

3.2-P10. Detection of thermal signatures as a function of transferred heat and weather conditions

Underground nuclear explosions can have detectable impacts on hydrogeological conditions; potentially affecting aquifers and wells as well as soil moisture. A potential impact of a detonation is cool subsurface or geothermal water being brought to the surface or to the near-surface, manifesting as OSI-relevant thermal anomalies. The use of infrared imaging equipment at the surface and from the air is permitted during an On-Site Inspection. On this basis, a series of tests were performed using thermal imaging equipment to assess their ability to detect simulated heat sources in the near subsurface. Recording of input energy, soil and meteorological conditions enabled heat transfer to be modelled, and allowed the sensitivity of thermal imaging cameras under different conditions to be quantified. Variations in weather conditions over testing days enabled the team to evaluate the appropriateness of the application of thermal imaging equipment for the detection of OSI-relevant thermal anomalies under different environmental conditions.

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