

**St. Lucie SLRA: Breakout Questions**

SLRA Section 4.3.1, "Metal Fatigue of Class 1 Components"

TRP: 143.1

Note: Breakout Questions are provided to the applicant and will be incorporated into the publicly-available audit report.

<b>Technical Reviewer</b>	Seung Min	12/9/2021
<b>Technical Branch Chief</b>	Matt Mitchell	12/21/2021
<b>Breakout Session</b>	<i>Date/Time</i>	<i>To be filled in by PM</i>

<b>Applicant Staff</b>	<b>NRC staff</b>
<i>To be filled out by PM during breakout</i>	

<b>Question Number</b>	<b>SLRA Section</b>	<b>SLRA Page</b>	<b>Background / Issue (As applicable/needed)</b>	<b>Discussion Question / Request</b>	<b>Outcome of Discussion</b>
1	4.3.1	4.3-2	<p>SLRA Tables 4.3.1-1 and 4.3.1-2 describe the 80-year projected cycles for the design transients, which were included in the original PSL LRA for PSL Units 1 and 2 respectively.</p> <p>The SLRA indicates that the 80-year projections of the transient cycles use the cumulative cycle counts for each transient monitored on each unit up to December 31, 2019. The SLRA also explains that the cycle counts are projected to 80 years of operation (1) based on a direct extrapolation of the cycle counts through the subsequent</p>	<p>1. Explain why the second cycle projection method uses only the recent 10 years of the cycle counting for 80-year cycle projections. As part of the response, clarify whether the second projection method results in the more conservative 80-year cycle projections (i.e., more projected cycles) than the first projection method (i.e., the direct extrapolation of the cycle count).</p>	

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			<p>period of extended operation (SPEO) or (2) based on cycle accumulation over the recent 10 years of cycle counting (up to December 31, 2019) and then by pro-rating the counts for the remaining years to the end of the SPEO.</p> <p>However, the SLRA does not clearly explain why the second cycle projection method for some transients uses only the cycle counts from the recent 10 years of the cycle counting.</p>		
2	4.3.1	4.3-10 4.3-11	<p>SLRA Tables 4.3.1-1 and 4.3.1-2 describe the design transients, which were included in the original PSL LRA for PSL Units 1 and 2 respectively. These tables indicate that some transients will not be monitored in the Fatigue Monitoring program (e.g., “plant loading, 5 percent/minute” and “10 percent step load increase” transients).</p> <p>In addition, Tables 1 and 2 of Westinghouse LTR-SDA-II-20-32-NP indicate that the transients, which will not be monitored in the Fatigue Monitoring program, are consistent with the transients that are not monitored in the current licensing basis (i.e., the initial license renewal term up to 60-year operation). The tables explain that these design transients were excluded from the monitoring of the Fatigue Monitoring</p>	<ol style="list-style-type: none"> <li>1. For the transients excluded from fatigue monitoring based on cycle margins, describe the cycle margins (e.g., margins beyond the actually accumulated cycles with respect to 80-year projected cycles and design cycle) to confirm that cycle margins are large enough to exclude the transients from fatigue monitoring.</li> <li>2. For the transients excluded from fatigue monitoring based on fatigue usage contributions, clarify whether the 80-year evaluation considers all the</li> </ol>	

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			<p>program because the transients resulted in a fatigue usage less than 0.1 or large margins were present with respect to actual cycle counts versus allowable cycle limits.</p> <p>The staff found a need to confirm that the basis of excluding these transients from fatigue monitoring remains valid for 80 years of operation.</p>	<p>contributions of the excluded transients on fatigue usage to confirm that the total contributions of the transients for an applicable location do not exceed the contribution limit (0.1), as opposed to a single contribution of a specific transient. If not, justify why the combined effects of the transients on fatigue usage are not considered in the determination for fatigue monitoring exclusion.</p>	
3	4.3.1	4.3-2 4.3-12	<p>SLRA Seciton 4.3.1 states that the transients, which are included in the current PSL Fatigue Monitoring program but not included in the original PSL LRA for PSL Units 1 and 2, are presented in Tables 4.3.1-3 and 4.3.1-4, respectively. The SLRA also indicates that SLRA Tables 4.3.1-5 and 4.3.1-6 describe the 80-year projections for additional transients (e.g., "loss of letdown flow" transient cycles) that support subsequent period of extended operation (SPEO) fatigue evaluations.</p> <p>The SLRA does not clearly discuss whether the Fatigue Monitoring program</p>	<ol style="list-style-type: none"> <li>1. Clarify whether the Fatigue Monitoring program will monitor the additional transients that are described in SLRA Tables 4.3.1-5 and 4.3.1-6. If not, justify why the additional transients in the table do not need to be monitored in the Fatigue Monitoring program for SPEO.</li> <li>2. With respect to the pressurizer spray nozzle cumulative usage factor addressed in SLRA Table</li> </ol>	

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			<p>will monitor the additional transients for 80 years of operation, which are described in SLRA Tables 4.3.1-5 and 4.3.1-6.</p> <p>In addition, SLRA Table 4.3.1-4 addresses the pressurizer spray nozzle cumulative usage factor in the column for the additional Unit 2 transients that are included in the fatigue monitoring. However, this item does not clearly describe relevant transients and their cycle limits, accumulated cycles and 80-year projected cycles. The staff found a need to clarify the transients and associated cycles for this item.</p>	4.3.1-4, describe the relevant transients and their cycle limits, accumulated cycles and 80-year projected cycles, consistent with the other transient listings.	
4	4.3.1	4.3-4	<p>SLRA Section 4.3.1 addresses the metal fatigue TLAA for Class 1 components and piping.</p> <p>However, the section does not clearly discuss the following items: (1) the design transients used in the cumulative usage factor (CUF) calculations for pressurizer surge lines; (2) the associated design cycles, actual cycles and projected 80-year cycles; and (3) how the applicant ensures that actual cycles do not exceed the design cycles.</p>	1. Discuss the following items: (1) the design transients used in the cumulative usage factor (CUF) calculations for pressurizer surge lines; (2) the associated design cycles, actual cycles and projected 80-year cycles; and (3) how the applicant ensures that actual cycles do not exceed the design cycles.	