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Extrapolating Radionuclide Observables from the Platte Underground Nuclear Explosive Test

The Platte underground nuclear explosive test occurred in a tunnel at the U.S. Nevada Test Site on 14 April 1962. The test vented quickly (1.5 seconds) and radiation was detected at locations up to 200 km away. Using radioisotope measurements at the Queen City Summit location and HYbrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) modeling of dispersion and deposition, a release fraction of approximately 0.36% can be determined. Using this, we have calculated deposition concentrations for the particulate on-site inspection (OSI)-relevant radionuclides, assuming no fractionation. Then, applying the minimum detectable activities (MDA) obtained by the Base of Operations laboratory at the Integrated Field Exercise 2014 (IFE14), we have calculated the maximum times an OSI could be expected to detect the various particulate OSI-relevant radionuclides for a vent of this magnitude. Such information can be used to determine sensitivity requirements for OSI equipment and procedures.

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