

From: Glenn Miller
To: Paul.Duke@pseg.com
Date: 7/25/05 2:49PM
Subject: Hope Creek ARTS/MELLLA draft RAIs

Paul,

Attached are the draft RAIs based on the fuel dependent evaluation of the ARTS/MELLLA submittal. After you have had a chance to look at them lets set up a conference call and discuss. At the end of the call we can discuss a time frame for response to the formal RAI.

Ed Miller
301-415-2481

CC: Muhammad Razzaque; Stewart Bailey

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Subject: Hope Creek ARTS/MELLLA draft RAIs
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From: Glenn Miller

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DRAFT REQUEST FOR ADDITIONAL INFORMATION
REGARDING AMENDMENT REQUEST TO
UTILIZE ARTS/MELLLA OPERATING DOMAIN
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

By letter dated June 7, 2004, PSEG Nuclear, LLC (PSEG) submitted license amendment request LCR H04-01 for the Hope Creek Generating Station (Hope Creek), seeking U.S. Nuclear Regulatory Commission approval of proposed changes to the Hope Creek Technical Specifications (TSs). Specifically, the proposed change would allow an expanded operating domain resulting from implementation of Average Power Range Monitor/Rod Block Monitor/Technical Specifications/Maximum Extended Load Line Limit Analysis (ARTS/MELLLA). Additionally, the proposed change would revise the methods used to evaluate annulus pressurization and jet loads resulting from the postulated Recirculation Suction Line Break. By letter dated February 18, 2005, PSEG submitted fuel dependent evaluations in support of the license change request. The Nuclear Regulatory Commission staff has been reviewing your submittal and has determined that the following draft additional information is required to complete our review:

1. It was stated in the submittal for fuel-dependent analysis (NEDC-33066P, Rev. 2) that in general, the limiting anticipated operational occurrences (AOOs) Minimum Critical Power Ratio (MCPR) calculation and the reactor vessel overpressure protection analysis are fuel dependent. These analyses are based on, or are applicable to, the Reference Loading Pattern (RLP) for Cycle 13. Hope Creek is currently operating with approximately 600 irradiated (for one to two previous cycles) non-GE14 fuel assemblies (SVEA-96+) in the core and has loaded 164 fresh GE14 fuel in the Cycle 13 core. For the fuel-dependent evaluations of the limiting AOOs, the licensee's analyses indicate that the original licensed MCPR (OLMCPR) for operation in the MELLLA region remains bounded by the generic power and flow dependent limits. The analyses results also indicate that performance in the MELLLA region is within allowable design limits for over-pressure protection, loss-of-coolant accidents (LOCAs), and Anticipated Transient Without Scram (ATWS) licensing criteria.

Describe, in detail, how different fuel designs (for the case of the current loading and for planned future loadings) can be combined to perform a mixed-core analysis, and still be able to obtain a bounding fuel-dependent analyses that demonstrates, at MELLLA conditions, that the core and fuel performance will satisfy all safety and regulatory requirements. As a part of this discussion, the response should include:

- a. A discussion of the neutronic and thermal-hydraulic compatibility of the different vendor's fuel loaded into the core.
 - b. A discussion on which fuel-type (SVEA-96+ or GE14) is more limiting from the standpoint of AOOs, over-pressure protection, LOCA, ATWS, and the thermal-hydraulic stability, including what makes it the limiting fuel-type.
2. In order to develop the plant- and cycle-specific DIVOM curve for Cycle 13, did you consider the state points for operation within the MELLLA domain of the power-flow map, and does the MELLLA operation make the slope of the DIVOM curve more conservative compared to operation outside the MELLLA domain?
 3. It is the NRC staff's understanding that the vendor's methodologies were approved only to apply to their respective fuel designs. Demonstrate that the DIVOM curve is

bounding when the core is loaded with different fuel designs, supplied by different fuel vendors.

4. In Table 4-1 of NEDC-33066P, Rev. 2, the OLMCPR values from the Rod Withdrawal Error (RWE) event were shown for various power/flow combination, except for 100% of CLTP and 76% rated core flow. This is a state point on the modified power/flow map for MELLLA, however, it falls outside the current operating domain. The NRC staff believes that this state point has the potential to be limiting for the OLMCPR. Provide an evaluation of the OLMCPR at this point or a justification for why it is not considered limiting.
5. It has been stated in the submittal that because the Hope Creek RWE does not credit the rod block monitor (RBM), the Technical Specification (TS) Limiting Condition for Operation (LCO) 3.1.4.3 for the RBM is not required to be in the TSs and could be removed. It was further stated that the removal of this LCO (and associated Surveillance Requirements) is not being requested at this time, and that maintaining the RBM system in the TSs is conservative. Please clarify the following:
 - a. If the RBM is not credited for a RWE, which plant safety feature is credited in order to prevent violation of fuel thermal limits during RWE?
 - b. Will the RBM setpoints be maintained in the TS or in the core operating limits report (COLR)?
6. Describe your training program for the operators in preparation for implementing the ARTS/MELLLA operation at Hope Creek.