

January 29, 2010

Mr. Robert E. Link, Manager
Environmental, Safety, Health
and Licensing
AREVA NP, Inc.
2101 Horn Rapids Road
Richland, WA 99354-5102

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO ANALYSIS OF OVERPRESSURIZATION SCENARIOS, AND REPLACEMENT OF A CONFIGURATION CONTROL ITEM RELIED ON FOR SAFETY IN THE SUPERCRITICAL CARBON DIOXIDE LICENSE AMENDMENT APPLICATION; LICENSE NO.: SNM-1227; DOCKET NO.: 70-1257 (TAC L32689)

Dear Mr. Link:

The U.S. Nuclear Regulatory Commission (NRC) staff has recently reviewed AREVA NP, Inc.'s (AREVA's) information submitted by letter dated November 11, 2009, in support of the supercritical carbon dioxide (CO₂) license amendment application. During this review, the NRC staff identified two outstanding issues with the information in the submittal. These issues were discussed with members of your staff during conference calls held on December 15, 2009, and January 8, 2010:

The NRC staff has continued its review and notes the following:

1) The submittal makes reference to a configuration control item relied on for safety (IROFS) that AREVA is crediting for meeting the performance requirements in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 70.61. This "IROFS" is proposed by AREVA for several criticality and chemical accident sequences. The description and functions performed by this "IROFS" contribute to the reliability and functionality of other IROFS in the accident sequences, thus meeting the definition of a management measure in 10 CFR 70.4. Therefore, the NRC staff concludes that this configuration control "IROFS" can not be used to demonstrate regulatory compliance.

AREVA shall re-evaluate those accident sequences where this configuration control IROFS is used and propose a different IROFS, where required, to demonstrate regulatory compliance. These results shall be communicated to the NRC in writing.

2) The submittal makes reference to several new sequences involving overpressurization and subsequent catastrophic failure of process pressure vessels which constitute high consequence events per 10 CFR 70.61. AREVA identified IROFS involving the low pressure circuit of the system. During the December 15, 2009, conference call, AREVA stated that there were no credible mechanisms in the high pressure circuit of the process (i.e., inside the pressurized vessels) that could result in a high or intermediate consequence event. The November 11, 2009, submittal from AREVA does not provide supporting information related to this conclusion.

During this conference call, the NRC staff informed AREVA that this is an unusual and indirect approach, and would not be considered reasonable and generally accepted, good engineering practices (RAGAGEP) for protecting pressure vessels from failure. For example, as stated during the conference call, Section VIII of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code generally considers the pressure relief devices on the high pressure circuit (i.e., the pressurized vessels) to have a safety designation related to the protection against overpressurization and catastrophic failure. Thus, for the supercritical CO₂ extraction process, the ASME code and the use of RAGAGEP would likely assign a safety designation to the relief devices on the pressurized vessels. However, in the AREVA submittal, none of these relief devices have a safety designation (i.e., declared IROFS) for any overpressurization scenarios; some pressurized vessels have uncredited defenses that include pressure relief devices on the high pressure circuit.

Consequently, the NRC staff concludes that AREVA's current approach does not demonstrate compliance with 10 CFR 70.61. The NRC staff concludes that AREVA has the option of identifying additional IROFS for these scenarios (e.g., by designating one or more of the uncredited defenses in the pressurized vessels as IROFS), or by providing an analysis that supports AREVA's conclusion that the current approach of controls on the low pressure circuit can render overpressurization and catastrophic failure events in the process as "highly unlikely." The NRC staff notes that, if AREVA chooses to submit an analysis to demonstrate the adequacy of the current safety strategy, it must be a high quality submittal addressing all credible overpressurization scenarios because the current strategy is contrary to Section VIII of the ASME Code and does not follow RAGAGEP. AREVA should also be aware that additional questions could result from the review of such an analysis by the NRC staff.

Consistent with 10 CFR 70.61(e) and 70.64(a)(5), AREVA shall either identify additional IROFS for these overpressurization events or provide a copy of a high quality analysis that demonstrates the currently proposed controls meet the regulatory requirements.

If you have any questions, please contact me at (301) 492-3111, or via e-mail at Rafael.Rodriguez@nrc.gov.

Please note that if your response contains proprietary information that you want withheld from the public under 10 CFR, Section 2.390, you must identify such information in your letter and your basis for withholding it.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agency-wide Documents Access and Management System (ADAMS). ADAMS is accessible through the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Rafael L. Rodriguez, Project Manager
Fuel Manufacturing Branch
Fuel Facility Licensing Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 70-1257
License No.: SNM-1227

cc: Calvin D. Manning, Manager
Nuclear Criticality Safety
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2101 Horn Rapids Road
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Sincerely,

/RA/

Rafael L. Rodriguez, Project Manager
Fuel Manufacturing Branch
Fuel Facility Licensing Directorate
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

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