

NRC Response to NEI Comments on Fire Protection SDP Revision  
 IMC 0609 Appendix F, its 8 Attachments and Basis Document IMC 0308 Attachment 3 Appendix F

#	Attachment	Page	Comment	Proposed Resolution
1	Main Document	N/A	Recommend adding discussion of FAQ 14-0009 guidance for modeling MCC fires to relevant sections, including the discussion of separation and distance of targets from the individual MCC buckets in the determination of ZOI and time to damage.	FAQ 14-0009 concerns the probability of propagation of fires from well-sealed MCCs. Phase 2 doesn't evaluate whether a cabinet is well-sealed or whether the fire effects escape the cabinet. FAQ 14-0009 is beyond the scope of Phase 2, but may be considered in Phase 3 evaluations.
2	Main Document	N/A	Recommend more realistically crediting Very Early Warning Fire Detection Systems.	NRC guidance concerning very early warning fire detection systems (VEWFDS), as outlined in NUREG-2180, is under intense scrutiny by industry, as indicated by an open FAQ about this item. In addition, the credit for VEWFDS outlined in NUREG-2180 is variable. Therefore credit for VEWFDS was not included in Phase 2, but may be considered in a Phase 3 evaluation, depending on resolution of the FAQ.
3	Main Document	N/A	Recommend including explicit credit for very low hot work.	Hot work likelihood ratings (low, medium, and high) are only used in Phase 2 for administrative control findings associated with hot work deficiencies. Hot work frequencies would not be very low in these cases and Phase 2 does not distribute hot work frequencies across multiple areas. Therefore, this is not necessary.
4	Main Document	11	In Step 1.4.8-A, the criteria should be two or more redundant components. If the component impacts are functionally equivalent, then it should be considered a single impact. It is unclear of the purpose of the separation term.	Question 1.4.8-A is referring to the distance between any components associated with a finding. Generally, the components include an ignition source and a target, and they are not redundant components. Adding the word redundant would unnecessarily limit the ability to use the question to screen findings to green. Additional information about the purpose of the question is included in IMC 0308 Att 3 App F, Section 06.01.04.08.

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5	Main Document	11	In Step 1.4.8-B, the criteria should be two or more redundant components. If the component impacts are functionally equivalent, then it should be considered a single impact.	Same as previous response.
6	Main Document	11	In Step 1.4.8-C, better define "single fire scenario."	The term "fire scenario" is defined in IMC 0308 Att 3 App F, Section 03.03. The term "single fire scenario" refers to one fire scenario. Additional information about the purpose of the question is included in IMC 0308 Att 3 App F, Section 06.01.04.08. No additional information is needed.
7	0308, Att 3	93	Recommend removing conservative factor of 2 and 4 for wall corner effects within 2' (analyst can optionally neglect wall effects). Note that the latest NRC testing showed that the effect is significantly overestimated until within 6 inches of wall.	NRC guidance which reduces the impact of wall and corner effects is not yet finalized. Therefore, it is not included in this revision of the procedure. In the interim, the analyst is given the discretion to ignore wall effects.
8	3	7	Fire PRA FAQ 13-0005 should be followed for self-ignited cable fires, such that damage is limited to the tray of origin.	Will consider implementing FAQ.
9	5	3	Recommend mentioning the electrical fire split fraction for pump fires here.	The weighting factors used to account for electrical fire split fractions in the tables/plots are discussed in IMC 0308 Att 3 App F, Section 06.02.04.01. The analyst does not need to use this information directly to perform a Phase 2 evaluation, so it does not need to be included in the main body of the procedure or the attachments.
10	5	3	Recommend incorporating the method for oil fire spills involving very small oil spills provided in NEI letter dated June 21, 2012 (ML12171A583) page 4	Very small oil spills are considered low degradation findings which are screened to green in Phase 1. They are not evaluated in Phase 2.

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11	5	6	Discuss how fires spreading into vertical tray stacks affect the radiant ZOI and damage to targets that may be in cable trays or conduit located radially from the fire.	This information is presented in Attachment 3 for identifying credible fire scenarios and described in detail in IMC 0308 Att 3 App F, Section 06.03.03. Placing this information in Attachment 5 would be unnecessarily redundant.
12	5	6	Self-ignited cable fires. Section does not clarify that this only applies to thermoplastic cables. Attachment 3, page 75 and Attachment 4, Page 1 only show TP cable, but it is never explicitly stated.	This is stated explicitly in Attachment 3 on Page 7. Attachment 3 contains guidance for identifying credible fire scenarios.
13	6	1	Recommend mentioning sensitive electronics and their lower damage criteria in the opening paragraph along with TS and TP cables.	This information is clearly presented on Page 3 of the attachment and is not pertinent to the information presented in the opening paragraph.
14	6	N/A	Recommend more clearly addressing damage to targets that are not the first tray in a stack of trays.	Need clarification of request.  The attachment is very short and limited to discussing damage and ignition criteria for cables/electronics. How fire spread through stacks of cable trays is discussed in Attachment 3.
15	6	1	Recommend using the damage temperature from FAQ 08-0053 or KATE-Fire not used for Kerite cable	Including Kerite cables as a third cable type would make the tables/plots associated with the Phase 2 analysis unnecessary complicated. As a middle ground, the damage and ignition thresholds and fire spread rates for TP and TS cables were used instead, as appropriate. This is discussed in Attachment 6.
16	7	11-17	These figures should have figure numbers so that they can be referenced as needed.	Editorial change that will be fixed.
17	7	4	Recommend mentioning the effect that spread to secondary combustibles can have on HRR and thus detection timing.	Determining the damage time for FDS2 scenarios is discussed in Step 2.7.1, but not detection time. Will include more info on first page of Attachment 7 to direct analyst to reference tables in Attachment 8, Set C to determine the detection timing for FDS2 scenarios.

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18	7	6	It would be clearer to define the variable "t" visually in the equation as it is described in the paragraph below the equation to ensure the net time available for suppression is accounted for properly. Similar to the way it is defined in Table A7.2	Will clarify that $t = T_{\text{damage}} - T_{\text{detection}}$ in Equation 7-1.
19	7	N/A	The new guidance for manual detection timing by General Plant Personnel, in Step 2.7.2, is ambiguous. It states that detection by plant personnel can be assumed but does not provide guidance on what time should be assumed nor does it provide a bounding alternative for assumed manual detection timing. More guidance is needed for manual detection to ensure consistent application.	The guidance says to use room occupancy to determine timing, which is self-explanatory. Most fire PRAs assume 15 min for simplicity because they are modeling the entire plant and because suppression isn't that helpful after reaching the maximum HRR. In SDP, we are usually only evaluating one room, so using room occupancy is more realistic.
20	7	3	The guidance in this section states that "fire detection time is 5 minutes if the fire area is continuously occupied" This is different than the Fire PRA method in NUREG/CR-6850, appendix P, table P-1, sequences A through E, which states prompt detection is applicable when an area is continuously occupied. NUREG/CR-6850 page P-6 defines prompt detection as "prompt detection assumes a negligible time to detection".	The paragraph under Table P-1 in Appendix P of NUREG/CR-6850 states that "prompt detection should be only credited when a continuous fire watch is assigned to an operation, or a high-sensitivity smoke detection system is installed." Prompt detection allows for detection of the fire in the incipient stage, which is assumed to last 5 min. Assuming prompt detection for continuously occupied areas without a fire watch is not conservative and therefore 5 minutes is assumed in Phase 2.
21	8	25	The time to peak HRR of most fire profiles is 12 minutes. Recommend including these sprinkler activation tables for time up to 12 minutes.	The sprinkler activation tables are only provided for up to 6 min because all of the common ignition source profiles will have reached 25% of their peak heat release rates in that time and will have activated the sprinklers.

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22	8	N/A	Recommend including the HRRs in the tables along with D and V values.	<p>Needs additional clarification.</p> <p>I think this is referring to the radial ZOI tables in Set A for combustible liquid fires. The HRR is included in the vertical ZOI tables, but not the radial ZOI tables because it isn't needed in both tables.</p>
23	8	N/A	Recommend including the HRRs in the tables along with the ignition source classification.	<p>Needs additional clarification.</p> <p>To which tables is this referring? The HRR for various ignition sources are included in tables in Attachment 5 and in Step 2.2 of the main body of the procedure.</p>