

**From:** Wang, Alan  
**Sent:** Tuesday, April 12, 2011 5:30 PM  
**To:** 'MILLAR, DANA'; 'Jerry Burford'  
**Cc:** Lent, Susan; Burkhardt, Janet  
**Subject:** RE: GG EPU Nuclear Performance and Code Review Branch Request for Additional Information (ME4679)

Dana and Jerry,

By letter dated September 8, 2010 (Agencywide Documents Access and Management System, Accession No. ML102660403), Entergy Operations, Inc. (Entergy, the licensee), submitted a request to amend the Facility Operating License No. NPF-29 for Grand Gulf Nuclear Station, Unit 1 (GGNS). The licensee proposed a license amendment request (LAR) for an extended power uprate (EPU) to increase the maximum reactor core power operating limit from 3898 megawatts thermal (MWt) to 4408 MWt. The U.S. Nuclear Regulatory Commission (NRC) staff has determined that the following additional information is needed for the NRC staff to complete our review of this amendment. This request for additional information (RAI) was discussed with Mr. Jerry Burford of your staff on April 12, 2011, and it was agreed that a response would be provided within 30 days of receipt of this E-mail. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1445 or via e-mail at [Alan.Wang@nrc.gov](mailto:Alan.Wang@nrc.gov).

The following RAIs are from Nuclear Performance and Code Review Branch:

- 1.0 The previous small break loss-of-coolant accident (LOCA) analysis limiting break peak clad temperature (PCT) was identified as 1322<sup>0</sup> F at 4025 MWt. The EPU PCT for the limiting small break at 4408 Mwt is listed as 1360<sup>0</sup> F. Please explain why the increase is only 38<sup>0</sup> F when the power level increases by 383 MWt.
- 2.0 Were any of the inputs or assumptions to the small break LOCA (SBLOCA) analysis changed or modified in the EPU analysis. If so, please describe and explain these changes.
- 3.0 Since the power level increases in the average and low power bundles, the higher power levels in the peripheral bundles is expected to degrade the downflow from core spray pooling in the upper plenum. As such, the top down flow and bottom up cooling from the core spray is expected to be decreased, increasing PCT in the hot bundle, even though the hot bundle power level remains the same. Please explain.
- 4.0 While the hot bundle power is stated to remain the same at EPU conditions, some power increases although small could occur at EPU conditions. Do the LOCA analyses take into account these small power differences. Please explain.
- 5.0 Please identify the References or provide the results and plots of the SBLOCA break spectrum analyses at EPU conditions.
- 6.0 Please provide the results to show that a break in one of the ancillary lines line connect to the lower head is not limiting at EPU conditions (i.e. instrument line and drain line).

7.0 Please provide the analysis of a ruptured core spray line to show a break in this location is not more limiting at EPU conditions.

8.0 Does a RELAP5 input deck exist for this plant? If so, please provide the input deck and nodalization.

Alan Wang, Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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