

REQUEST FOR ADDITIONAL INFORMATION  
LICENSE AMENDMENT REQUEST TO ADOPT  
NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805  
PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER  
REACTOR GENERATING PLANTS  
CALLAWAY PLANT  
(TAC NO. ME7046)

Office of Nuclear Reactor Regulation  
Division of Risk Assessment  
Fire Protection Branch

Fire Modeling RAI 1b

For the case of fires which postulate propagation to secondary combustibles and a Froude number above the validation range, the licensee indicates “the fire conditions are calculated assuming a nominal base area which is smaller than the area of the ignition source.” Provide examples where this assumption was made.

Fire Modeling RAI 1c

Indicate exactly where in NUREG 1824 it is stated that the total heat release rate was used in the validation of Alpert’s ceiling jet correlation.

Fire Modeling RAI 1f

Provide the results of the sensitivity study related to equivalence ratio on the portal or, if those results are already posted, indicate where they can be found.

Fire Modeling RAI 1g

Provide a list of areas and scenarios where the results of the analyses described in Appendix B, C and D of document EPM R1984-01-002 were used.

Fire Modeling RAI 1i

Provide the fuel composition that was used in the FDS analyses of areas C-21 and C-22 and explain how this composition was determined.

Fire Modeling RAI 2b

The results appear to be counter-intuitive and it may be necessary to determine up to what extent the revised geometry in the FDS input file is representative of that in the plant. Provide the FDS input files and pictures that show the obstructions in areas C-21 and C-22.

Fire Modeling RAI 3k

A typical range for standard response sprinkler response time index (RTIs) is  $100\text{-}350\text{ (m-s)}^{1/2}$ . Perform a sensitivity analysis to substantiate the use of an RTI of  $130\text{ (m-s)}^{1/2}$ .

Fire Modeling RAI 3t

The Society of Fire Protection Engineers (SFPE) Handbook lists two sets of values for the type of qualified cable that is present in the MCR (XLPE/XLPE according to the MCR abandonment study report). XLPE/XLPE cable #1 in the SFPE handbook table has a soot yield of 0.12 g/g and a heat of combustion of 28.3 kJ/g. The values for cable #2 are 0.12 g/g and 12.5 kJ/g, respectively. Explain why the soot yield and heat of combustion for cable #1 were used in the analysis.