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of 2022 and 2023 OSI Field Tests for Seismic Techniques

In 2022 and 2023, the PTS conducted two field tests for the development of seismic and non-seismic geophysical techniques for deep on-site inspection (OSI) applications. The 2022 Field Test took place in the Austrian Alps over a cave system embedded in limestone with karst voids 5-15 m in diameter at depths of 40-350 m. Active seismic surveys (ACT) and resonance seismometry (RES) were conducted over two profiles, with also non-seismic techniques deployed over the first. The 2023 Field Test was conducted on a gentler topography in the UK above the Channel Tunnel, consisting of two rail tunnels 7.6 m in diameter excavated in chalk marl at 90 m depth. ACT was deployed over two profiles and RES over one (non-seismic techniques over both). These were first OSI activities to employ an ACT system owned and operated by the PTS. The field tests were also specifically designed to test a new concept of operations for RES, involving use of local, regional and teleseismic events as well as ambient seismic noise. The ACT and RES results show unique seismic signals from the targets. Joint interpretation of the seismic and non-seismic results emphasizes the complementary nature of different techniques and data processing approaches.

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