CHAPTER III

THE POLITICS OF VERIFICATION

The issue of the verification forms the core of this chapter. As suggested earlier the verification negotiations went through three stages before agreement was reached on a verification regime. However, I would note that the notion of stages or phases here is an analytical one. There are always boundary problems in dividing up a process such as this into neat divisions. At any rate, in the first phase the nuclear powers explored the technical feasibility of the test ban verification. As the International Monitoring System (IMS) formed the core of the regime, the focus during this phase was to identify the various technologies to be used in it. After this diagnosis the negotiations entered the second phase. During this phase, negotiators agreed on the number and the locations of the IMS stations. Moreover, other issues, like on-site inspections, gained prominence during this phase. In the final phase, political question related to IMS and decision-making procedures on OSI were dealt with to bring about a consensus.

PHASE I OF NEGOTIATIONS: THE BEGINNING

The issue of arms control verification has traditionally remained a contentious one. The reasons are self evident: States want to ensure that an agreement is fully complied with. As the mechanism of doing so involves complex surveillance technologies, they also want to be assured that the
verification system is not abused by an adversary to its benefit. How then did the nuclear powers coordinate their efforts during the 1994-1996 CTBT negotiations to evolve a consensus verification? What technologies were involved in the putative verification system? How were technical judgements combined with political manoeuvring?

From the beginning, in January 1994, there was a basic consensus amongst the nuclear powers that the envisaged verification regime would comprise both technical and physical verification. As a result the verification system was to include (a) an International Monitoring System constituted by a global seismic network, (b) transparency measures, (c) consultations and clarification, and (d) on-site inspections. The reasons behind this elaborate system were both political and technological.

On the political side, the mandate given to the Ad Hoc Committee called upon to negotiate a “universal and multilateral treaty”. By extension, this also called for a global verification regime. The verification of the earlier Partial Test Ban Treaty (PTBT) was done by national technical means (NTM) only. Although NTMs included technologies such as satellites, bhangmeters and other communication intercepts, they are available to only a few advanced industrialised states. And while these may provide quality verification, reliance on them discriminates amongst the “haves” and the “have-nots”. This was inappropriate for a treaty which had been envisaged
as universal.\textsuperscript{1} Furthermore, since the threat of nuclear proliferation is "real" and goes beyond national boundaries. Hence a global verification regime rather than NTMs were required.\textsuperscript{2}

Beyond the political reasons for a complex system of verification there were technical reasons also. Any one technological method would have its limits. For instance, the cornerstone of the global verification regime is the International Monitoring System comprising a network of seismometers. The assumption is that when nuclear detonation takes place, underground vibrations are generated. These vibrations travel on different paths, at different speed, and are caught by a network of seismometers. The problem is to determine whether a seismic signal was actually caused by a nuclear explosion or by a natural earthquake or a chemical explosion carried out in a mine. Therefore, while it is easy to detect an explosion, it is rather difficult to identify the nature of that event.\textsuperscript{3} The problem gets further complicated if it is a very low-yield nuclear explosion. Moreover, there were fears of evasion by a "rogue" state. Nuclear explosion can also be decoupled: that is, muffling a

\textsuperscript{1} This argument is based on an article published by Wolfgang Hoffmann. The German diplomat was Chairman of the Working Group on Verification in 1994. For details, see Wolfgang Hoffmann, "The Verification Regime", \textit{Disarmament}, Vol.18, No.1, 1995, pp.70-86.

\textsuperscript{2} Ibid.

seismic signal by firing an explosion in an underground cavity.\(^4\) Test ban verification is particularly a difficult task in view of the requirement to deter evasion in all possible environments. For these reasons, any verification regime must exploit a combination of mechanisms including physical verification: on-site inspections, consultations, and clarifications.

Beyond this basic agreement, the five nuclear powers remained divided on the specifics. For instance, which technologies should be exploited for the proposed IMS? What should be the role of the national technical means (NTMs)? What should be the procedures to trigger-off an OSI? In this sense, this phase was a search for first principles. Unlike scope, verification issues were dealt with in a more graduated manner.

At the outset, the United States had insisted that the CTBT required an "effective" verification regime. According to the US Ambassador, Stephen Ledogar, such a regime "will have a deterrent effect on the would-be violations".\(^5\) Indeed, the US position on the issue was rigorous to the extent that it even wanted some provision within the treaty framework to punish violators. On February 3, the US Ambassador asserted: "the CTBT should provide for a rigorous and a non discriminatory collective action against violators and for ultimate recourse to the United Nations Security Council".\(^6\)


\(^6\) Ibid.
In addition, the US called for an efficient monitoring capability consisting of multiple components. This included a seismic network atmospheric sampling for radionuclides and gaseous debris and provision for on-site inspections.\(^7\) The US, at this stage, appeared to be concerned that the proposed system should be able to identify evasively conducted nuclear explosions of less than a few kilotons yield.

Britain largely shared the US view on verification. It called for a regime comprising an international monitoring system and on-site inspections. While it did not specify its choice of technology to be used for the IMS, it did state clearly that the “seismic regime will not be the only means of monitoring”.\(^8\) Britain, it would appear, wanted the verification system to be complemented by other technical means. London did not specify what other technical means at this stage.

Britain also emphasised the role of on-site inspections. As the British Ambassador put it at the CD plenary on January 25, 1996: “the principal objective of on-site inspection should be to clarify the nature of any suspect event which might be detected - but not necessarily clearly identified - by the monitoring system.”\(^9\) Moreover, like the US, Britain also wanted to ensure that the treaty contained a provision to punish violators. The British Ambassador argued: “Naturally we hope that the verification regime will be

\(^7\) Ibid.


\(^9\) Ibid.
sufficiently effective to deter violations of the treaty. But where it fails to do so, it will be necessary to ensure that there is a provision within the treaty for action to be taken".\textsuperscript{10}

Russia did not disagree with the US and Britain. However, Russia's main concern, initially, appeared to be that the verification regime be cost-effective: "the Russians delegation will pay close attention to the financial side of the issue, without detriment, of course, to the effectiveness of verification."\textsuperscript{11} Towards this end, Russia had proposed the "maximum use of existing monitoring capabilities".\textsuperscript{12} Moreover, it argued elsewhere that "the process of the creation of the CTBT verification [must] be pragmatic, [of an] evolutionary character".\textsuperscript{13} In accordance with the above approach, Russia emphasised the use of national technical means (NTM). Furthermore, it suggested that additional verification techniques could be added later, at a subsequent stage of treaty functioning. The Russian Federation's approach to verification, as Berdennikov summed up in \textit{Disarmament}, is based on following fundamental provisions: (a) the CTBT verification system should include all environments where testing is possible, (b) it should be non-discriminatory in nature and data from international technical monitoring means should be available to all, (c) the process of setting up a system

\textsuperscript{10} Ibid.

\textsuperscript{11} Grigori Berdennikov, Russian Ambassador, 1 February 1994, CD/PV.668, p.10.

\textsuperscript{12} Ibid.

\textsuperscript{13} As quoted in Rebecca Johnson, \textit{Strengthening the Non-Proliferation Regime}, Acronym No.6 (London: The Acronym Institute, April 1995), p.14.
should be an evolving one, i.e., the system should remain open so that it may include at subsequent stages of treaty functioning, new methods and technical means enhancing the reliability and quality of verification, (d) and, the cost of establishing a verification system should not impose excessive burden, otherwise its universality may be jeopardized.¹⁴

Throughout the first phase, France did not express its views on the structure of the proposed verification regime. However, it did believe that the regime should be fully designed and tested by the time the treaty entered into force.¹⁵

While the US, UK, Russia and France shared more or less similar views, it was China which remained apprehensive that an intrusive regime could be abused. Early on during the negotiations, China had explicitly warned:

We believe that the verification clauses and arrangements should be strict, effective, fair and reasonable, and should reflect the basic principle adopted by the United Nations General Assembly on verification of disarmament and arms control agreements. While state parties to the treaty should abide by the treaty and honour their obligations to accept fair verification-related information and relevant resources and technology, abuse of verification leading to unjustifiable interference in the internal affairs of States parties and infringements of their security must be prevented.¹⁶

¹⁵ Ibid.
Within these broad parameters, the Ad Hoc Committee on the Nuclear Test Ban began its work. As a first step, it established a Working Group (WG) I, on verification. This was chaired by a German diplomat, Ambassador Wolfgang Hoffmann. Throughout the year, the Chair worked under the guidance of four "Friends of Chair": Ajit Kumar of India on seismic verification; Dr. Peter Marshall of UK on non-seismic technologies; Victor Slipchenko of Russia on on-site inspections and Berthil Roth of Sweden on transparency measures.

Throughout the year, the "Friends of the Chair" worked in close coordination with the various technical expert groups to explore the requirements and design options for the verification regime. However, progress was impeded by two factors. First, the baseline of scope was yet to be determined. That is, what type of nuclear tests were to be verified? Would 'test preparations' be verified as demanded by Sweden? Were hydronuclear experiments to be prohibited under the treaty? Political indecision on these questions retarded progress towards evolving a verification regime at this stage. Secondly, the technical requirements of the verification regime also were at an experimental stage. For instance, the core of any verification regime is the global seismic monitoring. With the purpose of developing an optimum concept of seismic monitoring, the CD had in 1976 established an independent Group of Scientific Experts (GSE). The group was expected to

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work for a technically feasible network of seismic stations: its location, and
together with the International Data System. However, at the beginning of
the test ban talks, the GSE was still continuing with its technical tests. The
third and final test GSETT-3 (GSE Technical Test 3) was scheduled in
January 1995. This prevented any major political decision on the issue of
verification. Thus, throughout the first phase, the focus was largely on
technical matters. As a result of a hectic exercise, the Ad Hoc Committee - by
the end of the first phase - managed to agreement amongst the nuclear
powers on the proposed International Monitoring System. The number and
the location of the proposed monitoring station however continued to be
contentious.

**International Monitoring System**

During the month of August 1994, an expert group coordinated by
Peter Marshall - one of the “Friends of the Chair” on non seismic technology - worked on the combination of techniques for the proposed IMS. The idea was
to experiment for optimum detection and identification at three standard
yields: 5 kt, 1 kt, 100t. Based on Marshall’s work, the GSE combined at least
six technologies: seismic network, radio nuclide, hydroacoustic, infrasound,
satellite monitoring, and electromagnetic pulse monitoring (EMP). On
September 2, 1994, Marshall presented a paper titled “Illustration of Possible
Networks of Sensors to Detect, Locate and Identify Explosion Underground,
Underwater and in Atmosphere Based on Reports of Experts”. 18 This paper

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suggested six possible IMS network options. In each option, the technologies complemented each other by the principle of synergy. Moreover, each option also provided the different numbers, types and geographical distribution of stations, with the whole providing better coverage than the sum of its parts.

The six options were as follows:

[a] To detect 5-kt explosions underground, underwater and in atmosphere (25 primary seismic, 75 auxiliary seismic, 50 infrasound, 50 radionuclide, 15 hydroacoustic); [b] To detect about 1-kt explosions underground, underwater and in the atmosphere (43 primary seismic, 100 auxiliary seismic, 100 infrasound, 95 radionuclide, 15 hydroacoustic); [c] To detect about 1-kt explosions underground, underwater and in the atmosphere (50 primary seismic, 100 auxiliary seismic, 50 infrasound, 75 radionuclide, 5 hydroacoustic); [d] To detect 1-kt explosions underground, underwater and in the atmosphere, using aircraft (43 primary seismic, 100 auxiliary seismic, 3 airborne radionuclide, 20 hydroacoustic); [e] To detect 1-kt explosion underground, underwater, in the atmosphere and in space, using satellites (43 primary seismic, 100 auxiliary seismic, 15 hydroacoustic, 18 satellites); and (f) To detect 1 ton explosions underground, underwater and in the atmosphere (150 primary seismic, 150 infrasound, 150 radionuclide, 15 hydroacoustic).\(^{19}\)

These technical findings prepared the background for a political decision. During the intersessional meetings held between November 28 to December 16, 1994, the position of four of the five nuclear powers began to converge. The US, Britain, France and Russia signalled a policy compromise, namely, that the IMS be based on four technologies: seismic, hydroacoustic,
infrasound, and radionuclide. To bring down the expenses of the IMS, Russia disagreed on the numbers and locations of the stations.²⁰

China, however, disagreed with the other nuclear powers. While it wanted the above mentioned four technologies, it additionally demanded an independent global satellite. As China argued, “satellites are the most effective, timely and reliable means of sensing nuclear explosions in the atmosphere and outer space”.²¹ Although, it was widely thought that a satellite monitoring system could definitely enhance detection capability, experts argued that China was motivated by other concerns. As Rebecca puts it, “China’s position is chiefly determined by its desire not to be dependent on satellite and other intelligence from national technical means controlled by others (i.e. the US and Russia)”.²² However, the question arises: will the other nuclear powers accept an highly expensive Chinese demand for a satellite network? There could be second reason for the Chinese demand. As a Western analyst puts it:

Although the Chinese see their interests best served by the creation of an independent IMS for verification of a CTBT, they do not expect the United States and Russia to agree to provide real-time sharing of data from their NTM nor to agree to the building of an expensive and elaborate satellite monitoring under the International Secretariat of the CTBT Organisation. Beijing nevertheless sees political advantages in its relations with the developing states in pressing for equality in the verification provisions. The Chinese also realise that they can

²⁰ Johnson, n.13, p.15.
²² Johnson, n.13, p.15.
slow down the negotiations by forcing debate over their verification proposals.\textsuperscript{23}

Moreover, China had also called for electromagnetic-pulse (EMP) monitoring. Except that the EMP sensors can be thought to ensure better coverage of atmospheric explosion, China did not put forward any specific reason for the EMP demand.

To sum up, at the end of the first phase, there was a broad-although not universal-agreement on four technologies to be used for the IMS. China, additionally demanded satellite monitoring and the EMP sensors. No agreement was arrived on the numbers and locations of the stations. Yet, the phase was crucial as it prepared the basis for further negotiations.

PHASE II OF NEGOTIATIONS: THE SEARCH FOR CONVERGENCE

The opening of the CD, on January 31, marked the beginning of the second phase of negotiations. As we have seen the political decisions on verification aspects had to be combined with technical feasibility. Hence, the negotiators were forced to coordinate with the technical experts. After the nuclear powers broadly converged on the technology to be used for the IMS, the task ahead was to agree on the number and location of the stations. Also, other verification issues which had politically remained dormant, for instance, on-site inspections, now gained prominence. Why did they came into focus now and not earlier? The most likely reason is the IMS forms the

core of any verification system. Only when states have agreed upon it substantially does the question of physical verification including on-site inspecting, consultation, and so on, arise.

On February 3, 1995, the Ad Hoc Committee was reconstituted with Ambassador Ludwik Dembenski as the new Chair. He immediately appointed the Swedish Ambassador Lars Norberg as the Chairman of The Working Group (WG) on verification. Unlike the previous year, Norberg appointed six “Friends of the Chair” for verification. They were: Peter Marshall of the UK on Technical Verification; Patrick Cole of Australia on the IMS; Ralph Allwine of the US on the International Data Centre; Victor Slipchenko of Russia and Hamid Baidi of Iran on OSIs; and Richard Ekwall of Sweden on transparency measures. The appointment of six “Friends of the Chair” itself was indicative that the issue would become important during this phase. Two matters figured prominently during this phase: the International Monitoring System; and On-Site inspections.

The International Monitoring System

Following the broad agreement reached at the end of the previous phase, the IMS was to consist of four technologies: seismic, hydroacoustic, radionuclide and infrasound. The challenge was now to arrive at a consensus on the number and locations for the system. As the majority of stations would be seismic, the others merely complementing them, the first task was to evaluate the effectiveness of a seismic network.
The idea of an international cooperative regime for detecting underground nuclear explosions through seismic means dates back to the Swedish proposal of 1965.\textsuperscript{24} It initially began as an informal Group of Experts known as the "detection club". In 1976, in an effort to institutionalise it, Sweden proposed the establishment of an Ad Hoc Committee of government-appointed experts. The proposal was adopted and was entitled "The Scientific Group of Experts to Consider International Cooperative Measures to Detect and Identify Seismic Events".\textsuperscript{25} This group of scientists and technical experts drawn from several countries was mandated to establish and maintain an international seismic monitoring network for the verification of a comprehensive nuclear test ban treaty.

At the beginning of the test ban negotiations, this Group of Experts (GSE) had conducted two experiments: GSETT-1 (GSE Technical Test 1) and GSETT-2. The third test GSETT-3 was inaugurated on January 1, 1995.

GSETT-3 envisaged a two-tier system. First, a network of 60 primary seismic stations which would feed the information directly into the International Data Centre (IDC). For experimental purposes, the US had offered its data centre at Arlington, Virginia. The second tier would include approximately 150 auxiliary stations, linked up with the National Data Centre (NDCs). This, however, could be accessed by the IDC, if necessary. The


\textsuperscript{25} Ibid., p.62.
network also had a provision for a third tier of stations, to be operated by participating countries. This could be used only for clarification regarding any unusual event in one’s locality.

After successfully performing the experiment, the Group of Scientific Experts (GSE), Chaired by Sweden’s Dr. Ola Dahlman, held three meetings in the CD between February 20 to March 3, again between August 7-18 and finally from 27 November to 1 December. The experts confirmed during the meetings that the initial phase had “started successfully” and was “achieving its basic objective of acquiring, storing and disseminating data”. Although in its August 1995 report, it was stated that additional work was required to further develop the system; it was confirmed the network could well identify explosions upto the location accuracy of 1000 sq. km., down to a depth of 15-25 kms in well covered areas.

Encouraged by these technical findings, the position of the nuclear powers began to converge on the seismic network. They finally seemed to agree on 50 primary seismic stations and 100-150 auxiliary stations. This network would detect tests well below 1 kt when combined with other technologies. By the end of this phase the nuclear powers had broadly agreed on the locations and numbers of radionuclide, hydroacoustic and infrasound stations as well. At the end of this phase, there was agreement that the International Monitoring System would comprise of the following:

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26 As quoted in Johnson, n.13, p.16.
a) seismic: 50 primary and 100-150 auxiliary stations
b) hydroacoustic
c) radionuclide: 75-100 detectors for radioactive particles, with noble gas monitoring
d) infrasound: 70 detectors

This network was thought to detect and identify explosions, up to 1 kt. energy yield, with a high degree of confidence. China, however, additionally continued to demand EMP electromagnetic pulse sensors and a satellite network. Moreover, it had by now also come out against noble gas sensors to be included in the IMS. Noble gases, like argon and xenon, are characteristic of a nuclear explosion and hence their monitoring is thought to enhance the detection capabilities of the IMS.

On-site Inspection

The most intrusive measures to monitor treaty compliance are on-site inspections. OSI are a means whereby treaty signatories allow specific areas, installations or other facilities to be surveyed by a group of internationally mandated experts. In 1963, the test ban negotiations were bogged down on the issue of on-site inspections. The United States and the Soviet Union at one point had proposed respectively seven and three on-site inspection to monitor the comprehensive ban, but both sides were far from reaching agreement on the critical details of these inspections: how many

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inspector would be permitted, the length of their stay, the area or zone of inspection, the methods to be allowed during the inspection and so on. During the negotiation the Chemical Weapons Convention (CWC), the issue of on-site inspections contributed to years of delay before it was finally agreed in 1992.

During the 1994-96 test ban talks, on-site inspections remained contentious. During the first phase, no political issue related to on-site inspections was debated. Indeed a technical committee was appointed under the coordination of John Zucca of the US to explore the characteristic or residual effects of nuclear detonation in various environments and the potential evasion scenarios. It was then also asked to suggest effective on-site inspection measures. This technical report completely ruled out on site inspection in space and the upper atmosphere and focussed instead on underground, underwater and lower atmosphere evasion scenario. After these technical findings, political issues related to on-site inspections gained prominences. The most compelling questions on which the nuclear powers appeared badly divided were: What should be the level of evidence necessary to back up a request or “trigger” an OSI? Secondly, what should be the basis of suspicious evidence: the IMS or the national technical means? Thirdly, could a request originate from the Implementing Organisation or only a State Party? Fourth, should the treaty contain

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provisions for routine on-site or challenge inspections? Finally, and perhaps the most contentious, what should be the decision making process to initiate or trigger an on-site inspection?

From the beginning the United States wanted the on-site inspections to be quick and conducted at the earliest after a request was made. This position perhaps was an extension of its overall maximalist position on the issue of verification. One reason for the US position was the fear that crucial evidence could be lost if there was any delay. In that context, the Western nuclear powers believed that an OSI could be requested on the basis of either IMS or national information or both, although they suggested different decision-making procedures. The U.S. had earlier, in the month of February 1995, proposed that the on-site inspection could be conducted in two phases. The first would be of a relatively shorter duration with low intrusiveness, but conducted soon after detection of a suspicious event. This might include aerial overflights and visual inspections and seismological measurements. The second phase would be more intrusive and of longer duration, involving expensive drilling, if necessary.\(^\text{29}\) On the decision making or the trigger mechanism, the US believed that the first phase could be conducted with a "red light" agreement and the second phase by a "green light".\(^\text{30}\) In a "red light" trigger mechanism, the on-site inspection can occur, following a request unless specifically blocked by a negative vote of the Executive

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\(^{29}\) Johnson, n.25, p.24.  
\(^{30}\) Ibid.
Council. In a "green light" mechanism, an OSI can be activated only after a positive decision has been taken by the Executive Council. With the exception of Russia and China, the US view was shared by the Western states, including France and Britain.

Russia and China believed that the OSI should be a last resort. Also, they believed that the request for the inspection should be made only after other possibilities of clarification had been exhausted. Russia, however, appeared to be less "orthodox" than China. Indeed, China was the most worried about frivolous, unfounded or abusive inspections. As a result, it wanted an independent CTBT-specific satellite network, rejected reliance on national technical means, and wanted to evolve a cumbersome decision making procedure which would minimise the risks of abusive OSI. It favoured, in short, the "green light" mechanism. This also brought into question the membership of the Executive Council. These questions related to wider political debated on the treaty per se and also related to the end-game bargaining.

**PHASE III OF NEGOTIATIONS: TOWARDS AGREEMENT**

The final phase of negotiations began on January 23, 1996. Jaap Ramaker of the Netherlands had taken over as Chairman of the Ad Hoc
Committee. Early on, during the negotiations, he had set a timetable for the treaty's conclusion. According to this timetable, he was expected to present an "Outline of a Draft Comprehensive Test Ban Treaty" on March 29, i.e. the penultimate day of the first part of the 1996 CD session. At this early stage, there was a broad agreement on the International Monitoring System (IMS). However, China had still not agreed to it and was demanding the inclusion of satellite monitoring and electromagnetic sensors. Beijing had also called for the exclusion of noble gas monitoring. Moreover the issue of on-site inspections remained contentious.

To further streamline the contentious issue, Ramaker had appointed the Russian diplomat, Grigori Berdennikov, as the Chairman of the Working Group I on verification. Furthermore, he had the support of five "Friends of the Chair" who were primarily responsible to turn the emerging agreement into a consolidated treaty language.

The first glimmer of hope towards a full fledged agreement on the IMS appeared on March 28, the day China signalled a review of its position on the satellites and the EMPs. However, it clearly signalled that it would seek a reciprocal concession. Any decision to drop the requirement for specific satellite and EMP networks as part of the IMS would no doubt have to be accompanied by agreement on getting access to such data. The next day,

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34 Conference on Disarmament Doc.CD/NTB/WP.321, 28 March 1996.
on March 29, Ramaker presented the Chair's treaty outline. This "Outline" highlighted only on-site inspections as an outstanding contentious issue. The nature of the reciprocal concession to China for dropping its demands were not known until May 28 when the Chairman presented his first draft treaty. Titled as the "Draft Comprehensive Nuclear Test-Ban Treaty", it omitted China's demand for satellites and EMP sensors. However, it included provision for the improvement of the verification regime, allowing such technologies to be incorporated at later stages of treaty functioning.

For this purpose the May 28 draft contained a special provision which read:

Each State Party undertakes to cooperate with the Organisation and with other State Parties in the improvement of the verification regime, and in examination of the verification potential of additional monitoring technologies such as electromagnetic pulse monitoring or satellite monitoring with a view to developing, when appropriate, specific measures to enhance the efficient and cost-effective verification of this treaty.  

In this manner technologies or stations could be added or deleted from the IMS without requiring the full process of an Amendment Conference.

China in addition managed to secure its demand of information access from other states' NTMs. Ramaker's May 28 text had a separate provision which called upon states to establish a "cooperative arrangement" to make

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37 Ibid., p.19.
data available from national stations which are not formally part of the IMS. However, this applied only to the 'IMS-type' technologies. It was with thus that China adapted to the earlier agreed positions of the four other nuclear powers. The issue of IMS was finally settled. The agreed upon IMS was now as follows:

(a) 50 primary seismic stations; (b) 120 auxiliary seismic stations; (c) 80 radionuclide stations for measuring radioactive particles in the atmosphere, of which 40 would also be designated for the presence of noble gases; (d) 11 hydroactive; (e) 60 infrasound. This later became the part of the final treaty adopted at the United Nations.

Ramaker's May 28 draft also brought the issue of the on-site inspections centre stage. Ramaker had already stressed that his draft was to facilitate the "last and the final stage of negotiations". Due to the treaty-breaking importance of on-site inspections, it had become the major issue of the nuclear powers' confidential meetings as well. Indeed, this was the last outstanding verificational issue which had to be dealt with, and hence had a bargaining value as well.

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39 Ibid.

40 Ibid., p.15.
On-Site Inspections

The issue of on-site inspections gained prominence in the final stage of verificational negotiations. During the first phase, the "Friends of the Chair" concentrated on the technical nuances and on identifying the nature and the residual effects of clandestine activity. During the second phase, political questions related to on-site checks were raised. The nuclear powers also expressed their national positions on the issue. However, it was not thought to be negotiable at that stage. The nuclear powers preferred first to agree on the International Monitoring System which is thought to form the core of the verification regime. Moreover, negotiation experience suggests that "not all issue are negotiable at a given time".41 Recognizing the "political" sensitivity of the on-site inspections, it was thought by some states to be an end game issue.

With the beginning of the final stage, the OSI issue had gained prominence. As a result, Ramaker had nominated Ambassador Mark Moher of Canada as a "Friends of the Chair" for on-site inspections. For the Chair, the most challenging decision was: what, when and how fast can on-site inspections be triggered? In addition, the question of admissibility of NTMs also remained debatable: could evidence from states' NTMs be deemed to merit an on-site request?

The issue became contentious because the three Western nuclear powers along with Russia wanted to ensure quick access and prompt collection of evidence. Moreover, they wanted any kind of relevant information, including those gathered by the NTMs, to trigger off an OSI. China, however, was opposed. It argued for an OSI to be a last resort, rarely used, and only undertaken if a mandatory and stringent process for consultation and clarifications has failed to resolve the ambiguity. It was also strictly against any use of NTMs to trigger off an OSI. It thought that the use of information could be subjective, selective, and unreliable.

China had earlier noted: “the institutionalization of NTM in the CTBT would be tantamount to legalizing the ability of one State party or a small group of State parties with superior technical means to police the world, conduct all kinds of activities including espionage”. On March 28, China’s Ambassador Sha reasserted at the CD plenary, “if NTMs are incorporated into international verifications or used for triggering OSI, that would put most states into an extremely unequal position”. This, he added, would be “obviously unreasonable and unjustifiable”.

Ramaker tried to balance the rights and the obligations of the States parties to the treaty. His May 28 draft treaty proposed to allow any relevant

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42 Johnson, n.35, p.22.
43 Sha Zukang, CD/PV.717.
44 Sha Zukang, 28 March 1996, CD/PV.733.
45 Ibid.
kind of information, including those from the national sources to start off the on-site checks. However, the information ought to be consistent with the principle of international law:

The on-site inspection request shall be based on the information collected by the International Monitoring System, or any relevant technical information obtained by national technical means of verification in a manner consistent with generally recognized principles of international law, or on a combination thereof.\textsuperscript{46}

This language was intended to balance the concerns of both the US and allies, on the one hand and China, on the other. The Ramaker text added that before the inspection could be triggered-off, it had to be decided by a "majority of all members".

**Red Light, Green Light**

There were two competing views on the issue of the OSI decision-making process.\textsuperscript{47} According to the first view, states wanted to ensure that the likelihood of unearthing convincing evidence should be strong enough to deter the violator. Therefore, they wanted quick access and a simplified decision making process. This view was expressed by the US and was shared by Britain and France. This was the so-called "red light" mechanism. Borrowed from the Chemical Weapons Convention, in the "red light" procedure, an OSI request would be automatically carried out unless the Executive Council (EC) countermanded it.

\textsuperscript{46} Conference on Disarmament Doc.CD/NTB/WP.330, 28 May 1996, p.25.

\textsuperscript{47} Johnson, n. 35, pp. 23-24
The second view was more sensitive to the OSI being potentially abused for the purpose of espionage. In this view, OSI was to be used only if it became inevitable. The decision-making on the OSI had therefore to be more cumbersome. China and Russia were the most vocal exponents of this view, that of a "green light" mechanism. In this procedure, no go-ahead on the OSI was possible until endorsed by a majority of the EC members. However, there was disagreement over whether a majority should be deemed as simple plurality, or as a two-thirds or even three-quarters plurality.\(^{48}\)

Ramaker's May 28 draft was absolutely clear on the issue. It stated "the decision to approve the on-site inspection shall be made by a majority of all members of the Executive Council".\(^{49}\) Indeed, the draft favoured the "green light" mechanism to trigger-off an OSI. This was completely unacceptable to the US. Even China did not accept the Chair's decision-making system, which required that the "green light" decision be taken by a two-thirds majority.

These positions on OSI decision-making brought about a substantial stalemate in the negotiations. If this was to break, it called for a new negotiating tactic. Ramaker shifted the negotiations from the conference room to the "side-bar" meeting. The issue of OSI was now discussed


amongst the five nuclear powers. The effort was to resolve it as a "package" with other outstanding issues: peaceful nuclear explosions, entry into force and transparency measures. ⁵⁰

While the tactic worked to resolve the PNEs, it failed badly due to the intransigence of the US on the one hand and China on the other with respect to OSIs. The other nuclear powers Britain, France and Russia, however, appeared to be flexible on the US stand. Rebecca Johnson writes, "The US was so obsessed with getting its way on OSI that it seemed unable to keep it eye on any other ball, even though it would have preferred a more flexible provision on the entry into force". ⁵¹

At this point, it is worth examining why the US adopted a hardline on the OSI. First, the US was concerned about the loss of evidence issue. The team of experts had earlier noted that the venting of radioactive isotopes of xenon and aftershocks close to the site of the explosion were important indications which would vanish if not observed within a month. ⁵² Traces of specially-built road debris or "tailing" might also still be discernible to a quick inspection, but would be erased if the violator was given time. The other less critical manifestations were: evidence of underground cavity, residual underground radioactivity and surface crating. Quick on-site inspections could trace most of the proof. Hence, the US called for an easy

⁵⁰ Johnson, n.48, p.10.
⁵¹ Johnson, n.38, p.15.
⁵² Conference on Disarmament Doc.CD/NTB/WP.198.
decision-making procedure. The second reason was that the threat of an OSI itself might deter a potential violator. The most important political concern though was that the US could not sell the treaty domestically, if it diluted its position on the on-site inspections. This concern was raised by the US during the working group meetings on several occasions. Johnson notes, “the US has warned that it may as well walk away from the CTBT, since it would not get the Congress to ratify. On several occasions US representatives have underlined that this is a bottomline issue, a ‘treaty breaker’”. The US eventually failed to prevail over China and had to dilute its own position.

On June 28, Ramaker tabled the revised draft. This draft was thought to be the final draft, a take-it or leave-it draft. However, two issue still continued to remain disputed: OSIs and the entry into force. The issue of on-site inspections, now had become almost a bilateral issue between the US and China. The US had diluted its position. Recognising that the “red light” trigger mechanism was not obtainable, the US was now holding out for a simple majority decision by those members of the Executive Council who were present and voting. China, however, insisted on a two-thirds majority of the 51 member EC, arguing that it had already dropped its requirement from three-fourths. After a month’s recess, the CD resumed on July 29. The atmosphere, however was tense. The US had now publicly declared its

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53 Interview with Rebecca Johnson, New Delhi, 22 February 2000.
54 Ibid.
56 Johnson, n.38.
support of the June 28 draft. This was seen as a tactic to deter further negotiation, keeping in view the September deadline for the opening of the treaty. Moreover, it had by now also sought the support of Britain, France and Russia.\(^67\) The only nuclear power left out was China. India had expressed it desire to veto the treaty on the issue of EIF. However, India’s stand did not matter much to the US. As a senior US Arms Control and Disarmament agency official put it, “it was China which mattered to us the most as it was a nuclear power”.\(^58\) Notwithstanding the earlier position against any re-opening of the treaty, the US now agreed to China’s demand for further discussions on the decision-making procedure of the OSI. Ironically, China had, the same day, on July 29, conducted its 45th test at its Lop Nor test site. Following a pattern of concession after such explosions, China also now appeared more flexible.

During the earlier working group meeting among the nuclear powers, Britain, France and Russia had expressed their willingness to accept authorisations of an OSI by a three-fourths majority.\(^59\) This was conditional on China’s acceptance of national technical information as triggering-off a request for an inspection. The United States felt that this could be an “exchange point” with China. Beijing also calculated the balance of the

\(^{57}\) Johnson, n.38, p.16.

\(^{58}\) Interview of a senior US Arms Control and Disarmament agency official. The interview was conducted by the author at the US Department of State, Washington, D.C., 27 July 1998.

\(^{59}\) Johnson, n.38, p.16.
Executive Council. It calculated that 30 out of the 51 members was the minimum assurance it needed in order that the United States and its allies did not have the automatic weight to vote for an OSI request irrespective of the supporting evidence.\textsuperscript{60} It, therefore, proposed a three-fifths majority as a compromise. This was accepted by the US. Although the US Ambassador, John Holum, recognised that "in doing so it has stretched itself to the limit in what is provided for effective verification, both for the discovery of cheating and for its deterrence".\textsuperscript{61}

With procedural modifications, Ramaker presented the absolutely final draft on August 14.\textsuperscript{62} The finally accepted decision-making procedure as it appeared in this draft reads:

The Executive Council shall take a decision on the on-site request no later than 96 hours after receipt of the request from the requesting state party. The decision to approve the on-site inspection shall be made by at least 30 affirmative votes of members of the Executive Council. If the Executive Council does not approve the inspection, preparations shall be stopped and no further action on the request shall be taken.\textsuperscript{63}

The request for an inspection could be based on information collected by the IMS or any other technical information obtained by national technical means of verification. This, however, should be consistent with the generally accepted principles of international law.\textsuperscript{64}

\textsuperscript{60} Ibid.
\textsuperscript{61} John Holum, CD/PV.793.
\textsuperscript{62} Conference on Disarmament Doc.CD/NTB/WP.330/Rev.2.
\textsuperscript{63} Ibid.
\textsuperscript{64} Ibid.
CONCLUSION

The issue of verification remained the major contentious technical issue. However, successfully agreeing on a verification regime shows that these issues are resolvable. During the first phase, the focus of the negotiators was to assess the technical feasibility of a verification system. As the baseline of scope was yet to be determined, this prevented any major political breakthroughs on verification. The negotiators had little choice but to state their preferences about the nature and the structure of the regime at this stage. Moreover as the International Monitoring System comprised the core of the regime, the effort first was to finalise the choice of technologies to be used for it. In this sense, the first phase was mainly an effort to explore the technical possibility of a verification system which would also be politically acceptable. This phase also provided a basis for further negotiations.

During the second phase, the nuclear powers dealt with the issues of the numbers, locations and technologies for the IMS. Indeed, with the exception of China, they were broadly in agreement on an IMS-regime. However, the issue of on-site inspections gained prominence. Given the political nature of the issue, it became the focal point of end-game bargaining as well.

The final phase revolved around how China could be brought round to the earlier agreed upon IMS. However this was accomplished only after a
reciprocal concession in terms of an additional clause sought by Beijing for
the "improvement of the verification regime".

On-site inspections proved to be the key bargaining point. The US,
however, managed to rope China into the treaty regime through imaginative
negotiating tactic. The selection of an "exchange point" by the US showed
that an intelligent tactic could well bring optimum results in negotiations
with China. China, however, continued with its tactic of combining "power"
with compromise. A concession on OSI, preceded by a nuclear explosion,
endorses this point. In sum, the negotiations on verification suggest that
contentious issues can be resolved in a phased, symmetric way to finally
achieve agreement.