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Docket Number 50-346

License Number NPF-3

Serial Number 1975

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United States Nuclear Regulatory Commission
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Subject: Revised Response to NRC Bulletin Number 89-03: Potential
Loss of Required Shutdown Margin during Refueling Operations
(TAC No. M75420)

Gentlemen:

On November 21, 1989, the NRC Staff issued Bulletin Number 89-03 "Potential Loss of Required Shutdown Margin During Refueling Operations" (Toledo Edison Log Number 1-2181). The bulletin discussed that, with longer fuel operating cycles, the enrichment of reload fuel has been increasing which can result in the reduction of the shutdown margin during refueling operations involving intermediate fuel assembly positions. To assure that an adequate shutdown margin will be maintained during refueling operations, three actions were identified by Bulletin Number 89-03:

1. Assure that any intermediate fuel assembly configuration (including control rods) intended to be used during refueling is identified and evaluated to maintain sufficient refueling boron concentration to result in a minimum shutdown margin of approximately five percent.
2. Assure that fuel loading procedures only allow those intermediate fuel assembly configurations that do not violate the allowable shutdown margin and that these procedures are strictly adhered to.
3. Assure that the staff responsible for refueling operations is trained in the procedures recommended in Item 2 above and understand the potential consequences of violating these procedures. This training should include the fundamental aspects of criticality control with enriched fuel assemblies.

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By letter (Serial Number 1770) dated February 13, 1990, Toledo Edison provided a response to NRC Bulletin Number 89-03 to address the three actions described above. In this initial response, Toledo Edison stated: (1) the refueling boron concentration calculation for the Davis-Besse Nuclear Power Station (DBNPS) assumes the final core configuration with no control rods installed and (2) during refueling operations at the DBNPS, scheduled intermediate fuel assembly configurations within the core are not utilized. The above approach alleviated the necessity to perform a detailed analysis of all of the allowed interim core configurations to calculate the minimum required refueling boron concentration. The NRC staff found Toledo Edison's response to Bulletin Number 89-03 to be satisfactory and closed associated TAC No. W75420 by letter dated April 18, 1990 (Toledo Edison Log Number 3221).

Although Toledo Edison's past practice has been that the refueling boron concentration calculation assumes the final core configuration with no control rods installed, an acceptable alternate calculational method is to calculate the refueling boron concentration while considering control rod worth. Should Toledo Edison utilize this alternative calculational method, in which control rod worth is considered, the calculational method will ensure that the specified boron concentration maintains an overall core reactivity of $K_{eff} \leq 0.95$ during fuel handling, with control rods and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed by the core reload sequence. The $K_{eff} \leq 0.95$ or less includes a one percent $\Delta K/K$ conservative allowance for uncertainties.

Regardless of the calculational method used, Toledo Edison will only allow fuel and control rod movements that result in configurations within the core that are bounded by the assumptions of the calculational method used to determine the refueling boron concentration.

Based on the above discussion, the actions delineated in NRC Bulletin Number 89-03 will be addressed by using either calculational method to ensure that the minimum required shutdown margin of 5 percent will be maintained during refueling operations.

Should you have any questions or require additional information, please contact Mr. R. W. Schrauder, Manager - Nuclear Licensing, at (419) 249-2366.

Very truly yours,


RAS/dlm

Attachments

cc: P. M. Byron, NRC Region III, DB-1 NRC Senior Resident Inspector
A. B. Davis, Regional Administrator, NRC Region III
J. B. Hopkins, NRC/NRR DB-1 Senior Project Manager
Utility Radiological Safety Board

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REVISED RESPONSE TO NRC BULLETIN 89-03
"POTENTIAL LOSS OF REQUIRED SHUTDOWN MARGIN
DURING REFUELING OPERATIONS,"


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DAVIS-BESSE NUCLEAR POWER STATION

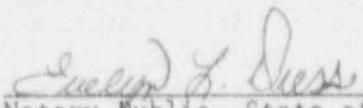
UNIT NUMBER 1

This letter is submitted in conformance with Section 182a, Atomic Energy Act of 1954, as amended, and 10CFR50.54(f) in response to NRC Bulletin Number 89-03, "Potential Loss of Required Shutdown Margin During Refueling Operations."

By:


D. C. Shelton, Vice President Nuclear

Sworn and subscribed before me this 28th day of August, 1991.


Notary Public, State of Ohio