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Exelon Generation®

200 Exelon Way
Kenneth Square, PA 19348
www.exeloncorp.com

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Ms. Cindy Bladey, Chief
Rules, Announcements, and Directives Branch
Division of Administrative Services
Office of Administration
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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Comments Concerning 10 CFR 50 Petition for Rulemaking, "In-core Thermocouples at Different Elevations and Radial Positions in Reactor Core" (77FR30435, dated May 23, 2012) (Docket ID NRC–2012–0056)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission (NRC) request for comments concerning the 10 CFR 50 Petition for Rulemaking, "*In-core Thermocouples at Different Elevations and Radial Positions in Reactor Core,*" published in the *Federal Register* on May 23, 2012 (i.e., 77FR30435)

The petitioner requests that the NRC amend its regulations *"to require all holders of operating licenses for nuclear power plants (NPP) to operate NPPs with in-core thermocouples at different elevations and radial positions throughout the reactor core to enable NPP operators to accurately measure a large range of in-core temperatures in NPP steady-state and transient conditions."* The petitioner further asserts that, in the event of a severe accident, in-core thermocouples would provide plant operators with *"crucial information to help operators manage the accident."*

Exelon Generation Company, LLC (Exelon) appreciates the opportunity to comment on this Petition for Rulemaking and offers the following comments for consideration by the NRC.

General Comments

- During steady-state operation, for both Presssurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs), the fuel cladding (surface) temperature is a function of coolant Temperature - Enthalpy (T-H) properties. The coolant steady-state properties (i.e., temperature) do not vary significantly axially or radially during steady-state operation and therefore, in-core thermocouples would not provide useful information. Exelon believes that there are more accurate means of measuring core conditions than in-core thermocouples already in place. Adding in-core thermocouples would not improve the ability or accuracy of measuring core conditions.

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- Exelon does not consider it feasible to attach thermocouples directly to the fuel cladding. Thermocouples would need to be located in existing instrument tubes (e.g., BWR Local Power Range Monitor tubes) and would not be in direct contact with the reactor coolant. Therefore, thermocouples would provide only indirect readings of fuel temperature and be subject to heat transfer delays/response times. The time response and accuracy of the reading as it relates to the reactor coolant would be highly questionable. The presence of the fuel channel on a BWR fuel assembly would further inhibit/interfere with the readings of a thermocouple in an instrument tube.

- Exelon believes that transition from Emergency Operating Procedures (EOP) to Severe Accident Management Guidelines (SAMGs) based on existing plant parameters (e.g., coolant level, reactor pressure, etc.) is adequate. PWRs already use core exit thermocouples to make the transition to SAMGs. The potential delay in the response of indirectly reading in-core thermocouples, as discussed above, could actually be longer than the response of other plant parameters, including core exit thermocouples, in identifying potential severe accident conditions.

- During a severe accident, operators focus on providing coolant to the reactor core. Specific information regarding local fuel temperature would not provide meaningful/useful input to the operators, and certainly would not be "crucial," relative to restoring core cooling. Exelon considers that in-core thermocouples may only provide some useful "post mortem" information and therefore, would not be beneficial during severe accident conditions.

If you have any questions or require additional information, please do not hesitate to contact Richard Gropp at (610) 765-5557.

Respectfully,

D. P. Helker

David P. Helker
Manager – Licensing
Exelon Generation Company, LLC