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Document Control Desk
United States Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Supplemental Information Regarding RAI 1.3 Response Submitted on January 13, 2020 (ML20016A314) for the Maryland University Training Reactor (R-070)

Dear Ms. Montgomery & Mr. Balazik,

The University of Maryland seeks to provide additional information regarding our response to RAI 1.3: "Justify by using specific parameters (i.e., peaking factor, departure from nucleate boiling ratio, core power level, average fuel element power etc.) why the current thermal-hydraulic analysis bounds the proposed core configuration."

University of Maryland's response reads "The thermal hydraulic analysis for the current core bounds the thermal hydraulics for the proposed core configuration. The new core will have a similar power peaking factor (1.65 vs. 1.6), and a lower highest power element (4.23kW vs 4.63 kW, see Attachment 1). The same power will be distributed across a larger core resulting in a lower power per element (2.75kW vs 3.23kW at 300kW) and more conservative fuel temperatures. Lower fuel temperatures will result in a larger DNBR. For the current core, General Atomics has simulated the DNBR at power of 300kW and a 92° C pool temperature to be 5.92; the proposed core will have a greater DNBR. The proposed core is more conservative thermal-hydraulically than the current core thus the current thermal-hydraulic analysis is bounding."

We seek to clarify the highest power element information. The information about the element powers originally reported is derived from the OSU Neutronics Analysis Report (Attachment 1 of the RAI). The thermal-hydraulic analysis performed in support of the relicensing (ML110350175) uses a more conservative value of 5.15kW for the highest power element of the current core at 300kW. This value should be used for the analysis. The OSU analysis gives a highest power element of 4.23kW at a reactor power of 280kW. This value should be scaled to

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300kW to match the current thermal hydraulic analysis. Thus, the highest power element of the proposed core is 4.23kW*(300kW/280kW) = 4.53kW.

With these corrections, the response to RAI 1.3 should read "The thermal hydraulic analysis for the current core bounds the thermal hydraulics for the proposed core configuration. The new core will have a similar power peaking factor (1.65 vs. 1.6), and a lower highest power element (4.53kW vs 5.15 kW, see Attachment 1 of the RAI). The same power will be distributed across a larger core resulting in a lower power per element (2.75kW vs 3.23kW at 300kW) and more conservative fuel temperatures. Lower fuel temperatures will result in a larger DNBR. For the current core, General Atomics has simulated the DNBR at power of 300kW and a 92° C pool temperature to be 5.92; the proposed core will have a greater DNBR. The proposed core is more conservative thermal-hydraulically than the current core thus the current thermal-hydraulic analysis is bounding."

Please let me know if there are any further questions.

I declare under penalty of perjury that the foregoing response is true and correct.

Sincerely,

Amber S. Johnson

Director, Nuclear Reactor and Radiation Facilities