Dominion Nuclear Connecticut, Inc.
Millstone Power Station
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Dominion

August 24, 2004

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

Serial No. 04-501
MPS Lic/WDB R1
Docket No. 50-336
License No. DPR-65

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2
LICENSE BASIS DOCUMENT CHANGE REQUEST (LBDCR) 2-18-02
SELECTIVE IMPLEMENTATION OF THE ALTERNATIVE SOURCE TERM – FUEL HANDLING ACCIDENT ANALYSES

By a letter dated September 26, 2002, Dominion Nuclear Connecticut, Inc. (DNC) proposed to amend Operating License DPR-65 by incorporating changes to the Millstone Power Station Unit 2 (MPS 2) Technical Specifications. The proposed changes would selectively implement the Alternative Source Term for the Fuel Handling Accident (FHA) analysis. Subsequently, in a letter dated May 7, 2004, DNC modified the proposed change by submitting an alternate method to determine bounding gap fractions for the small number of rods having the potential to exceed the linear heat generation rate and burnup criteria of footnote 11 to Table 3 of RG 1.183.

On August 11, 2004, an RAI was received from the NRC staff that contained one question related to the aforementioned license amendment request. Conference calls were conducted the weeks of August 9 and 16, 2004, to discuss DNC's response to the RAI. On the basis of those discussions DNC withdraws the May 7, 2004 proposal. A revised extended burnup source term proposal is submitted for NRC consideration as Attachment 1 to this letter.

As a separate matter, DNC understands that the NRC is working to extend its source term research by updating its analytical models with current core performance data. DNC has agreed to support this effort and will provide core performance data requested by the NRC within 120 days of the date of this letter.

The additional information provided in this letter does not affect the conclusions of the Safety Summary and Significant Hazards Consideration discussion in the DNC September 26, 2002 letter.

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

Very truly yours,

David A. Christian
Senior Vice President
Nuclear Operations and Chief Nuclear Officer

Attachments: (1)

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission
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Millstone Power Station

Serial No. 04-501
Docket No. 50-336
RAI: Alternate Source Term

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by David A. Christian, who is Senior Vice President - Nuclear Operations and Chief Nuclear Officer, of Dominion Nuclear Connecticut, Inc. He has affirmed before me that he 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 his knowledge and belief.

Acknowledged before me this 24th day of August, 2004.

My Commission Expires: 3/31/08.

SEAL

Maggie McCline
Notary

ATTACHMENT 1

LICENSE BASIS DOCUMENT CHANGE REQUEST 2-18-02 SELECTIVE IMPLEMENTATION OF THE ALTERNATIVE SOURCE TERM - FUEL HANDLING ACCIDENT ANALYSES

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

MILLSTONE POWER STATION, UNIT 2
DOMINION NUCLEAR CONNECTICUT, INC. (DNC)

LICENSE BASIS DOCUMENT CHANGE REQUEST 2-18-02
SELECTIVE IMPLEMENTATION OF THE ALTERNATIVE SOURCE TERM - FUEL HANDLING ACCIDENT ANALYSES
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Question No 1:

In your May 7, 2004 letter, you state the calculation method used to determine the ANSI/ANS 5.4 gap fractions is the same as submitted and approved on the Fort Calhoun Station (FCS) docket in 2001. In our review of your May 7, 2004, letter we found this was not the case. The FCS docket used non-LOCA gap fractions that are a factor of 2 greater than the RG 1.183 values and was able to demonstrate the radiation doses analyzed will bound the radiation doses from an actual event. Your analysis was not performed in the same manner as the FCS method. Therefore, the staff has not been able to conclude that your alternative methodology provides adequate assurance that it conforms to RG 1.183 and thus meets the requirements of 10 CFR 50.67.

Please provide additional detailed information on the alternative methodology used for determining the bounding non-LOCA gap fractions outlined in the May 7, 2004 supplemental letter. Information should be included on a step-by-step basis so that the method can be clearly understood. Any references used in the development of the methodology should also be clearly stated. Also, provide the specific information, such as the vendor supplied inputs DNC used in performing the gap fraction calculations, so the staff can perform a confirmatory analysis.

Response:

Dominion Nuclear Connecticut (DNC) understands that the approval of the FCS alternative bounding non-LOCA gap fractions did not entail NRC review or approval of the method of using ANS 5.4. Therefore, Dominion withdraws its May 7, 2004 proposal. As a consequence of our withdrawal of that proposal, a direct response to the RAI is no longer relevant. As discussed in the conference calls conducted during the weeks of August 9 and 16, 2004, DNC proposes to adopt an alternative methodology for determining bounding non-LOCA gap fractions consistent with the method submitted and approved on the Indian Point Unit No. 3 (IP3) docket (TAC No. MB5382).

This alternative methodology involves analysis of current and future core reload designs to determine the bounding fuel assembly that could potentially be dropped in a fuel handling accident (FHA). The bounding fuel assembly is the assembly that contains the greatest percentage of fuel rods that exceed the maximum linear heat generation rate (LHGR) acceptance criteria defined in footnote 11 of Table 3 in RG 1.183. Specifically, the gap fractions listed for non-LOCA events are acceptable for a peak rod average burnup less than 62,000 MWD/MTU provided that the maximum LHGR does not exceed 6.3 kw/ft peak rod average power for peak rod average burnup exceeding 54,000 MWD/MTU. Due to the nature of the Millstone Power Station Unit 2 (MPS 2) fuel cycle

design, Dominion estimates that typically 10% to 40% of the fuel rods in the bounding assembly may exceed the LHGR criteria of 6.3 kw/ft for rod burnups in excess of 54,000 MWD/MTU in future fuel cycles. No rods will exceed 62,000 MWD/MTU.

For the MPS 2 fuel rods that exceed the R.G. 1.183 criteria, DNC will use the more conservative gap fractions provided in RG 1.25, "Assumptions Used for Evaluating the Potential Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors." These gap fractions will be modified to reflect the conclusions of NUREG/CR-5009, "Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors." NUREG/CR-5009 concludes that RG 1.25 gives conservative values for non-LOCA fuel gap release fractions for extended burnup fuel, except for iodine-131, which may be up to 20% higher.

This approach is consistent with the approach approved for IP3 with the following exception. The IP3 approach would apply the RG 1.25 adjusted gap fractions to a portion of the fuel rods in a given assembly. The MPS 2 FHA analyses submitted by letter dated September 26, 2002 and currently under review have been re-analyzed to conservatively assume 100% of the rods in the bounding assembly exceed the RG 1.183 criteria. Gap fraction inventories consistent with RG 1.25, as modified by the direction of NUREG/CR-5009 and listed below, were used in the analysis.

Gap Fractions from RG 1.25 (as modified by NUREG/CR-5009)

Group	Fraction
I-131	0.12
Kr-85	0.30
Other iodines	0.10
Other noble gases	0.10

Table 1 provides a listing of the inputs used to support the extended burnup fuel rod evaluation case, as well as a comparison of those inputs to the current licensing basis, and the values utilized in the September 26, 2002 submittal. The re-analyses using this approach results in the revised radiological consequences at the Exclusion Area Boundary (EAB), at the Low Population Zone (LPZ), and in the control room listed in Tables 2 through 4.

The revised radiological consequences are within the dose criterion specified in GDC 19 and 10 CFR 50.67. The bounding non-LOCA gap fractions selected are consistent with the conservative guidance provided in RG 1.183 and their application to 100% of the fuel rods in the damaged assembly provides adequate assurance that assumptions bound future MPS 2 fuel cycles.

Table 1 – Assumption Changes in FHA Re-Analyses

Assumption	Current FSAR	Sept. 26 Submittal	Re-Analyses
Core Release Fractions			
I-131	0.12	0.08	0.12
Kr-85	0.30	0.10	0.30
Other Halogens	0.12	0.08	0.10
Other Noble Gases	0.10	0.10	0.10
Decay Time	150 hours	72 hours	100 hours
Control Room Charcoal Efficiency	90%	70%	90%
Control Room Isolation	10 seconds	20 seconds	10 seconds
Time at which Recirculation starts Through Filtration	10 minutes	60 minutes	10 minutes
Control Room Unfiltered Inleakage	130 cfm (Tech. Spec. value)	200 cfm	130 cfm

Table 2 – AST Analysis Results (FHA Inside Containment)

Dose Location	Previous TEDE Result Rem	New TEDE Result Rem	TEDE Limit Rem
EAB	1.2E+00	1.5E+00	6.3
LPZ	1.5E-01	2.0E-01	6.3
Control Room	4.6E+00	1.5E+00	5.0

Table 3 – AST Analysis Results (FHA Inside the Spent Fuel Pool Area)

Dose Location	Previous TEDE Result Rem	New TEDE Result Rem	TEDE Limit Rem
EAB	1.2E+00	1.5E+00	6.3
LPZ	1.5E-01	2.0E-01	6.3
Control Room	4.6E+00	1.5E+00	5.0

Table 4 – AST Analysis Results (FHA of Spent Fuel Cask Drop into the Spent Fuel Pool)

Dose Location	Previous TEDE Result Rem	New TEDE Result Rem	TEDE Limit Rem
EAB	1.1E-01	5.0E-01	6.3
LPZ	1.4E-02	5.0E-02	6.3
Control Room	5.0E-02	2.5E-01	5.0