

T3.4-O4. Testing the Use of Passive Seismic Methods to Detect Underground Cavities

A set of seismometers were deployed around the site of known underground nuclear explosions (UNE) at the U.S. Nevada National Security Site. The purpose was twofold: to test the use of seismic interferometry to image UNE sites and to evaluate effects that might be caused by resonances in the damaged subsurface ("e.g. "resonance seismometry"). We also generated 3D synthetics using a finite difference technique on a smoothed and idealized representation of the cavity and chimney. Examination of the observed data does not show clear indications of resonance within the cavity and chimney caused by seismic waves from teleseismic, regional, or local earthquakes although analysis is continuing. Green's functions of raypaths between station pairs have been generated using seismic interferometry based on ambient seismic noise and these will be used to generate a tomographic model. Prepared by LLNL under Contract DE-AC52-07NA27344.

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