Draft

Request for Additional Information No. 98 (1195), Revision 0

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U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants
Application Section: FSAR Section 14.2

QUESTIONS for Quality and Vendor Branch 1 (AP1000/EPR Projects) (CQVP)

14.02-39

Section 14.2.12.3.14 Pressurizer Safety Valve (Test #037) of the U.S. EPR FSAR tests the high setpoint operation of the PSRV; however, a test to verify solenoid actuator operation needs to be added. Also, the reference to Section 5.4.11 for the acceptance criteria appears to be wrong. The correct reference appears to be Sections 5.2.2 and 5.4.13.

The Staff requests that AREVA address the need to include provisions to verify the solenoid actuator operation of the pressurizer safety valve in Test # 37 and revise the references to be Sections 5.2.2 and 5.4.13, not Section 5.4.11.

14.02-40

Section 14.2.12.7.5, "Main Steam Isolation Valves and MSIV Bypass Valves (Test #063)," of the U.S. EPR FSAR does not provide for verifying that the MSIVs and MSIV bypass valves are operational since these tests are not performed with flow and differential pressure across the valves in the forward and reverse directions. Therefore, AREVA needs to include the performance of the MSIV stroke testing with flow and differential pressure across the valves in Test #063. Also, AREVA needs to include testing with the depressurization of each steam generator (one-at-a-time) to simulate reverse flow and differential pressure conditions.

14.02-41

Section 14.2.12.12.15, "Primary Depressurization (Test #151)," of the U.S. EPR FSAR verifies that the flow paths for the pressurizer safety valves, the primary depressurization valves, and the reactor coolant gas vent valves are operational, however, there are some inconsistencies which need to be clarified: (1) the test method does not explain what “simulating an over pressurizer condition” is, (2) the test method calls for use of water or air, but the test conditions are at hot zero power, and (3) the test method calls for verifying that all valves fail closed, but the primary depressurization valves are motor-operated valves that apparently fail as-is.

Therefore, staff requests that AREVA clarify what the simulated pressurizer pressure conditions and actuating mechanisms are for the flow path tests, that the test method

uses hot zero power fluid conditions, not water or air conditions, and whether the primary depressurization valves are verified to close on loss of power in Test #151.

14.02-42

Section 14.2.12.12.16 Rapid Depressurization (Test #152) of the AREVA FSAR verifies by test that the flow paths for the main steam relief train valves are operational; however, a reference to the appropriate FSAR section is needed in the acceptance criteria. The staff requests the AREVA provide the appropriate FSAR reference in the acceptance criteria of Test #152 with a clear correlation to the test objective(s).

14.02-43

Section 14.2.12.13.15, "Pre-Core Safety Injection Check Valve Test (Test #175)," of the U.S. EPR FSAR verifies that the pre-core SI check valves are operational; however, it is not clear how the full opening and reclosure of the valves will be demonstrated. The staff requests that AREVA address how the full stroke opening and reclosure of the pre-core SI check valves is verified in Test #175.

14.02-44

Table 1.8.2, "U.S. EPR Combined License Information Items," states that the COL applicant that references the U.S. EPR design certification will provide site-specific test information for the circulating water supply system (COL information item 14.2-5) and for the cooling tower (COL information item 14.2-7). However, the U.S. EPR FSAR does not assign the COL applicant the responsibility to consider testing for other structures, systems, and components (SSCs) beyond the scope of the design certification application (for example, radiation monitors or offsite power supply.) The staff recommends that AREVA delete COL information items 14.2-5 and 14.2-7 from the U.S. EPR FSAR and instead insert one generic COL information item stating that the COL applicant that references the U.S. EPR design will provide site-specific test information for interface requirements giving consideration for initial testing of all SSCs that are beyond the scope of the design requirements.

14.02-45

Section 14.2.8 of the U.S. EPR FSAR states that plant operations staff will review reactor operating and testing experiences at other facilities that are similar in design and capacity prior to the unit starting up. Additionally, Section 14.2.8.1 commits that the first COL applicant that references the U.S. EPR certified design will review results from European predecessors concerning the new, unique, or novel EPR features and propose supplemental testing if necessary. The statement to commit only the first COL applicant to review the operating and testing experience is a redundant COL information item as this action item is already contained in the commitment in 14.2.8 which states that all plants will review all reactor operating and testing experiences. Accordingly, the staff recommends that AREVA remove the paragraph stating, "The first COL applicant that references the U.S. EPR certified design will commit to review results from

European predecessors concerning the new, unique, or novel EPR features such as those previously noted and propose supplemental testing if necessary," from Section 14.2.8.1 of the U.S. EPR FSAR.

14.02-46

FSAR Section 14.2.12.16.4, "Natural Circulation (Test #196)," Objective 1.3.1, states that it is permissible to substitute test data from plants of similar design in lieu of performing this test. However, consistent with RG 1.68 Appendix A.4.t, natural circulation tests of the reactor coolant system is performed to confirm that the design heat removal capability exists, or to verify that flow (without pumps) or temperature data are comparable to prototype designs for which equivalent tests have been successfully completed." Therefore, RG 1.68 does not allow for substitution of test data from plants of similar design in lieu of performing the test. Accordingly, the staff requests that AREVA remove Objective 1.3.1 from Section 14.2.12.16.4.

14.02-47

Appendix A to 10 CFR Part 50, General Design Criteria 64, requires that fission product gases be sampled and analyzed under all plant operating conditions. RG 1.68, Appendix A.l.8, states that appropriate tests should be conducted to demonstrate the functional operability and design flow rates of plant sampling systems during the initial test program. Section 14.2.12.9.10, " Nuclear Sampling System (Test #100)," of the U.S. EPR FSAR tests the nuclear sampling system, however, the severe accident sampling system (SASS), which is a similar auxiliary system, is not being tested. The staff requests that AREVA add a test abstract for the preoperational testing of the SASS or provide justification for not performing preoperational testing of the SASS.

14.02-48

RG 1.68 App A.1.n(7) states that applicant should conduct appropriate tests to demonstrate the proper manual and automatic operation of fire detection, alarm, and suppression systems. The U.S. EPR FSAR Sections 14.2.12.6.4, "Fire Water Distribution System (Test #054), 14.2.12.6.6, "Sprinkler Systems (Test #056), 14.2.12.6.7, "Gaseous Fire Extinguishing Systems (Test #057), and 14.2.12.11.9, "Plant Fire Alarm System (Test #132) do not provide for the demonstration of proper manual operation of these systems. The staff requests that AREVA revise the fire protection system test abstracts to include the demonstration of proper manual operation of the system, or justify the exclusion of the testing.

14.02-49

Regulatory Guide 1.68, Appendix A.5, provides the power ascension tests that the applicant should conduct in order to demonstrate that the facility operates in accordance with design in normal steady-state conditions and, to the extent practical, during and following anticipated transients. The staff notes examples in which power ascension tests do not demonstrate all of the aspects listed in Appendix A.5. For example, FSAR Sections 14.2.12.16.3, "Main, Startup and Emergency Feedwater Systems (Test #195)

and 14.2.12.16.4, "Natural Circulation (Test #196) do not test all design features outlined in Appendix A.5.I needed to demonstrate the design capability to remove residual or decay heat. Therefore, the staff requests that AREVA verify that all aspects of power ascension testing listed in Appendix A.5 to RG 1.68 are addressed in the test abstracts listed in Section 14.2.12.16 of the U.S. EPR FSAR, and revise the applicable test abstracts, accordingly.

14.02-50

Section 14.2.12.12.16, "Rapid Depressurization (Test #152)," of the U.S. EPR FSAR verifies that the flow paths for the main steam relief train valves are operational; however, clear acceptance criteria, including a reference to the appropriate FSAR section is needed. Therefore, AREVA needs to revise the acceptance criteria section of Test # 152 include the appropriate FSAR section(s) as well as to include explicit, measurable criteria (e.g., values, prescribed limits, or measurable parameters) from the relevant U. S. EPR FSAR section(s) that establish the functional adequacy of the SSCs and design features tested, and that provide a direct correlation to the test objective(s) being effectively met.

14.02-51

The Standard Review Plant 14.2.II.3.B states that the applicant should include general guidance for the review of relevant operating and testing experiences at other facilities to recognize reportable occurrences of repeatedly experienced safety concerns and other operating experiences that could potentially impact the performance of the test program. The U.S. EPR FSAR Section 14.2.8 does not include this provision. Therefore, the staff requests that AREVA revise Section 14.2.8 to add the affirmation that the review of operating and test experiences should recognize reportable occurrences of repeatedly experienced safety concerns and other operating experiences that could potentially impact the performance of the test program.