

Annual Report 2005



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ARTICLE I of the Treaty

BASIC OBLIGATIONS

1. Each State Party undertakes not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control.
2. Each State Party undertakes, furthermore, to refrain from causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion.

Paragraph 1 of the Text on the Establishment of a Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization

1. There is hereby established the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter referred to as “the Commission”) for the purpose of carrying out the necessary preparations for the effective implementation of the Comprehensive Nuclear-Test-Ban Treaty, and for preparing for the first session of the Conference of the States Parties to the Treaty.

This report serves as the first of the Executive Secretary’s written reports to the Twenty-Sixth Session of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization. It gives an account as of 31 December 2005 of the activities undertaken by the Provisional Technical Secretariat of the Commission during 2005 in implementation of the seven Major Programmes.

Foreword

by the Executive Secretary

I am pleased to present the annual report of the Provisional Technical Secretariat (PTS) of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, the first since I took up my duties as Executive Secretary in August 2005.

In the course of 2005, the PTS continued to make substantial progress in all aspects of its work to establish the Treaty verification regime and to prepare for the entry into force of the Treaty.

The PTS made considerable advances in installation and certification during the further build-up of the International Monitoring System (IMS), a unique worldwide verification network consisting of 321 seismic, hydro-acoustic, infrasound and radionuclide monitoring stations and 16 radionuclide laboratories. In 2005, a further 37 stations and 1 radionuclide laboratory were certified as meeting the technical requirements of the Commission, so that by the end of the year there were 156 stations and 6 laboratories certified. Installations were completed at an additional 22 stations. Thus 68% of the network was either certified or installed. This progress can also be seen in the increase of expenditure in the Capital Investment Fund from 55% in 2004 to 82% in 2005. States hosting IMS facilities continued their valuable cooperation with the Commission. Two additional facility agreements were concluded with the Russian Federation and Iceland and the agreement with Guatemala entered into force. At present, appropriate legal arrangements are in place in 84 countries.

The International Data Centre (IDC) in Vienna received, analysed, reported on and archived the waveform and radionuclide data from a growing number of IMS stations. The PTS in 2005 made substantial progress in connecting IMS stations to IDC operations. With 33 new or upgraded waveform monitoring stations and 5 radionuclide particulate stations integrated into the IDC operational system during the year, the number of stations in IDC operations reached the 50% mark, substantially enhancing the geographical coverage of data being received. Furthermore, the Global Communications

Infrastructure (GCI), which provides communications links to IMS sites as well as to National Data Centres (NDCs) and station operators, continued to expand throughout 2005 with the installation of 14 new very small aperture satellite terminals, bringing the number installed overall to 199, which is equivalent to 77% of the total planned. At the same time, in view of the fact that the current GCI contract will expire in September 2008, the procurement of the next GCI contract has been initiated with the objective of ensuring a smooth transition. The procurement process continued in 2005 with a review of expressions of interest and the release of the final request for proposals.

Complementing the momentum in the build-up and integration of the verification network, substantial strides were made in 2005 in improving the ability of the IDC to analyse data and provide quality products to States Signatories. For example, new and improved software developed by the PTS for receiving and sending data was introduced. The PTS also made progress in refining and improving detection and analysis methods and algorithms for processing of data. As a result, the number of 'false' (non-real) events in the automatic processing dropped from 69% to 50% compared with the number of events in the Reviewed Event Bulletin. In addition, the new computer centre was successfully moved to a new high technology facility, which now hosts all central computer systems, networking devices and related infrastructure.

An additional 69 users in States Signatories were authorized to access IMS data and IDC products, making a total of 737 authorized users at the end of 2005. Furthermore, during 2005, 5 States Signatories established secure signatory accounts, bringing to 90 the total number of States Signatories which have designated organizations to have access to IMS data and IDC products.

While the purpose of the verification regime is to ensure compliance with the Treaty, the verification technologies are also useful for civil and scientific purposes. In response to the tragic devastation caused by the tsunami

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in the Indian Ocean in December 2004, the Commission tasked the PTS to explore and assess which data and products might be useful and could be provided by the PTS for tsunami warning purposes, and expressed its willingness to contribute to a tsunami warning system. Accordingly, the PTS is currently forwarding data on a test basis to tsunami warning centres in Japan and Hawaii, as well as to Malaysia.

During the year, we made important progress in on-site inspection (OSI) related activities. In light of guidance from the Policy Making Organs, OSI activities were re-oriented towards planning and preparing for the Integrated Field Exercise (IFE) to be held in 2008. The IFE will be an important part of our endeavours to address the concerns of delegations that progress in OSI should not fall behind progress in other areas. There was also a large step forward in the drafting of the OSI Operational Manual. The first reading of the initial draft rolling text was concluded at the Twenty-Fourth Session of Working Group B, with support provided by the PTS.

In 2005, the PTS conducted the performance testing phase of the first system-wide performance test (SPT1), where all of the 163 stations in IDC operations (about 50% of the entire monitoring system) and 5 certified radionuclide laboratories took part. This has resulted in the establishment of a baseline performance under the current provisional mode of operation against which future improvements can be compared. Lessons from these activities and their results have given us a wealth of data which will allow us to analyse the achievements and shortcomings of the verification network as an integrated system. I fully expect that this will lead to important improvements in the next few years.

The year also saw a further strengthening throughout the PTS in the coordination of verification related activities. The Operations Centre was established in March 2005 and involves staff from the IMS and IDC Divisions. The IMS Reporting System for logging and tracking operational incidents in the IMS was expanded beyond its original purpose to cover incidents in all parts of the data collection and distribution chain. Planning, implementation and evaluation of SPT1 involved considerable

resources provided by various verification related areas of the PTS.

In contrast to the first phase of build-up, which was characterized by the parallel construction of IMS stations, of the IDC and of OSI capacity, these increasingly coordinated activities represent the emergence of an integrated verification system. It is in this context that in November 2005 the Commission adopted the report by the external review team which, among other things, recommends structural changes to the IMS and IDC Divisions.

Activities in 2005 to support the verification regime as well as to promote the Treaty, such as training courses and workshops, were held around the world with the participation of representatives from about one hundred States. I am grateful to Australia, Austria, Bolivia, France, Germany, Italy, Japan, Kazakhstan, the Republic of Korea, Slovakia and the United States of America for successfully hosting these events. In addition, I would like to express my appreciation to the Netherlands and the Czech Republic for their voluntary contributions of funds during 2005 in support of the Commission's international cooperation and outreach activities, as well as a pilot project on e-learning, the initial testing of which began in 2005 to complement the regular PTS training activities.

In relation to the continuing endeavours of ratifiers and signatories to promote the Treaty, one of the key events in 2005 was the Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, which took place in New York on 21–23 September. Altogether 117 ratifying States and States Signatories, the greatest number to attend such a conference so far, and 3 non-signatory States were represented. About forty States were represented at the level of Minister or Deputy Minister, clearly indicating the strong political support for the CTBT in the international community.

Multilateral fora provide valuable opportunities to promote the support of the international community for the cause of the Treaty as well as the work of the Commission. In this context, during the year the PTS continued to develop contacts and cooperation with relevant global and regional international organizations. The Commis-

FOREWORD BY THE
EXECUTIVE SECRETARY

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sion now has six relationship and cooperation agreements with various international organizations, including an agreement with the Association of Caribbean States, which was concluded on 7 March 2005.

As a result of the efforts described above, in 2005 two States signed and six States ratified the Treaty. In addition, in the early months of 2006 we have seen these efforts bear further fruit in the form of six more ratifications, including a ratification by one of the 44 States listed in Annex 2 to the Treaty, whose ratification is required for entry into force of the Treaty. Thus at the end of March 2006, the CTBT had 176 signatures and 132 ratifications and is even closer to achieving the status of universality.

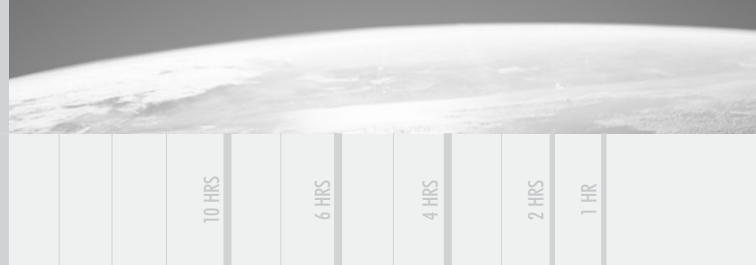
The above is a summary of what the PTS achieved in 2005 and the details are presented in this report. On the

basis of these achievements, I, together with all of the PTS staff, am determined to pursue our work with a commitment to the continuation of efforts to realize further efficiency and effectiveness.

Tibor Tóth
Executive Secretary

Preparatory Commission
for the Comprehensive
Nuclear-Test-Ban Treaty
Organization

Vienna
April 2006



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Abbreviations

AG	Advisory Group	NDC	National Data Centre
ATM	atmospheric transport modelling	NMS	network management system
CD	continuous data	O&M	operation and maintenance
CIF	Capital Investment Fund	OSI	on-site inspection
DE05	OSI directed exercise in 2005	PMCC	Progressive Multi-Channel Correlation
DOTS	Database of the Technical Secretariat	PTS	Provisional Technical Secretariat
ECS	Experts Communication System	REB	Reviewed Event Bulletin
EIF	entry into force	SAINT	Simulation Assisted Interactive
GCI	Global Communications Infrastructure		Nuclide Review Tool
IDC	International Data Centre	SPT1	first system-wide performance test
IFE	Integrated Field Exercise	WGA	Working Group A
IMS	International Monitoring System	WGB	Working Group B
INGE	International Noble Gas Experiment	WMO	World Meteorological Organization
IRS	IMS Reporting System		

Major Programme 1:



International Monitoring System

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Major Programme 1: International Monitoring System

HIGHLIGHTS OF THE ACTIVITIES IN 2005

During 2005, significant progress was made towards the completion of the International Monitoring System (IMS), with further build-up in all four technologies (seismic, hydroacoustic, infrasound and radionuclide). Installations were completed at 22 additional stations. Also, 37 stations and one radionuclide laboratory were certified as meeting the technical requirements of the Preparatory Commission, bringing the total number of certified stations to 156 (32 primary seismic, 47 auxiliary seismic, 8 hydroacoustic, 32 infrasound and 37 radionuclide stations) and the total number of certified radionuclide laboratories to six. Thus 54% of the primary IMS stations (primary seismic stations and hydroacoustic, infrasound and radionuclide stations), 39% of the auxiliary seismic stations and 37% of the radionuclide laboratories have been certified. Altogether, at the end of 2005, 219 stations (68%) were either certified or completed.

Development of provisional operation and maintenance (O&M) processes and procedures continued in 2005. In this regard, the PTS enhanced its logistics support structure, with the focus on configuration management

and maintenance policy. Several new contracts for testing and evaluation, for post-certification activities and for equipment support of the IMS stations were concluded during the year. Significant progress was also made in configuration and information management through the establishment of a baseline configuration of certified stations in the Database of the Technical Secretariat (DOTS). Finally, several technical training programmes and a workshop for station operators were organized in 2005.

IMS ESTABLISHMENT

A summary of the status of the establishment of the IMS in each of the monitoring technologies is presented below (see Table 1).

Seismological Monitoring System

Significant progress was made in installation of the primary and auxiliary seismic networks in 2005, with 21 additional stations being certified. As a result, the total number of certified primary seismic stations at the end of the year was 32, or 64% of the primary seismic network, and a total of 47 auxiliary seismic stations, or 39% of the auxiliary seismic network, have also now been certified.

In the primary seismic network, 3 stations were certified in 2005 and installations were completed for 3 additional stations. Construction of 5 more was under way.

Table 1.
Status of the Station Installation Programme as of 31 December 2005

IMS Station Type	Installation Complete		Under Construction	Contract Under Negotiation	Not Started
	Certified	Not Certified			
Primary seismic	32	5	5	3	5
Auxiliary seismic	47	49	5	9	10
Hydroacoustic	8	1	2	0	0
Infrasound	32	2	7	7	12
Radionuclide	37	6	18	6	13
Total	156	63	37	25	40

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Primary seismic station PS26, Torodi, Niger. Left: array element; right: borehole drilling.



Vault entrance, auxiliary seismic station AS99, Sutherland, South Africa.



Auxiliary seismic station AS27, Sondre Strømfjord, Greenland, Denmark.

In the auxiliary seismic monitoring programme, 18 stations were certified during 2005. Installation was completed for 6 stations and 13 other stations were connected to the International Data Centre (IDC). Installation work was in progress at 5 additional stations.

Hydroacoustic Monitoring System

In the hydroacoustic monitoring network, two stations were certified in 2005, bringing the number of certified stations to eight, or 73% of the network.

One part of the hydroacoustic network comprises hydrophone based stations, for which the Treaty specifies a

total of six stations. There are currently five hydrophone stations installed, of which four are certified. The contract for the installation of the sixth and last hydrophone station was concluded in 2005 and the site preparation work for the station was under way. At station HA4 in the Crozet Islands (French Southern and Antarctic Lands), the submarine fibre optic cables suffered damage from ship anchors, which caused interruption of the data flow from the south triplet in June and from the north triplet in November 2005. A cable repair operation in December 2005 successfully restored telemetry to the south hydrophones. Although the ship time available for this mission was limited, significant progress was also made in reparation of the north cable. An additional mission is needed to complete the repairs.

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Aerial view of the northern element of hydroacoustic station HA6, Socorro Island, Mexico.



Central recording facility and satellite communications antennas at hydroacoustic station HA10, Ascension, United Kingdom.

The second part of the hydroacoustic network is based on T phase stations, for which the Treaty provides for a total of five stations. The installation and certification of two such stations were completed in 2005, bringing the total number of certified T phase stations to four. The remaining T phase station is an existing station and its upgrade is nearing completion.

Infrasound Monitoring System

Build-up of the infrasound monitoring network made significant progress during 2005. Eight more stations were certified, bringing the total number of infrasound stations certified to 32, or 53% of the infrasound net-

work. Installations were completed for 4 stations and 5 more were under construction.

In November–December 2005, an infrasound technology workshop was held in Tahiti, French Polynesia. The workshop focused on technology for monitoring nuclear explosions and other signals such as volcanic infrasound



Array element at infrasound station IS44, Petropavlovsk-Kamchatskiy, Russian Federation.



First installation of PTS-supplied prefabricated pipe array, infrasound station IS48, Kesra, Tunisia.

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Preparation and testing of infrasound station equipment.

and sound from the 2004 tsunami event in the Indian Ocean.

In 2004, the PTS started research in collaboration with the Department of Analysis and Surveillance of the Environment (DASE) of the French Atomic Energy Commission to develop an improved system designed for infrasound stations located in areas with strong winds. This research was successfully concluded in 2005 with the innovative and tested concept of synthetic infrasound array elements. In 2006, this new technology is planned to be implemented at the high-wind location of station IS23 on the island of Kerguelen (French Southern and Antarctic Lands).

Radionuclide Monitoring System

In 2005, progress in the build-up of the radionuclide monitoring network included the certification of 6 particulate stations, bringing the total number of certified radionuclide stations to 37 (of which 20 are manual), or 46% of the network. Installation work at 7 new particulate stations also started in 2005 and a certification visit was carried out for the first time in the Russian Federation, at station RN61 (Dubna). A quality assurance programme for the network was continued with the routine remeasurement of samples from certified stations at certified radionuclide laboratories and with the implementation of procedures for creating and amending station-specific operational manuals.

The interim report on Phase IIIb of the International Noble Gas Experiment (INGE) presented a summary of the results from three of the four systems under test. Testing of the remaining system started in 2005. With the two new systems installed in 2005, there is now a total of seven noble gas systems installed at IMS sites. Eight additional systems were being installed in 2005, bringing the total number of noble gas systems located at IMS sites to 15. Work also progressed on certification requirements, and on the role of radionuclide laboratories in the quality assurance and quality control of the noble gas network.

In 2005, one radionuclide laboratory was certified, bringing the total number of certified laboratories to six. The 2004 proficiency test exercise was completed and the report made available.



Two new noble gas systems installed in 2005 in Stockholm (SAUNA-II) and Buenos Aires (ARIX-02).



Certification visit at radionuclide particulate station RN61, Dubna, Russian Federation.

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A joint radionuclide laboratory and noble gas workshop was held in Stockholm in early December 2005. Discussion focused on evaluation of data from Phase IIIc of INGE, a noble gas categorization scheme, certification requirements for noble gas stations, operational issues, the support given by radionuclide laboratories to the noble gas network, calculation of minimum detectable concentration and the 2004 proficiency test exercise.

INTEGRATED LOGISTICS SUPPORT

An Integrated Logistics Support study, contracted by the PTS, made recommendations in 2004 for an initial strategy for the long term logistical support of IMS stations. The PTS started to address the recommendations and, to this end, has enhanced its logistics support structure. Progress was made in designing and implementing a configuration management programme, and in maintenance policy, particularly in the development of equipment support contracts.

CONFIGURATION AND INFORMATION MANAGEMENT

DOTS is an integrated database with custom built Web based applications to store and manage information pertinent to the PTS and the future Technical Secretariat. Significant progress has been made in establishing a baseline configuration of the certified stations, which comprises a set of minimum system configuration information required to operate and support the stations. Starting from 4 stations at the beginning of the year, the number reached 74 by the end of 2005. Database reports for each of these stations were posted on the Experts Communication System (ECS).

TRAINING

Four technical training programmes were organized by the IMS Division in 2005: one for radionuclide station operators at the Austrian Research Centers in Seibersdorf, Austria (25–29 April), one for infrasound station opera-



Participants of IMS technical training programme in La Paz, Bolivia, November 2005.

tors in Les Ulis, France (16–20 May), and two for seismic station operators in Albuquerque, New Mexico, United States of America (11–17 September), and La Paz, Bolivia (7–11 November). In addition, a Seismometer Calibration Workshop was held for seismic station operators in Saalfeld, Germany, from 26 to 30 September 2005.

OPERATIONS CONTRACTS

In 2005, the PTS concluded 11 new contracts for testing and evaluation and for post-certification activities of IMS stations, including 1 station at which noble gas equipment was tested. The model contract developed in 2002 was being used for 92 stations by the end of the year.

UNSCHEDULED MAINTENANCE

Unscheduled maintenance (USM) is a process used to carry out repairs or replacements in response to any unexpected malfunction for a certified station. It is regarded as a particularly difficult area in which to achieve satisfactory performance. During 2005, an improved USM process was established. This included greater inter-Divisional cooperation of all parties involved, training in the procurement procedures for different categories of USM and systematic monitoring of cases of USM. Equipment support contracts were being put in place to facilitate USM as well as overall support for station equipment and software.

Major Programme 2:



International Data
Centre

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Major Programme 2: International Data Centre

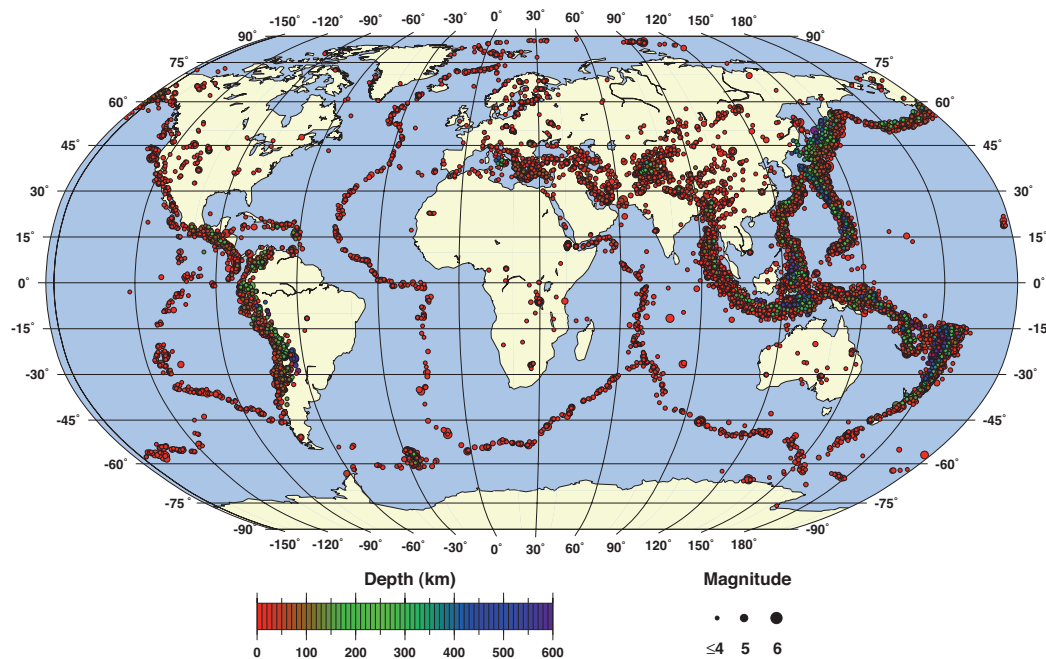
HIGHLIGHTS OF THE ACTIVITIES IN 2005

As a result of the continuing work to integrate new IMS stations (33 new or upgraded waveform monitoring stations and 5 radionuclide particulate stations) into the IDC operational system, the number of IMS stations in operations reached the 50% mark at the end of 2005. Both the success and the limitations of IDC waveform analysis capacity were demonstrated by the review of over 1500 aftershocks of the 26 December 2004 Sumatra earthquake. This provided a basis for a review of options to deal with future exceptional levels of seismicity.

In the continued build-up of the IDC, the software to receive and send data in CD-1.0 and CD-1.1 formats, developed by the PTS, was moved into IDC operations, replacing a large amount of legacy software. A plan was developed to migrate the IDC applications software towards open source solutions, including the Linux operating system. Further progress was achieved in implementing the Progressive Multi-Channel Correlation (PMCC) method in the detection subsystem for infrasound. In the hydroacoustic area, a PMCC-like algorithm has also been used for the efficient processing of hydrophone triplets.

Under the programme for developing capability for noble gas analysis, the first software (BG_ANALYZE) for the processing and analysis of beta-gamma coincidence systems was delivered by a contractor and successfully tested. In the quality assurance programme for atmospheric transport modelling (ATM) and Level 5 operations, the experimental CTBTO-WMO response system was further automated and

26 852 Events from the IDC 2005 Reviewed Event Bulletin



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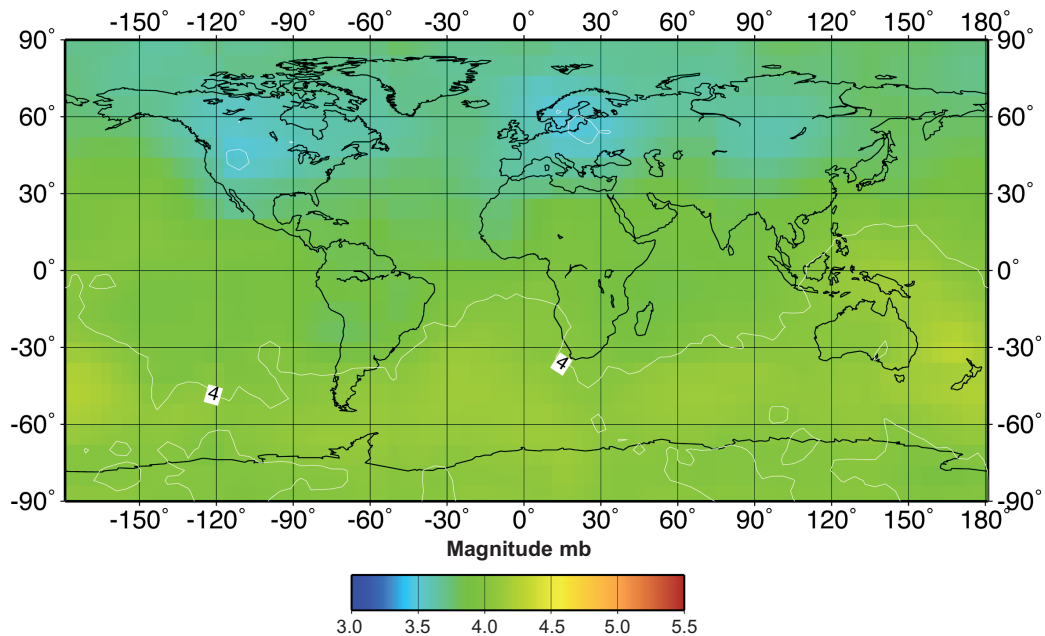
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Average detection capability of the IMS seismic network by the end of 2005.

successfully tested during the second CTBTO–WMO experiment and the 2005 phase of the system-wide performance test, SPT1. In ATM analysis and data fusion, the first version of a Web connected graphics engine (WEB-GRAPE), a new tool for analysis by National Data Centres (NDCs) of PTS atmospheric transport calculations, was delivered by a contractor and successfully tested.

An enhanced level of support was given to NDCs through the introduction of the first advanced training course for NDC technical staff. The PTS successfully set up a new computer centre and carried out the move of hardware and equipment with the minimum of disruption to PTS activities.

PROCESSING AND ANALYSIS

Waveform Data

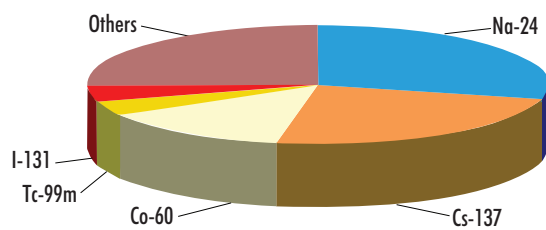
During the year, 33 new or upgraded waveform monitoring stations were introduced into IDC operations. Data from 134 such stations were processed continuously and contributed to Reviewed Event Bulletins (REBs).

Standard IDC products were issued for each day. On average, 138 and 77 events per day were included in the automatic Standard Event List 3 and the REB respectively, compared with 152 and 65 during 2004. Exceptionally large REBs were completed for the last four days of December 2004, following the dramatic event of 26 December 2004 when a tsunami devastated most of the coastal regions of the Indian Ocean. Pursuant to a decision by the Commission, the PTS started forwarding data to a small number of tsunami warning centres.

The identification of software deficiencies, proposed enhancements and the testing and evaluation of software upgrades continued. The IDC Division continued to support the build-up of the IMS and the certification of its stations by configuring and testing data receipt and processing, and by integrating the stations into the IDC operational system.

In response to a decision at Part I of the Twenty-Fourth Session of the Commission, the PTS has been supporting the forwarding of data to two tsunami warning centres recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and has been exploring possible uses of IMS data for a tsunami warning system, under the terms of that decision.

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CTBT-relevant radionuclides detected in 2005. Most detections refer to three nuclides, sodium-24, caesium-137 and cobalt-60, which are primarily due to cosmic radiation or resuspension of fallout from the Chernobyl accident of 1986.



Map showing all radionuclide particulate stations that were operational at the end of 2005. The five stations shown in red entered the operational system in 2005.

Radionuclide Data

In 2005, five radionuclide particulate stations (collecting aerosols on filter media) were added to IDC operations, which increased the total number of stations in operations to 37 (out of 80 planned for the complete radionuclide monitoring network).

During the year, 9359 full-sample spectra were automatically analysed, interactively reviewed and finally categorized. Of these, 67% were Level 1 spectra. Twenty-six of the 33 Level 5 samples (which included 2 for testing purposes) occurred during the period 1 January to 1 June. This number was larger than usual because during this period the nominal risk level of the Simulation Assisted Interactive Nuclide Review Tool (SAINT) was set at a higher value. As recommended by the Working Group B (WGB) radionuclide expert group, this nominal risk level was decreased on 1 June.

The automated ATM system delivered 'fields of regard' (FORs) for every Reviewed Radionuclide Report (RRR)

issued. Pertinent analysed global meteorological data arrived from the European Centre for Medium-Range Weather Forecasts (ECMWF) with high reliability.

In Phase IIIc of INGE, data continued to be collected and analysed from beta-gamma coincidence systems in Sweden (Stockholm) as well as from gamma systems installed in Canada (Ottawa and Yellowknife), France (Tahiti) and Germany (Freiburg). Sufficient data have now been accumulated that important background parameters can be defined in certain regions of the globe.

SOFTWARE DEVELOPMENT

Waveform Development

In the infrasound area, further progress was achieved in implementing the PMCC method in the detection sub-system. Work on rigorous identification of noise phases (microbaroms, surf noise, very local disturbances, etc.) continued and was tested in an operational mode. Development of a prototype interactive tool for infrasound data analysis reached an advanced stage and full scale testing by analysts was pursued.

In the hydroacoustic area, a PMCC-like algorithm has also been used for the efficient processing of hydroacoustic triplets. Important progress was achieved in the proper identification of T, H and N (noise) phases. The updated seasonal and azimuth-dependent travel time tables created on the basis of long range modelling were used.

In the seismic area, the performance of the automated system was investigated with the goal of improving its functionality and the reliability of the Standard Event Lists. The number of false events in the automatic processing was reduced from 69% to 50% compared with the number of events in the REB. This was achieved by substantial improvement of signal and noise separation.

The event location calibration effort continued to focus on Africa, with one of the contracts finalized and the second nearing completion.

In the event screening area, all modifications requested by the expert group on event screening were implemented. Work has been proceeding for one contract on the magnitude ratio (mb:Ms) criterion. The second contract could not be concluded owing to legal issues encountered at the negotiation stage.

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Radionuclide Development

The prototype interactive radionuclide review software SAINT was used by analysts to collect experience and to fine-tune its parameters, primarily the nominal risk factor that defines the number of false detections as well as the capability to find relatively weak signals. In 2005, a study was started to acquire a very good qualitative and quantitative understanding of signals due to cosmic radiation.

The second phase of SPT1 provided a good means for testing the new interactive software. In particular, the test with 100 artificial spectra was very useful for comparing the IDC detection capabilities with those of a few NDCs. The large number of detections and signatures of CTBT-relevant nuclides contained in the artificial spectra provoked ideas and improvements that might otherwise have been overlooked.

The first three phases of development of the noble gas software were completed. The first phase saw the delivery of the BG_ANALYZE program, which is used at the IDC for the processing and analysis of beta-gamma coincidence systems (resulting from the US ARSA and Swedish SAUNA systems). The other two phases were

the development of a prototype graphical user interface for beta-gamma spectra and a new approach for analysing beta-gamma data by fitting standard spectra of single components.

In the quality assurance programme for ATM and spectra characterized as Level 5, the experimental CTBTO-WMO response system was further automated and tested during the second CTBTO-WMO experiment and the 2005 phase of SPT1. In January 2005, the second CTBTO-WMO experiment was carried out, involving full support from nearly all Regional Specialized Meteorological Centres of the World Meteorological Organization and a few volunteering NDCs. The experiment involved a simulated nuclear explosion in New Zealand and was highly successful.

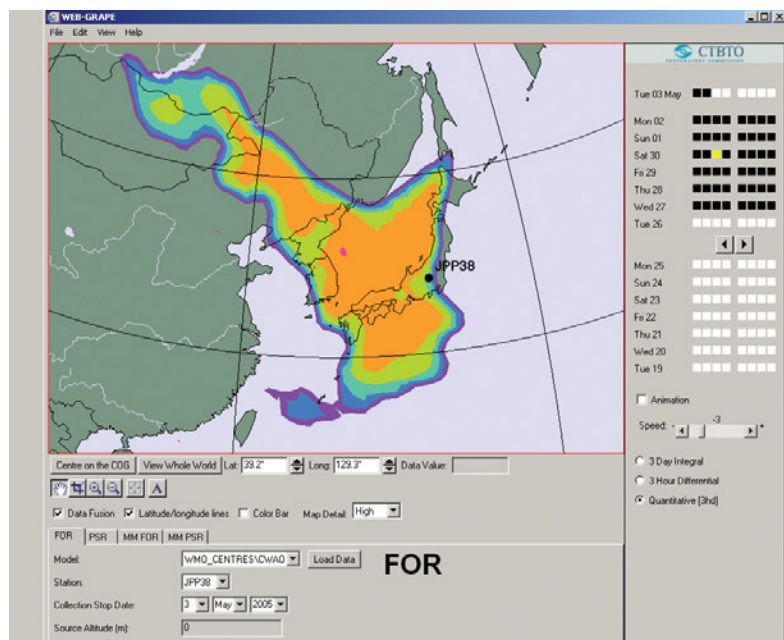
The Web based graphics engine WEB-GRAPE was coded by a contractor early in the year. This software tool is designed to allow users to generate ATM products interactively. ATM processing was selected as a pilot project for migration to open source operating system software (Linux). The new ATM server will allow the PTS to extend the backtracking capability from 6 days to 14. The new server will also enable the PTS to run more than one model in parallel, which will provide an uncertainty measure for the daily computed FORs.

Software Integration

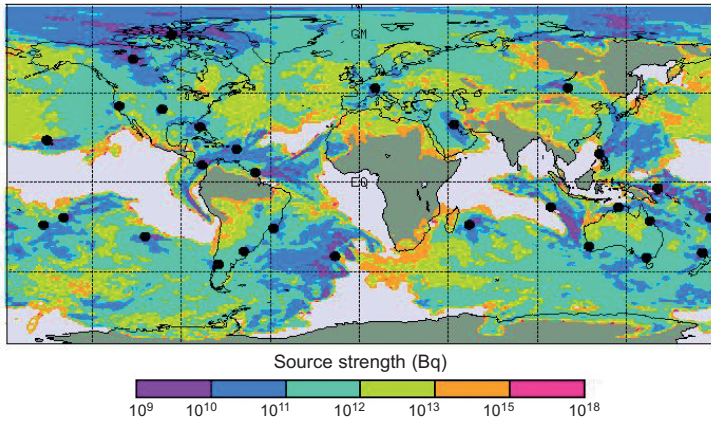
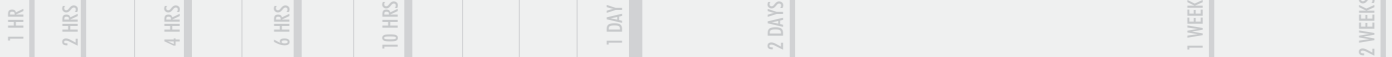
The software developed by the PTS to receive and send data in CD-1.0 and CD-1.1 formats was moved into IDC operations early in 2005, replacing a large amount of legacy software. The new software (CD Tools) includes a module which stores references to the waveform data in a database. A detailed users' guide for this software has been created.

The software for calculating the mission capability of waveform stations was further developed and installed in IDC operations early in the year. This software is consistent with the definitions specified in the latest revisions of the draft IMS Operational Manuals. The associated documentation was also updated to reflect the new capabilities of the software.

A plan was developed to migrate the IDC applications software towards open source solutions, including the Linux operating system. Some of the IDC software has been transferred to Linux and was being tested in the



Screenshot of the new end user software WEB-GRAPE showing a quantitative field of regard for a three hour time window three days before the data collection stop for a Level 5 sample taken at radionuclide station JPP38 in Japan. The colour coding shows areas where emissions of different sizes within the time window would yield the reported signal at the station.



Threshold source strength based on lanthanum-140 observations at radionuclide particulate stations that were operational in November 2005 (indicated by black circles), for sources not older than six days on first detection.

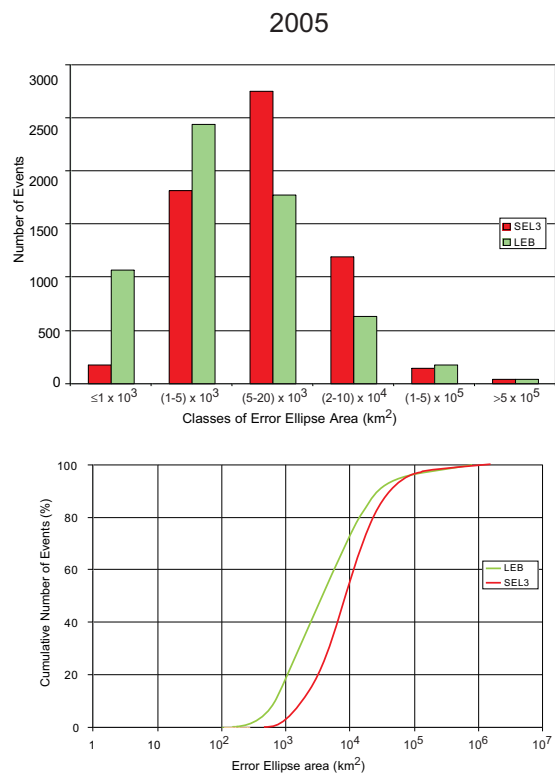
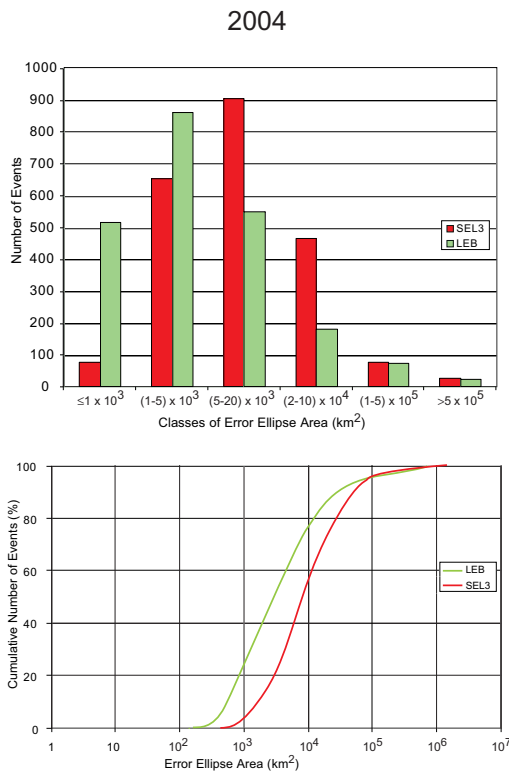
development environment. This work provides some flexibility for the PTS to decide which hardware to purchase in the hardware replacement programme. In a related project, a document was being drafted which describes how a pair of low cost Linux computers can be coupled to form a redundant hardware cluster. This work was done using open source software.

Early in the year, a project was started to create an experimental processing pipeline which could produce a bulletin of large seismic events in the shortest time possible. This work was done by reconfiguring the IDC software to produce a bulletin (SEL0) with global geographical coverage within 20 minutes of an event. This is currently running on Linux in the development environment. The interaction between this project and the Linux conversion project has had beneficial effects on both projects.

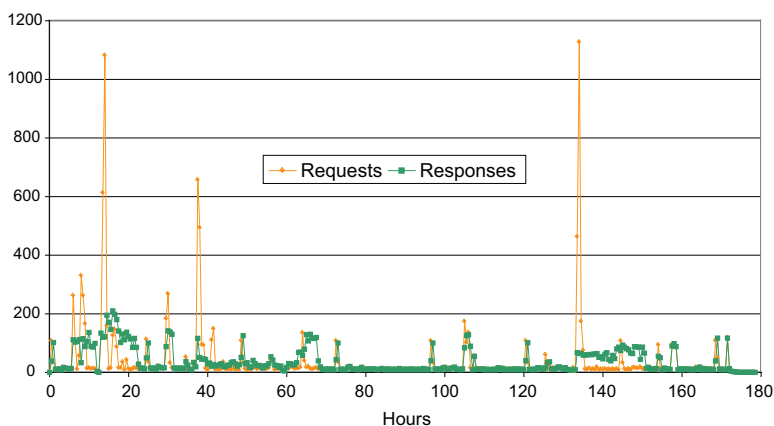
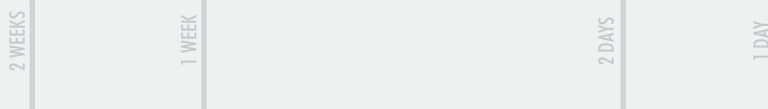
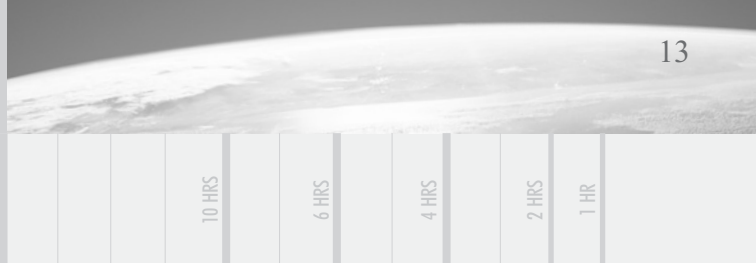
Software integration work continued in the areas of software development, maintenance and configuration management. Seventeen upgrade patches of the IDC applications software were put into the operational system. A number of changes were made to improve the archiving capability and the database performance of the IDC software.

DATA FUSION, REVIEW AND SERVICES

By the end of 2005, 90 secure signatory accounts (one per State Signatory) had been established, and a total of 737 users had been authorized to access IMS data and IDC products and receive technical support. More than



Average location differences between the Standard Event List SEL3 and the Late Event Bulletin (LEB) in 2004 and 2005. In both years, about 40% of SEL3 events and 20% of LEB events had an error ellipse area of more than 10 000 km².



Number of data requests and responses as a function of time.

700 requests from authorized users regarding technical information were received and resolved during the year.

The threshold monitoring application was upgraded before the performance testing phase of SPT1 to include stations admitted into IDC operations in recent years. Estimates showed that the seismic network detection threshold is at magnitude 4 or less for most of the globe.

Analysis of the source strength threshold based on observed lanthanum-140 in minimum detectable concentrations at 37 operational stations and on ATM results showed that the radionuclide network performance has reached a global coverage of about 75% with a detection capability equivalent to an average threshold source strength of 4×10^{11} Bq.

The assessment of REB quality continued through comparisons with bulletins of the International Seismological Centre (ISC) for 2002 and of the National Earthquake Information Center (NEIC) of the United States Geological Survey for 2003, following similar investigations for previous years. The results showed that the relative number of REB events contributing to the ISC bulletin has steadily increased since 2000, including the number of events solely located by the IDC, both in continental and in oceanic regions. As the ISC bulletin and REB have no lower magnitude limit on included events, the number of common solutions is significantly higher than with respect to the NEIC bulletin. The quality level of the REB, as assessed by mean location differences of common solutions, was maintained within the same bounds in terms of the ISC as well as the NEIC bulletin.

Procedures for data fusion were further explored by testing event time determination from xenon isotopic activi-

ty ratios to support fusion of information with data on seismoacoustic events. A screening method based on isotopic ratios to distinguish between nuclear tests and reactor sources was tested and proven for a future categorization scheme.

In 2005, review activities concentrated on the evaluation of data and products gathered during the performance testing phase of SPT1. These activities included analysis of detection lists, assessment of performance of event screening parameters, analyses of implemented test case scenarios and comparison between IDC standard products and relevant products from NDCs. In particular, RRRs on the test case with 100 artificial spectra were compared with a view to assessing the capabilities of the IDC radionuclide analysis processes. Results were presented during the NDC Evaluation Workshop in Rome (see "Assessment of SPT1" in Major Programme 5).

The IDC services baseline performance exhibited a considerably higher load in 2005 than in 2004, with nearly double the number of products and data volume and with a significant increase in the preparation times for subscriptions. This increased load was also reflected in a test case conducted for the Automatic Data Request Manager (AutoDRM) system during SPT1.

Support for National Data Centres

As of the end of 2005, the 'NDC in a box', including software and documentation for receiving continuous data in CD-1.0 and CD-1.1 formats and calculating waveform data availability, had been distributed to 84 States Signatories.

In November 2005, the PTS Registration Form and Questionnaire for National Data Centres and Authorized Users was sent to all States Signatories. The form was developed to make it easier for States Signatories to obtain data access rights and support for their NDCs by means of a single questionnaire.

COMPUTER INFRASTRUCTURE

The Computer Infrastructure Section of the IDC Division continued to provide information technology services to support the work and activities of the PTS and States Signatories. These services included the hosting of information systems, office automation, network and Internet

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS

services, and supporting the development of information systems, such as the Document Management System, the ECS, the PTS Intranet and PTS Library systems.

In August 2005, the new computer centre of the PTS became operational following an intensive planning, procurement and construction process. Located in the basement of the central conference building at the Vienna International Centre, this high technology facility hosts all central computer systems, networking devices and related infrastructure equipment that support the CTBT verification regime. The PTS coordinated the meticulously prepared move of all equipment, which was accomplished in a single weekend.

Other activities in 2005 included the establishment of a pilot database management system running on Linux, the purchase of the first Linux-driven hardware to host the ATM software and the successful transition to the Windows 2000/XP platforms for all office automation systems.

MANAGEMENT, COORDINATION AND TRAINING

Management

A new Information Security Manager began work at the end of 2005. This will allow the PTS to continue the implementation of the plan for improving the security of its information technology.



IDC analyst.

To improve the distribution of work and responsibilities in the IDC Division, all functions related to communications were merged to form the Network Services Section. This Section is now responsible for both the Global Communications Infrastructure (GCI) and the PTS internal and external networks. Staff members were reassigned to the new Section accordingly.

Technical Coordination

In 2005, the PTS increased its level of coordination with States Signatories, particularly in relation to the decision to support their efforts in building or improving tsunami warning centres. Staff members of the IDC Division participated in a number of seminars and workshops where States Signatories' specific needs were expressed. These coordination efforts involved also the IMS Division as well as the International Cooperation Section of the PTS. Cooperation with the WMO included participation of the PTS in meetings where issues such as alerts for tsunamis and volcanic ash clouds were discussed.

Training

The IDC Division organized a regional technical training course in Canberra from 21 to 25 November 2005. In total, 39 NDC technical staff members from 24 States Signatories participated in the IDC part of the regional training provided by the PTS.

From 5 to 9 December 2005, the PTS organized in Vienna, for the first time, an advanced training course for NDC technical staff. Its main purpose was to familiarize the participants with advanced features of the new version of the 'NDC in a box' software package. Sixteen participants from 16 States Signatories attended the new training course.

Initial testing of the concept and infrastructure for Internet based distance learning ('e-training') was carried out by making the IDC advanced training course available to States Signatories through video streaming on the ECS. After editing, the course material will be made available on DVD and from the IDC secure web site.

Major Programme 3:



Communications

1 HR	2 HRS	4 HRS	6 HRS	10 HRS	1 DAY	2 DAYS	1 WEEK	2 WEEKS
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Major Programme 3: Communications

HIGHLIGHTS OF THE ACTIVITIES IN 2005

At the end of 2005, 199 VSATs had been installed out of the 259 planned for the GCI network (about 80%).

The volume of traffic carried by the GCI and special links to the IDC increased slightly from about 6900 Mbytes/day at the start of the year to slightly over 7500 Mbytes/day at the end of the year. The average GCI virtual circuit availability was 96.5% over the year.

The new network management system (NMS-II) was released with a unified reporting interface (URI), allowing both the PTS and States Signatories to view near real time statistics on the performance of the GCI network.

GCI IMPLEMENTATION

GCI coverage continued to expand throughout 2005, with 14 new very small aperture terminals (VSATs) installed. As of 31 December, an additional 5 GCI site surveys had been completed. Fifteen radio frequency licences, including several which had been outstanding for a long time, were obtained. Of the total planned number of 259 VSATs, GCI site surveys had been completed for 239 (92%); 199 VSATs (77%) had been installed at IMS, NDC and development sites; and 206 licences (80%) had been obtained in 63 of 91 countries (69.2%).

The volume of traffic carried by the GCI and special links to the IDC increased slightly from about 6900 Mbytes/day at the start of the year to slightly over 7500 Mbytes/day at the end of the year. This daily data volume is the equivalent of sending 11 full compact discs every day. In the other direction, almost 5100 Mbytes/day were transported from the IDC to remote sites.

The average GCI virtual circuit availability was 96.5% over the year. It included all outages in the GCI VSAT and terrestrial circuits. With only the outages counted against the GCI contractor (Hughes Network Systems) taken into account, the adjusted average GCI virtual circuit availability was 99.3%.



IS26, Freyung, Germany.



PS23, Makanchi, Kazakhstan.



IS2, Ushuaia, Argentina.

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR

To support the testing at tsunami warning centres, including two internationally recognized centres, three virtual private network (VPN) connections were established between the IDC and each centre.

In conjunction with the move of the computer centre, the GCI network infrastructure located at the IDC was also moved to the new centre with no loss of circuits; the move was completed on schedule.

NETWORK MANAGEMENT

The introduction of an enhanced NMS has resulted in better statistics on and monitoring of the entire GCI network. A new Web based URI was included to allow for a better representation of the operational status of the GCI. This interface is now also available to station operators and NDCs via the dynamic VPN interface.

CONNECTION TO POLAR REGIONS

Regarding the continued GCI coverage of the polar regions, discussions were held on how to increase the real time data transmission capability from auxiliary seismic station AS114 (South Pole), which was only 12 hours a day. A solution utilizing an Iridium satellite will be implemented in 2006 to add another 12 hours of coverage.

INTERNET COMMUNICATION

The performance of the current Internet links (two links each of 4 megabits per second) was consistent during 2005, with an availability of greater than 99.9%. The two links are sharing the normal Internet traffic as well as the VPN traffic for the GCI. The capability to monitor usage and load sharing for each Internet connection was integrated with the NMS in late 2005 to ensure that the quality of service is maintained.

NEXT GCI CONTRACT

With the objective of ensuring a smooth transition from the current GCI contract, the terms of reference for expressions of interest in the next GCI contract were issued. This exercise was undertaken by the IDC Division under the guidance of a steering committee and in cooperation with the IMS Division, the Procurement Section, the Financial Services Section and the Legal Services Section. Following the evaluation of the expressions of interest, the PTS prepared the final request for proposals, which was released to selected invitees on 30 November 2005, requiring responses to be received by 21 March 2006. The PTS also held a bidders' conference.



IS47, Boshof, South Africa.



PS41, Chiang Mai, Thailand.



NDC, Tashkent, Uzbekistan.

Major Programme 4:



On-Site Inspection

1 HR
2 HRS
4 HRS
6 HRS
10 HRS
1 DAY

2 DAYS

1 WEEK

2 WEEKS

Major Programme 4: On-Site Inspection

HIGHLIGHTS OF THE ACTIVITIES IN 2005

In 2005, the PTS proposed a programme to conduct an on-site inspection (OSI) Integrated Field Exercise (IFE) in 2008, which was approved by WGB at Part II of its Twenty-Fifth Session. WGB at its Twenty-Fourth Session concluded its first reading of the initial draft rolling text of the OSI Operational Manual, for which the PTS provided support. The PTS also conducted a directed exercise (DE05) in July on a former nuclear test site in Kazakhstan, with the result that standard operating procedures (SOPs) for initial overflights, gamma survey and radionuclide sampling have been validated and are now available for the IFE. Substantial progress was also achieved towards the acquisition and technical testing of additional categories of specialized core equipment.

REVISED STRATEGIC PLAN AND INTEGRATED FIELD EXERCISE

The PTS proposed a revised programme to conduct an Integrated Field Exercise (IFE) in 2008 instead of a near full scale field exercise in 2007. This was due to the fact that sufficient resources were not available for the full achievement of most of the elements of this intermediate goal, such as obtaining one set of tested OSI equipment, the creation of a roster of trained surrogate inspectors, the completion of the draft OSI Operational Manual, creation of a nearly complete set of SOPs and some important elements of tested OSI methodology. This proposal was approved by WGB at Part II of its Twenty-Fifth Session. For the efficient use of funds, a special account was established for the IFE to allow for possible uncertainties during the planning and preparation of this multiyear project.

As a result, the first OSI strategic plan, which was drafted to establish the readiness of the OSI regime on the basis of the recommendations made by the OSI external evaluation team, has been revised and consists of



Elaboration of the draft OSI Operational Manual in Working Group B.

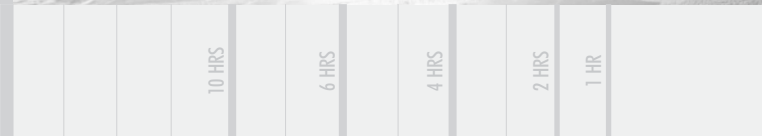
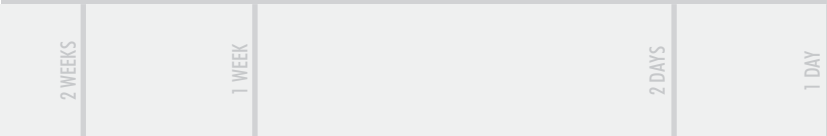
two phases. The first phase is to establish provisional capabilities through the development, testing and refinement of the procedures and tools which are necessary for the eventual conduct of OSIs. Since there is no prior experience on which to draw in an effort to build up the OSI regime, field exercises are considered essential to gaining practical experience. Therefore, during phase 1, field exercises would be conducted periodically to develop, test and refine these procedures and tools.

The second phase would be devoted to the rapid preparation of the OSI regime and would include preparation for training of inspectors and procurement of OSI equipment. This phase requires a substantial amount of funds. At present, phase 2 would be considered to start from the date when all States listed in Annex 2 to the Treaty have deposited their instruments of ratification.

OSI OPERATIONAL MANUAL

The PTS continued to give priority to the support of the drafting process of the OSI Operational Manual. Working on the agreed basis of the initial draft rolling text, WGB at its Twenty-Fourth Session concluded its first reading of the text. The proceedings of the first reading have been recorded in the annotated draft rolling text, which was issued in May 2005. This document will form the basis for the second round of elaboration of the draft manual.

OSI Workshop-11 was held from 10 to 14 October 2005 in Canberra. Forty OSI experts from 14 States Signatories and the PTS participated. Thirty reports were presented on three clusters of topics: the IFE, OSI equipment (geophysical and radionuclide) and the OSI Operational



Manual. The workshop focused largely on the IFE and touched on almost all aspects of the exercise. The workshop report, containing a series of recommendations, was to be made available to WGB at its Twenty-Sixth Session in February 2006.

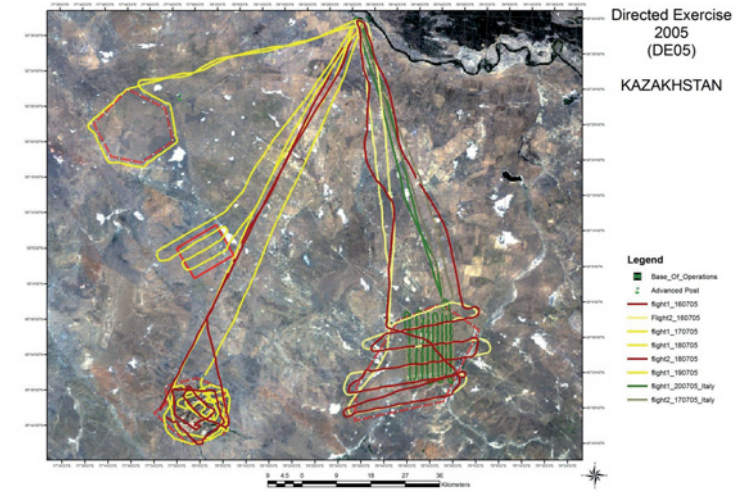
METHODOLOGY EXPERIMENTS

With the assistance of experts and equipment from supporting States Signatories, the PTS conducted a new OSI directed exercise (DE05) from 12 to 28 July on the former nuclear test site at Semipalatinsk, focusing on the testing of various SOPs drafted during the first half of 2005 for that purpose. As a result, SOPs for initial overflights, gamma survey and radionuclide sampling have been validated and are now available for the IFE in 2008. In addition, taking advantage of DE05 field deployments, new procedures and items of equipment have been obtained in many areas, ranging from radio communication and field navigation to field information management and health and safety.

The PTS completed the work on OSI-specific health and safety standards as set up by a panel of experts from States Signatories together with PTS representatives, and initiated the procedure for forwarding them to WGB for endorsement for OSI purposes.

INFRASTRUCTURE

During 2005, the development of the geographical information system, one of the main elements of a future Operations Support Centre, made substantial progress owing to



Map generated from the geographical information system and showing all routes of the overflights conducted during DE05.

fruitful cooperation with the United Nations Cartographic Section. As a result the PTS currently has the technical ability to prepare basic maps, including elevation data, for any location in the world within a few hours.

TRAINING

Three OSI training events were conducted during 2005, namely the ninth Introductory Course (IC9), Part II of the OSI Introductory Course and the sixth Experimental Advanced Course (EAC6). While IC9 was an outreach activity, the two other activities were curriculum development events. Both courses are based on the Long Range Plan (LRP) for the training and exercise programme (TEP) for future OSI inspectors. The PTS is grateful to Slovakia for its help and provision of facilities in hosting the two activities. The lessons learned and recommendations of the participants from these activities will contribute to improvement of the curriculum of the training programme as well as to the elaboration of the draft OSI Operational Manual.

IC9 was conducted in June 2005 in Vienna. Its aim was to familiarize experts from States Signatories with the OSI regime and its development. The course focused mainly on the OSI process and its context, the phenomenology of nuclear explosions, OSI technologies, and the rights and obligations of the inspection team and the inspected State Party. A total of 47 trainees from 33 States Signatories and the PTS, representing all the geographical regions of the Treaty, participated in the course.



Initial overflight activity in Kazakhstan during DE05.

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS



Sixth Experimental Advanced Course, Slovakia: planning the installation of seismometers as part of the exercise for participants in the seismic sub-team.

Part II of the OSI Introductory Course was conducted from 26 to 30 September in Bratislava, Slovakia. This course is aimed at training all future inspectors in the common or generic skills required for an inspector to survive in the field and to function successfully as a team member. A total of 19 experts from 18 States Signatories participated in the event. As the climax of the activity the participants conducted a field exercise in teams where they were required to deploy all of the skills that they had learned.

EAC6 had the aim of developing a curriculum for the advanced course for the seismology sub-team based on the LRP. Nine experts from eight States Signatories and the



OSI Introductory Course, Part II, Slovakia: participants receiving training in radionuclide sampling.

PTS participated. During the course, participants concentrated on the actual deployment of the equipment in the field, data collection and analysis, and presentation of results. Special emphasis was given to the synergetic presentation of data gathered by different sub-teams. Slovakia provided a military area for the deployment of seismometers, where a small explosion was carried out to simulate aftershocks of an underground nuclear explosion.

During 2005, the PTS enhanced efforts to keep in contact with the few hundred participants of previous OSI activities, mainly training activities, who constitute a pool of trained experts that can contribute to advanced activities such as methodology development events and development of advanced training courses. For this purpose a quarterly newsletter was sent to everyone in the database of participants. This activity is also an exercise in the use of tools for keeping the roster of inspectors in the future, after entry into force (EIF) of the Treaty.

EQUIPMENT

A list of equipment for use during OSIs must be considered and approved at the initial session of the Conference of the States Parties. The current status of the Commission's work on a list of core equipment for various categories and approval of the initial specifications thereof is summarized in Table 2. The Commission's mandate also requires it to acquire or otherwise make provisions for the availability of relevant inspection equipment, including communication equipment, and conduct technical tests of such equipment as necessary. Partial quantities of the types of equipment, for testing and training purposes only, that are currently in the custody of the PTS are also indicated in the table. In 2005, substantial progress was achieved towards the acquisition and technical testing of additional categories of specialized core equipment, especially unique items for measurement of levels of radioactivity and equipment for use in geophysical methods during the continuation period of an OSI.

In 2005, two prototype movable systems for xenon sampling, separation and measurement were developed and the technical testing phase was commenced. Initial results from the tests were encouraging and plans to conduct more comprehensive testing are at an advanced stage. In parallel, using the technical synergies that exist, data analysis software needed for both systems was being developed in accordance with PTS standards through ongoing collaboration with the IDC Division.

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR

Table 2. Current Status of List of OSI Equipment and Technical Specifications Approved by the Commission for Testing and Training Purposes

Activities and Techniques Specified in Part II of the Protocol to the Treaty	Equipment Approved (or to be Further Considered) by the Commission	Equipment Obtained by the PTS ^a	
		In PTS custody	In State Signatory custody
Position finding (para. 69(a)) <ul style="list-style-type: none"> • From the air • At the surface 	Analogue altimeter Satellite based positioning system Handheld range finding equipment Pocket transit compass Analogue altimeter	✓ ✓ ✓ ✓ ✓	
Visual observation (para. 69(b))	Field glasses/binoculars Binocular microscope Magnifying glass	✓ ✓ ✓	
Video and still photography (para. 69(b))	Handheld 35 mm camera Handheld instant camera Media for camera Processor for photographic film Handheld video camera (analogue) Video cassette recorder	✓ ✓ ✓ ✓ ✓ ✓	
Multispectral imaging (including infrared measurements) (para. 69(b))	Not yet approved		
Measurement of levels of radioactivity – gamma radiation monitoring and energy resolution analysis (from the air and at or under the surface) (para. 69(c))	Handheld search and limited gamma identification tools Vehicle-portable search and limited gamma identification tool	✓ 	
Current list of radionuclides of OSI interest: ³⁷ Ar, ⁹⁵ Zr, ⁹⁵ Nb, ⁹⁹ Mo, ¹⁰³ Ru, ^{115m} Cd, ¹³¹ I, ¹³² I, ¹³² Te, ^{131m} Xe, ^{133m} Xe, ^{133g} Xe, ¹³⁵ Xe, ¹⁴⁰ Ba, ¹⁴⁰ La, ¹⁴¹ Ce, ¹⁴⁴ Ce, ¹⁴⁴ Pr, ¹⁴⁷ Nd, ⁹⁹ Tc, ¹⁰⁶ Rh	High resolution gamma spectrometer tool for field and laboratory use – ‘blinded’ or measurement restricted Equipment for xenon sampling, separation and measurement Argon-37 equipment for sampling, separation and measurement – not yet considered Aerial gamma spectroscopy equipment	✓ ✓ ✓ 	
Environmental sampling and analysis of solids, liquids and gases (para. 69(d))	To be elaborated		
Passive seismological monitoring for aftershocks (para. 69(e))	Passive seismic equipment	✓	
Resonance seismometry and active seismic surveys (para. 69(f))	Resonance seismometry equipment – not yet approved Active seismometry equipment – not yet approved		
Magnetic and gravitational field mapping, ground penetrating radar, electrical conductivity measurements at the surface and from the air (para. 69(g))	Magnetic field mapping equipment Gravitational field mapping equipment Ground penetrating radar Electrical conductivity measurement equipment		Project ongoing Project ongoing Project ongoing Project ongoing
Drilling (para. 69(h))	Not yet considered		
Communication equipment (para. 62)	Not yet considered		

^a Equipment ‘obtained by the PTS’ is categorized in accordance with paragraphs 39 and 40 of Part II of the Protocol and is obtained by the PTS through special procurement procedures in accordance with the decision of the Commission at its Eighth Session (CTBT/PC-8/1/Annex II).

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS



OSI equipment demonstration, Australia: levelling a receiver coil used for measuring induced magnetic fields.

As tasked by the Commission, the PTS has been supporting further improvements to be made to the Movable Argon-37 Rapid Detection System (MARDS) that has been developed independently by the Institute of Nuclear Physics and Chemistry, China Academy of Engineering Physics, Mianyang, China. This development has been complemented by a laboratory based analysis capability at the Climate and Environmental Physics Institute of the University of Berne, Switzerland. Through the coordinating role played by the PTS, the two institutes further agreed to initiate intercomparison studies to enable these improvements in the measurement capabilities for argon-37 to be made.

On the basis of previous technical work, the PTS has contracted to obtain an initial unit of a high resolution gamma spectrometer tool for field and laboratory use. Technical testing will be undertaken once the tool has been received on the basis of plans that have been developed. Work on upgrading of software for the passive



OSI equipment demonstration, Australia: equipment for resistivity measurement.

seismic measurement technique has also made good progress. This work has been undertaken in consultation with the IDC Division as it is the intention that platforms and standards used at the IDC be used for this upgrade.

In collaboration with Geoscience Australia as the host organization, in the period from 2 to 7 October 2005 the PTS conducted field testing and evaluation of geophysical techniques suitable for deeper investigations during the continuation period of an OSI. Technical experts from five States Signatories as well as equipment providers and observers attended this activity. Two well characterized geophysical anomalies in the Bungonia State Recreation Area, New South Wales, were used for testing electrical, electromagnetic and gravitational field mapping techniques. During the four field days, the participants received hands-on training and an overview of the main characteristics of the equipment from the respective suppliers before surveying the two field areas. Further details are presented in a comprehensive Technical Report.

Major Programme 5:



Evaluation

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS

Major Programme 5: Evaluation

HIGHLIGHTS OF THE ACTIVITIES IN 2005

In 2005, evaluation activities focused on the assessment of the provisional O&M processes and products within SPT1 in order to establish a quality baseline against which future improvements can be compared. In order to do so, the Evaluation Section supported the intercomparison of analysis results by the NDCs and the IDC by developing and providing common software, open source databases and a set of artificial radionuclide spectra. As a result, a baseline quality of radionuclide data processing can now be established. The feedback from NDCs will be taken into account in future comparison exercises, in particular with a view to determining a baseline quality for waveform bulletins. SPT1 was instrumental in achieving the high degree of engagement and good cooperation now in place between NDCs and the PTS for evaluation activities and the NDC Evaluation Workshop provided an opportunity for the PTS to obtain feedback from its 'customers'. The evaluation of OSI activities focused on the preparation, testing and follow-up stages of DE05 and on preparing for the evaluation of the IFE. The Quality Management Workshop held in Vienna in 2005 led to the specification of the revised PTS quality system, on the basis of which the organization's Quality Manual is currently being revised.

EVALUATION

Evaluation activities included the development of assessment frameworks for testing activities, e.g. SPT1 and OSI activities, infrastructure to support the intercomparison of bulletins and a scheme for external evaluation by NDCs.

Assessment of SPT1

The Evaluation Section supported SPT1 (see also "System-Wide Performance Test" in Joint Programmatic Acti-

vities) by developing guidance for evaluation, i.e. PTS self-assessment and NDC evaluation. The PTS engaged a team of consultants to perform external evaluation of SPT1 and provide feedback on the assessment concept by drawing independent conclusions, giving advice on high level, 'dashboard' metrics for provisional O&M, and assisting in identifying improvement objectives and further testing needs.

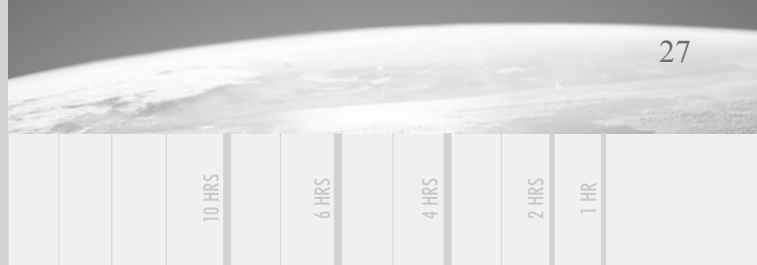
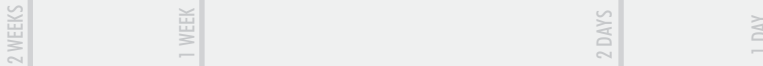
The PTS coordinated the elaboration of guidelines for NDC evaluation of radionuclide and waveform products, as well as a survey questionnaire for NDCs to provide feedback on key issues relating to the quality and timeliness of PTS services.

Four NDCs provided the results of automated or interactive radionuclide analysis in April, May and June 2005 and one more NDC provided results for the spectra issued in June 2005. In phase I, the total number of IMS spectra was 1770 and three participants processed the major part of those spectra in automated mode. The NDCs reviewed subsets of 421, 415, 85 and 9 spectra. Five NDCs and the IDC participated in phase II, analysing 100 artificial spectra generated by the PTS. The results from the two phases were stored in two separate Linssi databases, which, together with queries and tools to make the statistical analysis, were provided to all interested NDCs.

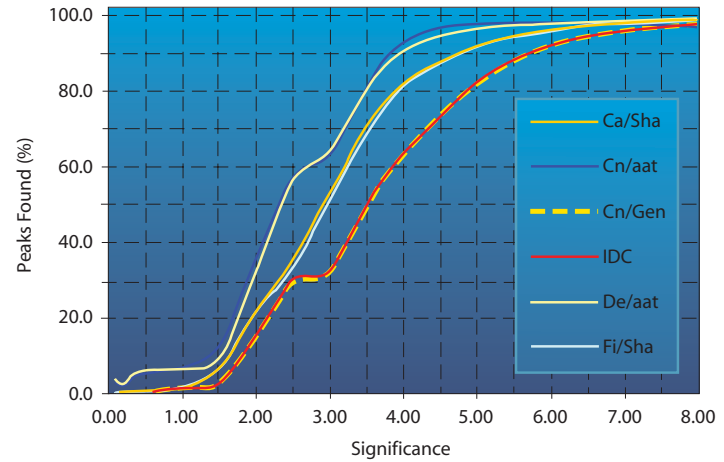
The software enabling the comparison of seismic bulletins was upgraded. The upgraded software was tested on the bulletins contributed by the NDCs during SPT1. The purpose of the test was to identify metrics from the statistical evaluation of REBs against NDC bulletins as a basis for quantifying the continuous improvement of processes. The software for modelling the detection capability of the primary seismic network was also upgraded and beta-tested and validated in SPT1 by comparing the results of simulations with observations by NDCs. Both software packages were provided to NDCs for beta testing.

The PTS prepared preliminary baseline costs for provisional O&M related processes, including managerial and support processes. Relationships between items of expenditure, processes and products and services were established and discussed during the NDC Evaluation Workshop held from 17 to 21 October 2005 in Rome.

The workshop attracted over 80 participants from 26 States Signatories, who contributed reports, presentations and posters describing their SPT1 evaluation. The workshop acknowledged that SPT1 had been very



<p>SPT1 Radionuclide Intercomparison</p> <p>A - Nuclide based Reports</p> <p>A1 - Detailed Report A2 - Nuclide Finding Report A3 - Nuclide Quantification Analysis</p> <p>B - Peak based Reports</p> <p>B1 - Reference-Peak Finding Report B2 - Single Line Findings B3 - Peaks of Relevant Nuclides B4 - Peak Data Analysis B5 - Peak Location Precision B6 - Peak Calibrations</p> <p>C - High-level Statistics</p> <p>C1 - Per Station Participation C2 - Nuclide Finding Frequencies C3 - Review Times C4 - Risk Levels C5 - Plot Variables</p> <p>D - Miscellaneous</p> <p>D1 - Analysis Report D2 - Custom Query</p> <p>Help About</p>
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SPT1 radionuclide intercomparison infrastructure. Left: screenshot of Web interface to Linssi database; right: peak finding probabilities for the software used by the NDCs participating in the June 2005 exercise.

successful in providing baseline information on the current status of the verification regime and in illuminating various areas that required further development. It was recommended that WGB consider future integrated tests to assist the development of selected components of the verification system.

Assessment of OSI Activities

The evaluation of DE05 (see “Methodology Experiments” in Major Programme 4), conducted in Kazakhstan in July 2005, focused on the three stages involved in directed exercises, namely planning, testing and follow-up. WGB recommended that a similar approach be applied to the evaluation of the IFE, i.e. starting at the early stages of the project to assist in the establishment of plans, processes, standards and procedures that will help satisfy the requirements.

QUALITY ASSURANCE

The PTS initiated the review of the quality management system. A Quality Management Workshop took place from 11 to 13 April 2005 in Vienna to advise on the principles for the reorientation of the PTS Quality Manual, to

discuss its scope, objectives and approaches, and to examine the proposed plan, resources and timing. The main recommendation of the workshop was that the revised PTS quality system should go beyond controlling and assuring the quality of products. Rather, and in compliance with the spirit of the WGB mandate in 1997, a quality management system (QMS) should be constructed around goals, processes, indicators and people to ensure that the correct actions are taken properly the first time. A gap analysis characterizing the status of the QMS was conducted to provide input for the revised quality policy and manual.

COOPERATION WITH THE UNITED NATIONS EVALUATION SYSTEMS

The PTS continued to support the endeavours of the United Nations Evaluation Group (UNEG) and cooperated actively in the elaboration of the United Nations Evaluation Norms and Standards (N&S), which were adopted by the United Nations agencies participating in the annual meeting of UNEG in April 2005. The N&S represent a major advance in establishing a common professional framework for evaluation across the United Nations system and provide the basis for inter-agency agreement on certification of evaluation functions.

1 HR

2 HRS

4 HRS

6 HRS

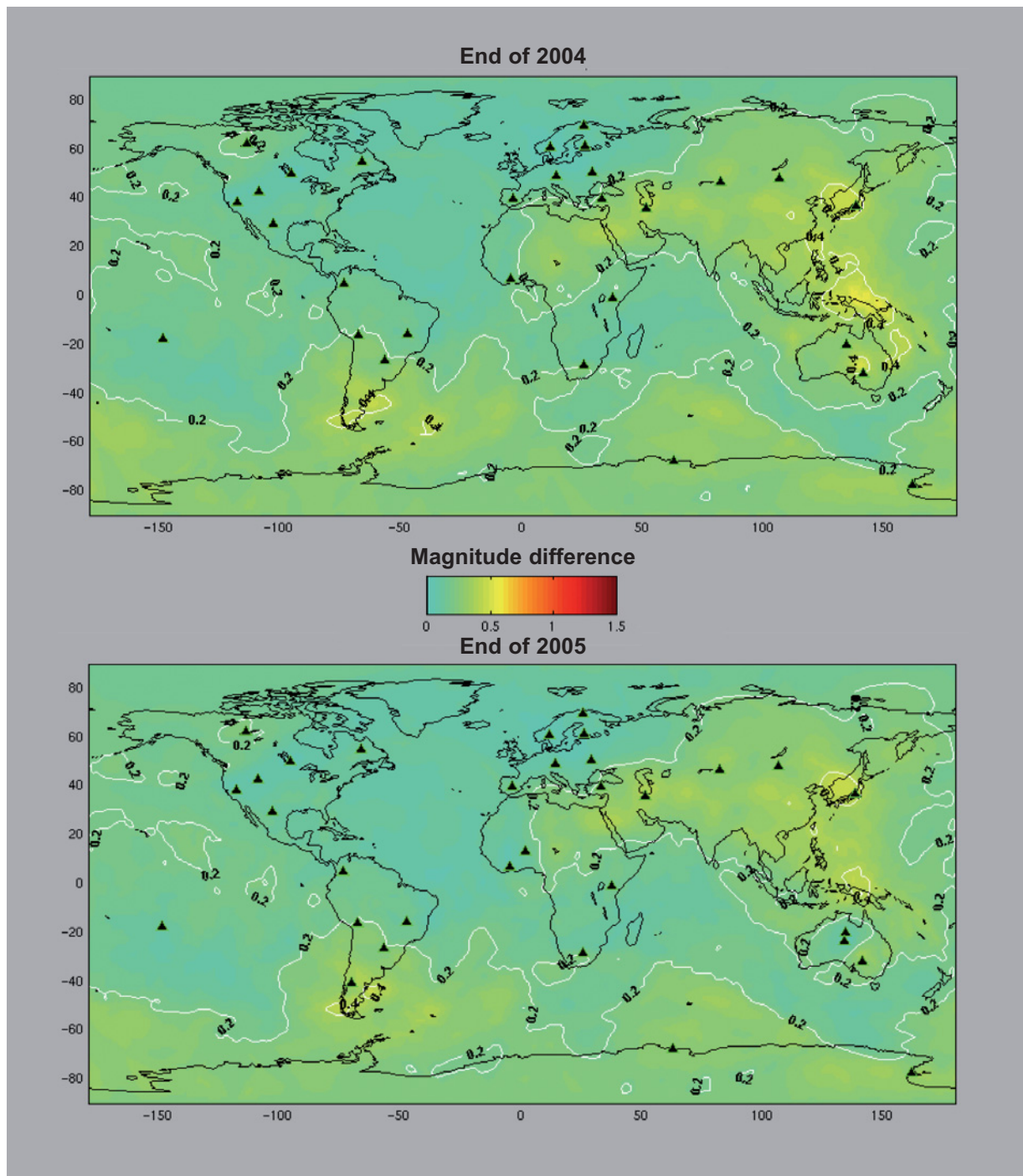
10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS



The maps show simulations of the estimated automatic detection capability of certified IMS stations at the end of 2004 and 2005 relative to that of the 49 currently known stations of the primary seismic network under ideal conditions (full station availability and low background noise).

Relative detection capability is shown as a difference in body wave magnitudes. An event is considered detected when its signal exceeds

the noise level by a factor of 3 at three or more stations. Areas with large magnitude differences (yellow) in the map for the end of 2005, with 32 certified stations, show a decrease in size relative to the end of 2004, when there were 29 certified stations.

Since only primary seismic data were considered in this evaluation, fusion with inputs from other IMS technologies would improve the overall picture even further.



Joint Programmatic Activities

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS

Joint Programmatic Activities

HIGHLIGHTS OF THE ACTIVITIES IN 2005

Implementation of a plan for structural changes to the IMS and IDC Divisions started at the end of 2005. As the construction of the monitoring regime advanced, the PTS paid increased attention to the successful coordination of provisional O&M. In this context, the PTS Operations Centre was established in March 2005, in time for the performance testing phase of SPT1. The IMS Reporting System (IRS) for logging and tracking operational incidents in the IMS was also expanded beyond its original purpose of tracking problems with IMS stations, to cover incidents in all parts of the data collection and distribution chain. Planning, implementation and evaluation of the performance testing phase of SPT1 resulted in the establishment of baseline performance under the current provisional mode of operation. Three training courses were jointly organized by the IMS and IDC Divisions.

ORGANIZATIONAL STRUCTURE OF THE PTS

In response to the report by the external review team, the IDC Division in cooperation with the IMS Division devised a plan for implementing structural changes to both Divisions. The Commission, at Part III of its Twenty-Fifth Session, expressed its understanding that all steps proposed in the plan would be carried out on the basis of regular reporting to and feedback from the Policy Making Organs and taking into consideration the concerns of delegations. The reorganization started at the end of 2005.

COORDINATION OF OPERATION AND MAINTENANCE

As the construction of the monitoring regime advances, the task of provisional O&M becomes ever more important. The PTS paid increased attention in 2005 to the successful coordination of O&M.

The PTS continued to perform provisional O&M under more relaxed guidelines (in particular for data availability rates) than those expressed in the draft IMS and IDC Operational Manuals, which provide requirements for performance following EIF of the Treaty. Nevertheless, processes and procedures are being designed, tested and practised so that the standards prevailing after EIF can be met.



Daily operations meeting.



PTS Operations Centre.

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR



Participants of joint IMS–IDC regional technical course for station operators and NDC technical staff in Kiev, Ukraine, June 2005.

Provisional operation of the monitoring system involves generation of data at the remote facility, as well as transmission of the data to the IDC in Vienna, receipt and storage of the data, automatic and interactive processing of the data to create bulletins, and finally forwarding of data and products to States Signatories.

In 2005, the PTS further developed unified tools and processes to record and to track operational incidents in the verification system and to monitor its state of health (SOH). The PTS Operations Centre was established in March 2005, in time for the performance testing phase of SPT1. It focused in 2005 on the data collection process, paying particular attention to incident management. The need for the Operations Centre was clearly demonstrated by the preparatory phase of SPT1 (in 2004). Its establishment prior to the commencement of the performance testing phase allowed the benefits of this approach to be utilized during the test.

These activities continued to involve the combined efforts of the IDC and IMS Divisions. Reasonable progress was made in the integration of processes and procedures from the two Divisions and, where necessary, new processes and procedures were defined and developed. The Operations Centre is staffed by personnel from various Sections of the two Divisions, who share the daily monitoring functions. It provides centralized monitoring and support functions and enables the efficient resolution of incidents, including the forwarding of

information on more complex incidents to the appropriate party for resolution. The tools and processes of the Operations Centre generate O&M statistics, which can be used for developing knowledge to allow the elaboration of policies to enhance performance and to optimize costs.

DEVELOPMENT OF INCIDENT TRACKING SYSTEMS

The IRS is the current PTS tool for logging and tracking operational incidents in the IMS. During 2005, this incident tracking system was expanded beyond its original purpose of tracking problems with IMS stations, to cover incidents in all parts of the data collection and distribution chain. In parallel, the PTS began to use the exploratory System-Wide Incident Tracking System (SWIT) and prototype SOH monitoring workflow with Web interface to define and document the future requirements for SOH monitoring and SWIT. This activity will progress well into 2006. Experience with the IRS and this experimental system will allow the PTS to develop an incident tracking system adapted to its specific needs and to the variety of complex processes involved in the successful acquisition and processing of data and distribution of data and products.

SYSTEM-WIDE PERFORMANCE TEST

The PTS conducted the performance testing phase of SPT1 in April–June 2005, including all stations in IDC operations. Altogether, 163 IMS stations (about 50% of the complete monitoring system) and five radionuclide laboratories took part in that test.

April and May 2005 were devoted to performance measurements in order to establish a system-wide performance baseline under the current provisional mode of operation. During June 2005, 21 test case scenarios were implemented on a controlled basis to analyse the response of the system.

The test provided the framework and data for further evaluation and assessment of the verification system,

1 HR	2 HRS	4 HRS	6 HRS	10 HRS	1 DAY	2 DAYS	1 WEEK	2 WEEKS
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while contributing to the development of the draft IMS and IDC Operational Manuals. A preliminary evaluation and assessment framework was applied on a trial basis during the test.

The last phase of SPT1, in the second half of 2005, focused on evaluation of and reporting on the performance tests. NDCs, IMS station operators and radionuclide laboratories played an active role in this phase, as outlined in the PTS guidelines for the NDC evaluation of SPT1.

JOINT IMS AND IDC TRAINING COURSES

In 2005, three training courses were jointly organized by the IMS and IDC Divisions: an introductory course for station operators and NDC managers (Vienna, 18–22 April); and two regional technical courses for station operators and NDC technical staff (Kiev, Ukraine, 6–10 June, and Gaborone, Botswana, 18–22 July). The two regional training courses included a special programme for station operators and NDC staff.

Major Programme 6:



Policy Making Organs

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS

Major Programme 6: Policy Making Organs

HIGHLIGHTS OF THE ACTIVITIES IN 2005

The Preparatory Commission was chaired in 2005 by Ambassador Taous Feroukhi (Algeria). Following the resignation of Ambassador Tibor Tóth from the post of Chairperson of Working Group A (WGA), the Commission appointed Ambassador Patricia Espinosa Cantellano (Mexico) to this post on an interim basis for the Twenty-Seventh Session of WGA and for the joint meeting of Working Groups A and B held on 1 September. Subsequently, the Commission appointed Ambassador Abdulkadir Bin Rimdap (Nigeria) to the post for a two year term with effect from 3 October 2005 and reappointed Mr André Gué (France) as Chairperson of the Advisory Group (AG) for a three year term beginning on 16 May 2006. The Commission also decided that the term of office of the Chairperson of Working Group B (WGB) should be three years.

The Commission held a special session in March which adopted a decision on a possible contribution of the Commission to a tsunami warning system. In November, the Commission adopted the final report of the external review team on the organizational structure of the PTS as a basis for proceeding with the restructuring of the PTS.

POLICY MAKING ORGANS

The Commission was chaired in 2005 by Ambassador Taous Feroukhi, Permanent Representative of Algeria, and held two sessions, each in three parts. In March, the Commission held a special session which discussed and adopted a decision on a possible contribution of the Commission to a tsunami warning system. In November, the Commission adopted the final report of the external review team on the organizational structure of the PTS as a basis for proceeding with the restructuring of the PTS.

The Commission's subsidiary bodies, WGA, WGB and the AG, each held two sessions in 2005. To facilitate the timely consideration of matters related to the Programme and Budget, the Twenty-Fifth Session of WGB and the Twenty-Fourth Session of the AG were each divided into two parts with an interval of several weeks.

With regard to the organization and methods of work of its subsidiary bodies, the Commission decided that the term of office of the Chairperson of WGA should be two years and, following the resignation of Ambassador Tibor Tóth from this post, appointed Ambassador Abdulkadir Bin Rimdap (Nigeria) as Chairperson of WGA with effect from 3 October 2005. The Commission decided that the term of office of the Chairperson of WGB should be three years and that Mr Ola Dahlman (Sweden) should serve in this post for another four months from the date of the decision. The Commission also reappointed Mr André Gué (France) as Chairperson of the AG for a three year term beginning on 16 May 2006.

Ambassador Patricia Espinosa Cantellano (Mexico) was appointed as Chairperson of WGA on an interim basis for its Twenty-Seventh Session and for the joint meeting of Working Groups A and B held on 1 September. Ambassador Rimdap chaired the Twenty-Eighth Session of WGA. WGA made recommendations, subsequently adopted by the Commission, on administrative and budgetary matters, including the report of the External Auditor.

WGB, chaired by Mr Dahlman, made recommendations, subsequently adopted by the Commission, on a range of verification related issues. Special attention was devoted to OSI issues, including planning and preparations for the IFE in 2008, the main phase of SPT1, the contract procurement process for the next generation of the GCI and a possible contribution of the Commission to a tsunami warning system.

A joint meeting of WGA and WGB was held on 1 September to discuss the final report on the review of the organizational structure of the PTS. A Chairpersons' summary of the proceedings of this joint meeting was issued.

The AG, chaired by Mr Gué, considered and provided advice on financial, budgetary and administrative issues.

Major Programme 7:



Administration,
Coordination and Support

1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY

2 DAYS

1 WEEK

2 WEEKS

Major Programme 7: Administration, Coordination and Support

HIGHLIGHTS OF THE ACTIVITIES IN 2005

In 2005, two States (Bahamas and Lebanon) signed and six States (Cook Islands, Djibouti, Haiti, Madagascar, Saint Kitts and Nevis and Vanuatu) ratified the Treaty. Also, 35 new Permanent Representatives were accredited, bringing the total number of accreditations to 117, compared with 111 at the end of 2004.

The IMS facility agreement with the Government of Guatemala entered into force on 2 June 2005. Two IMS facility agreements with the Government of the Russian Federation and the Government of Iceland were concluded on 30 April and 13 October 2005 respectively. An agreement on cooperation between the Commission and the Association of Caribbean States (ACS) was concluded on 7 March 2005.

The PTS organized two regional workshops on CTBTO international cooperation for States from Latin America and the Caribbean in Guatemala City, Guatemala, in September 2005 and for States of South-East Asia, the Pacific and the Far East (SEAPFE) in Seoul, Republic of Korea, in October 2005. Using voluntary contributions by States Signatories, the PTS undertook two information visits, and organized a series of national seminars as well as the annual hands-on training course for experts from developing countries.

The PTS completed more than 450 procurement processes in 2005, compared with 360 in 2004. By 31 December 2005, 77 States Signatories had made full payments and 21 had made partial payments of assessed contributions for 2005, amounting to 88.8% of the US dollar portion and 86.9% of the euro portion.

Following Part III of the Twenty-Fifth Session of the Commission, the PTS prepared an updated version of the Electronic Document Archive CD-ROM and included, for the first time, video recordings of plenary meetings of the Commission.

SIGNATURES AND RATIFICATIONS

In 2005, two States (Bahamas and Lebanon) signed and six States (Cook Islands, Djibouti, Haiti, Madagascar, Saint Kitts and Nevis and Vanuatu) ratified the Treaty. As of 31 December 2005, the Treaty had 176 signatures and 126 ratifications, including ratifications by 33 of the 44 States listed in Annex 2 to the Treaty, whose ratification is required for the Treaty to enter into force. The overall status of signatures and ratifications of the Treaty, which opened for signature on 24 September 1996, is shown in Table 3.

Table 3. Signatures and Ratifications by Year

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Signatures	138	11	2	4	5	5	1	4	4	2	176
Ratifications	1	7	18	25	18	20	8	11	12	6	126

FACILITY AGREEMENTS

The IMS facility agreement with the Government of Guatemala entered into force on 2 June 2005. Two IMS facility agreements with the Government of the Russian Federation and the Government of Iceland were concluded on 30 April and 13 October 2005 respectively. These brought the total number of such agreements or arrangements to 33 at the end of the year. Of these, 25 have entered into force. (The IMS host States with which the Commission has concluded facility agreements or arrangements are listed at the end of this report.)

RELATIONS WITH STATES

With the emphasis on States hosting IMS facilities and States that have yet to sign and/or ratify the Treaty, in particular those listed in Annex 2 to the Treaty, the PTS maintained dialogue through bilateral visits in capitals and interaction with Permanent Missions in Vienna, Berlin, Geneva and New York. Contacts were also made in the framework of multilateral fora at the global, regional and subregional levels. In this context the Executive Secretary visited Antigua and Barbuda, Australia, the Bahamas, Barbados, Cape Verde, Chile, China, the Cook Islands, France, Germany, Ghana, Malawi, Saint Kitts and Nevis, Senegal, Trinidad and Tobago, Vanuatu and Zambia.

In Vienna, the Executive Secretary also met with a number of senior government officials, including the Prime

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR

Minister of Haiti, the Minister for Foreign Affairs and Regional Cooperation of Burkina Faso, the Minister for Foreign Affairs of the Republic of Cape Verde, the Deputy Minister for Foreign Affairs and Trade of the Republic of Korea and the Deputy Director of the Israel Atomic Energy Commission, as well as the President of the fifty-ninth United Nations General Assembly, the Director General of the International Atomic Energy Agency (IAEA), the Director-General of the United Nations Industrial Development Organization and the Director-General of the United Nations Office at Vienna.

The Executive Secretary hosted breakfast meetings for Vienna based Permanent Representatives of States from the Africa and SEAPFE geographical regions.

On the margins of the 2005 Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty (Article XIV conference), the Executive Secretary met and exchanged news with heads of 22 delegations of States participating in the conference, including 10 at the Ministerial level and 3 at the level of Deputy Foreign Minister.

The PTS undertook missions to Berlin, Geneva and New York to enhance contacts with States which do not maintain diplomatic representations in Vienna.

As of 31 December 2005, 112 States had notified the Commission of their designation of National Authorities, or 'national focal points', in accordance with Article III, paragraph 4, of the Treaty. Of this number, 9 States notified the Commission in 2005.

RELATIONS WITH INTERNATIONAL ORGANIZATIONS

The PTS continued to develop contacts and cooperation with relevant global and regional international organizations. The Executive Secretary addressed the sixtieth session of the First Committee of the United Nations General Assembly, the forty-ninth session of the General Conference of the IAEA and the meeting of the Committee on Hemispheric Security of the Organization of American States. An agreement on cooperation between the Commission and the ACS was concluded on 7 March 2005. (The international organizations with which the Commission has concluded relationship and cooperation agreements are listed at the end of this report.)

The Chairperson of the Preparatory Commission addressed the Conference of States Parties and Signatories to Treaties that Establish Nuclear-Weapon-Free Zones in Tlatelolco, Mexico.

PTS staff addressed the 19th Regular Session of the General Conference of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) in Santiago, Chile, made a contribution to the Sixth United Nations Conference on Disarmament in Kyoto, Japan, and made presentations to the thirty-sixth Pacific Islands Forum Summit in Port Moresby, Papua New Guinea, the Fourth United Nations–Republic of Korea Joint Conference on Disarmament and Non-Proliferation Issues in Busan, Republic of Korea, and the Workshop on the Promotion of the United Nations Study on Disarmament and Non-Proliferation Education in Bali, Indonesia. PTS staff participated in the Conference of States Parties and Signatories to Treaties that Establish Nuclear-Weapon-Free Zones in Tlatelolco, the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons in New York and the 2005 United Nations World Summit in New York.

TRAINING, WORKSHOPS AND OTHER CAPACITY BUILDING ACTIVITIES

The PTS continued to assist in promoting cooperation among States Signatories to support the timely establishment of the verification regime and early EIF of the Treaty. Special emphasis was placed on training, including coordination within the PTS, as well as on providing encouragement to States through various means in order for them to engage more actively in and benefit from the work of the Commission, and on providing assistance to such States, as necessary.

At the invitation of the Government of Guatemala, the PTS, with the support of the United Nations Development Programme, organized a Regional Workshop on CTBTO International Cooperation for States from Latin America and the Caribbean in Guatemala City from 19 to 21 September 2005. The workshop was attended by 40 participants from 23 Latin American and Caribbean States, including 1 non-signatory State and representatives from the ACS and the United Nations Regional Centre for Peace, Disarmament and Development in Latin America and the Caribbean.

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS



Participants of international cooperation workshop in Guatemala City, Guatemala, September 2005.



Participants of international cooperation workshop in Seoul, Republic of Korea, October 2005.

At the invitation of the Government of the Republic of Korea, and with the support of its NDC, the PTS organized a Workshop on CTBTO International Cooperation for States of South-East Asia, the Pacific and the Far East in Seoul from 18 to 20 October 2005. Thirty-six participants from 19 States in the SEAPFE region and a representative from the United Nations Department for Disarmament Affairs attended the workshop.

Workshop participants discussed accounts of the activities in the fields of national implementation of the Treaty, regional and international technical cooperation with regard to the installation of IMS facilities, and needs and offers in the area of technical assistance. Special attention was given to civil and scientific applications of CTBT verification technologies, particularly the potential use of IMS data for disaster alert purposes. Video recordings were made of the Seoul workshop deliberations and will be made available to States.

The PTS provided PCs loaded with NDC operating software, together with peripherals, to one State in the Africa region, one State in the Eastern Europe region, one State in the SEAPFE region and one State in the Middle East and South Asia region. Close interaction with several other States requesting the support of the Commission for the establishment and operation of their NDCs continued.

Further work on the coordination of PTS training activities included work on the database, scheduled to be fully populated by early 2006. Work also continued on the first draft of a procedures manual for quality management in training and other capacity building activities.

VOLUNTARY CONTRIBUTIONS

Voluntary contribution funds were provided by the Government of the Netherlands in support of international cooperation activities for the timely establishment of the verification regime as well as the early EIF of the Treaty. Using these funds, the PTS has organized a series of national seminars aimed at enhancing understanding of the Treaty by the relevant authorities in Antigua and Barbuda, Cameroon, Cape Verde, Ethiopia, Guatemala, the Marshall Islands, Papua New Guinea and the Solomon Islands. The funds were also used for the organization of an information seminar on enhancing awareness of the CTBT, as one of the side events during the Conference of States Parties and Signatories to Treaties that Establish Nuclear-Weapon-Free Zones.

The Government of the Czech Republic made a voluntary contribution of funds to enhance understanding of the CTBT and the work of the Commission, with particular emphasis on the functioning of NDCs and IMS stations. Using these funds, two information visits combined with hands-on training activities were organized for States from central Asia and the Balkan region on 17–20 May and 13–17 June 2005 respectively. Representatives from Kyrgyzstan, Serbia and Montenegro, Tajikistan, The former Yugoslav Republic of Macedonia and Uzbekistan participated in these activities.

The Government of the Netherlands provided additional voluntary contribution funds in order to support the pilot project of the PTS on enhanced capacity building through e-training, the purpose of which is twofold: to increase the number of participants in PTS training activities by means of the Internet or email, and to provide training

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR

modules to experts, station operators and NDC staff to ensure the successful development and operation of the elements of the verification system through computer based training.

The annual hands-on training course in radionuclide technology for experts from developing countries, organized by the Radiation and Nuclear Safety Authority (STUK) and financed by the Government of Finland, was held on 25–27 April 2005 in support of NDC establishment and IMS station operation. Eight participants from seven States (Burkina Faso, Kenya, Sri Lanka, Tunisia, Uganda, Zambia and Zimbabwe) attended.

The PTS also cooperated with the Japanese authorities regarding the training programme on global seismological observation organized by Japan for developing States. The training was conducted in Tokyo from October to December 2005.

FINANCIAL SERVICES

The Programme and Budget for 2005 amounted to US\$51 047 250 and €42 540 900. At the 2004 Programme and Budget average exchange rate of 0.93167 euro to 1 US dollar, the total US dollar equivalent of the Programme and Budget for 2005 was \$96 708 600, representing a nominal growth of 2.28% or, taking into account price changes, a real growth of 0.81%. On the basis of the 2005 average exchange rate of 0.8076 euro to 1 US dollar, the total US dollar equivalent of the Programme and Budget for 2005 was \$103 722 956. Of the

total Budget, 79% was allocated to verification related activities, including an allocation of \$22 045 815 to the Capital Investment Fund (CIF), established for the build-up of the IMS. A breakdown of the 2005 Programme and Budget by Major Programme is shown in Table 4.

By 31 December 2005, 77 States Signatories had made full payments and 21 had made partial payments of assessed contributions for 2005, amounting to 88.8% of the US dollar portion and 86.9% of the euro portion.

The expenditures for the Programme and Budget in 2005 amounted to \$102.5 million, of which \$33.2 million was from the CIF. For the General Fund, the unused budget amounted to \$12.4 million, or 15.2% of the total amount approved for the year. For the CIF, approximately 82% of the allotment was executed by the end of 2005. More detailed information on budget implementation will be provided in the 2005 Programme and Budget Performance Report .

In 2005, disbursements in the amount of \$429 102 and obligations in the amount of \$906 269 in indirect taxes were recorded by the PTS. The total cumulative amount of indirect taxes disbursed as of 31 December 2005 was \$1 507 872.

PROCUREMENT

The PTS completed more than 450 procurement processes in 2005, compared with 360 in 2004. The total number of contracts for testing and evaluation and post-certification activities concluded by the end of the year was 11, covering 10 IMS stations, including 1 radionuclide station at which noble gas equipment was tested. The PTS also conducted negotiations on various stages of work for a further 19 IMS facilities, including 1 radionuclide laboratory and testing at a radionuclide station in the noble gas network.

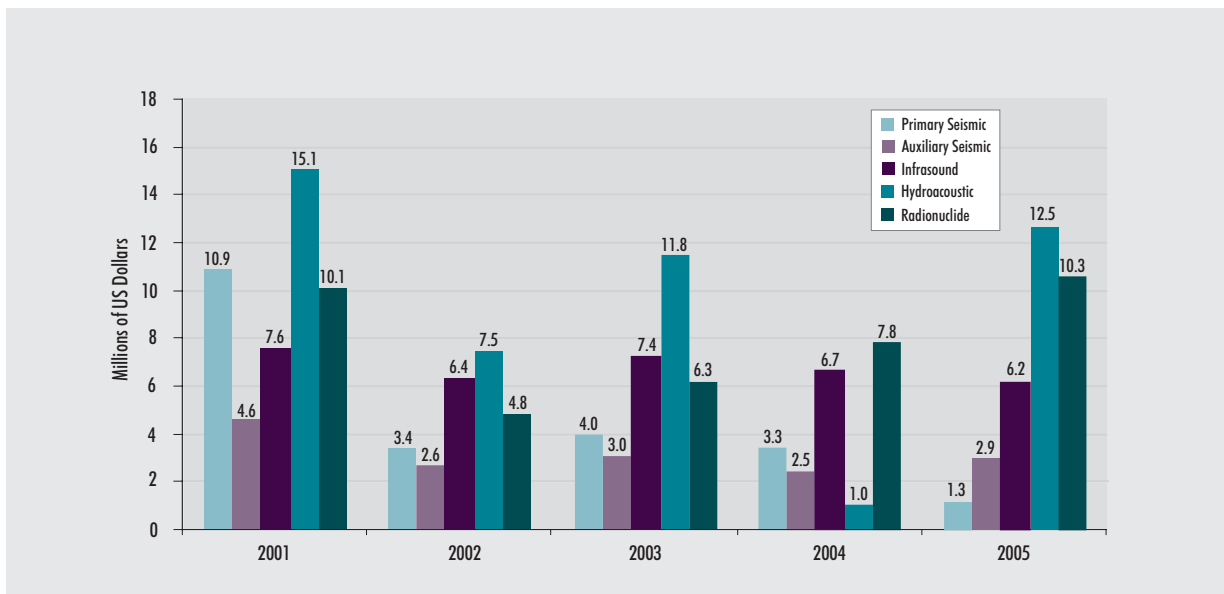
Financial Rule 11.5.06, Exceptions to Competitive Procedures, stipulates that the Commission should be informed about all contracts over \$150 000 which were awarded after one of the exceptions listed in this Rule had been invoked. In 2005, 10 sole source procurements falling into this category were concluded (compared with 21 contracts in 2004) with a total value of approximately \$4.2 million.

**Table 4. 2005 Programme and Budget
by Major Programme**

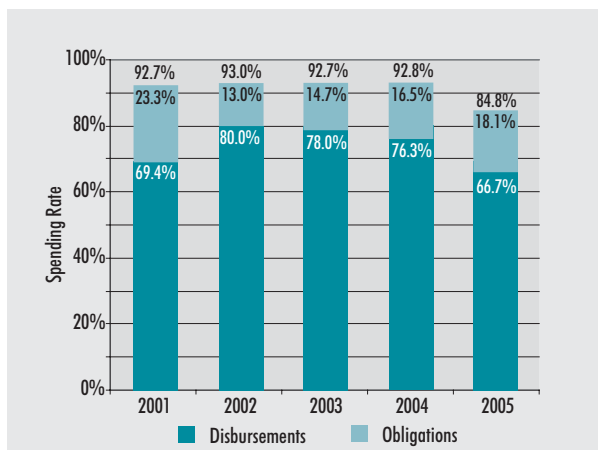
Major Programme	\$(millions) ^a
MP1: International Monitoring System	44.8
MP2: International Data Centre	20.0
MP3: Communications	11.2
MP4: On-Site Inspection	4.8
MP5: Evaluation	1.2
MP6: Policy Making Organs	3.3
MP7: Administration, Coordination and Support	18.4
Total	103.7

^a An average exchange rate of 0.8076 euro to 1 US dollar was used to convert the euro components of the 2005 Programme and Budget.

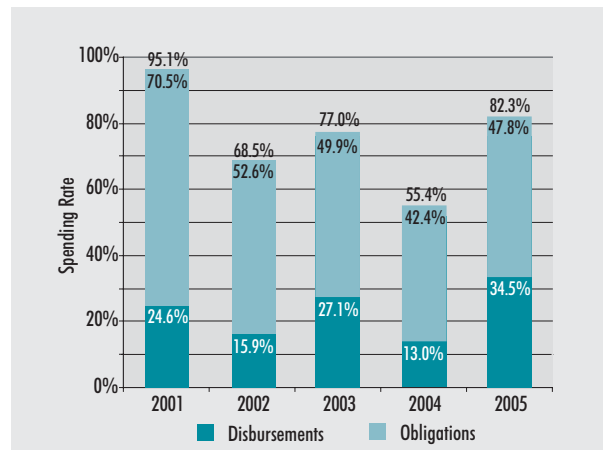
1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY 2 DAYS 1 WEEK 2 WEEKS



CIF expenditure by IMS technology (2001–2005).



Annual General Fund budget implementation (2001–2005).



Annual CIF budget implementation (2001–2005).

HUMAN RESOURCES MANAGEMENT

The PTS secured the human resources for its operations by recruiting and maintaining highly competent and diligent staff for all programmes. Recruitment was based on securing the highest standards of professional expertise, experience, efficiency, competence and integrity. Due regard was paid to the principle of equal employment opportunity, to the importance of recruiting staff on as wide a geographical basis as possible, and to other criteria stipulated in the relevant provisions of the Treaty as well as the Staff Regulations.

As of 31 December 2005, the PTS had 270 staff members from 68 countries, compared with 267 staff members at

the end of 2004. Figure 1 provides information on the distribution of staff members in the Professional category by geographical region. Table 5 provides a breakdown of regular staff members by field of work. More detailed information on human resources issues will be provided in the 2005 Human Resources Management Report .

The PTS continued its efforts to increase the representation of women in the Professional category, which rose to 26.85% at the end of 2005 from 25.88% at the end of 2004. In comparison with 2004, the numbers of female staff members at the P2 and P4 levels remained the same, while at the P5 and the P3 level there was a decrease of 14.28% and an increase of 28.57% respectively. The recruitment efforts continued against the background of low numbers

Table 5. Regular Staff Members by Field of Work

Field of Work	Professional	General Service	Total
Evaluation Section	4	1	5
International Monitoring System Division	40	14	54
International Data Centre Division	73	26	99
On-Site Inspection Division	16	6	22
<i>Subtotal, verification related</i>	<i>133 (76.00%)</i>	<i>47 (49.47%)</i>	<i>180 (66.67%)</i>
Office of the Executive Secretary	4	3	7
Internal Audit	1	1	2
Division of Administration	20	27	47
Legal and External Relations Division	17	17	34
<i>Subtotal, non-verification-related</i>	<i>42 (24.00%)</i>	<i>48 (50.53%)</i>	<i>90 (33.33%)</i>
Total	175 (100%)	95 (100%)	270 (100%)

of female applicants for the majority of vacancies for scientific posts. Discussions were held with some States Signatories regarding the modalities of encouraging female candidates to apply for vacant positions in the PTS.

In 2005, the PTS appointed 29 regular staff members. In addition, the PTS processed contracts for 55 consultants, 10 interns and 6 linguists; 133 contracts were processed for short term staff.

The PTS continued to provide opportunities for staff to develop their ‘soft’ skills in courses tailored for the mutual benefit of the PTS in carrying out its work programmes and of staff members in their job performance and career. During the year, 102 staff members participated in internal and external training in a wide range of topics, such as conflict management, performance management, gender sensitivity and diversity, management and supervision and effective presentations, as well as information technology related topics.

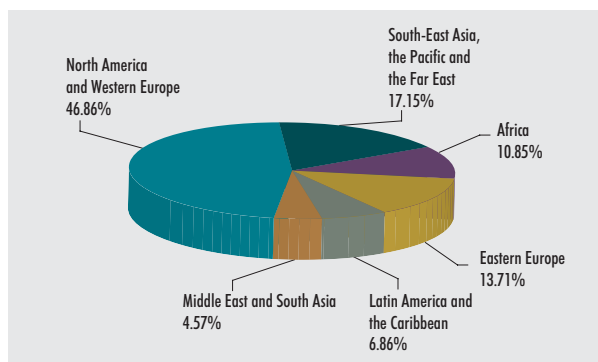


Figure 1. Staff members in the Professional category by geographical region (as set out in Annex 1 to the Treaty).

Pursuant to a report, issued in January 2002, by an external consultancy firm on its personnel and management practices, the PTS continued to devote considerable effort to addressing and finalizing the issues raised in the report. In 2005, the PTS introduced a revised system for appraising the performance of staff.

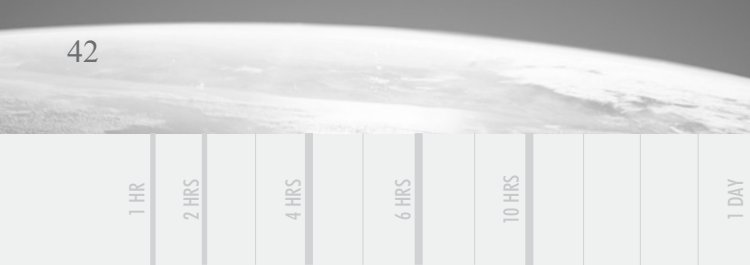
On the issue of service limitation for Professional and internationally recruited General Service staff members, the PTS introduced a system for implementing the policy within the framework of the Treaty, the Regulations and Rules and Administrative Directives, in particular Administrative Directive No. 20 (Rev.2). At the end of 2005, implementation of the policy was well under way.

The PTS has been working on a human resources strategy which will not only focus on the implementation of the service limitation but also provide for improved planning of recruitment and succession, knowledge management and transfer of expertise. Due regard will be paid to the importance of recruiting staff on as wide a geographical basis as possible, as well as to increasing the representation of staff from under-represented and developing countries and to improving the gender balance.

DISSEMINATION OF INFORMATION

Activities for dissemination of information in 2005 focused on outreach activities in support of the 2005 Article XIV conference (described at the end of this report).

Twenty-five press releases were distributed, covering such topics as the Article XIV conference, the latest



Treaty ratification and developments in the establishment of the IMS.

The PTS produced an information sheet on facts and figures about the CTBTO and the leaflet entitled *Potential Civil and Scientific Applications of the CTBT Verification Technologies* was produced in French and Spanish. Two issues of the *CTBTO Spectrum* newsletter were distributed in hard copy to 2500 recipients. Seven issues of *CTBTO News* were distributed to all Permanent Missions in Vienna and the film entitled *Verifying the CTBT* was produced in DVD format.

The PTS public web site, including the web page designed for the Article XIV conference, continued to be updated regularly. The automatic Web based subscription to *CTBTO Spectrum* reached 250. Electronic versions of information material available in languages other than English continued to be placed in the "Reference" section of the web site. The site also featured 17 articles, whose themes included new facility agreements, national seminars, training activities and workshops on the CTBT.

In early 2005, the PTS saw an upsurge of interest by the media in the work of the Commission. The PTS received numerous enquiries from the press which focused on the earthquake and subsequent tsunami in South-East Asia that occurred on 26 December 2004. In March, the PTS organized a special press briefing on a possible PTS contribution to a tsunami warning system. The PTS conducted over thirty press interviews on the subject with renowned news agencies, including CNN International, BBC World, Deutsche Presse Agentur and Agence France Presse.

There was also an increase in the number of briefings given to academic and special interest groups upon request with a focus on the civil and scientific applications of the Treaty. In 2005, 12 such briefings were held. The PTS continued to provide regular briefings on the Treaty and the work of the Commission to other groups, such as the Diplomatic Academy of Vienna, Disarmament Fellows, delegations, military officials, students, journalists and members of parliaments. Twenty-eight briefings were held in total.

SUPPORT FOR MEETINGS

The PTS provided substantive support to the Chairpersons of the Commission, Working Groups A and B and the AG in the preparation and conduct of their meetings, as well as to training courses and workshops of the Commission held in Vienna. The PTS also provided administrative and substantive support to meetings of the external review team on the organizational structure of the PTS (28 February – 2 March and 4–15 April). Following a series of tests, the PTS introduced live and archived video streaming of meetings of the Policy Making Organs on the secure Experts Communication System (ECS).

All official documents of the Commission and its subsidiary bodies issued in 2005 (totalling approximately 6540 original pages) were processed and stored on the automated Document Management System (DMS). By the end of 2005, over 5600 documents had been archived on the DMS.

The PTS issued the 2004 Annual Report in the six official languages of the Commission, both in booklet form and on the public web site. The second edition of the Regulations and Rules of the Preparatory Commission was issued in booklet form as well as on CD-ROM. Programme and Budget related documents, a Technical Paper, technical and workshop reports and new editions of the Permanent Missions booklet were also issued.

At Part II of the Twenty-Fifth Session of WGB, the PTS distributed to delegations for the first time a CD-ROM containing documents of the session. Following Part III of the Twenty-Fifth Session of the Commission, the PTS prepared an updated version of the Electronic Document Archive CD-ROM and included, also for the first time, video recordings of plenary meetings of the Commission. Meetings support material, including banners, programmes and posters, were created for the Quality Management Workshop in



Issues 6 and 7 of CTBTO Spectrum.

2 WEEKS

1 WEEK

2 DAYS

1 DAY

10 HRS

6 HRS

4 HRS

2 HRS

1 HR



The hard copy archive of the official documents of the Commission.

April and the NDC Evaluation Workshop in October. In preparation for the bidders' conference held in December, the PTS printed booklets containing the terms of reference and instructions to invitees as well as the next GCI contract.

The PTS assisted States Signatories in accrediting their Permanent Representatives to the Commission. In 2005, 35 new Permanent Representatives were accredited, bringing the total number of accreditations to 117, compared with 111 at the end of 2004.

Together with other Vienna International Centre (VIC) based organizations (VBOs), the PTS continued to work in cooperation with the Austrian authorities on the design and plans for the new conference facility, building M.

INTERNAL AUDIT

During the year, the PTS produced a final audit report covering education grants in the school year 2003/2004, repatriation grants and end of service allowances. The follow-up audits of consultants and administration of the Provident Fund were concluded and the final reports were

in preparation. A review of the next GCI contract and subsequent amendments was initiated. A follow-up on implementation of previous audit recommendations was also carried out.

FOLLOW-UP TO THE FINAL REPORT ON THE ORGANIZATIONAL STRUCTURE OF THE PTS

As of 1 October 2005, the Conference Services Section was transferred from the Division of Administration to the Legal and External Relations Division in order for support services to be concentrated in the latter Division.

In accordance with the recommendation of the external review team in its final report (see "Policy Making Organs" in Major Programme 6), the post of Strategic Coordination and Planning Officer was established within the Office of the Executive Secretary. The aim is to ensure that the priorities of the PTS are consistent and are contributing to the fulfilment of the strategic objectives and targets set by the States Signatories.

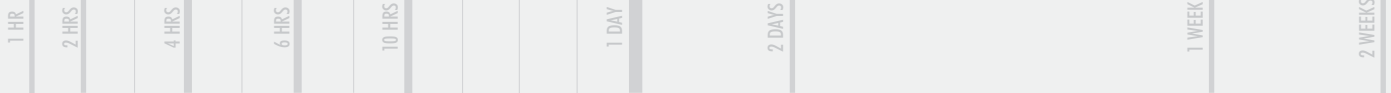
GENERAL SERVICES

The asbestos removal project at the VIC continued throughout 2005. The first staff members of the PTS moved to the temporary building L in May and returned to their offices in August. By the end of 2005, all but a few PTS staff had returned to their refurbished offices.

The PTS continued to chair the VIC Security Advisory Group. The implementation of Phases I and II of the security enhancements project at the VIC continued. Member States of all the VBOs have allocated over \$17 million towards the project for the budget years 2004–2006.



Supplementary Information



Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty (Article XIV Conference)

ARTICLE XIV of the Treaty

ENTRY INTO FORCE

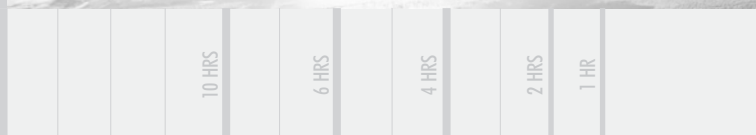
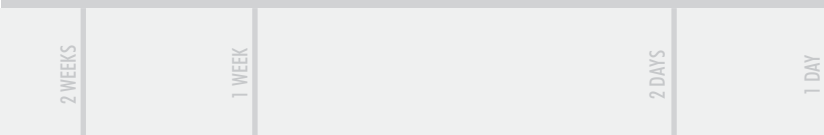
1. This Treaty shall enter into force 180 days after the date of deposit of the instruments of ratification by all States listed in Annex 2 to this Treaty, but in no case earlier than two years after its opening for signature.

2. If this Treaty has not entered into force three years after the date of the anniversary of its opening for signature, the Depositary shall convene a Conference of the States that have already deposited their instruments of ratification upon the request of a majority of those States. That Conference shall examine the extent to which the requirement set out in paragraph 1 has been met and shall consider and decide by consensus what measures consistent with international law may be undertaken to accelerate the ratification process in order to facilitate the early entry into force of this Treaty.

3. Unless otherwise decided by the Conference referred to in paragraph 2 or other such conferences, this process shall be repeated at subsequent anniversaries of the opening for signature of this Treaty, until its entry into force.

4. All States Signatories shall be invited to attend the Conference referred to in paragraph 2 and any subsequent conferences as referred to in paragraph 3, as observers.

5. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the 30th day following the date of deposit of their instruments of ratification or accession.



Seated at the table, left to right: Tibor Tóth, Executive Secretary of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization; the President of the Conference, HE Alexander Downer, Minister for Foreign Affairs of Australia; Kofi Annan, Secretary-General of the United Nations; and the Secretary of the Conference, Nobuyasu Abe, Under-Secretary-General for Disarmament Affairs, United Nations Secretariat.

The Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty (Article XIV conference) was held at United Nations Headquarters, New York, from 21 to 23 September 2005 under the presidency of HE Alexander Downer, Minister for Foreign Affairs of Australia. The PTS supported the informal consultations held in Vienna in preparation for the conference and cooperated closely with the Secretariat of the United Nations in servicing the conference.

One hundred and seventeen ratifying States and States Signatories and three non-signatory States were represented. The attendance of 38 States at the level of Minister or Deputy Minister was evidence of the strong political support for the CTBT.

On the margins of the conference, the PTS organized a range of events to promote the understanding of the CTBT. An exhibition consisting of panels and screens displaying information about the IMS, the IDC, the GCI and OSI, and supported by photographs of IMS stations



around the world, provided visitors with an insight into the scope and capacity of the Treaty verification system. The PTS also offered extensive support to the press in various forms. The press kit for the conference, printed in English, French and Spanish, was disseminated to both national and international press agencies, United Nations Information Centres, United Nations Information Services, Permanent Missions and non-governmental organizations.

The conference adopted by consensus a “Final Declaration and Measures to Promote the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty”. The Final Declaration recommends, inter alia, that the PTS continue to provide States with legal assistance with respect to the ratification process and implementation measures and maintain a contact point in this regard. The Final Declaration also requests the PTS to continue to act as a ‘focal point’ where information about activities undertaken by States is collected in order to assist in promoting the EIF of the Treaty.

1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY 2 DAYS 1 WEEK 2 WEEKS

States Whose Ratification is Required for the Treaty to Enter into Force (31 December 2005)

41 ■ Signed 33 ■ Ratified 3 ■ Not signed

State	Date of Signature	Date of Ratification
■ Algeria	15 Oct. 1996	11 Jul. 2003
■ Argentina	24 Sep. 1996	4 Dec. 1998
■ Australia	24 Sep. 1996	9 Jul. 1998
■ Austria	24 Sep. 1996	13 Mar. 1998
■ Bangladesh	24 Oct. 1996	8 Mar. 2000
■ Belgium	24 Sep. 1996	29 Jun. 1999
■ Brazil	24 Sep. 1996	24 Jul. 1998
■ Bulgaria	24 Sep. 1996	29 Sep. 1999
■ Canada	24 Sep. 1996	18 Dec. 1998
■ Chile	24 Sep. 1996	12 Jul. 2000
■ China	24 Sep. 1996	
■ Colombia	24 Sep. 1996	
■ Democratic People's Republic of Korea		
■ Democratic Republic of the Congo	4 Oct. 1996	28 Sep. 2004
■ Egypt	14 Oct. 1996	
■ Finland	24 Sep. 1996	15 Jan. 1999
■ France	24 Sep. 1996	6 Apr. 1998
■ Germany	24 Sep. 1996	20 Aug. 1998
■ Hungary	25 Sep. 1996	13 Jul. 1999
■ India		
■ Indonesia	24 Sep. 1996	
■ Iran (Islamic Republic of)	24 Sep. 1996	
■ Israel	25 Sep. 1996	
■ Italy	24 Sep. 1996	1 Feb. 1999
■ Japan	24 Sep. 1996	8 Jul. 1997
■ Mexico	24 Sep. 1996	5 Oct. 1999
■ Netherlands	24 Sep. 1996	23 Mar. 1999
■ Norway	24 Sep. 1996	15 Jul. 1999
■ Pakistan		
■ Peru	25 Sep. 1996	12 Nov. 1997
■ Poland	24 Sep. 1996	25 May 1999
■ Republic of Korea	24 Sep. 1996	24 Sep. 1999
■ Romania	24 Sep. 1996	5 Oct. 1999
■ Russian Federation	24 Sep. 1996	30 Jun. 2000
■ Slovakia	30 Sep. 1996	3 Mar. 1998
■ South Africa	24 Sep. 1996	30 Mar. 1999
■ Spain	24 Sep. 1996	31 Jul. 1998
■ Sweden	24 Sep. 1996	2 Dec. 1998
■ Switzerland	24 Sep. 1996	1 Oct. 1999
■ Turkey	24 Sep. 1996	16 Feb. 2000
■ Ukraine	27 Sep. 1996	23 Feb. 2001
■ United Kingdom	24 Sep. 1996	6 Apr. 1998
■ United States of America	24 Sep. 1996	
■ Viet Nam	24 Sep. 1996	

1 HR

2 HRS

4 HRS

6 HRS

10 HRS

1 DAY

2 DAYS

1 WEEK

2 WEEKS

Status of Signature and Ratification of the Treaty (31 December 2005)

176 ■ Signed 126 ■ Ratified 18 ■ Not signed

State	Date of Signature	Date of Ratification
■ Afghanistan	24 Sep. 2003	24 Sep. 2003
■ Albania	27 Sep. 1996	23 Apr. 2003
■ Algeria	15 Oct. 1996	11 Jul. 2003
■ Andorra	24 Sep. 1996	
■ Angola	27 Sep. 1996	
■ Antigua and Barbuda	16 Apr. 1997	
■ Argentina	24 Sep. 1996	4 Dec. 1998
■ Armenia	1 Oct. 1996	
■ Australia	24 Sep. 1996	9 Jul. 1998
■ Austria	24 Sep. 1996	13 Mar. 1998
■ Azerbaijan	28 Jul. 1997	2 Feb. 1999
■ Bahamas	4 Feb. 2005	
■ Bahrain	24 Sep. 1996	12 Apr. 2004
■ Bangladesh	24 Oct. 1996	8 Mar. 2000
■ Barbados		
■ Belarus	24 Sep. 1996	13 Sep. 2000
■ Belgium	24 Sep. 1996	29 Jun. 1999
■ Belize	14 Nov. 2001	26 Mar. 2004
■ Benin	27 Sep. 1996	6 Mar. 2001
■ Bhutan		
■ Bolivia	24 Sep. 1996	4 Oct. 1999
■ Bosnia and Herzegovina	24 Sep. 1996	
■ Botswana	16 Sep. 2002	28 Oct. 2002
■ Brazil	24 Sep. 1996	24 Jul. 1998
■ Brunei Darussalam	22 Jan. 1997	
■ Bulgaria	24 Sep. 1996	29 Sep. 1999
■ Burkina Faso	27 Sep. 1996	17 Apr. 2002
■ Burundi	24 Sep. 1996	
■ Cambodia	26 Sep. 1996	10 Nov. 2000
■ Cameroon	16 Nov. 2001	
■ Canada	24 Sep. 1996	18 Dec. 1998
■ Cape Verde	1 Oct. 1996	
■ Central African Republic	19 Dec. 2001	
■ Chad	8 Oct. 1996	
■ Chile	24 Sep. 1996	12 Jul. 2000
■ China	24 Sep. 1996	
■ Colombia	24 Sep. 1996	
■ Comoros	12 Dec. 1996	
■ Congo	11 Feb. 1997	
■ Cook Islands	5 Dec. 1997	6 Sep. 2005
■ Costa Rica	24 Sep. 1996	25 Sep. 2001
■ Côte d'Ivoire	25 Sep. 1996	11 Mar. 2003
■ Croatia	24 Sep. 1996	2 Mar. 2001



State	Date of Signature	Date of Ratification
Cuba		
Cyprus	24 Sep. 1996	18 Jul. 2003
Czech Republic	12 Nov. 1996	11 Sep. 1997
Democratic People's Republic of Korea		
Democratic Republic of the Congo	4 Oct. 1996	28 Sep. 2004
Denmark	24 Sep. 1996	21 Dec. 1998
Djibouti	21 Oct. 1996	15 Jul. 2005
Dominica		
Dominican Republic	3 Oct. 1996	
Ecuador	24 Sep. 1996	12 Nov. 2001
Egypt	14 Oct. 1996	
El Salvador	24 Sep. 1996	11 Sep. 1998
Equatorial Guinea	9 Oct. 1996	
Eritrea	11 Nov. 2003	11 Nov. 2003
Estonia	20 Nov. 1996	13 Aug. 1999
Ethiopia	25 Sep. 1996	
Fiji	24 Sep. 1996	10 Oct. 1996
Finland	24 Sep. 1996	15 Jan. 1999
France	24 Sep. 1996	6 Apr. 1998
Gabon	7 Oct. 1996	20 Sep. 2000
Gambia	9 Apr. 2003	
Georgia	24 Sep. 1996	27 Sep. 2002
Germany	24 Sep. 1996	20 Aug. 1998
Ghana	3 Oct. 1996	
Greece	24 Sep. 1996	21 Apr. 1999
Grenada	10 Oct. 1996	19 Aug. 1998
Guatemala	20 Sep. 1999	
Guinea	3 Oct. 1996	
Guinea-Bissau	11 Apr. 1997	
Guyana	7 Sep. 2000	7 Mar. 2001
Haiti	24 Sep. 1996	1 Dec. 2005
Holy See	24 Sep. 1996	18 Jul. 2001
Honduras	25 Sep. 1996	30 Oct. 2003
Hungary	25 Sep. 1996	13 Jul. 1999
Iceland	24 Sep. 1996	26 Jun. 2000
India		
Indonesia	24 Sep. 1996	
Iran (Islamic Republic of)	24 Sep. 1996	
Iraq		
Ireland	24 Sep. 1996	15 Jul. 1999
Israel	25 Sep. 1996	
Italy	24 Sep. 1996	1 Feb. 1999
Jamaica	11 Nov. 1996	13 Nov. 2001
Japan	24 Sep. 1996	8 Jul. 1997
Jordan	26 Sep. 1996	25 Aug. 1998
Kazakhstan	30 Sep. 1996	14 May 2002
Kenya	14 Nov. 1996	30 Nov. 2000
Kiribati	7 Sep. 2000	7 Sep. 2000
Kuwait	24 Sep. 1996	6 May 2003
Kyrgyzstan	8 Oct. 1996	2 Oct. 2003
Lao People's Democratic Republic	30 Jul. 1997	5 Oct. 2000
Latvia	24 Sep. 1996	20 Nov. 2001
Lebanon	16 Sep. 2005	
Lesotho	30 Sep. 1996	14 Sep. 1999
Liberia	1 Oct. 1996	
Libyan Arab Jamahiriya	13 Nov. 2001	6 Jan. 2004

1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY 2 DAYS 1 WEEK 2 WEEKS

State	Date of Signature	Date of Ratification
Liechtenstein	27 Sep. 1996	21 Sep. 2004
Lithuania	7 Oct. 1996	7 Feb. 2000
Luxembourg	24 Sep. 1996	26 May 1999
Madagascar	9 Oct. 1996	15 Sep. 2005
Malawi	9 Oct. 1996	
Malaysia	23 Jul. 1998	
Maldives	1 Oct. 1997	7 Sep. 2000
Mali	18 Feb. 1997	4 Aug. 1999
Malta	24 Sep. 1996	23 Jul. 2001
Marshall Islands	24 Sep. 1996	
Mauritania	24 Sep. 1996	30 Apr. 2003
Mauritius		
Mexico	24 Sep. 1996	5 Oct. 1999
Micronesia (Federated States of)	24 Sep. 1996	25 Jul. 1997
Monaco	1 Oct. 1996	18 Dec. 1998
Mongolia	1 Oct. 1996	8 Aug. 1997
Morocco	24 Sep. 1996	17 Apr. 2000
Mozambique	26 Sep. 1996	
Myanmar	25 Nov. 1996	
Namibia	24 Sep. 1996	29 Jun. 2001
Nauru	8 Sep. 2000	12 Nov. 2001
Nepal	8 Oct. 1996	
Netherlands	24 Sep. 1996	23 Mar. 1999
New Zealand	27 Sep. 1996	19 Mar. 1999
Nicaragua	24 Sep. 1996	5 Dec. 2000
Niger	3 Oct. 1996	9 Sep. 2002
Nigeria	8 Sep. 2000	27 Sep. 2001
Niue		
Norway	24 Sep. 1996	15 Jul. 1999
Oman	23 Sep. 1999	13 Jun. 2003
Pakistan		
Palau	12 Aug. 2003	
Panama	24 Sep. 1996	23 Mar. 1999
Papua New Guinea	25 Sep. 1996	
Paraguay	25 Sep. 1996	4 Oct. 2001
Peru	25 Sep. 1996	12 Nov. 1997
Philippines	24 Sep. 1996	23 Feb. 2001
Poland	24 Sep. 1996	25 May 1999
Portugal	24 Sep. 1996	26 Jun. 2000
Qatar	24 Sep. 1996	3 Mar. 1997
Republic of Korea	24 Sep. 1996	24 Sep. 1999
Republic of Moldova	24 Sep. 1997	
Romania	24 Sep. 1996	5 Oct. 1999
Russian Federation	24 Sep. 1996	30 Jun. 2000
Rwanda	30 Nov. 2004	30 Nov. 2004
Saint Kitts and Nevis	23 Mar. 2004	27 Apr. 2005
Saint Lucia	4 Oct. 1996	5 Apr. 2001
Saint Vincent and the Grenadines		
Samoa	9 Oct. 1996	27 Sep. 2002
San Marino	7 Oct. 1996	12 Mar. 2002
Sao Tome and Principe	26 Sep. 1996	
Saudi Arabia		
Senegal	26 Sep. 1996	9 Jun. 1999
Serbia and Montenegro	8 Jun. 2001	19 May 2004
Seychelles	24 Sep. 1996	13 Apr. 2004
Sierra Leone	8 Sep. 2000	17 Sep. 2001

2 WEEKS

1 WEEK

2 DAYS

1 DAY








































10 HRS

6 HRS

4 HRS

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1 HR

State	Date of Signature	Date of Ratification
 Singapore	14 Jan. 1999	10 Nov. 2001
 Slovakia	30 Sep. 1996	3 Mar. 1998
 Slovenia	24 Sep. 1996	31 Aug. 1999
 Solomon Islands	3 Oct. 1996	
 Somalia		
 South Africa	24 Sep. 1996	30 Mar. 1999
 Spain	24 Sep. 1996	31 Jul. 1998
 Sri Lanka	24 Oct. 1996	
 Sudan	10 Jun. 2004	10 Jun. 2004
 Suriname	14 Jan. 1997	
 Swaziland	24 Sep. 1996	
 Sweden	24 Sep. 1996	2 Dec. 1998
 Switzerland	24 Sep. 1996	1 Oct. 1999
 Syrian Arab Republic		
 Tajikistan	7 Oct. 1996	10 Jun. 1998
 Thailand	12 Nov. 1996	
 The former Yugoslav Republic of Macedonia	29 Oct. 1998	14 Mar. 2000
 Timor-Leste		
 Togo	2 Oct. 1996	2 Jul. 2004
 Tonga		
 Trinidad and Tobago		
 Tunisia	16 Oct. 1996	23 Sep. 2004
 Turkey	24 Sep. 1996	16 Feb. 2000
 Turkmenistan	24 Sep. 1996	20 Feb. 1998
 Tuvalu		
 Uganda	7 Nov. 1996	14 Mar. 2001
 Ukraine	27 Sep. 1996	23 Feb. 2001
 United Arab Emirates	25 Sep. 1996	18 Sep. 2000
 United Kingdom	24 Sep. 1996	6 Apr. 1998
 United Republic of Tanzania	30 Sep. 2004	30 Sep. 2004
 United States of America	24 Sep. 1996	
 Uruguay	24 Sep. 1996	21 Sep. 2001
 Uzbekistan	3 Oct. 1996	29 May 1997
 Vanuatu	24 Sep. 1996	16 Sep. 2005
 Venezuela (Bolivarian Republic of)	3 Oct. 1996	13 May 2002
 Viet Nam	24 Sep. 1996	
 Yemen	30 Sep. 1996	
 Zambia	3 Dec. 1996	
 Zimbabwe	13 Oct. 1999	

1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY 2 DAYS 1 WEEK 2 WEEKS

Facility Agreements or Arrangements with States Hosting IMS Facilities (31 December 2005)

State	Date(s) of Signature	Date(s) of Entry into Force
Argentina	9 December 1999	2 March 2004
Australia	13 March 2000	17 August 2000
Canada	19 October 1998	19 October 1998 (Articles 6, 8 and 9 on 1 March 2000)
Cook Islands	31 March 2000 14 April 2000	14 April 2000
Czech Republic	13 November 2002	29 January 2004
Finland	12 May 2000	6 June 2000
France	13 July 2001	1 May 2004
Guatemala	26 November 2002	2 June 2005
Iceland ^a	13 October 2005	
Israel ^a	23 September 2004	
Jordan	11 November 1999	11 November 1999
Kazakhstan ^a	9 September 2004	
Kenya	14 October 1999 29 October 1999	29 October 1999
Mauritania	16 September 2003 17 September 2003	17 September 2003
Mongolia	5 June 2000	25 May 2001
New Zealand	13 November 1998	19 December 2000
Niger	20 November 2000 24 November 2000	24 November 2000
Norway	10 June 2002	10 June 2002
Oman ^a	19 May 2004	
Palau	16 April 2002 29 April 2002	29 April 2002
Panama	26 November 2003	26 November 2003
Paraguay ^a	4 April 2003	
Peru	14 March 2001	8 July 2002
Philippines	14 April 2003	8 January 2004
Romania	13 June 2003	13 October 2004
Russian Federation ^a	30 April 2005	
Senegal ^b	22 May 2001	
South Africa	20 May 1999	20 May 1999
Spain	14 September 2000	12 December 2003
Sri Lanka ^a	14 June 2000	
Ukraine	17 September 1999 27 September 1999	20 April 2001
United Kingdom	12 November 1999	16 June 2004
Zambia	18 September 2001 20 October 2001	20 October 2001

^a Agreement or arrangement had not yet entered into force.

^b Agreement has been applied provisionally since 22 May 2001.

2 WEEKS

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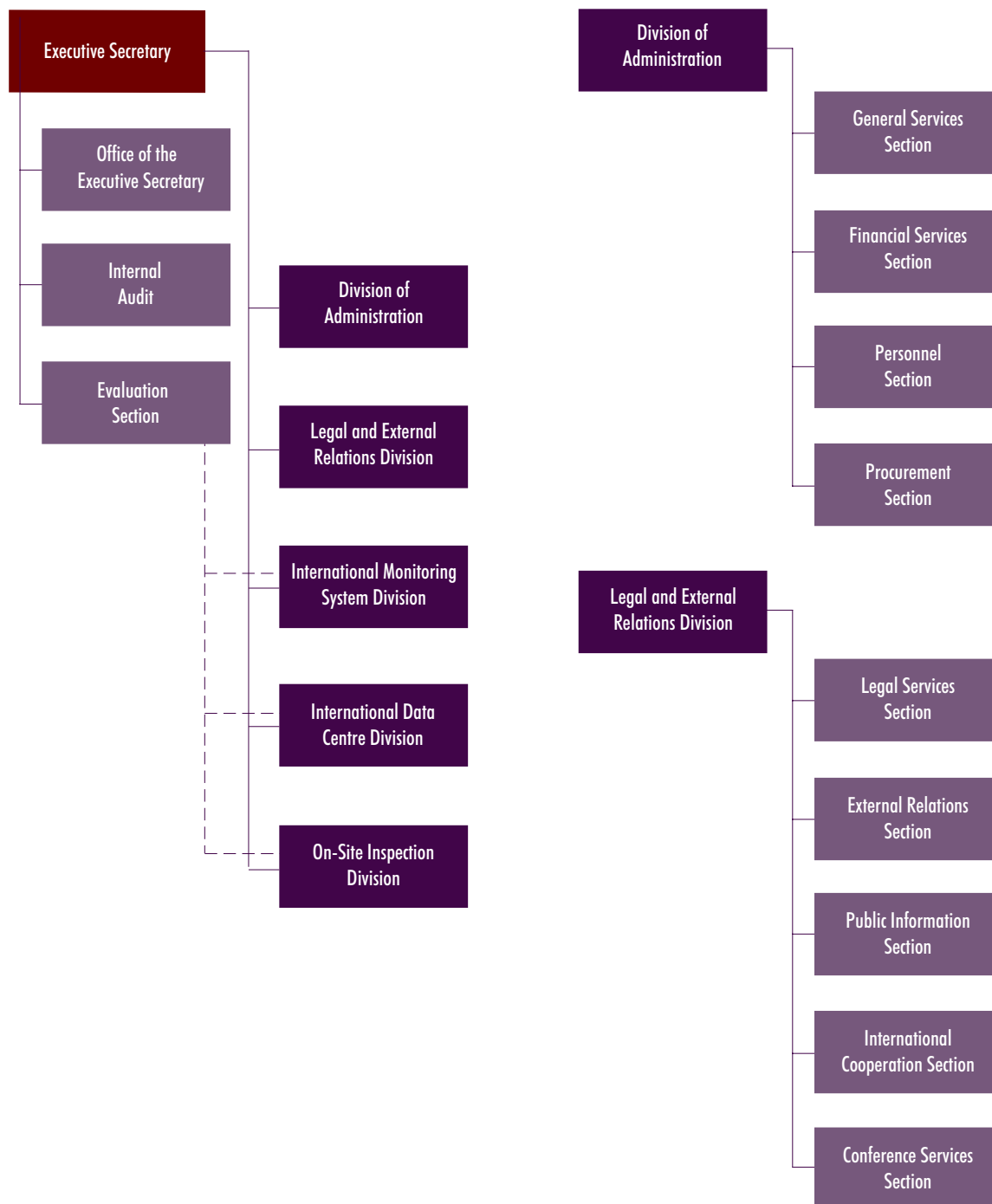
Relationship and Cooperation Agreements with Other International Organizations (31 December 2005)

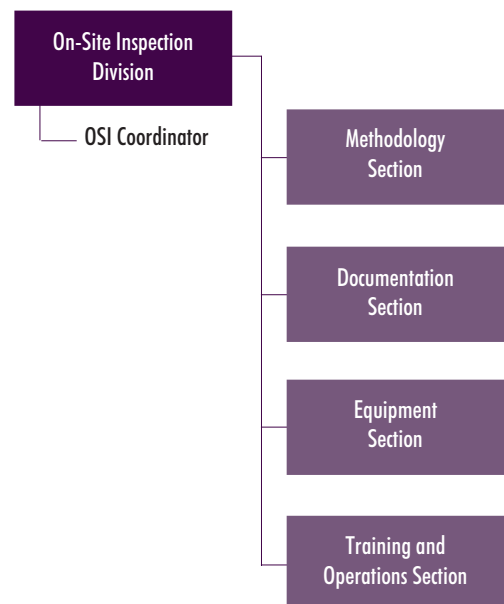
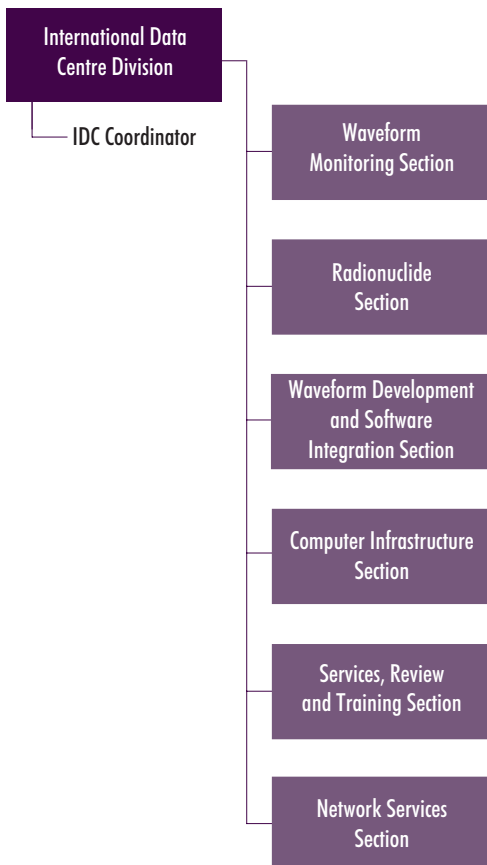
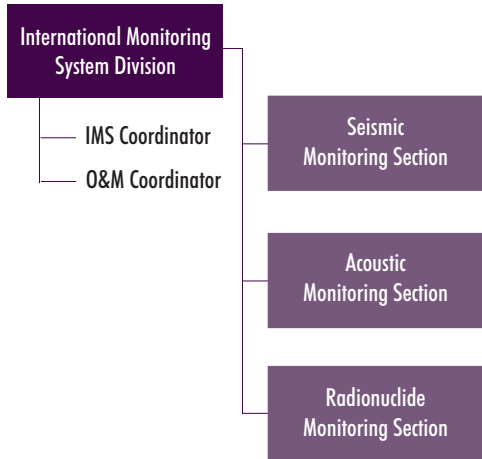
International Organization and Agreement	Date of Signature	Date of Entry into Force
Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) Agreement between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean	18 September 2002	18 September 2002
Association of Caribbean States Agreement between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the Association of Caribbean States	7 March 2005	7 March 2005
European Centre for Medium-Range Weather Forecasts Agreement between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the European Centre for Medium-Range Weather Forecasts	^a	24 June 2003
United Nations Agreement to Regulate the Relationship between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the United Nations	26 May 2000	15 June 2000
United Nations Development Programme Agreement between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the United Nations Development Programme on the Provision of Support Services	7 December 2000	7 December 2000
World Meteorological Organization Agreement between the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization and the World Meteorological Organization	^a	23 May 2003

^a A protocol recording the date of entry into force was signed after that date.

1 HR 2 HRS 4 HRS 6 HRS 10 HRS 1 DAY 2 DAYS 1 WEEK 2 WEEKS

Organizational Structure of the Provisional Technical Secretariat (31 December 2005)





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