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Attention: Alan Wang

Subject: GEXL Correlation for 10X10 Fuel

References:

1. B. Mozafari (USNRC) to G. Van Middlesworth (NMC), "Duane Arnold Energy Center – Request for Additional Information on the Proposed Extended Power Uprate Program (TAC No. MB0543)", dated June 4, 2001.
2. Letter, G. A. Watford (GNF) to R. Pulsifer (NRC), "Transmittal of GNF Proprietary Information, Presentation "GEXL Correlation for 10X10 Fuel", FLN-2001-012, June 7, 2001.
3. Letter, G. A. Watford (GNF) to J. Donoghue (NRC), "*GEXL14 Correlation for GE14 Fuel*, NEDC-32851P Revision 2, and *GEXL10 Correlation for GE12 Fuel with Inconel Spacer*, NEDC-32464P Revision 2", FLN-2001-018, September 25, 2001.
4. Letter, G. A. Watford (GNF) to J. Donoghue (NRC), "Final Presentation Material for GEXL Presentation, February 11, 2002", FLN-2002-004, February 12, 2002.
5. Letter, G. A. Watford (GNF) to J. Donoghue (NRC), "GEXL Correlation for 10X10 GE Fuel – Safety Limit Impact", FLN-2002-008, April 12, 2002.
6. Letter, G. A. Watford (GNF) to A. Wang (NRC), "NRC Technology Update – Proprietary Slides – July 31 - August 1, 2002", FLN-2002-015, October 31, 2002.
7. *General Electric Standard Application for Reactor Fuel*, GESTAR II, NEDE-24011-P-A-14, June 2000.

During the audit of the DAEC EPU during March 2001 the NRC questioned the adequacy of the database for the GEXL correlation for 10X10 fuel, specifically the lack of test data for a top

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peaked axial power shape was questioned (1). The purpose of this letter is to summarize actions that have been taken since this audit and to present the current status of the GEXL correlation for 10X10 fuel.

The experimental database and the use of the COBRAG subchannel code for the GEXL correlation for 10X10 fuel was discussed at a teleconference with NRC on June 7, 2001 (2). At this meeting it was concluded that GESTAR (7) requires the use of approved codes and, therefore, COBRAG cannot be used for the development of the GEXL correlation without NRC review and approval. At the teleconference GNF committed to re-evaluate the GEXL correlations for 10X10 fuel based on experimental data alone.

On September 25, 2001, GNF submitted the two reports "*GEXL14 Correlation for GE14 Fuel*, NEDC-32851P Revision 2, and *GEXL10 Correlation for GE12 Fuel with Inconel Spacer*, NEDC-32464P Revision 2" (Reference 3). In these reports, the GEXL correlations, including the bias and uncertainty in the correlations were determined entirely based on experimental data.

These reports and the GEXL correlation for 10X10 fuel were discussed at a meeting between USNRC and GNF on February 11, 2002. At this meeting it was agreed that an increased bias and uncertainty would be used for the GEXL correlations for 10X10 fuel in order to increase the confidence level in the correlations in the absence of data for top peaked power shape for 10X10 fuel. In addition GNF would re-evaluate the safety limits for all plants using the increased uncertainties. This re-evaluation of the safety limits would follow a five-step evaluation process as presented at the meeting and would take credit for existing conservatisms in plant safety limits. Finally at this meeting it was also agreed that GNF would conduct additional testing to obtain critical power data for GE14 top peaked axial power shape. Once these additional data are obtained, the GEXL14 correlation will be re-evaluated consistent with requirements of GESTAR (7). The material from this meeting is contained in Reference 4.

The re-evaluations of the safety limits for all plants were completed April 12, 2002 (5). These re-evaluations were further discussed at the NRC Technology Update Meeting in Wilmington July 31 – August 1, 2002. At this meeting the plan for additional testing was also presented, where data for GE14 top peaked axial power shape would be obtained during the summer of 2003. The material from the Technology Update Meeting is contained in Reference 6.

Sincerely,

Jens G. Munthe Andersen