

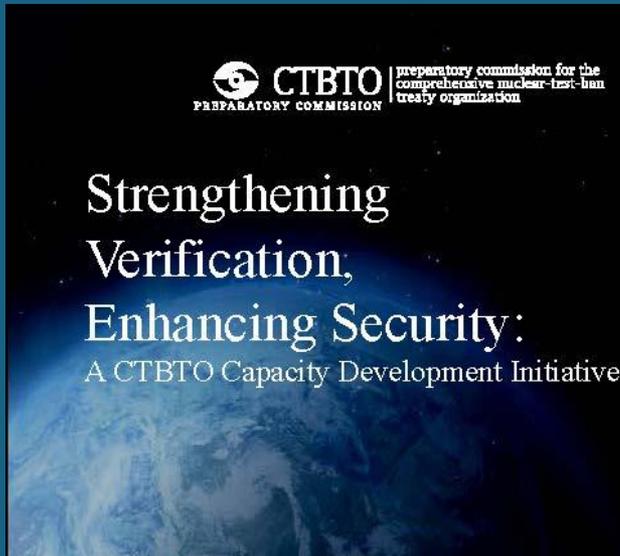
the comprehensive nuclear-test-ban treaty
putting an end to nuclear test explosions

Capacity Development Initiative

Training and Educating the Next Generation of CTBT Experts

Vienna, Austria
12 January 2012

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Legal and External Relations Division
Comprehensive Nuclear-Test-Ban Treaty Organization



Building and maintaining capacity to effectively confront technical, scientific, political and legal challenges facing the multilateral nonproliferation and disarmament regime:

- Investing in the next generation of disarmament and non-proliferation specialists
- Establishing a network of partnerships to strengthen and broaden participation in global monitoring and verification efforts
- Utilizing innovative technologies and educational tools

UNSG Report on Disarmament and Nonproliferation Education (A57/124) & UNGA resolution (57/60):

- Developing user-friendly and accessible educational material on disarmament and non-proliferation is becoming a global trend among relevant UN offices and International Organizations.
- Coordination among United Nations and other relevant international organizations and programmes is crucial for the successful implementation of the recommendations of the study.
- 2010 NPT Action Plan, Action 22: encourages all states to implement UNSG Report to advance the goals of the Treaty in support of achieving a world without nuclear weapons.

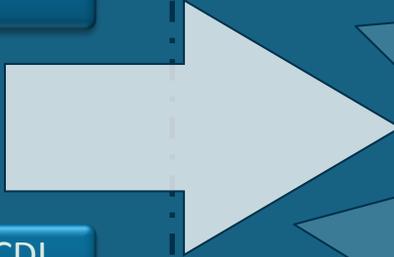
The CTBTO Capacity Development Initiative

Creating Network of
Partners

Identifying Recipients

Development of CDI
Tools

Assembling Resources



Broadened participation in CTBTO
global monitoring and verification
efforts and facilitated access to the
many civil and scientific benefits of
the verification regime.

The CTBTO Capacity Development Initiative



- Beneficial for member-states, especially from the developing world
- Free courses and lectures in Vienna, supplemented by an online e-learning platform
- Lectures are made available to a global audience through live streaming and archiving on the CDI e-learning platform
- The most complete and accessible repository of knowledge on the CTBT

CDI Introductory Course

- Held in Vienna and online on 5-9 September 2011
- Provided participants with an understanding of the science and political significance of the CTBT
- 266 participants registered (online and in Vienna) from 79 countries
- On average, 70 participants attended the course each day
- 20,000 minutes spent watching archived lectures
- 137 participants (online/Vienna) successfully passed the course

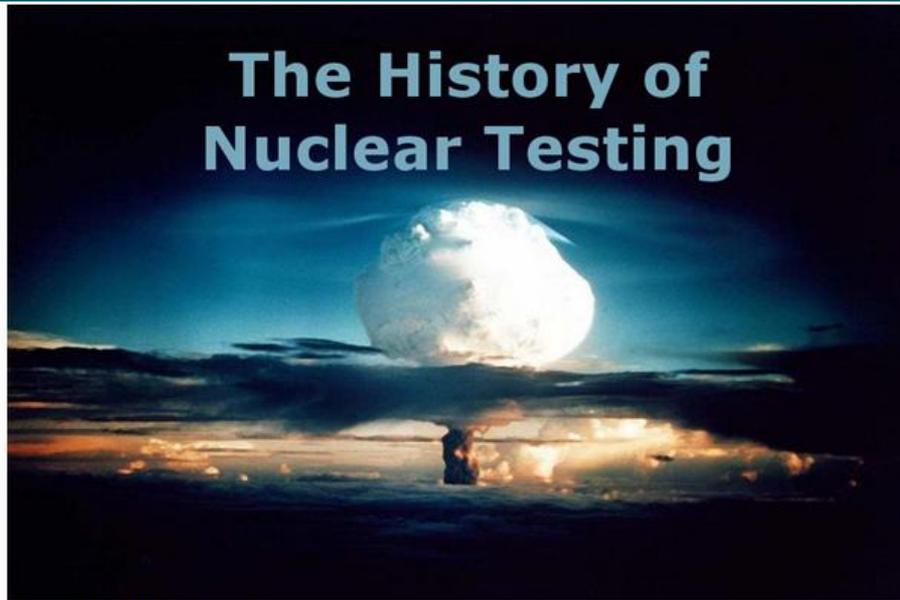


Introductory Course Participants' Geography

The Introductory CDI Course had a global reach!

First name / Surname	City/town	Country
Christian EHN	Vienna	Austria
Nicholas OPOKU	Accra	Ghana
Joy Ibifuro ALASIA	Vienna	Austria
Efren MORALES	Davao	Philippines
Jonathan BURNETT	London	United Kingdom
Yehoshua Michael BETTAN	Yavne	Israel
Hector Rondon-Fuentes	Vienna	Austria
Anesu George CHIBI	Harare	Zimbabwe
Abdelaziz KHELOUI	Algiers	Algeria
Ambrose CHUKWU	Vienna	Austria
Serge FRANCHOO	Paris	France
Eva GONGORA	Lisbon	Portugal
Ibrahim ABDULMAJEED	Abuja	Nigeria
Ashley DAVIES	London	United Kingdom

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Presentation:

-  [Introductory Module on the History of Nuclear Testing](#)

Suggested Background Readings

-  [Nuclear Testing: World Overview](#). Preparatory Commission for the CTBTO, Vienna, 2011
-  [Nuclear Testing Infamous Anniversaries](#), Preparatory Commission for the CTBTO
-  [Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb](#), Scott D. Sagan, *International Security*, Vol. 21, no. 3, Winter 1996/97

Additional Resources:

-  [Unfinished Business: The Negotiation of the CTBT and the End of Nuclear Testing](#), Rebecca Johnson, United Nations Institute for Disarmament Research, Geneva, Switzerland, 2009, Chapter 2: pg. 9-23

Mini-Quiz 2:

-  [The History of Nuclear Testing Quiz](#)

Time Remaining
0:59:42

[Info](#) [Results](#) [Preview](#) [Edit](#)

Preview Final Quiz

[Start again](#)

1 

Marks: 1

<!--[endif]-->All states members to NWFZ arrangements have signed and ratified the CTBT.

Answer:

True

False

2 

Marks: 1

Sort the following countries by the date of the first nuclear test (1= first in time)

Pakistan

Choose... 

India

Choose... 

North Korea

Choose... 

France

Choose... 

China

Choose... 

United Kingdom

Choose... 

United States

Choose... 

Soviet Union

Choose... 

Video Archives of Lectures

Day 1 Presentations: Monday 5 September 2011

[Lecture 1: Political Significance of the CTBT \[iOS Video Link\]](#)

(Executive Secretary, Tibor Tóth)

Presentation Slides

[Lecture 2: History of Nuclear Testing \[iOS Video Link\]](#)

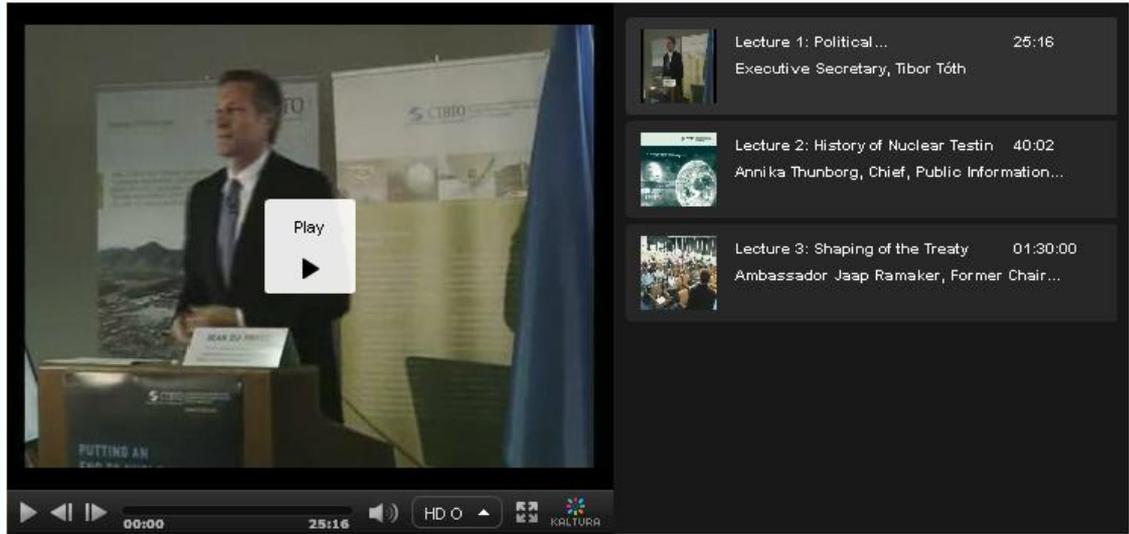
(Annika Thunborg, Chief, Public Information Section, Legal and External Relations Division)

Presentation Slides

[Lecture 3: Shaping of the Treaty \[iOS Video Link\]](#)

(Ambassador Jaap Ramaker, Former Chair of the CTBT Negotiations and former Special Representative to Promote the CTBT)

Presentation Slides



Play

Lecture 1: Political... 25:16
Executive Secretary, Tibor Tóth

Lecture 2: History of Nuclear Testin 40:02
Annika Thunborg, Chief, Public Information...

Lecture 3: Shaping of the Treaty 01:30:00
Ambassador Jaap Ramaker, Former Chair...

00:00 25:16 HD KALTRA

Advanced Course on CTBT

Held in Vienna
from 28 November to 9 December

Targeted at:

- NDC Staff and Station Operators
- Universities
- Research Institutions
- Permanent Missions/Embassies
- Ministries of Foreign Affairs
- Government Agencies
- International Organizations
- NGOs
- Interested Individuals

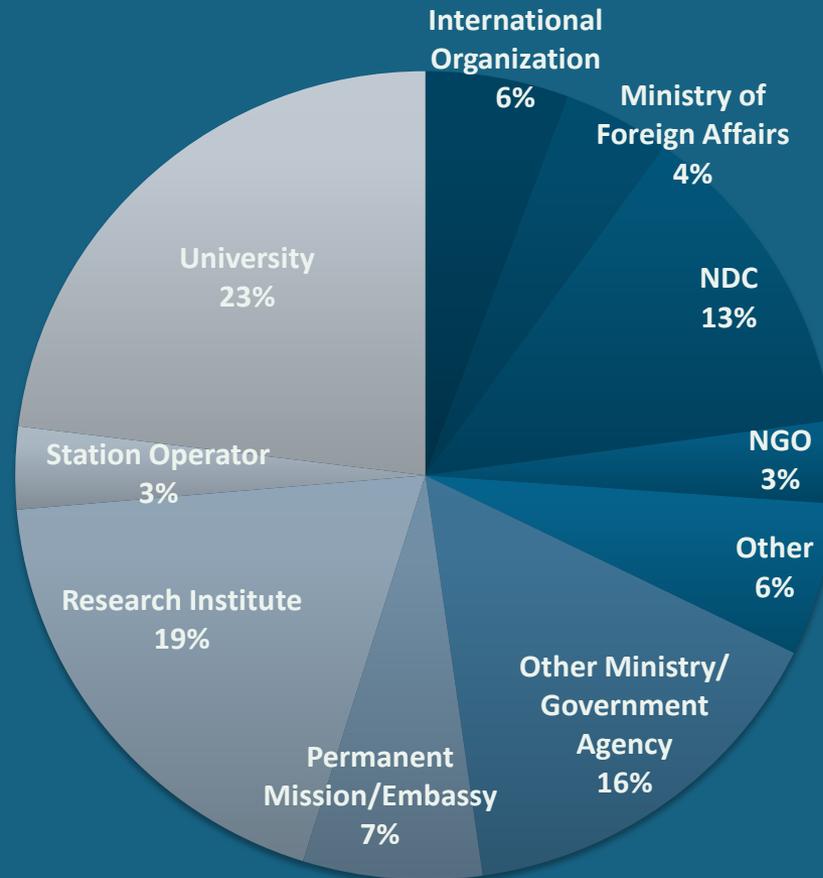


- Designed to enhance understanding of the science underpinning verification regime and provide practical training on the CTBT-related issues

Over 400 registered participants from nearly 100 countries!

[CDI Online Learning Platform](#)

Advanced Course Participant Composition



Over 400 registered participants from nearly 100 countries!

[CDI Online Learning Platform](#)

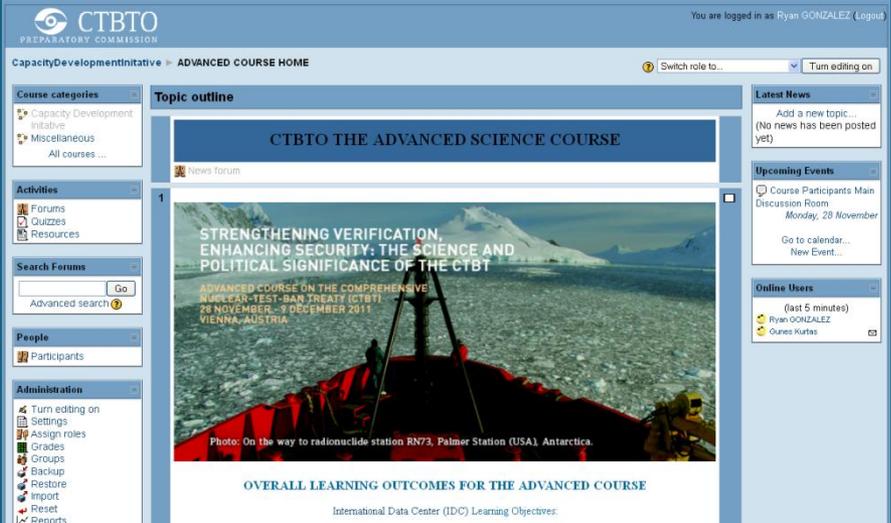
Advanced Course on CTBT

- Approximately 60 participants in Vienna and many more following the course
- Visits to the OSI storage and maintenance facility, the IMS rooftop radionuclide station and mobile noble gas unit, observation of IDC analysts, and lectures and tour of the Institute of Atomic and Subatomic physics.
- OSI Table Top Exercise
- Panel on the Nexus of Science and Diplomacy featuring Dr Bharath Gopaldaswamy of Cornell University, Dr Rebecca Johnson of the Acronym Institute, Andreas Presbo of VERTIC and Dr Patricia Lewis of CNS, looked at the role that scientists play in setting the agenda for policy-makers.

Show: CTBTO		
Period: November 27, 2011 - December 9, 2011		
Breakdown		
Days	Unique Viewers	Viewer Hours
November 28, 2011	78	60,23
November 29, 2011	45	39,72
November 30, 2011	62	84,75
December 1, 2011	86	99,94
December 2, 2011	56	72,75
December 5, 2011	96	68,76
December 6, 2011	49	64,89
December 7, 2011	28	23,22
December 8, 2011	112	152,97
December 9, 2011	27	6,17
Total	639	673,4
Average per Day	63,9	67,34

Advanced Course on CTBT

- Overview of Nuclear Weapons Technology & Testing and Development of Nuclear Weapons
- Understanding the Nuclear Explosion Source
- IMS Technologies: Seismic, Hydroacoustic, Infrasound, Radionuclide and Noble Gas Monitoring Monitoring
- Atmospheric Transport Modeling and Data Fusion
- IDC Data Analysis and Data Products
- Nuclear Explosion Signatures
- OSI: Technologies and Techniques

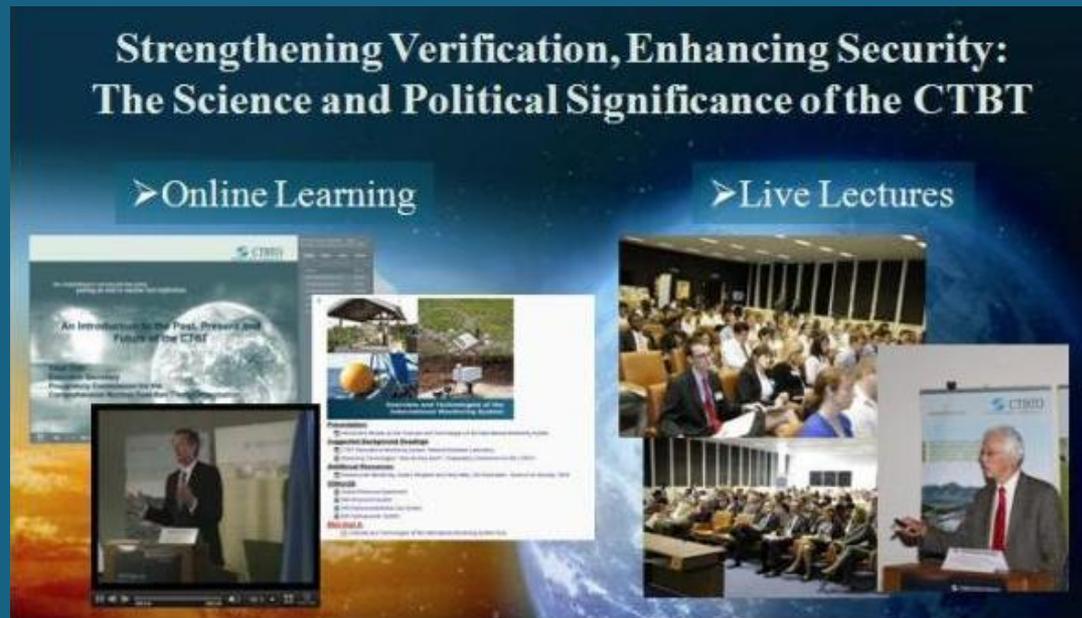


- Overview of Potential Civil and Scientific Applications of Monitoring Technologies
- CTBTO Response to Great East Japan Earthquake and Tsunami and Fukushima Nuclear Power Plant Accident
- Practical Exercises and visits to the CTBTO facilities
- AND MUCH MORE...

Advanced Science Course Participants



<http://batchgeo.com/map/cdiparticipants>



- Original courses: Introductory and Advance
- Exploration of organizational synergies and avenues of collaboration
- Train the trainers workshop
- Incorporation of the CTBT technologies related topics in the educational curricula worldwide
- Continued support and cultivation of the next generation of professionals, especially from developing countries
- Targeted regional training and outreach

Additional CTBTO E-Training Platforms

Welcome to the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) E-learning Training Centre. As part of the CTBTO's capacity development strategy, this e-learning platform has been developed to help you gain a better understanding of the CTBTO's global verification regime.

The e-learning modules found in your curricula contain interactive and virtual training tools to help facilitate your teaching, including a pre-assessment of the subject matter, step by step tutorials, video lectures, supplemental materials and links to external resources. Completion of these modules will provide you with a better understanding of the Comprehensive Nuclear-Test-Ban Treaty itself and is the basis for the training that is necessary to participate in the treaty's verification regime.



VISION:
E-Learning Training Centre

E-learning system was used in 2010 and 2011 used for NDC workshops, training events, OSI training, and Station Operator training.

- All training/workshops participants were requested to complete the e-learning courses prior to the event. Feedback received was positive
- Use of the system freed up ~4 days of classroom time which was then devoted to hands on and practical training.

Presently we have 30 modules of which 11 have been translated into all the official UN working languages

E-learning system is being recognized as an up to date and easy to use resource/reference by in-house staff.

Off-line discs containing all e-learning materials are available to authorized users and training participants. Particularly useful for areas without internet access.





- An Introduction to Radioactivity
- Radionuclide Monitoring
- The IMS Radionuclide Network

There are several key parameters in station design used by experts.

These are based on:

- the number of ground-based stations
- sampling and reporting time
- sensitivity of analysis system
- atmospheric transport modeling
- a 90% detection capability within approximately 14 days for a one kiloton (kt) nuclear explosion in the atmosphere or from venting by an underground or underwater detonation

To view a list of the Minimum requirements specified for Radionuclide stations, click [here](#)

For a list of noble gas monitoring specifications, click [here](#)



E-learning modules developed and translated



- 1. Overview of CTBT
- 2. National Implementation
- 3. OSI Phenomenology
- 4. Seismic Monitoring
- 5. Hydro Monitoring
- 6. Infrasound Monitoring
- 7. Radionuclide Monitoring
- 8. Standard Software

- 16. Access to IMS Data and IDC Products
- 17. NDC establishment and Operation
- 18. Basic Linux
- 19. Maintenance of IMS Stations
- 20. OSI Search Logic
- 21. Intro to OSI (Import of existing course)
- 22a. Radiological Fundamentals
- 22b. Biological Effects and Radiation Limits



- 9. Seismo-acoustic and Infrasound Processing at IDC
- 10. Radionuclide Processing at IDC
- 11. OSI Core Technologies and Techniques
- 12. Operation of IMS Network
- 13. Configuration Management
- 14. Logistic Support
- 15. IMS Data and IDC Products

- 22c. Personal Monitoring and Detection Equipment
- 22d. Risk Management and Incident Response
- 22e. Radiation Safety Final Assessment
- 23. Overview of IMS
- 24. Overview of IDC
- 25. Overview of OSI
- 26. Overview of ADM



Topics

- Infrasound Data and Processing
- Atmospheric Transport Modeling
- Noble Gas Data and Processing
- IDC Products
- Hydroacoustic Data and Processing
- OSI: Goals, Tools and Procedure
- OSI Seismic Aftershock Monitoring System

Credits | Quit

CTBTO PREPARATORY COMMISSION

Start | Up | Portfolio | Glossary | The Treaty



Modules

Welcome! The aim of the CTBTO Training Modules is to familiarize Inspection Team Members with many of the issues surrounding On-Site Inspections.

- > Understanding OSI
- > On-Site Inspection Processes
- > Conduct of an On-Site Inspection



Legend

- ✓ Successfully completed
- 🔄 Repetition recommended

OSI E-Training and Simulation System ESMF - OSI E-Training Centre

- In 2007 the Russian Federation provided the OSI E-Training and Simulation System to the PTS. Comprises a server (Game Manager Computer) and workstations for the Inspected State Party and Inspection Team to allow for interaction between those parties.
- The system simulates the whole process of an On-Site Inspection, and allows the conducting of an OSI in real time.

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Thank You!