

#### *Authorized by Law*

This exemption would allow the use of Optimized ZIRLO™ fuel rod cladding material at STP, Units 1 and 2. As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR part 50. The NRC staff has determined that granting of the licensee's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

#### *No Undue Risk to Public Health and Safety*

The underlying purpose of 10 CFR 50.46 is to establish acceptance criteria for ECCS performance. Westinghouse topical reports WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," dated July 2006, contain the justification to use Optimized ZIRLO™ fuel rod cladding material in addition to Zircaloy-4 and ZIRLO™ (these topical reports are non-publicly available because they contain proprietary information). The NRC staff approved the use of these topical reports, subject to the conditions stated in the NRC staff's safety evaluation for each topical report. Ring compression tests performed by Westinghouse on Optimized ZIRLO™ were reviewed and approved by the NRC staff (ADAMS Accession No. ML062080569), and demonstrate an acceptable retention of post-quench ductility up to the 10 CFR 50.46 limits of 2200 degrees Fahrenheit and 17 percent equivalent clad reacted. Furthermore, the NRC staff has concluded that oxidation measurements provided by the licensee illustrate that oxide thickness (and associated hydrogen pickup) for Optimized ZIRLO™ at any given burnup would be less than that for both zircaloy and ZIRLO™ (ADAMS Accession No. ML073130555). Hence, the NRC staff concludes that Optimized ZIRLO™ would be expected to maintain improved post-quench ductility over ZIRLO™. Finally, the licensee stated that Westinghouse will perform an evaluation to ensure that the Optimized ZIRLO™ fuel rods continue to satisfy 10 CFR 50.46 acceptance criteria utilizing currently NRC-approved loss-of-coolant accident (LOCA) models and methods.

The underlying purpose of 10 CFR part 50, appendix K, Section I.A.5, "Metal-Water Reaction Rate," is to ensure that cladding oxidation and hydrogen generation are appropriately limited during a LOCA and conservatively accounted for in the ECCS evaluation model. Appendix K of

10 CFR part 50 requires that the Baker-Just equation be used in the ECCS evaluation model to determine the rate of energy release, cladding oxidation, and hydrogen generation. Since the use of the Baker-Just equation presumes the use of zircaloy-clad fuel, strict application of the rule would not permit use of the equation for Optimized ZIRLO™ cladding for determining acceptable fuel performance. Westinghouse has demonstrated that the Baker-Just model is conservative in all post-LOCA scenarios with respect to the use of the Optimized ZIRLO™ advanced alloy as a fuel cladding material.

The NRC-approved topical reports have demonstrated that predicted chemical, thermal, and mechanical characteristics of the Optimized ZIRLO™ alloy cladding are bounded by those approved for ZIRLO™ under anticipated operational occurrences and postulated accidents. Reload cores are required to be operated in accordance with the operating limits specified in the technical specifications and the core operating limits report.

Based on the above, no new accident precursors are created by using Optimized ZIRLO™, thus, the probability of postulated accidents is not increased. Also, based on the above, the consequences of postulated accidents are not increased. Therefore, there is no undue risk to public health and safety due to using Optimized ZIRLO™.

#### *Consistent With Common Defense and Security*

The proposed exemption would allow the use of Optimized ZIRLO™ fuel rod cladding material at STP, Units 1 and 2. This change to the plant configuration has no relation to security issues. Therefore, the common defense and security is not impacted by this exemption.

#### *Special Circumstances*

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present whenever application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR 50.46 and Appendix K to 10 part 50 is to establish acceptance criteria for ECCS performance. The wording of the regulations in 10 CFR 50.46 and Appendix K is not directly applicable to Optimized ZIRLO™, even though the evaluations above show that the intent of the regulation is met. Therefore, since the underlying purposes of 10 CFR 50.46 and Appendix K are achieved through the use of

Optimized ZIRLO™ fuel rod cladding material, the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption exist.

#### **4.0 Conclusion**

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, 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 the licensee an exemption from the requirements of 10 CFR 50.46 and Appendix K to 10 CFR part 50, to allow the use of Optimized ZIRLO™ fuel rod cladding material at STP, Units 1 and 2.

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 and published an environmental assessment for this exemption on October 11, 2011 (76 FR 62861).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 27th day of October 2011.

For the Nuclear Regulatory Commission.

**Michele G. Evans,**

*Director, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.*

[FR Doc. 2011-28608 Filed 11-3-11; 8:45 am]

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## **NUCLEAR REGULATORY COMMISSION**

**[NRC-2010-0062; Docket No. 50-261]**

**Carolina Power & Light Company; H. B. Robinson Steam Electric Plant, Unit 2; Exemption**

### **1.0 Background**

Carolina Power & Light Company (the licensee) is the holder of Renewed Facility Operating License No. DPR-23, which authorizes operation of the H. B. Robinson Steam Electric Plant (HBRSEP), Unit 2. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect. The facility consists of one pressurized-water reactor located in New Hill, North Carolina.

### **2.0 Request/Action**

Title 10 of the Code of Federal Regulations (10 CFR), 50.46,

“Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors,” paragraph (a)(1)(i) provides requirements for reactors containing uranium oxide fuel pellets clad in either zircaloy or ZIRLO. Additionally, Appendix K to 10 CFR part 50, “ECCS [Emergency Core Cooling System] Evaluation Models,” specifies the use of zircaloy or ZIRLO fuel cladding when doing calculations for energy release, cladding oxidation, and hydrogen generation after a postulated loss-of-coolant accident. Therefore, both of these regulations either state or assume that either zircaloy or ZIRLO is used as the fuel rod cladding material.

By letter dated October 19, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102980142), the licensee requested an exemption from the requirements of 10 CFR 50.46 and Appendix K to 10 CFR part 50 to allow the use of fuel rods clad with AREVA’s M5 alloy. The advanced zirconium-based M5 alloy is a proprietary alloy and chemically different from zircaloy or ZIRLO fuel cladding materials, which are approved for use. The exemption request related solely to the specific types of cladding material specified in these regulations. As written, the regulations presume the use of zircaloy or ZIRLO fuel rod cladding. Thus, an exemption from the requirements of 10 CFR 50.46 and Appendix K to 10 CFR part 50 is needed to support transition to the AREVA fuel design with advanced zirconium-based M5 alloy at HBRSEP Unit 2.

### 3.0 Discussion

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its 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) when special circumstances are present. The requested exemption to allow the use of M5 advanced zirconium alloy rather than zircaloy or ZIRLO for fuel cladding material for reloads at HBRSEP, Unit 2, satisfies these requirements as described below.

#### *Authorized by Law*

This exemption would allow the use of M5 advanced alloy, in lieu of zircaloy or ZIRLO, for fuel rod cladding in fuel assemblies at HBRSEP, Unit 2. As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR 50.46 and Appendix K to 10

CFR part 50. The NRC staff has determined that granting of the licensee’s proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission’s regulations. Therefore, the exemption is authorized by law.

#### *No Undue Risk to Public Health and Safety*

The underlying purpose of 10 CFR 50.46 is to establish acceptance criteria for ECCS performance. In the approved topical report BAW–10227(P)(A), Revision 1, “Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel,” dated June 18, 2003, Framatome ANP demonstrated that the effectiveness of the ECCS will not be affected by a change from zircaloy fuel rod cladding to M5 fuel rod cladding. The analysis described in the topical report also demonstrated that the ECCS acceptance criteria applied to reactors fueled with zircaloy clad fuel are also applicable to reactors fueled with M5 fuel rod cladding.

The NRC staff’s review and approval of topical report BAW–10227(P)(A), Revision 1 addressed all of the important aspects of M5 with respect to ECCS performance requirements: (1) Applicability of 10 CFR 50.46(b) fuel acceptance criteria; (2) M5 material properties including fuel rod ballooning and rupture strains; and (3) steam oxidation kinetics and applicability of Baker-Just weight gain correlation. A subsequent NRC-approved topical report, BAW–10240P–A, “Incorporation of M5 Properties in Framatome ANP Approved Methods,” further addressed M5 material properties with respect to the loss-of-coolant accident (LOCA) applications.

Appendix K, paragraph I.A.5, of 10 CFR part 50 ensures that cladding oxidation and hydrogen generation are appropriately limited during a LOCA, and conservatively accounted for in the ECCS evaluation model. Appendix K requires that the Baker-Just equation be used in the ECCS evaluation model to determine the rate of energy release, cladding oxidation, and hydrogen generation. In topical report BAW–10227(P)(A), Revision 1, Framatome ANP demonstrated that the Baker-Just model is conservative in the evaluated post-LOCA scenarios with respect to the use of the M5 advanced alloy as a fuel rod cladding material, and that the amount of hydrogen generated in an M5-clad core during a LOCA will remain within the HBRSEP, Unit No. 2, design basis.

The M5 alloy is proprietary zirconium-based alloy comprised of primarily zirconium (~99 percent) and

niobium (~1 percent). The elimination of tin has resulted in superior corrosion resistance and reduced irradiation-induced growth relative to both standard zircaloy (1.7 percent tin) and low-tin zircaloy (1.2 percent tin). The addition of niobium increases ductility, which is desirable to avoid brittle failures.

The NRC staff has reviewed the advanced cladding and structural material, M5, for pressurized-water reactor fuel mechanical designs as described in BAW–10227(P)(A), Revision 1. In the safety evaluation for this topical report, the NRC staff concluded that, to the extent and limitations specified in the staff’s evaluation, the properties of M5 and mechanical design methodology are acceptable for referencing in fuel reload licensing applications.

Based on the above, no new accident precursors are created by the use of M5 fuel cladding at HBRSEP, Unit 2; thus, the probability of postulated accidents is not increased. Also, based on the above, the consequences of postulated accidents are not increased. Therefore, there is no undue risk to public health and safety.

#### *Consistent With Common Defense and Security*

The proposed exemption would allow the use of M5 advanced alloy, in lieu of zircaloy or ZIRLO, for fuel rod cladding in fuel assemblies at HBRSEP, Unit 2. The M5 fuel rod cladding is similar in design to the current cladding material used at HBRSEP, Unit 2. This change in cladding material will not result in any changes to the security aspects associated with the control of special nuclear material. The change in cladding material is unrelated to other security issues. Therefore, the common defense and security is not impacted by this exemption.

#### *Special Circumstances*

Special circumstances, in accordance with 10 CFR 50.12, are present whenever 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 ensure that nuclear power facilities have adequately demonstrated the cooling performance of their ECCS. As discussed above, topical report BAW–10227(P)(A), Revision 1 concluded that the effectiveness of the ECCS will not be affected by a change from zircaloy fuel rod cladding to M5 fuel rod cladding and also demonstrated that the ECCS acceptance criteria

applied to reactors fueled with zircaloy clad fuel are also applicable to reactors fueled with M5 fuel rod cladding.

The underlying purpose of 10 CFR part 50, appendix K, paragraph I.A.5 is to ensure that cladding oxidation and hydrogen generation are appropriately limited during a LOCA and conservatively accounted for in the ECCS evaluation model. Specifically, Appendix K requires that the Baker-Just equation be used in the ECCS evaluation model to determine the rate of energy release, cladding oxidation, and hydrogen generation. Topical Report BAW-10227(P)(A), Revision 1, demonstrated that the Baker-Just model is conservative in the evaluated post-LOCA scenarios with respect to the use of the M5 advanced alloy as a fuel rod cladding material.

Based on the above, the underlying purpose of 10 CFR 50.46 and 10 CFR part 50, Appendix K is still met and literal compliance is not necessary for use of M5 fuel rod cladding. Therefore, the special circumstances required by 10 CFR 50.12 for the granting of an exemption from 10 CFR 50.46 and Appendix K of 10 CFR part 50 exist.

**4.0 Conclusion**

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12 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 the licensee an exemption from the

requirements of 10 CFR 50.46 and Appendix K of 10 CFR part 50.

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 (October 26, 2011; 76 FR 6633). This exemption is effective upon issuance.

Dated at Rockville, Maryland this 31st day of October 2011.

For the Nuclear Regulatory Commission.

**Michele G. Evans,**

*Director, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.*

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**NUCLEAR REGULATORY COMMISSION**

**Request for a License To Export Reactor Components**

Pursuant to 10 CFR 110.70 (b) "Public Notice of Receipt of an Application," please take notice that the Nuclear Regulatory Commission (NRC) has received the following request for an export license. Copies of the request are available electronically through ADAMS and can be accessed through the Public Electronic Reading Room (PERR) link <http://www.nrc.gov/reading-rm.html> at the NRC Homepage.

A request for a hearing or petition for leave to intervene may be filed within thirty days after publication of this notice in the **Federal Register**. Any request for hearing or petition for leave

to intervene shall be served by the requestor or petitioner upon the applicant, the office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555; the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555; and the Executive Secretary, U.S. Department of State, Washington, DC 20520.

A request for a hearing or petition for leave to intervene may be filed with the NRC electronically in accordance with NRC's E-Filing rule promulgated in August 2007, 72 Fed. Reg. 49139 (Aug. 28, 2007). Information about filing electronically is available on the NRC's public Web site at <http://www.nrc.gov/site-help/e-submittals.html>. To ensure timely electronic filing, at least 5 (five) days prior to the filing deadline, the petitioner/requestor should contact the Office of the Secretary by email at [HEARINGDOCKET@NRC.GOV](mailto:HEARINGDOCKET@NRC.GOV), or by calling (301) 415-1677, to request a digital ID certificate and allow for the creation of an electronic docket.

In addition to a request for hearing or petition for leave to intervene, written comments, in accordance with 10 CFR 110.81, should be submitted within thirty (30) days after publication of this notice in the **Federal Register** to Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Rulemaking and Adjudications

The information concerning this application for an export license follows.

**NRC Export License Application**

**DESCRIPTION OF EQUIPMENT**

Name of applicant/date of application/date received/application Number/docket Number	Material type	Total quantity	End use	Destination
Westinghouse Electric Company LLC, August 18, 2011, October 6, 2011, XR174, 11005963.	Complete reactor control rod system and associated equipment.	12	Perform seismic testing necessary for qualification of AP1000 (design) nuclear reactors.	China.

For the Nuclear Regulatory Commission.

Dated this 27th day of October 2011 at Rockville, Maryland.

**Stephen Dembek,**

*Acting Deputy Director, Office of International Programs.*

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**POSTAL REGULATORY COMMISSION**

[Docket No. A2012-32; Order No. 938]

**Post Office Closing**

**AGENCY:** Postal Regulatory Commission.

**ACTION:** Notice.

**SUMMARY:** This document informs the public that an appeal of the closing of the Barronett, Wisconsin post office has been filed. It identifies preliminary steps and provides a procedural schedule. Publication of this document will allow the Postal Service,

petitioners, and others to take appropriate action.

**DATES:** November 9, 2011:

Administrative record due (from Postal Service); November 25, 2011, 4:30 p.m., Eastern Time: Deadline for notices to intervene. See the Procedural Schedule in the **SUPPLEMENTARY INFORMATION** section for other dates of interest.

**ADDRESSES:** Submit comments electronically by accessing the "Filing Online" link in the banner at the top of the Commission's Web site (<http://www.prc.gov>) or by directly accessing the Commission's Filing Online system