



Use of Geophysical and Remote Sensing Techniques During the Comprehensive Test Ban Treaty Organization's Integrated Field Exercise 2014

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The Integrated Field Exercise of 2014 (IFE14) was a field event held in the Hashemite Kingdom of Jordan (with concurrent activities in Austria) that tested the operational and technical capabilities of a Comprehensive Test Ban Treaty's (CTBT) on-site inspection (OSI). During an OSI, up to 40 inspectors search a 1000km² inspection area for evidence of a nuclear explosion. Over 250 experts from ~50 countries were involved in IFE14 (the largest simulation of an OSI to date) and worked from a number of different directions, such as the Exercise Management and Control Teams to execute the scenario in which the exercise was played, to those participants performing as members of the Inspection Team (IT). One of the main objectives of IFE14 was to test Treaty allowed inspection techniques, including a number of geophysical and remote sensing methods. In order to develop a scenario in which the simulated exercise could be carried out, a number of physical features in the IFE14 inspection area were designed and engineered by the Scenario Task Force Group (STF) that the IT could detect by applying the geophysical and remote sensing inspection technologies, as well as other techniques allowed by the CTBT. For example, in preparation for IFE14, the STF modeled a seismic triggering event that was provided to the IT to prompt them to detect and localize aftershocks in the vicinity of a possible explosion. Similarly, the STF planted shallow targets such as borehole casings and pipes for detection by other geophysical methods. In addition, airborne technologies, which included multi-spectral imaging, were deployed such that the IT could identify freshly exposed surfaces, imported materials and other areas that had been subject to modification. This presentation will introduce the CTBT and OSI, explain the IFE14 in terms of goals specific to geophysical and remote sensing methods, and show how both the preparation for and execution of IFE14 meet those goals.