

From: Lawrence Rossbach
To: Allan.haeger@Exeloncorp.com
Date: 7/14/01 5:12PM
Subject: EPU & GE14 fuel questions

Our review of the Dresden and Quad Cities extended power uprate (EPU) and GE14 Fuel amendment requests has identified several questions in the fuels area. These questions are attached. We did not identify any proprietary information in these questions. Please identify any information in these questions that you consider proprietary otherwise they may be released to the public within one week. Please let me know if you would like a call to discuss them.

CC: Anthony Mendiola; Edward Kendrick; Jon Hopkins; Stewart Bailey

Docket Nos. 50-237, 50-249, 50-254, 50-265

QUAD CITIES AND DRESDEN

EXTENDED POWER UPRATE AND GE14 FUEL AMENDMENTS

REQUEST FOR ADDITIONAL INFORMATION

During the week of March 26, 2001, four members of the Nuclear Regulatory Commission (NRC) staff visited the General Electric (GE) Facility, Global Nuclear Fuel, at Wilmington, North Carolina, to audit material pertinent to the proposed power uprate for the Duane Arnold Energy Center (Docket Number 50-331). Material reviewed included the database used to develop GEXL14 Correlation for the GE14 fuel, analyses of the anticipated transient without scram event, and loss-of-coolant accident (LOCA) related analyses. The audit identified several open issues which we believe apply to your September 29, 2000, GE14 Fuel and December 27, 2000, extended power uprate amendment requests for the Quad Cities and Dresden Nuclear Power Stations. These issues are listed below in the form of a request for additional information (RAI.) This RAI applies to Quad Cities, Units 1 and 2 and Dresden, Units 2 and 3.

- 1) The COBRAG computer code is the critical power ratio (CPR) methodology used to predict critical power behavior throughout the core. The NRC staff has not reviewed this code. We understand that COBRAG uses first principle models to predict boiling transition and the details of the flow field. Justify the adequacy of the COBRAG code in predicting, from "first principles," boiling transition phenomena in the upper portion of GE14 fuel and, if applicable to Quad Cities or Dresden, for GE12 fuel.
- 2) Describe the testing of the new GE14 fuel that was conducted to test the respective CPR correlations. Identify any additional data, available or planned, to substantiate and validate the correlations. Provide upskew or downskew data that has been collected to validate the GEXL10 or the GEXL14 correlations for use at Quad Cities, Units 1 and 2, and Dresden, Units 2 and 3.
- 3) In 1992, following an NRC Team Audit of GE11 fuel design compliance with Amendment No. 22 of NEDE-20411-PA, GE was encouraged to develop a procedure for implementing Amendment No. 22 criteria for new correlation development as defined in GESTARII. This procedure is documented in TDP-0117, Rev. 2, page 8. Explain how the procedure was applied in the development of the GEXL14 correlation for use at Quad Cities and Dresden, especially with regard to items 3 and 4, given the apparent absence of raw data for upskew and downskew power profiles. Provide technical justification if the criteria of the Amendment No. 22 process criteria were not met.
- 4) The LOCA analysis of off-rated conditions (specifically, single-loop operation) assumes that the statistical adders developed for the SAFER code at rated conditions will apply. Justify the use of these adders for single-loop operation at Quad Cities and Dresden.