



December 11, 2007
NRC:07:075

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

**Request for Two Exemptions for the U.S. EPR Standard Design Certification
(Project No. 733)**

AREVA NP Inc. (AREVA NP) requests two exemptions for the U.S. EPR Standard Design Certification pursuant to 10 CFR 52.7 and 10 CFR 50.12 from:

- A. 10 CFR 50.46, Acceptance criteria for emergency core cooling systems for light-water reactor nuclear power reactors and 10 CFR 50, Appendix K to Part 50, ECCS Evaluation Models, and
- B. 10 CFR 50.34(f)(3)(iv) – Dedicated Containment Penetration.

Information supporting the exemption requests is contained in Attachments 1 and 2.

A. 10 CFR 50.46 and Appendix K

AREVA NP requests exemptions from the requirements in 10 CFR 50.46, Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors, and 10 CFR 50 Appendix K -- ECCS Evaluation Models, paragraph I.A.5, regarding the use of Zircaloy or ZIRLO as a fuel rod cladding material. These exemption requests are related to the proposed use of the M5™ advanced zirconium alloy for the U.S EPR fuel rod cladding and fuel assembly structural material. Since M5™ cladding is a zirconium based alloy that is chemically different than Zircaloy or ZIRLO fuel cladding materials which are approved for use in these regulations, an exemption from these regulations is required to support use of the M5™ cladding in the U.S. EPR. Information supporting the exemption request is contained in Attachment 1.

AREVA NP has concluded that granting the exemption request will not present undue risk to the public health and safety and is consistent with the common defense and security. Furthermore, the NRC has approved similar exemption requests for other nuclear plants; in particular, fuel with M5™ cladding is used at several operating plants in the United States.

B. 10 CFR 50.34(f)(3)(iv) – Dedicated Containment Penetration

AREVA NP requests an exemption from the requirements of 10 CFR 50.34(f)(3)(iv) with respect to providing a dedicated containment penetration.

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AREVA NP INC.
An AREVA and Siemens company

Requirement: *Provide one or more dedicated containment penetrations, equivalent in size to a single 3-foot diameter opening, in order not to preclude future installation of systems to prevent containment failure, such as filtered vented containment system.*

The U.S. EPR does not utilize a dedicated containment penetration. The severe accident assessment (U.S. EPR FSAR Tier 2 Section 19.2), the PRA (U.S. EPR FSAR Tier 2 Section 19.1) and the containment analysis (U.S. EPR FSAR Tier 2 Section 6.2) demonstrate that a dedicated containment penetration is not required. Specific containment overpressure protection is provided through its large size and strength and through the availability of forty-seven (47) Passive Autocatalytic Recombiners (PAR) and the Severe Accident Heat Removal System (SAHRS) for the removal of hydrogen and steam, respectively, the principal contributors to high containment pressure during a severe accident. The functions of these systems are described in U.S. EPR FSAR Tier 2 Section 19.2.3.3.2.

AREVA NP has concluded that special circumstances defined in 10 CFR 50.12 exist to warrant the exemptions and that granting the exemption requests will not present undue risk to the public health and safety and is consistent with the common defense and security.

AREVA NP requests approval of these exemptions concurrent with the approval of the application for design certification of the U.S. EPR.

If you have any questions related to this request, please contact Ms. Sandra M. Sloan, Regulatory Affairs Manager for New Plants Deployment. She may be reached by telephone at 434-832-2369 or by e-mail at sandra.sloan@areva.com.

Sincerely,



Ronnie L. Gardner, Manager
Site Operations and Corporate Regulatory Affairs
AREVA NP Inc.

Enclosures

cc: L. Burkhardt
G. Tesfaye
Project 733

Attachment 1

10 CFR 50.46 and 10 CFR 50, Appendix K Exemption Request

In accordance with 10 CFR 52.7 and 10 CFR 50.12, AREVA NP Inc. (AREVA NP) requests exemptions from the requirements in 10 CFR 50.46, Acceptance criteria, for emergency core cooling systems for light-water nuclear power reactors, and 10 CFR 50 Appendix K -- ECCS Evaluation Models, paragraph I.A.5, regarding the use of Zircaloy or ZIRLO as a fuel rod cladding material. These exemption requests are related to the proposed use of the M5™ advanced zirconium alloy for the U.S. EPR fuel rod cladding and fuel assembly structural material.

10 CFR 50.12 states that the Commission may grant an exemption from requirements contained in 10 CFR 50 provided that: 1) the exemption is authorized by law, 2) the exemption will not present an undue risk to public health and safety, 3) the exemption is consistent with the common defense and security, and 4) special circumstances, as defined in 10 CFR 50.12(a)(2) are present. The requested exemptions to allow the use of advanced zirconium alloys other than Zircaloy or ZIRLO for fuel cladding material for the U.S. EPR satisfy these requirements as described below.

The NRC has approved similar exemption requests for other nuclear plants; in particular, fuel with M5™ cladding is used at several operating plants in the United States.

1. The requested exemption is authorized by law.

The fuel that will be irradiated in the U.S. EPR contains cladding material that does not conform to the cladding material designations explicitly defined in 10 CFR 50.46 and 10 CFR 50, Appendix K. However, the criteria of these sections are satisfied for the U.S. EPR core containing M5™ fuel rod cladding and fuel assembly structural material.

2. The requested exemption does not present an undue risk to the public health and safety.

The M5™ fuel rod cladding and fuel assembly structural material has been evaluated to confirm that operation with this fuel product does not increase the probability of occurrence or the consequences of an accident. The evaluation also concluded that no new or different type of accident will be created that could pose a risk to public health and safety. In addition, appropriate safety analyses have been performed to demonstrate that this fuel type does not present an undue risk to the public health and safety. AREVA utilizes NRC approved methods for the U.S. EPR core which contains M5™ fuel rod cladding and fuel assembly structural materials.

3. The requested exemption will not endanger the common defense and security.

The M5™ fuel rod cladding is similar in design to the cladding material used in operating plants. The special nuclear material in this fuel product will be handled and controlled in accordance with approved procedures. It has been confirmed through evaluation that M5™ fuel rod cladding and fuel assembly structural material will not endanger the common defense and security.

4. Special circumstances are present which necessitate the request of an exemption to the regulations of 10 CFR 50.46 and 10 CFR 50 Appendix K.

The special circumstance necessitating the request for an exemption to 10 CFR 50.46 and 10 CFR 50 Appendix K is that neither of these regulations allows the use of M5™ fuel rod cladding material. The underlying purpose of 10 CFR 50.46 is to ensure that nuclear power facilities have adequately demonstrated the cooling performance of their Emergency Core Cooling System (ECCS). Topical Report BAW-10227P-A, Evaluation of Advanced Cladding and Structural Material (M5™) in PWR Reactor Fuel, approved by the NRC by letter dated February 4, 2000, demonstrates that the effectiveness of the ECCS will not be affected by a change from Zircaloy fuel rod cladding to M5™ fuel rod cladding.

The underlying purpose of 10 CFR 50 Appendix K 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. AREVA demonstrates in Appendix D of BAW-10227P-A, that the Baker-Just model is conservative in all post-LOCA scenarios with respect to the use of the M5™ advanced alloy as a fuel rod cladding material.

Therefore, the intent of 10 CFR 50.46 and 10 CFR 50, Appendix K is satisfied for the planned operation with M5™ fuel rod cladding and fuel assembly structural material [(10 CFR 50.12(a)(2)(ii)]. Issuance of an exemption from the criteria of these regulations for the use of M5™ fuel rod cladding and structural material in the U. S. EPR core will not compromise the safe operation of the reactor.

Attachment 2

10 CFR 50.34(f)(3)(iv) – Dedicated Containment Penetrations Exemption Request

In accordance with 10 CFR 52.7 and 10 CFR 50.12, AREVA NP Inc. requests an exemption from the requirements of 10 CFR 50.34(f)(3)(iv) with respect to providing a dedicated containment penetration.

Requirement: Provide one or more dedicated containment penetrations, equivalent in size to a single 3-foot diameter opening, in order not to preclude future installation of systems to prevent containment failure, such as filtered vented containment system.

The U.S. EPR design does not utilize a dedicated containment penetration. The severe accident assessment (U.S. EPR FSAR Tier 2 Section 19.2), the PRA (U.S. EPR FSAR Tier 2 Section 19.1) and the containment analysis (U.S. EPR FSAR Tier 2 Section 6.2) demonstrate that a dedicated containment penetration is not required. Specific containment overpressure protection is provided through its large size and strength and through the availability of forty-seven (47) Passive Autocatalytic Recombiners (PAR) and the Severe Accident Heat Removal System (SAHRS) for the removal of hydrogen and steam, respectively, the principal contributors to high containment pressure during a severe accident. The functions of these systems are described in U.S. EPR FSAR Tier 2 Section 19.2.3.3.2.

10 CFR 50.12 states that the Commission may grant an exemption from requirements contained in 10 CFR 50 provided that: 1) the exemption is authorized by law, 2) the exemption will not present an undue risk to public health and safety, 3) the exemption is consistent with the common defense and security, and 4) special circumstances, as defined in 10 CFR 50.12(a)(2) are present. The requested exemption relative to not utilizing a dedicated containment penetration for the U.S. EPR satisfies these requirements as described below.

1. The requested exemption is authorized by law.

The exemption request is not precluded by law.

2. The requested exemption does not present an undue risk to the public health and safety.

The U.S. EPR design does not utilize a dedicated containment penetration. The severe accident assessment (U.S. EPR FSAR Tier 2 Section 19.2), the PRA (U.S. EPR FSAR Tier 2 Section 19.1) and the containment analysis (U.S. EPR FSAR Tier 2 Section 6.2) demonstrate that a dedicated containment penetration is not required. Specific containment overpressure protection is provided through its large size and strength and through the availability of forty-seven (47) PARs and the SAHRS for the removal of hydrogen and steam, respectively, the principal contributors to high containment pressure during a severe accident. The functions of these systems are described in U.S. EPR FSAR Tier 2 Section 19.2.3.3.2.

3. The requested exemption will not endanger the common defense and security.

The severe accident assessment (U.S. EPR FSAR Tier 2 Section 19.2), the PRA (U.S. EPR FSAR Tier 2 Section 19.1) and the containment analysis (U.S. EPR FSAR Tier 2 Section 6.2) demonstrate that a dedicated containment penetration is not required.

4. Special circumstances are present which necessitate the request of an exemption to the regulation of 10 CFR 50.34(f)(3)(iv).

The severe accident assessment (U.S. EPR FSAR Tier 2 Section 19.2), the PRA (U.S. EPR FSAR Tier 2 Section 19.1) and the containment analysis (U.S. EPR FSAR Tier 2 Section 6.2) demonstrate that a dedicated containment penetration is not required, as discussed in paragraph 2 above. Therefore, application of the rule is not necessary to achieve the underlying purpose of the rule [(10 CFR 50.12(a)(2)(ii)].