From: Nowlen, Steven P [spnowle@sandia.gov]
Sent: Monday, January 11, 2010 10:42 AM
To: Taylor, Gabriel
Cc: Salley, MarkHenry; Wyant, Francis J
Subject: ERFBS report NUREG-1924

Hey Gabe,

I read through your fire barrier report and found it very complete and informative. It's definitely a valuable resource for future reference.

I only have one technical comment and that is related to the hose stream aspect of the fire endurance tests. There is some history there that has not been discussed. You could easily work this into Chapter 4 and the discussion of the standard tests and NRC acceptance criteria. You probably DON'T need to worry about where any individual test stands relative to this issue. However, the history is worthy of note as is the distinction that arises relative to the nature of the hose-stream test. I may not have all of the "official" verbiage right here, but I am sure that either Mark or Pat would confirm and could help clean up the discussion. So, here it is:

I recommend adding the following information to Chapter 4: Originally, ERFBS were exposed to the same solid-stream hose stream test that applied to primary structural fire walls. As noted elsewhere in the report, some standards did allow for a second identical test specimen exposed to only ½ the fire endurance period to be used for hose stream testing, whereas others applied the hose stream to the test article after completion of the full fire exposure duration test. The solid-stream hose test derived from very early life safety concerns for firefighting personnel. During certain historical fire incidents (early 1900's), structural walls actually collapsed when a fire hose was played against them putting firefighters at risk. The hose stream test was added to the fire barrier standard (ASTM E119) to reduce the chances of that happening. The standard's specifications were based on a typical solid-stream hand-held fire hose (pressure, line and nozzle characteristics). The ASTM and NFPA standards made no exception to the hose stream test for non-bearing partitions and those protocols were also being applied to ERFBS. Many of the early ERFBS tests resulted in severe damage to the barrier system itself when the solid-stream hose test was employed. The ERFBS were not, by and large, designed to withstand such impact especially at the end of their fire endurance capacity. Early in industry's Thermo-Lag resolution efforts, NEI argued that the solid-stream hose test was inappropriate to the ERFBS. They argued that the structural integrity issues that drove the standard for a primary fire wall are not of equivalent concern when it comes to ERFBS because structural failure of an ERFBS is unlikely to place firefighters at significant hazard as would collapse of a primary structural element such as a wall. NEI also argued that industry practice relied on either fog nozzles or adjustable diffusion-type nozzles for interior fire fighting rather than fixed pattern solid-stream type nozzles. The NRC ultimately agreed with this position and endorsed the use of an alternate hose stream test using a diffusion nozzle rather than a solid-stream nozzle. As a result, most of the ERFBS qualification tests performed since the early 1990's have used the diffusion nozzle hose test rather than a solid-stream hose test.

If you want, I can submit this comment officially as a public comment, or I can let it go at this e-mail. Your call as to which is preferred.

Beyond that one technical comment, the report could benefit from a good editorial scrub. I marked typos and other editorial comments as I read through a paper copy of the report and I will forward that copy to you. I confess though that I did not read every word of every chapter and appendix. I did skip over Chapter 6 (since I have no specific knowledge of the plant by plant resolution efforts) and I did not re-read 10CFR50.48 or appendix R. The rest I actually read.

Regards, Steve Nowlen

E-mail Properties

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