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To:	"MOORE, MICHAEL S"
Cc:	BENNETT, BRUCE ALLEN
Subject:	Summer TS 4.3.3.6 SR LAR - Request for Additional Information
Date:	Wednesday, September 05, 2018 11:35:50 AM
Attachments:	image002.png

Michael,

By letter dated August 24, 2018 (ADAMS Accession No. ML18236A383), as supplemented by letter dated August 31, 2018 (ADAMS Accession No. ML18243A392), Virgil C. Summer Nuclear Power Plant, Unit 1 (Summer) submitted a license amendment request (LAR) to change the surveillance interval of Technical Specification (TS) 4.3.3.6 from 18 to 19 months. The NRC staff has reviewed the application and, based upon this review, determined that additional information is needed to complete our review. Please provide a response on the docket by September 11, 2018.

Extending the TS 4.3.3.6 required surveillance interval from 18 months to 19 months effectively means that the plant could operate the core exit thermocouple monitoring system for longer than previously assumed, without performing certain existing required surveillance actions. US NRC Generic Letter (GL) 91-04, Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle, dated April 2, 1991, provides US NRC guidance regarding what licensees should evaluate in support of a longer fuel cycle. Although there are several areas requiring review, instrument drift during the longer interval is the key consideration to be discussed here. Generic Letter 91-04 provides the following overview regarding instrument drift issues:

> Licensees must address instrument drift when proposing an increase in the surveillance interval for calibrating instruments that perform safety functions including providing the capability for safe shutdown. The effect of the increased calibration interval on instrument errors must be addressed because instrument errors caused by drift were considered when determining safety system setpoints and when performing safety analyses…Licensees must evaluate the effects of an increased calibration interval on instrument errors that exceed the assumptions of the safety analysis. Instrument drift affects the capability of a system to perform its safety function and is a consideration for determining safety system setpoints.

The magnitude of instrument drift is also one of the uncertainties, when combined with all other instrument channel uncertainties, used to determine the required allowance for overall instrument loop accuracy to support the channel's designated design functions. (i.e., the instrument channel must be sufficiently accurate to meet the requirements of each of the functions and applications the channel serves.) During calibration activities, the performance of the instrument channel is measured under calibration conditions to determine if the measured output of the channel has deviated beyond its expected performance. This information is used in the decision making as to whether the channel has been found to be operable or inoperable from a technical specification standpoint, as well as whether it is sufficiently accurate to support the performance requirements for any non-technical specification functions.

Request for Additional Information (RAI)-1
Based on the information provided in the license amendment, the staff determined that the

licensee did not demonstrate there is no adverse impact of the increased channel drift uncertainty on the current licensing basis allowances assumed in the channel accuracy calculations. Specifically, the license amendment does not quantify the estimated additional drift uncertainty associated with the requested surveillance extension. This information is necessary to assess its impact on the existing design basis. Such information is needed to determine whether the overall loop accuracy assumptions continue to be protected. This additional information is requested to support compliance with 10 CFR 50.36(c)(3). Addressing regulatory guide (RG) 1.105, and GL 91-04 provides one acceptable approach for meeting regulatory requirements associated with instrument channel performance.

a) Provide a summary of the methodology used for establishing the limiting instrument loop uncertainty associated with the design functions served by these core exit temperature monitoring channels.

b) Describe the methodology used and the limiting acceptable calibration tolerance for periodic surveillance testing. Indicate whether there are any related Analytical Limits (AL) or other limiting design values (and the sources of these values) that may serve as the basis for any protective setpoints associated with the design functions served by the instrument channels affected by the LAR.

c) Provide evidence that adequate margin exists to accommodate the additional drift within the design basis.

(Note: The licensee can provide a loop accuracy calculation summary identifying the limiting loop uncertainty values needed to support the required design functions, or methodology summary and calculation summary, if applicable, in lieu of calculation.)

RAI-2

Section 50.36(c)(3) of 10 CFR Part 50 states: “Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.”

Please provide a summary of the determination of the expected instrument channel drift calculated to be present at the end of the 19 month + 25% interval.

RAI-3

On page 5 of the LAR, it is stated:

> Historical review of the last two performances of this surveillance have shown that 6 of 24 and 7 of 24 thermocouples were required to be adjusted back into tolerance due to as found values being out of tolerance. Therefore 18 and 17 thermocouples, respectively, were in tolerance and would have remained operable if no adjustment were performed.

a) Provide the recorded “As-Found” and “As-Left” values from the last surveillances associated with these core exit temperature monitoring channels.

b) UFSAR Section 7.5.5 states, in part, “The Incore Temperature Monitoring System consists of 51 thermocouples positioned in the reactor vessel above the core to measure reactor coolant temperature at the fuel assembly outlets,” explain why only 24 were surveilled during the last two surveillances.

RAI-4

If the surveillance frequency is increased one month, as proposed in the LAR, the

thermocouple accuracy would be expected to incur additional drift. Given the number of core exit thermocouples found out of tolerance during performance of the last two surveillances, provide a discussion on the impact to the computed parameters (such as saturation margin, core relative fuel assembly power distribution, core enthalpy rise nuclear hot-channel factors, core radial tilting factors). The discussion should consider both the assumed uncertainty as well as the actual as-found uncertainties during the last two performances of the surveillance and any additional drift that would be expected to occur during the proposed additional month, including the +25% grace period.

Once this email is added to ADAMS, I will provide the accession number for your reference.

Thanks
Mike

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