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

On-Site Inspection Build-Up Exercise in 2024 (BUE24)

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CTBTO PREPARATORY COMMISSION | PUTTING AN END TO NUCLEAR EXPLOSIONS

INTRODUCTION AND MAIN RESULTS

The On-Site Inspection (OSI) Build-Up Exercise in 2024 (BUE24) was a medium-scale exercise focusing on the Continuation Period of an OSI, conducted in Hungary and involving over 150 participants from 37 States Signatories over three weeks in June-July 2024.

This poster provides information on the BUE24 aim, objectives, scope and availability of techniques, scenario development and implementation process, role of the Operations Support Centre and independent evaluation. Furthermore, it shall summarise specific key findings and recommendations which are being addressed in advance of future OSI exercises.

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Aim, Objectives, and Scope

The **OSI Build-Up Exercise 2024** (BUE24), conducted in Hungary between 16 June and 6 July 2024, was the first of two "integrated" exercises foreseen under the OSI Exercise Programme 2022-2025.

The aim of BUE24 was to **build-up OSI operational capabilities** in preparation for the conduct of an effective Integrated Field Exercise (IFE).

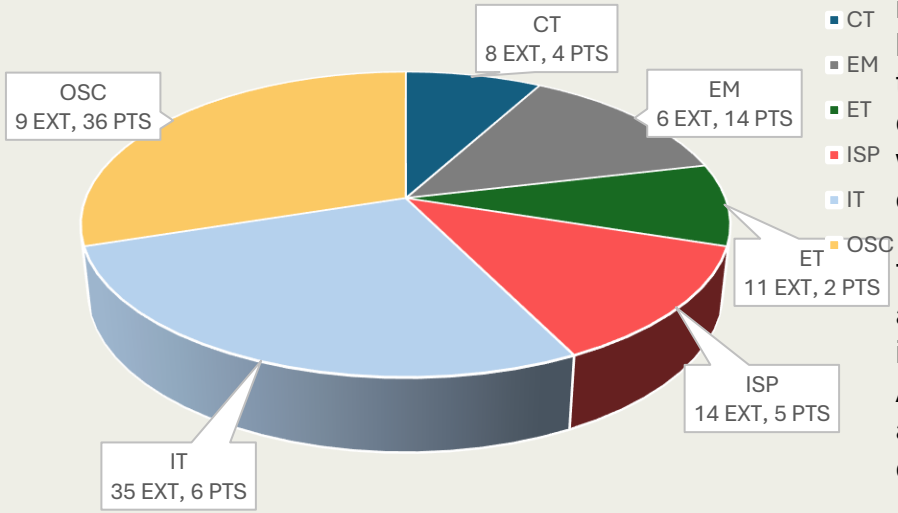
The stated objectives were to:

- Test and/or validate OSI capabilities including selected inspection activities and techniques in an integrated manner in a tactical exercise environment, with a focus on the Continuation Period of an OSI;
- Test and/or validate the inspection team functionality concept and related tools;
- Provide a practice opportunity for selected surrogate inspectors;
- Ensure that areas of existing operational capability have been maintained;
- Identify the areas where immediate improvement is required;
- Raise the profile of the CTBT and illustrate the importance of the OSI verification element in the area of international arms control and non-proliferation.

Location and Participants

The Base of Operations (BOO) was located at the Mátrafüred Vocational College, near Gyöngyös, approximately one hour east of Budapest. Inspection activities were conducted in the vicinity, with a view to testing nascent OSI capabilities in a moderately mountainous area, in preparation for the IFE. The total size of the inspection area was approximately 300 km2.

157 people participated in BUE24, comprised of 83 external national technical experts representing 37 States Signatories, and 74 PTS staff. The distribution of BUE24 participants by team is shown below:



Scenario and Implementation

The BUE24 scenario was one of **non-compliance**: The fictional country of Bludor conducted a small yield nuclear explosion (< 1kt) at a depth of 350m in a mountain using a vertical emplacement accessed by horizontal tunnel. The scenario was developed to allow the inspection team (IT) to apply both initial and continuation period techniques over a real mining area - with existing features of interest - in a mountainous environment, for the first time.

The IT focused its field activities within the inspection area on a number of search zones that were pre-identified by the OSI scenario development task force. Arrangements were made for site modifications, access and the necessary permissions for the application of site characterization techniques.

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Operations Support Centre

In addition to the work in Hungary, the OSI Operations Support Centre (OSC) was established at the CTBT Operations Centre (COPC) at PTS headquarters to provide necessary support to the IT. The OSC was staffed by national technical experts and PTS staff members throughout BUE24.

BUE24 included several first-time achievements during an OSI field exercise, including the use of:

- Updated inspection team functionality concept;
- The Geospatial Information Management (GIMO) system for OSIs at full-scale;
- Involvement of a Requesting State Party (RSP) observer;
- Updated Policy on Headquarters Support, including injects to engage PTS senior management.

Concepts, Methodologies and Systems

A list of aspects included in BUE24 is shown below:

Operations Support Centre	**Health, Safety and Security**
OSC Security procedures	Health and safety procedures at the BOO, and emergency response procedures in the field
Daily documentation logbook	Information security (confidentiality, integrity, chain of custody of samples and data)
Inspection folder maintenance	Setup of BOO physical security arrangements, including electronic perimeter surveillance and access control
Daily reports to/from IT	**IT – ISP and IT-RSO Interaction**
Response to IT requests for assistance or support	Regular meetings between IT and ISP
PTS Senior Management injects	Inspection Team Functionality concepts
Assembly of BOO Infrastructure	Utilization of OSI Inspection Team Functionality
Conduct of specific ISP briefings related to the BOO location, as applicable	Utilization of OSI search logic (Steps 1-5)
Erection of the BOO infrastructure and utilities	Utilization of OSI Field Team Functionality
Setup of the Communications System, LANs	Technical teams and field teams reporting (FTRs, TMRS, SZSRs)
Setup of contamination control at BOO	Daily briefings and debriefings
Setup of the OSI field laboratory	Integrated application of techniques
Application of Inspection Techniques	Data flow and information technology management
Position Finding (at the surface)	**Inspection reporting**
Visual observation (at, below the surface)	Daily/regular reporting by the IT to the DG/OSC
Video (at, below the surface)	Preparation of a Request for Extension of Inspection Duration
Still photography (at, below the surface)	**Post Inspection reporting**
MSIR (at, below the surface)	Preparation of Preliminary Findings Document (PFD)
Measurements of levels of radioactivity (at, below the surface)	Presentation of the PFD to the ISP
Measurement of Ar-37	Other post inspection activities
Measurement of radioxenons	IT-ISP interactions on issues of concern (e.g., items to be retained; confidentiality; export and departure procedures; national health, safety and environmental protection; …)
Environmental sampling and analysis (solids, liquids, gases)	**Return of IT Members and Equipment**
Resonance seismometry	Decommissioning of the BOO
Active seismic surveys	Dismantlement of the BOO infrastructure and utilities
Magnetic field mapping (air, at the surface)	Equipment packing
Gravitational field mapping	
Ground penetrating radar	
Electrical conductivity measurements	

Evaluation, Findings and Recommendations

The evaluation objective for BUE24 was to determine and report on the maintenance and enhancement of operational capabilities, identify areas for further development, and validate the effectiveness of the OSI Division's recent programmes of work. Items identified will inform and shape future OSI plans, which will outline further development of capabilities needed to establish readiness of the OSI element of the verification regime.

Observations were reported across a range of topics:

- Infrastructure, logistics and operations
- Health, safety and security
- OSI Communications and information management systems
- Inspection Team Functionality and application of OSI techniques
- Exercise design and management
- OSC

Informed by direct feedback from BUE24 participants and the results of the independent external Evaluation Team, the OSI Division will build on the positive outcomes of BUE24, implement the concepts proven to contribute to OSI field exercises and aim to incorporate lessons learned from BUE24 in preparation for the next IFE.

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