August 27, 2012

MEMORANDUM TO: Richard Correia, Director
Division of Risk Analysis
Office of Nuclear Regulatory Research

THRU: Kevin Coyne, Chief ***/RA/***
Probabilistic Risk Assessment Branch
Division of Risk Analysis
Office of Nuclear Regulatory Research

FROM: Donald M. Helton ***/RA/***
Probabilistic Risk Assessment Branch
Division of Risk Analysis
Office of Nuclear Regulatory Research

SUBJECT: SUMMARY OF SECOND CLOSED MEETING TO DISCUSS ONGOING OFFICE OF NUCLEAR REGULATORY RESEARCH CONFIRMATORY LEVEL 1 PROBABILISTIC RISK ASSESSMENT SUCCESS CRITERIA ANALYSES

On August 10, 2012, NRC staff held a noticed, closed teleconference with Exelon/Byron station to discuss ongoing Office of Nuclear Regulatory Research confirmatory Level 1 probabilistic risk assessment (PRA) success criteria analyses. During the teleconference, participants discussed boundary conditions and qualitative results for sequence timing and success criteria aspects of selected loss of direct current (DC) bus 111 scenarios, as well as boundary conditions for upcoming calculations related to steam generator tube rupture events. These discussions (and the associated analyses) do not relate to any ongoing or anticipated regulatory actions; rather, they are to confirm specific underlying modeling aspects in the agency's standardized plant analysis risk models for 4-loop Westinghouse plants with large, dry containments (a continuation of an activity described further in NUREG-1953, "Confirmatory Thermal-Hydraulic Analysis to Support Specific Success Criteria in the Standardized Plant Analysis Risk Models – Surry and Peach Bottom").

This meeting was closed because (a) there has been no public interest expressed in past public activities related to this work, (b) the meeting is an information exchange not related to any specific regulatory decision, and (c) closure of the meeting facilitates the discussion of facility details (e.g., emergency operating procedures) that are not in the public domain. Should a member of the public wish to participate in any future discussions between NRC and Exelon associated with this project, they should contact Donald Helton, Senior Reliability and Risk Engineer, at 301-251-7594 or at Donald.Helton@nrc.gov.

CONTACT: Donald Helton, RES/DRA
301-251-7594

With regard to the qualitative results presented on the draft loss of DC bus 111 accidents for Byron Unit 1, qualitative results confirm the current modeling in both the licensee's model and the Standardized Plant Analysis Risk (SPAR) model that: (i) one train of charging and one pilot-operated relief valve (PORV) is sufficient, and (ii) success cannot be achieved for feed and bleed operation for this transient if no charging trains are available. NRC staff also discussed sensitivity studies and a limited-scope uncertainty analysis that further corroborate the results of the base calculations. An item was raised by the licensee regarding the dependency of the instrument air system on DC bus 111 (and thus the number of times the PORV would cycle prior to the safety relief valve being challenged), and this issue is being investigated. Finally, the staff's calculations suggest that further investigation of the PRA model's treatment of situations where no operator action is taken may be warranted, as they may be conservative for particular applications.

With regard to the steam generator tube rupture scenario, participants discussed the basic boundary conditions (e.g., control of charging flow early in the transient). There was a desire on the licensee's part to further research an assumption related to the time of assumed trip for cases where manual reactor trip is assumed, with the possibility of voluntarily providing operator training material related to this procedure step. The licensee also pointed out that due to the type of steam generator PORV at Byron (a modulating valve with a hydraulic operator) that the sensitivity to valve cycling does not have the same physical meaning that it had in NUREG-1953 (where the pressurized water reactor had a spring-operated valve). Following the call, the staff deliberated internally, confirmed that the plant-specific MELCOR model properly treats the valve operation, and concluded that other sensitivities would be of more value. Finally, the licensee may voluntarily provide information related to valve modifications being made under 10 CFR 50.59 which may be used to inform a sensitivity study.

The licensee expressed interest in participating in future calls of this type related to this activity. Participants agreed that the inclusion of more substantive information about the scenarios being analyzed in the meeting announcements is helpful.

At this time, the steam generator tube rupture calculations are ongoing. Staff will schedule a subsequent teleconference when calculations are substantively completed, likely in early October 2012.

The following people participated in the teleconference:

NRC		Exelon	Erin Engineering
James Corson	Margaret Tobin	Joe Edom	Heather Lucek
Donald Helton	Joel Wiebe	Barry Quigley	
Laura Kozak			

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