

The CTBT Verification System

Entering Rough Waters?

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Oliver Meier

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Executive Summary

- Five years after the Comprehensive Nuclear Test Ban Treaty (CTBT) was opened for signature, progress towards entry into force has been slowing.
- Political uncertainty about the timing of entry into force is complicating the work of the CTBT Organization's Preparatory Commission (PrepCom).
- The US decision, announced on 21 August 2001, not to pay its full share of financial contributions to the PrepCom and withdraw from activities not related to the International Monitoring System (IMS) may put it in non-compliance as a signatory to the treaty.
- States need to continue to support the work of the PrepCom by providing it with the necessary financial and technical means. Gaps left by the US decision need to be filled by other states.
- Completing the IMS remains a priority task which will need patience and support from all member states of the PrepCom.
- Establishing an effective regime for on-site inspections is greatly complicated by the new US policy. Those states in favour of a flexible regime need to redouble their efforts, including increased input into the development of an Operational Manual.
- States need to overcome undue concerns about confidentiality and create an open verification regime that makes its data available to scientific and humanitarian relief organisations.
- Taken together, these efforts will enable the PrepCom to complete its task of setting up the CTBT's verification system in the foreseeable future.
- Washington should live up to its commitment as a signatory to the CTBT and support the whole range of PrepCom activities.
- The Article XIV conference should urge the US to reconsider its new policy of reducing support to the PrepCom.

INTRODUCTION

Over the last year political progress towards entry into force of the 1996 Comprehensive Nuclear Test Ban Treaty (CTBT) has been slowing. As of 7 September 2001, 161 states had signed the treaty, 79 had ratified. Five years after the treaty was opened for signature, 13 states still have to ratify before the treaty can enter into force. Especially worrying is that the US government has stated that it does not intend to ratify the treaty in the near future and that India, North Korea and Pakistan, which are also listed in Annex 2 of the treaty, have not even signed.

Meanwhile, good progress towards the implementation of the treaty's verification system has been made. Since 1997, when the Provisional Technical Secretariat (PTS) for the future Comprehensive Nuclear Test Ban Treaty Organisation (CTBTO) in Vienna commenced work to implement the CTBT's verification provisions, major milestones have been achieved. The groundwork for the International Monitoring System (IMS) has been laid and the system is increasingly being put into place. The Organisation itself has evolved into an efficient international verification body.¹

*Status of the 44 States Required to Ratify the CTBT Before it Enters into Force**

The ratifiers

Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, Finland, France, Germany, Hungary, Italy, Japan, Mexico, Netherlands, Norway, Peru, Poland, Romania, Republic of Korea, Russia, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

The signatories

Algeria, China, Colombia, Democratic Republic of Congo, Egypt, Indonesia, Iran, Israel, United States, Viet Nam

The non-signatories

Democratic People's Republic of Korea, India, Pakistan

*As of 12 September 2001. Up-to-date information on signatures and ratification can be found at pws.ctbto.org

¹ For a summary of the capabilities of the system see 'Report of the Independent Commission on the Verifiability of the Comprehensive Nuclear Test Ban Treaty', London, October 2000, www.ctbtcommission.org.

COMPLETING THE VERIFICATION SYSTEM

But there are also first indications that the lack of political progress is beginning to affect the work being done in Vienna. Political support for the CTBTO Preparatory Commission (PrepCom), which has oversight of the PTS, is needed because major hurdles still need to be overcome before its mission is accomplished and the verification system is established as foreseen in the treaty. There are four main challenges facing the PrepCom:

- maintaining political support and funding for the verification regime;
- completing the IMS;
- creating an effective regime for on-site inspections (OSIs);
- building an open organisation that can make its data available for the greater common good.

Maintaining support for the CTBTO

Political and financial support for the work being done in Vienna has been good so far. It includes the willingness of states to pay for necessary budget increases. The main reason for rising budgets is the growth of the organisation and the implementation of the IMS. The 2001 PrepCom budget was \$US 83.5 million, compared with \$US 79.9 million in 2000, \$US 74.7 million in 1999 and \$US 58.4 million in 1998. The PTS has requested about \$US 86 for 2002.

The collection rate for assessed contributions to the budget was approximately 97 per cent for the 2000 budget and more than 84 per cent for the 2001 budget.² This is a good record compared with most international organisations, but needs to be maintained. While discussions about the PTS budget have been relatively smooth so far, there are some signs that this might change.

On 21 August 2001, the US representative to the PrepCom in Vienna announced that the US 'will continue to participate in and fund only those PrepCom activities directed to establishing and supporting the International Monitoring System including, to the extent required for IMS support, the International Data Centre (IDC) and Global Communications Infrastructure.'³ Reportedly, this new policy would result in a reduction of US contributions by about 4.5 per cent or \$US 900,000 annually, starting in 2002. It would also include an end to US

² CTBTO PrepCom document CTBT/PC-15/1/Annex IV, 21-23 Aug. 2001, p. 4.

³ Statement of the US alternate representative, delivered at the 15th session of the Preparatory Commission for the CTBTO, Vienna, 21 August 2001.

participation in efforts to develop an OSI regime.⁴ Since the announcement, the US has stopped participating in discussions aimed at developing a manual for on-site inspections.

This new US policy sets a worrying precedent for arms control and disarmament verification regimes because states normally do not attempt to designate how their financial contributions to international organisations are spent. There is traditionally an unstated understanding among signatories to any treaty which mandates the establishment of a new organisation prior to entry into force, that despite the apparent tenuousness of their legal obligations they will work cooperatively on their joint endeavour. The new US attitude disturbs this implicit assumption and may backfire in areas that Washington cares more deeply about. The US policy may even be seen as putting it in non-compliance with at least its political, if not legal, commitments as a signatory to the treaty. Should the US allow its underpayments to accumulate, it runs the risk of losing its vote in the PrepCom.⁵

The partial US withdrawal from the work of the PrepCom comes at a bad time for two reasons. First, the PTS projects rising budgets over the next years to deal with the double burden of operating certified stations and installing new stations in order to complete the IMS. From the perspective of the Secretariat, substantial budget increases will be required for the next two to three years to provide the necessary funds for the installation of the remaining IMS stations. What is needed is increased support, not a reduction.

Second, there is the danger of a domino effect. A number of developing countries have recently begun questioning funding levels necessary during the PrepCom phase of the verification system's implementation. This discussion was triggered by agreement on a new scale of assessment for financial contributions to the UN and UN agencies, which will be used from 2002. This new scale pegs the US contribution at 22 per cent and redistributes the reduction to other countries.⁶ States have argued that

⁴ Phillip C. Bleek, 'White House to Seek Partial CTBTO Funding; Plans to Drop Support for On-Site Inspection', *Arms Control Today*, 31 August 2001, www.armscontrol.org.

⁵ Paragraph 5 of the Resolution Establishing the Preparatory Commission (CTBT/MSS/Res/1), Annex, adopted on 19 November 1996 obliges all signatory states to annually meet their share, based on the UN scale of assessment, of the PrepCom. The resolution states that a 'State Signatory which has not discharged in full its financial obligation to the Commission within 365 days of receipt of the request for payment shall have no vote in the Commission, until such payment is received.'

⁶ See General Assembly Resolution A/RES/55/B-F, 22 January 2001.

the PrepCom should continue to use the old scale of assessment or apply the scale of assessments used for peacekeeping operations, which provides for a US contribution of 25 per cent. These discussions have the potential to seriously undermine the work of the PTS if they escalate into a broader debate about the scale of contributions to the PrepCom.

There is also a danger that other states may cut their contributions unilaterally or seek to control the way in which their contributions are used. Finally, the US decision signals a lack of confidence in the future of the regime and sets a bad example for efforts to improve verification in other contexts and for other regimes.

PrepCom 2001 Budget (\$US 83.5 million)

- \$US 43 million for establishing or upgrading IMS stations
- \$US 12.9 million for the IDC
- \$US 10 million for establishing the global communications infrastructure
- \$US 2.3 million towards developing an on-site inspection capacity
- \$US 15.2 million on administration.

Source CTBTO PrepCom document CTBT/PC-13/1/Annex V, 20-21 Nov. 2000.

Completing the IMS

The IMS will consist of 321 monitoring stations and 16 radionuclide laboratories located in some 90 countries. Four types of stations are to be established—seismological, infrasound, hydroacoustic and radionuclide. The seismic network will form the core of the verification system. Seismic waves generated by earthquakes, explosions or other phenomena will be detected using 50 primary and 120 auxiliary seismic stations, distributed worldwide. In addition, 11 underwater hydroacoustic stations are being set up. Sixty land-based infrasound stations will use sonar to detect atmospheric tests, while 80 radionuclide stations will measure radioactive particles in the atmosphere from atmospheric nuclear tests or underground tests that vent. Sixteen radionuclide laboratories will analyse filters from the stations, as well as samples taken by inspectors.

After a slow start during the early years, when the legal and political foundations for the new monitoring system were being established, the completion of the IMS is making good progress. The PTS was able to reach most of its milestones for 2000. By August 2001, 291 IMS facilities in 70 countries were covered by some kind of legal arrangement. Site surveys were completed for 258 IMS stations and the installation of

113 stations was in progress. Twelve IMS stations have been certified. However, technical difficulties have slowed the certification process in 2001.⁷ While the PTS planned to certify 27 stations this year, only one had been certified by the end of August.

Now, that more and more stations are being completed, the PrepCom is putting additional efforts into establishing legal and financial rules for the operation and maintenance of certified IMS stations. Like so many PrepCom issues, this is uncharted territory. No international organisation has ever operated such an elaborate network of monitoring stations.

As a first step, Working Group B, responsible for verification, has made an initial recommendation for the provisional operation and maintenance of IMS facilities. This includes the development of rules for staff and operators.⁸

One controversial issue is whether the PTS will be responsible for the operational and maintenance costs for the 120 auxiliary seismic stations. These stations are normally used for scientific purposes and will only transmit data to the IDC when there is a need to clarify a suspicious event. However, auxiliary stations need to be certified to the same standards as stations in the primary network.⁹ Papua New Guinea is the first state to request that the PTS shoulder the operational costs of an auxiliary seismic station.¹⁰ Other developing countries are expected to make similar requests, but the PrepCom intends to deal with them on a case-by-case basis.

Setting up the International Data Centre (IDC)

All information from IMS stations is transmitted to the IDC via the Global Communications Infrastructure (GCI). The IDC receives, processes and distributes it to authorised users, such as national authorities in member states. All CTBT member states can receive raw data and/or screened information from IMS stations, according to their individual wishes.

Data from the seismic, infrasound and hydroacoustic stations is automatically processed. It is the IDC's responsibility to screen out events which are clearly of natural origin. A large percentage of all earthquakes, for instance, occur at depths at which it is impossible to conduct clandestine nuclear tests. By applying screening criteria to the vast amount of data delivered to the IMS, the number of potentially suspicious events can be reduced. The product—so-called Standard Event Lists—are reviewed by human analysts, who produce Reviewed Event Bulletins (REBs). Because radionuclides take much longer to be collected and analysed, this takes place on a different time-scale.

The IDC will issue Standard Event Bulletins, which indicate the degree to which each detected event meets specific screening criteria.¹¹ States without significant national technical and analytical means will naturally look to the IDC for more precise information if suspicions are aroused concerning a particular event. The IDC is expected to assist any state party in the technical analysis of IMS data as well as data provided by other state parties.¹²

Since 21 February 2000, when the IDC took over from the provisional IDC (pIDC) in Arlington, US, its products have been produced regularly, although on the basis of data from only a few stations, and with delays and gaps in reporting. As of August 2001, the centre is receiving about five gigabytes of data per day from IMS stations. Member states received, on average, 21,000 segmented data and product deliveries per month from the IDC.¹³ Over the course of 2000, 74 IMS stations were sending data to the IDC but only 16 stations were transmitting data over the Global Communications Infrastructure. The REB reported on average 52 events a day.¹⁴

As more and more stations deliver data to the IDC on a near real-time basis, the centre is distributing data and products to member states on a larger scale. This has raised the question of whether the IDC, prior to entry into force of the treaty, is expected to provide services to member states on a 24-hour, 7-day basis, thereby fulfilling the requirements for a fully operational IDC.

Three releases of IDC applications software, which filter and screen IDC data, have been successfully installed and tested at the IDC, the last one after some delay in June 2000.¹⁵ One setback for the IDC is that the pIDC in Arlington will not continue its free

delivery of software. In line with the US decision to cut back involvement in the non-IMS parts of the PTS work, the pIDC will not deliver the fourth release of the IDC software, but the PTS is still negotiating the details of further cooperation. Meanwhile, the PTS has begun to set up a Software Integration Unit and has budgeted \$US 1.8 million in 2001 for external contracts for the development, maintenance and documentation of IDC software.¹⁶

Agreeing rules for on-site inspections

OSIs may be mandated by the Executive Council of the CTBTO to clarify suspicious events detected by the IMS or on the basis of information from national technical means (NTM), obtained in a manner consistent with international law, and submitted by states parties. The CTBTO will not have a standing OSI inspectorate, but will draw on a pool of trained inspectors nominated by member states. This pool needs to be geographically representative and large enough to supply a team of up to 40 inspectors within six days.

OSI teams will be permitted to spend up to 130 days on an inspected state's territory and will therefore require significant in-country support. Substantial amounts of portable equipment will also be needed, including geophysical, radionuclide, drilling and communications equipment.

In November 1999 the PrepCom took steps to speed up the development of OSI procedures, realising that development of this component of the test ban's verification system was lagging behind. Consequently, the budget for developing an OSI capacity was doubled. However, the process remains problematic. Preparing for on-site inspections has several, interrelated aspects:

- the development of an Operational Manual (OpsMan),
- the selection and training of future inspectors, and
- the procurement of equipment.

To draft a text for an OSI manual, a group of Friends of the OSI Programme Coordinator was established in November 1999, open to participation by all signatories. This process did help identify some contentious issues, but was not capable of delivering a usable manual. To speed up the process, discussions on the OpsMan were brought into Working Group B. In late 2000, the new position of Task Leader for the 'OSI Operational Manual' was created. Since February 2001, Dutch Ambassador Arnd Meerburg has been in charge of this issue.

The manual is expected to be a guide for inspectors, detailing the rights and obligations of both the team

and the inspected party. But this process faces several difficulties. First, there is no agreed understanding of the scope and purpose of the manual. Israel, which is wary of intrusive OSIs because they might reveal details about its opaque nuclear weapons programme, favours a minutely detailed manual that explains the purpose, methodology and parameters of the activities to be undertaken by inspectors. Others, including the US, would prefer a manual that outlines general responsibilities of the inspectors, but leaves room for flexibility and is within the spirit of the treaty's OSI provisions.¹⁷

US withdrawal from the deliberations on an OSI manual will negatively affect the development of an effective regime. Without the US, the influence of those states that want to limit the freedom of inspectors to actively investigate suspicious events will grow. The US withdrawal is counterproductive even from the perspective of the treaty's opponents in Washington. Unless pro-verification states fill the gap left by the US' absence, the result could be a regime that is less able to clarify suspected violations of the test ban.

The second difficulty in the development of the OSI manual is its dependence on national contributions. By the end of 2000, the draft text covered about 75% of the OpsMan, but some crucial issues were still not covered. For other issues, competing language was submitted. So far, it has not been possible to reach compromises on many of the issues underlying the deliberations. The lack of future US technical support for the talks will also hamper a positive outcome. The comparatively large US delegation has contributed many crucial elements to date.

Finally, the current drafting method is still too slow and ineffective. Based on contributions received so far, an Initial Draft Rolling Text of more than 1,000 pages was compiled. Delegations began discussing this text in June 2001. However, this process has not resulted in the acceleration of the deliberations that many had hoped for. Placing discussions in Working Group B has increased the political attention given to this problem. But the new task leader has not been able to convince delegations to move beyond line-by-line negotiations. Even though it will make it harder for some of the smaller delegations in Vienna to participate, some form of intersessional work on the OpsMan is likely to be required.

Meanwhile, the PTS is continuing to conduct exercises and mock on-site inspections to assist the development

⁷ See 'Background Document by the Provisional Technical Secretariat of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization prepared for the Conference on Facilitating the Entry into Force of the CTBT (New York, 2001)', CTBT-Art.XIV/2001/3, 5 July 2001, pws.ctbto.org.

⁸ CTBTO PrepCom document CTBT/PC-14/1/Annex IV/Appendix V, 24-26 April 2001, p. 32.

⁹ The treaty states that the Technical Secretariat shall agree and cooperate to establish, operate, upgrade, finance and maintain monitoring facilities and radionuclide laboratories. Protocol to the CTBT, Part I, paragraph 4.

¹⁰ CTBTO PrepCom document CTBT/PC-15/1/Annex I, 21-23 Aug. 2001, p. 8.

¹¹ Protocol to the CTBT, Part I, Section F, paragraph 18.

¹² Protocol to the CTBT, Part I, Section F, paragraph 20.

¹³ See pws.ctbto.org.

¹⁴ CTBTO PrepCom document CTBT/PC-14/1/Annex III, 5-16 Feb. 2001, p. 7.

¹⁵ One positive effect of this development is that IDC staff now has the opportunity to alter and modify software according to its needs. Private Communication.

¹⁶ Private communication.

¹⁷ See Mordechai Melamud, 'Background Paper on On-Site Inspections (OSI) Main Elements and Expectations', submitted to the Independent Commission on Verifiability of the CTBT, www.ctbtcommission.org/melamudpaper.htm

of the OSI regime. Two tabletop exercises have been conducted to test procedures for fielding an inspection team. The second of these, held from 29 November to 1 December 2000 also involved the OSI Operations Support Centre, based at the PTS in Vienna.¹⁸

A number of training courses have been conducted, including an OSI Experimental Advanced Course in Snezhinsk, Russia, which was used to further develop the training programme. By the end of August 2001, 170 persons had participated in introductory training courses and some of these experts will be trained in advanced courses and will participate in OSI exercises.¹⁹

In addition, Slovakia will host an experimental, mock on-site inspection in October/November 2001. Another trial, the timing and location of which remain confidential, will take place at a later stage.²⁰ Such trials have been successfully used in the development of the on-site inspection arrangements in other regimes and have helped dispel exaggerated fears with regard to the loss of confidential information.²¹

The slow progress in discussions on the Operational Manual is hindering the procurement of OSI equipment. As long as the procedures for OSIs are unclear, the PTS can only procure certain types of equipment, such as tools for passive seismic measurements, still and video photography, visual observation and position finding and low resolution gamma search. But procurement of other instruments, such as high resolution gamma spectrometry tools and equipment for xenon detection, has been delayed because of disagreements about requirements.²² For example, some states insist that certain equipment be 'blinded' so that it only reveals data indicative of a nuclear explosion. Further, they insist that these limitations be incorporated into the equipment's hardware (rather than encoded in the software). Such specifications are expensive and will unnecessarily prolong the procurement process.

The PTS has also started looking at the logistical requirements for future OSIs, for example the facilities and arrangements at Vienna International Airport for

ensuring the rapid dispatch of on-site inspectors and equipment.

Creating an open organisation

Another issue for which no solution has been found is the use of IMS data for purposes other than test ban monitoring. Some states in the PrepCom, including China, argue that the confidentiality provisions of the treaty prohibit the distribution of IMS data to non-states parties. Some Western states and others favour a more open policy, arguing that IMS data has little national security relevance. The US specifically argues for the immediate and complete release of all IMS data.

The treaty itself only obliges the Technical Secretariat to 'make available all data, both raw and processed, and any reporting products, to all States Parties' (Article IV paragraph 14.e). But it is unclear whether this excludes the possibility of making information available to others. Unlike other verification regimes, data that is available to the IMS is not confidential information provided by governments. Rather, it is scientific data that has been collected and analysed by the international organisation itself.

IMS data could be used in a variety of contexts. Scientific and humanitarian relief organisations, for example, have expressed an interest in receiving it. Data from the seismic network is of interest to seismologists in improving their ability to predict earthquakes and other natural phenomena. Hydroacoustic stations could give early warning of tsunamis, while infrasound stations could warn of volcanic eruptions. Another option would be to make IMS data available to everybody, possibly with a built-in delay for certain types of data.

It will in any case be difficult to prevent leakage of the data, since data centres in all CTBT parties will have direct access to it. In order to evaluate confidentiality rules, the PTS has been planning a phased release of certain types of data to a limited number of non-state recipients. Thus, humanitarian organisations could promptly receive IMS data for disaster relief operations, while others would have only delayed access. The proposed test of a delayed release of certain types of IMS data beyond states parties' National Data Centres has not begun because of the continued resistance of at least one state party.

The development of the CTBTO as 'a relatively open organization that cooperates with other organizations, national and international to make the most effective use of its resources, both to achieve its primary objectives and for the common good' was also contained in the report of an external review team that evaluated the functioning of the IDC in October and

November 2000.²³ Such a course of action would not only enable the CTBTO to freely exchange information with the scientific and non-governmental community, but might also provide another *raison-d'être* for the IMS in addition to monitoring for nuclear explosions.

THE WAY FORWARD

Five years after the CTBT was opened for signature, the completion of the verification system is overshadowed by the uncertain prospects of entry into force because a small number of the countries required to ratify it before it enters into force have refused to do so. The political uncertainty means that the PrepCom and the PTS is working against a shifting deadline, further complicating the already difficult task of setting up the CTBT's verification system.

Several interrelated political issues need to be addressed by the PrepCom:

- what is a realistic timeline for completing the IMS and the other components of the verification system so that the regime is 'capable of meeting the verification requirements' of the CTBT?
- what level of funding is required for the timely completion of the system and for maintaining the operational readiness of the IMS?
- what will eventually be required of the verification regime so that it is 'capable of meeting the verification requirements' of the CTBT?

The answers to these questions will depend on the level of political commitment of states to work towards entry into force of the CTBT. Key to this process is the US' position on the test ban, not only because of the political importance of the most powerful country towards a resumption of nuclear tests, but also because of the financial and technical importance of US support for the PrepCom.

The Bush administration's approach toward the CTBT has greatly complicated planning for the PTS in several aspects. The new administration has made it clear that it does not intend to seek ratification of the treaty. On the contrary, the US has taken several steps to distance itself from the test ban:

- in July 2001 it emerged that the administration had asked for legal advice on a possible withdrawal of the US signature of the treaty. The State Department's advice was that the CTBT remains before the Senate despite the failed ratification vote on 13 October 1999.²⁴

- Parts of the Republican leadership both in Congress and the administration still want to renounce US signature of the treaty.²⁵
- The administration has taken steps to shorten the lead-time necessary for a resumption of nuclear testing.²⁶

While the US is not the only state that has refused to ratify the treaty, Washington's test ban policy has taken the pressure off other countries which are reluctant to do so. This is most obvious in the case of India and Pakistan, which have both stated that they will not stand in the way of entry into force but have taken no measures themselves to become state parties.

All of this increases the uncertainty about the timing of entry into force. The PTS has developed a Programme Option Memorandum for 2002-2006, which describes several timelines for completion of the system. The PTS has made 2005 the target date for the completion of the IMS, even though this is not necessarily a realistic date for entry into force.

As a result, several states, including Latin American countries and China, have begun to make a connection between the rate of completion of the IMS and the entry into force of the treaty. As more and more IMS stations are certified, the PTS must absorb the operational and maintenance costs of these stations. Some PrepCom delegations have therefore floated the idea of 'mothballing' part of the system until the treaty enters into force. From a verification point of view, such proposals are short-sighted. IMS stations need to be maintained and operated on a continuous basis. In most cases, stopping operations of stations would necessitate re-certification and therefore only add to the costs of setting up the IMS.

¹⁸ CTBTO PrepCom document CTBT/PC-14/1/Annex III, 5-16 Feb. 2001, p. 15.

¹⁹ 'Background Document by the Provisional Technical Secretariat' for the Conference on Facilitating the Entry into Force of the CTBT, pws.ctbto.org, op. cit.

²⁰ CTBTO PrepCom document CTBT/PC-15/1/Annex III, 21-23 Aug. 2001, p. 8.

²¹ See John Hart, 'On-site inspections across arms control and disarmament regimes', *Verification Matters*, no. 3, VERTIC 2001, forthcoming.

²² CTBTO PrepCom document CTBT/PC-14/1/Annex I, 24-26 April 2001, p. 14.

²⁵ In a letter dated 12 March 2001, the then-Chairman of the Senate Committee on Foreign Relations, Jesse Helms, wrote to Secretary of State Colin Powell, that it 'is time for the Executive Branch to articulate a new policy on nuclear testing, to withdraw the U.S. signature from the CTBT, and to terminate funding to CTBT organizations.' Jonathan S. Landay, 'Jesse Helms pushes for U.S. pullout of nuclear test ban treaty,' *Knight Ridder Newspapers*, 29 March 2001, www.krwashington.com. On 4 April, ten Republican Senators in a letter publicly called on Secretary of Defense Donald Rumsfeld to terminate Defense Department efforts to implement the CTBT. Letter from Senator Jon Kyl and nine other Senators to Secretary Rumsfeld against CTBTO, 4 April 2001.

²⁶ C. Bruce Tarter, the director of the Lawrence Livermore National Laboratory in California, said in an interview that US nuclear weapons scientists are looking at 'what it would take to do various kinds of tests on various time scales.' See Jonathan S. Landay, 'Bush asks scientists for input on resumption of nuclear tests', *Knight Ridder/Tribune News Service*, 28 June 2001.

Behind these practical questions looms the larger issue of what will be required for the verification regime 'to be capable of meeting the verification requirements' of the CTBT.²⁷ The bottom line among delegations seems to be that the completion of the three Operational Manuals is a necessary requirement. But how much of the IMS needs to be completed? It is unlikely that all 321 stations will be completed in the near future as envisaged in the treaty, but this should not prevent entry into force and will not be necessary to verify the CTBT with sufficient confidence.

While this is not an urgent issue yet, developing realistic expectations of system requirements will make it easier to tailor the work of the PrepCom to the eventual political requirements.

While the completion of the CTBT's verification system is ultimately dependent on the political decisions of states that have not yet signed and ratified the CTBT, progress made towards completing the system in turn fosters political progress towards entry into force in at least two ways.

First, demonstrable progress shows the capabilities of the treaty's verification system and helps to dispel fears that the verification system has loopholes. Second, support for the verification system by the PrepCom is and will be seen as symbolising the political importance that states attach to the CTBT.

What is needed is that states maintain their political commitment towards the CTBT as a landmark international agreement, as well as to its early entry into force and smooth establishment of the treaty's verification system. Steps to be taken include:

- keeping up the pressure on those states that need to ratify the treaty for it to enter into force,
- completing the IMS as a priority task. This will need patience and support from all member states of the PrepCom,
- creating a flexible and effective on-site inspection regime, by redoubling efforts to develop an Operational Manual,
- creating an open verification regime that can make its data available to scientific and humanitarian relief organisations by overcoming undue concerns about confidentiality,
- urging the US to reconsider its new policy, as announced on 21 August in Vienna.

Oliver Meier is Senior Arms Control and Disarmament Researcher at VERTIC.

²⁷ CTBT, Article IV.1.C.



VERTIC is the Verification Research, Training and Information Centre, an independent, non-profit making, non-governmental organisation. Its mission is to promote effective and efficient verification as a means of ensuring confidence in the implementation of international agreements and intra-national agreements with international involvement. VERTIC aims to achieve its mission through research, training, dissemination of information, and interaction with the relevant political, diplomatic, technical, scientific and non-governmental communities.

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Baird House
15/17 St. Cross Street
London EC1N 8UW
United Kingdom

Tel: +44 (0)20 7440 6960

Fax: +44 (0)20 7242 3266

Email: info@vertic.org

Web: www.vertic.org

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