

United States Nuclear Regulatory Commission Staff Review of Resolutions of Arkansas Nuclear One  
Internal Events and Fire PRA Facts and Observations (F&Os)

The Nuclear Regulatory Commission (NRC) staff reviewed the licensee's resolutions of all of the Facts and Observation (F&Os) to determine the technical adequacy of both the Internal Events Probabilistic Risk Assessment (IEPRA) and the Fire PRA (FPRA) for the National Fire Protection Administration (NFPA) 805 application. The NRC staff requested additional information to assess the adequacy of some of the resolutions for the review. The tables in the Safety Evaluation (SE) Attachment D document the conclusions of the NRC staff's review of the licensee's resolution to each F&O/self-assessment issue. Table D-1 documents these conclusions for the IEPRA, Table D-2 documents these conclusions for the FPRA, and Table D-3 documents these conclusions for the FPRA SRs where capability category-I (CC-I) was met.

The NRC staff documents its basis for finding the licensee's resolution of each F&O acceptable by one of two methods. The first method is that the resolution was determined to be acceptable without the need for an RAI for the reasons reflected in the column titled "With No RAI Based on (A/B/C)" as indicated by noting "A" or "B" or "C," which are defined in the key at the end of the table. The second method is that resolution to the F&O was found acceptable based on the licensee's response to RAIs. If the licensee's response to the RAI is discussed in SE Section 3.4, then it is summarized in the "Discussed in SE" column. If the licensee's response to the RAI is not discussed in SE Section 3.4, then it is summarized in the "Not Discussed in SE" column. Generally, an RAI is discussed in SE Section 3.4, if the licensee made a change to the PRA in response to the RAI.

Finding Suggestion ID (F&O) or Supporting Requirement (SR) <sup>1</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
QU-B1	A		
IFEV-A6	C		
IFEV-A5 IFEV-B1	C		
SY-A4	C		
SY-B14 SY-A22 AS-B3			See PRA RAI 02.a and PRA RAI 03 in Section 3.4.2.1
IFEV-A3	C		
QU-D6	C		

Finding Suggestion ID (F&O) or Supporting Requirement (SR) <sup>1</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
QU-E4	A		
QU-D7	A		
IFSN-B1	C		
LE-G5			See PRA RAI 02.b and PRA RAI 03 in Section 3.4.2.1
IE-D1	C		
IE-C5	C		
IE-C8 QU-D6	C		
LE-A4 LE-E1 LE-C7			See PRA RAI 02.c in Section 3.4.2.1
DA-D4	A		
QU-D4 IE-A1 IE-B3	C		
LE-F2 IFQU-A10	C		
SC-A2 SC-B3 SC-B4 AS-A9	C		
SC-C3 QU-E1 AS-C3 DA-E3 HR-I3 IFEV-B3 IFPP-B3 IFQU-B3	C		

Finding Suggestion ID (F&O) or Supporting Requirement (SR) <sup>1</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
IFSN-B3 IFSO-B3 LE-F3 SY-C3 LE-G4 QU-E4 QU-F4			
DA-C10			See PRA RAI 02.d in Section 3.4.2.1
DA-C4 DA-E2			See PRA RAI 02.e in Section 3.4.2.1
DA-C13	C		
IE-A1	C		
AS-A5	C		
IE-C3	C		
IE-A1 IE-C6	C		
HR-C2	C		
SC-B5	C		
IE-C14 QU-A3	C		
IE-C14	C		
IFEV-A7	C		
SY-B4	C		
IFEV-A8	C		
IFSN-A6 IFSN-B1	C		
QU-A3	C		
QU-F5	C		
QU-F6	C		

Finding Suggestion ID (F&O) or Supporting Requirement (SR) <sup>1</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
LE-G6			
IFSO-B1 IFSO-A1	C		
IFEV-B2	C		
IFQU-B2 IFQU-A5	C		
IFQU-A4 IFSN-A9	C		
IFSO-A5	C		
<p>Acceptability Key for SE Attachment D, Table D-1</p> <p>A: The NRC staff finds that the licensee's disposition 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 CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.</p> <p>B: The NRC staff finds that the licensee's disposition of 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 CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.</p> <p>C: The NRC staff finds that the licensee's disposition 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 fire PRA</p>			

Finding ID (F&O) <sup>2</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
PP-A1-01	A		
PP-B2-01	A		
PP-B3-01			See PRA RAI 01.a in Section 3.4.2.2
PP-B5-01			See PRA RAI 01.b and PRA RAI 03 in Section 3.4.2.2
PP-C3-01	A	(In addition to F&O disposition see PRA RAI 01.a and PRA RAI 01.b.)	
PP-C3-02	A		
ES-C1-01	A		
ES-C2-01			See PRA RAI 01.f in Section 3.4.2.2
CS-B1-01	A		
PRM-A3-01	C		
PRM-B2-01	A		
PRM-B5-01	A		
FSS-C1-01			See PRA RAI 01.c in Section 3.4.2.2
FSS-C2-01	C		
FSS-C7-01	C		
FSS-D1-01	A		
FSS-D3-01			See FM RAI 01.c in Section 3.4.2.3
FSS-D7-01	A		
FSS-G2-01		See PRA RAI 01.d. Acceptable to NRC staff because subsequent to the F&O disposition the Multiple-Compartment and hot gas layer (HGL) methodologies were	

Finding ID (F&O) <sup>2</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
		revised. The revised analysis uses a convolution of heat release rate probability distributions, time-to-a HGL, and non-suppression probabilities from NNUREG/CR-6850, Supplement 1.	
FSS-G2-02	A		
FSS-G2-03	A		
FSS-G2-04	A	(In addition to F&O disposition for cabinets see FM RAI 01.e for transient fires)	See FM RAI 01.e in Section 3.4.2.3
FSS-H4-01	A		
IGN-A5-01	A		
IGN-B5-01	A		
CF-A1-01			See PRA RAI 01.e, PRA RAI 01.e.01, and PRA RAI 03 in Section 3.4.2.2
CF-A1-02	A	(In addition to F&O disposition to See PRA RAI 01.e.)	See PRA RAI 01.e, PRA RAI 01.e.01, and PRA RAI 03 in Section 3.4.2.2
HRA-A2-01	A		
HRA-A3-01	A	(In addition to F&O disposition to See PRA RAI 01.f.)	See PRA RAI 01.f in Section 3.4.2.2
HRA-B3-01			See PRA RAI 01.g, PRA RAI 01.g.01, and PRA RAI 03 in Section 3.4.2.2
HRA-C1-01	A		
HRA-D2-01	A		
HRA-E1-01	A		
HRA-E1-02	A		
FQ-A4-01			See PRA RAI 01.h

Finding ID (F&O) <sup>2</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
			and PRA RAI 03 in Section 3.4.2.2
FQ-A4-02	A		
FQ-A4-03	A		
FQ-D1-01	A		
FQ-E1-01	A		
FQ-E1-02	A		
FQ-F1-01	A		
UNC-A1-01			See PRA RAI 01.h and PRA RAI 03 in Section 3.4.2.2
FSS-G3-01	A		
FSS-G3-04			See FM RAI 01.b and FM RAI 01.c in Section 3.4.2.3
FSS-G3-05	A		
FSS-G3-06		See PRA RAI 01.i. Acceptable to NRC staff because the licensee provides resolutions for the examples cited in the F&O of inadequate technical justification for aspects of the Multiple-Compartment Analysis (MCA). The resolutions are based on elimination of screening factors that were used in the original MCA but not used in the revised approach.	
FSS-G4-01	A	(In addition to F&O disposition to See PRA RAI 01.b.)	See PRA RAI 01.b and PRA RAI 03 in Section 3.4.2.2
FSS-G5-01	A	(In addition to F&O disposition to See PRA RAI 01.b.)	See PRA RAI 01.b and PRA RAI 03 in Section 3.4.2.2
HR-G3-01 <sup>3</sup>			See PRA RAI 01.g.01 in Section

Finding ID (F&O) <sup>2</sup>	ACCEPTABLE TO STAFF VIA		
	Review of Plant Disposition (A/B/C)	RAI Response	
		Not Discussed in the SE	Discussed in the SE
			3.4.2.2
HR-G3-02 <sup>2</sup>			See PRA RAI 01.g.01 in Section 3.4.2.2
HR-G7-01 <sup>2</sup>			See PRA RAI 01.g.01 in Section 3.4.2.2
<p>Notes:</p> <p>A: The NRC staff finds that the licensee's disposition 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 CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.</p> <p>B: The NRC staff finds that the licensee's disposition of 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 CC-I SRs are modeling methods that yield conservative FRE and change evaluation results.</p> <p>C: The NRC staff finds that the licensee's disposition 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 fire PRA</p>			



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<sup>1</sup> Attachment U of the LAR identifies the Internal Event PRA F&Os using the Supporting Requirement(s) on which they were based.

<sup>2</sup> The licensee provided a separate evaluation table of SRs that were only met at Capability Category I in LAR Table V-2. For all entries in LAR Table V-2, the SRs met only at Capability Category are addressed by an F&O in LAR Tables V-1 or V-1a. All F&Os associated with entries in Tables V-1, V-1a, and V-2 of the LAR are addressed in this table.

<sup>3</sup> In response to the request in PRA RAI 01.g.01, the licensee provided the three F&Os from the focused-scope peer review performed June 2014 on HRA and their dispositions. These F&Os and their dispositions are addressed in this table.