Message from the Executive Secretary

We had a very eventful year in 2013. The year was marked with pressing challenges and promising opportunities. This Annual Report attempts to capture, though very briefly, the remarkable performance of the Preparatory Commission in all areas of its extensive field of operation throughout the period in review.

With the ratification of the Treaty by Brunei Darussalam, Chad, Guinea-Bissau and Iraq, the number of ratifying States rose to 161, surpassing the 160 ratifications milestone. This edged the Treaty closer to universalization.

The Treaty, its entry into force and the work of the Commission received strong political backing. The President of Burkina Faso, HE Blaise Compaoré, addressed the Fortieth Session of the Commission. The seventh Article XIV conference held in New York was an occasion to present a unified, resolute call for early entry into force of the Treaty.

I visited China, Ukraine, the Russian Federation, the United States of America, Angola, Japan, Jordan and France, meeting high ranking officials, including prime ministers and foreign ministers. The message of absolute support that I received during these visits is very heartening. During my visit to China an agreement was reached to ensure the flow of data from the International Monitoring System (IMS) stations located on the territory of the country.

In order to secure additional signatures and ratifications, the Commission liaised with a large number of States as well as with the United Nations and other global and regional organizations. We conducted consultations with senior officials from nearly all States that had not yet ratified or signed the Treaty, including all but one Annex 2 State. In particular, on the margins of the Article XIV conference and the sixty-eighth session of the United Nations General Assembly in New York, I met with the foreign ministers of Angola, Egypt, Japan, Kazakhstan, Lithuania, Romania and Papua New Guinea, as well as the Deputy Prime Minister of Tuvalu and the Deputy Foreign Minister of Iran.

On 26 September, we launched the Group of Eminent Persons in New York. This group comprises a former prime minister, current and former foreign and defence ministers, members of parliament, politicians and diplomats with a wealth of international expertise and experience. Their political and social reach can certainly assist us in promoting the Treaty, broadening contacts and strengthening dialogue with non-ratifying States, including the remaining Annex 2 States.

The response of the Commission to the announced nuclear test by the Democratic People’s Republic of Korea on 12 February 2013 again proved the readiness of the verification regime. The system put on display yet another impressive performance. All elements of the system worked in a coherent and efficient manner. The event was registered by 94 seismic stations and 2 infrasound stations in our network. Later, our radionuclide station in Takasaki (Japan) also detected radioactive noble gases at levels which were consistent with a release from a nuclear test. Monitoring data and products were constantly shared with States Signatories, meeting the time frame specified in the Treaty.
The year was also a turning point in our strategic planning. To improve our efficiency and optimize the use of limited resources available to the Commission, we introduced our four year Midterm Strategy (2014‒2017). The new strategy streamlines our strategic goals. These goals include operation and sustainment of the IMS and the International Data Centre and further development of on-site inspection operational capabilities. Capacity building activities, as an enabling factor, will also receive special attention.

Improving network coverage and data availability are vital objectives of the Commission. This requires continuous build-up, sustainment and recapitalization of the IMS network. By the end of 2013, 282 IMS stations had been installed. This figure represents 88% of the network foreseen by the Treaty. Station design in all four of the Treaty’s monitoring technologies also continued to evolve, providing for higher detection capability of newly installed stations. With the certification of six noble gas systems and the upgrade of three further systems, significant progress was made in the noble gas monitoring programme. By the end of the year, 31 noble gas systems (78% of the planned total) were installed.

We made efforts to keep pace with technological advancements and innovation. In this regard we focused on technology foresight for verification technologies. The Science and Technology 2013 conference was another major undertaking by the Commission in this respect. The conference was attended by over 700 participants from about 90 countries. More than 300 oral and poster presentations were given. The event provided an opportunity to review the performance of the Treaty’s verification regime. It offered a useful platform for exploring new and improved monitoring technologies and methods and their possible inclusion in the verification system. The conference also examined the wider scientific and civic applications of monitoring data and products. Finally, the gathering helped to broaden our interaction with the scientific and technological communities.

Our capacity building activities, in particular for developing countries, increased notably. We consider this a rewarding investment that assists States Signatories in better fulfilling their Treaty obligations and using the data and products of the verification system more efficiently.

Further progress was made in preparations for the next Integrated Field Exercise (IFE), to be held in Jordan in 2014. The exercise aims to enhance our operational capabilities for on-site inspections (OSIs) anywhere and at any time. In 2013 we conducted a build-up exercise, with almost 150 experts participating. In the meantime five field tests related to the OSI techniques and technologies were carried out. In addition, the implementation of our four year OSI action plan, the second training cycle for surrogate inspectors and a number of other OSI training programmes were completed. All of the remaining task forces for the IFE were activated.

The Commission’s success in 2013 was made possible by the unconditional and steadfast support of States Signatories and the assiduous work of the dedicated staff of the PTS. I should therefore congratulate them for their achievements and express my appreciation for their invaluable service to the noble cause of nuclear non-proliferation and disarmament. I also sincerely acknowledge the tireless efforts of my predecessor Mr Tibor Tóth in promoting the Treaty and furthering the work of the Commission during the last eight years.

Lassina Zerbo
Executive Secretary
CTBTO Preparatory Commission
Vienna, February 2014
The Comprehensive Nuclear-Test-Ban Treaty (CTBT) is an international treaty outlawing nuclear explosions in all environments. In providing for a total ban on nuclear testing, the Treaty seeks to constrain the development and qualitative improvement of nuclear weapons and end the development of new types of nuclear weapon. In doing so, it constitutes an effective measure of nuclear disarmament and non-proliferation in all its aspects.

The Treaty was adopted by the United Nations General Assembly and opened for signature in New York on 24 September 1996. On that day, 71 States signed the Treaty. The first State to ratify the Treaty was Fiji on 10 October 1996.

Under the terms and provisions of the Treaty, the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) is to be established in Vienna, Austria. The mandate of this international organization is to achieve the object and purpose of the Treaty, to ensure the implementation of its provisions, including those for international verification of compliance with it, and to provide a forum for cooperation and consultation among States Parties.

In advance of the entry into force of the Treaty and the establishment of the CTBTO proper, a Preparatory Commission for the organization was established by the States Signatories on 19 November 1996. The Commission was given the mandate of preparing for entry into force and is located at the Vienna International Centre.

The Commission has two main activities. The first consists of undertaking all necessary preparations to ensure the operationalization of the CTBT verification regime at entry into force. The second is the promotion of Treaty signature and ratification to achieve entry into force. The Treaty will enter into force 180 days after it has been ratified by all 44 States listed in its Annex 2.

The Preparatory Commission is made up of a plenary body responsible for directing policy and comprising all States Signatories, and a Provisional Technical Secretariat (PTS) to assist the Commission in its duties, both technically and substantively, and carry out such functions as the Commission determines. The PTS started work in Vienna on 17 March 1997 and is multinational in composition, with staff recruited from States Signatories on as wide a geographical basis as possible.
Summary

This report provides a brief description of the major accomplishments of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization in 2013.

The response of the verification system to the announced nuclear test by the Democratic People’s Republic of Korea on 12 February was a vivid demonstration of its reliable operational capability and its relevance to global nuclear disarmament and non-proliferation.

Detections were made by 96 International Monitoring System (IMS) stations, 2 of which were infrasound stations. Eighty-eight stations were used in the event location estimate reported in the Reviewed Event Bulletin (REB). The location of the event was estimated within a confidence ellipse with a semi-major axis of 8.1 km. The magnitude of the event was 4.9 according to the International Data Centre (IDC) body wave magnitude scale.

The first data and results were made available to States Signatories in little more than one hour and before the announcement by the Democratic People’s Republic of Korea, and the REB was issued to States Signatories well within the time frame specified in the Treaty. Atmospheric transport modelling (ATM) was used to estimate where a possible radionuclide release would be detectable. On 9 April, 55 days after the announced nuclear test, radioactive noble gases were detected by the IMS noble gas system in Japan. These detections, so long after the announced test, are illustrative of the monitoring capability of the IMS system.

In 2013, the Commission registered further progress in the installation, upgrade, certification and start-up of new IMS facilities.

Three IMS stations were installed in 2013, bringing the total number installed by the end of the year to 282 (88% of the network foreseen by the Treaty). Station design in all technologies also continued to evolve, resulting in a higher detection capability of newly installed stations.

Four IMS facilities were certified as meeting all of the stringent technical requirements of the Commission. The total number of certified IMS stations and laboratories reached 278 (82% of the network foreseen by the Treaty) at the end of 2013.

These activities helped to increase the coverage and data availability in all IMS technologies, in particular for noble gas monitoring. They also enhanced network resilience.

The major project to repair IMS hydroacoustic station HA3 and infrasound station IS14 (Chile), which were heavily damaged by a tsunami in 2010, moved forward. Preparation work to install and certify additional IMS facilities continued progressively. Notably, preparations for work on the re-establishment of HA4 (France) – the only uncertified hydroacoustic station in the IMS – advanced substantially with the aim to complete the IMS hydroacoustic monitoring network by 2016. At the end of 2013, preparations were also under way for installation and/or certification of about 20 facilities in 2014.

There was considerable evidence of political support from several countries hosting IMS facilities where the Provisional Technical Secretariat (PTS) had not been able to proceed in previous years. Of particular importance was the resolution of long standing issues with China that allowed resumption of data flow from IMS stations hosted by China. Important steps were also made to further the completion of the IMS segment in the Russian Federation. All of these advances in 2013 contributed to bringing closer the prospect of the completion of the IMS network.
With the certification of six noble gas systems and the upgrade of three further systems the noble gas monitoring programme progressed significantly. By the end of 2013, 31 noble gas systems (78% of the planned total) were installed at IMS radionuclide stations, of which 18 had been certified.

Improved performance of the Global Communications Infrastructure helped to keep overall adjusted availability consistently above 99.77%. The network also increased its data and product transmission to an aggregate of over 35 gigabytes per day.

The PTS succeeded in further consolidating infrasound and noble gas monitoring into IDC operations, incorporating data from the newly certified facilities. At the end of the year, 47 infrasound and 31 noble gas systems were in provisional operation. Moreover, efforts were continued to further enhance the ATM capabilities of the verification system.

Activities to enhance data security as well as hardware and software improvements were continued. In addition, there was further progress in the initiative funded by the European Union to improve knowledge of the global xenon background.

The 2013 Science and Technology conference, held from 17 to 21 June in Vienna, was a major undertaking, with over 750 participants from around 100 countries. The key objectives of the conference were to review the status of the verification system and to explore ways and means to improve its capabilities. The gathering also aimed to broaden the interaction of the Commission with the scientific and technological community.

The conference discussed three themes: (1) the earth as a complex system, (2) events and their characterization and (3) advances in sensors, networks and processing. Within each theme several topics were identified. It also featured panel discussions addressing synergies between on-site inspection (OSI) technologies and industry, innovations and technological drivers that will shape the future of verification, and radioxenon anthropogenic release mitigation. The number of presentations was notably very high, with over 80 oral presentations and over 250 poster presentations.

Fostering the operational capabilities of the organization in the area of OSI was a main priority in 2013. The OSI operational capabilities were improved through the implementation of the four year OSI action plan, with advancement in five main areas, namely policy planning and operations, operations support and logistics, techniques and equipment, training and procedures and documentation.

In preparation for the Integrated Field Exercise (IFE) in 2014, a host of activities were undertaken. The third build-up exercise (BUE III) was concluded. Almost 150 experts from States Signatories and the PTS participated in the exercise, which was the second largest exercise ever conducted by the organization. BUE III findings and observations indicated considerable progress since the IFE in 2008.

IFE preparations also included five field operational tests covering the OSI techniques and technologies. A scientifically credible and comprehensive scenario for the IFE was developed, encompassing all necessary information about scenario related preparations and implementation aspects, and all remaining task forces were activated. These include scenario design; logistics and operations; health, safety and security; equipment; public information and external relations; and documentation.

In addition, the second training cycle for surrogate inspectors and a number of other OSI training programmes were concluded. The completion of the four year OSI action plan was a notable achievement of the organization in 2013.

The political momentum in support of the Treaty and its early entry into force became stronger in 2013. Brunei Darussalam, Chad, Guinea-Bissau and Iraq ratified the Treaty, increasing the number of
ratifications to 161. The President of Burkina Faso, HE Blaise Compaoré, addressed the Fortieth Session of the Commission, being the first head of state to attend a session of the Commission.

The Executive Secretary visited several States Signatories, including China, Ukraine, the Russian Federation, the United States of America, Angola, Japan, Jordan and France, and met with high level officials, including prime ministers and foreign ministers. He also met with the foreign ministers of Egypt, Kazakhstan, Lithuania, Romania and Papua New Guinea, as well as the Deputy Prime Minister of Tuvalu and the Deputy Foreign Minister of Iran. The repeated messages of unwavering support for the Treaty and the work of the Commission were very encouraging.

The eighth Article XIV conference and the sixty-eighth session of the General Assembly of the United Nations in New York provided additional platforms for a worldwide call for ratification of the Treaty by the remaining Annex 2 States and appreciation of the work of the Commission.

To promote the Treaty and secure additional ratifications, the Group of Eminent Persons (GEM) was established. GEM enjoys the membership of renowned former prime, foreign and defence ministers, parliamentarians, politicians and diplomats. The group held its first meeting in September in New York.

Other outreach activities of the Commission involved liaising with many States, including Annex 2 States, international organizations and civil society.

Efforts were made to streamline and expand the capacity building and capacity development initiative (CDI) activities of the Commission. These activities included training courses and workshops for National Data Centres (NDCs), software provision, equipment donations and technical follow-up visits. They aim to ensure the smooth operation of the IMS and to build the capacity of NDCs to fulfil their obligations under the Treaty. Activities related to the CDI included education and outreach activities that aim to broaden knowledge of the Treaty and to prepare States Signatories to confront effectively the political, legal, technical and scientific challenges to the Treaty and its verification regime. More than 300 station operators and NDC staff attended capacity building programmes. The number of participants in CDI courses in 2013 stands at 675.

The Commission further intensified its efforts in promoting the Treaty and its verification regime through media outreach. Global media coverage of the Treaty and its verification regime saw an increase of more than 60%, with over 4500 articles and citations in online media alone. The public website and social media outlets of the Commission received on average around 150 000 visits monthly. There was also a significant surge of interest in the 37 videos on the CTBTO YouTube channel.

In August 2013 the Commission introduced its new Midterm Strategy (MTS) for 2014–2017, which presents a framework for the programmes and activities of the organization over the next four years. The MTS focuses on two strategic goals: (1) operation and sustainment of the IMS and IDC and (2) further development of OSI operational capabilities. It also accords high importance to capacity building activities and improved management.

Work on the development of an IPSAS-compliant Enterprise Resource Planning system was pursued. According to plan, the system will go live in 2014. The organization sought further synergies and efficiencies by fostering results based management, accountability and oversight. This has resulted in a continuation of achieving higher delivery rates.
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Abbreviations

- ATM: atmospheric transport modelling
- BOO: base of operations
- BUE: build-up exercise
- CPT: continuation period techniques
- ESMF: Equipment Storage and Maintenance Facility
- EU: European Union
- FIMS: field information management system
- GEM: Group of Eminent Persons
- GCI: Global Communications Infrastructure
- H&S: health and safety
- IAEA: International Atomic Energy Agency
- IDC: International Data Centre
- IFE: Integrated Field Exercise
- IIMS: Integrated Information Management System
- IMS: International Monitoring System
- IPSAS: International Public Sector Accounting Standards
- IPU: Inter-Parliamentary Union
- ISP: inspected State Party
- IT: inspection team
- ITF: inspection team functionality
- NDC: National Data Centre
- O&M: operation and maintenance
- OSC: Operations Support Centre
- OSI: on-site inspection
- PCA: post-certification activity
- POE: point of entry
- PTS: Provisional Technical Secretariat
- QMS: Quality Management System
- REB: Reviewed Event Bulletin
- SAMS: Seismic Aftershock Monitoring System
- SOP: standard operating procedure
- WGB: Working Group B
- WIN: work instruction