

RESOLUTION OF COMMENTS BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
ON DRAFT SAFETY EVALUATION FOR  
TOPICAL REPORT EMF-3028(P)  
“RAMONA5-FA: A COMPUTER PROGRAM FOR BWR [BOILING WATER REACTOR]  
TRANSIENT ANALYSIS IN THE TIME DOMAIN,” VOLUME 1, REVISION 2, “USERS  
MANUAL” AND VOLUME 2, “THEORY MANUAL”  
AREVA NP, 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 NP, Inc. (AREVA) on the draft safety evaluation (SE) for Topical Report (TR) EMF-3028(P), “RAMONA5-FA: A Computer Program for BWR Transient Analysis in the Time Domain,” Volume 1, Revision 2, “Users Manual” and Volume 2, “Theory Manual.” AREVA provided its comments in a letter dated March 22, 2010, entitled “Response to Request for Comment on Draft SER for EMF-3028(P), Volumes 1 and 2, Revision 2 and RAMONA5 Version 2.4” (Agencywide Documents Access and Management System Accession No. ML100830370).

<u>PAGE NO.</u>	<u>LINE(S) NO.</u>	<u>PROPOSED CHANGE AND REASON</u>	<u>NRC STAFF COMMENT DISPOSITION</u>
1	3-7	Title was modified from “EMF-3028(P), “RAMONA5-FA: A COMPUTER PROGRAM FOR BWR TRANSIENT ANALYSIS IN THE TIME DOMAIN,” VOLUME 1, REVISION 2, “USERS MANUAL” AND “THEORY MANUAL”, VOLUME 2” to “BAW-10255 “Cycle-Specific DIVOM Methodology Using the RAMONA5-FA Code”. This modification was made to clarify that the SE is planned to be used to update BAW-10255PA to remove the 10% penalty associated with EFW domains. EMF-3028 was submitted to facilitate a more detailed review of the RAMONA5-FA methods which was needed to remove this restriction.	The NRC staff disagrees with the proposed change. The proposed change was not made.
5	203	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.

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5	209	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
5	211-212	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
5	225	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
5	226	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
6	254	Remove the text: "(2 group fluxes and nodal powers)". This text was removed to reflect that the modal method does not use a full two group nodal solution.	The text was removed.
6	266-271	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
6	274	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
6	275	Removed the text "two group" to reflect that the modal method does not use a full two group solution	The text was removed.
6	275	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
6	279-281	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
8	389-391	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
8	395-397	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
9	407	Replace text "Second, the actual bypass void oscillation is calculated with the RAMONA5-FA code" with "Second, the actual bypass void oscillation is calculated by integrating a system of differential equations representing two-phase flow mass, momentum, and energy balance formulated similar to the RAMONA5-FA code." This change is recommended to be consistent with the discussion in RAI #21. Note that this replacement text is included in a comment on Page 9.	The NRC staff agrees with the suggested modification. The text was replaced.

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9	409-411	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
9	414	Replace the text "actual bypass flow oscillations calculated by RAMONA5-FA" with "calculated bypass flow oscillations". This change is recommended to be consistent with the discussion in the response to RAI #21.	The NRC staff agrees with the suggested modification. The text was replaced.
9	416-417	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
9	426	Add the text "for a 764 assembly plant" after the text "19100 active channel nodes". This is a clarification since the number of active channel nodes depends on the number of channels in the core.	The NRC staff agrees with the clarification. The text was added.
9	450	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
10	453	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
10	468	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
10	470-471	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
10	475-477	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
10	492-493	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
11	547	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
12	563-565	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
12	567-569	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
14	653-654	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
14	668-669	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
14	687-688	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.

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14	688-691	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
14	693-697	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
14	699-703	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
15	704-705	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
15	710-711	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
15	715-716	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
15	732-733	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
15	734-737	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	756	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	757	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	759-762	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	774	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	778	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
16	781-804	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
17	806-810	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
17	815	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
17	832	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
17	834	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
17	839-847	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.

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18	858-888	The particular correlation used in licensing calculations is considered proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
18	901-904	The particular correlation used in licensing calculations is considered proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
19	910	The particular correlation used in licensing calculations is considered proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
19	915-919	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
19	925-926	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
21	1007	Add the following text: "The NRC staff acknowledges that AREVA will combine this safety evaluation with the previously approved TR to issue Revision 3 of TR BAW-10255. All parts of the latest revisions have been approved by the NRC staff." This statement is recommended to ensure that all parties are in agreement as to how the SE will be implemented. This approach is also consistent with approach used to issue TRs EMF-2209 Revision 3 and ANP-10249 Revision 1.	The NRC staff disagrees with the suggested text change. The suggested change was not made.
22	1055-1056	The particular correlation used in licensing calculations is considered proprietary information. Since this reference was used in a section deemed proprietary, and it can identify the correlation used for licensing, this reference is deemed proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
22	1057-1058	The particular correlation used in licensing calculations is considered proprietary information. Since this reference was used in a section deemed proprietary, and it can identify the correlation used for licensing, this reference is deemed proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.

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Table 1	All	Replace table image with the full table to ensure that the square proprietary brackets are appropriately bolded. Note that proprietary brackets occur in the last column of the table on rows 2 (Momentum formulation), 3 (Hydraulic correlation), 5 (Neutronics cross sections), 6 (Hydraulic input), and 7 (Pin Conduction).	The NRC staff agrees that the information is proprietary. The information was redacted and the table image was replaced.
Table 2	All	Table was marked as proprietary since it may identify the correlation used in licensing calculations.	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 2	Table title	Table title contains proprietary information	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 3	All	Table was marked as proprietary since it may identify the correlation used in licensing calculations.	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 3	Table title	Table title contains proprietary information	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 4	All	Table was marked as proprietary since it may identify the correlation used in licensing calculations.	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 4	Table title	Table title contains proprietary information	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 5	All	Table was marked as proprietary	The NRC staff agrees that the information is proprietary. The information was redacted.
Table 6	All	Replace table image with the full table to ensure that the square proprietary brackets are appropriately bolded. Note that all entries in columns 2 and 3 are considered proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted and the table image was replaced.
Figure 1	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 2	All	Figure was marked as proprietary since it may identify the correlation used in licensing calculations.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 2	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 3	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 4	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.

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Figure 5	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 6	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 6	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 7	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 7	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 8	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 8	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 9	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 9	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 10	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 10	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 11	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 11	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 12	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 12	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 13	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 14	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 15	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 15	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.

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Figure 16	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 16	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 17	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 17	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 18	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 19	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 19	Figure title	Figure title contains proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 20	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 21	All	This figure is marked as proprietary.	The NRC staff agrees that the information is proprietary. The information was redacted.
Figure 22	All	This figure is marked as proprietary.	Figure 22 was removed from the safety evaluation.
App A Pg 1	All	Added line numbers to better identify changes.	Not applicable.
App A Pg 1	11	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 1	24-25	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 1	25-27	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 1	36-40	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 2	50-56	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 2	62	It is noted that proprietary brackets are already appropriately marked for RAI #5.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 2	70-71	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 2	72-75	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.

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App A Pg 3	124, 125, 127	It is noted that proprietary brackets are already appropriately marked for RAI #10.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 3	137-139	It is noted that proprietary brackets are already appropriately marked for RAI #11.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 4	146-147	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 4	151-152	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 4	156, 161-162	It is noted that proprietary brackets are already appropriately marked for RAI #12.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 4	168-169	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 4	169	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 6	249	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.
App A Pg 6	261	Remove the word "RAMONA5-FA" to make the discussion consistent with the response to RAI #21.	The word was removed for consistency.
App A Pg 6	262- 265	Proprietary information.	The NRC staff agrees that the information is proprietary. The information was redacted.