

**Responses to George Anastas Question Set #2
700-C Ventilation Fan Restart**

1. A question was asked at the December 10, 2020 Zoom Town Hall: What is the minimum Detectable Activity (MDA) of the CAMS? The answer was that the Alarm Setpoints are set to 8 DAC-hours (Derived Air Concentration-Hour, (DAC-hour) The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours.). The question is: What is the Minimum Detectable Activity of the CAMS?

MDA for the CAMs is derived from the activity which equates to one (1) DAC for the primary isotope (PU-239) of concern at the WIPP site.

2. The term DAC-hr. is a radiation dose, if an unprotected worker (not wearing a respirator) is exposed to 1 DAC-hour their estimated radiation dose is 2.5 mrem, accordingly 8 DAC-hour would result in a dose of 20 millirem to a radiation worker, NOT a member of the public. What is the basis of selecting 8 DAC-hour as the CAM Alarm Setpoint.?

The NWP technical basis is designed to meet the requirements from the code of federal regulations 835.401(b). The air monitoring equipment shall be routinely calibrated and maintained on an established frequency no less than once each year. CAMs should be capable of measuring 1 DAC when averaged over 8 hours (thus 8 DAC-hours) under laboratory conditions. This is also important in that the typical sensitivity of 1.0 DAC-h (chronic) and 30 DAC-h (acute) is also chosen in that there would be less than one false alarm per 2080 hours of operation. It is highly accurate but not overly sensitive to avoid multiple false alarms, which can increase the worker apathy toward alarms.

3. A question was asked: Which contaminated Nuclear Category 2 facilities have operated ventilation without filtration during the past 10 years? There was no response to that question.

Response currently posted as part of the Town Hall Q&A's to this question:

The type and level of ventilation systems used in DOE Nuclear Category 2 and Category 3 nuclear facilities are determined based on the hazards in the facility and the controls necessary to ensure protection to the worker, the public, and the environment. DOE has evaluated the use of the 700-C fan for a 4-hour test, the 5-day balancing run, and for subsequent routine operations during non-waste emplacement activities and has determined that operation of the WIPP ventilation system in the unfiltered mode is acceptable and that it improves overall safety at the site by increasing airflow and quality to the underground. Ventilation systems for other DOE facilities are designed and operated in accordance with specific hazards and required controls as stipulated in the safety basis documents for those facilities.

4. A question was asked: How long does it take for the 700-C fan to coast down. There was no answer to that question.

Answers is currently posted as part of the Town Hall Q&A's

It takes several minutes for the fan to coast down but there are dampers that close faster, both

automatically and there is an additional manual damper. It takes approximately two minutes for the fan to spin down and 30-45 seconds for the automatic dampers to close.

5. DOE has stated: "a shift to filtered ventilation will be able to be conducted in a timely manner to prevent contamination releases." What is the range of "a timely manner" starting from the time contamination is detected until the time 100% filtration is in effect, with or without a worker manually opening the damper?

Response currently posted as part of the Town Hall Q&A's to this question:

In order to switch the underground ventilation system to the filtered mode, the 700-C fan is first shutdown from the WIPP Central Monitoring Room. This is a push of a button on a screen in the control room and can be accomplished in seconds. Next, operators would be dispatched to the 700-C fan to manually shut dampers in the ductwork isolating the 700-C fan and then open dampers in the ductwork routing the ventilation to the HEPA filters which would filter the exhaust when an 860 filtered ventilation fan was started. Turning off the 700-C fan effectively stops all airflow in the mine, removing any motive force that could carry radioactive materials from the underground to the fan discharge.

6. DOE has stated: "Analyze potential for radiological emissions from the 700-C fan. Have analysis validated by the Consortium for Risk Evaluation with Stakeholder Participation (CRESP)." The CRESP Report is dated May 2020. Accordingly the information provided to CRESP was prepared and given to CRESP months before May 2020. What are the differences between the information provided to CRESP in early 2020, or earlier, and the information provided to the Public nearly 12 months later in December 2020?

The only differences would be the result of answering CRESP questions and incorporating their comments to make the December 2020 public information as clear and complete as possible.

7. DOE has stated: "The CRESP Team has endorsed WIPP's rationale and approach to restarting the 700-C Fan." CRESP did not endorse the rationale presented to the Public in December 2020. CRESP reviewed what DOE gave CRESP many months, perhaps a year, before DOE released "revised" (?) information to the Public. Provide copies of the information DOE provided to CRESP.

Response posted to Town Hall Q&A's to a similar question regarding the documents:

They were in draft form, but were very close to the completed documents. We did make some changes at the recommendation of the CRESP team and we made a few minor changes to the documents, but they were essentially in their final form.

The following documents are currently posted to the 700-C page:

- 700-C Ventilation Short Duration Test Scheduled Notice (newly added)
- 700-C Restart Fact Sheet
- Rational for Restarting 700-C Ventilation Fan
- Estimated Release White Paper
- Radiological Sampling Plan

8. DOE stated that workers on site during the discharge of contamination from the unfiltered ventilation would be outfitted with PPE (Personal Protective Equipment) including respirator. This is a prudent measure. Then why isn't the contaminated airflow treated with filtration prior to discharge? The workers have filtration (the particle filter in the respirator). Also, is the NWP Evaluation White Paper accurate when it states: "Onsite personnel not directly involved with the fan testing will be required to remain indoors"? on page 29. The question is how long must they remain indoors?

Precautionary PPE for worker protection in the area immediately downwind near the fan was considered prudent until completion of the 4-hour test. Respiratory protection was not required for the remainder of the site. At the conclusion of the fan test the "remain indoor" direction was lifted. Areas downwind of the fan that were posted as a precaution to require protective clothing were surveyed and downposted during the week following the test, with no contamination found.

9. DOE stated: "The MSHA has long been in favor of providing more airflow to the WIPP underground, a viewpoint they articulated in recommendations they provided to WIPP after a technical assist visit in 2016." The question is: In what document did MSHA indicate that it would be permissible to blow all the unfiltered radiological contamination out to the site and the environs to provide more airflow to the underground?

MSHA identified the need for increased mine ventilation but did not make recommendations regarding the radiological status of the ventilation system, as that is not within their regulatory purview or area of expertise.

10. Since CEMERC and NMED WIPP radioactivity monitoring data are so out of date (more than 1-2 years), what independent organization will promptly collect, analyze and make Public the unfiltered contamination blown out of WIPP when the 700-C fan is operated? Provide the most recent DOE Grant to and application by CEMERC including but not limited to scope of objectives, radionuclides analyzed, quality assurance criteria, deliverables and timeliness of deliverables.

Isotopic actinide analyses by CEMRC have been completed on Station A and Station B filters through December 31, 2020 and gross alpha and beta screening analyses are complete through January 31, 2021. These data are provided to the DOE on a monthly basis. CEMRC is in the process of updating its website so that data can be uploaded directly as soon as they become available, and to provide a mechanism for stakeholders to request data directly. The 2018 annual report, which was delayed due to changes in CEMRC's administration, is expected to be published by mid-February 2021, the 2019 report by April 30, 2021, and the 2020 report by end of 2021 as specified in the statement of work.

The Statement of Objectives, which formed the basis of Financial Assistance Grant, DE-EM0005195 was renewed in 2020. Details about the grant, including budgetary information, is public information and can be obtained from <https://www.usaspending.gov/>.

In relation to quality assurance criteria, there are multiple layers of quality assurance and quality control practices that encompass CEMRC's environmental monitoring programs. Of particular relevance to the scope in question, CEMRC participates in the two national performance-evaluation programs, the National Institute of Standards and Technology Radiochemistry Inter-Comparison Program (NIST-RIP), and the Department of Energy (DOE) Mixed-Analyte

Performance Evaluation Program (MAPEP) for soil, particulate filters, and water analyses. Successful completion of the proficiency tests ensures the accuracy of analytical results reported to DOE and documented in annual reports, while also providing an efficient means for laboratories to demonstrate analytical proficiency.

11. Radioactive materials collected during environmental monitoring after contamination on site and the environs is post release, it is difficult to return the blown out contamination back into WIPP, much like it is difficult to return toothpaste to the tube. Provide the radionuclide data (isotope and activity) from the most recent wipe samples taken in the ductwork, in and around station A and in and around the bottom of the exhaust shaft. Provide identical radionuclide data for any fixed contamination in these same areas.

On December 14, 2020 radiological control technicians collect wipe samples at Station A; all activity was below the minimal detection threshold for the Tennelec counting instrument (13.25 dpm for beta/gamma and 13.39 dpm for alpha activity). There have been no radiological surveys conducted in and around the bottom of the exhaust shaft because the area cannot be safely accessed until additional ground control and mining activities are conducted.

12. The shrouded probes were mentioned by DOE. The question is: When were the shrouded probes installed and are they caked with salt resulting in the data collected unreliable?

Station A sample probes are replaced on a monthly basis to ensure they remain reliable. They were most recently replaced the week preceding the 4 hour test. In addition, new shrouded probes were placed on a scaffold set up at the face of the fan discharge to allow confirmatory sampling of the exhaust. Results from these samplers will be included as part of the data provided.

13. What are the potential radiological emissions on a daily and annual basis for the restart and ongoing operation of the 700-C fan?

For the initial test of the fan (4 hours) NWP has performed an assessment of radiological conditions and has derived the following. The estimated emissions for the four hour test period are $5.92E-06$ Ci per TE 20-002 Radiological Assessment of the Startup and Testing of the 700C Fan. The total estimated dose to a MEOSI located 335 meters East Southeast of the 700 fans of $4.89E-03$ mrem annually this would be similar to spending 45 minutes on Sandia Peak in Albuquerque, NM with a resultant exposure of $5.99E-03$ mrem.

An estimate of an annual emission rate was performed using the EPA CAP-88 Model and summarized in BC-RP-0129, Radiological Air Emissions Evaluation of the Restart of The 700 Fans for 40 CFR 61 Subpart H. Using the CAP-88 software to estimate results generated the following: total estimated dose to a MEOSI located 335 meters East Southeast of the 700 fans of $4.89E-03$ mrem annually.

Actual projections for emission rates for any period longer than four hours will be made using empirical data collected during the test itself.

14. With all the unanswered questions, valid concerns and interest in the 700-C fan restart, it would be prudent, in the Public interest and consistent with transparency, that at least one additional, perhaps more, WIPP Town Hall discussions be held prior to WIPP blowing contamination on to the site and environs.

An additional town hall meeting is currently being scheduled for late February or early March to go over the 4-hour test and the sampling results. Those results will be posted when the data is finalized and validated. As stated during the initial town hall meeting held on December 10, 2020, the sampling data will be posted at least two weeks prior to the 5-day test and balance evolution.