



# Ventilation Challenges at the Waste Isolation Pilot Plant



PRESENTED BY

Phil Theisen



SAND2019-4428PE



Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

# Ventilation Background

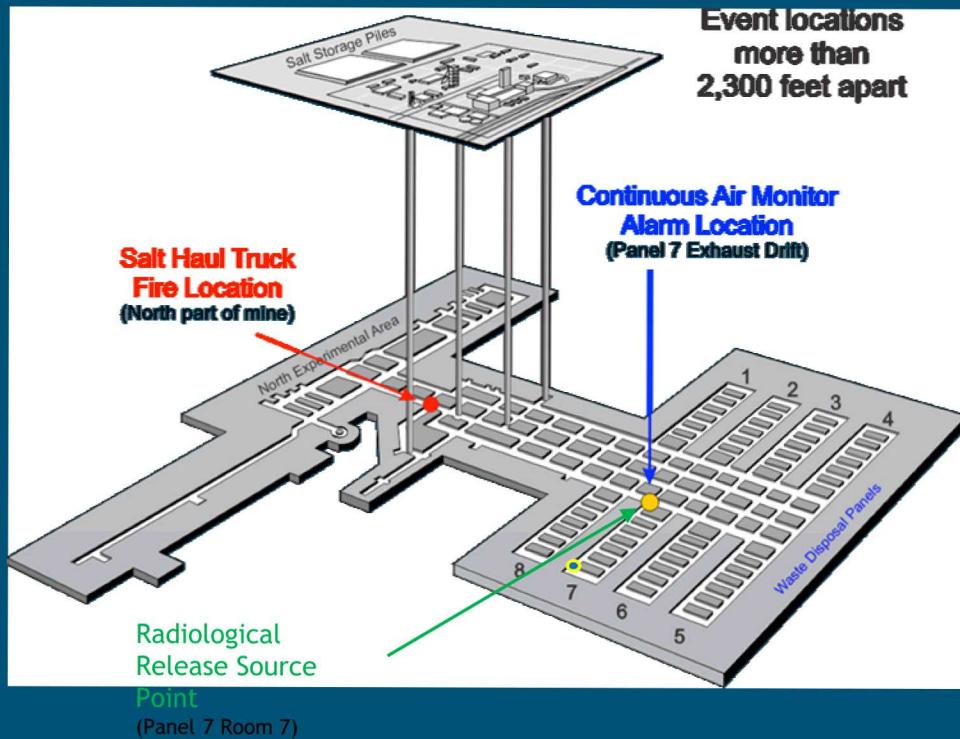
2

- WIPP's Underground Ventilation System prior to the 2014 accidents consisted of
  - 4 Vertical Shafts
  - Underground Drifts
  - Bulkheads/ Regulators
  - 3 Unfiltered Fans
  - 3 Filtered Fans
  - 2 HEPA Banks
- Unfiltered conditions provided maximum capacity of 425KCFM
- Supported Waste Handling Operations, Mining Operations, and Ground Control Operations.

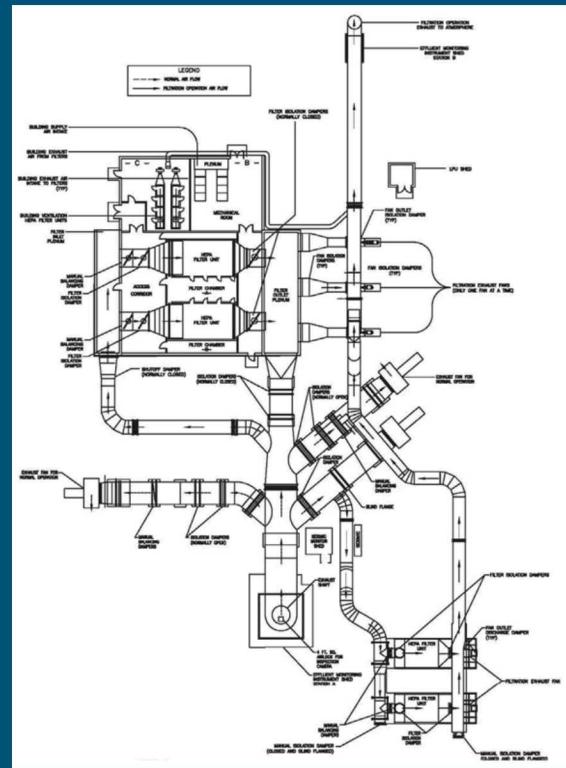


## 2014 Accidents

- February 5, 2014 Salt Haul Truck Fire.
- February 14, 2014 Radiological Release.



- New Interim Ventilation System tied into existing Underground Ventilation System consists of:
  - 2 additional Filtered Fans
  - 2 additional HEPA Banks
  - Provides an additional 54KCFM
- Maximum capacity of 114KCFM.
- Allows for Waste Handling Operations.



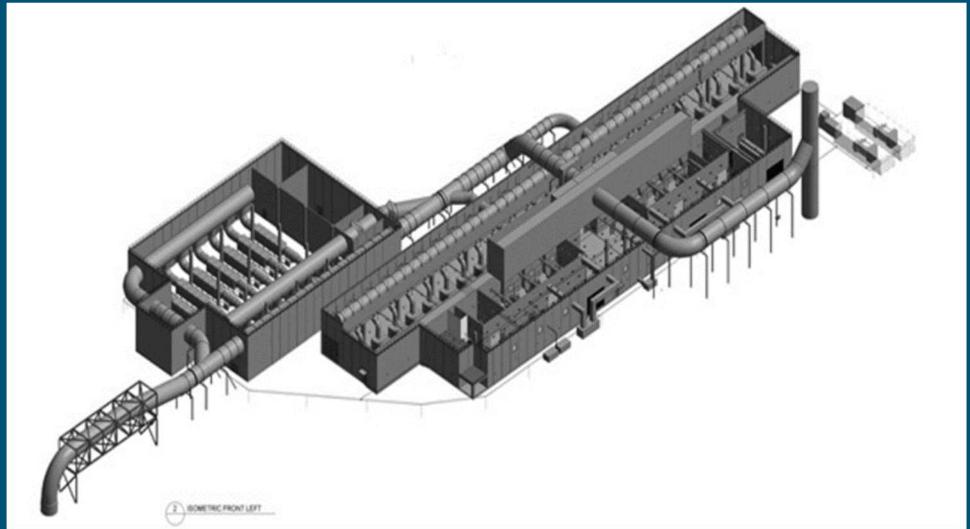
## Path Forward – Supplemental Ventilation System

- New Supplemental Ventilation System installed in the Underground consists of:
  - A Booster Fan supplementing the air intake
  - An additional 130KCFM
- Maximum capacity of 250KCFM.
- Allows for Mining Operations.



## Path Forward – Safety Significant Confinement Ventilation System

- Upcoming installation of Safety Significant Confinement Ventilation System will consist of:
  - 6 additional Filtered Fans
  - 22 additional HEPA Banks
  - Utilizes existing Exhaust Shaft
  - New Salt Reduction Building
  - New Filtration Building
- Maximum capacity of 540KCFM.



- The Interim Ventilation System coupled with the Supplemental Ventilation System allows for increased Waste Handling throughput and Mining progress for Panel 8. In addition, Ground Control efforts are allowed additional resource utilization.
- The Safety Significant Confinement Ventilation System will allow for the reduction of major hazards in the Underground such as VOCs and DPMs through dilution as a result of the significant increase in airflow. The new system will also provide an increase the efficiency in work activities for Waste Handling, Mining, and Ground Control. And lastly, the new system will allow for additional panels to be installed to facilitate the disposal of the full LWA TRU waste limit.



# Questions?

Thank you!