



OFFICE OF NUCLEAR REACTOR REGULATION

REVIEW STANDARD FOR
EXTENDED POWER UPRATES

APPROVED BY: /RA/

L. Marsh, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

CONTACT: Mohammed A. Shuaibi, NRR
(301) 415-2859
mas4@nrc.gov

RS-001, Revision 0
DECEMBER 2003

TABLE OF CONTENTS

PURPOSE

BACKGROUND

GUIDANCE

SECTION 1 - PROCEDURAL GUIDANCE

- 1.1 - Processing Extended Power Uprate Applications
 - Figure 1.1-1 - EPU Process Flow Chart

SECTION 2 - TECHNICAL REVIEW GUIDANCE

- 2.1 - Reviewing Extended Power Uprate Applications
 - Matrix 1 - Materials and Chemical Engineering
 - Matrix 2 - Mechanical and Civil Engineering
 - Matrix 3 - Electrical Engineering
 - Matrix 4 - Instrumentation and Controls
 - Matrix 5 - Plant Systems
 - Matrix 6 - Containment Review Considerations
 - Matrix 7 - Habitability, Filtration, and Ventilation
 - Matrix 8 - Reactor Systems
 - Matrix 9 - Source Terms and Radiological Consequences Analyses
 - Matrix 10 - Health Physics
 - Matrix 11 - Human Performance
 - Matrix 12 - Power Ascension and Testing Plan
 - Matrix 13 - Risk Evaluation

SECTION 3 - DOCUMENTATION OF REVIEW

- 3.1 - Documenting Reviews of Extended Power Uprate Applications
- 3.2 - Boiling-Water Reactor Template Safety Evaluation
 - Insert 1 - Materials and Chemical Engineering
 - Insert 2 - Mechanical and Civil Engineering
 - Insert 3 - Electrical Engineering
 - Insert 4 - Instrumentation and Controls
 - Insert 5 - Plant Systems
 - Insert 6 - Containment Review Considerations
 - Insert 7 - Habitability, Filtration, and Ventilation
 - Insert 8 - Reactor Systems
 - Insert 9 - Source Terms and Radiological Consequences Analyses
 - Insert 10 - Health Physics
 - Insert 11 - Human Performance
 - Insert 12 - Power Ascension and Testing Plan
 - Insert 13 - Risk Evaluation
- 3.3 - Pressurized-Water Reactor Template Safety Evaluation
 - Insert 1 - Materials and Chemical Engineering
 - Insert 2 - Mechanical and Civil Engineering
 - Insert 3 - Electrical Engineering
 - Insert 4 - Instrumentation and Controls
 - Insert 5 - Plant Systems
 - Insert 6 - Containment Review Considerations
 - Insert 7 - Habitability, Filtration, and Ventilation
 - Insert 8 - Reactor Systems
 - Insert 9 - Source Terms and Radiological Consequences Analyses
 - Insert 10 - Health Physics
 - Insert 11 - Human Performance
 - Insert 12 - Power Ascension and Testing Plan
 - Insert 13 - Risk Evaluation

SECTION 4 - INSPECTION GUIDANCE

- 4.1 - Inspection Requirements

MATRIX 12

SCOPE AND ASSOCIATED TECHNICAL REVIEW GUIDANCE

Power Ascension and Testing Plan

Areas of Review	Applicable to	Primary Review Branch	Secondary Review Branch(es)	SRP Section Number	Focus of SRP Usage	Other Guidance	Template Safety Evaluation Section Number		Acceptance Review Checklist
							BWR	PWR	
Power Ascension and Testing	All EPU's	IEPB	EEIB EMCB EMEB IROB SPLB SPSB SRXB	14.2.1* Draft Rev. 0 Dec. 2002	Entire Section		2.12	2.12	

*The staff is currently finalizing SRP Section 14.2.1. While this SRP Section is being finalized, the staff will continue to use the version issued for interim use and public comment in December 2002. Once finalized, the staff will use the new version.

2.12 Power Ascension and Testing Plan

2.12.1 Approach to EPU Power Level and Test Plan

Regulatory Evaluation

The purpose of the EPU test program is to demonstrate that SSCs will perform satisfactorily in service at the proposed EPU power level. The test program also provides additional assurance that the plant will continue to operate in accordance with design criteria at EPU conditions. The NRC staff's review included an evaluation of: (1) plans for the initial approach to the proposed maximum licensed thermal power level, including verification of adequate plant performance, (2) transient testing necessary to demonstrate that plant equipment will perform satisfactorily at the proposed increased maximum licensed thermal power level, and (3) the test program's conformance with applicable regulations. The NRC's acceptance criteria for the proposed EPU test program are based on 10 CFR Part 50, Appendix B, Criterion XI, which requires establishment of a test program to demonstrate that SSCs will perform satisfactorily in service. Specific review criteria are contained in SRP Section 14.2.1.

Technical Evaluation

[Insert technical evaluation. The technical evaluation should (1) clearly explain why the proposed changes satisfy each of the requirements in the regulatory evaluation and (2) provide a clear link to the conclusions reached by the NRC staff, as documented in the conclusion section.]

Conclusion

The staff has reviewed the EPU test program, including plans for the initial approach to the proposed maximum licensed thermal power level, transient testing necessary to demonstrate that plant equipment will perform satisfactorily at the proposed increased maximum licensed thermal power level, and the test program's conformance with applicable regulations. The staff concludes that the proposed EPU test program provides adequate assurance that the plant will operate in accordance with design criteria and that SSCs affected by the proposed EPU, or modified to support the proposed EPU, will perform satisfactorily in service. Further, the staff finds that there is reasonable assurance that the EPU testing program satisfies the requirements of 10 CFR Part 50, Appendix B, Criterion XI. Therefore, the NRC staff finds the proposed EPU test program acceptable.