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# of a Field Portable Ar-37 Monitoring Capability

Since 37Ar is produced in significant quantities when neutrons from a nuclear explosion activate calcium in the ground, measurements of 37Ar are among the most important made for nuclear explosion monitoring applications, including on-site inspections (OSI) under the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Measurement of 37Ar is also among the more difficult measurements to make in field conditions for a number of reasons, such as the need for portability and ease of operation, the difficulty in the separation of bulk argon from air, and the difficulty in measuring the low energy decay Auger electron. In addition, the throughput and detection sensitivity of an effective field portable 37Ar collection and measurement system must meet the needs of the nuclear explosion monitoring community. After decades of experience with the sensitive collection and measurement of noble gases for nuclear explosion monitoring, and more recently the sensitive measurement of 37Ar in a laboratory environment, PNNL is developing an 37Ar field system that could be used for applications such as CTBT OSI. This presentation will explain the basic operating principles of the U.S. system, as well

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