FINAL SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

TOPICAL REPORT BAW-10179P, REVISION 8

"SAFETY CRITERIA AND METHODOLOGY FOR

ACCEPTABLE CYCLE RELOAD ANALYSES"

PRESSURIZED WATER REACTOR OWNERS GROUP

PROJECT NO. 694

1.0 INTRODUCTION AND BACKGROUND

By letter dated July 31, 2009, AREVA NP, Inc. (AREVA), on behalf of the Pressurized Water Reactor Owners Group (PWROG) submitted topical report (TR) BAW-10179P, Revision 8, "Safety Criteria and Methodology for Acceptable Cycle Reload Analyses," (Reference 1) to the U.S. Nuclear Regulatory Commission (NRC) staff for review and approval for referencing in licensing actions.

The NRC through Generic Letter 88-16 allows the removal of cycle-dependent variables from technical specifications (TS) provided the values of these variables are determined with an NRC-approved methodology and are included in a Core Operating Limits Report (COLR). Furthermore, the NRC agreed (Reference 2) that this approach can be extended to the cycle-dependent protective and maximum allowable setpoint limits. As designer and fuel fabricator, AREVA prepares reload safety evaluations for a number of Babcock and Wilcox (B&W) – designed nuclear power plants with 177 fuel assemblies. The methodology for performing reload design evaluations is presented in topical report (TR) BAW-10179P-A, “Safety Criteria and Methodology for Acceptable Cycle Reload Analyses” (Reference 3). The utility owners, for whom AREVA performs reload safety evaluations, reference BAW-10179P-A in the Administrative Controls sections of the plant TS. The TS identify BAW-10179P-A as the NRC approved methodology for determining the limits contained in the COLR. The TS also state that the latest approved revision of BAW-10179P-A shall be specified in the COLR.

Subsequent to the submittal for approval of TR BAW-10179P-A, Revision 7, TR BAW-10164P-A, Revision 6, “RELAP5/MOD2 - B&W – An Advanced Computer Program for Light Water Reactor LOCA [loss-of-coolant-accident] and Non-LOCA Transient Analysis,” was approved by the NRC for blow-down system and hot pin thermal transient analysis for B&W designed plants (Reference 4). The usage of TR BAW-10164P-A, Revision 6, is already described in TR BAW-10179P-A, Revision 7.

2.0 SUMMARY OF TOPICAL REPORT

TR BAW-10179P, Revision 8, incorporates by reference, through Appendix A, the TR BAW-10164P-A, Revision 6, into the reload methodology given in TR BAW-10179P-A, Revision 7. Appendix B of TR BAW-10179P provides a brief description of TR BAW-10164P-A, Revision 6.

ENCLOSURE

3.0 TECHNICAL EVALUATION OF THE REVISED REPORT SECTIONS

The significant difference between the Revision 8 of TR BAW-10179P, under current review, and the previously approved revision of BAW-10179P-A, Revision 7 is the incorporation, by reference, of information from the previously approved TR BAW-10164P-A, Revision 6, via Appendices A and B. Based on the previous approval of TR BAW-10164P-A, Revision 6, the NRC staff considers the information presented in the appendices and the attendant TR as acceptable.

3.1 Summary of the Key Content of the Newly Incorporated Appendices

Appendix A – Provides the reference to the relevant report that received NRC approval subsequent to the submittal of TR BAW-10179P-A, Revision 7 and is incorporated in TR BAW-10179P, Revision 8.

Appendix B – Summarizes, in tabular form, the changes incorporated into TR BAW-10164P-A, Revision 6, and points out that Revision 6 of TR BAW-10164P-A includes text changes to incorporate the NRC-approved B-HTP critical heat flux form of the departure from nucleate boiling correlation into the code TR supporting LOCA applications with AREVA Mark-B-HTP fuel designs.

3.2 Application to the Core Operating Limits Report Technical Specifications

The application of TR BAW-10179P, Revision 8, should be in compliance with NRC Generic Letter (GL) 88-16 guidance, which addresses the appropriate modifications to the Administrative Controls section of a facility's TS that are necessary to implement and use a COLR. In particular, (1) Identification of the individual specifications that address the core operating limits supported by the referenced approved TR for calculating the operating limits that have been relocated to the COLR may be included, if desired, in the Reporting Requirements of the plant TS; (2) the supported TR by TR number and title shall be provided in the Reporting Requirements of the plant TS; and (3) Specification of the TR by Number, Title, Revision Level, and Date of the approved TR shall be provided in the COLR.

4.0 CONCLUSION

The NRC staff has reviewed TR BAW-10179P, Revision 8. TR BAW-10179P, Revision 8, incorporates into the original NRC-approved TR BAW-10179P-A, Revision 7, the NRC approved TR BAW-10164P-A, Revision 6, "RELAP5/MOD2 - B&W – An Advanced Computer Program for Light Water Reactor LOCA and Non-LOCA Transient Analysis."

On the basis of this review, the NRC staff approves the safety criteria and methodology for acceptable cycle reload analyses as documented in TR BAW-10179P, Revision 8. The application of the safety criteria and methodology for acceptable cycle reload analyses should be in compliance with NRC GL 88-16 guidance, including complete identification of the report, including revision level and date, in the COLR.

5.0 REFERENCES

1. Letter from R. L. Gardner to U. S. NRC, Subject: Request for Review and Acceptance of BAW-10179P, Revision 8, "Safety Criteria and Methodology for Acceptable Cycle Reload Analysis," dated July 31, 2009 (ADAMS Accession Number ML092170306).

2. Memorandum for Jose A. Calvo from David C. Fisher, Subject: Minutes of Meeting with the B&W Owners Group (BWOG) on the Technical Basis and Scope of the BWOG Core Operating Limits Report, dated July 19, 1989.

3. Letter from Ashok C. Thadani (NRC) to Joseph D. McCarthy (BWOG), Subject: Acceptance for Referencing of Licensing Topical Report BAW-10179-P, "Safety Criteria and Methodology for Acceptable Cycle Reload Analyses," dated March 16, 1993.

4. Letter from Ho K. Nieh (NRC) to Gordon Bishoff (BWOG), Subject: Final Safety Evaluation for AREVA NP, Inc., Topical Report BAW-10164P-A, Revision 6, "RELAP5/MOD2-B&W – An Advanced Computer Program for Light Water Reactor LOCA and Non-LOCA Transient Analysis," dated June 25, 2007.

Principal Contributor: Y. Orechwa
T. Huang

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