TOLEDO EDISON

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Docket No. 50-346

License No. NPF-3

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Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz
Operating Reactor Branch No. 4
Division of Licensing
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Stolz:

This letter is being submitted to correct a typographical error contained in our amendment request dated February 13, 1985 (Serial No. 1125) for the Davis-Besse Nuclear Power Station Unit No. 1. Within our Safety Evaluation and Significant Hazard Consideration it was stated that the uncertainty associated with the flow requirement for four pump operation was 2.55%. This should be 2.5%. Attached is the Safety Evaluation and Significant Hazard Consideration containing the revised uncertainty value (noted by the revision bar).

Very truly yours,

RPC:GAB:lah

cc: DB-1 NRC Resident Inspector

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SAFETY EVALUATION

This FCR proposes a change to the DB-1 Tech. Spec. minimum RCS flow requirement to take credit for the use of the Lumped Burnable Poison (LBP) rods and the corresponding decrease in core by-pass flow in the Cycle 5 reload core design.

The safety function of the Tech. Spec. minimum reactor coolant system (RCS) flow requirement is to ensure adequate cooling of the reactor core such that the minimum required DNBR is maintained. To justify the proposed change it is necessary to demonstrate that this decrease in system flow does not result in a decreased core cooling capability. The coolant flow available for core cooling represents the difference between the total RCS flow and the core by-pass flow. Core by-pass comprises the RCS flow within the reactor vessel that does not flow around fuel rods. Major by.pass paths that exist in the reactor vessel include:

1. Empty guide tubes in fuel assemblies.
2. Baffle plates.
3. Gaps around the hot leg nozzle in upper core internals.

A change in the total cross sectional area of all by-pass paths will directly affect the system flow and the split between core flow and by-pass flow. Assuming all other variables remain constant, a decrease in by-pass area results in a slight decrease in system flow, a decrease in by-pass flow, and an increase in core flow.

Cycle 5 utilizes Lumped Burnable Poisons (LBP's) in the 64 new fuel assemblies to accommodate the IN-OUT-IN fuel shuffle scheme. Since the presence of the LBP rod assemblies reduces the core by-pass flow path, the by-pass flow for Cycle 5 is therefore less than that for earlier cycles (except cycle IA where LPB and orifice rods were used). B&W stated in their letter BWT-85-2316 (Attachment A) that the Cycle 5 Reload thermal hydraulic analysis assumed no LBP insertion when determining by-pass flow. They also stated that insertion of 64 LBP's would decrease by-pass flow from the 10.7% used in the Cycle 5 Reload Report to 8.1%. This decrease in by-pass flow would result in a larger core coolant flow than was assumed in the Cycle 5 Reload analysis. Therefore, a reduction in the Tech. Spec. minimum RCS flow requirement can be justified.

The new minimum RCS flow must ensure that the core coolant flow associated with it and an 8.1% by-pass flow is greater than or equal to the core coolant flow associated with the present minimum flow and 10.7% by-pass flow. The minimum DNBR requirement remains unchanged. B&W in letter BWT-85-2317 (Attachment B) has specified these new flow rates for 4 RC pump and 3 RC pump operation. These reduced minimum RCS flow rates can be used without invalidating the results of the Cycle 5 Reload Report.

The proposed change affects Table 3.2-1 of Tech. Spec. Section 3.2.5. The flow requirement for 4 pumps operation (396,880 gpm) represents 110% of design flow plus 2.5% uncertainty. The revised flow will be 389,664 gpm which corresponds to 108% of design flow and includes 2.5% uncertainty.

The 3 pump case is also changed from 297,340 gpm to 291,080 gpm. To maintain consistency, other Tech. Spec. Sheets (2-3, 2-7, B2-1, B2-8) are also changed since they have quoted flow rates that correspond to 110% of the design flow. The flow changes on these pages do not include the 2.5% uncertainty used in Table 3.2.1.

On Tech. Spec. Sheet 2-7, an editorial change is made to clarify that the 3 pump operation represents an "approximately" 25% flow reduction. On Tech. Spec. Sheet B2-8, there is a typo error. The 89.3% for 3 pump operation should have been 89.1% (to be consistent with Tech. Spec. Sheet 2-3).

The proposed Tech. Spec. changes to not degrade the safety function of the Technical Specifications for Davis-Besse nor do they represent an unreviewed safety question.

SIGNIFICANT HAZARD CONSIDERATION

This amendment request is to revise the minimum Reactor Coolant System (RCS) Flow requirements to take credit for decrease in the core bypass flow resulting from the use of Lump Burnable Poison (LBP) rods in Cycle 5 design. This amendment request does not represent a Significant Hazard.

The Cycle 5 core utilizes Lumped Burnable Poison in the 64 new fuel assemblies to accommodate the IN-OUT-IN fuel shuffle scheme Since the presence of the LBP rod assemblies reduces the core by-pass flow path, the by-pass flow for Cycle 5 is therefore less than that for earlier cycles (except cycle IA where LPB and orifice rods were used). The Cycle 5 Reload thermal hydraulic analysis assumed no LBP insertion when determining by-pass flow. The analysis stated that insertion of 64 LBP's would decrease by-pass flow from the 10.7% used in the Cycle 5 Reload Report to 8.1%. This decrease in by-pass flow would result in a larger core coolant flow than was assumed in the Cycle 5 Reload analysis. Therefore, a reduction in the Technical Specification minimum RCS flow requirement can be justified.

The RCS flow requirement is to ensure adequate cooling of the reactor core such that the minimum required DNBR is maintained. To justify the proposed change it is necessary to demonstrate that this decrease in system flow does not result in a decreased core cooling capability. The coolant flow available for core cooling represents the difference between the total RCS flow and the core by pass flow. Core by-pass comprises the RCS flow within the reactor vessel that does not flow around fuel rods. Major by-pass paths that exist in the reactor vessel include:

1. Empty guide tubes in fuel assemblies.
2. Baffle plates.
3. Gaps around the hot leg nozzle in upper core internals.

A change in the fuel cross-sectional area of all by-pass paths will directly affect the system flow and the split between core flow and by-pass flow. Assuming all other variables remain constant, a decrease in by-pass area results in a slight decrease in system flow, a decrease in by-pass flow, and an increase in core flow.

The new minimum RCS flow must ensure that the core coolant flow associated with it and an 8.1% by-pass flow is greater than or equal to the core coolant flow associated with the present minimum flow and 10.7% by-pass flow. The minimum DNBR requirement remains unchanged. These reduced minimum RCS flow rates can be used without invalidating the results of the Cycle 5 Reload Report.

The flow requirement for 4 pumps operation (396,880 gpm) represents 100% of design flow plus 2.5% uncertainty. The revised flow will be 389,664 gpm which corresponds to 108% of design flow and includes 2.5% uncertainty. The 3 pump case is also changed from 297,340 gpm to 291, 080 gpm.

The granting of this request would not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated (10CFR50.92.(C)(1).

   All accidents previously evaluated within the reload report or other evaluations remain unchanged. The minimum flow requirement will ensure adequate DNBR is maintained as assumed in Davis-Besse accident analysis. Therefore, the change does not involve a significant increase in the probability of an accident previously evaluated.

2) Create the possibility of a new or different kind of an accident previously evaluated (10CFR50.92(C)(2).

   The flow change will not affect minimum required DNBR for all previously evaluated accidents. Therefore, this amendment would not create the possibility of new or different kind of accident.

3) Involve a significant reduction in a margin of safety, 10CFR50.92(C)(3)

   The amendment request changes the minimum flow requirement but maintains the DNBR limit and all other accident evaluations assumptions and limits. Therefore, with all evaluation assumptions and limits unchanged, there is no reduction in the margin of safety.

Based on the attached safety evaluation and the above Significant Hazard Consideration, this amendment request does not contain a Significant Hazard.