February 11, 2004 letter (Reference 1) from the Nuclear Regulatory Commission (NRC), which granted exemptions to 10 CFR Section 50.44, Section 50.46 and Appendix K to allow the use of up to eight LTAs containing fuel rods, guide thimble tubes and instrument tubes fabricated with Optimized ZIRLO^{TM}, a cladding material that contains a nominally lower tin content than the already approved ZIRLO^{TM} material. DNC intends to irradiate one of the LTAs to a burnup in excess of the 62,000 MWD/MTU limit. As discussed in NEI 96-07 Revision 1 "Guidelines for 10 CFR 50.59 Implementation" (Reference 2), changes that alter the design basis limit for a fission product barrier require NRC approval prior to implementation. In addition, the current design basis radiological analysis for the Fuel Handling Accident utilizes the Alternative Radiological Source Term assumptions as specified in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," July 2000. The extended burnup will exceed the burnup range for release fractions as specified in this regulatory guide. It is proposed that the conservative release fractions for the standard source term as specified in Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors," March 23, 1972 and NUREG/CR-5009, "Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors,"

February 1988 be used for this LTA. Per NEI 96-07 and 10 CFR 50.59, activities that result in a departure from a method of evaluation used in the safety analysis described in the FSAR require NRC approval. DNC has evaluated the proposed change in the limit for the lead rod average burnup as per 10 CFR 50.59 and has determined that NRC approval is required. As such, a license amendment is being requested as per 10 CFR 50.90 for this licensing basis change.

3.0 BACKGROUND

As the nuclear industry pursues longer operating cycles with increased burnups, additional data is needed to validate satisfactory fuel performance at burnup levels that exceed the current licensing basis. To obtain data on fuel assembly extended burnup, Westinghouse has developed an LTA program in cooperation with DNC. This amendment requests NRC approval to irradiate one LTA to a lead rod average burnup level that exceeds the current fuel rod-average licensing basis to obtain extended burnup data.

The Millstone Unit 3 reactor core is comprised of an array of 17 x 17 fuel assemblies that are similar to each other in design. The core consists of Robust Fuel Assemblies with ZIRLO™ cladding. In Cycle 10, DNC inserted eight 17X17 Next Generation Fuel (NGF) LTAs with Optimized ZIRLO™ clad rods into the Millstone Unit 3 core. Millstone Unit 3 Technical Specification Design Features 5.3 allows the placement of a limited number of LTAs in non-limiting core locations. Exemptions for 10 CFR 50.44, "Standards for Combustible Gas Control System in Light-Water-Cooled Power Reactors," 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Reactors," and Appendix K of 10 CFR 50, "ECCS Evaluation Models" were requested and approved by the NRC by letter on February 11, 2004 (Reference 1).

The NRC approval was based upon a review of the fuel mechanical design, core physics and non-LOCA and LOCA safety analyses. The LTA mechanical design was found to be acceptable based upon LTA irradiation experience of similar low tin versions of ZIRLO™, expected performance due to similar material properties, and an extensive LTA post-irradiation examination program aimed at qualifying model predictions. The fuel rod burnup and fuel duty experienced by the LTAs was judged to be acceptable because it would remain well within the operating experience base and applicable licensed limits for ZIRLO™. This limit was specified as 62,000 MWD/MTU. The core physics and LOCA and non-LOCA analyses were approved based upon the use of approved models and methods and the placement of LTAs in non-limiting locations. These requirements remain unchanged and are unaffected by this requested license amendment.

During Cycle 11 operation, all eight LTAs will be re-used. For Cycle 12 operation, five of the eight LTAs will be re-inserted but only one will be used in order to obtain high burnup data. The lead rod average burnup for this one assembly is projected to be

approximately 70,500 MWD/MTU. This burnup will exceed the current licensing basis limit of 62,000 MWD/MTU; therefore, it is requested that the NRC provide approval to increase the lead rod average burnup limit for the above LTA from 62,000 MWD/MTU to 71,000 MWD/MTU for Millstone Power Station Unit 3 Cycle 12. Approval for up to 71,000 MWD/MTU burnup is being requested to ensure sufficient margin exists in the event the fuel cycle is extended due to coast down.

A similar request was approved by the NRC for Byron Station, Unit 1 (Reference 3).

4.0 TECHNICAL ANALYSIS

Fuel burnup is a design basis parameter for a fission product barrier for which the design basis limit for the lead rod average burnup is currently set at 62,000 MWD/MTU for the LTAs. This limit was specified in the February 11, 2004 letter from the NRC (Reference 1), which granted exemptions to 10 CFR, Section 50.44, Section 50.46 and Appendix K to allow the use of up to eight LTAs containing fuel rods, guide thimble tubes and instrument tubes fabricated with Optimized ZIRLO™, a cladding material that contains a nominally lower tin content than the already approved ZIRLO™ material. DNC intends to irradiate only one assembly beyond the current limit of 62,000 MWD/MTU.

This LTA is one of eight assemblies included in a prototype testing program. The testing program includes examinations and testing as well as analysis. Parameters important for extended burnup include fuel rod growth, clad fatigue, rod internal pressure and cladding corrosion. The Reference 12 Safety Evaluation prepared by Westinghouse has evaluated the LTA program for impact due to the extended burnup of one of the LTAs. It is concluded for Cycle 10 (the current operating cycle) and for the proposed Cycles 11 and 12, that all current design criteria will be met for the LTA. Compliance with the design criteria will be confirmed on a reload specific basis to support Cycles 11 and 12.

Pre-characterization Inspection and Measurement

Pre-characterization with respect to these specific LTAs means a statistically based set of measurements of selected as-built parameters. The purpose of this pre-characterization is to obtain data that is useful in understanding the fuel performance based on the known fuel duty. Pre-characterization provides pre-irradiation values for the parameters to be measured. This allows a more accurate assessment of the changes due to irradiation when post irradiation measurements are evaluated.

Post-irradiation Examinations

A plan for the post-irradiation examination of the LTAs was provided in a letter to the NRC on November 10, 2003 (Reference 4). At the end of each of the three LTA

irradiation cycles at Millstone Unit 3 (Cycles 10, 11 and 12), various on-site non-destructive post-irradiation examinations will be performed on the LTAs. The plan for the use and inspection of LTAs is as follows:

- Eight LTAs are included in the Cycle 10 core design for their first cycle of operation.
- During refueling outage 10 (following Cycle 10) visual inspections will be performed on two of the eight LTAs.
- It is anticipated that all eight LTAs will be included in the Cycle 11 core design for their second cycle of operation.
- During refueling outage 11 (following Cycle 11) three LTAs will be discharged from the core and visual inspections will be performed on the five LTAs planned for reuse in Cycle 12.
- It is anticipated that five LTAs will be included in the Cycle 12 core design for their third cycle of operation.
- During Cycle 12 operation, post-irradiation examinations will be performed using the three LTAs that were discharged after two cycles of operation.
- Following Cycle 12 operation, post-irradiation examinations will be performed using the five LTAs that were discharged after three cycles of operation.

Fuel Design Criteria

Fuel rod design criteria that become more limiting for high burnup fuel rods include fuel rod growth, clad fatigue, rod internal pressure and cladding corrosion. Evaluations have been performed using NRC-approved fuel rod design methodologies. These models have been used to perform similar evaluations for other high burnup LTAs. The available data indicates that the approved models are appropriate and no modifications to the approved models are necessary. In addition, a developmental corrosion model for ZIRLO™/Optimized ZIRLO™ will be used as an evaluation tool based primarily on data from high burnup fuel at the V. C. Summer, North Anna and Byron plants. This model accounts for observed corrosion from the ZIRLO™/Optimized ZIRLO™ clad fuel rods that were examined in previous post-irradiation examination campaigns. Both the ZIRLO™ developmental corrosion model and the NRC-approved model will be used in the Millstone Power Station Unit 3 Cycle 12 specific reload evaluation to confirm that the fuel rod design limits will be met. With the Millstone Unit No. 3 projected fuel duty estimate, the internal Westinghouse limit of 100 micron best estimate fuel rod oxidation value will not be exceeded.

The Optimized ZIRLO™ high burnup fuel rods will continue to satisfy the Specified Acceptable Fuel Design Limits specified in the Westinghouse Topical Report, WCAP-12488-A, "Westinghouse Fuel Criteria Evaluation Process," (Reference 5). This report was approved by the NRC on July 27, 1994. The clad integrity of the Optimized ZIRLO™ high burnup rods will be maintained since the subject fuel assembly will be placed in a less than limiting core location and will continue to meet the safety parameter requirements. These criteria remain unchanged by this license amendment

request. In addition, the acceptability of using the Optimized ZIRLO™ high burnup rods will be evaluated in the Millstone Power Station Unit 3 Cycle 12 Reload Evaluation.

Non-LOCA Safety Analysis

Utilizing currently NRC-approved core physics, core thermal hydraulics, and non-LOCA safety analysis models and methods, DNC and Westinghouse will perform cycle-specific reload evaluations including the one high burnup assembly to ensure that the acceptance criteria for the non-LOCA analysis are satisfied.

LOCA Analysis

Utilizing currently approved LOCA models and methods, DNC and Westinghouse will perform cycle-specific reload evaluations including the one high burnup assembly to ensure that the 10 CFR 50.46 acceptance criteria are met.

Radiological Analyses

It has been shown in WCAP-12610-P-A (Reference 6), that even though there are variations in core inventories of isotopes due to extended burnup up to 71,000 MWD/MTU, there are no significant increases of isotopes that are major contributors to accident doses. It is worth noting that, at higher burnups, there is actually a reduction in certain isotopes that are major dose contributors under accident conditions (e.g., Kr-88). With only a limited number of Optimized ZIRLO™ high burnup rods in the entire core, any variation of isotopic inventories will be extremely small. Thus, the radiological consequences of postulated design basis accidents involving potential for fuel rod failure are not significantly impacted.

The only event for which the characteristics of a single LTA would potentially have a significant impact is the Fuel Handling Accident (FHA) since that analysis assumes failure of all fuel rods in one assembly plus 50 additional fuel rods in another assembly. The latest FHA analysis performed for Millstone Unit 3 utilizes the alternative source term methodology from Regulatory Guide 1.183 (Reference 7) in which the fission product gap fractions have been reduced from those specified in the earlier guidance of Regulatory Guide 1.25 (Reference 8) and NUREG/CR-5009 (Reference 9). The limiting dose from that FHA analysis is 4.9 rem TEDE for the Millstone Unit 3 control room operators compared to an acceptance limit of 5.0 rem TEDE. The calculated offsite doses to the public are less than one half the acceptance limit. If it is assumed that the LTA is the assembly involved in the FHA, the extended burnup will be outside the range given in Regulatory Guide 1.183 for the determination of gap fractions. Based on the discussion regarding fission gas release to the gap as a function of burnup, which was presented to the NRC in Reference 10, the projected gap fractions at a burnup of 71,000 MWD/MTU would be bounded by the values taken from Regulatory Guide 1.25 and NUREG/CR-5009. Thus, the evaluation of impact of the LTA on the FHA doses conservatively assume the gap fractions for the standard source term as given in

Regulatory Guide 1.25 and NUREG/CR-5009. To offset the higher gap fractions used in the analysis, credit is taken for the lower analyzed LTA peaking factor of 1.15 in place of the lead rod radial peaking factor of 1.70. The Millstone Unit 3 Technical Specification Design Features Section 5.3 requires that the LTAs be placed in non-limiting core locations. With the combination of higher gap fractions and the reduction in the power multiplier, the radiological consequences for the FHA are bounded by the current alternative source term FHA analysis approved by the NRC on March 17, 2004 (Reference 11).

Informational Reporting

Two reports shall be submitted to the NRC associated with the high burnup LTA. The first report will contain the following information:

1. Licensee name
2. Plant name
3. Cycle and date when the LTA shall be inserted
4. Location of the LTA
5. Anticipated pre- and post-cycle burnup for the LTA
6. Purpose of LTA
7. Estimated date for pre- and post-irradiation characterizations or the results of the pre-characterization and an estimation of the date for the post-irradiation characterization
8. Estimated date of the second report
9. Statement that the LTA will not be irradiated to the high burnup if all current design criteria are not met.

The second report will contain the following information:

1. Licensee name
2. Plant name
3. Assembly identification number
4. A summary of pre-characterization inspections and post-irradiation examinations, as appropriate.

5.0 Regulatory Safety Analysis

5.1 No Significant Hazards Consideration

DNC has evaluated whether or not a Significant Hazards Consideration (SHC) is involved with the proposed changes by focusing on the three standards set forth in 10 CFR 50.92(c) as discussed below:

The proposed changes do not involve an SHC because the changes do not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The Westinghouse LTA is very similar in design to the Westinghouse fuel that comprises the remainder of the core. The reload core design for Millstone Unit 3 Cycle 12, where one LTA will operate to high burnup, will meet all applicable design criteria. The performance of the Emergency Core Cooling System will not be affected by the operation of the LTA and operation of the LTA to high burnup will not result in a change to the Millstone Unit 3 reload design and safety analysis limits. Operation of one Westinghouse LTA to high burnup will not result in a measurable impact on normal operating releases, and will not increase the predicted radiological consequences of accidents postulated in Chapter 15 of the Millstone FSAR. Therefore, neither the probability of occurrence nor the consequences of any accident previously evaluated is significantly increased.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   The Westinghouse LTA is very similar in design (both mechanical and composition of materials) to the resident Westinghouse fuel. All design and performance criteria will continue to be met and no new single failure mechanisms will be created. The irradiation of one LTA to high burnup does not involve any alteration to plant equipment or procedures, which would introduce any new or unique operational modes or accident precursors. Therefore, the possibility for a new or different kind of accident from any accident previously evaluated is not created.

3. Involve a significant reduction in a margin of safety.

   The operation of one Westinghouse LTA to high burnup does not change the performance requirements of any system or component such that any design criteria will be exceeded. The normal limits on core operation defined in the Millstone Unit 3 Technical Specifications will remain applicable for the core in which the high burnup assembly is irradiated. Therefore, the margin of safety as defined in the Bases to the Millstone Unit 3 Technical Specifications is not significantly reduced.

In summary, in accordance with 10 CFR 50.92, DNC has reviewed the proposed changes and has concluded that they do not involve an SHC. The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised.

5.2 Applicable Regulatory Requirements/Criteria

5.2.1 Regulations

Technical Specification 5.3.1 Reactor Core Fuel Assemblies states the following:

"The core shall contain 193 fuel assemblies. Each fuel assembly shall consist of 264 zircaloy-4 or ZIRLO clad fuel rods with an initial composition of natural uranium dioxide or a maximum nominal enrichment of 5.0 with percent U-235 as fuel material. Limited substitutions of zircaloy-4, ZIRLO or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assembly configurations shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by test or cycle-specific reload analyses to comply with all fuel safety design bases. Each fuel rod shall have a nominal active fuel length of 144 inches. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions."

On February 11, 2004, the Commission granted DNC an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and 10 CFR Part 50, Appendix K, to allow the use of Optimized ZIRLO™ as a cladding material in eight LTAs in the capacity described in the DNC July 1, 2003 submittal, as supplemented November 10, 2003, up to a lead rod average burnup of 62,000 MWD/MTU.

The lead rod average burnup limit of 62,000 MWD/MTU meets the definition of a design basis limit for a fission product barrier given in NEI 96-07 Revision 1. 10 CFR 50.59(c)(2) states the following:

"A licensee shall obtain a license amendment pursuant to 50.90 prior to implementing a proposed change, test or experiment if the change, test or experiment would:
(vii) Result in a design basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered, or
(viii) Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses"

5.2.2 Design Bases (UFSAR)

In FSAR Section 4.2.1 (Design Bases), the following is stated:

"For the 17 x 17 STD, V5H, RFA/RFA-2 fuel assemblies, and Next Generation Fuel (NGF) Lead Test Assemblies (LTAs) the fuel rod and fuel assembly design bases are established to satisfy the general performance and safety criteria presented in Section 4.2.

The fuel rods from Regions 1 thru 4 are designed for a rod pellet burnup of approximately 50,000 megawatt days per metric ton of uranium (MWD/MTU) in the fuel cycle equilibrium condition. Starting from fuel Region 5, the design peak rod burnup is increased to approximately 60,000 MWD/MTU."

5.2.3 Approved Methodologies

All fuel design and safety analyses were performed using the NRC-approved methodologies listed in Technical Specification 6.9.1.6.b.

The radiological analyses for the fuel handling accident were performed using the Alternative Source Term as approved by the NRC on March 17, 2004.

5.2.4 Analysis

The fuel design and safety analyses demonstrate that all fuel design limits and safety analysis criteria are met with the extended lead rod average burnup in one LTA to 71,000 MWD/MTU.

5.2.5 Conclusion

DNC is proposing to insert one NGF LTA into a non-limiting core location during Millstone Power Station Unit 3 Cycle 12 for the purpose of obtaining high burnup data. The projected lead rod average burnup in this assembly at the end of Cycle 12 will be approximately 70,500 MWD/MTU. Based upon the above assessment, extending the lead rod average burnup limit to 71,000 MWD/MTU will not create a safety issue, as all fuel design limits will continue to be met.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance 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.

6.0 ENVIRONMENTAL CONSIDERATION

DNC has evaluated the proposed change against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.22. DNC has determined that the proposed changes meet the criteria for categorical exclusion set forth in 10 CFR 51.22(c). The proposed amendment also does not involve irreversible consequences in accordance with 10 CFR 50.92(b).

This determination is based on the fact that the changes are being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, or that changes an inspection or a surveillance requirement, and the amendment requests meets the following specific criteria:

(i) The proposed change involves no significant hazards consideration.

As demonstrated above, the proposed changes do not involve a significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released off site.

No changes are being made in the types or amounts of any radiological effluents that may be released offsite during normal operation and design basis accidents. With only a limited number of Optimized ZIRLO™ high burnup rods in the entire core, any variation of isotopic inventories will be extremely small.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will not result in changes in the hardware of the facility. There will be no change in the level of control or methodology used for evaluation of the processing of radioactive effluents or handling of solid radioactive waste. Since there will be no significant change in core inventories, there will be no change to the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational exposure resulting from the proposed changes.

7.0 REFERENCES

1. NRC Letter from Victor Nerses to David A. Christian, "Millstone Power Station, Unit No. 3, Exemption from the Requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50.44, 10 CFR 50.46 and 10 CFR Part 50, Appendix K (TAC No. MB9897)", February 11, 2004.

2. NEI 96-07, Revision 1, "Nuclear Energy Institute Guidelines for 10 CFR 50.59 Implementation," November 2000.

3. NRC letter from George F. Dick, Jr., to Christopher M. Crane, "Issuance of Amendment for Irradiation of Four Lead Test Assemblies – Byron Station, Unit 1 (TAC No. MC1520)," June 16, 2004.

4. DNC letter from J. Alan Price to U.S. Nuclear Regulatory Commission. "Millstone Power Station, Unit No. 3 Response to Request for Additional Information Regarding Exemption to Use a Low Tin Cladding (TAC No. MB9897)," November 10, 2003.

5. Davidson, S. L. (Ed.), et al, "Westinghouse Fuel Criteria Evaluation Process," WCAP-12488-A, October 1994.

6. Davidson, S. L. and Nuhfer, D. L. (Eds.), "VANTAGE + Fuel Assembly Reference Core Report," WCAP-12610-P-A, April 1995.

7. U.S. NRC Regulatory Guide 1.183 (formerly DG-1081), "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," July 2000.

8. U.S. NRC regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors," March 23, 1972.

9. Baker, D. A. et al, "Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors," NUREG/CR-5009, February 1988.

10. Letter from David J. Modeen (Nuclear Energy Institute) to U. S. NRC, transmitting comments on Draft Regulatory Guide DG –1081, March 31, 2000.

11. Letter from Victor Nerses to David A. Christian, "Millstone Power Station, Unit No. 3 – Issuance of Amendment Re: Selective Implementation of Alternate Source Term (TAC No. MB8137)", March 17, 2004.

12. Safety Evaluation for the Westinghouse NGF Lead Test Assemblies in Millstone Unit 3 for Cycle 10, 11 and 12, Revision 1, November 2004.

ENCLOSURE 2

**LICENSING BASIS DOCUMENT CHANGE REQUEST (LBDCR) LBC-MP3-04-004
LICENSE AMENDMENT TO REVISE BURNUP LIMIT FOR ONE LEAD TEST ASSEMBLY**

LIST OF REGULATORY COMMITMENTS

**MILLSTONE POWER STATION UNIT 3
DOMINION NUCLEAR CONNECTICUT, INC.**

LICENSING BASIS DOCUMENT CHANGE REQUEST (LBDCR) LBC-MP3-04-004
LICENSE AMENDMENT TO REVISE BURNUP LIMIT FOR
ONE LEAD TEST ASSEMBLY

LIST OF REGULATORY COMMITMENTS

Subject: Application for a License Amendment to allow an increase in the lead rod average burnup in one lead test assembly to a limit of 71,000 MWD/MTU.

The following commitment has been identified in this submittal and is being incorporated into our commitment management program:

Two reports shall be submitted to the NRC associated with the high burnup lead test assembly (LTA).

A. The first report will contain the following information:

1. Licensee name
2. Plant name
3. Cycle and date when the LTA shall be inserted
4. Location of the LTA
5. Anticipated pre- and post-cycle burnup for the LTA
6. Purpose of LTA
7. Estimated date for pre- and post-irradiation characterizations or the results of the pre-characterization and an estimation of the date for the post-irradiation characterization
8. Estimated date of the second report
9. Statement that the LTA will not be irradiated to the high burnup if all current design criteria are not met.

B. The second report will contain the following information:

1. Licensee name
2. Plant name
3. Assembly identification number
4. A summary of pre-characterization inspections and post-irradiation examinations, as appropriate.