

1.4-O4. Understanding the Challenges of OSI Drilling to Safely Recover Relevant Radiological Samples from an Underground Nuclear Explosion

Integrated Field Exercise 2014 (IFE14) demonstrated advancing maturity for CTBT on-site inspection (OSI) techniques. Drilling to recover relevant radiological samples, arguably the most physically intrusive and demanding of the allowed inspection techniques, was purposefully omitted from the exercise. At entry into force (EIF) the CTBTO must be ready to implement drilling as an OSI inspection technique. For drilling to be safe and capable as an OSI technique there are many physical constraints and components that must be considered. When the dynamic nature of a radiological source term is combined with the challenging industrial work environment of a drill site, drilling will require significant effort to plan and execute. It is instructive to review the challenges of drilling for the recovery of radiological samples by considering the relevant historical experience of personnel who led the last U.S. post shot drilling and radiological sample recovery effort. This includes exploring the physical constraints as well as discussion of the drilling equipment, guidance and detection equipment, required personnel, radiation safety systems, and sample handling. Enhanced understanding of the challenges that must be identified and addressed to implement drilling as an OSI technique could prompt the discussion necessary to prioritize development of OSI drilling.

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