

## *Rolling list of upcoming workshops, training and exercises organized by the PTS*

*Disclaimer: The information was last updated on 30 June 2017. This list is updated on a regular basis.*

*For the latest up-to-date information, please consult the web sites for “Calendar of Events” (<http://www.ctbto.org/the-organization/calendar-of-events/>) and “Workshops, Training and Exercises” (<http://www.ctbto.org/the-organization/workshops-training-and-exercises/>)*

# 2017

<i>Dates</i>	<i>Venue</i>	<i>Meeting/Event</i>	<i>Target audience/participants</i>	<i>Descriptions (Objectives, Deliverables, etc.)</i>	<i>Lead Division(s)</i>
3 – 4 July	VIC, Vienna	Technical Meeting on the IDC Validation and Acceptance Test Plan	<p>The meeting is aimed towards scientists, engineers and other persons who have technical expertise in one of the four IMS technologies, the functions of the IDC and in performance monitoring and testing. The participants are expected to provide their technical input to the IDC Validation and Acceptance Test Plan.</p> <p>States Signatories are expected to nominate experts who will provide substantive inputs to the plan.</p>	<p><u>Objectives</u></p> <p>To continue the process of completing the IDC Validation and Acceptance Test Plan; the focus for this particular meeting will be on reviewing the changes made since the December 2016 meeting and to continue improving the test content; progress in this regard will be presented at WGB 49.</p> <p><u>Agenda</u></p> <ul style="list-style-type: none"> <li>➤ Review of recent updates &amp; status;</li> <li>➤ Expert presentations, discussion and feedback;</li> <li>➤ Validation methods, acceptance criteria and metrics for the IMS and IDC as systems;</li> <li>➤ Updates to verification methods and metrics for specific functionalities that will be tested in Experiment 2: standard products, data handling, data and product access services, IMS operations, and IMS radionuclide laboratories.</li> <li>➤ Completing all verification methods, acceptance criteria and metrics for the remaining validation tests;</li> <li>➤ Meeting outcomes and action items.</li> </ul>	IDC
3 – 14 July	VIC, Vienna	Training Course on NDC Capacity Building: Access and Analysis of Radionuclide IMS Data and IDC Products	<p>Participants profile includes:</p> <ul style="list-style-type: none"> <li>• NDC technical staff/authorized users (preferably Principal User or Regular User);</li> <li>• Experience in radionuclide data analysis and/or similar experience related to nuclear test-ban verification; and</li> <li>• Linux background and some SQL-experience;</li> <li>• Having passed the e-Learning course.</li> </ul>	<p><u>Objectives</u></p> <ul style="list-style-type: none"> <li>• To understand the roles of National Data Centres in the verification regime;</li> <li>• To build and/or improve the National Data Centre capabilities;</li> <li>• To provide participants with sufficient knowledge for accessing and using IMS data and IDC products; and</li> <li>• To provide practical experience in analyzing IMS radionuclide data.</li> </ul>	IDC

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3 – 14 July	VIC, Vienna	Training Course on NDC Capacity Building: Access and Analysis of Radionuclide IMS Data and IDC Products (continued)		<u>Agenda</u> <ul style="list-style-type: none"> <li>➤ Introduction and overview;</li> <li>➤ Methods to access IMS data and IDC products;</li> <li>➤ NDC support/performance reports;</li> <li>➤ IMS data, acquisition, processing and storage: standard software packages;</li> <li>➤ Necessary NDC's resources to process IMS data and analyse IDC products;</li> <li>➤ Practical sessions on data and products access, and use of standard software packages, for processing and analysis of particulate and noble gas radionuclide data as well as post processing of atmospheric transport modelling output.</li> </ul>	IDC
7 – 11 August	Vietnam	East Asian National Data Centre Regional Workshop	Invited States should nominate participant(s) who are involved in the use of IMS Data and IDC Products (waveform and radionuclide). Preference will be given to NDC operators and NDC's customers. This Workshop is dedicated to the following countries: Australia, China, Indonesia, Japan, Republic of Korea, Mongolia, Philippines, Russian Federation, Thailand, United States of America, and Vietnam.	<u>Objectives</u> <ul style="list-style-type: none"> <li>• To strengthen the knowledge of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and the work of the Preparatory Commission;</li> <li>• To further build-up the capacity of State Signatories of the CTBT to participate in the implementation of the verification regime and assess how participants are making use of IMS data and IDC products;</li> <li>• To encourage National Data Centres within the region to undertake a joint exercise for the analysis of waveform and radionuclide data and compare their results; and</li> <li>• To promote the exchange of experience and expertise among the NDCs.</li> </ul>	IDC
4 – 8 September	Austria	Technical Training for Station Operators of Manual Radionuclide Stations	Invited States Signatories should nominate participant(s) who are station operators involved in the operation, maintenance and repair. In an effort of to ensure that relevant technical training is provided to the appropriate person, the invited States Signatories should nominate individuals who are directly related to their IMS facility.	<u>Objectives</u> <ul style="list-style-type: none"> <li>• To provide station operators with the basic knowledge and technical understanding on the operations, maintenance and management of a manual radionuclide station and, more specifically, to provide hands-on training for the various operational and maintenance procedures.</li> </ul>	IDC

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4 – 8 September	Austria	Technical Training for Station Operators of Manual Radionuclide Stations (continued)	<u>Target stations:</u> RN01, RN03, RN04, RN05, RN06, RN07, RN08, RN09, RN10, RN13, RN14, RN16, RN17, RN20, RN21, RN22, RN23, RN26, RN27, RN28, RN29, RN30, RN31, RN32, RN39, RN42, RN43, RN45, RN46, RN47, RN50, RN51, RN52, RN64, RN67, RN68	<u>Agenda</u> Daily station operation, including: <ul style="list-style-type: none"> <li>➤ Status checks, new filter preparation, taking flow samples and checking status;</li> <li>➤ Filter management and filter logging procedures;</li> <li>➤ Data sending, authentication and security.</li> <li>➤ Periodic station operations and data management, including:</li> <li>➤ Detector calibration, the principles of Gamma spectrometry detection, taking background measurements, blank filter measurements;</li> <li>➤ Data back-up, management, and resending of spectral data;</li> <li>➤ Operational set-up after long outage;</li> <li>➤ Required reports and reporting;</li> <li>➤ Station equipment maintenance schedule;</li> <li>➤ Data availability and downtime;</li> <li>➤ Station management and administrative procedures; and</li> <li>➤ One-day introduction to CTBTO headquarters - IDC Operation, and IMS Maintenance and Support.</li> </ul>	IDC
4 – 15 September	VIC, Vienna	Training Course on NDC Capacity Building: Access and Analysis of Radionuclide IMS Data and IDC Products	NDC technical staff and authorized users (preferably Principal User or Regular User).  Participants should have: <ul style="list-style-type: none"> <li>- experience in radionuclide data analysis and/or similar experience related to nuclear-test-ban verification; and</li> <li>- Linux background and some SQL experience.</li> </ul> Passing the e-Learning course is a prerequisite but not mandatory for the selection	Objectives: <ul style="list-style-type: none"> <li>• To understand the roles of NDCs in the verification regime;</li> <li>• To build and/or improve NDC capabilities;</li> <li>• To provide participants with sufficient knowledge for accessing and using IMS data and IDC products; and</li> <li>• To provide practical experience in analyzing IMS radionuclide data.</li> </ul> The agenda of the training course will include: <ul style="list-style-type: none"> <li>➤ Methods to access IMS data and IDC products;</li> <li>➤ NDC support/performance reports;</li> <li>➤ IMS data, acquisition, processing and storage: standard software packages;</li> <li>➤ Necessary NDC's resources to process IMS data and analyze IDC products;</li> <li>➤ Practical sessions on data and products access, and use of standard software packages, for processing and analysis of particulate and noble gas radionuclide data as well as post processing of atmospheric transport modelling output.</li> </ul>	IDC

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10 – 16 September	VIC, Vienna	Expert Meeting on Telemetry	15 external experts	<p><u>Objective:</u> To recommend validated equipment specifications for seismic aftershock monitoring system (SAMS) data transmission and further development steps regarding the possible utilization of the telemetry system for position finding, gamma radiation monitoring and in-field communications.</p>	OSI
11 – 13 September	VIC, Vienna	International Hydroacoustics Workshop (IHW2017)	The workshop is aimed towards all scientists, engineers and other persons involved in hydroacoustics, ocean observatories, acoustic sensor technologies, cabled and autonomous underwater systems and related fields.	<p><u>Objectives:</u> To cover the following three main aspects of hydroacoustics related to monitoring of the CTBT:</p> <ul style="list-style-type: none"> <li>• Technological advancements in marine engineering, particularly in ocean observatories, pertinent to IMS hydroacoustic network sustainability and improvement;</li> <li>• Signal processing methods for the CTBT verification purposes; and</li> <li>• Civil and scientific applications of CTBTO data and products.</li> </ul> <p><u>Agenda:</u> The following main themes will be addressed:</p> <ul style="list-style-type: none"> <li>➤ Technology and engineering trends in ocean observatories, with emphasis on those pertinent to the IMS hydroacoustic network;</li> <li>➤ Sustainability of modular ocean observation systems and maintainability challenges with focus on the use of Remotely Operated underwater Vehicles (ROV) and environmentally challenging locations;</li> <li>➤ Risk mitigation in design, installation and operation of submarine cabled systems;</li> <li>➤ Ocean Observatories as “platform of opportunity” for IMS sensor prototypes and temporary replacement sensors;</li> <li>➤ Civilian applications of IMS data;</li> <li>➤ Signal processing techniques for hydroacoustic event detection and evaluation.</li> </ul>	IDC
20 September	UN Headquarters, New York, U.S.A.	Tenth Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty (Article XIV Conference)	Representatives of the ratifying States and signatory States that have not yet ratified the Treaty. Representatives of other States which have the right to sign the Treaty per Article XIV of the Treaty but has not yet done so may also attend.	The UN Secretary General convenes the Conference. The purpose of the Conference is to examine the extent to which the requirement for entry into force set out in Article XIV, paragraph 1, of the Treaty has been met and to consider and decide by consensus what measures consistent with international law may be undertaken to accelerate the ratification process in order to facilitate the early entry into force of the Treaty.	LEGREL

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2 – 6 October	Nevada, United States of America	Visual observation / radionuclide course, Third Training Cycle (3TC)	3TC surrogate inspectors (80 maximum)	<p><u>Objective:</u> The purpose of the course is to familiarize trainees with the geologic, anthropogenic and radionuclide observables associated with an underground nuclear explosion.</p>	OSI
2 – 13 October	VIC, Vienna	Training Course on NDC Capacity Building: Access and Analysis of Radionuclide IMS Data and IDC Products	<p>NDC technical staff and authorized users (preferably Principal User or Regular User).</p> <p>Participants should have:</p> <ul style="list-style-type: none"> <li>- experience in radionuclide data analysis and/or similar experience related to nuclear-test-ban verification; and</li> <li>- Linux background and some SQL experience.</li> </ul> <p>Passing the e-Learning course is a prerequisite but not mandatory for the selection</p>	<p><u>Objectives:</u></p> <ul style="list-style-type: none"> <li>• To understand the roles of NDCs in the verification regime;</li> <li>• To build and/or improve NDC capabilities;</li> <li>• To provide participants with sufficient knowledge for accessing and using IMS data and IDC products; and</li> <li>• To provide practical experience in analyzing IMS radionuclide data.</li> </ul> <p>The agenda of the training course will include:</p> <ul style="list-style-type: none"> <li>➤ Methods to access IMS data and IDC products;</li> <li>➤ NDC support/performance reports;</li> <li>➤ IMS data, acquisition, processing and storage: standard software packages;</li> <li>➤ Necessary NDC's resources to process IMS data and analyze IDC products;</li> <li>➤ Practical sessions on data and products access, and use of standard software packages, for processing and analysis of particulate and noble gas radionuclide data as well as post processing of atmospheric transport modelling output.</li> </ul>	IDC
16 – 19 October	Olen, Belgium	Technical Training for Radionuclide Station Operators with Canberra Equipment	<p>Invited States Signatories should nominate participants who are station operators involved in operation and maintenance of the following stations: RN23, RN26, RN39, RN43, RN45, RN50, RN52</p> <p>Applications from other stations using Canberra detector equipment may be considered on a space available basis. In an effort to ensure that relevant technical training is provided to the appropriate person, please nominate individuals that are directly related to the IMS facility.</p>	<p><u>Objective</u></p> <ul style="list-style-type: none"> <li>• To provide hands-on training and practical lessons to Station Operators on the operation, maintenance and repair of the Canberra Gamma Detector System manufactured by Canberra Industries Inc.</li> </ul> <p><u>Agenda</u></p> <ul style="list-style-type: none"> <li>➤ Detector system theory <ul style="list-style-type: none"> <li>- Fundamentals of electromagnetic radiation.</li> <li>- What is a HPGe semi-conductor detector and how does it work</li> <li>- CTBTO specific preamplifier, why and what is different</li> <li>- Basic functions (gain, offset, pole zero, shaping time)</li> </ul> </li> <li>➤ Genie2k basic operation <ul style="list-style-type: none"> <li>- Hardware set-up</li> <li>- Calibrations</li> </ul> </li> </ul>	IDC

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16 – 19 October	Olen, Belgium	Technical Training for Radionuclide Station Operators with Canberra Equipment (continued)		<u>Agenda (continued)</u> <ul style="list-style-type: none"> <li>➤ Hands-on training <ul style="list-style-type: none"> <li>- Safe handling of detector (unpacking, packing, installing)</li> <li>- Manipulating the electronics (connecting, high voltage, etc.)</li> <li>- Detector initial set-up and calibration</li> <li>- Hands-on training with the available hardware from individual items up to a full working gamma spectroscopy chain, calibrated in energy, shape and efficiency.</li> <li>- Detector cooling system operation and routine maintenance</li> <li>- Thermal cycling and oscilloscope exercise</li> <li>- Trouble-shooting detector, MCA and cooling system, including preamplifier replacement</li> <li>- Improving detector resolution, including earth loops and how to avoid/cure them</li> </ul> </li> </ul>	IDC
23 – 27 October	Tromsø, Norway	Infrasound Technology Workshop 2017 (ITW 2017)	The workshop is aimed towards all scientists, engineers, Station Operators, staff from National Data Centres and other persons involved in infrasound technology and related fields.	<u>Objective:</u> <ul style="list-style-type: none"> <li>• The purpose of the Infrasound Technology Workshop 2017 (ITW2017) is to create an international forum for presenting and discussing recent advancements in infrasound research and operational capabilities of global and regional networks.</li> </ul> <u>Agenda:</u> The main sessions of the ITW2017 will address: <ul style="list-style-type: none"> <li>➤ IMS, IDC and NDC infrasound projects</li> <li>➤ Instrumentation</li> <li>➤ Data processing and station performance</li> <li>➤ Modelling &amp; network performance</li> <li>➤ Analysis of sources and scientific applications</li> </ul>	IDC
25 – 27 October	Oak Ridge, United States	Technical Training for Radionuclide Station Operators with ORTEC Systems (TT ORTEC Training)	Invited States Signatories should nominate participant(s) who are Station Operators involved in the operation, maintenance and repair of stations with ORTEC gamma detector systems manufactured by AMETEK.  Nominated individuals should be directly related to the IMS facility.	<u>Objective</u> <ul style="list-style-type: none"> <li>• To provide hands-on training and practical lessons to Station Operators on the operation, maintenance and repair of the ORTEC gamma detector system manufactured by AMETEK.</li> </ul> <u>Agenda:</u> <ul style="list-style-type: none"> <li>➤ Introduction to Detector Systems;</li> <li>➤ Detector Troubleshooting;</li> <li>➤ Detector repair;</li> <li>➤ X-Cooler Troubleshooting;</li> <li>➤ DSPEC Troubleshooting</li> </ul>	IDC

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30 October – 3 November	Fairfax, USA	Technical Training for Radionuclide Station Operators with RASA Systems	<p>Invited State Signatories should nominate participant(s) who are Station Operators involved in the operation and maintenance of RASA systems.</p> <p>Nominated individuals should be directly related to the IMS facility.</p>	<p><u>Objective:</u></p> <ul style="list-style-type: none"> <li>To provide hands-on training and practical lessons to Station Operators on the operation, maintenance and repair of the RASA equipment.</li> </ul> <p><u>Agenda:</u></p> <p>Day 1: Overview of the RASA system and the Technical Training Programme</p> <p>Day 2: RASA operating procedures, software operating interface and associated files, and data communication procedures</p> <p>Day 3: Software Servers and various menu options, control commands and site infrastructure</p> <p>Day 4: Station Maintenance</p> <p>Day 5: Responsibilities of station operators and station preparation, with attention on troubleshooting</p>	IDC
30 October – 3 November	VIC, Vienna	Table Top Exercise on Inspection Team Functionality (ITF) Field Team Functionality (FTF) and Search Logic	Up to 26 external participants	<p><u>Objective:</u></p> <p>The scope of the Table Top Exercise (TTE) is to provide adequate opportunity to test the updated ITF/FTF search logic concepts and its implementation in the next generation Inspection Information Management System</p>	OSI
6 – 8 November	VIC, Vienna	Expert Meeting on OSI QMS Document Management	10 external participants	<p><u>Objective:</u></p> <p>The meeting will further advance the development/revision of QMS documents and discuss mechanisms to facilitate effective use of OSI documentation in the field.</p>	OSI
6 November – 1 December	VIC, Vienna	NDC Capacity Building: NDC Waveform Analyst Training Course	<p>Participants profile includes:</p> <ul style="list-style-type: none"> <li>NDC technical staff/authorized users (preferably Principal User or Regular User);</li> <li>Experience in waveform data analysis and/or similar experience related to nuclear test-ban verification;</li> <li>Seismologists with an advanced degree who operate or have access to regional and local seismic network data and the means of processing that data to provide accurate phase pick information;</li> <li>Linux background and some SQL-experience.</li> </ul>	<p><u>Objectives:</u></p> <ul style="list-style-type: none"> <li>To enhance understanding of the roles of National Data Centres (NDCs) in the verification regime;</li> <li>To build and/or improve the NDC capabilities;</li> <li>To provide participants with sufficient knowledge for accessing and using IMS data and IDC products; and</li> <li>Provide practical experience in analyzing IMS data.</li> </ul> <p><u>Agenda:</u></p> <p>The programme includes the following:</p> <ul style="list-style-type: none"> <li>➤ Methods to Access IMS data and IDC products;</li> <li>➤ NDC support/performance reports;</li> <li>➤ IMS data, acquisition, processing and storage; standard software package;</li> <li>➤ Necessary NDC's resources to process IMS data and analyse IDC products;</li> </ul>	IDC



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6 November – 1 December	VIC, Vienna	NDC Capacity Building: NDC Waveform Analyst Training Course (continued)	To be considered for the Course, participants should successfully complete E-Learning Training Course on NDC Capacity Building: Access and Application of IMD Data and IDC Products.	<u>Agenda (continued):</u> <ul style="list-style-type: none"> <li>➤ Practical sessions on data and products access, and use of standard software packages.</li> </ul>	IDC
20 – 24 November	VIC, Vienna	Technical Training for Station Operators from Auxiliary Seismic Stations (non-parent network stations)	Priority will be given to operators of specific stations targeted for this training. The countries hosting these stations receive this announcement directly through official channels. Invited States Signatories should nominate participant(s) who are Station Operators involved in the operation, maintenance and repair. Nominated individuals should be directly related to the IMS facility	<u>Objective</u> <ul style="list-style-type: none"> <li>• To provide station operators with the basic knowledge and technical understanding of the operations, maintenance and management of an IMS station using waveform technology and, more specifically, to provide hands-on training for the various operational and maintenance procedures.</li> </ul> <u>Agenda</u> <ul style="list-style-type: none"> <li>➤ Operation, maintenance and sustainment of the IMS seismic auxiliary station network <ul style="list-style-type: none"> <li>- Nanometrics, Guralp and SSI equipment</li> </ul> </li> <li>➤ Station operator support <ul style="list-style-type: none"> <li>- Troubleshooting</li> <li>- Communication with PTS</li> </ul> </li> <li>➤ Practice: practical exercises <ul style="list-style-type: none"> <li>- Hands-on training on pairing digitizer software with sensors</li> <li>- Troubleshooting, with station specific scenarios</li> <li>- Restoring station to normal operational conditions</li> <li>- Reporting</li> </ul> </li> </ul>	IDC
27 November – 1 December	Middlesex, United Kingdom	International Noble Gas Experiment Workshop 2017	The workshop is aimed towards all scientists, engineers and other persons involved in Noble Gas measurements related to the verification of the CTBT.	<u>Objective</u> <ul style="list-style-type: none"> <li>• To present and evaluate the most recent advances in noble gas monitoring technology.</li> </ul> <u>Agenda</u> <p>The themes of the workshop are:</p> <ul style="list-style-type: none"> <li>➤ Noble gas measurement technologies at IMS stations and for OSI;</li> <li>➤ The analysis and interpretation of noble gas data;</li> <li>➤ Noble gas background mechanisms and measurements to characterize typical xenon and argon-37 detections in the atmosphere and the subsoil;</li> <li>➤ QA/QC and laboratories supporting the noble gas measurements;</li> <li>➤ New technologies related to gas processing, nuclear decay measurements and analysis;</li> <li>➤ Noble gases in On-Site Inspections;</li> <li>➤ Atmospheric Transport Modeling;</li> <li>➤ CTBTO noble gas capabilities roadmap.</li> </ul>	IDC



