INTERNATIONAL MONITORING SYSTEM: TASK LEADER VIEW FROM VIENNA

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ABSTRACT

An independent view from that of the Provisional Technical Secretariat (PTS) of the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO) is given on how the commissioning of the International Monitoring System (IMS) is planned and resourced. The presentation describes briefly the main policy-making organs of the CTBTO and also gives a brief description of the CTBTO's International Monitoring System (IMS) regime. It also looks at the progress made by the PTS in meeting the goals of the 1997, 1998, and, as far as possible, the 1999 work programmes. The presentation identifies some of the problems encountered by the CTBTO, both politically and technically. Consideration is made to the future financial resourcing of the CTBTO, in particular the IMS major programme, future IMS-related issues that need addressing, and attempts to predict when the Entry-into-Force criteria might be met.

Key Words: International Monitoring System, Provisional Technical Secretariat, Comprehensive Nuclear-Test-Ban Treaty Organisation

AIM

The aim of this presentation is to give an overview of PTS progress on commissioning the International Monitoring System (IMS), which is part of the verification regime necessary for the Comprehensive Nuclear-Test-Ban Treaty (CTBT). The purpose is to show how the commissioning is planned, what progress is being made, to give an indication of the difficulties that have been encountered, and what I see as the future.

This is a personal view and does not represent the views of the United Kingdom Mission in Vienna nor that of the British Government.

BACKGROUND

Although there have been negotiations on a CTBT that stretch back over 40 years, the Treaty that was eventually signed resulted from negotiations held at the Conference of Disarmament in the period January 1994 through June 1996. The Treaty was opened for signature in September 1996, and currently it has over 150 Signatories and almost 40 ratifiers. In order to bring the Treaty into effect, a Preparatory Commission (PrepCom) was set up in November 1996 with its home in Vienna. The PTS was established there in March 1997 in offices occupying three then-empty floors of one of the tower blocks of the Vienna International Centre.

Various bodies or organs were established during the PrepCom phase. There is the parent body itself and its subsidiary organs of Working Group A (WGA), Working Group B (WGB) and the Advisory Group. PrepCom is the governing body, somewhat similar to the International Atomic Energy Agency (IAEA) Board of Governors. WGA deals with nontechnical issues, whereas WGB is technical, dealing with all issues associated with verification, not just the IMS. The Advisory Group, formerly called the financial AG, deals mainly with financial and procedural matters. Each meets for various durations three time a year in Vienna. The chair of PrepCom rotates periodically on a geographical basis, whereas the terms of the Chairs of the other bodies are not defined.

Under the Chairmanship of Dr. Ola Dahlman WGB is structured with five programme coordinators who have responsibilities for each of the five major verification programmes.

THE INTERNATIONAL MONITORING SYSTEM

The IMS, as defined in the Treaty, comprises 321 monitoring stations employing four separate monitoring technologies: seismic in the earth, hydroacoustic in and above the oceans, and infrasound and radionuclide in the atmosphere. The stations are distributed world wide. The radionuclide stations are supported by up to 16 radionuclide laboratories, again distributed on a wide geographical basis. This monitoring system will the largest associated with any international treaty. It will also surpass any national capability.

Though many seismic stations already exist, most will require some upgrading. Several new arrays are required and several three-component stations need to be upgraded to arrays. Digitization and communication at many need to be increased considerably. The hydroacoustic system is almost new: the only two existing ones being the US MILS arrays at Wake and Ascension Islands whose conditions are not yet up to the IMS standards. The infrasound system, which is almost entirely new, requires 4-element arrays to be installed at a minimum. Although there are many radionuclide stations existing worldwide their suitability for IMS purposes is not good. Perhaps one-fourth of the required particulate stations exist but almost all need some upgrading. Virtually no noble gas capability exists at IMS locations. For many, noble gas detection is seen as a particularly important monitoring capability.

ENTRY INTO FORCE

For this Treaty to enter into force, two criteria must be met. The first is political in that 44 named States not only have to sign this Treaty but also have to ratify it. The Treaty can enter into force 180 days after the deposition of the 44th instruments of ratification. The second requirement is not

so exact but it requires that an operational verification system must be capable of meeting the verification requirements of the Treaty. Some States take this to mean, *inter alia*, that all 321 IMS stations need to be established. This view is not subscribed to by all, including some powerful States.

COST

The IMS will be costly. The early estimates at Geneva were US$80-100M with the belief that these estimates might prove to be too low. This is certainly the case and recent estimates total about US$145-180M. As the PTS get a better understanding of the tasks required and various technical organisations or institutions are approached, it is becoming apparent that even the current updated cost estimates are probably too low, especially when stations in the most remote arrears are addressed. It is possible that the costs of logistics may outweigh the instrument costs in some cases. Even when established, the IMS alone will be expensive to operate and maintain.

PLANNING OF THE COMMISSIONING PROGRAMME

In mid-1997 the question was asked: which stations should be commissioned first? At that time there was virtually no technical staff in the PTS; rather, it was composed of political, administrative and legal branches. Thus, WGB had to define the technical work programme. WGB's recommendation was adopted for the 1998 and 1999 work programmes. WGB also tried to cost the programme, although in reality it was not the best possessor of accurate information. When it came to the 2000 programme and budget, which is still under active debate, a different approach was adopted. It was felt that the PTS had come of age and therefore should be given the responsibility of developing its own programme, following closely the guidelines given to it by WGB. In all cases the final programme is agreed and approved by PrepCom. The whole process has been unpleasant at times since extreme positions are taken by some delegations. There are those who wish to see expeditious progress being pursued and realise that this requires high financial resourcing, while others for whatever reason are advocating very low levels of spending and are willing to accept slower progress. Some delegations have called for Zero Real Growth even in the second or third years of a large capital investment programme.

The outcome of this difference of opinion is that so far the programmes have been modest concentrating perhaps in the first few years on surveying sites. This is consistent with the concept of "preparedness" advocated by the WGB chairman. As time passes, it is hoped the emphasis will move from surveying to upgrading leading eventually to certification and operation.

The PTS runs on annual budgets that have risen from $28M in the partial year of 1997 to $75M in the year 1999. The PTS have shown that when this organization is completely established, some $85M/yr will be required. To date the IMS element has consistently been just under 50% of the total.

PROGRESS TO DATE

Progress in implementing the IMS commissioning plans so far has not been good, although 1999 has seen a dramatic improvement. With hindsight it is easy to say that some States Signatories have been too demanding and too unrealistic in their expectations. 1997 was a poor year with little being achieved; 1998 was slightly better in that some surveys but virtually no installations or upgrades were conducted other than those carried out by a few countries using their own funding and resources. However, 1999 has seen a vast improvement and the PTS remain confident of completing the combined 1997/8/9 work programmes in a timely fashion.

The reasons for poor progress are many, ranging from the absence of an existing infrastructure, slow staff recruitment, lack of legal basis for work to be done, poor cooperation by some States Signatories, costs higher than expected, lack of decisions by WGA and WGB in some cases, and lack of project management experience in an international regime. One particular problem concerns the exact locations of the stations as specified by geographical coordinates in the Treaty. When the networks were being developed by the technical experts at Geneva, there was an understanding that

the locations could be accurate to perhaps 50-100 km without adversely affecting monitoring capability. However, when the Treaty came to be drafted, some nontechnical diplomat decided that precision was called for and identified the stations by geographical coordinates. However, this was not too exact and, as a result, the locations listed for several stations are essentially wrong.

FUTURE INVESTMENTS TO MEET TARGETS

Up to now, there has been much debate on the annual budgets, which have risen each year, as is expected for a programme that has a large capital investment programme. One of the problems for many delegations is that they had no indication to what level the annual budgets might rise. In developing programmes the two guidelines required, namely an end-date or an annual financial limit, have not been given. Following calls from many delegations in early 1999, the PTS produced what was called their 5-year plan (CTBT/PTS/INF.98). In this they gave indications of what they saw as annual budgets to complete the capital investment programme by certain dates. They took the year 2004 as the mean, with accelerated and decelerated programmes for completion in 2002 or 2006 as alternatives. Delegations regarded this document as an information document and accepted its contents on the understanding that it was not to dictate the pace of progress. That was for the State Signatories to determine. The figures show that annual budgets over $100M are required in some years dropping to a steady state value of about $85M after completion of the verification regime. This figure is required to keep the organisation running and does not include any recapitalisation. So far, annual budgets have been well below the steady state value.

MAIN ISSUES FOR FUTURE CONSIDERATION

Many technical issues remain outstanding, and some require urgent resolution. In particular there is a need to get the IMS operational manuals sorted out. Another important issue is the degree to which IMS data and International Data Centre products are confidential and not available to the world at large. There are very opposing views on this. One delegation wants the information to be freely available to all, while a second delegation believes it should be embargoed for three months before being released. There is also much to be resolved associated with the radionuclide laboratories and transportation of IMS samples from stations to the laboratory.

THE FUTURE

A question often asked is “when will this Treaty enter into force?” There is no simple answer. Each can make individual judgments against the two criteria, namely the political and technical criteria. Even with adequate funding, it will be at least five years before all the requirements are met. Without adequate funding it is impossible to answer exactly, but one possible answer is “never.”