

promote consequences beyond those currently analyzed.

### 3.2 ECCS Performance and Exemptions

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or own initiative, grant exemptions from the requirements of 10 CFR part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) special circumstances are present. Special circumstances are present if application of the regulation in the particular circumstances would not serve the underlying purpose of the rule, or is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of 10 CFR 50.46 is to establish acceptance criteria for ECCS performance. In Addendum 1 to WCAP-12610-P-A (Reference 7)<sup>7</sup>, Westinghouse demonstrates that the material properties of Optimized ZIRLO™ are similar to those of the currently approved ZIRLO™ cladding and that the ECCS acceptance criteria for ZIRLO™ clad fuel are also applicable to fuel with Optimized ZIRLO™ cladding. Ring compression tests performed by Westinghouse on Optimized ZIRLO™ demonstrate an acceptable retention of ductility up to 10 CFR 50.46 limits of 2200 °F peak cladding temperature and 17 percent total oxidation. Utilizing currently approved LOCA models and methods, Westinghouse will perform cycle-specific reload evaluations to ensure that the Optimized ZIRLO™ LTAs satisfy 10 CFR 50.46 acceptance criteria.

Paragraph I.A.5 of Appendix K to 10 CFR part 50 states that the rates of energy, hydrogen concentration, and cladding oxidation from the metal-water reaction shall be calculated using the Baker-Just equation. Since the Baker-Just equation presumes the use of zircaloy clad fuel, strict application of the rule would not permit use of the equation for the Optimized ZIRLO™ LTA cladding for determining acceptable fuel performance. Metal-water reaction tests performed by Westinghouse on Optimized ZIRLO™ (documented in Appendix B of Addendum 1 to WCAP-12610-P-A) demonstrate conservative reaction rates relative to the Baker-Just equation. Thus, application of Appendix K, Paragraph I.A.5, in these circumstances, is not necessary for the licensee to

achieve the underlying purpose of the regulation.

Based upon the results of metal-water reaction tests and ring-compression tests, which ensure the applicability of ECCS models and acceptance criteria and the use of approved LOCA models to ensure that the Optimized ZIRLO™ LTAs satisfy 10 CFR 50.46 acceptance criteria, the NRC staff finds it acceptable to grant an exemption from the requirements of 10 CFR 50.46 and Appendix K to 10 CFR part 50 for the use of up to eight LTAs in STP, Units 1 and 2.

### 3.3 Special Circumstances

In summary, the NRC staff has reviewed the licensee's request for an exemption to allow up to eight LTAs containing fuel rods, guide thimble tubes, and instrumentation tubes fabricated with Optimized ZIRLO™ to be used in STP, Units 1 and 2. Based on the NRC staff's evaluation, as set forth above, the NRC staff considers that granting the proposed exemption will not defeat the underlying purpose of 10 CFR 50.46, or Appendix K to 10 CFR part 50. Accordingly, special circumstances, are present pursuant to 10 CFR 50.12(a)(2)(ii).

### 3.4 Other Standards in 10 CFR 50.12

The NRC staff reviewed information provided by the licensee in References 1 and 2 to support the exemption request, and concluded that the use of Optimized ZIRLO™ would satisfy 10 CFR 50.12(a) as follows:

(1) The requested exemption is authorized by law:

No law precludes the activities covered by this exemption request. The Commission, based on technical reasons set forth in rulemaking records, specified the specific cladding materials identified in 10 CFR 50.46 and 10 CFR part 50, Appendix K. Cladding materials are not specified by statute.

(2) The requested exemption does not present an undue risk to the public health and safety. As stated by the licensee in Reference 1:

The lead test assembly safety evaluation will ensure that these acceptance criteria are met following insertion of the assemblies containing Optimized ZIRLO™ material. Fuel assemblies using Optimized ZIRLO™ cladding will be evaluated using NRC-approved analytical methods and will address the changes in the cladding material properties. The safety analysis for the South Texas Project is supported by the applicable technical specifications. The South Texas Project reload cores containing Optimized ZIRLO™ cladding will continue to be operated in accordance with the operating limits specified in the technical specifications. Lead test assemblies using

Optimized ZIRLO™ cladding will be placed in non-limiting core locations. Therefore, this exemption will not pose an undue risk to public health and safety.

The NRC staff has evaluated these considerations as set forth in Section 3.1 and 3.2 of this Exemption. For the reasons set forth in Sections 3.1 and 3.2, the NRC staff concludes that Optimized ZIRLO™ may be used as a cladding material for up to eight LTAs to be placed in non-limiting core locations in STP, Units 1 and 2, and that an exemption from the requirements of 10 CFR 50.46 and 10 CFR part 50, Appendix K, does not pose an undue risk to the public health and safety.

(3) The common defense and security are not affected and, therefore, not endangered by this exemption.

### 4.0 Conclusion

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants STPNOC an exemption from the requirements of 10 CFR part 50, Appendix K and Section 50.46, for the use of up to eight LTAs containing Optimized ZIRLO™ in STP, Units 1 and 2, up to a lead rod average burnup of 62,000 megawatt days per metric ton of uranium.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (69 FR 45352).

This exemption is effective upon issuance.

For the Nuclear Regulatory Commission.

**Ledyard B. Marsh,**

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

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## NUCLEAR REGULATORY COMMISSION

### Draft Appendix C (DG-1138) to Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Workshop

The U.S. Nuclear Regulatory Commission (NRC) has issued draft Appendix C, "NRC Staff Position on ANS External Hazards PRA Standard" in August 2004. This Appendix will be

<sup>7</sup> Westinghouse Electric Company Topical Report, Addendum 1 to WCAP-12610-P-A and CENPD-404-P-A, "Optimized ZIRLO", February 2003.

part of Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" which was issued for trial use. The Appendix C was issued for public comment on August 31, 2004, and is available under ADAMS Accession Number ML042430314. Revision 1 to RG 1.200, which will include a final draft Appendix C, will be issued next year for public comment. Regulatory Guides (RGs) are developed to describe and make available to the public such information as methods acceptable to the NRC staff for implementing specific parts of the NRC's regulations, techniques used by the staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits and licenses.

This draft Appendix C is being developed to provide the staff's preliminary position on the American Nuclear Society, (ANS) Standard, External-Events Probabilistic Risk Assessment (PRA) Methodology. This draft Appendix C has not received complete staff approval and does not represent an official NRC staff position. It is the NRC's intent to update Appendix C when a revised ANS standard on external events is published. Therefore, if a revision of the current ANS standard impacts the staff position, this Appendix C will be revised.

The NRC will conduct a workshop on November 9, 2004, to be held in room O4B6 at NRC headquarters, 11545 Rockville Pike, Rockville, Maryland. The purpose of the workshop is to facilitate the comment process. In the workshop, the staff will discuss the staff's response to the public comments received and the basis for the staff's position, and answer questions. A preliminary agenda is attached. The staff is also requesting comments on the following general issues and two specific issues. The general issues are:

- The intent was that the ANS standard be seamless with the American Society of Mechanical Engineers (ASME) PRA standard for internal events. However, this has not been achieved for the following reasons:

In the ASME Standard, the word "shall" is only used in high level requirements, and permissive words such as "should" or "may" are not used in any requirements. The ANS Standard on external-events uses permissive words in both high level and supporting requirements. Permissive words are not to be used because they cannot be used to define a minimum requirement.

The ANS Standard interprets the use of supporting requirements that cut across capability categories in a different manner from the ASME Standard (see discussion in Section 1.4 of the ANS Standard). In the ASME Standard, a requirement that is the same for more than one capability category, is to be interpreted as a pass/no-pass requirement with no requirement to allocate a capability category.

- ◆ The organization of the ANS Standard is different from that of the ASME Standard. In the ASME Standard the applications chapter is Chapter 3, whereas in the ANS Standard it is Chapter 6.

- ◆ Some definitions are not consistent with those in the ASME Standard.

- The staff considers the use of explanatory notes is helpful in principle. However, several of the notes contain what the staff interprets as requirements (see example, SR WIND-A1).

- The staff has identified several missing supporting requirements. These include, for each of the hazards, requirements to identify the Structures Systems and Components (SSCs) that are critical to plant safety, SSCs that are vulnerable to the hazard being evaluated, identification of specific failure modes, and identification of the modification of PRA logic to model these failures.

In addition to these general issues, there are two specific issues on which the staff requests comment.

- Section 3.4 of the ANS Standard addresses screening of external hazards. In Section 3.4.2, three fundamental (sic) quantitative screening criteria are introduced, that focus on core damage frequency (CDF). The last paragraph recognizes that large early release frequency (LERF) should also be considered in the screening but does not suggest additional requirements. One approach is to lower the numerical criteria (e.g., in REQ.EXT-C1) to result in screening at a CDF of 1E-07 rather than 1E-06. Is this an acceptable approach, or are there alternative approaches based on a more qualitative approach dealing with the releases?

- Appendix D in the ANS Standard is a nonmandatory appendix that provides guidance on uses of a seismic margins assessment with enhancements. The seismic margin approach, while can be used for certain applications, is not a PRA. Since this standard is providing requirements for an external events PRA, the staff takes objection to this appendix. The staff believes the appropriate place to provide its position on this appendix would be in the NUREG being prepared by the Office of

Nuclear Regulatory Research addressing the use of non-PRA methods in risk-informed decision-making. Is this an appropriate strategy?

For information about the draft Appendix C and the workshop, contact Mr. A. Singh at (301) 415-0250; e-mail [axs3@NRC.GOV](mailto:axs3@NRC.GOV).

Although a time limit is given for comments on this draft Appendix C, comments and suggestions in connection with items for inclusion in guides, currently being developed, or improvements in all published guides, are encouraged at any time.

**Authority:** (5 U.S.C. 552(a)).

Dated at Rockville, Maryland, this 26th day of October 2004.

For the Nuclear Regulatory Commission.

**Charles E. Ader,**

*Director, Division of Risk Analysis and Applications, Office of Nuclear Regulatory Research.*

**Public Workshop on Draft Appendix C "NRC Staff Regulatory Position on ANS External Hazards PRA Standard" to Regulatory Guide 1.200 for Trial Use "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk Informed Activities"**

**November 9, 2004—10 a.m.—3 p.m. Room O-4B6**

**Preliminary Agenda**

10 a.m.—10:15 a.m.

Introduction—NRC

10:15 a.m.—10:30 a.m.

Overview of Appendix C—NRC

10:30 a.m.—11 a.m.

Overall, general staff's response to public comments

11 a.m.—12 Noon

Detailed discussion on specific Comments

12 Noon—1 p.m.

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1 p.m.—2 p.m.

Detailed discussion (cont'd)

2 p.m.—2:45 p.m.

Open Discussion

2:45 p.m.—3 p.m.

Wrap-up

3 p.m.

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