NRCREP Resource

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To:	NRCREP Resource
Subject:	Response from "Comment on NRC Documents"

Below is the result of your feedback form. It was submitted by

Mark Schairer (mvs@epm-inc.com) on Friday, April 30, 2010 at 15:13:43

Document_Title: NUREG-1934: Nuclear Power Plant Fire Modeling Application Guide (NPP FIRE MAG) - DRAFT January 2010 - Docket ID NRC–2009–0568

Comments: Comment # Page Section Comment

1 xvii Report Summary States that this report replaces EPRI 1002981. Does this mean that EPRI 1002981 is considered superceded, and is not to be used or referenced. There are certain sections in EPRI 1002981, that are not included in NUREG-1934, and are still useful and applicable, for example EPRI 1002981, section 5.1 guidance for "Non-rectangular compartments" is omitted from NUREG-1934.

2 Various General A number of table and figure references are incorrect or incomplete in numerous places in the attachments. For example, Page 4-6, 3rd paragraph, "The sensitivity factor p is found in Table 4-1..." should beTable 4-2" These references require correction to clearly identify referenced material.

3 Page 2-1 2.1, 2nd paragraph "...for example, Appendix I of NUREG/CR-6850" should be Appendix H (Damage Criteria)

4 Page 2-2 2.2, 2nd paragraph "MEFs" should be "MEFSs" to be consistent with NFPA 805 and elsewhere in document

5 Page 2-13 2.3.6 This section lacks discussion of how to handle subsequent versions/revisions of already V&Vd fire models. For example, new releases of FDS are issued on a frequent basis. Guidance on how to treat new revisions/versions would be useful and informative here.

6 Page 2-19 9.0 Attachments (k, , c, etc.) should be (k, p, c, etc.)

7 Page 3-5, etc. Intervening Combustibles Discussion "This section describes the treatment of burning intervening combstibles in fire modeling. The discussion concludes that modeling of fire spread into secondary combustibles is currently outside the capabilities of the fire models. This discussion also indicates that ""special models"" can be used to predict the fire generated conditions that may be expected by fire spread to secondary combustibles. The treatment of fire spread to secondary combustibles is critical to the perfromance of detailed fire modeling when developing a Fire PRA. This approach is used to support determination of damage times for PRA targets across relatively large compartments. Accordingly development fo fire modeling techniques that employ these attributes would be extremely helpful. Of the case studies included in this guide, several lend themselves to development of an example of such fire propagation.

It should be noted that postulation of cable ignition should be included in models that predict cable damage because ignition of lower trays in a stack increase the probability of fire damage to cables located higher in the stack. "

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = dsw4 (D. Stroup)

8 Page 3-8 Section 3.1.4, 2nd paragraph As elluded to in the final sentence of this paragraph, HGL entrainment into the plume will raise plume centerline temperatures and should be considered in rooms where development of an HGL is expected. Further discussion of this and examples of solving for elevated plume temperatures should be provided.

9 Page 6-9 6.5.2, 4th paragraph, item 1 "system unavailability" should be changed to "system unreliability". Consistent with NUREG/CR-6805 and EPRI report NSAC-179L, "unavailability" is more commonly used to characterize maintenance contributions and ineffectiveness, while "unreliability" applies to random failures.

10 Page A-8 A.5.1, Geometry and Fire The Geometry and Fire discussions indicate that the room is modeled as a 5.2m (17ft) high room and that the fire is located at a cabinet air vent which is located 1.95m (6.4ft) above the floor. The FDT Deal and Beyler method was used to predict HGL temperature under the proposed forced ventilation conditions. The prescribed FDT does not include an input that specifically addresses fire location with respect to room height except that room height may be assumed to be the height above the base of the fire. Clarification is needed on how FDTs should be used to describe fires that are above floor level. This approach is used numerous times in the guide therefore it should be clearly defined to ensure consistent application of the FDTs.

11 Page A-15 Figure A-6, HGL Temperature The FDT temperature profile appears to be for the Forced Ventilation - FPA Method. According to A.5.1 General discussion the Deal and Beyler method was used to obtain this result. Also attempts to replicate this result using the inputs provided were unsuccessful.

12 Page B-5 B.5.1, Materials, last paragraph The discussion introduces THIEF, a new addition to FDTs. However, this model is not mentioned in section 2.3.6, Validation and Verification. Has this model been V&V'd? If yes, it should be included in Table 2-3, if not, should it be referenced in this document as a useable fire model?

13 Page B-6 B.5.1, Fire/Smoke Detection For NUREG-1805 FDT for smoke detection estimate, although Alpert's ceiling jet correlation is V&V'd by NUREG-1824, the empirical link between smoke detection and temperature has not been. This paragraph implies that it is acceptable to use. Please clarify that it is or isn't.

14 Page B-9 B.6.1 Cable Damage "The results claim that empirical models cannot be used. While the results of cable damage time may be conservative, this does not mean that they should be disqualified. There are two apparoches:

1) The first approach assumes an instantaneous, fully developed fire that remains at peak heat release rate for the duration of the fire scenario (steady-state fire). Using this approach, the time to damage is estimated by utilization of NUREG 1805 FDTs worksheets to calculate the plume temperature or radiant heat flux at the target location. Tables H-5 through H-8 in Appendix H to NUREG/CR-6850 can then be used to acquire a time to failure in minutes.

2) The second approach is to determine the critical heat release rate (HRR) necessary for damage, and determine the time at which the fire reaches this HRR along the t^2 curve (e.g., 12 minute t^2 growth, 8 minutes at peak, and 20 minute decay period as per NUREG/CR-6850, Appendix G, pg. G-6).

Consider discussing these options.

15 Page B-10 B.6.3, Smoke Detector Activation, 2nd sentence The paragraph concludes that FDT is not included because detection in a few seconds is an unrealistic result. Rather, it should be clarified that the steady state HRR is unrealistic, and the time to detection of a few seconds would be non-conservative.

16 Page D-10 Section D.6.1, first paragraph, last sentence The word "site" should be "sight".

17 E-5 E.4, Fire Scenario, Fire 4th sentence states "the fire is assumed to grow following a t^2 fire curve to 130 in 600s". This conflicts with the guidance provided in NFPA 805 FAQ-08-0052 which states that transient fires will reach peak HRR at 8, 2, or 0 minutes depending on the type.

18 E-5 E.4, Fire Scenario, Fire "The document assumes a 130kW fire occurs in a cable spreading room based on NUREG-4860 for a 'trash fire'; however, this value does not bound all fires within NUREG-4680 (FP2 is 145kW). Also NUREG-6850 recommends using 317kW for trash can fires and references numerous test data located in Table G-7 of Appendix G.

The scenario is also 'simplified' to not spread to any secondary combustibles, even though cables are within 1.0 m vertically. The possibility of hot gas layer formation is avoided under this assumption. Guidance and examples on the involvement of the seconday combustibles would make this example more useful and more applicable to real NPP fire scenarios encountered in the industry.

19 E-9 E.6.2 This sections lacks discussion of the FDT and FIVE results.

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