

September 17, 2003

Mr. Dale E. Young, Vice President
Crystal River Nuclear Plant (NA1B)
ATTN: Supervisor, Licensing & Regulatory Programs
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 - ENVIRONMENTAL ASSESSMENT AND FINDING
OF NO SIGNIFICANT IMPACT RE: EXEMPTION FROM 10 CFR 50.44,
10 CFR 50.46, AND APPENDIX K (TAC NO. MB8180)

Dear Mr. Young:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for exemption dated October 23, 2002, as supplemented July 25 and August 11, 2003. The proposed exemption from the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.44, 10 CFR 50.46 and 10 CFR Part 50, Appendix K would allow the expanded use of M5 advanced alloy for fuel rod cladding and fuel spacer grids at Crystal River Unit 3.

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

Sincerely,

/RA by Chandu Patel for/

Brenda Mozafari, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: Environmental Assessment

cc w/encl: See next page

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*See previous concurrence

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UNITED STATES NUCLEAR REGULATORY COMMISSION

FLORIDA POWER CORPORATION

DOCKET NO. 50-302

CRYSTAL RIVER UNIT 3

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from certain provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Sections 50.44, 10 CFR 50.46, and 10 CFR Part 50, Appendix K for Facility Operating License No. DPR-72, issued to Florida Power Corporation (the licensee) for operation of Crystal River Unit 3 (CR-3) located in Citrus County, Florida. 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 licensee requests an exemption from the provisions of: (1) 10 CFR 50.44, "Standards for combustible gas control system in light-water-cooled power reactors," which provides requirements to control hydrogen generated by zircaloy or ZIRLO fuel cladding after a postulated loss-of-coolant accident (LOCA); (2) 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," which requires the calculated emergency core cooling system (ECCS) performance for reactors with zircaloy or ZIRLO fuel cladding meet certain criteria; and (3) Appendix K, "ECCS Evaluation Models," which presumes the use of zircaloy or ZIRLO fuel cladding when doing calculations for energy release, cladding oxidation, and hydrogen generation after a postulated LOCA.

The proposed action would allow the licensee to use the M5 advanced alloy in lieu of zircaloy or ZIRLO, the materials assumed to be used in the cited regulations for fuel rod cladding in fuel assemblies at CR-3. M5 alloy would also be used in fuel assembly spacer grids, fuel rod end plugs, fuel assembly guides, and instrument tubes. The fuel assemblies would be loaded into the CR-3 reactor core during the refueling outage in the fall of 2003, and used in operation during Cycle 14 and beyond.

The proposed action is in accordance with the licensee's application for exemption dated October 23, 2002, as supplemented by letters dated July 25 and August 11, 2003.

The Need for the Proposed Action:

The Commission's regulations in 10 CFR 50.46(a)(i) and 10 CFR Part 50, Appendix K require the demonstration of adequate ECCS performance for light-water reactors that contain fuel consisting of uranium oxide pellets enclosed in zircaloy or ZIRLO tubes. In addition, 10 CFR 50.44(a) addresses requirements to control hydrogen generated by zircaloy or ZIRLO fuel after a postulated LOCA. Each of these three regulations, either implicitly or explicitly, assumes that either zircaloy or ZIRLO is used as the fuel rod cladding material.

In order to accommodate the high fuel rod burnups that are required for modern fuel management and core designs, Framatome Cogema Fuels (FCF) developed the M5 advanced fuel rod cladding and fuel assembly structural material. M5 is an alloy comprised primarily of zirconium (~99 percent) and niobium (~1 percent) that has demonstrated superior corrosion resistance and reduced irradiation-induced growth relative to both standard and low-tin zircaloy. However, since the chemical composition of the M5 advanced alloy differs from the specifications of either zircaloy or ZIRLO, use of the M5 advanced alloy falls outside of the strict interpretation of these regulations. Therefore, approval of this exemption request is needed to permit the use of the M5 advanced alloy as a fuel rod cladding material at CR-3.

Environmental Impacts of the Proposed Action:

Use of M5 clad fuel will not result in changes in the operations or configuration of the facility. There will be no change in the level of controls or methodology used for processing radioactive effluents or handling solid radioactive waste. The NRC staff has also determined that the M5 fuel cladding will perform similarly to the current resident fuel. Accordingly, the proposed action will not significantly increase the probability or consequences of accidents. No significant changes are being made in the types of any effluents that may be released off site. There is no significant increase in the amount of any effluents that may be 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 nonradiological impacts, the proposed action does not involve any historic sites. It does not affect nonradiological plant effluents and has no other environmental impact. Therefore, there are no significant nonradiological 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 NRC 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 denying the application and of the proposed alternative 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 Crystal River dated May 1973.

Agencies and Persons Consulted:

On September 17, 2003, the NRC staff consulted with the Florida State official, William Passetti, of the Florida Department of Health Bureau 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 October 23, 2002, as supplemented by letters dated July 25 and August 11, 2003. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room, located at One White Flint North, 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 by e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 17th day of September 2003.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by Chandu Patel for/

Chandu P. Patel, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Mr. Dale E. Young
Florida Power Corporation

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