

RESOLUTION OF COMMENTS BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON  
DRAFT SAFETY EVALUATION FOR BAW-10247PA, REVISION 0, SUPPLEMENT 1P, REVISION 0,  
“REALISTIC THERMAL-MECHANICAL FUEL ROD METHODOLOGY FOR BOILING WATER  
REACTORS SUPPLEMENT 1: QUALIFICATION OF RODEX4 FOR RECRYSTALLIZED  
ZIRCALOY-2 CLADDING”

AREVA INC.  
Project No. 728

This Attachment provides the U.S. Nuclear Regulatory Commission (NRC) staff’s review and disposition of the comments made by AREVA Inc. (AREVA) on the draft safety evaluation (SE) for Topical Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0, “Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding.” AREVA provided a marked up version of the draft SE along with the comments (ADAMS Accession No. ML17075A325) to facilitate the NRC staff understanding of the comments.

<b>Page*</b>	<b>Line start*</b>	<b>Line end*</b>	<b>Proposed Change and Reason</b>	<b>NRC Resolution of Comments</b>
4	13	13	Proprietary: developed coefficients - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
4	30	30	Proprietary: developed values - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
6	2	3	Proprietary: Table 1 and formula below - developed values - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

<b>Page*</b>	<b>Line start*</b>	<b>Line end*</b>	<b>Proposed Change and Reason</b>	<b>NRC Resolution of Comments</b>
6	6	7	Proprietary: Table 2 - developed values - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
7	1	1	Proprietary: Figure 1 - developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
7	16	17	Proprietary: developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
8	20	21	Proprietary: Figure 2 - developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
8	28	28	Proprietary: developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
9	3	4	Proprietary: developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
9	6	7	Proprietary: Figure 3 - developed characteristic material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
10	1	1	Proprietary: Figure 4 - developed characteristic material properties	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

<b>Page*</b>	<b>Line start*</b>	<b>Line end*</b>	<b>Proposed Change and Reason</b>	<b>NRC Resolution of Comments</b>
10	19	19	Editorial: "a thermal" should be "athermal"	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
10	27	29	Proprietary: developed material properties - mark as proprietary from "higher value" through "cladding"	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
11	9	9	Proprietary: Figure 5 - evaluated material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
11	15	15	Proprietary: number of data points in developed database - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
12	1	1	Proprietary: Figure 6 - evaluated material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
12	3	4	Proprietary: Figure 7 - evaluated material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
13	4	4	Proprietary: database evaluation - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
13	19	19	Editorial: "nodular" instead of "nodulation"	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

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14	32	32	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
15	3	4	Proprietary: model detail text - mark as proprietary starting with "linear" and ending with "range" as denoted on enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
15	7	8	Proprietary: Figure 8 - developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
15	13	13	Editorial: "439" should be "436"	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
16	18	18	Proprietary: database details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
16	20	20	Proprietary: database details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
16	23	23	Proprietary: database details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
16	24	24	Proprietary: database details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

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16	24	25	Proprietary: database details - mark as proprietary starting with "three" and ending with "available" as marked on enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
16	28	28	Proprietary: database details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
17	1	1	Proprietary: Figure 9 -evaluated material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
17	10	10	Proprietary: evaluation details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
18	1	1	Proprietary: Figure 10 - evaluation details - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
19	27	27	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
20	1	1	Proprietary: Figure 11 - material developed and evaluated properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
20	5	6	Proprietary: Figure 12 - material developed and evaluated properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

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21	8	8	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
21	10	10	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
21	16	17	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
21	32	32	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
22	1	1	Proprietary: Figure 13 - material developed and evaluated properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
22	11	11	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
22	15	15	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
23	48	48	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.

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24	1	1	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
24	2	2	Proprietary: developed material properties - add proprietary bracketing as marked in enclosed markup.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
24	9	32	Editorial: Replace entire section with attached text: Excerpt A Enclosed	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.
24	36	40	Editorial: Replace paragraph with the following text:  The result of the review of the supplement to BAW-10247PA Revision 0 (Reference 1) is that the RODEX4 code and methods are acceptable for the inclusion of RX Zircaloy-2 and therefore, condition c in Section 5 of the Reference 7 SE is removed. All other limitations as discussed above in Section 4 continue to apply.	Accepted with minor changes. Added the following sentence: "Additionally, the hydrogen pickup model in RODEX4 code and methods has been found to be acceptable for RX and CWSR Zircaloy-2 cladding for BWR applications."
25	23	23	Editorial: Reference 4 ADAMS Accession No. should be ML13119A029.	The NRC staff agrees with the editorial suggestion. Change implemented in final SE.