

March 3, 2008

Mr. Timothy G. Mitchell
Vice President, Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72802

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 2 - ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO EXEMPTION
REQUEST FOR USE OF OPTIMIZED ZIRLO FUEL ROD CLADDING (TAC
NO. MD5378)

Dear Mr. Mitchell:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption dated April 24, 2007. The proposed exemption is for the cladding material specified in Section 50.46 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," and Appendix K to 10 CFR Part 50, "ECCS [Emergency Core Cooling System] Evaluation Models" to allow the use of Optimized ZIRLO™ fuel rod cladding material in future core reload applications at Arkansas Nuclear One, Unit 2.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Alan B. Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosure: Environmental Assessment

cc w/encl: See next page

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DATE	2/4/08	1/23/08	2/7/08*	2/28/08**	3/3/08

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Arkansas Nuclear One

(November 2007)

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UNITED STATES NUCLEAR REGULATORY COMMISSION
ENTERGY OPERATIONS, INC.
DOCKET NO. 50-368
ARKANSAS NUCLEAR ONE, UNIT 2
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Section 50.46 of Title 10 of the *Code of Federal Regulations* (10 CFR), and 10 CFR Part 50, Appendix K, for Facility Operating License No. NPF-6, issued to Entergy Operations, Inc. (Entergy, the licensee), for operation of the Arkansas Nuclear One, Unit 2 (ANO-2), located in Pope County, Arkansas. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would allow the ANO-2 to use Optimized ZIRLO™, an advanced alloy fuel cladding material for pressurized-water reactors.

The proposed action is in accordance with the licensee's application dated April 24, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071220267).

The Need for the Proposed Action:

The proposed action is needed so that Entergy can use Optimized ZIRLO™, an advanced alloy for fuel rod cladding and other assembly structural components at the ANO-2.

Section 50.46 of 10 CFR and 10 CFR Part 50, Appendix K, make no provisions for use of fuel rods clad in a material other than zircaloy or ZIRLO. Since the chemical composition of the Optimized ZIRLO™ alloy differs from the specifications for zircaloy or ZIRLO, a plant-specific exemption is required to allow the use of the Optimized ZIRLO™ alloy as a cladding material or in other assembly structural components at the ANO-2.

Environmental Impacts of the Proposed Action:

The underlying purposes of 10 CFR 50.46 and 10 CFR Part 50, Appendix K, are to ensure that facilities have adequate acceptance criteria for the emergency core cooling system (ECCS), and to ensure that cladding oxidation and hydrogen generation are appropriately limited during a loss-of-coolant accident (LOCA) and conservatively accounted for in the ECCS evaluation model, respectively. Neither 10 CFR 50.46 nor 10 CFR Part 50, Appendix K, explicitly allows the use of Optimized ZIRLO™ as a fuel rod cladding material or for other assembly structural components. Topical Report WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," which was approved by the NRC in July 2006 (ADAMS Accession No. ML062080569), demonstrated that the effectiveness of the ECCS will not be affected by a change from zircaloy to Optimized ZIRLO™. In addition, as a condition for the approval of WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, additional data was provided by Westinghouse by letters dated January 4, and November 6, 2007, and February 5, 2008, that demonstrated that the Baker-Just equation (used in the ECCS evaluation model to determine the rate of energy release, cladding oxidation, and hydrogen generation) is conservative in all post-LOCA scenarios with respect to Optimized ZIRLO™ advanced alloy as a fuel rod cladding material or in other assembly structural components. The licensee currently uses and will continue to use NRC-approved methods for the reload design process for ANO-2 reloads with Optimized ZIRLO™.

If the exemption is issued details of the staff's safety evaluation will be provided in the exemption.

The proposed action will not significantly increase the probability or consequences of accidents. No changes are being made in the types of effluents that may be released off site. There is no significant increase in the amount of any effluent released off site. There is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

The action does not involve the use of any different resources than those previously considered in the Final Environmental Statement for the ANO-2 dated June 16, 1977.

Agencies and Persons Consulted:

In accordance with its stated policy, on January 27, 2008, the staff consulted with the Arkansas State official, Mr. Bernard Beville of the Department of Radiation Control, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated April 24, 2007. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 3rd day of March, 2008.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Alan B. Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation