

Request for Additional Information No. 18, Revision 0

6/24/2008

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 03.05.01.03 - Turbine Missiles

SRP Section: 05.04.01.01 - Pump Flywheel Integrity (PWR)

Application Section: 3.5.1.3 and 5.4.1.6

CIB1 Branch

QUESTIONS

03.05.01.03-1

The U.S. EPR FSAR, Tier 2 Section 3.5.1.3 does not provide a turbine missile analysis for either of the two turbine generator designs specified in Section 10.2. In addition, Section 10.2.3.6 of the U.S. EPR FSAR specifies a turbine rotor inservice inspection plan, which specifies that an ASME Code inspection be performed every 10 years, and specifies no volumetric inspections. This contradicts the SRP Section 3.5.1.3, which states that applicants with turbines with no NRC approved reports on turbine missile generation probabilities should commit to the following program (which includes a volumetric inservice inspection with an inspection interval not to exceed 3 years or 2 fuel cycles). Therefore, if no turbine missile analysis is performed, then the 3 year inspection interval (for volumetric inspections) is used. Therefore, the NRC staff requests that a turbine missile analysis for each turbine design be submitted to the staff for review, and provide the corresponding turbine inspection program that follows the guidance of SRP Sections 3.5.1.3 and 10.2.3 in order to meet the requirements of GDC 4, "Environmental and Missile Dynamic Effects Design Bases" of 10 CFR Part 50.

05.04.01.01-1

The U.S. EPR FSAR, Tier 2 Section 5.4.1.6 does not provide a reactor coolant pump flywheel analysis topical report as recommended by Regulatory Guide (RG) 1.14, paragraph D.3 (which is referenced in SRP Section 5.4.1.1). For example, Section 5.4.1.6 of the U.S. EPR FSAR only provides statements such as "The critical speeds for ductile failure, failure due to excessive deformation and non-ductile failure of the flywheel exceeds two times the nominal speed of the flywheel (where $2 \times [\text{nominal speed}] = 2400 \text{ rpm}$), in accordance with paragraph 2.f of RG 1.14," without providing the detailed analysis. RG 1.14 states that the recommendations of this regulatory guide will be used in evaluating all topical reports on flywheel integrity after January 1, 1976. In addition, RG 1.14 states that several analysis (critical flywheel speed for ductile fracture, nonductile fracture and excessive deformation) should be submitted in a topical report to the NRC for evaluation. Therefore, the NRC staff requests a detailed technical report concerning the reactor coolant pump flywheel analysis be provided for review in accordance with RG 1.14 and SRP Section 5.4.1.1 in order to meet the requirements of GDC 4, "Environmental and Missile Dynamic Effects Design Bases" of 10 CFR Part 50.