

SLR Document Changes: Water Chemistry

Overview of purpose of change: Revise AMP XI.M2, “Water Chemistry,” to include the latest revision of EPRI guidelines for BWR and PWR.

Basis Document Input: Revise NUREG-2221 as follows.

Add a new row to Table 2-29 as follows:

XI.M2 Water Chemistry		
Location of Change	Summary of Significant Changes	Technical Bases for Changes
Program Description References	<p>Revision to include the latest Electric Power Research Institute (EPRI) “Pressurized Water Reactor Secondary Water Chemistry Guidelines.” Revision 8.</p> <p>Revision to include the latest Electric Power Research Institute (EPRI) BWRVIP-190, “BWR Vessel and Internals Project, Volume 1 BWR Water Chemistry Guidelines – Mandatory, Needed, and Good Practice Guidance.” Revision 1</p> <p>Updated references.</p>	<p>EPRI has issued “Pressurized Water Reactor Secondary Water Chemistry Guidelines.” Revision 8. Consistent with the staff’s evaluation of an exception documented in NUREG–XXXX, “Safety Evaluation Report Related to the License Renewal of Surry Power Station, Units 1 and 2,” MM 20YY, Section 3.0.3.2.2, “Water Chemistry (Primary and Secondary),” the staff finds the use of EPRI “Pressurized Water Reactor Secondary Water Chemistry Guidelines.” Revision 8. EPRI 3002010645, dated September 2014, acceptable to cite.</p> <p>EPRI has issued BWRVIP-190, “BWR Water Chemistry Guidelines - Mandatory, Needed, and Good Practice Guidance.” Revision 1. Consistent with the staff’s evaluation of an exception documented in NUREG–2205, “Safety Evaluation Report Related to the License Renewal of LaSalle County Station, Units 1 and 2,” September 2016, Section 3.0.3.2.1, “Water Chemistry,” the staff finds the use of BWRVIP-190, Revision 1, “BWR Vessel and Internals Project, Volume 1, BWR Water Chemistry Guidelines – Mandatory, Needed, and Good Practice Guidance,” EPRI 3002002623, dated April 24, 2014, acceptable to cite.</p>

References. EPRI 3002010645, “PWR Secondary Water Chemistry Guidelines.” Revision 8. Palo Alto, California: Electric Power Research Institute. September 2017.

EPRI 3002002623, BWRVIP-190, “BWR Water Chemistry Guidelines - Mandatory, Needed, and Good Practice Guidance.” Revision 1. Palo Alto, California: Electric Power Research Institute. April 2014.

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GALL-SLR: Revise NUREG-2191 as follows.

XI.M2 WATER CHEMISTRY

Program Description:

The main objective of this program is to mitigate loss of material due to corrosion, cracking due to stress corrosion cracking (SCC) and related mechanisms, and reduction of heat transfer due to fouling in components exposed to a treated water environment. The program includes periodic monitoring of the treated water in order to minimize loss of material or cracking.

The water chemistry program for boiling water reactors (BWRs) relies on monitoring and control of reactor water chemistry based on industry guidelines contained in the Boiling Water Reactor Vessel and Internals Project (BWRVIP)-190 (Electric Power Research Institute (EPRI) 10165793002002623), "BWR Vessel and Internals Project: BWR Water Chemistry Guidelines," Revision 1. The BWRVIP-190 has three sets of guidelines: (i) one for reactor water, (ii) one for condensate and feedwater, and (iii) one for control rod drive mechanism cooling water. The water chemistry program for pressurized water reactors (PWRs) relies on monitoring and control of reactor water chemistry based on industry guidelines contained in EPRI 1014986, "PWR Primary Water Chemistry Guidelines," Revision 7 and EPRI 10165553002010645, "PWR Secondary Water Chemistry Guidelines," Revision 78.

Table XI-01. FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs			
AMP	GALL-SLR Program	Description of Program	Implementation Schedule*
XI.M2	Water Chemistry	This program mitigates aging effects of loss of material due to corrosion, cracking due to SCC, and related mechanisms, and reduction of heat transfer due to fouling in components exposed to a treated water environment. Chemistry programs are used to control water chemistry for impurities (e.g., chloride, fluoride, and sulfate) that accelerate corrosion. This program relies on monitoring and control of water chemistry to keep peak levels of various contaminants below the system-specific limits, based on EPRI guidelines (a) BWRVIP-190 (EPRI 10165793002002623, BWR Water Chemistry Guidelines 20082014 Revision) for BWRs or (b) EPRI 1014986 (PWR Primary Water Chemistry – Revision 7) and EPRI 10165553002010645 (PWR Secondary Water Chemistry – Revision 78) for PWRs.	Program is implemented 6 months prior to the subsequent period of extended operation

Reference:

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EPRI ~~10165553002010645~~, "PWR Secondary Water Chemistry Guidelines." Revision ~~7~~⁸. Palo Alto, California: Electric Power Research Institute. ~~February 2009~~ ^{September 2017}.

EPRI. BWRVIP-190 (EPRI ~~40165793002002623~~), "BWR Vessel and Internals Project: BWR Water Chemistry Guidelines." ^{Revision 1}. Palo Alto, California: Electric Power Research Institute. ~~October 2008~~ ^{April 2014}

SRP-SLR: Revise NUREG-2192 as follows.

Reference:

12. EPRI. BWRVIP-190 (EPRI ~~40165793002002623~~), "BWR Vessel and Internals Project: BWR Water Chemistry Guidelines." ^{Revision 1}. Palo Alto, California: Electric Power Research Institute. ~~October 2008~~ ^{April 2014}

24. EPRI ~~EPRI TR-10165553002010645~~, "PWR Secondary Water Chemistry Guidelines—Revision ~~7~~⁸." Palo Alto, California: Electric Power Research Institute. ~~February 2009~~ ^{September 2017}.