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Attachments: V.C. Summer LAR-16-03 Auxiliary Building Roof Rebar Configuration Design Rev1 Clarification Questions from BPJain.docx

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Clarification Questions for Discussion

V.C. Summer Units 2 and 3 LAR 16-03, R1, dated May 3, 2017

1. In response to NRC comment #2 regarding the revised governing load combination, the licensee (page 2 of 7 in Enclosure 3 to LAR16-03R1) stated, "the revised governing load combination should be LC7 instead of LC6. This was a transcriptional error and the markup of UFSAR Table 3H.5-10 is updated to reflect this correction." The staff notes from the markup of UFSAR Table 3H.5-10 in 16-03R1, that in addition to correcting for transcriptional error in governing load combination, the numerical data associated with the force and reinforcement is also revised. The revised magnitude of forces and the required reinforcement in LAR 16-03R1 have increased significantly from those reported in LAR 16-03. For example, in UFSAR Table 3H.5-10 of LAR 16-03, a 10% increase in girder shear force and in the required reinforcement perpendicular to the girder was reported. However, in LAR 16-03R1, respective increase of 24% and 41% is reported. The staff requires clarification of the extent and scope of the transcriptional error and whether the revised numerical data in UFSAR Table 3H.5-10 is also due to the transcriptional error. Staff requires clarification of the technical basis of the difference (s) in the analysis results reported in LAR 16-03 and LAR 16-03R1.
2. In several places in the LAR 16-03R1, the licensee attributes the increase in demand to "more refined analysis and the combined seismic and thermal loads." The load combinations reported in UFSAR Table 3.8.4-2 include combination of thermal and seismic loads. The staff needs clarification whether the licensed structures were designed to seismic and thermal load combinations and that consideration of this combination is not a change that is being considered for this license amendment. The staff needs to understand, given that the seismic and thermal load combination is not a new requirement for this license amendment, what "refinements" are made to the certified analysis that alone contributed to the significant increase in forces, e.g., increase of 41% in the required reinforcement perpendicular to the girder. The licensee is requested to clarify, with reference to the AP1000 certified DC, the specific "refinements" to the analysis and additional loads and loading scenarios have been considered. More specifically, the licensee is requested to clarify (1) the specific changes (refinements) made to the analysis and to the load(s) and load combinations, if any, with reference to certified AP1000 design, and (2) the technical basis(es) and justification to conclude that these specific changes result in increased required reinforcement and different governing load combinations.
3. The licensee is requested to provide clarification of the technical basis and justification for the statement that the LC7 governs the required concrete slab reinforcement parallel to the girders but not in the direction perpendicular to the girders that is governed by LC3. Generally the load combination LC7 is expected to be more critical than LC3 since the load combination LC7 includes additional accident loads (accident pressure, thermal, thermal reactions, etc.).

4. As stated in the LAR R1, the calculated required concrete slab reinforcement parallel to the girders, 2.54 in²/ft., has increased by 46% (from 1.74 to 2.54) and is exactly equal to the provided reinforcement. Please clarify the sensitivity of any unverified parameter, assumptions, or any load in the load combination considered in the calculations that may potentially result in exceeding the provided reinforcement value of 2.54 in²/ft.