SnT 2025 8 SEPTEMBER ONLINE DAY 9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

On-Site Inspection Directed Exercises in 2023 (DEs23)

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CTBTO PREPARATORY COMMISSION | PUTTING AN END TO NUCLEAR EXPLOSIONS

INTRODUCTION AND MAIN RESULTS

The On-Site Inspection (OSI) Directed Exercises (DEs) in 2023 were the first field exercises conducted under the framework of the OSI exercise programme for 2022-2025 and the first field exercises conducted since the Integrated Field Exercise in 2014 (IFE14). Three DEs were conducted simultaneously over three weeks in September 2023 in Bruckneudorf, Austria. They comprised the DE on Field Operations Support, the DE on Environmental Sampling and OSI Field Laboratory, and the DE on Data Flow Management.

This poster provides information on the DEs23 aim and objectives, concept, participants, and technologies. Furthermore, it shall summarise specific key findings and recommendations which are being addressed in advance of future OSI exercises.

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Aim and Objectives

The **OSI Directed Exercises** (DEs) 2023 were the first field exercises conducted under the framework of the OSI exercise programme for 2022-2025, and the **first field exercises conducted since the Integrated Field Exercise in 2014** (IFE14).

The overarching aim of the DEs in 2023 was to contribute to the high-level objectives of the OSI exercise programme:

- demonstrate and evaluate progress made in the development of OSI technical and operational capabilities since 2015;
- ensure that areas of existing OSI capability have been maintained;
- identify areas for further improvement of OSI capabilities and processes in preparation for EIF; and
- promote and raise awareness about the CTBT, its verification regime and in particular the OSI element, and the wider activities of the Preparatory Commission.

This was achieved by testing and validating relevant recent developments and existing operational OSI capabilities. The exercises also served as training platforms to facilitate the seamless interoperability of selected OSI capabilities during a subsequent Build-Up Exercise in 2024 (BUE24) and the next Integrated Field Exercise in 2026.

Concept and Participants

Three DEs were conducted simultaneously from 3 to 28 September 2023 in Bruckneudorf, Austria. The exercises comprised the:

- DE on Field Operations Support (DE FOS)
- DE on Environmental Sampling and OSI Field Laboratory (DE ESFL), and
- DE on Data Flow Management (DE DFM).

78 individuals participated in the DEs as exercise players or management, including 23 PTS staff members and consultants, in three groups:

- Exercise Management (EM) - managing the exercise and providing, in cooperation with the Host Country, the conditions for a safe and successful exercise.
- Inspection Team (IT) - conducting inspection activities and techniques per scenario & module briefings and participating in module preview and review briefings.
- Control Team (CT) - ensuring IT operated within the scenario boundaries and accomplished its objectives, overseeing IT activities, and acting as OSC and Inspected State Party members when needed.

DEs23 Participation by Team

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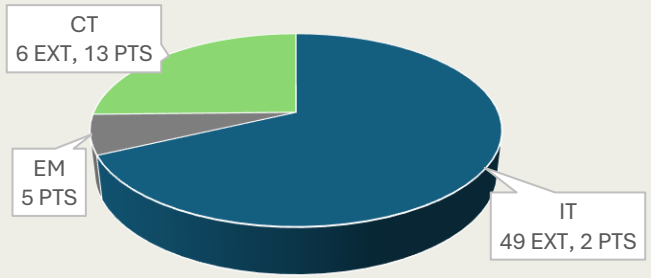

Findings and Recommendations

The approach to conduct DEs as the next step after inspector training was valuable. Exercising with briefings, debriefings, and repeated activities provided participants with opportunities to deepen their understanding of OSI methodology and to conduct activities at a larger scale than during regular training.

However, artificialities and limitations of a simplistic exercise scenario prevented participants from applying a coherent search logic. After a rotation of participants half-way through the DEs, newly-arrived IT members needed additional time to understand and adjust to these drawbacks.

Despite this finding, the timelines and periods for the phases of an OSI and IT daily activities were a good approximation of a real OSI and should be maintained for future exercises.

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DE on Field Operations Support

The specific aims were to validate the readiness and sustainability of support functions related to IT operations during deployment. This involved dispatch of equipment, provision of facilities and amenities for the IT such as communications and health and safety support, facilitating field missions, and concluding operations. Point of entry activities were not part of this exercise.

This was the first exercise since IFE14 when the whole Base of Operations (BOO) was set up and operated at full scale. It was also the first opportunity for 3TC surrogate inspectors to see and work at a complete BOO. The exercise showed that the skills and capabilities required for effective field operations support were well represented, not only by FOS specialists but also by other IT functions who provided stand-in FOS services. Overall, the DE was a unique learning experience and provided several important recommendations for improvement of the FOS training.

DE on Environmental Sampling and OSI Field Laboratory

The specific aims were to validate selected radionuclide related equipment, software and procedures used for the collection and analysis of solid, liquid and gas samples, as well as data for in-situ energy resolution analysis. This allowed assessment of tools for chain of custody of samples and electronic media and devices as well as those available for the interpretation of data.

The objectives were to exercise OSI elements and functions related to:

- the setup of the OSI field laboratory;
- field missions for collection of environmental samples and measurements of levels of radioactivity using energy resolution analysis;
- data/sample analysis and reporting; and
- the required chain of custody.

Radionuclide technology has made significant progress since IFE14, especially the upgraded OSI noble gas system, the rapid deployment platform, and the improvement of OSI environmental sampling capabilities including sample portioning in the field and at the laboratory. Monitoring the progress of inspection techniques, procedures and equipment use is essential to ensure that every participant maintains a high level of professionalism during OSI exercises. Finally, correct and unambiguous reporting during an OSI is crucial for ensuring the accuracy, accountability and trustworthiness of the inspection findings.

DE on Data Flow Management

The specific aims were to validate the readiness of the Geospatial Information Management for OSIs system (GIMO) and the Equipment and Instrumentation Management for OSI (EIMO) system, and to test the ability of surrogate inspectors to operate both to implement the inspection team functionality concept.

All three surrogate inspectors fulfilling the function of the IT Data Flow Management officer performed their duties and tasks independently. All hardware components of the networks worked well during the exercise with exception of the laptops, which have since been replaced. All instances of GIMO and EIMO worked well during the exercises with only a few situations when non-standard intervention was required. Important recommendations stemming from the DE were implemented by February 2024 to allow for testing, training and preparation for their use during BUE24.