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GPS-Enabled Vehicle-Based Mobile Radiation Detection Search Tool for CTBT OSI

Searching for radioactivity during On Site Inspection (OSI) is critical to verifying the Comprehensive Nuclear-Test-Ban Treaty. Myriad tools are under development or commercially available for supporting search, but suffer from inadequate user-ability and have closed and proprietary software/hardware architectures. For search during a CTBT OSI, the Lawrence Livermore National Laboratory has developed and demonstrated a NaI-based radiation instrument that is GPS-enabled, and has an open software architecture interface (Glau). The interface has two display modes, histogram detector count rate or spectrum view, with a long-dwell data capture function. Stored data includes GPS location, date and time, count rate, and spectrum. If desired, additional hardware can be installed that enables these data and streaming video to be transmitted to the OSI base-camp via private self-forming mesh network. The instrument is comprised of a Na-I scintillation detector (4x4x16 inch), 1024-channel multichannel analyzer, a small computer, GPS antenna, and easy to use software. The Glau interface was developed to be an open source code in MatLab and operates under WindowsXP, Vista, or v7. Recent operations in vehicle-based search, both on water and on land, will be described. Work performed under the auspices of the U.S. DOE under contract DE-AC52-07NA27344, LLNL-ABS-611132.

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