

Record of Review for Dispositions to Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Internal Events PRA and Fire PRA Facts and Observations

By letter dated September 24, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13301A673), Exelon Generation Company, LLC, (the licensee) submitted a license amendment request (LAR) for Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2, to transition to National Fire Protection Association Standard (NFPA) 805.

Attachments U and V of the LAR provide the licensee's dispositions to the Facts and Observations (F&Os) from the internal events (including internal flooding) and fire probabilistic risk assessment (PRA) peer reviews, respectively. The Nuclear Regulatory Commission (NRC) staff evaluated each F&O and the licensee's disposition in LAR Attachments U and V to determine whether the F&O had any significant impact for the application. The NRC staff's review and conclusion for the licensee's resolution of each F&O and basis of acceptability of Supporting Requirements that are "not met" or only meet Capability Category I is summarized in Tables 1 and 2 for the internal events PRA and fire PRA, respectively.

Table 1. Record of review for the dispositions to CCNPP internal events PRA F&Os.

FINDING/SUGGESTION (F&O) ID OR SUPPORTING REQUIREMENT (SR)	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in SE	Discussed in SE
1-16	A		
1-17	C		
1-18	C		
1-19	C		
1-25	C		
2-7	A		
2-9	A		
3-3	A		
3-5	A		
3-8	A		
3-9	A		
3-11	A		
3-12	A		
4-5			See PRA RAIs 02.a and 03.
4-12	A		
4-15	C		
4-19	A		
4-20	A		
4-21	C		
4-22	A		
5-10	A		
5-17	C		

FINDING/SUGGESTION (F&O) ID OR SUPPORTING REQUIREMENT (SR)	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in SE	Discussed in SE
5-18	C		
5-23	C		
5-25	C		
5-30	A		
5-31	A		
6-3	A		
6-5	A		
6-8	A		
6-9	A		
6-10	C		
6-14	C		
6-16	C		
6-17	C		
6-18	A		
6-22	A		
6-23			See PRA RAIs 02.b, 02.b.i.01, 02.b.ii.01 and 03.
7-13	A		

- A: For F&Os, the NRC staff finds that the disposition of the F&O as described by the licensee in the LAR provides confidence that the issues raised by the F&O have been addressed and, if needed, the PRA has been modified, and therefore the resolution of the F&O is acceptable for this application. For Not Met or met at CC-I SRs, the NRC staff finds that the acceptability basis for the capability category of the SR as described by the licensee in the LAR provides confidence that the requirements of the SR have been addressed and, if needed, the PRA has been modified, and therefore the PRA quality with respect to the SR is acceptable for this application. Examples of acceptable Not Met and CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.
- B: For F&Os, the NRC staff finds that the disposition of the F&O as described by the licensee in the LAR and further clarified during the audit provides confidence that the issues raised by the F&O have been addressed and, if needed, the PRA has been modified, and therefore the resolution of the F&O is acceptable for this application. For Not Met or met at CC-I SRs, the NRC staff finds that the acceptability basis for the capability category of the SR as described by the licensee in the LAR and further clarified during the audit provides confidence that requirements of the SR have been addressed and, if needed, the PRA has been modified, and therefore the PRA quality with respect to the SR is acceptable for this application. Examples of acceptable Not Met and CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.
- C: For F&Os, the NRC staff finds that the resolution of the F&O, as described by the licensee in the LAR, would have a negligible effect on the evaluations relied upon to support fire risk evaluations and has no impact on the conclusions of the risk assessment and therefore the resolution of the F&O is acceptable for this application. Examples of such F&Os may be suggestions, as well as those F&Os that don't affect the FPRA. Documentation issues may fall into this category as well. For Not Met or met at CC-I SRs, the NRC staff finds that the acceptability basis for the capability category of the SR, as described by the licensee in the LAR, would have a negligible effect on the evaluations relied upon to support fire risk

evaluations and has no impact on the conclusions of the risk assessment and therefore the PRA quality with respect to the SR is acceptable for this application. Examples are those SRs that don't affect the FPRA.

Table 2. Record of review for the dispositions to CCNPP fire PRA F&Os.

FINDING/SUGGESTION (F&O) ID OR SUPPORTING REQUIREMENT (SR)	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in SE	Discussed in SE
PP-B3-01	B		
PP-B5-01	A		
PP-B7-01	A		
CS-B1-01	A/C	See PRA RAI 01.f. Acceptable to the NRC staff because the licensee clarifies that further detailed analysis performed on the MCC 208/120 VAC load circuit breakers concluded that the power supplies did not have any coordination issues.	
PRM-B3-01		See PRA RAI 01.a. Acceptable to the NRC staff because the licensee clarifies that because the maximum temperature for the MCR and CSR were determined by a GOTHIC analysis to be slightly above the design temperature (i.e., by 8°F), the maximum recommended failure rate increase among all equipment types documented in IEEE 500 was applied to the 125VDC and/or 120VAC busses, which supply all of the MCR and CSR controls and instrumentation.	
FSS-A5-01			See PRA RAIs 01.b and 03.
FSS-D2-01			See FM RAIs 01.a, 01.i, 01.k, 03 and 04 as well as PRA RAI 03.
FSS-D3-01			See FM RAIs 01.a, 01.i, 01.k, 03 and 04 as well as PRA RAI 03.
FSS-D3-02			See FM RAIs 01.a, 01.i, 01.k, 03 and 04 as well as PRA RAI 03.

FINDING/SUGGESTION (F&O) ID OR SUPPORTING REQUIREMENT (SR)	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in SE	Discussed in SE
FSS-D8-01			See FM RAIs 01.a, 01.i, 01.k, 03 and 04 as well as PRA RAI 03.
FSS-F3-01	A		
FSS-G4-01			See PRA RAIs 01.c and 03.
FSS-G5-01		See PRA RAI 01.d. Acceptable to the NRC staff because the licensee summarizes the types of active barrier elements and the basis for credit given in the FPRA. For water curtains credited in the MCA, the response indicates that the fire barrier failure probability applied was based on a non-suppression probability developed using guidance in Appendix P to NUREG/CR-6850. For normally open doors that would automatically close due to a fire, the response clarifies that the FPRA does not model such doors and that in general, values from NUREG/CR-6850 are used for doors. For fire dampers, the responses indicates that normally open fire dampers are not considered active fire barriers and that in general, values from NUREG/CR-6850 are used for dampers.	
HRA-B2-01		See PRA RAI 01.e. Acceptable to the NRC staff because the licensee clarifies that adverse actions are defined as those actions that preclude a spurious actuation but also disable (e.g., de-energize) equipment credited in the FPRA. For such actions, the FPRA models all equipment disabled by an adverse action as being failed and only credits successful preclusion of a spurious actuation when supported by	

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	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in SE	Discussed in SE
		a detailed human reliability analysis, including an assessment of dependency with other actions.	
HRA-E1-01	A		
FQ-A1-01	C	See PRA RAI 01.a with regard to MCR HVAC. Acceptable to the NRC staff because the licensee clarifies that because the maximum temperature for the MCR and CSR were determined by a GOTHIC analysis to be slightly above the design temperature (i.e., by 8°F), the maximum recommended failure rate increase among all equipment types documented in IEEE 500 was applied to the 125VDC and/or 120VAC busses, which supply all of the MCR and CSR controls and instrumentation.	
FQ-B1-01	C	See PRA RAI 01.a with regard to MCR HVAC. Acceptable to the NRC staff because the licensee clarifies that because the maximum temperature for the MCR and CSR were determined by a GOTHIC analysis to be slightly above the design temperature (i.e., by 8°F), the maximum recommended failure rate increase among all equipment types documented in IEEE 500 was applied to the 125VDC and/or 120VAC busses, which supply all of the MCR and CSR controls and instrumentation.	

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