

SUMMARY OF CONFERENCE CALL WITH AREVA REGARDING THE USE OF DESIGN  
FEATURES IN THE SUPERCRITICAL CARBON DIOXIDE AMENDMENT APPLICATION TO  
MEET THE PERFORMANCE REQUIREMENTS  
August 13, 2009

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**AREVA Representatives:** Robert E. Link, Calvin D. Manning

On August 13, 2009, staff from the U.S. Nuclear Regulatory Commission (NRC) and AREVA Inc. (AREVA) held a conference call to discuss AREVA's use of design features in the supercritical carbon dioxide (CO<sub>2</sub>) license amendment application to meet the performance requirements in Title 10 of the *Code of Federal Regulations* (10 CFR), 70.61. Specifically, the conference call focused on AREVA's use of pressurized equipment that is designed, built, and inspected to the standards in the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code (ASME Code), Section VIII, Division 1, to prevent or mitigate the consequences of a catastrophic release of licensed material.

The NRC staff explained that the use of pressurized equipment that conforms to the ASME Code to meet the performance requirements is consistent with the regulatory definition of an item relied on for safety (IROFS) in 10 CFR 70.61(e). AREVA stated that conformance of the equipment to the ASME standards is a "design feature," and relying on these features to meet the performance requirements is consistent with their Integrated Safety Analysis (ISA) program. According to AREVA, there are "design features" used in the facility operations to meet the performance requirements, such as criticality controls. AREVA expressed concerns in declaring the pressurized equipment as IROFS for this amendment application because it could impact their ISA program and would pose challenges in ensuring consistency across the facility. The NRC staff then discussed a response provided by AREVA in August 2007 in support of the NRC's review of AREVA's ISA Summary. The response discussed, in part, AREVA's position with respect to declaring equipment attributes and characteristics as IROFS. The NRC staff also discussed AREVA's definition of "not credible" and "highly unlikely" in section 6.0 of AREVA's ISA Summary. The NRC staff indicated that this information appears to indicate some inconsistency with AREVA's rationale for declaring the pressurized equipment as "design feature."

AREVA indicated that they first evaluate the consequences of a particular accident sequence, and then the frequency of occurrence of the sequence. There are many inputs that the ISA Team evaluates before concluding that an accident sequence is "highly unlikely." In addition, AREVA clarified that there are certain events that are considered "highly unlikely" (e.g., tornadoes, dam rupture, etc.) and the controls that could mitigate the consequences of these events are considered "design features." AREVA does not declare any IROFS for these types of events, and a similar logic would apply for the pressurized equipment in the license amendment application. AREVA indicated that the pressurized equipment will be installed and certified as "fit-for-service" by a qualified inspector from the State of Washington before it is operated. Periodic inspections would be conducted by the State every two years, and AREVA would rely on these inspections to meet the performance requirements.

Enclosure

During the call, the NRC staff and AREVA discussed two possible solutions to this issue:

- a) The NRC staff could conclude that AREVA's approach for defining something as a "design feature" was acceptable. That means that if a particular event has a frequency of  $10^{-5}$  and the attribute of a particular process equipment or component could only fail because of loss of configuration control, the attribute would be considered a "design feature"; or
- b) AREVA would declare the pressurized equipment associated with the issue as IROFSs. The broader issue of "design features" vs. IROFSs would be resolved through working groups from NRC and industry.

Finally, the NRC staff agreed to get the views of a senior risk expert in the division before making a decision on this issue for the purpose of the license amendment application.