



DUKE POWER

October 22, 1996

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Duke Power Company Implementation of the
BWU-Z Critical Heat Flux Correlation

References:

1. Letter from R. C. Jones (NRC) to J. H. Taylor (BWFC), April 5, 1996; Acceptance For Referencing of Babcock and Wilcox Fuel Company Topical Report BAW-10199(P) "The BWU Critical Heat Flux Correlations."
2. Appendix C, DPC-NE-2005P, Thermal-Hydraulic Statistical Core Design Methodology, submitted April 1996.
3. Letter from C. E. Rossi (NRC) to J. A. Blaisdell (URGA Executive Committee), May 11, 1986; Acceptance For Referencing Of Licensing Topical Report, EPRI-NP-2511-CCM, "VIPRE-01: A Thermal-Hydraulic Analysis Code for Reactor Cores", Volumes 1, 2, 3, and 4.
4. Letter from A. C. Thadani (NRC) to Y. Y Yung (VIPRE-01 Maintenance Group), October 30, 1993; Acceptance For Referencing Of The Modified Licensing Topical Report, EPRI-NP-2511-CCM, Revision 3, "VIPRE-01: A Thermal-Hydraulic Analysis Code for Reactor Cores".
5. Letter from R. E. Martin (NRC) to M. S. Tuckman (Duke), December 27, 1995; SER For Rev.1 To DPC-NE-3000.

The BWU-Z critical heat flux (CHF) correlation was approved by the NRC for use in Reference 1. Duke Power Company (DPC) is in the process of receiving approval to use the BWU-Z critical heat flux correlation for DNB calculations on Mark-BW17 fuel at McGuire and Catawba, Reference 2. The DPC submittal documents the acceptability of using the VIPRE-01

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thermal hydraulic computer code for BWU-Z calculations as well as determining the statistical core design limit applicable to analyses for McGuire and Catawba using BWU-Z.

VIPRE-01 is the subchannel thermal-hydraulic computer code used by DPC for licensing analyses. VIPRE-01 was approved by the NRC for PWR applications in References 3 and 4. DPC has justified the use of the VIPRE-01 computer code in the following NRC approved McGuire/Catawba topical reports:

- a) DPC-NE-2004P-A, McGuire and Catawba Nuclear Stations Thermal-Hydraulic Methodology Using VIPRE-01, November 1991
- b) DPC-NE-2007P-A, Fuel Reconstitution Analysis Methodology, February 1995
- c) DPC-NE-3000P-A, Thermal-Hydraulic Transient Analysis Methodology, August 1994
- d) DPC-NE-3001P-A, Multidimensional Reactor Transients and Safety Analysis Physics Parameters Methodology, November 1991.

These reports, approved before development of the BWU-Z correlation, list BWC MV as the applicable CHF correlation for Mark-BW17 fuel. The SER in DPC-NE-3000 and DPC-NE-3001 require NRC review and approval of other CHF correlations prior to implementation.

The reports listed in the previous paragraph require an administrative change to reference the approved BWU-Z correlation. Revision 1 of DPC-NE-3000 included the following statement on page 3-81:

"Other CHF correlations that have been reviewed and approved by the NRC may also be used to perform DNBR analyses."

Revision 1 was approved by the NRC in Reference 5. The intent of this additional statement is the same as the purpose of this letter. It is concluded that the NRC's SER (Reference 5) approved this approach. A similar statement will be added to DPC-NE-3001, DPC-NE-2004, and DPC-NE-2007 in future submittals as an administrative change.

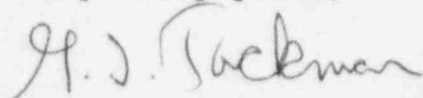
The additional DNB margin created by the BWU-Z CHF correlation will be applied as increased peaking for the Mark-BW17 fuel. This will translate into an increase from 1.50 to 1.60, or 6%, in the reference radial peak pin value. As with the CHF correlation, an administrative change will

be made in the listed topical reports to reflect this revised typical peaking value.

This letter represents Duke's notification of intent to make changes in the topical reports as outlined above. Please review this letter and approve these administrative topical report changes. DPC requests approval of this change by February 14, 1997. Catawba 1 Cycle 10 is currently operating with core peaking that may challenge surveillance limits after this date. Extension beyond mid February could risk power reductions on this cycle as well as delays in the design of future reload cores.

If any additional assistance is required relating to the issue, please feel free to contact Mr. Ron Gribble at (704) 382-6160 or Kenny Epperson at (704) 382-6785.

Very truly yours,



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