



Allen, Pam, NMENV

From: Maestas, Ricardo, NMENV
Sent: Thursday, June 26, 2014 2:28 PM
To: Allen, Pam, NMENV
Subject: FW: NMED Questions about the ventilation 3272014 (7)_rrc -tr
Attachments: NMED Questions about the ventilation 3272014 (7)_rrc -tr.docx

Email and att.

From: Kliphuis, Trais, NMENV
Sent: Thursday, March 27, 2014 12:45 PM
To: Flynn, Ryan, NMENV; Kendall, Jeff, NMENV
Cc: Winchester, Jim, NMENV; Tongate, Butch, NMENV; Blaine, Tom, NMENV; Schwender, Erika, NMENV; Skibitski, Thomas, NMENV; Kieling, John, NMENV; Maestas, Ricardo, NMENV; Holmes, Steve, NMENV; Nelson, Morgan, NMENV; Smith, Coleman, NMENV; Ines Triay (triayin@fiu.edu)
Subject: FW: NMED Questions about the ventilation 3272014 (7)_rrc -tr

From: Oba Vincent [<mailto:oba.vincent@cbfo.doe.gov>]
Sent: Thursday, March 27, 2014 12:45 PM
To: Kliphuis, Trais, NMENV
Cc: Kennedy, Scott - NWP (Scott.Kennedy@wipp.ws); George Basabilvazo - WIPPNet; 'Dale Bignell'
Subject: FW: NMED Questions about the ventilation 3272014 (7)_rrc -tr

Trais

Attached is the draft written response. This is still in review and more info is being developed for question 1, but I thought you would like to see where we are at on these. Once I get a revised set of comments, I will get them reviewed for quality and sent back out.

Thanks

Oba

From: Kennedy, Scott - NWP [<mailto:Scott.Kennedy@wipp.ws>]
Sent: Thursday, March 27, 2014 12:31 PM
To: Oba Vincent
Cc: Chavez, Rick - RES; Jones, Stewart - RES
Subject: NMED Questions about the ventilation 3272014 (7)_rrc -tr



Questions about the ventilation/filtrations system, 3/12/2014

- 1. What is the control efficiency (CE) for the filtration system as a whole including the CE with the leaking dampers and CE after the foaming of those leaking dampers?**

More discussion required.

- 2. It has been publically stated on numerous occasions that the filtration system worked at 99.97% control efficiency. Was this correct? If not, when was it identified?**

The public statements were primarily addressing the HEPA filters. For example the February 19, 2014, DOE news release posted on the WIPP Home page states the following: "This is consistent with the fact that HEPA filters remove at least 99.97% of contaminants from the air, meaning a minute amount still can pass through the filters."

This statement is correct because it is referring to the HEPA filters only. The HEPA filters were purchased to 99.97%, and in-place tested to 99.95%. The last test was 99.98%/99.99%.

- 3. Apparently the total CE across the filter system (taking into account the bypass leak) is different than the CE for each filter bank (99 vs. 99.97)? Why are they different and where in the design (specs and history) does it provide for a distinction?**

No design history calculations have been found that took this into consideration.

- 4A. The EIS for WIPP required a particulate reduction of 10^6 . How does this correlate with the DSA required value of $< \text{ or } = 99\%$?**

The reduction of 10^6 discussed in 8.5.3 of the Final EIS was specific to ventilation air from the waste handling building. However, in Section 9.6 of the EIS, Mitigation of Impacts, the commitment was made to design and operate in accordance with DOE procedures that limit the amount of radioactive material released during normal operations (Section 9.3.2) and under accident conditions (Section 9.5.1). The actions in Section 9.6 became the mitigation commitments approved in the Record of Decision for the EIS and this commitment was met by the installation of HEPA filters that would achieve an efficiency rating of $> \text{ or } = 99\%$. For the underground, Section 9.6.3 provides that "radiation monitors will be used to activate a system whereby the disposal-exhaust air will be diverted to HEPA filters if an accident releases radioactivity underground." The system design requirements for the filters specify that the filters meet this efficiency.

The installed filters have been demonstrated through annual tests to meet the design criteria. This mitigation action was responsive to the particulate reduction requirement.

4B. Does the DSA value include provisions for a leak?

The DSA recognizes that the underground filtration system (with HEPA filtration) may not provide 100% control of a release. The EPHA for WIPP was developed in accordance with Development and Maintenance of an Emergency Planning Hazards Assessment (WP12-12) as required by Comprehensive Emergency Management System (DOE Order 151.1C). The EPHA provides the technical basis for facility emergency planning efforts and evaluates the accident scenarios considered by the DSA. The EPHA does consider a leak during filtration with the leak factor of 0.1 percent (i.e., 99.9% efficiency).

4C. Is the EIS value binding? If not, why not?

Yes, the EIS value is binding as it was established in the Record of Decision that adverse impacts of the WIPP project would be mitigated by implementing the mitigation activities described in Section 9.6 of the EIS. However, the EIS considered the release of radioactive material from the waste handling building separately than from the underground. The waste handling building had the 10^6 criteria specified. Impacts beyond those evaluated in the EIS would require additional NEPA documentation.

If each HEPA has a manufacturer specification of 99.97% and there are two in series in each bank, why isn't the reduction efficiency multiplicative (99.9991)%? Yes, the reduction efficiency may be considered multiplicative.

5. Is the filtration system as a whole tested or just each HEPA filter bank? If it is not tested as a system, why not?)?

Filter banks were designed with test ports upstream/downstream of the HEPA banks only. Each filter is tested per ASME testing standards and meets DOE guidelines.

6. There are two dampers in series. Please provide calculations with explanation of assumptions of the leak rate after the second damper at the current operating flow rates. Was this value ever discussed during the design phase? Is this considered part of the filtration system reduction (or lack thereof) efficiency? If not, why not? Also, if the data is not logged, why not?

No design history calculations were found that took this into consideration. However, see the response to Question 1 above regarding emergency planning assumptions.

7. ***On 3/5/2014 we were told that the dampers were leaking at 250 cfm. On 3/6/2014 we were told they were leaking at 1000 cfm. On 3/7/2014 we were told that the 1000 cfm leak rate was because of the windows cut in the ducts and were not an accurate value of the leak rate. What is the correct leaking rate prior to window cutting and repair? How was it determined?***

These flow estimates were qualitative to determine if leakage was present and had no quality control or specifications. The best we can do is use calculations from Question 1 and estimate how much flow was through the bypass dampers.

8. ***Also, if rad risk > 10E-6, is there a requirement to tell the public? If so, who will tell the public?***

WIPP does have a trigger for notifying the public (nearest neighbors). A release of >1 rem Total Effective Does Equivalent (TEDE) at 300 meters would lead to notification. Implementation is via WIPP procedure WP 12-ER3906, *Categorization and Classification of Operational Emergencies*, which results in categorization of an emergency, making necessary notifications, and applying protective actions for the event category.

The cancer risk to general populations when taken as 1 latent cancer fatality per 2,000 rem¹ equates to 5E-7 at the 1 mrem level. The estimated dose to the nearest residence from the February 14, 2014, event was much less than 1 mrem.

¹ Note that the NCRP 116 use of these risk factors are strictly limited to use for general populations and are considered inappropriate for use on a single individual.

9. **Would you be able to provide all known differential pressures (ΔP) associated with the filtration system (running in filtration mode), including:**

- **ΔP across each component of each filter unit, including individual ΔP s across each roughing filter, medium filter, and each of the two series HEPA filter banks;**
 - The available ΔP is being provided periodically through the daily call and via the weekly report.
- **ΔP between the filter inlet plenum and the filter outlet plenum;**
 - This is not measured.
- **Estimated or measured ΔP across each of the series bypass dampers just before the foam sealing was performed;**
 - 2.0" wg (damper A), and 2.6" wg (damper B).
- **Compare total ΔP across both series bypass dampers to total ΔP across the filter inlet/outlet plenums.**
 - In line with the total ΔP (summed the individual ΔP measurements)
- **If the data is not logged, why not?**
 - The data inputs to our central monitoring system and is logged. It includes ΔP s and flow.