

September 9, 2015

Mr. Pedro Salas
Director
U.S. EPR Regulatory Affairs
AREVA NP, Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

SUBJECT: SAFETY EVALUATION REPORT REGARDING AREVA'S TOPICAL REPORT
ANP-10287P, REVISION 2, "INCORE TRIP SETPOINT AND TRANSIENT
METHODOLOGY"

Dear Mr. Salas:

By letter dated November 27, 2007, AREVA NP, Inc. (AREVA) submitted Topical Report (TR) ANP-10287P, "Incore Trip Setpoint and Transient Methodology," Revision 0, for U.S. EPR for review and approval. This TR was subsequently updated April, 6, 2012 (Revision 1) and August 6, 2014 (Revision 2) and May 22, 2015 (Revision 2 correction). This safety evaluation report (SE) is based on the submitted TR. The TR review included information obtained during a number of meetings, conference calls with the applicant, and formal requests for additional information (RAIs). The staff has followed the guidance in Regulatory Guide (RG) 1.105, "Setpoint for Safety-Related Instrumentation"; and Chapters 4.2, "Fuel System Design"; 4.3, "Nuclear Design"; 4.4, "Thermal and Hydraulic Design"; and 15, "Accident Analysis," of the Standard Review Plan (SRP), NUREG-0800. The staff further followed the guidance in Branch Technical Position (BTP) 7-12, "Guidance on Establishing and Maintaining Instrument Setpoints," and NUREG 0800, Appendices 7.1B, 7.1C, and 7.1D.

TR ANP-10287P, Revision 2, documents the analytical methodology used to determine the setpoints for the in-core-based departure from nucleate boiling ratio (DNBR) and linear power density (LPD) limiting safety system setting (LSSS), limitation, and limiting conditions for operation (LCO) functions in the U.S. EPR. The ANP-10287P methodology is designed to establish the departure from nucleate boiling (DNB) setpoints such that the DNB-limiting pin in the core will not experience departure from nucleate boiling during DNB basis events, at 95 percent probability, with 95 percent confidence, considering all uncertainties. The LPD setpoints are established such that the location in the core with peak LPD will not exceed either fuel centerline melt or clad strain limits during LPD basis events, at 95 percent probability and with 95 percent confidence, considering all applicable uncertainties. The U.S. EPR analytical methodology for setpoints is a collection of techniques that are utilized to ensure that the U.S. EPR in-core trips protect the core against specified acceptable design limits (SAFDLs) as required by the General Design Criteria (GDC). TR ANP-10287P defines some techniques that are well-known and are commonly used by the nuclear industry, while other techniques are specific to the U.S. EPR design. The enclosed SE addresses this collection of techniques.

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The main conclusion from this review is that the U.S. EPR in-core setpoint methodology is acceptable to determine the setpoint values for the in-core-based DNB, exit quality, and LPD, limiting safety system setting, limitation, and limiting conditions for operation functions in the U.S. EPR. The U.S. Nuclear Regulatory Commission (NRC) staff has found that TR-ANP-10287P, is acceptable for referencing in licensing applications to the extent specified and under the limitations delineated in the TR and in the enclosed final SE. A public version is on file under Agencywide Documents Access and Management System (ADAMS) Accession No. ML14220A191 and updated at ML15142A714. The SE defines the basis for NRC staff acceptance of the TR. NRC staff acceptance applies only to material provided in the subject TR. When referenced in a license application, the NRC staff does not intend to repeat the review of the acceptable material described in the SE. When the TR appears as a reference in license applications, the NRC staff review will ensure that the material presented applies to the specific plant involved. License amendment requests that deviate from this TR will be subject to a plant-specific review in accordance with applicable review standards. In accordance with the guidance provided on the NRC website, the NRC staff requests that AREVA publish accepted proprietary and non-proprietary versions of this TR within 3 months of receipt of this letter. The accepted versions shall incorporate this letter and the enclosed final SE after the title page. The accepted versions shall include an "-A" (designating accepted) following the TR identification symbol.

If future changes to NRC regulatory requirements affect the acceptability of this TR, AREVA and/or licensees referencing it will be expected to revise the TR appropriately, or justify its continued applicability for subsequent referencing.

Please review the enclosed proprietary SE and markup information held as proprietary and return markup version to NRC, with affidavit, within 10 days, if possible. The staff concludes that the enclosed SE may be proprietary because it is based on information contained in your proprietary TR. If you have any questions, please contact me at (301) 415-5848 or bill.gleaves@nrc.gov.

Sincerely,

/RA/

William (Billy) Gleaves, Senior Project Manager
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Docket No.: 52-020

Enclosure:
Proprietary version of SE

cc w/o encl: See next page

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