

1.4-O1. Drilling to Obtain Radioactive Samples: Concept of Operations and Equipment

The Comprehensive Nuclear-Test-Ban Treaty allows “Drilling to obtain radioactive samples.” The objective of drilling is to obtain data to help clarify whether a nuclear explosion occurred. At any time during the OSI, the Inspection Team Leader may submit to the Executive Council a proposal to conduct drilling. A successful drilling operation will require careful planning and execution to recover relevant samples efficiently and most importantly safely. A concept of operations should be developed that considers all aspects of the drilling and sampling process including health, safety, and environmental protection. An understanding of underground nuclear test explosion phenomenology and its relationship to radionuclide distribution and migration will be important. The emplacement configuration (vertical or horizontal) will present different challenges that affect equipment and their utilization. Sample handling Procedures will have to be developed based on the equipment and requirements. The OSI process of identifying the drilling location will provide much of the information (geology, terrain, mechanical properties, etc.) needed for designing the drilling plan. Inspector training will have to be coordinated based on the equipment, and the pre-existing arrangements, licenses, permits, etc. The time since the triggering event will also be an important consideration as will the type of sample.

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