Allen, Pam, NMENV

From: Maestas, Ricardo, NMENV
Sent: Wednesday, June 25, 2014 3:10 PM
To: Allen, Pam, NMENV
Subject: FW: Louvers

March

From: Smith, Coleman, NMENV
Sent: Thursday, March 06, 2014 12:46 PM
To: Kliphuis, Trais, NMENV
Cc: Maestas, Ricardo, NMENV; Holmes, Steve, NMENV
Subject: RE: Louvers

Yes, but I'll bet that DOE will say that the leak rate is a nonlinear function of the volumetric air flow. On the other hand, the DSA Rev. 4 says (pg. 2-151):

"During filtration operations, only one filtration fan operates, while the main fans do not operate. Any one of the three filtration fans is capable of delivering 100 percent of the design 60,000 scfm flow rate with the HEPA filters at their maximum pressure drop."

It would seem that the leak rate is 1000 acfm out of 60,000 acfm, and the efficiency is only (60,000-1000)/60,000 = 98.33%. The efficiency for a 2-stage nuclear-grade HEPA system should be 99.97% for each stage, or $(3E\text{-}4)^2$ = 9E-8. This is approximately one order of magnitude more conservative that the assumed value of 1E-6 used in the 1980 FEIS.

Either the DSA is wrong about the max. design flowrate, or the "spec sheet" doesn't accurately reflect the installation at the WIPP. it matters a lot if the leak rate is 1000@60,000 versus 1000@210,000. In order for the HEPAs to be the limiting factor for a release, the bypass leak rate would need to be <(9E-8)(60,000) = 5.4E-3 scfm at the HEPA maximum ΔP. Clearly, the system was designed such that the bypass leakage is the limiting factor. In other words, the higher the ΔP across the HEPAs, the higher the leak rate at the bypass. A high leak rate may be indicative of high filter loading and high ΔP across the HEPAs. There could even be an interlock such that when the ΔP across the HEPAs reaches a critical level, the bypass would automatically open before a catastrophic failure of the HEPAs could occur.

There might be something in the original testimony that justifies the use of a leaky system to control a radiological release. I was reading the 1980 FEIS in Section 9.5.1: *Accidents Involving Radiation*, concerning radiological release, and it defines Risk = consequence x probability of occurrence. Perhaps the calculated probability for a material release was astronomically low.

Cole

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From: Kliphuis, Trais, NMENV
Sent: Thursday, March 06, 2014 11:21 AM
To: Blaine, Tom, NMENV

Cc: Schwender, Erika, NMENV; Skibitski, Thomas, NMENV; LucasKamat, Susan, NMENV; Maestas, Ricardo, NMENV; Smith, Coleman, NMENV; Holmes, Steve, NMENV; Kieling, John, NMENV
Subject: RE: Louvers

A bit more:

If they are actually running at 58,000 to 63,000 cfm right now, the release rate after the second louver should only be:

63,000(1-.995)=315(1-.995)=1.575 cfm

They told us yesterday that it is leaking at 1000 cfm.....

Am I calculating this right?

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From: Kliphuis, Trais, NMENV
Sent: Thursday, March 06, 2014 11:05 AM
To: Kendall, Jeff, NMENV; Flynn, Ryan, NMENV
Cc: Tongate, Butch, NMENV; Blaine, Tom, NMENV; Winchester, Jim, NMENV; Schwender, Erika, NMENV; Skibitski, Thomas, NMENV; LucasKamat, Susan, NMENV; Maestas, Ricardo, NMENV; Smith, Coleman, NMENV; Holmes, Steve, NMENV; Kieling, John, NMENV
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I just had a brief conversation with Rick Chavez. He clarified that the louvers were not "designed to lead" but they were given a design basis that specified "they can't leak any more than 1000 acfm at 210,000 acfm" (on design spec sheet). This means the designed efficiency is 99.5%. (210,000-1000/210,000).

He also mentioned that there are two in series. So I asked wouldn't it then make sense to apply that control efficiency to the second louver to get the total/final released value. He wasn't sure so I just did the calculation myself. (1-.995)*1000 = 5 acfm. This is how much uncontrolled contaminated air is getting released assuming they are operating at the designed specifications. I am a bit baffled that this was ever considered to be acceptable. It could be that the second louver would have an even better efficiency as the forces (flow rates) are much weaker. Apparently, this system was designed by the Army Corp of Engineers in 1985. My group and I continue to "pull the string" and will research those documents (if/when we can get copies of them) as well as the DSA and EIS's.

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