ENCLOSURE 1

AREVA LICENSING REPORT NO. ANP-3304NP, REVISION 0

AREVA Response to NRC Follow-Up on SRXB RAI-6: ASME Overpressure Analysis

Non-Proprietary

9 pages follow

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ANP-3304NP
Revision 0

Licensing Report

April 2014

AREVA Inc.

Controlled Document

Nature of Changes

Item	Section(s) or Page(s)	Description and Justification
1	All	Initial Issue

Contents

List of Tables

Nomenclature

Acronym	Definition
ASME	American Society of Mechanical Engineers
NRC	Nuclear Regulatory Commission, U.S.
RAI	Request for Additional Information
SRXB	Reactor Systems Branch of NRC

1.0 INTRODUCTION

The ASME overpressure analysis is performed to demonstrate the safety/relief valves have sufficient capacity and performance to satisfy the requirements established by the ASME Boiler and Pressure Vessel Code. For Monticello the maximum allowable reactor dome pressure is 1332 psig (1347 psia) and the maximum allowable vessel pressure is 1375 psig (1390 psia). In SRXB RAI-6 the NRC staff requested justification that it is conservative to initiate this analysis from the maximum initial dome pressure. This was requested since if the event was initiated from a lower pressure condition at the same power level, the initial steady state void fraction could be higher, leading to a greater void collapse and resultant neutron flux spike. In Enclosure 2 of Reference 1, the licensee provided a response to SRXB RAI-6.

In Reference 2 the NRC provided a follow-up RAI.

Follow-Up to SRXB RAI-6 re: ASME Overpressure Analysis

The NRC staff requested the licensee to justify the assumption for the maximum allowable initial dome pressure. At a lower pressure condition at the same power level, the initial steady state void fraction could be higher, leading to a greater void collapse and resultant neutron flux spike.

In its letter dated January 31, 2014, the licensee provided a response to SRXB RAI-6, acknowledging the potentially limiting characteristics of a lower initial dome pressure, and confirmed that the higher pressure initial condition was more limiting. The licensee stated:

> *...a lower initial dome pressure may experience a larger pressure increase (peak pressure – initial pressure) during the event. However, a lower initial dome pressure also has more margin to the pressure limit. AREVA calculations have shown the increase in the pressure rise during the event does not offset the increase in initial pressure margin.*

The licensee also provided results of an analysis, applicable to Monticello, that evaluated both initial pressure conditions, and indicated that the lower initial pressure result was bounded by the higher initial pressure result by a margin of 5 pound per

square inch (psi). The NRC staff verified the licensee's response, which is based on AREVA's prior modeling experience, by reviewing the topical report suite describing these modeling approaches. The NRC staff was unable to locate, in its record system, a clear disposition for this initial condition that verified the licensee's assertion that this analysis would be applicable to Monticello. In light of the facts that the difference in peak pressures in the sensitivity analyses was 5 psi, and the licensee's indicated margin to the dome pressure safety limit was 6 psi, the NRC staff determined that supplemental information is required to verify the applicability of the experiential analyses to Monticello specifically.

Please provide relevant excerpts from an NRC-approved topical report with a disposition for the selection of initial conditions, or demonstrate that the chosen initial condition is the most conservative with respect to the limiting vessel pressure.

2.0 AREVA RESPONSE

AREVA topical reports do not address the selection of the initial dome pressure that is conservative for calculating the peak pressure for ASME overpressure analysis. Therefore, Monticello specific calculations have been performed to demonstrate that the maximum initial dome pressure is the most conservative initial pressure for calculating the Monticello peak transient pressure with AREVA transient methods.

Monticello ASME analyses are summarized in Section 7.1 of Reference 4. The limiting conditions were repeated with lower values for the initial dome pressure. For each initial dome pressure, an energy balance for the vessel was performed to determine the appropriate values for the steam flow, core inlet enthalpy etc.

The Monticello calculations are summarized in Table 1. These results show the trend described in Reference 1. For the reasons mentioned in the original RAI, a lower initial dome pressure experiences a larger pressure increase (peak pressure – initial pressure) during the event. However, a lower initial dome pressure also has more margin to the pressure limit. The AREVA calculations for Monticello show the same trend described in the original response; when the ASME analysis is performed with a lower initial dome pressure, the increase in the pressure rise during the event does not offset the increase in initial pressure margin.

Table 1 Monticello Sensitivity Results for Initial Dome Pressure

Initial Dome Pressure [psia]	Peak Vessel Pressure Lower Plenum [psig]	Peak Dome Pressure [psig]
[		
		]
1040	1360	1326
Pressure Limit	1375	1332

3.0 REFERENCES

1. Letter from Xcel Energy to NRC, "AREVA ATRIUM 10XM Fuel Transition – Response to Request for Additional Information (TAC MF2479)", L-MT-14-003, January 31, 2014 (ML 14035A297).

2. Email from NRC (Terry Beltz) to Xcel Energy (John Fields), "Monticello Nuclear Generating Plant – NRC Staff Request for Additional Information (Follow-up Question) re:AREVA Fuel Transition License Amendment Request (TAC No. MF2479)", March 27, 2014.

3. Letter from Xcel Energy to NRC, "License Amendment Request for Transition to AREVA ATRIUM 10XM Fuel and AREVA Safety Analysis Methodology", L-MT-13-055, July 15, 2013 (ML 13200A187).

4. ANP-3213(P) Revision 1, *Monticello Fuel Transition Cycle 28 Reload Licensing Analysis (EPU/MELLLA)*, AREVA NP, June 2013.

ENCLOSURE 3

**AREVA AFFIDAVIT FOR
WITHHOLDING PROPRIETARY INFORMATION**

3 pages follow

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

1. My name is Alan B. Meginnis. I am Manager, Product Licensing, for AREVA Inc. and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by AREVA to determine whether certain AREVA information is proprietary. I am familiar with the policies established by AREVA to ensure the proper application of these criteria.

3. I am familiar with the AREVA information contained in the report ANP-3304P, Revision 0, "AREVA Response to NRC Follow-Up on SRXB RAI-6: ASME Overpressure Analysis," dated April 2014 and referred to herein as "Document." Information contained in this Document has been classified by AREVA as proprietary in accordance with the policies established by AREVA for the control and protection of proprietary and confidential information.

4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by AREVA and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in this Document be withheld from public disclosure. The request for withholding of proprietary information is made in accordance with 10 CFR 2.390. The information for which withholding from disclosure is

requested qualifies under 10 CFR 2.390(a)(4) "Trade secrets and commercial or financial information."

6. The following criteria are customarily applied by AREVA to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for AREVA.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA, would be helpful to competitors to AREVA, and would likely cause substantial harm to the competitive position of AREVA.

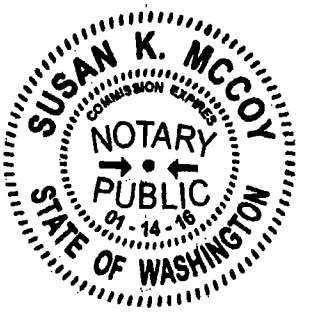
The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(b), 6(d) and 6(e) above.

7. In accordance with AREVA's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside AREVA only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. AREVA policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.

SUBSCRIBED before me this 22nd day of April, 2014.



Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016