

# CTBTO Spectrum

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## Who we are

The Comprehensive Nuclear-Test-Ban Treaty bans all nuclear weapon test explosions. The Treaty is a cornerstone of the international nuclear non-proliferation regime. It opened for signature in New York on 24 September 1996, and today has achieved strong worldwide support.

The CTBTO Preparatory Commission is an international organization consisting of a plenary body composed of all States Signatories and the Provisional Technical Secretariat. It carries out the necessary preparations for the effective implementation of the Treaty, and prepares for the first session of the Conference of the States Parties to the Treaty after its entry into force.

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## Legal aspects of establishing the IMS system

One of the key tasks of the CTBTO Preparatory Commission is the establishment of a global verification regime to verify compliance with the prohibition of nuclear test explosions. Since the Comprehensive Nuclear-Test-Ban Treaty (CTBT) has not yet entered into force, one may well ask what the legal basis is for establishing and provisionally operating this regime.



SITE SURVEY FOR AUXILIARY SEISMIC STATION (AS74) IN WADI SARIN, OMAN<sup>1</sup>

Article IV(1) of the CTBT stipulates that the verification regime of the Treaty, which includes the International Monitoring System (IMS), must be capable of meeting the verification requirements of the Treaty as it entry into force. The task of ensuring that this requirement is met has been entrusted to the CTBTO Preparatory Commission in accordance with the Text establishing the Commission, which was adopted by the signatories to the Treaty on 19 November 1996. Paragraph 13 of the Text provides that the Commission “shall undertake all necessary preparations to ensure the operationalization of the Treaty’s verification regime at entry into force”. In terms of paragraph 14, the Commission also supervises and coordinates the development, testing and provisional operation of the IMS.

Responsibility for IMS facilities is shared between the Provisional Technical Secretariat (PTS) and the States hosting the facilities. In accordance with Article IV(16) of the CTBT, the IMS is placed under the authority of the Technical Secretariat, while all monitoring facilities are “owned and operated by the states hosting or otherwise taking responsibility for them”. In view of this dual responsibility, paragraph 4 of Part I of the Protocol foresees that there will be appropriate agreements or arrangements between the organization and the

<sup>1</sup>The most recent IMS facility agreement was concluded between the Commission and Oman on 19 May 2004.

*continued on page 6*



## Editorial



*The adoption of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) in September 1996 has been described as a major achievement on the part of the international*

*community in moving towards global nuclear non-proliferation and disarmament. The Treaty's total prohibition of any nuclear test explosion will contribute to ending the development of ever more technologically advanced nuclear weapons, and will also arrest the proliferation of these weapons and prevent further environmental damage caused by testing.*

*The success of the Treaty depends on its universality and its verifiability. Substantial progress has been achieved in both areas. As Nobuyasu Abe, the Under-Secretary-General for Disarmament Affairs of the United Nations has pointed out in a recent speech: "Commitments on paper can be quite meaningful, but commitments backed by credible verification measures bring us closer to what I would call 'real progress' in nuclear arms control."*

*As of 2 July 2004, the CTBT has been signed by a total of 172 States and ratified by 115. The ratifiers include 32 of the 44 States whose ratification is required for the Treaty's entry into force. In order to set up as quickly as possible an international system capable of monitoring Treaty compliance, the international community took an innovative step in establishing by resolution the Preparatory Commission for the CTBTO. The main activity of the Commission and its Provisional Technical Secretariat (PTS) has been the build-up of the verification*

*regime which must be operational when the Treaty enters into force.*

*The International Monitoring System (IMS), with its 321 stations and 16 radionuclide laboratories, is the first global network to monitor the earth for evidence of a nuclear explosion. Over the past seven years, the PTS experts had to overcome considerable engineering challenges to establish these facilities. Many are located in extremely remote areas of the globe, far from settlements and infrastructure. However, more than 50% of the monitoring stations are now operational, constituting already at this stage a significant deterrent to any clandestine testing. Good progress in establishing the IMS network was made possible to a large degree by the Member States which host IMS facilities. A complex legal framework regulates the conditions under which IMS stations are established and under which they operate.*

*This issue of CTBTO Spectrum focuses on the legal aspects of building the verification regime. It sets out to*

*examine the essential role played by facility agreements and other legal arrangements in placing the provisional operation and maintenance of the IMS on a secure legal foundation. An interview with Palitha Kohona, Chief of the Treaty Section of the Office of Legal Affairs at the United Nations in New York, a special feature article by Anthony Aust, former Legal Counsellor of the United Kingdom Foreign Office, and the cover story by*

*"Commitments on paper can be quite meaningful, but commitments backed by credible verification measures bring us closer to what I would call 'real progress' in nuclear arms control."*

*Nobuyasu Abe, Under-Secretary-General for Disarmament Affairs, United Nations*

*Peter Hulsroj, PTS Legal Advisor, give further insights into the unique legal status of the Preparatory Commission and its verification regime. As usual, this issue provides also an overview of the Commission's work over the past six months, including an update on the latest session of the Preparatory Commission. It also reports on the latest developments in verification science and on the potential civil and scientific applications of the CTBT verification technologies.*

Wolfgang Hoffmann  
Executive Secretary  
Preparatory Commission for the Comprehensive  
Nuclear-Test-Ban Treaty Organization

## National implementation measures

States that have ratified the Comprehensive Nuclear-Test-Ban Treaty (CTBT) must ensure that their internal laws comply with it. Some may also be required to adopt new laws in order to give effect to the Treaty's provisions. Such national implementation measures are indispensable in fulfilling a State's obligations under the CTBT.

Article III of the CTBT explicitly requires States that have ratified it to take "any necessary measures" to implement their obligations under the Treaty. This includes making nuclear testing a prohibited activity not only for States but also for individuals, for example, through the adoption of criminal legislation. Furthermore, each State Party must ensure that an on-site inspection can be carried out on its territory in accordance with the Treaty's rules in order to determine whether illegal nuclear testing has been undertaken. To make this possible a State may need to pass new, or change existing, national laws. States also need to align their administrative procedures with Treaty requirements, for example as regards the issuing of visas for inspectors.

National implementation measures must be effective at the latest when the Treaty enters into force for the State. The State may then not invoke the absence of implementing provisions in its internal laws as an excuse for not complying with the Treaty (Article 27 of the 1969 Vienna Convention on the Law of Treaties).

In order to adopt implementation measures in time, advance preparation is necessary. One of the mandates of the Preparatory Commission is to advise and assist States in this effort. For this purpose the Commission has issued information material, including a model implementation law, and States can address the Provisional Technical Secretariat for legislative assistance if required. ■

## Relationship agreements

The CTBTO Preparatory Commission cooperates at various levels with many intergovernmental organizations in order to facilitate the implementation of its mandate. Relationship agreements are an important mechanism to formalize this cooperation. Authority to conclude these agreements flows from paragraph 7 of the Commission's establishing Text, which stipulates that it shall have "authority to negotiate and enter into agreements". As international agreements in accordance with the 1986 Vienna Convention on the Law of Treaties (to which the Commission acceded in 2002), relationship agreements are submitted to the Commission for approval prior to their signature or conclusion.

To date the Commission has entered into relationship or cooperation agreements with the following international organizations and agencies: the United Nations (in 2000), the United Nations Development Programme (UNDP)

(2000), the World Meteorological Organization (WMO) (2001), the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) (2002) and the European Centre for Medium-Range Weather Forecasts (ECMWF) (2003).

In New York, on 26 May 2000, when the United Nations Secretary-General and the Executive Secretary signed the agreement regulating the relationship between the two organizations, the Commission became the first preparatory commission to conclude a relationship agreement with the United Nations. This agreement was an important milestone as it brought the Commission into the United Nations family as a 'related organization'. Like the agreement between the United Nations and the International Atomic Energy Agency (IAEA) upon which it was based, the agreement deals with matters such as cooperation and coordination, reciprocal representation and exchange of information. ■

**"The multilateral system of binding international agreements designed to control the proliferation of nuclear weapons is under increasing pressure. We need to step up collective efforts to defend and strengthen these treaties. ...the Comprehensive Nuclear-Test-Ban Treaty has already created an efficient monitoring system, and has been signed by 170 countries. But it has not yet entered into force because, regrettably, many of the key parties in the negotiations have not ratified the treaty so far. They should join the club without delay. We appreciate the current de facto moratorium on nuclear tests, but it is not enough. The objective must be a treaty-based ban on nuclear-weapon explosions."**



LAILA FREVALDS, FOREIGN MINISTER OF SWEDEN; GEORGE A. PAPANDREOU, FORMER FOREIGN MINISTER OF GREECE AND ERKKI TUOMIOJA, FOREIGN MINISTER OF FINLAND; PUBLISHED IN: INTERNATIONAL HERALD TRIBUNE, JANUARY 26, 2004

# Commission update

## Report on the June 2004 session

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) held its Twenty-Second Session from 22 to 24 June 2004 in Vienna under the chairmanship of Ambassador Yukio Takasu of Japan. Eighty-eight Member States participated in the session. The League of Arab States attended as an observer.

### The report of the Executive Secretary

Mr Wolfgang Hoffmann, Executive Secretary of the CTBTO Preparatory Commission, reported on progress in the implementation of the verification regime and on administrative, legal and coordination matters. He informed the delegates that 130 stations and four radionuclide laboratories are participating in Phase 1 of the first system-wide performance test (SPT1), which started on 1 May 2004. Eighty-three out of the 337 IMS facilities have now been certified. Legal arrangements between Member States and the Commission are now in place for 322 IMS facilities in 81 countries.

Mr Hoffmann reported that the draft budget for 2005 was being presented in US dollars and euros for the first time. He noted that funding required for the safety and security upgrade at the Vienna International Centre, STP1 and the external review of the PTS structure goes beyond initial 2005 budget proposals. As of 15 June 2004, the collection rates of assessed contributions amounted to 82,6% for 2004 and 94,7% for 2003. Mr Hoffmann informed the delegates that the implementation of the CIF allotment stood at 30.4% as of 15 June.

### The plenary debate

The plenary debate focused on modalities for the appointment of an Executive Secretary, the review of the PTS organizational structure by an external review team and budgetary issues.

Member States welcomed the signing of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) by Saint Kitts and Nevis and Sudan, and the ratifications by Bahrain, Belize, the Libyan Arab Jamahiriya, Serbia and Montenegro, Seychelles and Sudan since the last session of the Commission. Several delegations expressed their support for the future work of Special Representative Ambassador Jaap Ramaker of the Netherlands, to promote the early entry into force of the Treaty. The Commission decided to include Timor-Leste in the South East Asia, the Pacific and the Far East geographical region for the purposes of the activities of the Commission.

### Conclusions

The Commission adopted a decision on the appointment procedure for the future Executive Secretary and authorized the Chairperson of the Commission to take the next necessary steps. ■

## Chairperson of the Preparatory Commission



Ambassador Yukio Takasu, Permanent Representative of Japan to the International Organizations in Vienna, is serving as Chairman of

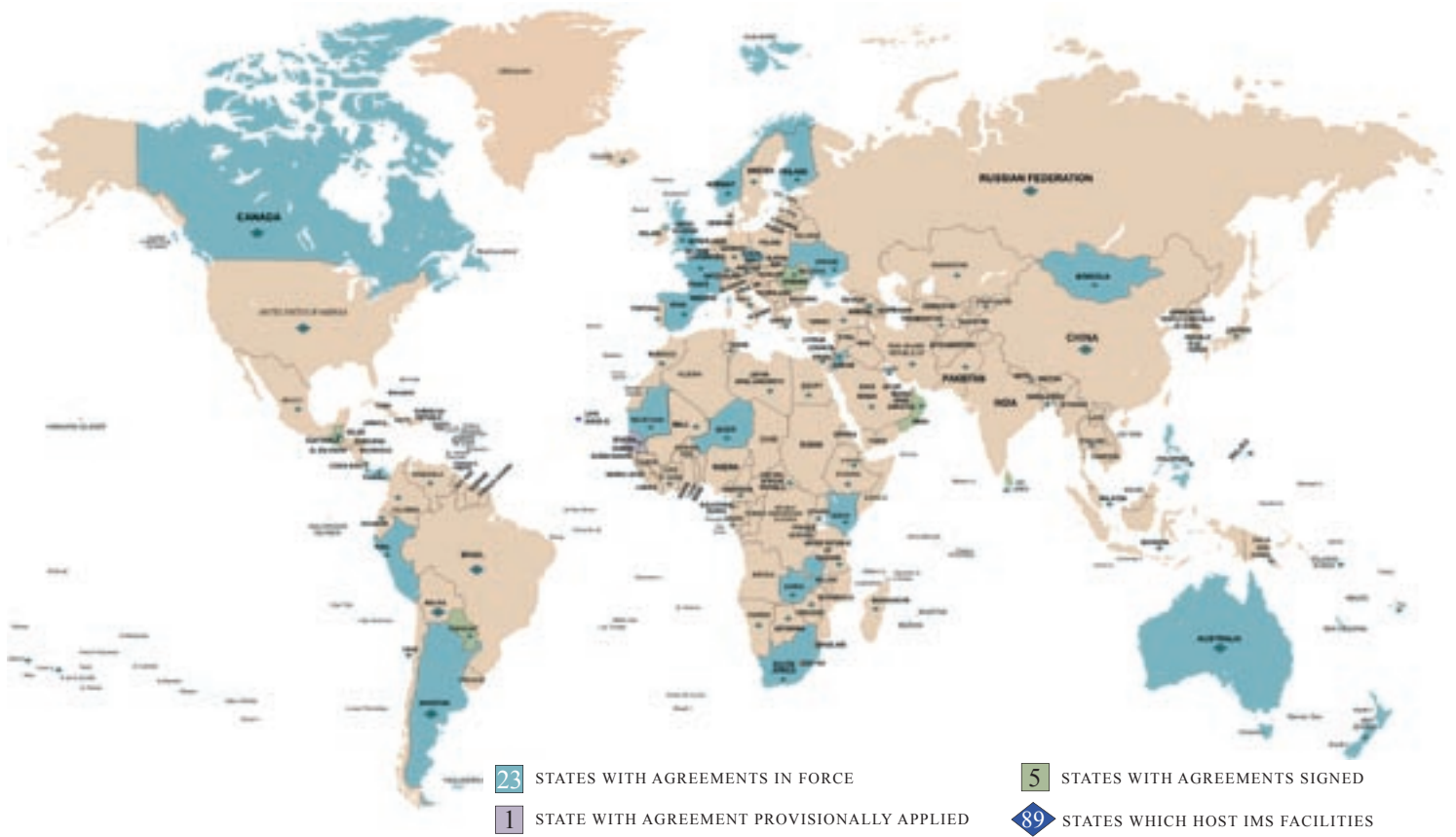
the Preparatory Commission for 2004. Ambassador Takasu studied at the University of Tokyo and at Oxford University. He joined the diplomatic service in 1969 and served in various positions in the United Kingdom, Malaysia, Indonesia and at the United Nations in New York.

In the Foreign Ministry in Tokyo, he was responsible for Japan's policy on Western Europe and on the United Nations (1988-1992). In September 1993, Mr Takasu was appointed Assistant Secretary-General and Controller of the United Nations in New York, where he was in charge of the budgetary and financial operations of the UN.

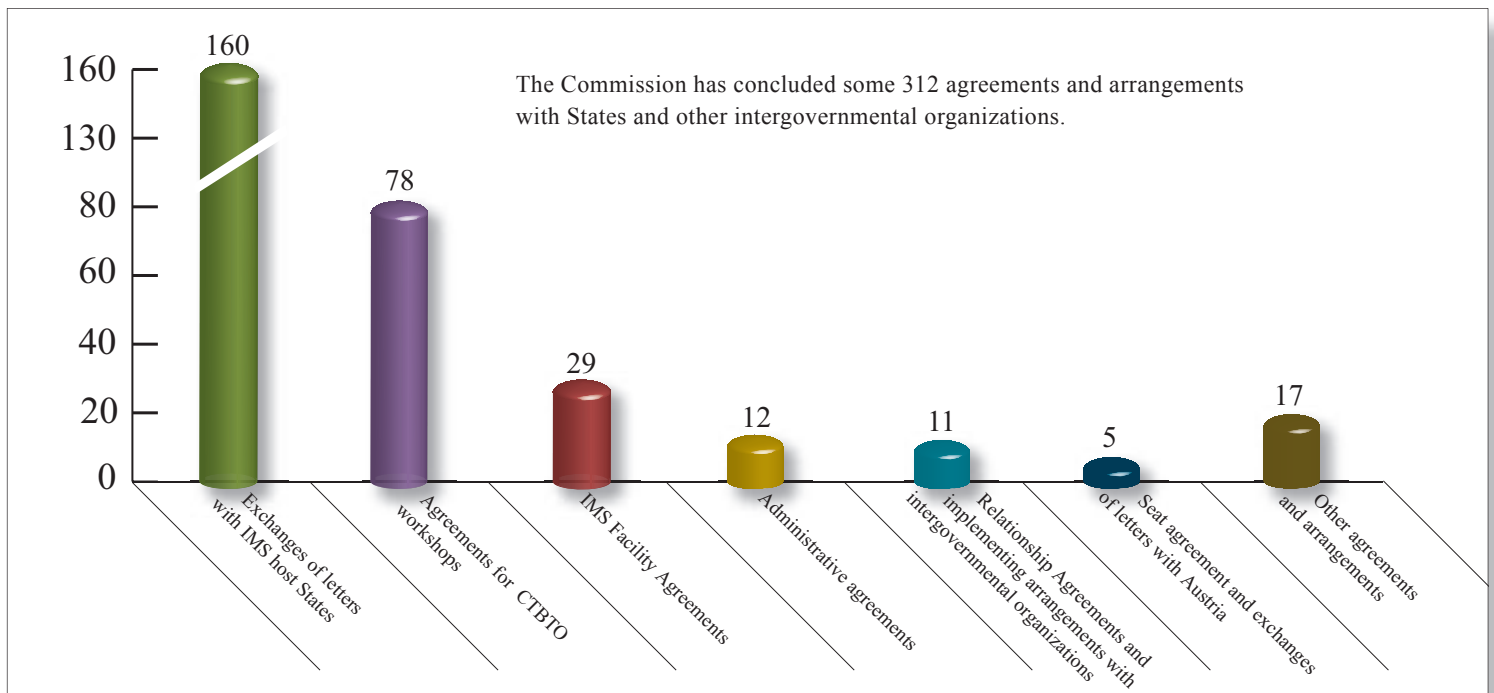
Between 1997 and 2000, Mr Takasu served his country as Ambassador to the United Nations, representing Japan in the Security Council from 1997 to 1998. In early 2000, he was appointed Director-General of the Multilateral Cooperation Department in Tokyo, and subsequently, Ambassador in charge of civil society. He took up his present post in Vienna in 2001. ■

# CTBTO agreements

## Facility agreement map as of 16 June 2004



## Agreements chart



## Legal aspects of establishing...

*continued from cover page*

host States. The task of concluding these 'facility agreements' has been assigned to the Commission under paragraph 12 of its establishing Text. In 1997 the Commission approved model agreements and authorized the PTS to negotiate agreements based on the models.

Besides dealing with the establishment, upgrading and provisional operation and maintenance of monitoring stations and laboratories, facility agreements also provide for functional privileges and immunities of the Commission. To date, the Commission has concluded 29 such agreements, of which 22 have entered into force and one is being applied provisionally pending its entry into force. Most recently, the Facility Agreement between the Commission and the Government of the Sultanate of Oman was concluded on 19 May 2004. Once they enter into force definitively, the Commission publishes facility agreements and files and records them with the United Nations.

An interim exchange of letters between the Commission and the host State usually regulates the activities of the Commission pending the entry into force of the formal facility agreement. Facility agreements nevertheless remain essential to place the provisional operation and maintenance of the IMS on a secure legal foundation. By April 2004, appropriate legal arrangements in the form of facility agreements or interim exchanges of letters were in place for a total of 322 (of the 337) IMS facilities in 81 (of the 89) host countries.

In conclusion, the ongoing work of the CTBTO Preparatory Commission to establish the IMS has resulted in many of the provisions of the CTBT being implemented in practice even before the Treaty has entered into force. ■

PETER HULSROJ, LEGAL ADVISOR OF THE PREPARATORY COMMISSION FOR THE CTBTO.

## List of concluded facility agreements

No.	COUNTRY NAME	DATE OF SIGNATURE(S)		ENTRY INTO FORCE
1	Canada	19 October 1998		19. Oct 1998, Articles 6,8 and 9 on 1 March 2000
2	New Zealand	13 November 1998		19 December 2000
3	South Africa	20 May 1999		20 May 1999
4	Ukraine	17 Sept. 1999 (Ukraine)	27 Sept. 1999 (PTS)	20 April 2001
5	Kenya	14 Oct. 1999 (Kenya)	29 Oct. 1999 (PTS)	29 October 1999
6	Jordan	11 November 1999		11 November 1999
7	United Kingdom of Great Britain and Northern Ireland	12 November 1999		16 June 2004
8	Argentina	9 December 1999		2 March 2004
9	Australia	13 March 2000		17 August 2000
10	Cook Islands	31 March 2000 (PTS)	14 April 2000 (Cook Islands)	14 April 2000
11	Finland	12 May 2000		6 June 2000
12	Mongolia	5 June 2000		25 May 2001
13	Sri Lanka	14 June 2000		
14	Spain	14 Sept. 2000		12 December 2003
15	Niger	20 Nov. 2000 (PTS)	24 Nov. 2000 (Niger)	24 November 2000
16	Peru	14 March 2001		8 July 2002
17	Senegal	22 May 2001		22 May 2001 (Provisionally applied)
18	France	13 July 2001		1 May 2004
19	Zambia	18 Sept. 2001 (PTS)	20 Oct. 2001 (Zambia)	20 October 2001
20	Palau	16 April 2002 (Palau)	29 April 2002 (PTS)	29 April 2002
21	Norway	10 June 2002		10 June 2002
22	Czech Republic	13 November 2002		29 January 2004
23	Guatemala	26 November 2002		
24	Paraguay	4 April 2003		
25	Philippines	14 April 2003	13 April 2003	8 January 2004
26	Romania	13 June 2003		
27	Mauritania	16 Sept. 2003 (PTS)	17 Sept. 2003 (Mauritania)	17 September 2003
28	Panama	26 November 2003		26 November 2003
29	Oman	19 May 2004		

# Outreach activities

*The PTS conducts a variety of activities focusing on enhancing the Treaty understanding of decision-makers and the general public, generating political support, encouraging international cooperation and building national technical capacities through training.*

## International cooperation

The Provisional Technical Secretariat (PTS) regularly organizes international cooperation activities to promote cooperation among States through information exchange and to contribute to national capacity building. In December 2003, an international cooperation workshop was held for the States from South-East Asia in Kuala Lumpur (Malaysia) with 23 participants from eight countries. April 2004 saw an international cooperation workshop take place in Tunis (Tunisia), with 35 participants from six States from Northern Africa.

The PTS also assisted in the organization of National Awareness Seminars on the Comprehensive Nuclear-Test-Ban Treaty, organized by the Government of Viet Nam in Hanoi, in December 2003, and by the Government of Suriname in Paramaribo, in March 2004. Each of the seminars was attended by about 50 participants representing relevant Ministries and technical institutions in the two countries. The objectives of the seminars were to enhance understanding of the significance of the CTBT and to facilitate its ratification. The Governments of Norway and the Netherlands provided financial assistance for the organization of these seminars. ■

## External relations

The Latin America and Caribbean (LAC) region plays an important role in ensuring the entry into force of the CTBT and the build-up of the verification regime. Twenty-one LAC States signed the Treaty when it opened for signature in 1996, and today, the number of signatures has reached 27, with ratifications standing at 20. Under the terms of the Treaty, 43 International Monitoring Facilities (IMS) are located in 13 Latin American countries.

Numerous bi-and multilateral activities have been undertaken to promote the Treaty within the region. The first IMS Introductory Training Programme was hosted by Argentina in 1997, and the Executive Secretary visits the LAC region regularly. Two regional CTBTO workshops were organized in Peru and Jamaica in 2000 and 2002 respectively, to facilitate information exchange and to examine ways and means to promote regional cooperation.

All States in the Latin American and Caribbean region are parties to the 1967 Treaty of Tlatelolco for the Prohibition of Nuclear Weapons in Latin America and the Caribbean. In several international fora, the LAC States have expressed their commitment to non-proliferation and disarmament, and their willingness to contribute to the early entry into force and universality of the Treaty. During the General Conferences of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) in 2001 and 2003, various resolutions in support of the CTBT were approved. OPANAL also concluded a cooperation agreement with CTBTO in September 2002 to support the effective implementation of the CTBT. The General Assembly of the Organization of American States (OAS) has approved resolutions in support of the CTBT every year since 2000. ■

## Training



TRAINEE LOOKING AT A GURALP CMG-3T THREE-COMPONENT BROADBAND SEISMOMETER

Following the interest shown by States Signatories in training, the PTS adopted a new training policy focusing on courses and workshops conducted jointly by the PTS major programmes. An example of this new policy is the regional training courses offered in cooperation between the IMS and the International Data Centre. In 2004, these courses are planned for the Russian Federation, covering Eastern Europe, and Venezuela, covering the Latin America and Caribbean region.



JOINT IMS/IDC REGIONAL TRAINING WORKSHOP, CARACAS, VENEZUELA

The courses offer training both in station operation and in technical National Data Centre issues and are thus well suited for the many institutes responsible for both tasks. This new approach will also facilitate the spread of technological knowledge, information exchange and cooperation on a regional level. ■



## In the spotlight

### Palitha T.B. Kohona, Chief of the Treaty Section of the Office of Legal Affairs at the United Nations

**Q:** *The provisions on entry into force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) as set out in Article XIV are quite complex.*

*What role does the United Nations play in the CTBT's journey towards entry into force?*

**A:** The CTBT has been described as a milestone in humanity's progress towards nuclear disarmament. Given the emphasis in the Charter of the United Nations on the maintenance of international peace and security, and the ongoing efforts of the United Nations with regard to disarmament, the CTBT is indeed a major achievement for the international community. The goal of disarmament was a key element in the Secretary-General's Millennium Report. The nations of the world resoundingly affirmed this goal in the Millennium Declaration, stating that they "seek to eliminate the dangers posed by weapons of mass destruction". They also committed themselves to further strengthen the international rule of law, which was further reaffirmed at the Millennium Summit Treaty Event, where the CTBT was one of the treaties highlighted for special attention. Given the success of that event, such special treaty events are now organised during each General Assembly. Our objective is to encourage the widest participation in the treaties deposited with the Secretary-General, including the CTBT, facilitating its early entry into force.

Article XIV of the Treaty requires the depositary to convene a conference at the request of a majority of ratifying States, if the Treaty had not entered into force three years from its opening for signature. This process is required to be repeated at subsequent anniversaries. Three conferences have been held so far and have been useful in encouraging

participation in the CTBT. Other opportunities have also been used by the United Nations to encourage wider participation in the CTBT with a view to facilitating its entry into force.

**Q:** *In general a treaty does not have any binding legal effect prior to its definitive entry into force.*

*Are there any legal obligations on States which have signed the CTBT, pending its entry into force? In your opinion, does the CTBT reflect any possible rule of customary international law?*

**A:** Under Article 18 of the 1969 Vienna Convention on the Law of Treaties, there is a clear obligation on the part of a signatory State to refrain from any acts which would defeat the object and purpose of a treaty that it has signed.

into force in accordance with Article XIV, twelve have not done so yet. Three have not even signed. Of those who have not become party, some are acknowledged nuclear powers. Others may be nuclear powers. Nuclear tests have been conducted by certain States since the text of the CTBT was opened for signature. However, it is also to be noted that many resolutions have been adopted (beginning with Resolution 1653(XVI) of 24 November 1961) on this subject. It is noted that the resolutions themselves have attracted some negative votes and abstentions. It may be the case that there needs to be wider acceptance by the international community for the provisions of the CTBT to acquire the status of customary international law.

The Preparatory Commission for the CTBTO is recognized as an international organization in its own right. It has concluded international

**“Our objective is to encourage the widest participation in the treaties deposited with the Secretary-General, including the CTBT, facilitating its early entry into force.”**

The question of whether some provisions of the CTBT reflect customary international law could very well be the subject of an essay on its own. But one does note that to date it has attracted 115 parties and 172 signatories (2 July 2004). Today the membership of the United Nations stands at 191. Of the critical 44 States which are required to become party for the Treaty to enter

agreements not only with States but also with international organizations.

**Q:** *Can you explain the Preparatory Commission's unique position as an international organization?*

**A:** The Preparatory Commission for the CTBTO was established by resolution adopted by the States Signatories of the CTBT on 19 November





1996 and since then it has gradually acquired many of the characteristics of an international organization. It is unusual for an international organization to be established in this manner. Normally an international organization is established by treaty among States and the treaty would elaborate its powers and functions. Sometimes, other international organizations may participate in the process of creating an international organization. The above resolution went some way in meeting this need and it states in its Article 7 that the Commission shall have standing as an international organization, authority to negotiate and enter into agreements and such other legal capacity as necessary for the exercise of its functions and the fulfilment of its purposes. The Preparatory Commission will cease to exist following the entry into force of the CTBT and the CTBTO will be established.

The role of the Commission as an international organization has been gradually accepted by the international community. The Commission has concluded a number of bilateral treaties with States, 15 of which have been registered with the Secretariat of the United Nations pursuant to Article 102 of the Charter. It has also put in place around 150 arrangements with States through exchanges of letters. These have been critical in consolidating its verification regime. The Commission concluded a relationship agreement with the United Nations on 26 May 2000. Agreements have been concluded with the United Nations Development Programme (UNDP) and the World Meteorological Organization (WMO). These agreements have also been registered. The Preparatory Commission exercises a range of functions under

the above resolution and these are likely to continue for some time.

**Q:** *Article IV of the CTBT provides for the establishment of a global verification regime to detect and identify nuclear test explosions. Both the construction and provisional operation of the International Monitoring System (IMS) is carried out prior to the entry into force of the Treaty.*

*Legally, how can the provisional operation of the IMS take place before entry into force?*

**A:** Given the urgency felt by the international community to consolidate the goals of the CTBT, innovative mechanisms had to be devised by the international community to realize this objective. The resolution which established the Preparatory Commission as an international organization required it to undertake all necessary preparations to ensure the operationalization of the Treaty's verification regime at the time that it enters into force. The Commission is also required to supervise and co-ordinate, in fulfilling the requirements of the Treaty and its Protocol, the development, preparation, technical testing and, pending their formal commissioning, provisional operation as necessary of the International Data Centre and the International Monitoring System, together with appropriate support of the System by certified laboratory facilities and by respective means of communication.

It may also be argued on the basis of general principles of international law that the Commission, having been established as an international organization and having been recognised as such by the international community, possesses as "an international organization,

the capacity to undertake acts indispensable for the fulfilment of its purposes." The bilateral agreements and the exchanges of letters have been employed to provide the basis for the provisional operation of the IMS. ■

### Biographical note



*Palitha T.B. Kohona has been the Chief of the Treaty Section of the Office of Legal Affairs at the United Nations in New York since 1995. He holds several degrees, including a Master of Law from the Australian National University and a Ph.D. in International Economic Law from Cambridge University, United Kingdom.*

*Mr Kohona joined the Department of Foreign Affairs and Trade of Australia in 1983. Posted to Geneva in 1989, inter alia, he chaired the negotiating group that developed the compliance mechanism under the Montreal Protocol. Back in Australia in 1992, he became the Head of the Trade and Investment Section.*

*Mr Kohona has published a number of papers on international legal issues. The most recent publications are 'The role of non-state entities in the making and implementation of international norms' and 'The international rule of law and the United Nations'. ■*

## The CTBTO Preparatory Commission – Legal Status and Responsibilities

By Anthony Aust

The United Nations General Assembly adopted the Comprehensive Nuclear-Test-Ban Treaty (CTBT) on 10 September 1996.<sup>1</sup> Although it has been signed by 172 States ('States Signatories'), of which 115 have ratified it (as of 2 July 2004), the CTBT will not enter into force until all 44 States listed in Annex 2 (which participated in the 1996 Conference on Disarmament or possessed nuclear power or research

multilateral treaties can be exceedingly complex and provide for the creation of sophisticated monitoring regimes. Since it may be a number of years before such treaties enter into force, and setting up the regime can take a long time, the necessary preparatory work must be started well before that day arrives.



OPENING OF THE TWENTY-SECOND SESSION OF THE CTBTO PREPARATORY COMMISSION, 22 JUNE 2004, VIENNA (AUSTRIA)



An approach that is increasingly being followed is therefore to establish a preparatory commission, or 'prepcom', composed of all the States Signatories. The prepcom has the job of anticipating entry into force by making all the arrangements so that the regime will be ready to begin operations fully from day one. A prepcom was established for the UN Convention on the Law of the Sea in 1982 and met until the Convention entered into force in 1994. For some treaties there is little more for the prepcom to do than draft rules of procedure, financial regulations and suchlike. However, Article II of the CTBT provides for the establishment of a Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO). Its tasks will include the operation, by means of a Technical

Secretariat, of a most elaborate verification and monitoring regime, involving 321 monitoring stations and 16 laboratories throughout the world.

Because of the immensity of this task it was clear to the States Signatories that they would have to take all necessary measures to ensure the rapid and effective establishment of the future CTBTO. On 19 November 1996 a meeting of the States Signatories adopted a resolution approving the 'Text on the Establishment of a Preparatory Commission for the CTBTO'.<sup>2</sup> All the States Signatories have a seat on the Commission. It is based in Vienna, and served by a Provisional Technical Secretariat. One of its essential tasks is to conclude arrangements with those States Signatories that have agreed to

reactors at the time) have ratified. So far 32 have done so. The 12 who have yet to ratify include China, the Democratic Republic of Korea, Egypt, India, Iran, Israel, Pakistan and the United States.

It is not uncommon for several years to pass before a multilateral treaty enters into force, yet today many of them provide for international bodies to be established. Although they cannot be established until entry into force, it is desirable that their rules of procedure should be prepared, secretariat staff engaged, premises found and, not least, all financial arrangements settled. Sometimes no further action is needed to prepare for entry into force. But

**“Because of the immensity of this task it was clear to the States Signatories that they would have to take all necessary measures to ensure the rapid and effective establishment of the future CTBTO.”**



host the monitoring stations. To ensure that the arrangements are firm, they need to be binding in international law; and therefore embodied in treaties between the Commission and each host State. All this takes considerable time and effort, but needs to be completed well before the CTBT enters into force.<sup>3</sup>

Usually a prepcom has no legal status, being temporary and informal. As such it does not have the international legal personality necessary to enable it to enter into treaties. The States Signatories therefore decided that, exceptionally, the Commission

of its functions.” As an international organization in its own right, albeit temporary, the Commission has therefore been able to conclude agreements with the various States Signatories hosting the monitoring stations. If the Commission had not been established by a treaty and given the power to enter into such agreements, many States Signatories would not have been able to conclude the agreements or make the necessary implementing legislation. So far 29 facility agreements have been concluded, of which 22 are now in force. Their general purpose

CTBTO by the CTBT. This has now either been completed or is actively being done. The Commission has also concluded relationship agreements with the United Nations, the UN Development Programme and the World Meteorological Organization.

In short, the Commission is well ahead of the game. ■

### Biographical note



*Anthony Aust served as Deputy Legal Adviser to the Foreign and Commonwealth Office, United Kingdom, until 2002, advising ministers and officials in various fields, including*

*general international law, investment protection, dispute settlement, privileges and immunities, counter-terrorism and defence. He had over ten years close involvement with United Nations legal affairs, including as Legal Adviser to the UK Permanent Mission to the United Nations in New York from 1988 to 1991.*

*Mr Aust is now a freelance consultant on public international law and constitutional law, and works with Kendall Freeman, solicitors, in London. He lectures as visiting professor at the London School of Economics and at University College London. Mr Aust is the author of ‘Modern Treaty Law and Practice’ (Cambridge University Press, 2000), the leading work on the subject, and of a ‘Handbook of International Law’, which will be published by Cambridge in 2005. ■*

“As an international organization in its own right, albeit temporary, the Commission has therefore been able to conclude agreements with the various States Signatories hosting the monitoring stations.”

would be created by treaty - albeit one with the novel name ‘Text’. And since it was essential for the Commission to begin work immediately, the Text would enter into force on its adoption. Although most multilateral treaties are subject to signature and ratification, the negotiating States agreed to dispense with these formalities and bring the treaty into force straight away. The law of treaties allows this.

Paragraph 7 of the Text provides that the Commission “shall have standing as an international organization, authority to enter into agreements, and such other legal capacity as necessary for the exercise

is to facilitate the continued testing, provisional operation and maintenance of the International Monitoring System (IMS) standards, in pursuit of the goal of an effective CTBT. The agreements thus provide for inventories of existing monitoring facilities; site surveys; upgrading or construction of monitoring facilities; and certification that facilities meet IMS standards. They also include provisions on finance and privileges and immunities.

The other specific responsibilities of the Commission include preparing all the reports, recommendations and other documentation, including essential operational manuals, required of the

<sup>1</sup> International Legal Materials (1996), p. 1443, or see the CTBTO PrepCom website: [www.ctbto.org](http://www.ctbto.org).

<sup>2</sup> See CTBT/MSS/RES/1 or the website. The Text was also published in the UK Treaty Series (1999) 46.

<sup>3</sup> See the Agreement between the Commission and the United Kingdom of 12 November 1999 (UK Treaty Series (1999) 10).

# Verification highlights

*The Comprehensive Nuclear-Test-Ban Treaty (CTBT) includes a definition of a global verification regime to monitor compliance with the Treaty. Establishing this regime, which must be capable of detecting nuclear explosions underground, in water and in the atmosphere, is the main activity of the Preparatory Commission for the CTBTO. The verification regime must be operational at the Treaty's entry into force. The regime consists of an International Monitoring System (IMS) supported by an International Data Centre (IDC), consultation and clarification, on-site inspections (OSI) and confidence-building measures.*

## IMS station status

Since the last issue of *CTBTO Spectrum*, efforts in establishing and certifying IMS stations have progressed significantly. The number of certified facilities meeting all technical specifications has increased from 68 to 87, including four radionuclide laboratories. The site survey programme is nearing completion, with only 15 site surveys remaining to be concluded out of a total of 337 IMS facilities. Altogether 115 facilities have already been installed or upgraded and about 30 additional stations are under construction or in contract negotiation. More than 70 IMS facilities are currently funded for operation and maintenance, either for testing and evaluation prior to certification or for post-certification activities. The number of facilities contributing data to the IDC increased from 85 to 134.

All these facilities are currently taking part in the preparatory phase of the system-wide-performance test (SPT1). ■

## IMS station installation: A challenging mission to Tristan da Cunha



CENTRAL PROCESSING FACILITY (CPF) AND RADOMES, TRISTAN DA CUNHA

In late March, three PTS staff members and one consultant returned from a ten week mission to Tristan da Cunha. The PTS team, together with a team of eleven contractors from eight countries, had successfully installed three IMS stations (hydroacoustic station HA09, infrasound station IS49 and radionuclide station RN68) on what is often referred to as the most remote inhabited island in the world.

Three thousand kilometres away from the nearest mainland, Tristan da Cunha is located about midway between the southernmost point of South Africa and South America. A United Kingdom overseas territory, it

is named after the Portuguese sailor who discovered the island in 1506. To reach Tristan da Cunha, it is necessary to undertake a six day journey by ship from Cape Town, South Africa. The supply ship RMS St. Helena calls once a year, and the island is also visited from time to time by fishing vessels.

Tristan da Cunha is a volcanic island with an active volcano that last erupted in 1961. The central volcanic peak (2060 meters) is almost permanently covered with clouds. Arable land is limited to a 700 metres wide strip to the north- and southwest of the island. Today, the island is home to just under 300 people. The main settlement is called Edinburgh.

The island is financially almost self-supporting. Earnings derive mainly from lobster fishery and the sale of postage stamps. For food, the islanders rely mostly on their own stock, poultry and potato crops. To conserve grazing, stock is limited to two cows and seven sheep per family.

Preparations for the installation of the IMS stations began in 2001, when the PTS carried out site surveys. In 2003, the local power



IS49 UNDER CONSTRUCTION



ISLANDERS HELPING TO BUILD INFRASOUND STATION IS49



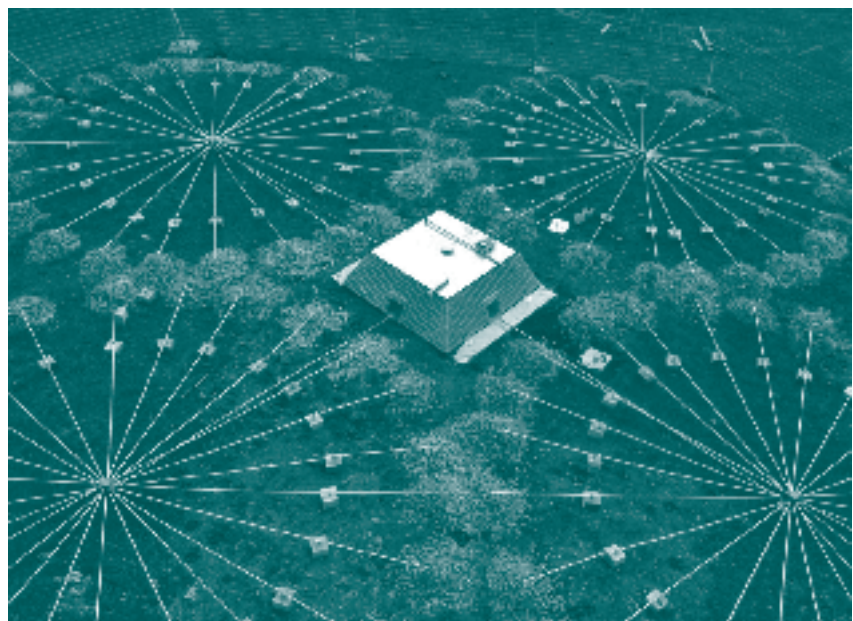
PTS STAFF INSTALLING PIPE ARRAY

station was upgraded to support the needs of the planned stations and interim construction work was carried out by a contractor. Three generators were donated to the islanders, which now provide a 24 hour power supply. More than 200 tonnes of equipment and construction materials had to be shipped to Tristan. Unloading was frequently difficult, as the island does not have a deep water harbour. Materials have to be offloaded from ships into smaller boats, often in high swells. During the final mission, the PTS hired a fishing vessel to bring the last 80 tonnes of equipment to the island. This included a complete Central Processing Facility (CPF), already set up in prefabricated containers. The CPF collects now data from all the IMS elements on the island and sends it to the International Data Centre in Vienna via satellite.

In addition to the challenge of getting equipment onto the island, the PTS mission also had to protect it from the elements and from livestock once it was installed. To protect infrasound station IS49 from curious cows, a circular fence was erected. Due to the scarcity of arable land, this was set as close to the arrays as possible. However, the grass inside proved too tempting for

one animal, which somehow managed to enter the protected area. As a result, several of the array pipes were bent and had to be repaired. In addition to being protected from 'cow attacks', the IS49 arrays needed to be sheltered from extreme winds. This was achieved by covering the arrays with gravel to reduce wind turbulence. Special constructions, or radomes, were erected

to protect the satellite dishes. Fences were also built around the other IMS stations and the CPF. To complete the work on the stations, the PTS employed between 10 and 25 islanders at various times. Following the successful completion of the mission, some islanders are now assisting in operating and maintaining the IMS stations. ■



COMPLETED INSTALLATION OF HIGH-FREQUENCY INFRASOUND ELEMENT H3 TRISTAN DA CUNHA, MARCH 2004

# Verification highlights

## Calibration of seismic regional travel-times to improve event location

In 1998, Working Group B identified a need to improve location accuracy. The Treaty restricts on-site inspections to an area of 1000 km<sup>2</sup>. This provides the target for the maximum size of the error ellipse for a seismic event location released by the International Data Centre (IDC). Such accuracy can only be achieved by using more sophisticated Earth models for seismic travel-time calculation. To tackle this challenge, the PTS initiated the Calibration Programme in the year 2000. This effort was guided by an expert group under the leadership of Dr. Frode Ringdal, Norway. Phase 1 of the Programme considered the regions of northern Eurasia, the Middle East and Australia, and ended successfully in 2003. Phase 2 has just started, with a first look at the African continent.

Source-Specific Station Corrections (SSSCs) are used in event location to account for the difference between the real Earth and a radially symmetric model. Such travel-time corrections are already being applied for North America and north-western Europe since delivery of the Release 3 software from the prototype IDC in Arlington, USA. Following the recommendation of the 2003 event location calibration expert group meeting in Oslo, the IDC evaluated the preliminary version of SSSCs available for northern Eurasia (Figure 1), and implemented them in IDC processing.

Controlled explosions provide a unique opportunity for regional travel-time calibration when such explosions are recorded by dense seismic networks. ■

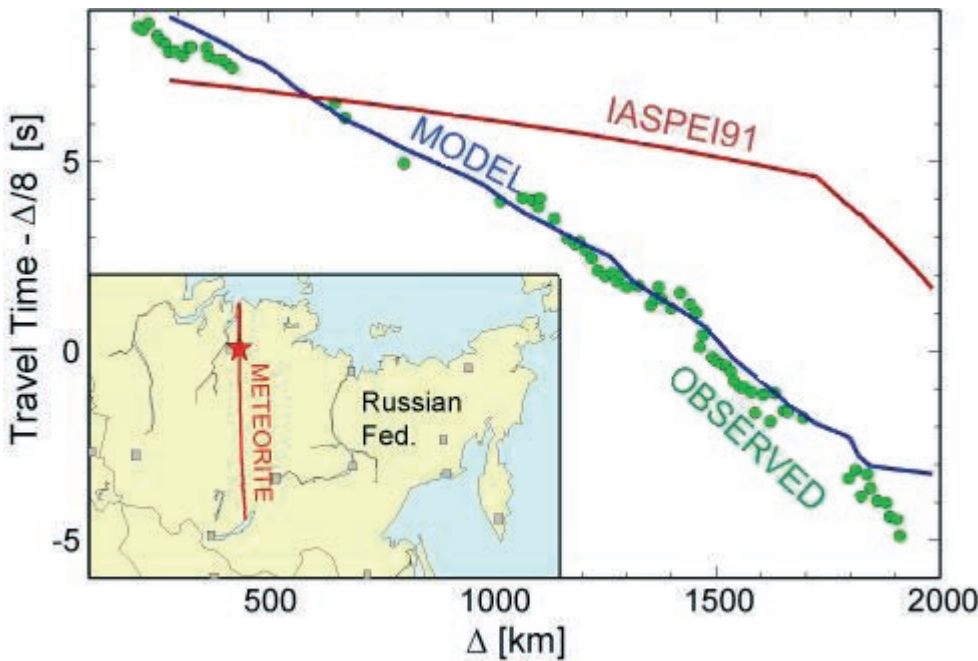


FIGURE 1: TRAVEL-TIMES FOR THE LONG-RANGE DEEP SEISMIC SOUNDING PROFILE OF A 'METEORITE' ACROSS THE RUSSIAN FEDERATION (GREEN), COMPARED WITH CALCULATED TRAVEL-TIMES FOR THE ONE-DIMENSIONAL STANDARD EARTH MODEL IASPEI91 (RED) AND TRAVEL-TIMES FOR A THREE-DIMENSIONAL MODEL THAT SERVED AS BASIS FOR THE SOURCE-SPECIFIC STATION CORRECTIONS (BLUE).

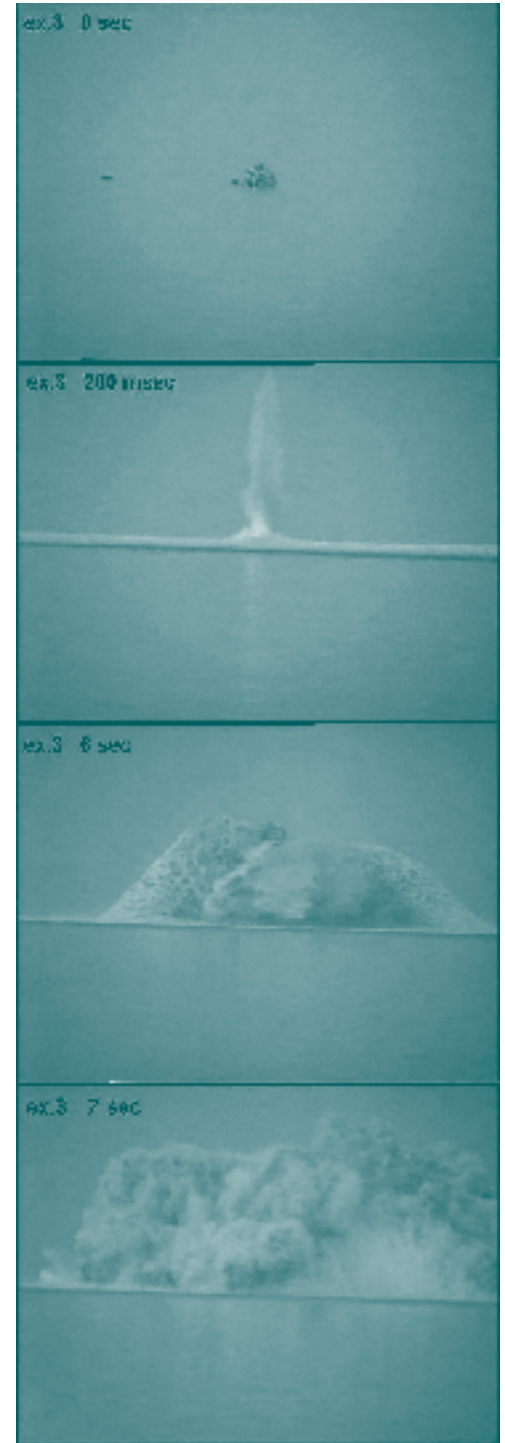


FIGURE 2: 1999 CALIBRATION EXPLOSION IN THE DEAD SEA COORDINATED BY THE GEOPHYSICAL INSTITUTE OF ISRAEL.



## Techniques for on-site inspections: Radionuclide survey and analysis equipment.



HAND-HELD RADIONUCLIDE SURVEY AND ANALYSIS TOOL

Preparing for an on-site inspection (OSI) is a major activity for the Preparatory Commission. During an OSI inspectors will be able to draw upon a ‘suite’ of technologies to clarify whether or not a nuclear test explosion has taken place. These include video and still photography, passive and active seismic methods and other geophysical methods such as magnetic and gravitational field mapping. However, the measurement of relevant radionuclides will be the primary indicator of whether an event had a nuclear origin. The results from radionuclide survey and analysis techniques are expected to be the ultimate evidence available to the Executive Council when deciding whether or not the Treaty has been violated.

Appropriate measurements allow OSI inspectors to determine the presence or absence of specific radionuclides that result from a

nuclear event and that are most relevant from an OSI point of view. Furthermore, the calculation of the relevant ratio of radioactive pair concentrations enables the inspectors to determine when an event may have occurred.

During an OSI, it is likely that the inspectors will undertake a radionuclide survey and analysis both from the air and at, or under, the surface to search for and identify radiation anomalies. Radionuclide survey and analysis equipment that could enable inspectors to carry out these tasks include handheld and vehicle-portable search and limited gamma identification tools, a high-resolution gamma spectrometer tool for field and laboratory use, radioactive noble gas measurement equipment for Xenon and Argon-37 and a tool for aerial gamma spectroscopy.



FIELD USE OF HAND-HELD TOOL FOR RADIONUCLIDE SURVEY AND IDENTIFICATION

While all the equipment described above plays an important role during an OSI, the equipment for measuring the noble gases Xenon and Argon-37 is of special interest to the CTBT verification system. This is particularly because, if the event detected occurred underground or underwater, Xenon and Argon-37 will enter the atmosphere as a result of dynamic venting or atmospheric pumping. With the right type of

equipment, these gases will be more readily detected. Based on the Commission’s decisions, the Provisional

**$^{37}\text{Ar}$ ,  $^{95}\text{Zr}/^{95}\text{Nb}$ ,  $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ ,  $^{103}\text{Ru}$ ,  $^{106}\text{Rh}$ ,  
 $^{115\text{m}}\text{Cd}$ ,  $^{131}\text{I}/^{132}\text{I}$ ,  $^{132}\text{Te}$ ,  $^{140}\text{Ba}/^{140}\text{La}$ ,  $^{141}\text{Ce}$ ,  $^{144}\text{Ce}$ ,  
 $^{144}\text{Pr}$ ,  $^{147}\text{Nd}$ , and  $^{131\text{m}},^{133\text{m}},^{133},^{135}\text{Xe}$**

RADIONUCLIDES OF INTEREST TO AN ON-SITE INSPECTION

The Commission has also elaborated an initial list of radionuclides of interest to an OSI. The technical criteria for inclusion in the list includes their relevance to a nuclear event, the half-life of the relevant radioisotopes and the OSI timelines established in the Treaty.

Technical Secretariat has several projects underway to develop and/or obtain these unique radionuclide survey and analysis tools, initially for testing and training purposes, but with the goal that the use of this important category of equipment will ultimately form the core activity during future inspections. ■

The network of the International Monitoring System with its associated communications infrastructure and the International Data Centre was designed by a Group of Scientific Experts at the Conference on Disarmament in Geneva to be fully capable of monitoring compliance with the Treaty. New research and improved communications technology continuously strengthens and refines the detection capabilities of the IMS. This column introduces some of the latest developments in the field of verification science.

## Evaluating infrasound station performance

The IMS infrasound network of 60 stations uses acoustic pressure sensors to detect very low-frequency sound waves in the atmosphere produced by natural and man-made events. Many of the IMS infrasound stations have four-element arrays, based on network performance simulation studies carried out during the Treaty negotiations in Geneva. According to these studies, the detection threshold will be

significantly less than one kiloton over most of the continental areas.

In 2002, Working Group B recommended that a number of tests be carried out in order to evaluate the performance of the IMS infrasound station network. At that time, about 60% of the infrasound network was in contract negotiation, under construction or already built. Experts from various scientific institutions were approached by the Provisional Technical Secretariat (PTS) to review the capabilities of several types of stations and to analyze the data from newly built and existing stations. The outcome of the review was discussed with PTS representatives in two workshops in March and in October 2003 in Vienna, Austria, and in La Jolla, United States, respectively.

The results of the expert study indicated that the four-element array stations are not robust enough. If one or two of the elements fail due to high noise or malfunction, the triangulation accuracy will be reduced. Another source of concern is the large spacing between the array elements which ranges between one and three kilometres. This may result in a poor directional performance of an array for higher-frequency sound waves.<sup>1</sup> This effect is often referred to as spatial aliasing (see Fig.1 and Fig.2). Eight-element arrays are less vulnerable to performance degradation. If an element or two are lost due to damage or malfunction, the increase in source parameter estimation error is still less than the error introduced by atmospheric variations. Furthermore, eight-element arrays perform equally well in detecting low- and high-frequency infrasonic waves. The expert group therefore recommended that stations be installed with more than four elements.

*continued on page 20*

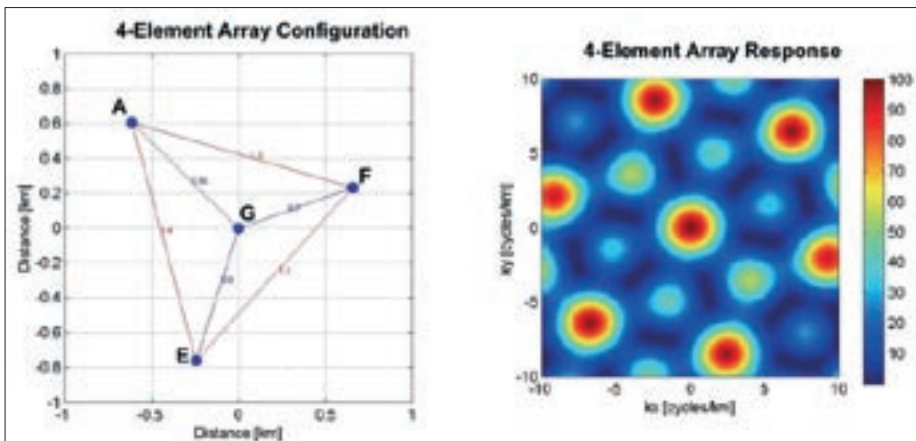


FIG. 1: SPATIAL ALIASING OF A 4-ELEMENT ARRAY IS VISUALIZED BY MULTIPLE RED-COLORED SPOTS IN ITS ARRAY RESPONSE PLOT. THE RESULT IS THAT THE DIRECTION OF THE INCOMING INFRASOUND MAY NOT BE UNIQUELY IDENTIFIED.

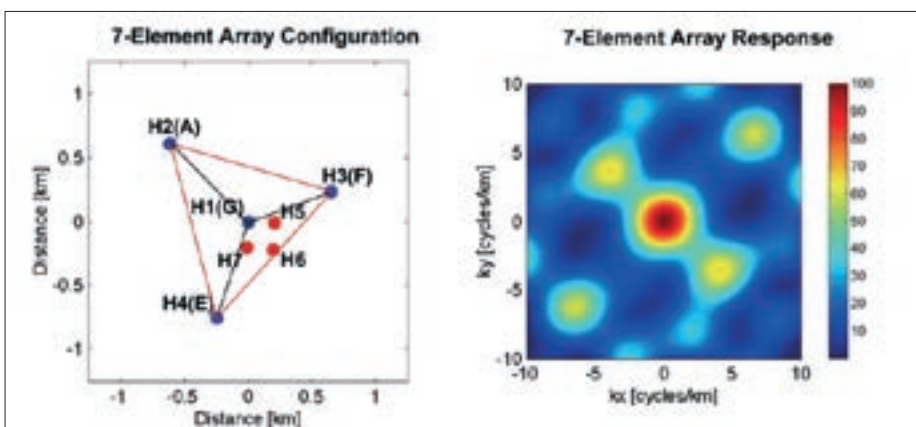


FIG. 2: THE ADDITION OF 3 CLOSELY SPACED ARRAY ELEMENTS (H5-H7) TO THE ORIGINAL 4-ELEMENT CONFIGURATION ELIMINATES ALL BUT ONE RED COLORED SPOT. THE DIRECTION OF THE INCOMING INFRASOUND IS NOW UNIQUELY IDENTIFIED.

<sup>1</sup> Recent studies of infrasound generated by small nuclear explosions suggest that the primary frequency band of interest for the detection of low-yield nuclear explosions is in the higher frequency range from about 0.4 Hz to 4 Hz. The frequency band specified during the Treaty negotiations covers a band from 0.02 Hz to 4 Hz.



# Potential civil and scientific applications

The International Monitoring System uses seismic, hydroacoustic, infrasound and radionuclide monitoring technologies capable of detecting evidence of nuclear explosions underground, in water and in the atmosphere in order to monitor compliance with the Comprehensive Nuclear-Test-Ban Treaty. These verification technologies, together with the data, technologies and products of the International Data Centre, have potential civil and scientific applications which can provide significant benefits to States and the international scientific community.

## Benefits of potential civil and scientific applications of CTBT verification technologies

by Bernard Massinon

What are the benefits of the potential civil and scientific applications of CTBT verification technologies? Scientists from the Provisional Technical Secretariat (PTS) and various National Data Centres (NDCs) addressed this question at a meeting in Berlin on 10 and 11 May 2004, initiated by the Japanese and German Missions to the International Organizations in Vienna.

With more than 50% of the International Monitoring System (IMS) stations now operational, the International Data Centre (IDC) is providing NDCs with timely, high quality data and products. Recently, various NDCs have conducted extensive research in collaboration with the PTS to improve the characterization and understanding of source and propagation phenomena.

In the oceans, for example, highly sensitive hydrophone arrays and seismic T-phase stations have observed an increasing number of icebergs breaking off the Antarctic ice shelves and sliding on icy

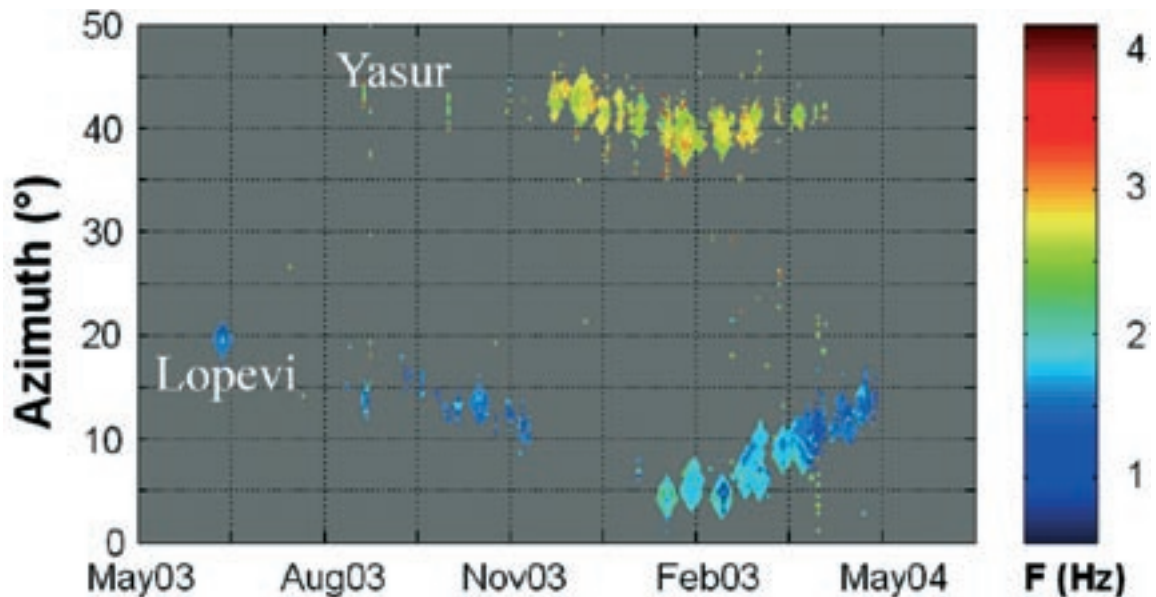
or rocky surfaces, a phenomenon probably linked to global warming. Submarine volcanoes, earthquakes and underwater explosions are also identified and located, contributing to a better understanding of hydroacoustic wave propagation.

In seismology, the Reviewed Event Bulletin (REB), which the PTS has been providing to the International Seismological Centre (ISC) since 2000, has contributed significantly to evaluations of earthquake magnitudes. This may have an impact on seismic hazard assessments in some areas of the globe. The ISC also provides the IDC with access to its collection of data from 2000 stations worldwide, making the collaboration between the PTS and ISC of clear mutual benefit. Furthermore, the increased access to waveforms and phases readings made possible by the IMS network will certainly help to improve 3-dimensional tomographies of the globe computed by national and international scientific institutions, allowing a better understanding of the internal structure of the earth's core.

*continued overleaf*



INFRASOUND WAVES PROPAGATING FROM TWO SIMULTANEOUS VOLCANIC ERUPTIONS ON VANUATU (YASUR AND LOPEVI), AS RECORDED BY IMS IS22 STATION IN NEW CALEDONIA. THE AZIMUTH DEVIATIONS ARE STRONGLY DEPENDENT ON SEASONAL WIND VARIATIONS. SUCH OBSERVATIONS SHOULD PROVIDE MORE REALISTIC REGIONAL ATMOSPHERIC PROPAGATION MODELS, WHICH CONTRIBUTE TO BETTER EVENT LOCATION AND MAY ALSO BE USEFUL FOR AIRCRAFT SAFETY.





## Benefits of potential civil and scientific applications ...

*continued from previous page*



ERUPTION OF VOLCANO LOPEVI, VANUATU

The synergy between the verification technologies has also improved analysis of other phenomena. A combination of IMS seismic and infrasound data, for example, pointed out the solid earth and atmospheric response to the large earthquake in Southwest China in 2003.



ERUPTION OF VOLCANO YASUR, VANUATU

In infrasound technology, the sensitive IMS infrasound arrays and the adapted processing system developed at the IDC and various NDCs have provided a unique tool which detects, locates and characterizes natural atmospheric phenomena on a global scale, and refines atmospheric transport models.

The IMS radionuclide network also provides a new level of sensitivity and coverage through the worldwide, quasi-continuous, low level data it can deliver on levels of natural or artificial radioisotopes. For example, natural radioisotopes originating from the crust and from the upper atmospheric layers may provide clues on the vertical mixing and interaction of air masses on a global scale, of possible interest to global warming investigations. Continuous radionuclide monitoring at very low detection thresholds will allow detection and tracking of accidental releases. This will help emergency preparedness efforts in detection, modelling and decision support by providing predicted deposition rates.

In conclusion, although the CTBT verification system is not yet fully complete, and the issue of access to IMS data and IDC products for scientific and hazard monitoring organizations has not yet been resolved, workshops and meetings on the possible civil and scientific applications of the verification technologies clearly demonstrate that impressive developments in scientific research are taking place. This development is likely to increase

as collaboration between NDCs grows. It is important to consider the issue of expanding this collaboration to the scientific society, and of contributing to human welfare and safety through cooperation programmes with other international organizations. ■

### Biographical note



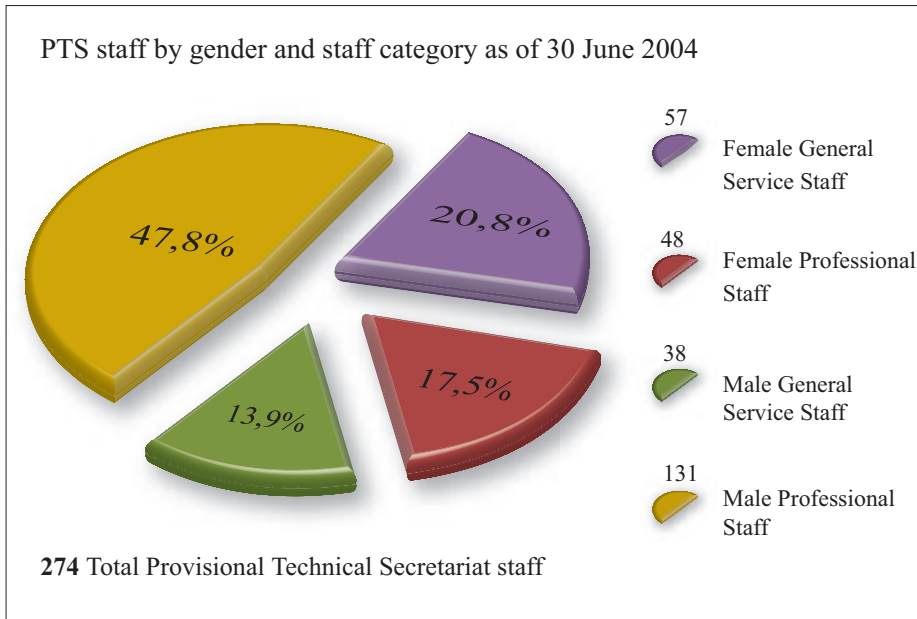
*Bernard Massinon studied at the Ecole Supérieure d'Electricité and holds a doctoral degree in Geophysics from the University of Paris (1964). He has worked as a research geophysicist with the French Commissariat à l'Energie Atomique (CEA) and has served as Head of the Data Processing and Geophysics Group at the Laboratoire de Détection et Géophysique (CEA/LDG).*

*From 1994 to 1997, Mr Massinon served as a member of the French Delegation in the Group of Scientific Experts at the Conference on Disarmament in Geneva. He also served as Scientific Assistant Head, Département Analyse, Surveillance, Environnement (CEA/DASE) from 1996 to 1999.*

*Since 1997, Mr Massinon has been a member of the French Delegation and Task Leader to Working Group B, while also serving as a Scientific Adviser at the Commissariat à l'Energie Atomique (CEA) since 2000. He recently received the 'Prix Science et Defense 2003' from the French Ministry of Defense. ■*

# Secretariat snapshots

## Equal employment policy and implementation in the PTS



The Provisional Technical Secretariat (PTS) is committed to a policy of equal employment. This policy is outlined in the Preparatory Commission's decision on Equal Employment Opportunities for Women in April 1998 (CTBT/PC-5/1/Add.7), which requests the Executive Secretary "to pursue a target of equal gender representation at all levels of the Secretariat". The policy is consistent with the PTS Staff Regulations on non-discrimination and is reflected in all vacancy announcements. The Secretariat continues to make every effort to increase the representation of women in the Professional category.

The Executive Secretary provides information and statistics on the representation of women in the PTS to the Commission on a regular basis. Relevant statistics have also been incorporated in the Annual Reports on Human Resources Management. As of 30 June 2004, out of the total count of 274 staff members, 38,3% are women and 61,7% are men. 17,5% of the staff of the PTS are women in Professional positions and 20,8% are women in General

Service positions. The percentage of female staff members has been gradually increasing over the years. However, the representation of women is far lower in the verification divisions than in administration and related fields of work, and women are under-represented at the managerial levels of P-5 and above.

Several measures have been taken to increase the number of women in the professional and higher categories in the PTS. The Secretariat cooperates with the Office of the Special Advisor to the United Nations Secretary-General on Gender Issues and the Advancement of Women to ensure wider circulation for its vacancy announcements. All vacancy announcements are also distributed via e-mail to interested Member State institutions and organizations. As well as its efforts to extend the recruitment pool, the PTS offers a part-time appointment scheme to staff in both the General Service and Professional categories, acknowledging that traditional patterns in working arrangements are a major source of work-family conflict. ■

## Interagency games in France

Sixteen PTS staff members participated in the 32nd United Nations Interagency Games which took place from 29 April to 3 May 2004 in Aix-les-Bains, France. Forming teams with UNOV, UNIDO or IAEA, the PTS staff took first place in mountain biking, second place in football and athletics, and third place in women's volleyball.

The United Nations Inter-Agency Games (IAG) was initiated by UNESCO in 1968 with the purpose of enabling the staff members of the agencies and organizations of the United Nations family to get to know each other through sports meetings and thereby to improve mutual understanding and working relations. ■



JOINT IAEA/CTBTO FOOTBALL TEAM



JOINT IAEA/CTBTO MOUNTAIN BIKING TEAM

## Treaty Status

Signatures .....	172
Ratifications .....	115
Annex 2 Ratifications .....	32

AS OF 2 JULY 2004

## Evaluating infrasound station performance

*continued from page 16*

The expert group also recommended an irregular arrangement of the elements in the array and to adjust the number of elements and the size and type of the noise reducing system, according to the local meteorological conditions. The more recently built IMS stations have already implemented these recommendations.

Infrasound technology and analysis of infrasound signals is still

developing. It is not as mature as the other verification technologies due to its comparatively short history. It has, however, a unique position within the verification system since it is capable of detecting explosions and many other natural phenomena in the atmosphere that cannot be detected by other IMS monitoring technologies. Further development and refinement of the infrasound network could therefore benefit the entire IMS. ■

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## Calendar of Meetings 2004

### Preparatory Commission:

22nd Session	22 – 25 June 2004
23rd Session	15 – 19 November 2004

### Working Group A:

25th Session	7 – 11 June 2004
26th Session	4 – 8 October 2004

### Working Group B:

22nd Session	9 – 27 February 2004
23rd Session I	24 May – 4 June 2004
23rd Session II	30 August – 10 Sept. 2004

### Advisory Group:

22nd Session I	19 – 23 April 2004
22nd Session II	17 – 21 May 2004
23rd Session	13 – 17 Sept. 2004

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