

Build-Up Exercise III

Preparing for the next OSI Integrated Field Exercise (IFE14) in Jordan

Upon entry into force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), an on-site inspection (OSI), will be the final, Treaty-specified verification measure to determine whether or not a nuclear explosion has been conducted in a suspected area. In preparation for entry into force, the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) conducts regular simulations and training exercises to fine-tune its procedures and processes.

From 26 May to 7 June 2013, nearly 150 experts from 40 countries

gathered at a military training ground near Veszprém, Hungary, for a simulated search for evidence of a nuclear explosion. Fifteen trucks transported 120 tons of state-of-the-art equipment from the CTBTO's equipment storage and maintenance facility near Vienna to the site, where a fully functioning base of operations was established.

The exercise in Hungary, called Build-Up Exercise III, was the last in a cycle of three exercises dating back to April 2012, which have rehearsed and tested the four phases of an OSI: Launch, Pre-Inspection, Inspection and

Post-Inspection. Build-Up Exercise III focused on an Inspection phase, in which the inspection team tested various OSI techniques, procedures, and the OSI search methodology, as well as their integration at the operational level.

With the experience and knowledge gained from exercises such as these, the CTBTO is now looking ahead to its second fully-integrated field exercise (IFE14) in Jordan in November 2014 – a major collaboration of international experts and scientists, which will test the vast majority of OSI activities and techniques over a duration of five weeks.

Photos in this article courtesy of Matjaz Prah and Pablo Mehlhorn.



1 Communications both within the inspection team and from the base of operations in the field to the CTBTO headquarters in Vienna needs to be ensured at any time during the inspection. For this purpose, the CTBTO makes use of different means, including HF, UHF and VHF band communication as well as satellite based communications

2 Passive seismological monitoring for aftershocks is another OSI technique that has been tested. Aftershocks occurring as a result of an underground nuclear test can be detected by seismic mini-arrays deployed to the field. The data gathered in the field are processed and analyzed back at the base of operations. The results help to narrow down the search area.

3 Airborne gamma spectroscopy represents another OSI technique. For this purpose, the inspection team was permitted to conduct an additional overflight over selected parts of the inspection area. After analysis of the data, the findings were shared with other team members.





4 Cooperative but tough: the inspected state party (ISP) insists upon its treaty rights during the conduct of the inspection. Negotiation skills of inspectors are essential and were tested throughout the entire exercise phase.

5 As part of the exercise, a radionuclide laboratory was established at the base of operations. Cooling of the highly sensitive high-purity germanium (HPGe) detectors is required with the help of liquid nitrogen produced by a generator in the field.

6 In addition, procedures and equipment for subsoil noble gas sampling were tested for the first time under exercise conditions. Logistical support by the inspected state party is essential in order to enable the team to fulfil its mandate.

7a



7b



7a Various geophysical methods such as geoelectrics were also utilized by the inspection team. These OSI techniques can detect underground anomalies caused by an underground nuclear test or its preparations.

7b Upon setting up the survey measurement equipment, data are stored in an acquisition system and transferred back to the base of operations for further processing and analysis.

8 Regular inspection team meetings are essential for information sharing and mission planning purposes. "Every inspector needs to be aware about the status of operations and the planned activities ahead. The inspection team functionality concept and our search methodology provided a solid framework for planning, executing and reporting our field missions," said inspection team leader Alex Lampalzer (centre left in picture below).



8