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Nuclear

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OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Secretary of the Commission  
U. S. Nuclear Regulatory Commission  
ATTN: Rulemakings and Adjudications Staff  
Washington, DC 20555-0001

Subject: Response to Request for Comments on Petition for Rulemaking, PRM-50-73

- References:
- (1) Volume 66, Federal Register, Page 52065 (66 FR 52065), dated October 12, 2001
  - (2) Nuclear Energy Institute letter, "Industry Comments on Petition for Rulemaking, PRM-50-73 (Federal Register of October 12, 2001, 66 FR 52065)" dated December 18, 2001

Exelon Generation Company (EGC), LLC, appreciates the opportunity to comment on the petition for rulemaking that was filed by Mr. Robert H. Leyse. The petitioner requests that the NRC amend regulations on the acceptance criteria for emergency core cooling systems for light-water nuclear power reactors to address the impact of crud on cooling capability during a large-break, loss-of-coolant accident (LOCA). This letter provides EGC's comments in response to Reference 1.

The petitioner requests that 10 CFR 50.46 and Appendix K to 10 CFR 50 be amended to address the impact of crud on cooling capability during a fast-moving (large-break) LOCA. EGC believes this is not necessary as 10 CFR 50.46 already requires that the cooling performance of the emergency core cooling systems (ECCS), following postulated LOCAs, meet certain acceptance criteria. Crud is only one of numerous phenomena that are considered in meeting these regulations but not explicitly stated in the regulations. NRC regulatory guidance and NRC approved evaluation models are relied on to address specific phenomena that can potentially impact performance relative to the acceptance criteria. This position is addressed in more detail in Reference 2. EGC has been actively involved with the Nuclear Energy Institute (NEI) on this issue and fully endorses the industry comments submitted by NEI in Reference 2.

EGC including its predecessor companies, Commonwealth Edison Company and Philadelphia Electric Company, have over 30 years of experience in monitoring fuel performance in light-water nuclear power reactors. During that time there has been only one cycle, in one unit, where crud induced fuel failures have been identified. This occurred at Three Mile Island during Cycle 10, which included operation from October 1993 through September 1995. While these failures occurred prior to ownership by EGC, our fuel engineers have extensive knowledge of this occurrence gained through various industry publications and interactions. Corrective actions taken after these failures at Three Mile Island have resulted in no further failures due to crud at this unit or any other Exelon unit.

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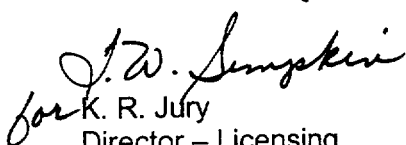
Exelon continually monitors fuel performance during normal operation. Any indication of fuel failures would be immediately investigated and actions would be taken to identify a root cause as well as to prevent further degradation or additional fuel failures. At this time, with 17 operating nuclear units, we estimate that we have only two leaking fuel rods, which are not believed to be crud induced. In addition, poolside examinations are commonly performed by EGC in conjunction with our fuel vendors as part of our ongoing fuel surveillance program. These examinations are designed to identify any anomalous fuel performance, including the buildup of significant crud. Any anomalous fuel performance would be thoroughly evaluated and corrective actions taken as a normal part of this process.

The industry experience relative to significant crud deposits has been that they are isolated cases that have extensive root cause evaluations with corrective actions developed to prevent recurrence. Crud deposits are controlled through use of operational chemistry guidelines that have been developed through collaboration between licensees, fuel vendors and the Electric Power Research Institute (EPRI). The EPRI Chemistry Guidelines are periodically reviewed and updated to incorporate any new industry experience. EGC has participated in the development of these guidelines and uses them in the operation of our nuclear units. There is also a strong economic incentive for utilities to control reactor water chemistry, including crud, since it will assure optimal performance of the reactor. Recent examinations of fuel during our refueling outages have not revealed any unusual buildup of crud. Most crud that has been observed has been described as powdery or fluffy with the amount varying between units depending upon the type of NSSS and type of makeup water system utilized. Its characteristics, in terms of size or strength, indicate that it would not result in blockage of the flow channels thus leading to fuel failures.

In summary, EGC does not believe 10 CFR 50.46 or Appendix K to 10 CFR 50 need to be revised to account for the impacts of fuel crud deposits. The regulations already require licensees to consider phenomena that might affect fuel performance. The specific analysis requirements of significant phenomena are covered in associated regulatory guides or through the review and approval of fuel vendor evaluation methodologies. In addition, significant fuel crud buildup is not being observed in the industry at this time. For those isolated past occurrences, extensive corrective actions have been successfully implemented.

If you have any questions or require additional information, please contact Mr. Terry Rieck at (630) 657-2194.

Respectfully,

  
for K. R. Jury

Director – Licensing  
Mid-West Regional Operating Group