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UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

NRC Evaluation of AREVA NP RAI Response 7.7-18

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Requirements for Setpoints

- 10 CFR 50.55a(h) provides requirements for safety-related instrumentation and control (I&C) systems and incorporates by reference IEEE Std. 603-1991.
- Clause 6.8.1 of IEEE Std. 603-1991 requires the allowance for uncertainties between the process analytical limit and the device setpoint.



Requirements for Setpoints (cont.)

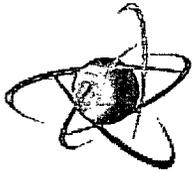
- 10 CFR Part 50, Appendix A General Design Criteria (GDC) 13 and 20 and 10 CFR 50.36(c)(1)(ii)(A) also provide requirements to ensure adequate setpoints are provided to monitor plant variables initiate safety functions when necessary.



Guidance for Setpoints

- Regulatory Guide (RG) 1.105 describes an acceptable means for meeting the regulations associated with setpoints and endorses ISA Std. S67.04-1994.
- The RG states that the standard [ISA S67.04-1994] provides a basis for establishing setpoints and addressing known contributing errors from the process (including the primary element and sensor) through and including the final setpoint device.

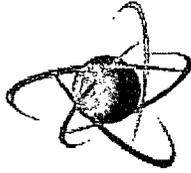
- **NRC staff requested AREVA NP to discuss why Regulatory Guide (RG) 1.105, “Setpoints for Safety-Related Instrumentation,” Revision 3, did not apply to the incore and excore instrumentation system.**
- **Incore instrumentation provide signals for the high linear power density and departure from nucleate boiling reactor trips.**



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RAI 7.7-18 (cont.)

- **NRC staff's understanding of AREVA NP's response:**
 - Incore and excore instrumentation system does not develop or use setpoints for actuation.
 - Committing to RG 1.105 for the Protection System implies incore and excore instrument uncertainties will be accounted in the setpoint calculation.



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RAI 7.7-18 (cont.)

- NRC disagrees with AREVA NP's response.
 - Discussion section of RG 1.105 describes applicability to the setpoints and components that contribute errors in a particular channel, including the instruments.



Staff Conclusion

- For the incore and excore instrumentation system, which provides signals for reactor trip functions, AREVA NP does not commit to RG 1.105; nor is there discussion of an alternate method and justification for its acceptability.



Staff Conclusion (cont.)

- The staff cannot conclude that the U.S. EPR design meets the requirements of 10 CFR 50.55a(h), 10 CFR 50.36(c)(1)(ii)(A), and 10 CFR Part 50, Appendix A, GDCs 13 and 20.
- Therefore, the staff does not plan to approve the U.S. EPR I&C design with the current RAI response and Final Safety Analysis Report description as it relates to this issue.