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**Conference on Facilitating the Entry into Force
of the Comprehensive Nuclear-Test-Ban Treaty**

New York, 24-25 September 2009

**Background document by the provisional technical
secretariat of the Preparatory Commission for the
Comprehensive Nuclear-Test-Ban Treaty Organization
prepared for the Conference on Facilitating the Entry into
Force of the CTBT (New York, 2009)**

Introduction

1. The Comprehensive Nuclear-Test-Ban Treaty (CTBT) lies at the very heart of the global nuclear non-proliferation and disarmament regime. For the Treaty to enter into force it must be ratified by the 44 States listed in Annex 2 to the CTBT.¹ As of 24 August 2009, nine Annex 2 States have yet to ratify the Treaty.
2. The CTBT represents a milestone in the efforts to prohibit any nuclear weapon test explosion or any other nuclear explosion in any environment and is thus a key component of the international nuclear non-proliferation and disarmament regime. Building on the 1963 Partial Test Ban Treaty (PTBT), which banned nuclear testing in outer space, in the atmosphere and under water but not underground, negotiations on the CTBT started in 1994 at the Conference on Disarmament in Geneva. Negotiations lasted until 10 September 1996, when the Treaty was adopted by the United Nations General Assembly.
3. The importance of the entry into force of the CTBT has been widely recognized by the international community. This is evidenced by the facts that the threshold of 150 ratifications is soon expected to be reached and that there are now improved prospects for ratification of the Treaty by several of the remaining nine Annex 2 States. Moreover, the announced nuclear test by the Democratic People's Republic of Korea on 25 May 2009 confirmed once more the central role of the CTBT for the nuclear non-proliferation and disarmament regime and underscored the importance of its entry into force. This event, coupled with recent political

¹ Annex 2 to the Treaty lists States that formally participated in the 1996 session of the Conference on Disarmament, and that possess nuclear research and nuclear power reactors according to data compiled by the International Atomic Energy Agency.



developments and declarations in the area of arms control, has generated a new momentum towards the entry into force of the Treaty.

Treaty

4. The CTBT prohibits all nuclear test explosions, whether for a military or any other purpose. It covers all environments and does not set a threshold from which the prohibitions should apply. The preamble of the Treaty states that its objective is “to contribute effectively to the prevention of the proliferation of nuclear weapons in all its aspects” and “to the process of nuclear disarmament”.

5. The CTBT has gone from strength to strength since its adoption in 1996. As of 24 August 2009, the Treaty has been signed by 181 States with 149 States having ratified, including 35 of the 44 States listed in its Annex 2. Since 18 September 2007, the CTBT has been signed by four States (Barbados, Iraq, Saint Vincent and the Grenadines, and Timor-Leste) and ratified by nine States (Bahamas, Barbados, Burundi, Colombia, Lebanon, Liberia, Malawi, Malaysia and Mozambique), including one of the Annex 2 States (Colombia).

Preparatory Commission

6. In advance of the entry into force of the Treaty and the establishment of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), a Preparatory Commission for the organization was established by States Signatories on 19 November 1996. The purpose of the Commission is to carry out the necessary preparations for the effective implementation of the CTBT and to prepare for the first session of the Conference of the States Parties to the Treaty. Altogether 123 States are accredited to the Commission and 135 have designated their National Authorities or focal points.

7. The Commission has two main activities. The first consists of undertaking all necessary preparations to ensure that the verification regime foreseen by the CTBT is capable of fulfilling its operational mission at entry into force. The second is the promotion of signature and ratification of the Treaty to achieve entry into force. The Commission is made up of a plenary body responsible for directing policy and composed of all States Signatories, as well as a Provisional Technical Secretariat (PTS) which assists the Commission in its duties and carries out such functions as the Commission determines.

2007 Article XIV conference

8. Under Article XIV, if the Treaty has not entered into force three years after the date of the anniversary of its opening for signature, a conference of those States that have already ratified it may be held to decide by consensus what measures consistent with international law may be taken to accelerate the ratification process and to facilitate entry into force. States Signatories will also be invited to attend the conference.

9. The fifth² Conference on Facilitating the Entry into Force of the CTBT convened under Article XIV of the Treaty was held on 17-18 September 2007 in Vienna with 105 ratifying States and States Signatories participating. This conference adopted a Final Declaration calling upon all States which had not done so to sign and/or ratify the Treaty (document CTBT-Art.XIV/2007/6, Annex). The declaration includes a number of measures to promote the entry into force of the CTBT.

10. In the course of the follow-up to the 2007 Article XIV conference, and in accordance with paragraph 11(c) of the Final Declaration, Austria and Costa Rica, which served as the Presidency of that conference, were selected as coordinators of the process “to promote cooperation, through informal consultations with all interested countries, aimed at promoting further signatures and ratifications”. In addition, in accordance with paragraph 11(e), Ambassador Jaap Ramaker of the Netherlands continued to act as a Special Representative “to assist the coordinating States in the performance of their function in promoting the entry into force of the Treaty”. In June 2009, at informal consultations within the framework of this “Article XIV process”, France and Morocco were selected to serve as Presidency-designate in preparing for the 2009 Article XIV conference in New York.

Verification regime

11. The CTBT provides for the establishment of a unique global verification regime that consists of an International Monitoring System (IMS), a consultation and clarification process, on-site inspections (OSIs) and confidence building measures. Data from IMS stations are to be sent via a secure global satellite network known as the Global Communications Infrastructure (GCI) to an International Data Centre (IDC) for processing and analysis, and IMS data and IDC products are to be made available to States.

International Monitoring System

12. The IMS is to consist of a network of 321 monitoring stations and 16 radionuclide laboratories. After entry into force of the CTBT, these facilities will produce data to detect possible nuclear explosions that are to be provided to States Parties for verification of compliance with the Treaty.

13. Since 2007, significant progress has been made towards the completion of the IMS network in all four technologies — seismic, hydroacoustic, infrasound and radionuclide. As of 24 August 2009, 266 IMS stations have been installed. Of these, 239 stations and 10 radionuclide laboratories have been officially certified as meeting the specifications of the Commission. This is an increase of 37 stations and one laboratory compared with 2007. To date, major parts of the primary seismic network, the auxiliary seismic network, the infrasound network and the radionuclide network have already been certified and the network of hydroacoustic stations is virtually complete, with 10 of the 11 envisaged stations now certified. Furthermore, the programme of installation of noble gas systems at radionuclide monitoring

² Previous Article XIV conferences were held in Vienna (in 1999 and 2003) and in New York (in 2001 and 2005).

stations has been substantially accelerated. Of the 40 systems envisaged by the Treaty, 23 have been installed.

14. Increasing the number of facility agreements and arrangements between the Commission and those States hosting IMS facilities is a key priority. As the construction of the IMS advances against the backdrop of improved prospects for entry into force, ensuring minimal downtime of IMS facilities is growing in importance. The Commission is seeking to ensure that such agreements and arrangements will include the necessary elements to allow for the required support and sustainment of the IMS to this end. The development of mechanisms such as timely customs clearance and tax exemption for equipment being brought into an IMS host State by staff of the Commission is also becoming increasingly relevant in this regard.

International Data Centre

15. The mission of the IDC is to support the verification responsibilities of States by providing products and services necessary for effective global monitoring after entry into force of the Treaty. Prior to entry into force, its task is to establish and test the facilities that will handle the data from the IMS stations. During the current provisional operations, the IDC supports State Signatories with real time data from the IMS, timely IDC products from the processing of that data and services to support their verification responsibilities as well as their civil and scientific efforts. Over three terabytes of data and products were distributed through the various distribution mechanisms in the past year and States were supported through an online help desk, data retrieval services, training courses, workshops and equipment.

16. The incremental build-up of the IMS network naturally has been associated with a significant increase in the volume of IMS data received by the IDC for processing and distribution and an increase in the number of events that it includes in its event bulletins. The volume of data thus handled has tripled since 2004 to more than 10 gigabytes per day. Notwithstanding, the PTS has continued to provide the States Signatories with timely and high quality data products, including Reviewed Event Bulletins, which now average around 100 events per day.

17. At present over 1100 users from 110 States Signatories are authorized to receive the products and services of the IDC. The role of the IDC was especially highlighted in the context of the nuclear test by the Democratic People's Republic of Korea in May 2009.

On-site Inspections

18. As a final verification measure, an on-site inspection is provided for in the Treaty. The purpose of an OSI, which can only be invoked after entry into force, will be to clarify whether a nuclear weapon test or any other nuclear explosion has been carried out in violation of the Treaty and to gather facts, as far as possible, which might assist in identifying any possible violator. Inspections are likely to consist of field activities which would incorporate the use of visual, geophysical, including seismic, and radionuclide analysis techniques.

19. The Commission has continued to build up the OSI regime as part of the CTBT verification regime in accordance with Treaty requirements. In the past two years, important achievements have been made in this regard.

20. In particular, an Integrated Field Exercise was carried out in Kazakhstan in 2008. This constituted a significant step towards achieving OSI operational readiness at the time of entry into force of the Treaty. Involving over two hundred participants and over fifty tonnes of equipment, the exercise took place inside the former Soviet Union's nuclear test site at Semipalatinsk and lasted four weeks. The lessons from this major exercise are to be taken forward through an action plan that defines much of the work that needs to be done over the next few years to reach a credible level of readiness to carry out an OSI.

Improving Efficiency and Effectiveness

21. Throughout the process of establishing the verification system, the PTS aims at enhancing its effectiveness, efficiency and continual improvement through the implementation of a quality management system. This system is focused on customers, such as States Signatories and National Data Centres, and seeks to fulfil the responsibilities of the Commission in compliance with the requirements set forth in the Treaty, its Protocol and relevant decisions of the Commission. National Data Centres, which use the products and services of the PTS, meet in annual workshops to provide their feedback.

Event in the Democratic People's Republic of Korea

22. The Democratic People's Republic of Korea announced on 25 May 2009 that it had conducted a nuclear test explosion. It was the country's second test after the test announced on 9 October 2006. The event demonstrated the capacity of the verification system being built by the Commission and the progress that has been achieved since 2006. Twenty-three primary seismic monitoring stations registered the event and were used in the initial, automatically generated event list, compared with 13 in 2006. States Signatories received the first automatic estimation of time, location and magnitude hours before the Democratic People's Republic of Korea publicly announced the test. The PTS also produced bulletins reviewed by IDC analysts within the time line anticipated for operation after entry into force. The bulletins were based on data from 61 seismic stations of the IMS, reflecting the improvement in coverage of the IMS since the 2006 event. The experience with this event served to underline the particular importance of OSI as a key pillar of the verification regime. After entry into force, OSI will provide the final measure to obtain clarity about the nature of an event.

Civil and scientific benefits of the Treaty

23. There is a range of civil and scientific applications for the verification technologies of the Treaty that can benefit the States Signatories. The abundance of data and products available to States Signatories can benefit their civil and scientific activities, including, for example, natural disaster warning and preparedness, sustainable development, knowledge expansion and human welfare.

24. As an example of the civil and scientific applications of the verification technologies, the Commission has agreed on terms under which IMS seismic and hydroacoustic data can be made available to recognized tsunami warning organizations. Seven such agreements or arrangements are currently in place for which data from 45 IMS stations are being sent. Tsunami warning organizations have confirmed that the use of IMS data, which are more timely and reliable than from other sources, increases their ability to identify potentially tsunamigenic earthquakes and to give more rapid warnings.

International Scientific Studies Conference

25. The International Scientific Studies (ISS) Conference was held in Vienna from 10 to 12 June 2009 with the participation of 600 scientists and diplomats from 100 countries. The purpose of the ISS process is to assess the capability and readiness of the CTBT verification system and to further develop cooperation between the scientific community and the Commission. The ISS Conference provided scientists and scientific institutions with an exceptional opportunity to present their analyses and findings concerning all aspects of the CTBT verification system.

26. The Conference showed most significant developments of the capability and readiness of the CTBT verification regime over the last decade. It also illustrated dramatic scientific improvements in many areas relevant for CTBT verification and the potential for achieving increased capability, quality and cost efficiency. The CTBT verification regime is highly dependent on science and technology. A continued ISS process with the scientific community is essential for the verification regime to stay attuned to the scientific and technological progress.

Provisional technical secretariat

Staffing and Budgetary Resources

27. As of 30 June 2009, the PTS comprised 261 staff members from 71 countries. The number of staff in the Professional category was 170. The PTS is committed to a policy of equal employment opportunity, aiming in particular at improving the representation of women, especially in the Professional category. As of 30 June 2009, there were 55 women in Professional positions, corresponding to 32.35 per cent of the Professional staff.

28. The approved budget of the Commission for 2009 amounts to US\$ 113.6 million. From 1997 up to and including the financial year 2009, the total budgetary resources amounted to \$851.7 million and €227.6 million. In equivalent US dollars this corresponds to a total of \$1137.7 million calculated using the budgetary rate of exchange of US\$ 1:€0.796. Of this total, 79.5 per cent has been dedicated to verification related programmes, including \$306.6 million (26.9 per cent) for the Capital Investment Fund for the installation and upgrade of IMS stations.

Outreach Activities

29. The purposes of PTS outreach activities include: to enhance understanding and implementation of the Treaty among States, media, civil society and the general public; to promote signature and ratification of the Treaty, and thereby its universality and entry into force; to assist States Signatories in their national implementation of verification measures and in gaining benefits from the peaceful applications of the verification technologies; and to assist in promoting the participation of States Signatories in the work of the Commission. The PTS has taken measures to reshape strategically these outreach activities. The PTS is increasingly focusing on special target audiences, and uses its participation at international and regional seminars, conferences and meetings to raise awareness about the CTBT, the verification regime and the work of the Commission.

30. In its bilateral interactions to assist States in promoting the universality and entry into force of the Treaty, the PTS has placed emphasis on those States listed in Annex 2 to the Treaty as well as on those States hosting IMS facilities. Furthermore, five regional international cooperation workshops have been held since 2007. These workshops have stressed the importance of national implementation measures and the signature and ratification of the Treaty.

31. The PTS continued promoting preparations for national implementation of the CTBT through its programme of legislative assistance to States on the measures to be taken in accordance with Article III of the CTBT. PTS model legislation and commentary have been widely distributed and are available on the public web site of the Commission.

32. Using voluntary contributions provided by States Signatories, the PTS has been able to continue the pilot project facilitating the participation of experts from developing countries in technical meetings of the Commission, as well as information visits to its premises in Vienna for policy and decision makers, scientific experts, and diplomatic representatives of signatory and non-signatory States. The PTS has also assisted in the organization of national seminars in a number of non-ratifying States. Additionally, voluntary contributions have been provided to build capacity in developing countries and to enhance States' understanding of the work of the Commission, applications of the verification technologies and the benefits accruing from membership of the Commission, including the civil and scientific advantages that it offers.

33. The PTS encouraged and participated in multilateral conferences and meetings at the global, regional and subregional levels to support the Treaty.³ The Executive Secretary addressed the sixty-third session of the United Nations General Assembly and the First Committee meetings of the sixty-second and sixty-third sessions, as well as regular sessions of the General Conference of the International Atomic Energy Agency and meetings of the Non-Aligned Movement (NAM), including the 15th Summit of Heads of State and Government held in July 2009 in Sharm el Sheik, Egypt. The Executive Secretary, for the first time since 1999, addressed the States parties to the Treaty on the Non-Proliferation of Nuclear Weapons at the Third Session of the Preparatory Committee for the 2010 Review Conference.

³ Further detail about the range of PTS activities in this area can be found in documents CTBT/PC-30/INF.1, CTBT/PC-32/INF.2 and CTBT/ES/2009/1.

34. Several other multilateral initiatives were undertaken at the global or regional level. At the global level, a Joint Ministerial Statement, endorsed by 80 countries, in support of the CTBT was issued at a Ministerial Meeting held at the United Nations Headquarters in New York on 24 September 2008. The statement, also endorsed by the former US Defense Secretary, William Perry, and the United Nations Messenger of Peace and actor, Michael Douglas, was submitted to the Secretary-General of the United Nations. Moreover, the Final Documents of both the 2008 Ministerial Conference of NAM and the 2009 Summit of Heads of State and Government expressed support for the CTBT.

35. The PTS has also continued to promote the Treaty and its verification regime through its interaction with media, civil society and the general public. Using a proactive and targeted approach, public information activities have covered all relevant events, such as the 2008 Integrated Field Exercise, the 2008 Ministerial Meeting, the 2009 International Scientific Studies Conference, the nuclear test by the Democratic People's Republic of Korea in 2009, and international, regional and bilateral conferences and meetings. Public information tools include the public web site (www.ctbto.org), which contains articles and highlights, animations, audiovisual content and interactive applications, electronic newsletters, press releases and briefings, social networking tools such as Twitter, Facebook, Flickr and YouTube, interviews and articles, publications such as the *CTBTO Spectrum* magazine, exhibitions and presentations.

Conclusion

36. The information provided in this background document indicates that since September 2007 significant progress has been made by the Commission and the PTS in all areas of implementation of their respective mandates. This includes, with respect to development of the CTBT verification system, progress in areas such as establishment and sustainment of the IMS, improvements to IDC processing methods and capabilities, development of a more integrated and effective approach to provisional operation and maintenance of the IMS, and further steps towards achieving OSI operational readiness at entry into force of the Treaty. Finally, outreach activities have been pursued more strategically with the aim of promoting, among other things, entry into force and greater universality of the Treaty, as well as broader participation by States Signatories in the work of the Commission and enhanced access to IMS data and IDC products.
