Security and Survival

The Case for a Nuclear Weapons Convention

including

The Model Convention on the Prohibition of the Development, Testing, Production, Stockpiling, Transfer, Use and Threat of Use of Nuclear Weapons and on Their Elimination

with Commentary and Responses

International Association of Lawyers Against Nuclear Arms
International Network of Engineers and Scientists Against Proliferation
International Physicians for the Prevention of Nuclear War

The model Nuclear Weapons Convention (NWC) presented in this book is a draft model treaty for the phased elimination of nuclear weapons. It is a revised version of the model NWC submitted by Costa Rica to the United Nations Secretary General as a discussion draft, UN Doc. A/C.1/52/7 (1997).

This book and the model NWC are non-governmental initiatives to further the goal of nuclear weapons abolition. The commentary and revisions to the model reflect governmental and non-governmental responses to the 1997 version.

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Where the mind is without fear and the head is held high
Where knowledge is free
Where the world has not been broken up into fragments by narrow domestic walls
Where words come out from the depth of truth
Where tireless striving stretches its arms towards perfection
Where the clear stream of reason has not lost its way into the dreary desert sand of dead habit
Where the mind is led forward into ever widening thought
and action
Into that heaven of freedom, let my country awake

— Rabindranath Tagore

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Introduction: Purpose of This Book

In the wake of the atomic bombing of Hiroshima and Nagasaki, the very first resolution of the newly formed United Nations unanimously called for "the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction."

Half a century later, the number of nuclear weapons in the world's arsenals had grown to more than 60,000, and remains at more than 30,000 today, equivalent in force to 200,000 Hiroshima-sized bombs.

As the 20th century comes to a close, the international community has banned the use, threat and production of chemical and biological weapons. Verification mechanisms for the prohibition and elimination of these weapons of mass destruction are developing, building on lessons from recent experiences.

The same is not true for nuclear weapons. Despite nearly universal condemnation of these weapons, a small minority of powerful states and some of their allies continue to rely on nuclear weapons as the cornerstone of their security, while denying this option to others. The nuclear tests by India and Pakistan in mid 1998 provided a graphic warning about the flaws of this policy. Nuclear proliferation will remain a risk as long as any states claim the right to possess nuclear weapons. Other countries are likely to pursue a nuclear capability if a verifiable and enforceable nuclear abolition treaty is not completed.

The current détente among the official nuclear weapon states may not last indefinitely; indeed it already shows serious signs of weakening. Moreover, the risk of nuclear terrorism is very real and will grow unless existing stockpiles are destroyed and all fissile material is secured under international safeguards.

Recent political and technical developments, many of which are outlined below, have made a nuclear-weapons-free world a realizable goal. Some states may not be prepared to reach this goal in a single bold step and transitional agreements may need to be negotiated first. What is vital, however, and what is currently missing in the plans and policies of the nuclear weapon states, is a genuine commitment to the final goal, some vision of what that goal should look like, and a rough plan of how to get there.

Security and Survival aims to fill that gap by demonstrating the necessity of achieving a nuclear weapons convention, outlining what a nuclear weapons convention could look like, and exploring the roads to a nuclear-weapons-free world. The book contains the Model Nuclear Weapons Convention, which was drafted by an international consortium of lawyers, scientists, and disarmament specialists under the coordination of the Lawyers' Committee on Nuclear Policy, and was circulated by the United Nations in 1997. Responses to this model treaty are also included.

This briefing book is intended for a wide audience including policy makers, diplomats, arms control and disarmament analysts, scientists, academics, grass-roots activists, media, and the general public. It need not be read from cover to cover. It is meant to be a resource for the various sectors of government and broader civil society whose participation is necessary for attaining nuclear abolition.

The book responds to the concerns of experts inside and outside of government who acknowledge the obligation under Article VI of the Nuclear Non-Proliferation Treaty to pursue nuclear disarmament, but who believe that the process is too difficult and complex to embark upon right now. The discussion that follows explores these complex questions and concludes that negotiations for a nuclear weapons convention can and should commence immediately, even though predicting the course of nuclear abolition is impossible.

Security and Survival supplements the report "Beyond the NPT: Toward a Nuclear Weapons Free World," released in 1995 by the International Network of Engineers and Scientists Against Proliferation (INESAP), and the Model Nuclear Weapons Convention released in 1997. This publication, produced by the International Physicians for the Prevention of Nuclear War (IPPNW), the International Association of Lawyers Against Nuclear Arms (IALANA) and INESAP, includes health and environmental considerations of nuclear abolition and discusses technical, legal, security, and strategic aspects of complete nuclear disarmament, including questions that are yet to be fully answered.

The Evolution of a Nuclear Weapons Convention

What	Treaty	Custom	Norm
Who	Governments	Civil society	Humanity
When	Incremental	Comprehensive	Ongoing
Why	Legal obligation	Security	Survival
How	ABM + START	Arms Control	Disarmament
	IAEA + NWFZs	Non-proliferation	Prevention
	CTR + MPC&A	Cooperation	Confidence
	CTB – SS&M	Conversion	Societal verification
	FMCT	Inventory	Disposition
	Cleanup	Development	Sustainability
	Enforcement	Evolution	Compliance

ABM = Anti-Ballistic Missile (Treaty)

START = Strategic Arms Reduction Treaty

IAEA = International Atomic Energy Agency

NWFZ = Nuclear Weapon-Free Zone

CTR = Cooperative Threat Reduction

MPC&A = Material Protection Control & Accounting

CTB = Comprehensive Test Ban

SS&M = Stockpile Stewardship & Management

FMCT = Fissile Material Cutoff Treaty

Section 1

Reversing Proliferation: The Case for a Nuclear Weapons Convention

A boy contemplates a display of missiles and other weaponry at the Beijing military museum, China. Photo: AP/Greg Baker

What Is a Nuclear Weapons Convention?

In the strict sense, a Nuclear Weapons Convention (NWC) is an international treaty, achieved through negotiations of relevant states, which would prohibit the development, testing, production, stockpiling, transfer, use, and threat of use of nuclear weapons and would provide a framework for the elimination of existing arsenals.

No such treaty exists yet, but demands for one have increased in recent years, as have more general demands for complete nuclear disarmament.

The NWC would include procedures for verifying compliance with the above obligations, including such measures as declarations, inspections, and technical monitoring. It would provide for individual rights and obligations, and include procedures for clarification or dispute resolution and enforcement in case of serious violations.

In a wider sense, the Nuclear Weapons Convention would be an expression of the universal societal condemnation of nuclear weapons and the codification of the customary norm against all weapons of mass destruction. Its impact will therefore be deeper and more far reaching than the treaty language itself. Such a treaty would reflect a broader social and political movement away from reliance on weapons of mass destruction and military solutions to conflicts, and would incorporate the desires and responsibilities of global civil society for a less militarized world.

Convention as Custom

International law derives from both treaties and custom, where custom means a combination of generally accepted practice and a sense of legal obligation. Biological and chemical weapons have been prohibited by specific international treaties, the Biological Weapons Convention and the Chemical Weapons Convention. These treaties, however, evolved from already existing customary prohibitions against weapons that are indiscriminate, that use poison, that cause unnecessary suffering or that are used in a disproportionate manner that violates neutral territory or causes long term and severe damage to the environment. Weapons of mass destruction, by their very nature, violate most or all of these principles.

World Court Project advocates display boxes before the World Court which contain millions of Declarations of Public Conscience submitted to the court as evidence of global opposition to nuclear weapons.
Photo: Ann Marie Janson/World Court Project.

In 1996, the International Court of Justice (ICJ), in applying this body of international law to nuclear weapons, determined that the threat or use of nuclear weapons is also generally illegal, and that there exists an obligation to pursue and conclude negotiations leading to complete nuclear disarmament.

In arriving at this conclusion the ICJ took into consideration the "dictates of public conscience," which are mentioned in the Hague and Geneva Conventions as an important indication of the legal status of particular weapons systems for which there is no specific treaty prohibition. The ICJ was presented with millions of "declarations of public conscience" and with evidence of the universal public condemnation of nuclear weapons.

Thus an NWC should be seen not as creating an entirely new prohibition against nuclear weapons, but as implementing an existing prohibition against weapons of mass destruction.

Nuclear weapons are by far the most potent and destructive weapons ever invented. This accounts for the reluctance of the States that possess them to give them up. It also makes their abolition within a reasonable timeframe all the more urgent.

"Nuclear Weapons must be banned and eliminated just as chemical and biological weapons have been prohibited...through the adoption... as a first step of a universal and legally binding multilateral agreement committing all states to the objective of the complete elimination of nuclear weapons."

Muhammad Siddique Khan Kanju, Minister for Foreign Affairs, Pakistan, July 1998

An argument has been made that other weapons of mass destruction, namely biological and chemical weapons, continue to exist and to terrify, despite treaties for their prohibition. Admittedly, the Biological Weapons Convention and the Chemical Weapons Convention have not yet brought about the complete elimination of these weapons. But a primary reason offered as justification for the pursuit of biological and chemical weapons by less developed States is that they are the "poor man's nukes," that is, that they are needed to counter the threat of nuclear weapons. Similarly, the nuclear weapon states justify their retention of nuclear weapons, in part, as deterrents to the use of biological and chemical weapons. Thus, although the legal regimes addressing nuclear, biological, and chemical weapons are distinct, the elimination of nuclear weapons will assist in the elimination of all weapons of mass destruction.

There are valid technical and political reasons for maintaining distinct disarmament and verification mechanisms for the various weapons of mass destruction. But without a general recognition that reliance on the capacity for mass destruction feeds on itself, decision makers will continue to rely on — and even further develop — these capabilities.

The technical difficulties in verifying an NWC are not impediments to the negotiation of such a treaty. The smaller size and ease of construction of chemical and biological weapons has made verifying the prohibitions against them far more difficult, but this has not prevented the global community from concluding treaties that establish a clear prohibition of these weapons, that spell out specific obligations to eliminate stockpiles, and that provide means to respond to non-compliance. The mechanisms are not flawless, but they impose severe practical and political restraints on the development and use of such weapons. A Nuclear Weapons Convention would complete the triad and thus reinforce these efforts.

More Than a Treaty

Not all who support the goal of nuclear abolition see the Nuclear Weapons Convention as the best approach. Some have argued that focusing on a "single" treaty is unrealistic and counterproductive, because it could detract from important intermediate measures that governments are more likely to undertake.

Looking at a Nuclear Weapons Convention as more than a treaty reveals what is actually "singular" in the demands for nuclear abolition, and why the Nuclear Weapons Convention is a valuable concept.

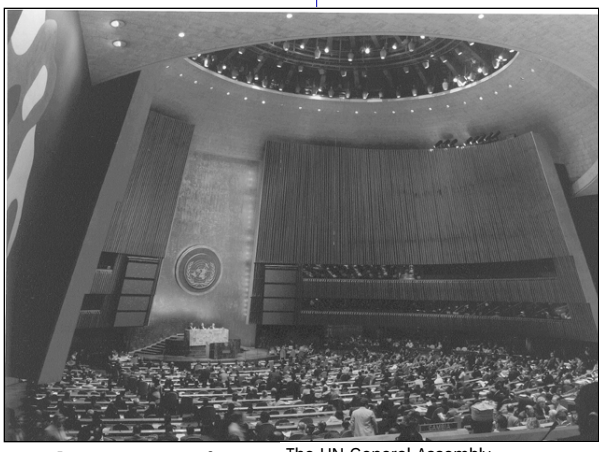
In the long run it would not matter whether elimination of nuclear weapons were achieved through one treaty or through a framework of treaties, provided the framework approach did not result in inordinate delay. For a Nuclear Weapons Convention to be meaningful and effective, more than a signed agreement among governments will be necessary. Political will and social motivation on several fronts are required, but these are not prerequisites to pursuing a Nuclear Weapons Convention. Rather, they are an integral part of the treaty development process—lobbying efforts, drafting, negotiations, and implementation.

The policies and institutions that support today's nuclear establishment must be reoriented towards nuclear disarmament, and this reversal of direction is the "singular" concept embodied in the Nuclear Weapons Convention. Such a reversal will entail deeper and more far-reaching developments than a mere treaty, but the treaty process can be used to identify, guide, and reinforce these developments towards the singular purpose of complete nuclear disarmament.

Who Makes a Nuclear Weapons Convention?

In the strict, traditional conception of a treaty, governments are the key participants. Their genuine agreement to an NWC is essential, particularly because the question of enforcement in the context of nuclear weapons is uniquely difficult. (See Critical Question on Enforcement.) To be both genuine and meaningful, the governmental agreement must be based on the will and involvement of citizens. This means that coordinated, voluntary governmental and non-governmental participation is necessary.

Governmental bodies, whether transnational or national, are responsible for existing and future implementation mechanisms. They also manage the agencies with the relevant expertise or information to improve and refine such mechanisms when necessary. Non-governmental bodies include scientific, business, and academic organizations, as well as a host of less easily defined social forces at the international, national, and local levels. Mechanisms that already operate as part of what has come to be called "globalization" (e.g., multi-national corporations, international labor unions) overlap these classifications. Some implementation mechanisms in the future might have a more "virtual" nature than today's.



The UN General Assembly.
Photo: UN/DPI by Eskinder Debebe.

The implementation bodies of the NWC will comprise combinations and variations of existing arms control, nonproliferation, and disarmament regimes. The pooled experience and skills of these bodies will be essential, and several are already developing channels of cooperation. Implementing the NWC would not require creation of entirely new mechanisms, but, more likely, definition and coordination of functions on the part of existing and emerging agencies as well as effective application of current technology.

The experience of many international and inter-governmental bodies will be useful, whether their current functions remain or change. These include:

- United Nations General Assembly and Security Council
- Conference on Disarmament
- International Atomic Energy Agency
- Nuclear weapons free zone implementation agencies
- Comprehensive Test Ban Treaty Organisation
- United Nations Special Commission on Iraq
- U.S. and Russian disarmament and non-proliferation bodies, including:
  - START and INF verification mechanisms
  - Cooperative Threat Reduction (CTR)
  - Material Protection Control and Accounting (MPC&A)
  - Nuclear Cities Initiative

The question who of will participate in the creation and implementation of a nuclear weapons convention must take into account that the world has seen 50 years of determined pursuit of nuclear weapons capability. Enormous resources and massive efforts went into creation of the current stockpiles, and reversing this legacy is complicated, dangerous work, in large part because the materials involved will “outlast” anyone living today by many centuries.

The U.S. Department of Energy has observed that the environmental problems alone necessitate efforts at least on the scale of the Manhattan Project.[1]

The proliferation that has taken place to date, particularly within the nuclear weapon states, built on the cumulative efforts of countless individuals. For the most part, therefore, it will be future generations who carry out the tasks related to eliminating nuclear weapons. But the importance and complexity of this work require laying the foundation of a coherent strategy today. Uncertainty about the exact political context of future nuclear disarmament work cannot be allowed to prevent progress on the legal and technological foundations that must be laid today for this future work to be possible.

"Nuclear weapons corrode and corrupt democratic rule."

Avner Cohen,
Israel and the Bomb

The precise roles of the institutions and individuals — the governmental agencies and the private, commercial, academic and educational bodies — that will undertake the work of undoing the cumulative effects of the nuclear age will turn on the particular combination of implementation and verification mechanisms chosen. Decisions about what is to be stored, in what form, and for how long will determine the appropriate combination of reliance on environmental cues, surveillance, inspections, and other verification mechanisms. Fortunately, the necessary capabilities already exist. Implementation of these capabilities simply requires continued development and greater production of the relevant technologies in the context of a comprehensive plan.

The knowledge, experience and technology accumulated to date is enough to lay the cornerstone of a regime for the complete elimination of nuclear weapons. The work must begin now, with a view to the future roles of policy makers and scientists. The call for a nuclear weapons convention is not an attempt to predict the future, rather it is a reflection of the desire for a better future.

When Will a Nuclear Weapons Convention Be Possible?

There is a range of perspectives on when an NWC could or should be concluded.

Among the nuclear weapon and threshold states, the governments of the US, France, Russia, the UK, and Israel, suggest that even thinking about an NWC is premature. They are unwilling to provide a time reference for beginning, let alone concluding, an NWC. The governments of India, China, and Pakistan support the commencement of negotiations on an NWC, but give no indication of when such negotiations could or should be concluded.

At the other end of the spectrum, Abolition 2000, an international network for the abolition of nuclear weapons, in April 1995 called for the conclusion of an NWC by the year 2000. (See Abolition 2000 statement, Documents section). In August 1996, the Non-Aligned Movement submitted a proposal to the Conference on Disarmament calling for the entry into force of an NWC by the year 2010 and the complete elimination of nuclear weapons by the year 2020.[2]

The Canberra Commission on the Elimination of Nuclear Weapons determined that while there is a need to further develop verification and weapons dismantlement systems, there are no real technological barriers to concluding an agreement or agreements to prohibit and eliminate nuclear weapons. The determining factor is not technology but political will.[3]

When there is sufficient political will, negotiations can be concluded fairly quickly. The Partial Test Ban Treaty, for example, was concluded in ten days of determined negotiating in

July 1963, after years of deadlock.[4] Agreements on timeframes for negotiations can sometimes help facilitate the process. The parties to the Non-Proliferation Treaty in 1995 agreed to a timeframe for concluding negotiations on a Comprehensive Test Ban Treaty no later than 1996. Such a timeframe helped bring the negotiations to an early conclusion.[5]

Unless there are major improvements in the global security system, nuclear weapon states will likely require a high level of confidence that there will be universal compliance with an NWC for them to agree to eliminate their nuclear weapons. (See Critical Questions on Enforcement, Security and Breakout.) Moreover, the nuclear systems of the different states are asymmetrical, requiring fairly complicated disarmament formulas. Thus, negotiations are likely to be complex and may take some time.

Because the precise nature of future political structures is unknown, some claim that the call for a nuclear weapons convention is premature. This view confuses prediction of the future political context for disarmament with preparation for a better future. The call for a nuclear weapons convention and the drafting of a Model Nuclear Weapons Convention are efforts to address the urgency of formulating coherent and consistent approaches to the creation of a true nuclear disarmament regime.

The question of when a nuclear weapons convention will be possible is not likely to see consensus in the near future, but this need not prevent progress toward elimination of nuclear weapons by all who share this goal. According to some analysts, lack of certainty about the future has in itself created obstacles:

> [T]he main reason for the resistance of policy elites to disarmament, and for their ability to mount effective campaigns against it within the corridors of power, is that satisfactory answers have not yet been given to three fundamental questions:
>
> 1 Would nuclear disarmament increase or decrease national, regional and global security?
>
> 2 What exactly is entailed by nuclear disarmament – what is being disarmed, and when has whatever is being disarmed finally been disarmed?
>
> 3 How do we get from here to there safely and securely, and once in the condition of disarmament how can we collectively ensure that we all stay there…?
>
> Unhappily, there are no clear, unambiguous answers to these questions…. Uncertainty is inherent to the current situation.[6]

Here, as in the question of who makes a nuclear weapons convention, uncertainty about the future is seen as an obstacle to progress on the part of policy makers. But lack of certainty about the future did not prevent large-scale planning to develop nuclear weapons and thereby shape the international security regime. Similarly, decisive action towards nuclear disarmament will shape the future viability of this goal. Uncertainty about the future has rarely prevented human beings from seeking answers — in fact it is generally an incentive. In the context of nuclear weapons, pursuit of these answers is imperative for a positive outcome.

While some participants in the drafting of the Model Nuclear Weapons Convention support the Abolition 2000 call, the approach adopted here does not suggest a timebound framework for conclusion of the negotiations or fixed dates for the complete elimination of nuclear weapons. Rather it calls for the immediate commencement of negotiations that ought to be concluded in a quick but comprehensive manner.

At some stage a timeframe for elimination of nuclear weapons will have to be negotiated. The MNWC suggests that this be done in phases, from entry into force. This is somewhat like

"The world is on the edge of nuclear warfare."

Senator Daniel Moynihan, former US Ambassador to India, May 1998.

incorporating a step-by-step process into a comprehensive approach. The MNWC attempts to balance the need for a speedy elimination of nuclear arsenals with the concerns of safety, confidence, and irreversibility.

From the perspective of societal verification, work on nuclear disarmament and preparation for a nuclear weapons free world are already ongoing. There is heated disagreement, though, over whether progress at the governmental level is adequate.

Why Pursue a Nuclear Weapons Convention?

The rationale for a Nuclear Weapons Convention is outlined in the Preamble of the Model Nuclear Weapons Convention, which begins

"We the people of the Earth, through the States signatory to this Convention:

Convinced that the existence of nuclear weapons poses a threat to all humanity and that their use would have catastrophic consequences for all the creatures of this earth,"

and concludes,

"Convinced that a convention prohibiting the development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons and providing for their elimination is required to abolish these weapons from the Earth."

Some points made in the preamble deserve further explanation here.

Slippery Slope to Armageddon: The Risks of Inaction

Since the dissolution of the Soviet Union in 1991, public fears of a nuclear war have drastically subsided and the issue has all but disappeared from the media. The nuclear tests by India and Pakistan in 1998 provided a sobering wake-up call that not all was well in the nuclear arena. Certainly this was a dangerous development. Not only did it raise the specter of a tragic nuclear exchange between the two countries, it also demonstrated the vulnerability of the concept of non-proliferation and could accelerate the acquisition of nuclear weapons by other countries.

While international attention was drawn to the South Asian tests, however, the world remained oblivious to the equally dangerous situation caused by existing nuclear stockpiles. What is not widely realized is that the nuclear weapon states maintain thousands of nuclear warheads with a combined explosive potential 200,000 times greater than the Hiroshima bomb. These weapons are on alert and are ready to be fired at a moment's notice.

France, the UK, the US, and now also Russia maintain policies that permit first use of nuclear weapons, that is, they maintain the option to use nuclear weapons even when nuclear weapons are not used or threatened against them. This opens up the possibility that nuclear weapons could be used in a range of conflicts, not just those between nuclear states. In fact, the US has made implied threats to use nuclear weapons three times since the end of the Cold War: against Iraq, Libya, and North Korea.

In January 1995 Russian early warning systems spotted a missile heading towards Moscow and Russian leaders were alerted that it may be a nuclear tipped submarine launched missile. The "nuclear suitcase," which is used to give commands for a retaliatory strike, was "opened" in preparation for activation. It took eight minutes to conclude that the missile was not a nuclear missile (it was a research rocket launched from Norway) — less than four minutes before the deadline for ordering a nuclear response.

See “Taking Nuclear Weapons off Hair-Trigger Alert” by Bruce Blair, Harold Feiveson and Frank von Hippel, Scientific American, Nov. 1998, pp. 74-81.

The implications of any use of nuclear weapons hardly need to be spelled out. The International Court of Justice warned in 1996 that any use even of a small tactical nuclear weapon would threaten escalation into a devastating nuclear exchange. The ICJ also noted the uniquely destructive aspects of nuclear weapons in both blast and radiation and stated that "The destructive power of nuclear weapons cannot be contained in either space or time."[7]

Survivors walking throught the ruins of Nagasaki on August 10, 1945, the day after the US used its second atomic bomb.
Photo: Yosuke Yamahata, Hiroshima-Nagasaki Publishing Company.

Nor is the nuclear arms race over. Nuclear weapon states are continuing to research, design, test, modernize, and develop nuclear weapons. France, the US, and Russia are conducting nuclear testing through a range of sophisticated technical means not specifically prohibited by the Comprehensive Test Ban Treaty. These include sub-critical explosive tests, computer simulations, and fusion experiments. The US recently deployed a new nuclear weapon (the B61-11), is about to recommence the production of tritium (a key material for nuclear weapons), and continues to build Trident nuclear submarines.

In June 1998, the Bulletin of the Atomic Scientists moved the hands of their doomsday clock forward from 14 minutes to midnight to 9 minutes to midnight. The editors noted that

"The end of the Cold War gave the world a unique opportunity to control and reduce the threat of nuclear catastrophe. It is clear that much of that opportunity has been squandered...No nuclear state is moving significantly toward nuclear disarmament. Between them Russia and the United States still have upwards of 30,000 nuclear weapons — strategic and tactical — 7000 warheads ready to be fired with less than 15 minutes notice."

Robert McNamara, former US Secretary of defense, argues that we must "put the genie back in the bottle. If we do not there is substantial risk that the twenty-first century will witness a nuclear tragedy."[8]

The failure of the nuclear weapon states to abandon their nuclear policies and practices is intrinsically linked to the proliferation of nuclear weapons to other countries.

The continuing existence of nuclear weapons and of unsafeguarded fissile material also creates a risk of acquisition or construction of a nuclear weapon by a terrorist organization, which may have fewer constraints than a government against using such a weapon. IPPNW reported on the increasing possibility of such a scenario.[9]

The Legal Obligation

Under Article VI of the treaty on the Non-Proliferation of Nuclear Weapons, "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament."[10]

On July 8, 1996, the International Court of Justice concluded unanimously that "There exists an obligation to pursue in good faith, and bring to a conclusion, negotiations leading to nuclear disarmament in all its aspects under strict and effective international control."[11]

The significance of the ICJ decision is that it affirmed that:

- the existence of a good faith obligation means there is an obligation to achieve the goal, not merely to postulate it;

"Since nuclear weapons can destroy all life on the planet, they imperil all that humanity has ever stood for, and indeed humanity itself...The work that this committee (United Nations Disarmament Committee) has done in calling for negotiations leading to a Nuclear Weapons Convention must be increased. Those nuclear weapons states resisting such negotiations must be challenged, for, in clinging to their outmoded rationales for nuclear deterrence, they are denying the most ardent of aspirations of humanity as well as the opinion of the highest legal authority in the world...the International Court of Justice."

Archbishop Renato Martino, Permanent Observer of the Holy See to the United Nations Oct. 15, 1997.

"Now is the time for serious consideration of an integrated approach, encompassing both bilateral and multilateral negotiations, culminating in an international agreement on a total ban on nuclear weapons."

Ray Burke, United Nations, September, 1997 (then the Minister for Foreign Affairs of Ireland)

- the obligation is not merely to achieve steps toward nuclear disarmament, but to achieve nuclear disarmament "in all its aspects" (i.e., the complete elimination of nuclear weapons);
- the elimination of nuclear weapons should occur under international control; and
- like any legal obligation, this obligation must be performed within an appropriate timeframe and cannot be postponed indefinitely.

The United Nations General Assembly (UNGA), which had originally requested the opinion from the ICJ, determined through yearly UNGA resolutions that this obligation should be fulfilled by the immediate commencement of negotiations leading to an early conclusion of a nuclear weapons convention prohibiting the development, testing, production, stockpiling, transfer, use, and threat of use of nuclear weapons and providing for their elimination. The European Parliament repeated this call on March 13, 1997. (See Documents section.)

The conclusions of the UNGA and European Parliament are not surprising. A nuclear weapons convention provides the most logical way to satisfy the ICJ requirements that nuclear disarmament be negotiated and completed under strict and effective international control. An NWC is also the most logical way to achieve the elimination of nuclear weapons in a non-discriminatory manner that will incorporate the security concerns of states that currently possess nuclear weapons. The negotiation process will inevitably require consideration of such concerns.

The NWC is also the most logical way to drastically reduce, if not to eliminate, the threat from nuclear weapons. Partial steps that leave numbers of nuclear weapons in the arsenals of some states will continue to pose a threat, even if the numbers are small.

It has been observed that, "The proposition that nuclear weapons can be retained in perpetuity and never be used — accidentally or by decision — defies credibility...The opportunity now exists, perhaps without precedent or recurrence, to make a new and clear choice to enable the world to conduct its affairs without nuclear weapons, and in accordance with the principles of the Charter of the United Nations."[12]

This view is now supported by the majority of governments in the world and even more so by citizens, including citizens of the nuclear weapon states and their allies. Public opinion polls in the UK, the USA, the Netherlands, Germany, Canada, and Belgium consistently show more than 80% support for a nuclear weapons convention. The Mellman Group poll in the US showed that the public was not generally in favor of nuclear disarmament UNLESS it was in the context of a nuclear weapons convention.[13]

While the ICJ opinion cited the NPT as an important indication of disarmament responsibility, it did not assert that the obligation is confined to states parties to the NPT. ICJ President Bedjaoui, in his separate declaration, stated that the obligation has "assumed customary force" and that "it is the duty of *all* (emphasis added) to seek to attain it (nuclear disarmament) more actively than ever."[14]

The US and the UK argued at the ICJ that their nuclear disarmament obligation was linked to progress in conventional disarmament and in developing alternative security systems to the system of nuclear deterrence. The Court did not accept this argument and, apart from the requirement for international control, made no mention of conditions that were required to move toward nuclear disarmament.

Thus the question to be asked is not why there should be a nuclear weapons convention, but why nuclear weapon states have not yet agreed to start negotiating one.

The Strategic Factor

A nuclear weapons convention is a step toward a world without weapons of mass destruction. These were developed as the logical extension of conventional military thought, according to which the goal of the military is to threaten or use superior force on an enemy in order to protect strategic interests. Historically, governments in conflict have sought to develop larger and larger military force capabilities in order to meet such an aim and these capabilities have, over time and with advances in scientific knowledge and technologies, developed into weapons of mass destruction. Thus, the prohibition of weapons of mass destruction, in reversing this historical development, must also reverse the conventional military aim and the war system itself.

Such a world, in turn, requires a political environment that does not rely on threat or force for security. Reliance on nuclear weapons is part of a larger set of problems than the Nuclear Weapons Convention can address. That is why an NWC will result from current social and political change, and will lead to future change. The blossoming support globally for an NWC is resulting partially from a paradigm shift in political, social, and economic systems and in consciousness. The world is moving away from self-contained nation-state systems to interstate interdependence combined with globalization. The enterprises and concerns of humanity are becoming much more international through the development of transnational and international corporations, a global market, international institutions, communications systems, environmental and social effects of policies and practices, civil society organizations and movements, and even a globalization of cultures and identities.

Defending borders with larger and larger military capacities is becoming meaningless in an increasingly borderless world — where power structures are being transformed from state-based to more transnational systems.

Nuclear weapons do not fit into this emerging structure but hold up its development by holding onto old power paradigms. An NWC, on the other hand, will necessarily involve the different elements of global society in its implementation and will generate new mechanisms for global cooperation. Thus, an NWC is both a logical result of global change and an enabler of it.

"I would have thought it unnecessary to demonstrate once again the commitment of the United States to nuclear disarmament, a commitment we undertook when we adhered to the NPT…."

United States Delegation to United Nations, October 29, 1998 (Statement on Eight Nation Resolution: "Towards a nuclear-weapon-free world: the need for a new agenda")

"Viewing arms limitation, those responsible for U.S. nuclear weapons must not lose sight of the fact that the intent of these negotiations is not to disarm the United States. The United States could do that unilaterally if such was in our interest. The intent of U.S. arms negotiators is to disarm others…."

Admiral W.J. Holland, Jr., "Nuclear Weapons the Info Age: Who Needs 'Em?" U.S. Naval Institute Proceedings, January 1999, p. 47.

Global Support for a Nuclear Weapons Convention

Global support for a nuclear weapons convention, both from governments and in civil society, is beginning to blossom as indicated by the following:

- In November 1995, Abolition 2000, an international network calling for negotiations on a nuclear weapons convention, was established. More than 1,300 organizations have now joined this network. (See Documents section.)
- In 1996, 1997, and 1998 the United Nations General Assembly adopted resolutions specifically calling for negotiations leading to the conclusion of a nuclear weapons convention.[15] A number of other resolutions also supported the call for such negotiations.[16]
- On March 13, 1997 the European parliament called on all members to support negotiations leading to the conclusion of a convention for the abolition of nuclear weapons. (See Documents section).
- Public opinion polls conducted in 1997 and 1998 in Australia, Belgium, Canada, Germany, Holland, Japan, Norway, the UK, and the US indicated overwhelming public support for a nuclear weapons convention.[17]

"Nuclear weapons diminish the security of all states. Indeed states which possess them become themselves targets of nuclear weapons." Canberra Commission, August 1996.

"We must ask the question, which might sound naive to those who have elaborated sophisticated arguments to justify their refusal to eliminate these terrible and terrifying weapons of mass destruction — why do they need them anyway?"

President Nelson Mandela, United Nations General Assembly, September 1998

- On June 18, 1998, and again on February 24, 1999, US Rep. Lynn Woolsey introduced resolutions to the US House of Representatives calling for negotiations leading to the conclusion of a nuclear weapons convention.[18]

How to Achieve a Nuclear Weapons Convention?

There are three general views as to how nuclear disarmament can best be achieved. The first, a step-by-step approach, entails negotiations on a limited number of initial steps toward nuclear disarmament. The United States, which supports this approach, has indicated that next steps should be bilateral reductions in stockpiles, entry into force of the Comprehensive Test Ban Treaty, and a treaty to cut off production of fissile material.[19]

A divergent perspective calls for comprehensive negotiations on the complete elimination of nuclear weapons under a time-bound framework. The Non-Aligned Movement, for example, has called on the Conference on Disarmament to "commence negotiations...on a phased program of nuclear disarmament and for the eventual elimination of nuclear weapons within a time-bound framework."[20] Abolition 2000 has called on states to "Initiate immediately and conclude by the year 2000 negotiations on a nuclear weapons abolition convention that requires the phased elimination of all nuclear weapons within a time-bound framework with provisions for effective verification and enforcement."[21]

A third perspective calls for a middle path between the first two, combining elements of the step-by-step approach and the comprehensive approach into an incremental-comprehensive program. The declaration of eight foreign ministers entitled "Towards a nuclear-weapon-free world: the need for a new agenda," for example, calls for a series of bilateral, plurilateral, and multilateral steps, which would lead towards the elimination of nuclear weapons through a legally binding instrument or framework of instruments.[22]

Step by Step Approach

The US argues that "the step-by-step is the only realistic approach in this highly complex field," and that it is "yielding significant, concrete results in the area of nuclear disarmament."[23] The validity of the second point is hotly contested. While the step-by-step process has delivered a number of limited disarmament and arms control treaties, including the START and INF Treaties, the Partial Test Ban Treaty, and negotiation of the Comprehensive Test Ban Treaty,[24] these have had little effect on the policies of the nuclear weapon states, on their ability to inflict unimaginable damage on other states with their remaining weapons, or on their ability to design and develop new weapons and delivery vehicles.

Under START I, START II, and the proposed START III treaties, the US and Russia are reducing their stockpiles of nuclear weapons but have no intention of going below numbers necessary to "...confront an enemy with risks of unacceptable damage and disproportionate loss."[25] The US thus indicates that it would not be prepared to reduce strategic nuclear weapons below a ceiling of 2,000 under START III. As most strategic weapons have yields of 100-500 kilotons, this would leave an explosive equivalent of approximately 100,000 Hiroshima-sized bombs in US and Russian arsenals.

The Partial Test Ban Treaty (PTBT), hailed as an important disarmament step, in fact did not halt nuclear testing, since the nuclear weapon states merely shifted to underground tests. In fact more nuclear tests were conducted after the PTBT came into force (1,679) than before its implementation (372).[26]

It is also hard to characterize the proposed Fissile Material Cut-Off Treaty (FMCT) as a real disarmament measure, considering that the nuclear weapon states have huge stockpiles of highly enriched uranium (HEU) and plutonium and thus will not be limited by a cut-off in production of these materials — in fact they have already stopped production unilaterally. The proposed FMCT could possibly help to limit nuclear weapons production and stockpiling by the nuclear weapon states, were it to include a ban on the production of tritium, a warhead component that must be replaced regularly due to fast decay. Tritium, however, is being exempted from the FMCT negotiations.[27]

Venting of radioactivity from the Baneberry underground nuclear test, Nevada Test Site, USA, 1970. Photo: US Department of Energy.

The achievement of insignificant steps can actually have a detrimental effect on — and delay progress toward — elimination of nuclear weapons, by giving an appearance of progress that can reduce impetus toward more significant steps and that could even derail ongoing negotiations. In the 1961 negotiations on a nuclear test ban treaty, for example, both the Partial Test Ban Treaty and a comprehensive test ban treaty (CTBT) had been proposed. There was considerable public and political pressure for a CTBT. The conclusion of the PTBT, despite its failure to restrain the number of nuclear tests and the development of new nuclear weapons, was generally perceived as a step towards nuclear disarmament. The PTBT thus took the wind out of the sails of the CTBT campaign. This was a key factor in the long delay before a CTBT was negotiated.

Negotiating the CTBT in the 1990s without incorporating India's proposals that the treaty be linked to a firm commitment to complete nuclear disarmament may have been a factor in India's decision to conduct nuclear tests in May 1998 — definitely a backward step in global non-proliferation efforts.[28]

The long, drawn out, step-by-step process that characterizes current arms control efforts ensures that by the time a step has been achieved, the nuclear weapon states have generally developed their technology to a stage where they no longer need whatever it was they were negotiating away. For example, by the time most nations had agreed to the CTBT, most nuclear weapon states had developed the ability to conduct a range of non-explosive nuclear weapons tests.[29] This has led some nuclear disarmament advocates to oppose the CTBT in its current form.[30] Many would claim, in fact, that the nuclear weapon states have never agreed to any disarmament step until they have developed the technology to replace what they were giving up.[31]

One could argue, therefore, that the step-by-step approach to elimination of nuclear weapons has been tried and, on the whole, has failed, despite significant incremental accomplishments. The nuclear weapon states are no closer to nuclear disarmament now than when they accepted their obligation to disarm under the Non-Proliferation Treaty 30 years ago. As a matter of numbers alone, there has been very little net reduction from the nuclear stockpiles that existed when the NPT entered into force in 1970. At that time there were 39,000 nuclear weapons. Now there are 36,000.[32] More important, the nuclear weapon states have made no moves away from policies of threat or use. The UK, the US, and France have been joined by Russia in refusing to rule out the first use of nuclear weapons and are continuing to keep thousands of nuclear weapons on alert status. In addition, the threat of use, including even the use in a pre-emptive first strike, has been extended to cover threats from chemical and biological weapons.[33]

On the other hand, the incremental achievements to date have contributed to the evolving norm against the testing, development, proliferation, and even use of nuclear weapons. They have also helped to develop mechanisms, procedures, and experience in nuclear arms control that those engaged in developing nuclear disarmament regimes will find extraordinarily useful.

As a matter of numbers alone, there has been very little net reduction from the nuclear stockpiles that existed when the NPT entered into force in 1970. At that time there were 39,000 nuclear weapons. Now there are 36,000.

Some of these mechanisms and procedures provide a basis for the verification and implementation approaches proposed in the Model Nuclear Weapons Convention.

Serious consideration should be given to the view that "the step-by-step process is the only realistic approach in this complex field." Nuclear disarmament is complex. There are many political, legal, and technical considerations in the process of abandoning nuclear use policies, eliminating the stockpiles, and maintaining a nuclear weapons free world. The political considerations may be most important. The governments of nuclear weapon states continue to resist any but the most minimal nuclear disarmament steps, because they believe that nuclear weapons still serve one or more purposes. They continue to assert their belief that nuclear weapons prevent war. The United Kingdom, for example, has argued that nuclear weapons are necessary in order to prevent "...subjection to conquest which may be of the most brutal and enslaving character."[34] The US has argued that "...we believe the policy of nuclear deterrence has saved many millions of lives from the scourge of war during the past 50 years. In this special sense nuclear weapons have been used defensively every day for over half a century ... to preserve the peace."[35]

There is also evidence of an unspoken belief among the nuclear weapon states that nuclear status confers political power. In 1995 the Mexican Ambassador to Geneva noted that

"What is at the heart of this debate is that it ... forces a rethinking of the whole cold war power structure... Look at France...The French government thinks that their legitimacy comes from having nuclear weapons. Take away their nukes and their Security Council veto, and what are they? A little more than Italy and less than Germany."[36]

Until the nuclear weapon states abandon these perspectives, they will not agree to a comprehensive approach to nuclear disarmament. Thus, a limited step-by-step approach, minimal as it is, may indeed be the only realistic way some governments see to move forward today. The danger of maintaining the status quo and the increasing instability of the non-proliferation regime may soon alert them to the need for reduced reliance on nuclear weapons, but public pressure is also needed.

The corporate and scientific interest in maintaining a robust nuclear weapons industry also constrains nuclear disarmament to limited steps. Harold Muller notes that, "Thousands of jobs and careers depend on the production, or at least the maintenance, of these weapons."[37] Scientists, bureaucrats, and corporations have considerable power to influence government decisions on nuclear policy. For example, Lockheed Martin, which manages some of the US nuclear weapons research laboratories and is the biggest manufacturer of US nuclear weapons delivery systems, spends $5 million annually and employs more than 80 lobbyists to persuade the US Congress to continue — and even to increase — funding for nuclear weapons programs.[38]

According to Lichterman and Cabasso, the weapons laboratories in the US convinced the Clinton administration that the only way to achieve congressional support for a CTBT was to guarantee a well funded "nuclear weapons research and testing program of Cold War proportions that will keep nuclear weapons in the arsenal, in the budget, and in the career paths of scientists well into the next century."[39]

Comprehensive Approach

Advocates of the comprehensive approach argue that it is high time the nuclear weapon states abandoned their nuclear deterrence policies and began work on a treaty for their complete elimination.

They argue as follows:

- Nuclear deterrence is inherently unstable and is bound to fail at some point. Deterrence relies on preventing an attack by convincing the enemy that a nuclear response could result. An enemy is only convinced if they perceive a genuine chance that nuclear weapons may be used against them. Thus, the line separating threat from actual use in a conflict situation must remain solid for deterrence to work. Once this line is crossed, deterrence has clearly failed, and when it fails, there is no plan B. In the Cuban Missile Crisis the Soviet Union approached that line and then backed down. Had they crossed the line, the US would have faced a dilemma: either use nuclear weapons or downgrade their deterrent value. If nuclear deterrence remains an indefinite policy, a conflict between nuclear weapon states will likely cross that line at some time and thus result in a nuclear exchange.
- Nuclear war could also occur by accident or miscalculation. A number of accidents that could have resulted in an inadvertent nuclear exchange have already occurred.[40] The likelihood of such an accident could increase markedly in the new millennium, especially if nuclear weapons are kept on alert status, because of probable failures or incorrect information transfers in military computers resulting from the Year 2000 "bug."[41]
- Nuclear deterrence stimulates other states to develop or acquire either nuclear weapons or other weapons of mass destruction in response.

For these reasons nuclear deterrence should be abandoned immediately. There is no valid reason to wait until nuclear disarmament steps have been achieved before dropping policies of first use — or any use — of nuclear weapons.

Proponents of a comprehensive approach also argue that this is the only way to deal with the asymmetries in nuclear arsenals and capabilities, as has been clearly demonstrated in the case of the Comprehensive Test Ban Treaty. The CTBT was originally proposed by India. Yet India rejected the CTBT when it was finally concluded, because by then other nuclear weapon states had developed the means for non-explosive testing while India had not.[42]

Without a major change in policy from the nuclear weapon states, the comprehensive approach seems unrealistic.[43] Advocates of a comprehensive approach, however, believe that such a change is possible.

This US nuclear bomb, the B28R1, was recovered from waters off the coast of Spain after a B-52 bomber collided with its refueler, scattering four nuclear bombs over the Spanish countryside.
Photo: Natural Resources Defense Council, Nuclear Weapons Databook, Volume I.

Indeed, a rejection of nuclear deterrence and support for a quick and comprehensive disarmament process has already permeated the consciences of academics, policy makers, scientists, military leaders, and the public throughout the world. For example:

- On February 6, 1985 the cities of Hiroshima and Nagasaki launched an appeal calling for the complete prohibition and elimination of nuclear weapons. The appeal has since been signed by more than 60 million people, making it the largest petition in the world.
- On August 14, 1996 the Canberra Commission on the Elimination of Nuclear Weapons released its report calling for a program for the complete elimination of nuclear weapons.
- On December 5, 1996 General Lee Butler and more than 50 other retired generals and admirals from 17 countries including Russia, the UK, France, India, and Pakistan, released a statement calling for the elimination of nuclear weapons.

"The nuclear weapon is obsolete. I want to get rid of it."
General Charles Horner, Former commander of US Space Command

- On June 17, 1997 the US National Academy of Sciences released a report calling for a long term strategy of complete elimination of nuclear weapons and intermediate steps including restricting the role of nuclear weapons to only deterring nuclear threats.
- On February 2, 1998 117 civilian leaders, including 47 past or present heads of state, released a statement calling for the elimination of nuclear weapons.
- On June 9, 1998 the Foreign Minsters of Brazil, Egypt, Ireland, Mexico, New Zealand, Slovenia, South Africa, and Sweden released a joint declaration calling for a new agenda for nuclear disarmament culminating in the elimination of nuclear weapons.
- In October of 1998 50 US bishops released a statement, "The Morality of Nuclear Deterrence," condemning nuclear deterrence and calling for nuclear abolition.
- In December of 1998 the Canadian Standing Committee on Foreign Affairs and International Trade recommended that Canada take an active role in encouraging reform of the policies and postures of the nuclear weapon states and of NATO, and also take an active role in the pursuit of complete nuclear disarmament.

(See also Critical Questions on Deterrence and Security.)

General Lee Butler and General Andrew Goodpaster address the National Press Club in Washington, DC, to announce the statement by more than 50 other retired generals and admirals calling for the elimination of nuclear weapons.
Photo: Art Garrison.

Appeal from Hiroshima and Nagasaki, The world's largest petition, signed by more than 60 million people

Now is the time to call for the complete prohibition and elimination of nuclear weapons. Let us work together urgently to achieve a total ban on the use, testing, research, development, production, deployment and stockpiling of nuclear weapons.

Advocates of a comprehensive approach have also noted the similarities between nuclear weapons and landmines, for which a comprehensive approach was successful. Francis Sejersted, Chairman of the Nobel Committee, notes that,

"Both hit victims at a vast remove from the actual warfare. They strike mainly at civilian populations, and their effects continue for generations after the end of the armed conflict. They are weapons which cast the shadow of war also across peace. War's threat to life and limb is everywhere and never ending."[44]

For some years negotiations on landmines were bogged down in a step-by-step process involving negotiations of limited protocols of the Inhumane Weapons Convention.[45] The shift by the majority of states to a comprehensive approach, led by Canada in the early 1990s, resulted in the rapid conclusion of the Landmines Convention.[46]

A key to the success of the landmines campaign is that the focus on a complete ban, not just on control of landmines or a ban on certain types such as "dumb" mines, captured public attention as a meaningful measure. During the negotiation process the comprehensive approach allowed the negotiators to jump over tricky issues such as which types of mines are

"Can a consensus be forged that nuclear weapons have no defensible role, that the political and human consequences of their employment transcends any asserted military utility, that as weapons of mass destruction, the case for their elimination is a thousand-fold stronger and more urgent than for deadly chemicals and viruses already widely declared illegitimate, subject to destruction and prohibited from any future production? I believe that such a consensus is not only possible, it is imperative, and is in fact growing daily."

General Lee Butler, Former Commander-in-Chief of US Strategic Command (US Air Force, Ret.)

"smart" and which types are "dumb," and to sidestep the fact that control mechanisms tend to discriminate in favor of technically advanced countries.

A similar comprehensive approach to nuclear weapons has the potential to capture public attention and to jump over deadlocks in negotiations caused by asymmetries in nuclear capabilities — deadlocks that cannot be overcome by partial measures.

Canadian Member of Parliament Bill Blaiklie had this to say after the achievement of the Landmines Convention:

"What we need now is a similar but even more comprehensive and successful dynamic . . . to abolish nuclear weapons which pose a threat to the entire human prospect."[47]

An Incremental-Comprehensive Approach

An alternative path forward between the above two extremes has been described as an incremental-comprehensive approach.[48] Such an approach incorporates step-by-step measures within a comprehensive framework. This is the approach suggested by the Canberra Commission on the Elimination of Nuclear Weapons[49] and by the "New Agenda Coalition.[50]

The United Nations resolutions on follow-up to the International Court of Justice advisory opinion on the legality of the threat or use of nuclear weapons also suggest this approach.[51] These resolutions call for the implementation of the disarmament obligation through negotiations leading to the conclusion of a nuclear weapons convention.

In introducing the resolution, Malaysia noted that

> "While a model draft convention prepared by leading international nuclear disarmament experts is already in circulation as a basis of discussion, my delegation is not, however, suggesting the immediate negotiations on such a convention at this stage. We believe the road towards the total elimination of nuclear weapons will be a long and arduous one and would be best traveled through a series of well-defined stages, accompanied by proper verification and control mechanisms. Such an approach is, therefore, not incompatible with the step-by-step incremental approaches already mooted by others . . ."[52]

An incremental-comprehensive approach has many advantages over a purely step-by-step approach. It would ensure that negotiations would continue beyond the achievement of small steps. Negotiators, policy makers, and the public would all understand that the goal is not the small step but the complete measure. It could also increase the momentum to complete the elimination process as governments and citizens feel empowered by initial success and develop greater confidence that the final goal is achievable.

An incremental-comprehensive approach would help overcome the problems of asymmetry in nuclear arsenals. Negotiating parties would be willing to accept temporary imbalances in forces or capabilities because they would be confident that such temporary imbalances would be rectified by subsequent measures that would be part of the negotiating program. Ultimately, the only real balance will occur when no state possesses nuclear weapons. If they recognize a clear program to reach that goal, states will more easily agree to the steps along the way.

While the path to nuclear disarmament will not mirror precisely the paths taken towards the abolition of biological weapons, chemical weapons, and landmines, adopting a similar comprehensive goal for nuclear disarmament, as was done in those treaties, will assist the process.

The nuclear weapon states are resisting the incremental-comprehensive approach because

they are not prepared for the complete elimination of nuclear weapons, and they see this as the slippery slope to elimination.

The UK, for example, opposed the 1998 UN resolution "Towards a nuclear-weapon-free world: the need for a new agenda,[53] because it "advocates measures which we on the national basis . . . concluded . . . would be at the present time inconsistent with the maintenance of a credible minimum nuclear deterrence."[54]

It would probably be more accurate to describe the incremental-comprehensive approach as a path rather than a slippery slope.

Once one is on the path, reaching the destination is easier than if one had not begun the journey, but there would still be checks and resting points along the way were confidence and security not sufficiently developed to advance to the next step. For example, the Model Nuclear Weapons Convention proposes a series of phases for reducing the numbers of nuclear weapons. Before commencing a phase of reductions, states would have the opportunity to affirm their confidence that other states have implemented their obligations under the previous phase.

Stansfield Turner notes that the most difficult step may be proceeding from a few nuclear weapons to zero. He thus proposes a resting point prior to complete elimination that would provide a "virtual zero." This could be done by placing all remaining nuclear weapons under a system of "strategic escrow," which would "lock up" the weapons but make them available if necessary in an emergency and with permission from an international controlling agency. [55]

The very fact that one had taken the initial steps on the path would increase one's confidence to take the next step. For example, the de-alerting of nuclear weapons, with appropriate verification, is one of the suggested steps in this approach. Such a step would increase confidence on all sides that they would not be subject to a surprise attack. This would enable a move away from launch-on-warning posture as states would have advance warning of any moves to re-alert the opposing forces weapons before they could be launched.

In the beginning states may prefer not to remove the warheads from the delivery vehicles until they have confidence in the verification systems developed through the de-alerting process. Once such confidence has been achieved, it would be much easier to adopt the next disarmament measure.

In addition, an incremental-comprehensive approach would include threshold states[56] and nuclear capable states[57] as participants in the negotiating process, thus reducing or eliminating the continuing risk of nuclear proliferation, which has been a key rationale used by the nuclear weapon states to hold onto their nuclear weapons.[58]

Where Does the Nuclear Weapons Convention Fit?

The nuclear weapons convention fits into either a comprehensive approach or an incremental-comprehensive approach. It provides a conceptual package for the complete elimination of nuclear weapons, taking into consideration each of the following:

- the security concerns that would need to be the subject of negotiations;
- the technical difficulties in verifying the elimination of nuclear weapons and the safe disposal of weapons materials; and
- the legal mechanisms that would need to be established to implement the process with fairness.

In addition it is framed in order to encourage and encompass incremental measures that could be adopted on the way to negotiating a complete convention.

Process for Negotiation

There are a variety of perspectives on which negotiating forum is best for achieving nuclear disarmament. The Non-Aligned Movement has called for the Conference on Disarmament "to establish, as the highest priority, an ad hoc committee to start (in 1998) negotiations on a phased program for the complete elimination of nuclear weapons..."[59]

The US, on the other hand, holds that "bilateral efforts which have already produced concrete results in the area of nuclear disarmament remain, for the time being, the only realistic approach to arms control."[60] For this reason the US opposes any negotiations, or even discussions on negotiations, in the Conference on Disarmament (see below).

Negotiations leading to the conclusion of a nuclear weapons convention would most likely require packages of negotiations in different fora. Ultimately, the conclusion of negotiations on a nuclear weapons convention will need to be folded into one specific multilateral forum. Most likely that will be either the Conference on Disarmament or a special negotiating conference. Work in other fora will be necessary, however, if there is to be progress toward the final goal.

Bilateral Negotiations

The US and Russia continue to maintain stockpiles of nuclear weapons at cold war levels. Other nuclear weapon states have indicated that they will not join plurilateral negotiations on reductions until the stockpiles of the US and Russia are down to levels comparable with their own. The most appropriate way for US and Russian stockpiles to be further reduced is through bilateral negotiations.

General Lee Butler has observed that numbers are not the key question — policy is.[61] In this case, policy issues include forward deployment, alert status of nuclear weapons, first use, use, use against other weapons of mass destruction, security assurances, commitment to abolition, transparency, and nuclear weapons research and development. Plurilateral and multilateral negotiations, particularly regarding policy aspects of nuclear disarmament, should therefore be held concurrently with bilateral negotiations and should not be held hostage to any difficulties in the bilateral process.

Number reductions, however, are not the only accomplishment in the bilateral process. In negotiating and implementing bilateral treaties including the ABM, START, and INF treaties, the Hot Line and Nuclear Accidents Agreements, and the Agreement on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine Launched Missiles, the US and Russia have established comprehensive missile and warhead destruction processes, verification regimes, and confidence building measures.

Some of these elements can be usefully included in plurilateral and multilateral procedures yet to be negotiated. Transferring some of them into a multi-lateral context, however, may be difficult or inappropriate. Certain information that neither state would want to be made available to other states is shared confidentially. Certain technical information could, for example, be useful to a threshold state wishing to advance its nuclear program. Thus, there could be a need for additional bilateral agreements on specific sensitive areas to be negotiated in conjunction with plurilateral and multilateral agreements.

Plurilateral negotiations

Different suggestions have been made for how negotiations could occur among some or all of the nuclear weapon states and nuclear threshold states. The Washington Council on Non-Proliferation has suggested five-power or five-power-plus-one negotiations to implement the NPT Article VI obligations for nuclear disarmament.[62] The proposal envisages negotiations among the five NPT nuclear weapons states (China, France, Russia, the UK and the US) with the possibility of including a non-nuclear state. In 1998 Prime Minister Nawaz Sharaf of Pakistan proposed negotiations among China, India, Pakistan, Russia, and the US; India proposed negotiations among the eight nuclear weapon states.

Plurilateral negotiations on certain aspects of nuclear disarmament may be useful. Experience with bilateral negotiations indicates that progress can be made relatively quickly on reductions of stockpiles, on verification, and on confidence building when negotiations and implementing mechanisms are kept to a small number of parties. Some security issues regarding nuclear disarmament, particularly in regional contexts, could also be handled more efficiently in negotiations among a small number of parties.

Plurilateral negotiations, however, should take place concurrently with multilateral negotiations. Nuclear-capable states need to be incorporated in the negotiating process in order to ensure that verification and compliance considerations that relate to them are developed with their agreement and participation. Mechanisms and procedures developed bilaterally and plurilaterally will need to be consistent with obligations and approaches developed multilaterally.

Non-nuclear-capable states also have an interest in being involved in the negotiations. Nuclear weapons threaten all states and all people; thus all states and all people have an interest in, and indeed a responsibility for, participating in developing a regime for their elimination. As with the CTBT, some non-nuclear-capable states also have expertise and technical facilities useful for the development of implementation procedures and systems. Some non-nuclear-capable states also have experience, skills, and creative ideas that can make them valuable partners in negotiations, especially in overcoming deadlocks.

Conference on Disarmament

The Conference on Disarmament (CD) was established as the primary multilateral negotiating forum for disarmament. The CD and its predecessor, the Eighteen Nation Disarmament Committee, were the negotiating fora for the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, the Chemical Weapons Convention, and the Comprehensive Test Ban Treaty.

The CD, however, has some drawbacks:

- all its decisions are taken by consensus, meaning that any member state could prevent the beginning of negotiations or their successful conclusion;
- membership is limited to the current 61 members, although some countries that are not members have expressed an interest in participating fully in such negotiations.

The first drawback would also apply to some degree to other negotiating fora, since it is unlikely that any of the nuclear weapon states will begin negotiations without the involvement of all of the nuclear weapon states. Once all five nuclear states agree to begin negotiations, the other members most likely will also agree. The second drawback may be overcome to some degree if provision is made for non-members to attend CD sessions as observers and to make their views known unofficially.

Non-Proliferation Treaty As a Negotiating Opportunity?

The parties to an existing treaty could negotiate a protocol, an amendment, or even a new treaty in order to further the aims and objectives of that treaty. The Philippines, for example, has suggested that the parties to the Non Proliferation Treaty convene a conference for the purpose of negotiating a nuclear weapons convention as a means to implement Article VI of the NPT.[63] The Marshall Islands has proposed that the 2000 NPT Review Conference establish an intersessional working group to assist in negotiations on a nuclear weapons convention.[64] If such a group were established, considerable preparatory work for a nuclear weapons convention could commence even before the nuclear weapons states agree to enter into negotiations.

Another proposal is that the parties to the NPT call a special conference to amend the NPT.[65] The amendment, in the form of a negotiated protocol to the Treaty, would prohibit nuclear weapons and provide for their elimination. While obtaining agreement from the nuclear weapon states on such a protocol could be difficult, the NPT requires a conference to discuss the proposal if one third of the parties to the Treaty request such a conference. A similar approach was taken in 1991 when one third of the parties to the Partial Test Ban Treaty requested a conference at which they proposed amending the PTBT to make it a Comprehensive Test Ban Treaty. While the nuclear weapon states did not agree to the amendment, the process did help achieve a negotiating mandate for a CTBT in the Conference on Disarmament.

International Conference

Another possible avenue to negotiations leading to a nuclear weapons convention would be the establishment of an ongoing international conference specially for this purpose. The Law of the Sea, for example, was negotiated through the establishment, by the United Nations General Assembly, of the Law of the Sea Conferences. The establishment of a special negotiating body allows for the creation of an appropriate negotiating forum. The Law of the Sea Conferences used a combination of formal and informal structures, including a number of working groups, which suited the large number of issues to be negotiated.

In 1998 the United Nations General Assembly called for "the convening of an international conference on nuclear disarmament at an early date with the objective of arriving at an agreement on a phased programme of nuclear disarmament and for the eventual elimination of nuclear weapons with a specified framework of time through a nuclear weapons convention."[66]

Establishing an international conference to negotiate a nuclear weapons convention would have a distinct advantage: this would leave the CD free to continue its work on other disarmament issues, such as prevention of an arms race in outer space and transparency in armaments.

The CD would also be able to conclude agreements on certain steps towards nuclear disarmament on which it is already working, such as the Fissile Material Cut-Off Treaty.

Participation of Civil Society

As noted earlier, the elimination of nuclear weapons will require participation not just from governments, but from various sectors of civil society. Scientists, technicians, and corporations working in the nuclear field are the most obvious participants, given their technical expertise and the responsibility they will have to ensure that no work in other nuclear-related fields is diverted into nuclear weapons work. Beyond that, individuals and organizations involved in education, public policy, law, health, and other fields must be included to ensure

Demonstrations like this one at the former Soviet test site in Kazakhstan helped to close it down. Photo: James Lerager.

that a nuclear weapons free regime is widely accepted and promoted. The general norm against nuclear weapons will need to be inculcated at all levels of society in order to make any breakout by states or non-state actors unthinkable and unsupported. Individuals will have a responsibility under a nuclear weapons convention to refuse to participate in activities that would support nuclear weapons, and to report on any such activities that come to their attention. Thus, a wide knowledge and understanding of the nuclear weapons convention throughout society will be important.

Negotiations for the Landmines Convention and the International Criminal Court included substantial input from non-governmental organizations (NGOs). Negotiations for a nuclear weapons convention, likewise, should include wide involvement of the constituents of civil society, not only through governments, but through interested and experienced NGOs.

Political Will

Currently the leaders of the nuclear weapon states do not have the political will to abolish nuclear weapons and are influenced by strong political forces not to develop such will. Only the combined efforts of citizens and supportive non-nuclear governments will persuade them to move.

The concept of a nuclear weapons convention can be a tool in these efforts, exploring many concerns that are sure to arise as the nuclear weapon states consider moving away from a security policy that they know and with which they have lived for decades, albeit very dangerously and with many undesired consequences. A public opinion poll in the US indicated that most US citizens still see a need for nuclear weapons to provide security (57%). That same poll also showed, however, that an overwhelming majority supported negotiations on a nuclear weapons convention (80%). Thus, there is a general acceptance of the view that as long as nuclear weapons are around "we should keep a couple in our back pocket just in case." Once all nuclear weapons from all countries are eliminated under a system of verification and control, there will be no need for "a couple of nukes in the back pocket."

The nuclear weapons convention approach also provides a way to ease or reverse the opposition of nuclear weapons scientists and corporations to nuclear disarmament. The convention indicates that considerable scientific expertise and corporate involvement will be necessary for the destruction of nuclear weapons and for the verification of the nuclear weapons free regime (See Critical Question on Conversion).

To facilitate this approach, an international consortium of lawyers, scientists, physicians, and disarmament specialists drafted a Model Nuclear Weapons Convention, primarily to stimulate the political will to begin negotiations on such a convention. The Model NWC is intended to demonstrate that an agreement on the elimination of nuclear weapons is possible to achieve, to implement, to verify, and to enforce.

Progress on nuclear abolition requires political, legal and technical developments. These are interrelated, and improvement in one area can stimulate the others. Rather than waiting for progress on one of these fronts before working on the others, therefore, we can improve the chances for overall progress by enabling efforts towards complete nuclear disarmament in any and every relevant sector.

Endnotes to Section 1

1 "Closing the Circle on the Splitting of the Atom", U.S. Department of Energy, Office of Environmental Management, January 1995, p. 9.

2 Final Document of the XII Summit of the Non-Aligned Movement, Durban, September 1998.

3 Canberra Commission on the Elimination of Nuclear Weapons, Canberra, Australia, 1996. Available at Canberra Commission homepage: www.dfat.gov.au/cc/cchome.html.

4 Daalder, Ivo H. The Limited Test Ban Treaty. In: Carnesale Albert, and Richard N. Haass, eds., Superpower Arms Control: Setting the Record Straight. Cambridge, Mass.: Ballinger. 1987.

5 NPT Principles and Objectives. See Final Document of the 1995 Review and Extension Conference, Decision 2, paragraph 4: "The achievement of the following measures is important in the full realization and effective implementation of Article VI, including the program of action as reflected below:…(a) The completion by the Conference on Disarmament of the negotiations on a universal and internationally and effectively verifiable Comprehensive Nuclear Test Ban Treaty no later than 1996…."

6 William Walker, Evolutionary versus Planned Approaches to Nuclear Disarmament", Disarmament Diplomacy No. 15, May 1997. Disarmament Diplomacy is published by the Acronym Institute, website: www.gn.apc.org/acronym/.

7 Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion of the International Court of Justice (ICJ), July 8), U.N. Doc. A51/218 (1996), reprinted in 35 I.L.M. 809 & 1343 (1996). The Advisory Opinion and separate declarations and opinions of judges are available on the website of IALANA: www.ddh.nl/org/ialana/opiniontable.html.

8 In Retrospect: The Tragedy and Lessons of Vietnam, Robert McNamara, Time Books, 1995, p.346.

9 "Crude Nuclear Weapons: Proliferation and the Terrorist Threat", IPPNW, 1996.

10 Treaty on the Non-Proliferation of Nuclear Weapons, entered into force 1970.

11 ICJ Advisory Opinion, op. cit., note 7.

12 Canberra Commission, op. cit., note 3.

13 Melman Group poll, "Public Attitudes on Nuclear Weapons," commissioned by the Stimson Center, interviews Sept. 10-15, 1997.

14 ICJ Advisory Opinion, Declaration of President Bedjaoui, op. cit., note 7.

15 UNGA Res. 51/45 M, December 10, 1996. UNGA Res. 52/38 O, December 9, 1997. UNGA Res. 53/77 W, December 4, 1998 (See Documents section for copies of the most recent resolution).

16 UNGA Resolution 52/38 L adopted on December 9, 1997; UNGA Resolution 52/39 C, adopted on December 9, 1997; UNGA Resolution 53/77 X adopted on December 4, 1998; UNGA Resolution 53/78 D, adopted on December 4, 1998.

17 For example, US Opinion Poll commissioned for the Abolition 2000 Network by the Global Resource Action Center for the Environment, (Lake Sosin Snell & Associates, April 1997); UK survey on nuclear weapons commissioned for the Abolition 2000 Network by the National Steering Committee for Nuclear Free Local Authorities (Gallup, September 1997); "Canadians' Views on a Global Ban on Nuclear Weapons," (Canada-wide poll by the Angus Reid Group for the Canadian Peace Alliance, February 1998); German opinion poll on nuclear weapons commissioned by the German affiliate of IPPNW (June 1998); Norwegian opinion poll undertaken by 4 fakta A/S for the Norwegian affiliate of IPPNW (July 1998).

18 H.Res 479, 105th Congress, 2d Session, June 18, 1998, H.Res.82, 106th Congress, 1st Session, February 24, 1999.

19 Statement by John Holum, Acting Undersecretary of State and Director of the US Arms Control and Disarmament Agency, UN First Committee, October 14, 1998

20 UNGA Res. 50/70 P, 12 December 1995.

21 Abolition 2000 Statement, April 1995.

22 "Towards a Nuclear-Weapon-Free World: The Need for a New Agenda", joint declaration of the foreign ministers of Brazil, Egypt, Ireland, Mexico, New Zealand, Slovenia, South Africa and Sweden, June 9, 1998.

23 United States Explanation of Vote on UN General Assembly Resolution L.45, November 10, 1998.

24 Other treaties, including the treaties of Tlatelolco, Rarotonga, Pelindaba and Bangkok, (establishing nuclear-weapon-free zones in Latin America, South Pacific, Africa and Southeast Asia, respectively), the Non-Proliferation Treaty and the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof, act to stop the proliferation of nuclear weapons rather than to implement disarmament of existing stockpiles.

25 US Doctrine for Joint Nuclear Operations, 15 December 1995

26 NRDC Nuclear Notebook, in Bulletin of Atomic Scientists, November/December 1998, p66.

27 An FMCT will never-the-less still be a useful treaty to achieve as it could well develop procedures and accumulate information which will be useful once the nuclear weapon states agree to a path of verified disarmament. Complete monitoring of civilian fissile material production and of stockpiles of fissile material will be necessary to develop confidence in compliance with a nuclear abolition regime (See Section 4, Verification).

28 The Indian government was one of the first to call for a CTBT and had been a strong supporter of it up until the final stages of the negotiations in the Conference on Disarmament in Geneva. India proposed language in the CTBT linking it with a commitment for nuclear disarmament within a timebound framework. Rather than addressing this proposal in the negotiations, a draft text of the CTBT, which had not been agreed by all delegations at the CD, was presented to the United Nations General Assembly and forced through with a vote. India and Pakistan opposed the resolution. A press statement released by the Indian government on May 15, 1998, following their nuclear tests noted that “It is because of the continuing threat posed to India by the deployment of nuclear weapons... that we have been forced to carry out these tests."

29 See “Stewardship Smokescreen", Hisham Zerriffi and Arjun Markhijani, Bulletin of Atomic Scientists, September/October 1996.

30 Victor Sidel, “Why Abolitionists Should Not Support the CTBT in Its Current Form" Victor Sidel, Medicine and Global Survival, October 1998. Vol. 5, Issue 3. See also accompanying article, Daryl Kimball, “Why the CTBT Is Still an Essential Step Toward Nuclear Abolition”.

31 French President Jacques Chirac highlighted this when he announced a resumption of French testing in 1995 in order to “perfect computer simulation techniques that would end the need for further (physical) testing”. NY Times, Sept. 6. 1995.

32 “Taking Stock: Worldwide Nuclear Deployments 1998”, Natural Resources Defense Council, March 1998. Nuclear Notebook, Bulletin of Atomic Scientists, Nov/Dec 1994.

33 The US Doctrine for Joint Theater Nuclear Operations of 1996, for example, holds that nuclear “operations must be planned and executed to destroy or eliminate enemy WMD (weapons of mass destruction) delivery systems and supporting infrastructure before they can strike friendly forces.”

34 Sir Nicholas Lyell, UK Attorney General, Statement to the International Court of Justice, November 15, 1995.

35 John McNeill, Senior Deputy General Counsel for the Department of Defense. Statement to the International Court of Justice, November 15, 1995.

36 “Ban the Bomb?” The Nation, January 9/16, 1995.

37 “An Incremental Strategy for Nuclear Disarmament: Rationale and Practical Considerations,” Harald Muller, Programme for Promoting Nuclear Non-Proliferation, April, 1998.

38 “Washington on $10 Million a Day: How Lobbyists Plunder the Nation”, Ken Silverstein, Common Courage Press, 1998.

39 “A Faustian Bargain: Why Stockpile Stewardship is Fundamentally Incompatible with the Process of Disarmament”, Western States Legal Foundation, April 1998. See also “Stockpile Stewardship of Nuclear Weapons: The Deal to Subsidize Nuclear Weaponeers”, Facing Reality, CA 1998.

40 See, e.g., “Selected Accidents Involving Nuclear Weapons 1950-1993”, Greenpeace, March 1996, at http://www.greenpeace.org/~comms/nukes/ctbt/read3.html.

41 See “The Bug in the Bomb: The Impact of the Year 2000 Problem on Nuclear Weapons”, Michael Kraig, BASIC, November 1998, and “The Nightmare Scenario: What if the World’s Y2K Nuclear Computer Problems Aren’t Fixed in Time?”, Kevin Sanders, The Nation, March 15, 1999.

42 Statement by Arundhati Ghose, Ambassador of India to the UN in Geneva, to the Conference on Disarmament, February 15, 1996.

43 Of the nuclear weapon states, only China, India and Pakistan support comprehensive disarmament. All three have called for negotiations on a nuclear weapons convention.

44 December 10, 1997. Speech at the presentation of the Nobel Peace Award to the International Campaign to Ban Landmines.

45 Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects.

46 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction.

47 Speech to the Canadian Parliament November 3, 1997

48 “Nuclear Weapons Convention on Track: UN Resolution, Incremental Comprehensive Approaches and the Drafting Process.” INESAP Information Bulletin, December 11, 1996.

49 Canberra Commission, op. cit., note 3.

50 “Towards a Nuclear-Weapon-Free World: The Need for a New Agenda", op. cit., note 22.

51 UNGA Res. 51/45 M, December 10, 1996. UNGA Res. 52/38 O, December 9, 1997. UNGA Res. 53/77 W, December 4, 1998 (See Documents section for copies of the most recent resolutions.)

52 Ambassador Hasmy Agam, Permanent Representative of Malaysia to the United Nations. United Nations First Committee, October 12, 1999.

53 UNGA Resolution 53/77 Y, December 4, 1998.

54 R. Tauwhare, United Kingdom. Debate of the UN First Committee, October 27, 1998.

55 Stansfield Turner, Caging the Nuclear Genie, Westview Press, 1997.

56 India and Pakistan are resistant to joining the Non-Proliferation Treaty and the Comprehensive Test Ban Treaty, and to negotiating a Fissile Material Cut-off Treaty. However both states indicated that they would have supported the CTBT and would support FMCT if they were linked to a program for complete nuclear disarmament.

57 With the exception of Iraq, all nuclear weapon capable states, ie those with nuclear reactors, are members of the Conference on Disarmament which would most likely be the negotiating body for the major multilateral elements of a program for nuclear disarmament.

58 The US Defense Department’s 1994 Annual Report, for example, noted that “...US nuclear weapons and nuclear posture can play a role in deterring the acquisition of nuclear weapons by other nations."

59 Final Document of the XII Summit of the Non-Aligned Movement, Durban, Sep 1998.

60 US Explanation of Vote before the vote on United Nations General Assembly resolution A/C.1/52/L.37, Nov 10, 1997.

61 General Lee Butler, public meeting, 3 March 1999, Ottawa, Canada.

62 “An Article VI Negotiating Forum of Five Plus One”, Nuclear Disarmament: How Much Have the Five Nuclear Powers Promised in the Non-Proliferation Treaty?, Washington Council on Non-Proliferation, June 1994.

63 Statement by Philippines President Fidel Ramos. Manila. July 9, 1996.

64 General considerations to be taken into account by Parties in the Review Process. Submitted by the Marshall Islands. NPT/CONF.2000/PC.I/11, 11 April 1997.

65 “Diplomatic Judo: Using the NPT to make the nuclear weapons states negotiate the abolition of nuclear weapons”, Zia Mian and M.V.Ramana, Center for Energy and Environmental Studies, Princeton University, October 1998.

66 UNGA 53/77 X, adopted December 4, 1998.

Section 2

Model Nuclear Weapons Convention

Convention on the Prohibition of the Development, Testing, Production, Stockpiling, Transfer, Use and Threat of Use of Nuclear Weapons and on Their Elimination

with

Comments and Critical Questions

Summary of the Model Nuclear Weapons Convention

General Obligations

The Model Nuclear Weapons Convention prohibits development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons. States possessing nuclear weapons will be required to destroy their arsenals according to a series of phases. The Convention also prohibits the production of weapons usable fissile material and requires delivery vehicles to be destroyed or converted to make them non-nuclear capable.

Declarations

States parties to the Convention will be required to declare all nuclear weapons, nuclear material, nuclear facilities and nuclear weapons delivery vehicles they possess or control, and the locations of these.

Phases for elimination

The Convention outlines a series of five phases for the elimination of nuclear weapons beginning with taking nuclear weapons off alert, removing weapons from deployment, removing nuclear warheads from their delivery vehicles, disabling the warheads, removing and disfiguring the “pits” and placing the fissile material under international control. In the initial phases the U.S. and Russia are required to make the deepest cuts in their nuclear arsenals.

Verification

Verification will include declarations and reports from States, routine inspections, challenge inspections, on-site sensors, satellite photography, radionuclide sampling and other remote sensors, information sharing with other organizations, and citizen reporting. Persons reporting suspected violations of the convention will be provided protection through the Convention including the right of asylum.

An International Monitoring System will be established under the Convention to gather information, and will make most of this information available through a registry. Information which may jeopardize commercial secrets or national security will be kept confidential.

National Implementation Measures

States parties are required to adopt necessary legislative measures to implement their obligations under the Convention to provide for prosecution of persons committing crimes and protection for persons reporting violations of the Convention.

States are also required to establish a national authority to be responsible for national tasks in implementation.

Rights and Obligations of Persons

The Convention applies rights and obligations to individuals and legal entities as well as States. Individuals have an obligation to report violations of the Convention and the right to protection if they do so. Procedures for the apprehension and fair trial of individuals accused of committing crimes under the treaty are provided.

Agency

An agency would be established to implement the Convention. It will be responsible for verification, ensuring compliance, and decision making, and will comprise a Conference of States Parties, an Executive Council and a Technical Secretariat.

Nuclear Material

The Convention prohibits the production of any fissionable or fusionable material which can be used directly to make a nuclear weapon, including plutonium (other than that in spent fuel) and highly enriched uranium. Low enriched uranium would be permitted for nuclear energy purposes.

Cooperation, Compliance and Dispute Settlement

Provisions are included for consultation, cooperation and fact-finding to clarify and resolve questions of interpretation with respect to compliance and other matters. A legal dispute may be referred to the International Court of Justice by mutual consent of States Parties. The Agency also is empowered to request an advisory opinion from the ICJ on a legal dispute.

The Convention provides for a series of graduated responses for non-compliance beginning with consultation and clarification, negotiation, and, if required, sanctions or recourse to the U.N. General Assembly and Security Council for action.

Financing

Nuclear weapon states are obliged to cover the costs of the elimination of their nuclear arsenals. However, an international fund will be established to assist states that may have financial difficulties in meeting their obligations.

Optional Protocol Concerning Energy Assistance

The Convention does not prohibit the use of nuclear energy for peaceful purposes. However it includes an optional protocol which would establish a program of energy assistance for States parties choosing not to develop nuclear energy or to phase out existing nuclear energy programs.

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Notes:

[..] Square brackets indicate alternative language or optional text.

Within Article II {Definitions}, each category begins with the definition of the categorical term. Other definitions follow in alphabetical order.

The text makes reference to a “Verification Annex” which would form an integral part of the NWC. Verification is considered in Section 4 of this book.

Preamble

We the people of the Earth, through the States signatory to this Convention:

Convinced that the existence of nuclear weapons poses a threat to all humanity and that their use would have catastrophic consequences for all the creatures of this Earth;

Noting that the destructive effects of nuclear weapons upon life on earth are uncontrollable whether in time or space;

Aware that amongst weapons of mass destruction, the abolition of which is recognized as being in the collective security interest of all people and States, nuclear weapons are unprecedented and unequalled in destructive potential;

Affirming that the inherent dignity and equal and inalienable rights of all members of the human family include the right to life, liberty, peace and the security of person;

Convinced that all countries have an obligation to make every effort to achieve the goal of eliminating nuclear weapons, the terror which they hold for humankind and the threat which they pose to life on Earth;

Recognizing that numerous regions, including Latin America, the South Pacific, Antarctica, Southeast Asia and Africa, have already established nuclear weapon free zones, where possession, production, development, use and threat of use of nuclear weapons are forever prohibited, and desiring to extend this benefit to the entire planet for the good of all life;

Determined to eliminate the risks of environmental pollution by radioactive waste and other radioactive matter associated with nuclear weapons and to ensure that the bounty and beauty of the Earth shall remain the common heritage of all of us and our descendants in perpetuity to be enjoyed by all in peace;

Recognizing the universal need for environmentally safe, sustainable energy;

Gravely concerned that the use of nuclear weapons may be brought about not only intentionally by war or terrorism, but also through human or mechanical error or failure, and that the very existence and gravity of these threats of nuclear weapons use generates a climate of suspicion and fear which is antagonistic to the promotion of universal respect for and observance of the human rights and fundamental freedoms set forth in the Charter of the United Nations and the Universal Declaration of Human Rights;

Convinced of the serious threats posed to the environment by nuclear arsenals, the economic and social costs and waste of intellectual talent occasioned by these arsenals and the efforts required to prevent their use, the dangers inherent in the existence of the materials used to make nuclear weapons and the attendant problems of proliferation, the medically and psychologically catastrophic effects of any use of a nuclear weapon, the potential effects of mutations on the genetic pool and numerous other risks associated with nuclear weapons;

Welcoming the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction and the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, as indications of a progression toward the elimination of all weapons of mass destruction;

Recognizing that all life is sacred and that there is a moral imperative to eliminate all weapons of mass destruction;

Believing that the threat and use of nuclear weapons is incompatible with civilized norms, standards of morality and humanitarian law which prohibit the use of inhumane weapons and those with indiscriminate effects;

Recalling Resolution 1(I), adopted unanimously on January 24, 1946 at the First Session of the General Assembly of the United Nations, and the many subsequent resolutions of the United Nations which call for the elimination of atomic weapons;

Recalling also the Final Document of the United Nations First Special Session of the General Assembly on Disarmament 1978, which calls for the elimination of nuclear weapons;

Mindful of the solemn obligations of States made in Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons to end the nuclear arms race at an early date and achieve nuclear disarmament, and in the "*Principles and Objectives for Nuclear Non-Proliferation and Disarmament*" adopted pursuant to that Treaty, furthering their commitment to eliminate all nuclear weapons;

Convinced that the elimination of nuclear weapons is an important step towards the goal of general and complete disarmament;

Welcoming the advisory opinion of the International Court of Justice of July 8, 1996, which concluded *"that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law"*, and concluded unanimously that "*There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control";*

Recalling United Nations General Assembly resolutions 51/45 M, of December 10, 1996, 52/38 O, of December 9, 1997, and 53/77X of December 4, 1998, which underline the nuclear disarmament obligation affirmed by the International Court of Justice and call upon all States to fulfil that obligation immediately by commencing multilateral negotiations "*leading to an early conclusion of a nuclear weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat or use of nuclear weapons and providing for their elimination*"*;*

Recalling United Nations General Assembly resolutions 51/45 O and 51/46 D, of December 10, 1996, 52/38 L and 52/39 C of December 9, 1997, and 53/77 X and 53/78 D of December 4, 1998, which support the call for such negotiations;

Convinced that a convention prohibiting the development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons and providing for their elimination is required to abolish these weapons from the Earth;

Have agreed as follows:

I. General Obligations

A. State Obligations

1. Each State Party to this Convention undertakes never under any circumstances:

a. To *use* or *threaten* to use *nuclear weapons;*

b. To engage in any military or other preparations to use *nuclear weapons;*

c. To develop, test, produce, otherwise acquire, deploy, stockpile, maintain, retain, or transfer *nuclear weapons* except as specified under paragraph 4 of this Article;

The prohibition on funding nuclear weapons research (subparagraph 1.g) replaces the prohibition on research in the 1997 MNWC, as this would be pragmatically and ethically problematic. The bracketed language would maintain this prohibition, which some responses consider essential.

d. To develop, test, produce, otherwise acquire, stockpile, retain, transfer or use *proscribed nuclear material* except as specified under paragraph 4 of this Article;

e. To develop, test, produce, otherwise acquire, deploy, stockpile, maintain, retain, or transfer *nuclear weapons delivery vehicles;*

f. To develop, test, produce, otherwise acquire, stockpile, maintain, retain, or transfer *nuclear weapon components* or equipment as specified in this Convention;

g. To fund [or conduct] *nuclear weapons research*, with the exception of *nuclear disarmament research;*

h. To assist, encourage, induce or permit, in any way, directly or indirectly, anyone to engage in any activity prohibited under this Convention.

2. Each State Party undertakes:

Preventive controls entail obligations additional to safeguards and would imply new obligations on the part of non-nuclear weapon states. (See Verification, Section 4.)

a. To destroy all *nuclear weapons* it owns or possesses, or that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention;

b. To destroy all *nuclear weapons* it abandoned on the territory of another State, in accordance with the provisions of this Convention;

c. To submit all *nuclear facilities* to *preventive controls;*

d. To destroy all nuclear weapons facilities it owns or possesses, or that are located in any place under its jurisdiction or control, or to convert such facilities to weapons destruction facilities or other facilities not prohibited by this Convention;

There is no satisfactory answer yet to the question of verification of command and control facilities.

e. [To disable or destroy all facilities, systems or sub-systems designed or used in the command or control of nuclear weapons, or convert such facilities, systems or sub-systems to purposes not prohibited under this Convention;]

f. To destroy or convert for purposes not prohibited under this Convention all nuclear weapons delivery vehicles and nuclear weapon components;

g. To place all special nuclear material under preventive controls as specified in this Convention.

h. To participate in good faith in activities aimed at the promotion of transparency with respect to nuclear weapons and related technologies and the promotion of education for the purposes of detecting and preventing activities prohibited under this Convention;

Subparagraph 2.h promotes transparency and education. This is a response to the argument that nuclear weapons technology and knowledge cannot be disinvented. (See also Critical Question on Knowledge and Reversibility.)

i. To report violations of this Convention to the Agency [and to cooperate to the fullest with the Agency's investigative, monitoring and verification functions;] [and to provide to the Agency all information requested by the Agency for the purposes of implementing this Convention, except such information as may be withheld for legitimate international or national security or trade secret concerns;]

j. To enact all domestic legislation necessary for the implementation of this Convention.

3. These obligations shall apply equally to nuclear explosive devices intended for peaceful purposes.

4 . These obligations shall not be interpreted to prohibit activities consistent with the application and implementation of the provisions of this Convention [including but not limited to transfer of nuclear weapons, special nuclear material, and nuclear weapons delivery vehicles for the purpose of their destruction or disposal, and nuclear disarmament research and verification thereof].

Paragraph 4 is necessary in order to ensure implementation that is consistent with the purposes of the NWC. Some responses indicated that the bracketed language should be deleted because it leaves room for loopholes. The question of intent and the difficulty of defining technical criteria for all provisions that turn on intent surface here and elsewhere.

B. Obligations of Persons

5. The following acts are crimes for which persons shall be held responsible regardless of their position, residence, citizenship or country of incorporation:

a. To engage or attempt to engage in any acts listed in subparagraphs 1.a through 1.g, inclusive, of this Article;

b. To aid, abet, or otherwise assist, in any way, anyone to engage in any activity prohibited under this Convention.

6. The fact that the present Convention provides criminal responsibility for individuals does not affect the responsibility of States under international law.

The obligations of the NWC would apply to individuals, corporations, and other private bodies. Enforceability of these obligations is a separate question and one that turns on the degree of compliance that can be assumed by the time of entry into force. See Critical Question on Enforcement.

II. Definitions

A. States and Persons

1. “Nuclear Weapons State” means a state which has manufactured and exploded a *nuclear weapon* or other *nuclear explosive device* prior to 1 January 1967 [or has otherwise declared that it possesses nuclear weapons].

The definition of Nuclear Weapons State borrows from the NPT. An alternative approach would be to include any State that declares that it possesses (or is known to possess) nuclear weapons, but there is concern that this approach would appear to legitimize the possession of nuclear weapons. The same concern applies to defining “Nuclear Threshold States.”

2. [“Nuclear Threshold State” means. . . .] {See Special Provision, Art. IV, Section E.}

3. “Nuclear Capable State” means a State that has any nuclear power or nuclear research reactor as per the list of the International Atomic Energy Agency.

4. “Person” means a natural or legal person.

“Natural person” means an individual. “Legal person” includes, for example, corporations.

B. Nuclear Weapons

5. “Nuclear Weapon” means:

a. Any device which is capable of releasing *nuclear energy* in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes;

b. Any *nuclear explosive device;*

c. Any *radiological weapon*; or

d. Any weapon which is designed to include a *nuclear explosive device* as a trigger or other component.

Definition 5.a. is borrowed from the Treaty of Tlatelolco. Definitions 5.b, c, and d update and expand this definition to cover modern weapons that use nuclear technology. Nuclear weapons are generally understood to be warheads (which have guidance systems and are delivered by missiles) or gravity bombs (delivered by aircraft).

6. “Nuclear Weapon Component” means [any constituent part of a nuclear weapon.]

7. “Nuclear Weapons Delivery Vehicle” means any vehicle designed for or capable of delivering a *nuclear weapon*. Any nuclear weapons delivery vehicle that has been constructed, developed, flight-tested or deployed for weapon delivery shall be considered a nuclear weapons delivery vehicle.

8. "Plutonium Pit" means the core element of a *nuclear weapon's* primary or fission component.

9. “Radiological Weapon” means any weapon that disperses radioactive material or uses radioactive material as a primary material in its construction.

10. "Warhead" means the explosive part of a nuclear weapons system. Warheads consist of *nuclear materials*, conventional high explosives, related firing mechanisms and containment structure.

C. Nuclear Energy, Explosives, and Explosive Devices

11. "Nuclear Energy" means energy released from the nucleus of an atom either spontaneously or through interaction with other particles and/or electromagnetic radiation.

12. "Nuclear Explosion" means the release of s*ignificant amounts of nuclear energy* on a time-scale faster than or comparable to chemical explosives [including micro-fission, micro-fusion or miniaturized devices of any yield].

13. "Nuclear Explosive Device" means any device capable of undergoing a *nuclear explosion*, irrespective of its purpose. The term includes such a weapon or device in unassembled and partly assembled forms, as well as devices or assemblies which belong to a nuclear explosive device or are a modification of such suitable for development and testing of nuclear weapons or other nuclear explosive devices, but does not include the means of transport or delivery of such a weapon or device if separable from and not an indivisible part of it.

14. "Significant Amount of Nuclear Energy" means more than the energy released by radioactive decay and spontaneous fission and may be much smaller than the maximum energy yield of the largest chemical explosions.

D. Nuclear Material

15. "Nuclear Material" means any source or fissionable or fusionable material as defined in this Convention.

See Critical Question on Nuclear Energy.

16. "Exemption Quantities" mean quantities of nuclear material not prohibited under the provisions of this Convention [and preventive controls].

17. "Fissionable Material" means any isotope which may undergo either spontaneous fission or fission induced by neutrons of any energy, as well as any compound or mixture including such isotopes.

18. "Fusionable Material" means any isotope capable of undergoing fusion with the same kind of nuclide or with any other nuclide by applying sufficient conditions (pressure, temperature and inclusion time) with technical means.

The number of nuclides that fall under the definition of fusionable material may change with scientific-technical progress.

19. "Highly Enriched Uranium (HEU)" means uranium in which the naturally occurring U-235 isotope (0.7% in natural uranium) is increased to 20% U-235 or above.

20. "Low Enriched Uranium (LEU)" means uranium enriched in the isotopic content of U-235 but to less than 20% of the total mass.

21. "Mixed Oxide Fuel (MOX fuel)" means nuclear reactor fuel composed of plutonium and uranium oxides.

22. ["Other Special Nuclear Material" means special nuclear material other than plutonium and uranium enriched to 20% or more U-235 or U-233.]

23. "Proscribed fissionable material" means any fissionable material that can be used for the manufacture of nuclear weapons without transmutation, chemical reprocessing or further enrichment, and includes any isotopic mixture of separated and unirradiated plutonium, uranium enriched in the isotoptes 235 to 20% or more, uranium-233.

24. "Proscribed fusionable material" means any *fusionable material* that can be used for the manufacture of *nuclear weapons* without transmutation, redoxation or further enrichment.

The new terms, "proscribed" materials, are offered to cover all materials that are to be banned under the MNWC. Proscribed fissionable material does not include plutonium in spent fuel or plutonium that is irretrievably stored.

25. "Proscribed nuclear material" means any *proscribed fissionable* or any *proscribed fusionable material.*

26. "Significant quantity" means the approximate quantity of *nuclear material* in respect of which, taking into account any conversion process involved, the possibility of manufacturing a nuclear explosive device cannot be excluded.

27. "Source Material" means uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope U-235, thorium, lithium beyond naturally occurring concentration, deuterium, helium-3, or any of the foregoing in the form of metal, alloy, chemical compound or concentrate.

28. "Special Fissionable Material" means *fissionable material* that can be used for the manufacture of *nuclear weapons.*

The definition of C3 facilities may not be necessary if such facilities were no longer used for the command and control of nuclear weapons by the time of entry into force of the NWC. In any case, verification of nuclear activities at these facilities would be difficult, so trust among States would have to be strong.

29. "Special Fusionable Material" means any *fusionable material* that can be used for the manufacture of nuclear weapons and includes deuterium, tritium, helium-3, and lithium-6.

30. "Special Nuclear Material" means any *special fissionable* or any *special fusionable material.*

E. Nuclear Facilities

31. "Nuclear Facility" means any facility for the research, testing, production, extraction, enrichment, processing, reprocessing, or storage of *nuclear material*; any facility for the production of *nuclear energy*; any facility for the research, development, testing, production, storage, assembly, disassembly, maintenance, modification, deployment, or delivery of nuclear weapons, or *nuclear weapon components*; or any facility deemed a nuclear facility by the Technical Secretariat. The term "Nuclear Facility" includes [but is not limited to] the following:

32. "Command, Control or Communication Facility", means [any facility designed or used for the purpose of launching, targeting, directing or detonating a *nuclear weapon* or its delivery vehicle, or for aiding or assisting in any of these purposes.]

It is necessary to draw a distinction between deployment sites and storage facilities not located in deployment sites, since a deployment site will have facilities for storage. This distinction could be made by requiring a certain distance between a deployment site and any storage facility.

33. "Deployment Site" means the location where a *nuclear weapon* is or has been deployed, or a location which is equipped for the deployment of nuclear weapons.

34. "Nuclear Enrichment Facility" means a facility capable of increasing the ratio of the isotope uranium-235 in natural uranium.

35. "Nuclear Material Storage Facility" means a facility for the interim or long-term storage of *nuclear material*.

36. "Nuclear Reactor" means any device in which a controlled, self-sustaining fission chain-reaction can be maintained or in which a controlled fission chain is maintained partly by an external source of neutrons.

37. "Nuclear Reprocessing Facility" means a facility to separate irradiated *nuclear material* and fission products in whole or in part, and includes the facility's head-end treatment section and its associated storage and analytical sections.

38. "Nuclear Weapons Destruction Facility" means any facility for disassembly or destruction of *nuclear weapons* or for rendering them permanently inoperable.

39. "Nuclear Weapons Facility" means any facility for the design, research, development, testing, production, storage, assembly, maintenance, modification, deployment, delivery, command, or control of nuclear weapons or Schedule 1 or Schedule 2 *nuclear weapon components*.

40. "Nuclear Weapons Production Facility" means any *nuclear facility* which produces materials which have been or may be used for military purposes, including such a reactor, a plant for processing *nuclear material* irradiated in a reactor, a plant for separating the isotopes of *nuclear material*, a plant for processing or fabricating nuclear material, a plant for the construction or assembly of nuclear weapon components, or a facility or plant of such other type as may be deemed a Nuclear Weapons Production Facility by the Technical Secretariat.

41. "Nuclear Weapons Research Facility" means any facility in which nuclear weapons research, development, testing or computer simulation is conducted.

42. "Nuclear Weapons Storage Facility" means a facility for the storage of nuclear weapons but does not include such a facility located on a deployment site.

43. "Nuclear Weapons Testing Facility" means a facility or prepared site for conducting nuclear weapons testing.

F. Nuclear Activities

44. "Nuclear Activity" means:

a. Any construction or use of a nuclear reactor or component parts thereof;

b. Any production, use or threat of use of a nuclear weapon;

c. Any research, development or testing of nuclear energy or nuclear weapons;

d. Any production, separation, treatment or handling of nuclear material;

e. Any dismantling, disabling or destruction of nuclear weapons;

f. Any decommissioning of nuclear reactors and power plants;

g. Any application of radiation and isotopes in food, agriculture, medicine, engineering, geology or other industrial processes; or

h. Any other activity listed below or deemed a nuclear activity by the Agency.

45. "Convert" means modify to a use not prohibited under this Convention.

46. "De-alert" means reduce the alert status of nuclear weapons by eliminating launch-on-warning or launch-under-attack alert readiness postures, e.g., by removing key trigger mechanisms, decoupling warheads from nuclear weapons delivery vehicles or other means.

As long as they exist, *nuclear weapons destruction* facilities would be under verification to ensure that they are not used for prohibited activities.

The definition *nuclear weapons facility* does not include *nuclear weapons destruction facility*. Thus, all nuclear weapons facilities can be closed or decommissioned even while weapons are being destroyed. If disassembly and destruction of *nuclear weapons* were both to take place at *nuclear weapons facilities*, this definition would require refining.

A nuclear weapons production facility might but would not necessarily be a complex that includes research, storage, destruction, reprocessing, or testing facilities. It would also include facilities for the production of nuclear weapon components that are non-nuclear.

Nuclear weapons storage facilities do not include such facilities if located on a deployment site because of the requirement that warheads and bombs be stored separately from their delivery vehicles.

47. "Deployment of a nuclear weapon" means prepare or maintain a nuclear weapon for possible use by any of the following:

a. placing it on, in or near a delivery system;

b. moving it to or maintaining it at a location suitable for delivery to a target.

48. "Destroy" means, with regard to a nuclear weapon, to remove the warhead from its delivery vehicle, dismantle and irreversibly disable the warhead and its components, and dismantle and disable or convert the delivery vehicle to non-nuclear use, in accordance with the provisions of this Convention.

Disposition refers to irretrievable disposal of nuclear weapons usable material. There is no known satisfactory technology for disposition yet.

49. "Disable" means:

a. with regard to a nuclear weapon, to render the weapon unable to be detonated by such means as disengaging or removing the arming fuse and firing mechanisms;

b. with regard to a plutonium pit, to render it unable to be used in a nuclear weapon, e.g., by disfiguring, quenching, squeezing, dilution, mixing with highly radioactive waste, immobilization and disposition, transmutation or other means;

c. with regard to command and control systems for nuclear weapons, to render such systems incapable of initiating or directing the launch of nuclear weapons delivery vehicles;

d. with regard to a nuclear weapons delivery vehicle, to render such vehicle unable to launch a nuclear weapon including such means as removing essential components and removing the delivery vehicle from the launch facilities.

50. "Disassemble" or "Dismantle" means:

a. with regard to nuclear weapons, to take apart the warhead and remove the subassemblies, components, and individual parts;

b. with regard to a nuclear weapons delivery vehicle, to separate the essential component parts, such as warheads, propulsion and guidance units.

51. "Immobilization" means the process of putting nuclear material into non-weapons usable form without irradiation, e.g., by mixing with highly radioactive isotopes and encasing into a matrix of another material in order to render separation of the nuclear material from the matrix technically difficult. Immobilization includes vitrification and encasing nuclear material in ceramic.

The definition of nuclear disarmament research was deemed necessary to distinguish between prohibited and necessary research with respect to the NWC. This concept requires more analysis and discussion.

52. "Nuclear Disarmament Research" means research intended to further the purposes of this Convention.

53. "Nuclear Weapons Research" means experimental or theoretical work undertaken principally to acquire new knowledge going beyond publicly available information of phenomena and observable facts directed toward understanding, development, improvement, testing, production, deployment, or use of nuclear weapons.

54. "Nuclear Weapons Testing" means nuclear explosions, computer simulations, hydrodynamic tests, hydronuclear tests designed to simulate behavior of nuclear materials, nuclear warheads, nuclear weapons or their components, under nuclear explosive conditions, and subcritical testing using nuclear materials.

55. "Reprocessing" means the separation of irradiated nuclear material and fission products in whole or in part.

56. "Threat of Use of Nuclear Weapons" means any act, whether physical or verbal, including the maintenance of a previously stated policy that creates or is intended to create a perception that a nuclear weapon may or will be used.

57. "Uranium Enrichment" means the process of increasing the percentage of U-235 isotopes so that the uranium can be used as reactor fuel or in nuclear weapons.

58. "Use of Nuclear Weapons" means the detonation of a nuclear weapon.

H. Verification

59. "Verification" means a comprehensive system for ensuring the compliance with and implementation of this Convention. Verification measures include obtaining, providing, and assuring the accuracy of information on nuclear weapons, nuclear material, nuclear facilities, and nuclear weapons delivery vehicles, including information in archives, data bases, and transportation systems, through declarations, monitoring, agreements on sharing information, consultation and clarification, on-site inspections, confidence-building measures, reporting and protection, preventive controls, and any other measures deemed necessary by the Agency.

60. "Abuse of the Right of Verification" means obtaining information, or attempting to obtain information, through verification activities, for purposes not relating to the verification or implementation of and compliance with this Convention.

61. "Confidence-Building Measures" means voluntary measures by States Parties to supply information, additional to that required, to the Technical Secretariat or to other States Parties in order to develop greater confidence in compliance with the Convention. These could include bilateral or multilateral agreements on monitoring and information sharing between States Parties.

62. "Dual-access" means access to nuclear weapons, nuclear material, or nuclear facilities that requires authorization of a State Party and another State Party or the Agency.

63. "Reconstruction" means undertaking good faith scientifically sound efforts to produce or reproduce data that is not readily available regarding past production of nuclear material. Reconstruction measures include gathering and reviewing past data records, analyzing production capacity and estimating the range of quantity of nuclear material produced, and interviewing individuals with knowledge of the operation of a nuclear facility under review.

64. "Preventive Controls" mean provisions adopted by the Agency to ensure that nuclear material and nuclear facilities are not used for any military or other purpose prohibited under this Convention.

a. The goals of preventive controls include:

i. Timely detection of diversion of nuclear material to allow a response before the material can be fabricated into a nuclear weapon;

ii. Deterring clandestine activities through the possibility of detection;

iii. Prevention of diversion through physical safety procedures and transfer of national access to dual-access.

Dual-access agreements establish a "two-key" model of access, which may be worked out bilaterally or multilaterally among States, or between States and the Agency. No State Party would have exclusive national access to nuclear weapons, nuclear material or nuclear facilities it formally owned or possessed after Phase I. Eventually dual-access agreements would be between States and the Agency. Dual-access is distinct from national control with international monitoring, which would apply to early de-alerting measures.

Preventive controls may include the establishment of procedures for transport, treatment, storage and disposition of such materials, including the establishment of environmental guidelines on such activities.

b. Preventive controls encompass safeguards of the IAEA (including all provisions of the 93+2 Programme), EURATOM, ABACC or other bodies; agreements among States; and agreements between States and the Agency.

See discussion of Preventive Controls in Section 4 of this book.

c. Preventive controls apply to all nuclear weapons, nuclear material and nuclear facilities. The degree of restrictiveness, accountability and accessibility vary according to the risks posed by these weapons, materials or facilities to the purposes of this Convention. Preventive controls may include:

i. Accountancy and surveillance of nuclear material in any form;

ii. Containment of special nuclear material in any form;

iii. Guidelines for the transport, treatment, handling, storage and disposition of nuclear material;

iv. Environmental guidelines;

Technical means encompass national technical means (state systems of surveillance) and international technical means of the Agency.

v. Dual-access agreements for all nuclear weapons facilities and nuclear storage facilities for proscribed nuclear material.

64. "Technical Means" means [the independent gathering or analysis of information which may have relevance to verification of the Convention, without physically accessing the territory being inspected.]

III. Declarations

A. Nuclear Weapons

Each State Party shall submit to the Registry, not later than [30] days after this Convention enters into force for it, the following declarations, in which it shall, in accordance with the standards and guidelines set forth in the Verification Annex:

1. Declare whether it owns or possesses or has owned or possessed any nuclear weapons, or whether there are any nuclear weapons located in any place under its jurisdiction or control;

2. Specify the precise location, aggregate quantity and detailed inventory of nuclear weapons it owns or possesses, or that are located in any place under its jurisdiction or control.

3. Report any nuclear weapons on its territory that are owned or possessed by another State or under the jurisdiction or control of another State, whether or not that State is a Party to this Convention.

4. Declare whether it has transferred or received, directly or indirectly, nuclear weapons and specify the transfer or receipt of such weapons.

5. Provide its general plan for destruction of nuclear weapons that it owns or possesses, or that are located in any place under its jurisdiction or control.

B. Nuclear Material

See Critical Question on Nuclear Energy.

Each State Party shall submit to the Registry the following declarations, in which it shall, in accordance with the standards and guidelines set forth in the Verification Annex:

6. Not later than [60] days after this Convention enters into force for it, declare an inventory of all special nuclear material it owns or possesses or that is located within its jurisdiction or control, whether intended for civilian or military use.

7. Not later than [90] days after this Convention enters into force for it, declare an inventory of all other nuclear material it owns or possesses or that is located within its jurisdiction or control, whether intended for civilian or military use.

8. Not later than [120] days after this Convention enters into force for it, submit a report on the availability of data with respect to nuclear material produced in the past, including estimates regarding missing data and extent of uncertainty, and its plans for the reconstruction of such data.

C. Nuclear Facilities

Each State Party shall submit to the Registry, not later than [180] days after this Convention enters into force for it, the following declarations, in which it shall, in accordance with the standards and guidelines set forth in the Verification Annex:

9. With respect to nuclear weapons facilities:

a. Declare whether it has or has had any nuclear weapons facility under its ownership or possession, or that is or has been located in any place under its jurisdiction or control at any time.

b. Declare any nuclear weapons facility it has or has had under its ownership or possession or that is or has been located in any place under its jurisdiction or control at any time.

c. Declare any nuclear weapons facility on its territory that another State has or has had under its ownership or possession and that is or has been located in any place under the jurisdiction or control of another State at any time.

d. Declare the precise location and production and storage capacities of any facility reported under subparagraphs a, b, or c above.

e. Declare whether it has transferred or received, directly or indirectly, any equipment for the production of nuclear weapons, and provide a detailed account thereof.

Declarations would be required for scientific research laboratories engaged in nuclear physics research and facilities with dual-use potential.

f. Specify actions to be taken for the closure of any facility reported under subparagraphs a, b, or c above.

g. Provide its general plan for conversion of any facility reported under subparagraphs a, b, or c into a nuclear weapons destruction facility.

10. With respect to other nuclear facilities, declare the precise location, nature and scope of activities of any nuclear facility under its ownership or possession, or located in any place under its jurisdiction or control. Such declaration shall include, inter alia, laboratories and test and evaluation sites as well as any other facility, site, or installation in which nuclear activities of any kind have been or are carried out, or which are suitable for carrying out such activities.

D. Delivery Vehicles

Each State Party shall submit to the Registry, not later than [210] days after this Convention enters into force for it, the following declarations, in which it shall, in accordance with the standards and guidelines set forth in the Verification Annex:

11. Declare the number and location of all nuclear-capable ballistic and cruise missiles, including all those in production, storage or under repair.

12. Declare the number and location of all nuclear-capable submarines, naval crafts, and aircraft, including all those in production, storage or under repair.

IV. Phases for Implementation

A. General Requirements

1. Each phase indicates the deadline for completion of specific implementation activity. Any phase can begin at any time, and does not require the completion of previous phases before initiation.

2. Implementation activities shall be conducted in accordance with the Verification Annex.

B. Extension of Deadlines

3. If a State Party is unable to complete any of its obligations under Phase One within the deadline, it may submit a request to the Executive Council for an extension. Such a request must be made at least [four] months prior to the deadline, and no extension may exceed [six] months.

4. If a State Party is unable to complete any of its obligations under Phase Two within the deadline, it may submit a request to the Executive Council for an extension. Such a request must be made at least [six] months prior to the deadline, and no extension may exceed [one] year[s].

5. If a State Party is unable to complete any of its obligations under Phases Three, Four, or Five within the deadlines, it may submit a request to the Executive Council for an extension of the deadline. Such a request must be made at least [one] year[s] prior to the deadline for that phase, and no extension may exceed [one] year[s].

C. Reciprocity in Extensions

6. If any State Party makes a request for an extension of any deadline, any other State Party may request a similar extension within [one month] of the original State's request.

D. Phases

7. Phase One. Not later than [one year] after entry into force of this Convention:

a. All States Parties shall have complied with the requirements of Article III {Declarations}.

b. Targeting coordinates and navigational information for all nuclear weapons delivery vehicles shall be removed.

c. All nuclear weapons and nuclear weapons delivery vehicles shall be disabled and de-alerted.

d. Activities listed in Schedule 1 of the Annex on Nuclear Activities shall have ceased.

e. Production of nuclear weapon components and equipment listed in Schedules 1 and 2 of the Annex on Nuclear Weapons Components and Equipment shall have ceased.

f. All nuclear weapons testing facilities, nuclear weapons research facilities and nuclear weapons production facilities shall be designated for decommissioning and closure or for conversion.

See Section 1, “How to Achieve a Nuclear Weapons Convention” for a discussion of the phased approach.

g. Production of proscribed nuclear material shall have ceased, with the exception of exemption quantities.

See Critical Question on Research.

h. [Funding for] nuclear weapons research of any sort not consistent with the purposes and obligations of this Convention shall have ceased.

i. Plans for the implementation of all obligations under this Convention shall have been submitted to the Agency.

8. Phase Two. Not later than [two] years after entry into force of this Convention:

Phase Two would require deep cuts in the nuclear arsenals of the United States and Russia if these had not taken place by the time of entry into force of the NWC.

a. All nuclear weapons and nuclear weapons delivery vehicles shall be removed from deployment sites.

b. All warheads shall be removed from their delivery vehicles and either placed into nuclear weapons storage facilities or dismantled.

c. Agreements shall be negotiated to subject all nuclear weapons, nuclear material and nuclear facilities to preventive controls.

9. Phase Three. Not later than [five] years after entry into force of this Convention:

a. All nuclear weapons shall be dismantled.

b. All nuclear weapons shall be destroyed, except:

i. no more than [..] warheads in each of the stockpiles of Russia and the United States; and

ii. no more than [..] warheads in each of the stockpiles of China, France, and the United Kingdom.

c. All nuclear weapons delivery vehicles shall be destroyed or converted for purposes not prohibited under this Convention.

d. All nuclear weapons facilities shall be designated for decommissioning and closure or for conversion.

10. Phase Four. Not later than [10] years after entry into force of this Convention:

a. All nuclear weapons shall be destroyed, except:

See Critical Question on Nuclear Energy.

i. no more than [..] warheads in each of the stockpiles of Russia and the United States, and

ii. no more than [..] warheads in each of the stockpiles of China, France, and the United Kingdom.

b. All reactors using highly enriched uranium shall be closed or converted to low enriched uranium use.

c. [All reactors using plutonium as fuel shall be closed or converted to reactors that do not use any special nuclear material.]

d. All special nuclear material in any form shall be under strict, effective and exclusive preventive controls.

11. Phase Five. Not later than [...] years after entry into force of this Convention:

a. All nuclear weapons shall be destroyed.

b. [The powers and functions of the Agency shall be reviewed and adjusted to preserve its role in carrying out the objectives of this Convention.]

The phases are not equivalent to a time-bound framework. Their purpose is to indicate the order and coordination of key steps towards nuclear disarmament. The emphasis should not be on speed of disarmament but on safety, security and irreversibility.

E. Special Provision

12. The Executive Council may make special provision for temporary retention of small and diminishing quantities of nuclear weapons and proscribed nuclear materials by States which are not Nuclear Weapons States within the meaning of paragraph II.A.1 but which desire to become party to the Convention and are known to possess or have credibly declared that they possess nuclear weapons.

Provision designed to deal with undeclared or unrecognized nuclear weapon state.

13. States meeting the criteria of this Special Provision shall follow the requirements, guidelines and phases outlined in this Article. They shall not be expected to implement the provisions of this Convention in advance of other States Parties, nor shall they be exempted from the requirements of each phase.

See the discussion of verification in Section 4 of this book. A Verification Annex would have to be negotiated among States as an integral part of the NWC. Article V provides the general guidelines of the verification regime.

V. Verification

A. Elements of Verification Regime

In order to verify compliance with this Convention, a verification regime shall be established consisting of the following elements:

1. Agreements on sharing data and verification activities among States and with existing agencies,

2. A Registry,

3. An International Monitoring System,

4. Reporting of information gathered by National Technical Means,

5. Open Skies,

6. Preventive controls,

7. Consultation and clarification,

8. On-site inspections, including challenge inspections,

9. Confidence-building measures, including additional voluntary measures,

10. Reporting and protection,

11. Any other measures deemed necessary by the Agency.

B. Activities, Facilities, and Materials Subject to Verification

12. All obligations of States Parties and persons as defined, inter alia, in Article I {General Obligations}, Article III {Declarations} and Article IV, Section D {Phases} shall be subject to verification in accordance with the relevant provisions of this Convention and its Verification Annex.

C. Rights and Obligations With Respect to Verification

13. Verification activities shall be based on objective information, shall be limited to the subject matter of this Convention, and shall be carried out on the basis of full respect for the sovereignty of States Parties and in the least intrusive manner possible consistent with the effective and timely accomplishment of their objectives. Each State Party shall refrain from any abuse of the right of verification.

14. Each State Party undertakes in accordance with this Convention to cooperate through its National Authority established pursuant to Article VI {National Implementation Measures} of this Convention, with the Agency, with other States Parties and with other agencies as stipulated in this Convention and in separate agreements to facilitate the verification of compliance with this Convention by, inter alia:

a. Establishing the necessary facilities, or providing necessary modifications to existing facilities, to participate in these verification measures, and establishing the necessary communication;

b. Providing all relevant data obtained by technical means and by national systems that are part of the International Monitoring System as agreed among States;

c. Participating, as necessary, in a consultation and clarification process;

d. Permitting the conduct of on-site inspections;

e. Participating in confidence-building measures; and

f. To the extent possible, internationalizing elements of its National Technical Means and incorporating them into the International Monitoring System.

15. Each State Party shall have the right to take measures not contrary to the provisions of this Convention to prevent disclosure of confidential information and data not related to this Convention.

16. Subject to paragraph 15, information obtained by the Agency through the verification regime established by this Convention shall be made available to all States Parties in accordance with the relevant provisions of this Convention.

17. The provisions of this Convention shall not be interpreted as restricting the international exchange of data for scientific purposes not prohibited by this Convention.

18. Each State Party undertakes to cooperate with the Agency and with other States Parties in the improvement of the verification regime and in the examination of additional monitoring technologies. Such measures shall, when agreed, be incorporated in amendments to this Convention or changes to the Annexes or, where appropriate, be reflected in the operational manuals of the Technical Secretariat.

D. Confidence-Building Measures

Confidence-building measures are voluntary measures by States to supply information, additional to that already required, to the Agency or to other States in order to develop greater confidence in compliance with the NWC.

19. Each State Party undertakes to cooperate with the Agency and with other States Parties in implementing various measures additional to those explicitly required under this Convention in order to:

a. Develop greater confidence regarding compliance with the obligations under this Convention, and

b. Assist in the compilation of detailed information by the International Monitoring System.

E. Relation to Other Verification Arrangements

20. The Technical Secretariat may enter into cooperative verification arrangements in accordance with the provisions of Article XIV {Cooperation, Compliance and Dispute Settlement} para. 3 and the provisions of Article XVIII, Section A {Relation to Other International Agreements} para. 2.

21. Nothing in this Convention shall be interpreted as in any way limiting or detracting from the verification arrangements assumed by either State under the Treaties Between the United States of America and the Russian Federation on Reduction and Limitation of Strategic Offensive Arms {START I, II and III} and the Treaty Between the United States of America and the Russian Federation on the Elimination of Their Intermediate-Range and Shorter-Range Missiles {INF}.

22. Nothing in this Convention shall be interpreted as in any way limiting or detracting from the verification arrangements, assumed by any State under the Comprehensive Nuclear Test Ban Treaty.

F. Implementation

23. Prior to entry into force of this Convention, nothing shall preclude any signatory State from implementing, individually or in agreement with other States, the verification measures of this Convention which are applicable to them. Such measures may include public declarations as detailed in Article III {Declarations}, negotiations with other States for the purposes of verifying bilateral or multilateral reductions of nuclear weapons, and the verification of plans for the destruction of nuclear weapons, disposition of special nuclear material, and destruction or conversion of nuclear weapons facilities or nuclear weapons delivery vehicles.

24. Verification measures adopted pursuant to paragraph 23 may include the formation of a provisional authority for the purpose of overseeing verification activities, including assistance in the development of national implementation plans pursuant to Article VI {National Implementation Measures} of this Convention.

The requirements and tasks of verification would be defined by the obligations of the NWC. The verification tasks can be divided into the following three main stages:

1. Baseline information exchange and data gathering: Identify the current status of the nuclear-weapons complex with reasonable accuracy without proliferating sensitive information.

2. Disarmament: Monitor the agreed path of reducing nuclear arms and eliminating the nuclear-weapons complex within tolerable limits of uncertainty and sufficient confidence.

3. Preventing rearmament: During the transformation to and within a nuclear-weapon-free world, observe any objects and detect any activities that might indicate a nuclear-weapons capability.

Verification in all three stages would need to focus on monitoring a complex range of treaty-limited items and activities and their combination. What actually needs to be verified is the combination of required/prohibited objects and activities, according to the General Obligations of the MNWC. These include, for instance, dismantlement of nuclear weapons; disposition of nuclear material; conversion or destruction of certain nuclear facilities; monitoring the location and status of nuclear weapons, nuclear material, nuclear facilities, delivery systems, and command and control systems to insure that they are not used for research, development, testing, production, transport, deployment or use of nuclear weapons. Other activities would include storage, transfer and handling of nuclear weapons and fissile material.

VI. National Implementation Measures

The National Implementation Measures include the establishment of national authorities to oversee implementation of the NWC. Domestic legal systems will have to be adapted to the obligations assumed by States Parties.

A. Legislative Implementation

1. Each State Party shall, in accordance with its constitutional processes, adopt the necessary legislative measures to implement its obligations under this Convention. In particular, it shall:

a. Extend its penal legislation to provide, in accordance with Article VII, Section A, for the trial, extradition and punishment of persons who commit crimes as defined in Article I, Section B.

b. Provide all necessary protection for persons who report violations of this Convention, in accordance with Article VII, Section C.

2. Each State Party shall cooperate with other States Parties in affording legal assistance toward fulfilling the obligations under paragraph 1.

3. Each State Party, in the implementation of its obligations under this Convention, shall assign the highest priority to ensuring the safety of people and to protecting the environment, and shall cooperate as appropriate with other States Parties in this regard.

B. Relations Between the State Party and the Agency

4. In order to fulfill its obligations under this Convention, each State Party shall designate or establish a National Authority to serve as the national focal point for effective liaison with the Agency and other States Parties. Each State Party shall notify the Agency of its National Authority at the time that this Convention enters into force for it. The responsibilities of the National Authority include:

a. The preparations and submission of declarations in the registry;

b. The enactment of new legislation or the revision of existing legislation to facilitate the enforcement of the Convention;

c. Preparations for receiving inspections, including, inter alia, approval of the list of inspectors, issuing of multiple entry visas for inspectors, providing aircraft clearances, and designating points of entry and exit.

5. Each State Party shall inform the Agency of the legislative and administrative measures taken to implement this Convention.

6. Each State Party undertakes to cooperate with the Agency in the exercise of all its functions and in particular to provide assistance to the Technical Secretariat. This includes cooperation in carrying out any investigation which the Agency may initiate, and to provide or support assistance with investigations of non-complying State Parties and with Parties exposed to danger as a result of violation of this Convention.

7. Each State Party shall disseminate information regarding the requirements of this Convention and shall ensure the inclusion of such information in the training of relevant personnel regarding obligations under this Convention.

8. Each State Party shall transmit relevant information gathered by its National Technical Means to the International Monitoring System.

C. Confidentiality

9. Each State Party shall treat as confidential and afford special handling to information and data that it receives in confidence from the Agency. Information subject to confidentiality shall include data used for purposes not prohibited under this Convention and state and military technology for dual use vehicles, components and computers.

VII. Rights and Obligations of Persons

A. Criminal Procedure

1. Any person accused of committing a crime under this Convention within the jurisdiction of a State Party of which such person is a citizen or resident shall be

a. tried according to the legal process of such State if found within such State, or

[b. extradited to the International Criminal Court if the crime alleged is within the jurisdiction of such Court.]

2. If found within another State Party, such person shall be

a. tried within such State, or

b. extradited to the State within the jurisdiction of which the crime is alleged to have been committed, or

[c. extradited to the International Criminal Court if the crime alleged is within the jurisdiction of such Court.]

3. Any person accused of a crime under this Convention shall be assumed to be innocent until proven guilty and have the right to a fair trial and humane treatment, as prescribed by the International Covenant on Civil and Political Rights and other conventions and agreements which have acquired the status of customary international law.

Certain prohibited acts under the NWC would be crimes for which there should be individual responsibility. This section outlines procedures for the trial of persons accused of crimes, including the rights of the accused. In addition, protection of individuals reporting crimes (societal verification) is considered a vital component of the model NWC (Section C).

B. Responsibility to Report Violations

4. Persons shall report any violations of this Convention to the Agency. This responsibility takes precedence over any obligation not to disclose information which may exist under national security laws or employment contracts.

5. [Information received by the Agency under the preceding paragraph shall be held in confidence until formal charges are lodged, except to the extent necessary for investigative purposes.]

C. Protection for Persons Providing Information

Intra-state protection

6. Any person reporting a suspected violation of this Convention, either by a person or a State, shall be guaranteed full civil and political rights including the right to liberty and security of person.

7. States Parties shall take all necessary steps to ensure that no person reporting a suspected violation of this Convention shall have any rights diminished or privileges withdrawn as a result.

8. Any individual who [in good faith] provides the Agency or a National Authority with information regarding a known or suspected violation of this Convention cannot be arrested, prosecuted or tried on account thereof.

See discussion of Societal Verification in Section 4 of this book.

9. It shall be an unlawful employment practice for an employer to discriminate against any employee or applicant for employment because such person has opposed any practice as a suspected violation of this Convention, reported such violation to the Agency or a National Authority, or testified, assisted, or participated in any manner in an investigation or proceeding under this Convention.

10. Any person against whom a national decision is rendered on account of information furnished by such person to the Agency about a suspected violation of this Convention may appeal such decision to the Agency within [..] months of being notified of such decision. The decision of the Agency in the matter shall be final.

Inter-State Protection

11. Any person reporting a violation of this Convention to the Agency shall be afforded protection by the Agency and by all States Parties, including, in the case of natural persons, the right of asylum in all other States Parties if their safety or security is endangered in the State Party in which they permanently or temporarily reside.

Additional Provisions

12. [The Executive Council may decide to award monetary compensation to persons providing important information to the Agency concerning violations of this Convention.]

13. Any person who voluntarily admits to the Agency having committed a violation of this Convention, prior to the receipt by the Agency of information concerning such violation from another source, may be exempt from punishment. In deciding whether to grant such exemption, the Agency shall consider the gravity of the violation involved as well as whether its consequences have not yet occurred or can be reversed as a result of the admission made.

VIII. Agency

A. General Provisions

1. The States Parties to this Convention hereby establish the Agency for the Prohibition of Nuclear Weapons (hereinafter "the Agency") to achieve the object and purpose of this Convention, to ensure the implementation of its provisions, including those for international verification of compliance with it, and to provide a forum for consultation and cooperation among States Parties.

The model NWC proposes an implementing agency similar in structure to the Organization for the Prohibition of Chemical Weapons, although the provisions within the Technical Secretariat dealing with the Registry and the International Monitoring System do not have counterparts in the Chemical Weapons Convention.

2. All States Parties to this Convention shall be members of the Agency. A State Party shall not be deprived of its membership in the Agency.

3. The seat of the Headquarters of the Agency shall be _____.

4. The organs of the Agency are the Conference of the States Parties, the Executive Council, and the Technical Secretariat. The Technical Secretariat shall oversee the Registry and the International Monitoring System.

5. The Agency shall conduct its verification activities provided for under this Convention in the least intrusive manner possible consistent with the timely and efficient accomplishment of their objectives. It shall request only the information and data necessary to fulfill its responsibilities under this Convention. It shall take every precaution to protect the confidentiality of information on civil and military activities and facilities coming to its knowledge in the implementation of this Convention.

6. In undertaking its verification activities the Agency shall consider measures to make use of advances in science and technology.

7. The costs of the Agency's activities shall be paid by States Parties in accordance with Article XVI {Financing}. The budget of the Agency shall comprise two separate chapters, one relating to administrative and other costs, and one relating to verification costs.

The NWC Agency, unlike the IAEA, would not have the task of promoting nuclear energy. Its primary objectives include containment and surveillance of all materials, equipment, or facilities that could contribute to the development, production, or maintenance of nuclear weapons.

8. A member of the Agency which is in arrears in the payments of its financial contribution to the Agency shall have no vote in the Agency if the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two full years. The Conference of the States Parties may, nevertheless, permit such a member to vote if it is satisfied that the failure to pay is due to conditions beyond the control of the member.

B. The Conference of the States Parties

Composition, procedures and decision-making

9. The Conference of the States Parties (hereinafter "the Conference") shall be composed of all members of this Agency. Each member shall have one representative in the Conference, who may be accompanied by alternates and advisors.

10. The first session of the conference shall be convened by the depositary not later than 30 days after the entry into force of this Convention.

11. The Conference shall meet in regular sessions which shall be held annually unless it decides otherwise.

12. Special sessions of the Conference shall be convened:

a. When decided by the Conference;

b. When requested by the Executive Council;

c. When requested by any member and supported by one third of the members;

d. In accordance with paragraph 22 to undertake reviews of the operation of this Convention.

Except in the case of subparagraph (d) the special session shall be convened not later than 30 days after receipt of the request by the Director-General of the Technical Secretariat, unless specified otherwise in the request.

13. The Conference shall also be convened in the form of an Amendment Conference in accordance with Article XVII {Amendments}.

14. Sessions of the Conference shall take place at the seat of the Agency unless the Conference decides otherwise.

The Agency's primary objectives include containment and surveillance of all materials, equipment, or facilities that could contribute to the development, production, or maintenance of nuclear weapons. Sources for information include declarations and reports by States, systematic and challenge inspections, information from other agencies (including NGOs), publicly available sources, national technical means, and the international monitoring system.

15. The Conference shall adopt its rules of procedure. At the beginning of each regular session, it shall elect its Chairperson and such other officers as may be required. They shall hold office until a new Chairperson and other officers are elected at the next regular session.

16. A majority of the members of the Agency shall constitute a quorum for the Conference.

17. Each member of the Agency shall have one vote in the Conference.

18. The Conference shall take decisions on questions of procedure by a simple majority of the members present and voting. Decisions on matters of substance should be taken as far as possible by consensus. If consensus is not attainable when an issue comes up for decision, the Chairperson shall defer any vote for 24 hours and during this period of deferment shall make every effort to facilitate achievement of consensus, and shall report to the Conference before the end of this period. If consensus is not possible at the end of 24 hours, the Conference shall take the decision by a two-thirds majority of members present and voting unless specified otherwise in this Convention. When the issue arises as to whether the question is one of substance or not, the question shall be treated as a matter of substance unless otherwise decided by the Conference by the majority required for decisions on matters of substance.

Powers and functions

19. The Conference shall be the principal organ of the Agency. It shall consider any questions, matters or issues within the scope of this Convention, including those relating to the powers and functions of the Executive Council and the Technical Secretariat. It may make recommendations and take decisions on any questions, matters or issues related to this Convention raised by a State Party or brought to its attention by the Executive Council.

20. The Conference shall oversee the implementation of this Convention, and act in order to promote its object and purpose. The Conference shall review compliance with this Convention. It shall also oversee the activities of the Executive Council and the Technical Secretariat and may issues guidelines in accordance with this Convention to either of them in the exercise of their functions.

21. The Conference shall:

a. Consider and adopt at its regular sessions the report, program and budget of the Agency, submitted by the Executive Council, as well as consider other reports;

b. Decide on the scale of financial contributions to be paid by States Parties in accordance with paragraph 7;

c. Elect the members of the Executive Council;

d. Appoint the Director-General of the Technical Secretariat (hereinafter referred to as "the Director-General");

e. Approve the rules of procedure of the Executive Council submitted by the latter;

f. Establish such subsidiary organs as it finds necessary for the exercise of its functions in accordance with this Convention;

g. Review scientific and technological developments that could affect the operation of this Convention and, in this context, direct the Director-General to establish a Scientific Advisory Board to enable him or her, in the performance of his or her functions, to render specialized advice in areas of science and technology relevant to this Convention, to the Conference, the Executive Council or States Parties. The Scientific Advisory Aboard shall be composed of independent experts appointed in accordance with terms of reference adopted by the Conference;

h. Take the necessary measures to ensure compliance with this Convention and to redress and remedy any situation which contravenes the provisions of this Convention, in accordance with Article XIV {Cooperation, Compliance and Dispute Settlement}.

22. The Conference shall, not later than one year after the expiration of the fifth and the tenth year after the entry into force of this Convention, and at such other times within that time period as may be decided upon, convene in special sessions to undertake reviews of the operation of this Convention. Such reviews shall take into account any relevant scientific and technological developments. At intervals of five years thereafter, unless otherwise decided upon, further sessions of the Conference shall be convened with the same objective.

C. The Executive Council

Composition, procedure and decision-making

23. The Executive Council shall consist of 42 members. Each State Party shall have the right, in accordance with the principle of rotation, to serve on the Executive Council. The members of the Executive Council shall be elected by the Conference for a term of four years. In order to ensure the effective functioning of this Convention, due regard being paid to equitable geographic distribution, to representation by nuclear-capable states and to the interests of all states to be free from the threat of nuclear devastation, the Executive Council shall be composed as follows:

Considerations for membership in the Executive Council are nuclear status, geographic diversity, special interest or expertise in the aims of the Convention and specific concerns regarding nuclear weapons . This could include, for example, States in which nuclear weapons have been used or tested.

a. All Nuclear Weapons States Parties;

b. Six or seven States Parties from Asia to be designated by States Parties located in this region;

c. Six or seven States Parties from Latin America and the Caribbean to be designated by States Parties located in this region;

d. Three or four States Parties from Eastern Europe to be designated by States Parties located in this region;

e. Six or seven States Parties from Africa to be designated by States Parties located in this region;

f. Six or seven States Parties from among Western Europe to be designated by States Parties located in this region;

g. Three or four States Parties from the Pacific to be designated by States Parties located in this region;

h. Additional States Parties that have special interest or expertise in implementing the aims of this Convention.

24. For the first election of the Executive Council 21 members shall be elected for a term of two years, and 21 members for a term of four years.

25. The Conference may, on its motion or upon the request of a majority of the members of the Executive Council, review the composition of the Executive Council taking into account developments related to the principles specified in paragraph 23.

26. The Executive Council shall elaborate its rules of procedure and submit them to the Conference for approval.

27. The Executive Council shall elect its Chairperson from among its members.

28. The Executive Council shall meet for regular sessions. Between regular sessions it shall meet as often as may be required for the fulfillment of its powers and functions.

29. Each member of the Executive Council shall have one vote. Unless otherwise specified in this Convention, the Executive Council shall take decisions on matters of substance by a two-thirds majority of all its members. When an issue arises as to whether the question is one of substance or not, that question shall be treated as a matter of substance unless otherwise decided by the Executive Council by the majority required for decisions on matters of substance.

Powers and Functions

30. The Executive Council shall be the executive organ of the Agency. It shall be responsible to the Conference. The Executive council shall carry out the powers and functions entrusted to it under this Convention, as well as those functions delegated to it by the Conference. In so doing, it shall act in conformity with the recommendations, decisions and guidelines of the Conference and assure their proper and continuous implementation.

31. The Executive Council shall promote the effective implementation of, and compliance with, this Convention. It shall supervise the activities of the Technical Secretariat, cooperate with the National Authority of each State Party and facilitate consultations and cooperation among States Parties at their request.

32. The Executive Council shall:

a. Consider and submit to the Conference the draft program and budget of the Agency;

b. Consider and submit to the Conference the draft report of the Agency on the implementation of this Convention, the report on the performance of its own activities and such special reports as it deems necessary or which the Conference may request;

c. Make arrangements for the sessions of the Conference including the preparation of the draft agenda.

33. The Executive Council may request the convening of a special session of the Conference.

34. The Executive Council shall:

a. Conclude agreements or arrangements with States and international organizations on behalf of the Agency, subject to prior approval by the Conference;

b. Approve agreements or arrangements relating to the implementation of verification activities, negotiated by the Technical Secretariat with States Parties.

35. The Executive Council shall consider any issue or matter within its competence affecting this Convention and its implementation, including concerns regarding compliance, and cases of non-compliance, and, as appropriate, inform States Parties and request compliance within a specified time.

36. If the Executive Council considers further action to be necessary, it shall take, inter alia, one or more of the following measures in accordance with Article XIV {Cooperation, Compliance and Dispute Settlement}:

a. Inform all States Parties of the issue or matter;

b. Bring the issue or matter to the attention of the Conference;

c. Make recommendations to the Conference regarding measures to redress the situation and to ensure compliance.

d. The Executive Council shall, in cases of particular gravity and urgency, bring the issue or matter, including relevant information and conclusions, directly to the attention of the United Nations General Assembly and the United Nations Security Council. It shall at the same time inform all States Parties of this step.

The Technical Secretariat is responsible for verification, including the preparation and maintenance of technical manuals. The contents of these manuals are beyond the scope of this draft.

D. The Technical Secretariat

37. The Technical Secretariat shall assist the Conference and the Executive Council in the performance of their functions. The Technical Secretariat shall carry out the verification measures provided for in this Convention. It shall carry out the other functions entrusted to it under this Conventions as well as those functions delegated to it by the Conference and the Executive Council.

38. With respect to the verification of and compliance with this Convention, the Technical Secretariat shall:

a. Maintain the Registry and other information databases in accordance with Section F below;

b. Maintain and coordinate the operation of the International Monitoring System;

c. Provide technical assistance in, and support for, the installation and operation of monitoring systems;

d. Assist the Executive Council in facilitating consultation and clarification among States Parties;

e. Receive requests for on-site inspections and process them, facilitate the Executive Council consideration of such requests, carry out the preparation for, and provide technical support during, the conduct of on-site inspections, and report to the Executive Council;

f. Negotiate agreements or arrangements relating to the implementation of verification activities with States Parties, subject to approval by the Executive Council;

g. Provide technical assistance and technical evaluation to States Parties in the implementation of the provisions of this Convention;

h. Assist the States Parties through their National Authorities on other issues of verification under this Convention.

39. The Technical Secretariat shall develop and maintain, subject to approval by the Executive Council, operational manuals to guide the operation of various components of the verification regime, in accordance with the Verification Annex. These manuals shall not constitute integral parts of this Convention or the Annexes, and may be changed by the Technical Secretariat subject to approval by the Executive Council. The Technical Secretariat shall promptly inform the States Parties of any changes in the operational manuals.

Additional provisions might provide for independent research done by institutions other than the current nuclear weapons research laboratories. A fund to support such research might be established.

40. With respect to administrative matters the Technical Secretariat shall:

a. Prepare and submit to the Executive Council the draft program and budget of the Agency;

b. Prepare and submit to the Executive Council the draft report of the Agency on the implementation of this Convention and such other reports as the Conference or the Executive Council may request;

c. Provide administrative and technical support to the Conference, the Executive Council and subsidiary organs;

d. Address and receive communications on behalf of the Agency to and from States Parties on matters pertaining to the implementation of this Convention;

e. Upon approval by the Executive Council and the Conference, submit the report of the Agency to the United Nations Secretary General.

41. All requests and notifications by States Parties to the Agency shall be transmitted through their National Authorities to the Director-General. Requests and notifications shall be in one of the official languages of the United Nations. In response the Director-General shall use the language of the transmitted request or notification.

42. The Technical Secretariat shall inform the Executive Council of any problem that has arisen with regard to the discharge of its functions, including doubts, ambiguities or uncertainties about compliance with this Convention that have come to its notice in the performance of

its verification activities or through confidential or non-governmental sources and that it has been unable to resolve or clarify through its consultations with the State Party concerned.

43. The Technical Secretariat shall comprise a Director-General, who shall be its head and chief administrative officer, inspectors and such scientific, technical and other personnel as may be required.

44. The Inspectorate shall be a unit of the Technical Secretariat and shall act under the supervision of the Director-General.

45. The Director-General shall be appointed by the Conference upon the recommendation of the Executive Council for a term of four years, renewable for one further term, but not thereafter. The appointment of the Director-General shall be considered a matter of substance governed by paragraph 18.

46. The Director-General shall be responsible to the Conference and the Executive Council for the appointment of the staff and the organization and functioning of the Technical Secretariat. The paramount consideration in the employment of the staff and in the determination of the conditions of service shall be the necessity of securing the highest standards of efficiency, competence and integrity. Only citizens of States Parties shall serve as the Director-General, as inspectors or as other members of the professional and clerical staff. Due regard shall be paid to the importance of recruiting the staff on as wide a geographical basis as possible. Recruitment shall be guided by the principle that the staff shall be kept to a minimum necessary for the proper discharge of the responsibilities of the Technical Secretariat.

47. The Director-General shall be responsible for the organization and functioning of the Scientific Advisory Board referred to in paragraph 21.g The Director-General shall, in consultation with States Parties and non-governmental sources, appoint members of the Scientific Advisory Board, who shall serve in their individual capacity. The members of the Board shall be appointed on the basis of their expertise in the particular scientific fields relevant to the implementation of this Convention. The Director-General may also, as appropriate, in consultation with members of the Board, establish temporary working groups of scientific experts to provide recommendations on specific issues. In regard to the above, States Parties and non-governmental sources may submit lists of experts to the Director-General. The Scientific Advisory Board may be called upon to review nuclear or other research and determine whether it is of a nature prohibited under this Convention or of a nature that may contribute to verification of nuclear disarmament.

48. In the performance of their duties, the Director-General, the inspectors and the other members of the staff shall not seek or receive instructions from any Government or from any other source external to the Agency. They shall refrain from any action that might reflect on their positions as international officers responsible only to the Conference and the Executive Council.

49. Each State Party shall respect the exclusively international character of the responsibilities of the Director-General, the inspectors and the other members of the staff and not seek to influence them in the discharge of their responsibilities.

E. Privileges and Immunities

50. The Agency shall enjoy on the territory and in any other place under the jurisdiction or control of a State Party such legal capacity and such privileges and immunities as are appropriate for the exercise of its functions.

51. Delegates of States Parties, together with their alternates and advisers, representatives appointed to the Executive Council together with their alternates and advisers, the Director-General and the staff of the Agency shall enjoy such privileges and immunities as are necessary in the independent exercise of their functions in connection with the Agency.

52. The legal capacity, privileges, and immunities referred to in this Article shall be defined in agreements between the Agency and the States Parties as well as in an agreement between the Agency and the State in which the headquarters of the Agency is seated.

53. Notwithstanding paragraphs 50 and 51, the privileges and immunities enjoyed by the Director-General and the staff of the Technical Secretariat during the conduct of verification activities shall be those set forth in the Verification Annex.

F. Registry and Other Databases

54. The Technical Secretariat shall maintain a Registry of the following:

a. All nuclear weapons;

b. All nuclear material;

c. All nuclear facilities;

d. All nuclear weapons delivery vehicles;

The Registry would maintain a list of all nuclear warheads, delivery vehicles, facilities and materials subject to verification.

e. Any other facilities or materials as determined by the Technical Secretariat.

55. The Technical Secretariat shall obtain information from the following sources:

a. Declarations by States in accordance with the provisions of Article III {Declarations};

b. Reports by States on progress in implementing their obligations under this Convention;

c. The International Monitoring System;

d. National Technical Means;

e. Systematic inspections;

f. Challenge inspections;

g. Other organizations with which the Agency has concluded agreements on sharing information in accordance with Article XVIII, Section A {Relation to Other International Agreements};

h. Other inter-governmental and non-governmental organizations that collect and submit such information;

i. Publicly available sources;

j. Any other sources which the Technical Secretariat deems appropriate.

56. The Technical Secretariat shall make available to the Registry information obtained from the above sources with the exception of information which may remain confidential because of legitimate national and international security concerns or trade secret concerns.

57. Information in the Registry shall be available to all States parties and to the public according to criteria established by separate agreements [among States].

G. International Monitoring System

58. The International Monitoring System shall comprise facilities and systems for monitoring by satellite, on-site sensors, remote sensors, radionuclide sampling, respective means of communication, aircraft and other systems developed as deemed necessary by the Agency.

59. The International Monitoring System shall be placed under the authority of the Technical Secretariat.

60. All monitoring facilities of the International Monitoring System shall be owned and operated by the States hosting or otherwise taking responsibility for them except for those systems or facilities which may be owned or operated by another agency or by the United Nations, or constructed or acquired by the Agency in accordance with paragraph 64.

61. The Technical Secretariat shall acquire equipment necessary for collating and analyzing data provided by the International Monitoring System.

62. Any State Party may, if it so decides and upon agreement with the Technical Secretariat, give a monitoring facility to the Agency.

63. The Technical Secretariat may, upon agreement of the Conference and in accordance with its funding guidelines, construct or otherwise acquire a monitoring system or facility if it determines that such a facility or system is necessary for verification of obligations of States under this Convention, and if no State is able or willing to provide such a system or facility or information from such a system or facility to the International Monitoring System.

64. Each State shall have the right to participate in the international exchange of data and to have access to all data made available to the Registry.

65. The Agency shall conclude agreements with other agencies or organizations using international monitoring systems relating to the sharing of information obtained through such systems relevant to the verification of this Convention in accordance with Article XVIII, Section A {Relation to Other International Agreements}.

66. Data obtained by the International Monitoring System not directly relevant to verification of this Convention shall be treated as confidential, except where such information is relevant to the verification of another international agreement [and there is an agreement on sharing such information between the Agency and the organization responsible for implementation of that agreement].

67. Data obtained from the International Monitoring System shall first be analyzed, processed and verified by the Technical Secretariat before being compiled as part of the Registry, in accordance with the provisions of paragraph 57.

The model NWC proposes the establishment of an International Monitoring System (IMS) similar to but more extensive than the International Monitoring System established by the Comprehensive Test Ban Treaty.

The main purpose of the IMS is to enable the Agency to gather information necessary for the verification of the Convention. The system would include monitoring and analysis equipment owned or controlled by the Agency. In addition, information generated by equipment owned or controlled by member States would be shared through agreements with the Agency.

Special arrangements may have to be made for facilities located on disputed territory or on the territory of indigenous nations.

IX. Nuclear Weapons

The procedures outlined to remove nuclear weapons from alert and deployment and to register, tag, declare and destroy such weapons need not necessarily follow in exact chronological order in each circumstance. It may be possible in some cases, for example, to disable a warhead before removing it from its delivery vehicle. In other cases the procedure may be reversed. The manuals to be compiled by the Technical Secretariat will provide the precise details for each weapon system.

A. General Requirements

1. All nuclear weapons [with corresponding delivery vehicles] shall be taken off alert status, disabled, removed from deployment, declared, and destroyed in accordance with the guidelines and standards of Article III {Declarations}, Article IV {Phases for Implementation}, the Verification Annex, and the provisions set forth below:

B. Procedures for Destroying Nuclear Weapons

2. Each State Party shall take the following measures with respect to all nuclear weapons that it owns or possesses or that are under its jurisdiction or control:

a. All warheads shall be bar-coded, registered, and tagged for identification using secure visual tags.

b. All nuclear weapons shall be destroyed or moved to nuclear weapons storage facilities subject to international preventive controls. No exclusive national access to the repositories is allowed. Weapons may be removed from the nuclear weapons storage facilities only for the purposes of destruction.

c. All core elements from newly dismantled warheads shall be quenched or otherwise deformed and placed in storage under international preventive controls until final disposal of the proscribed nuclear material, in accordance with the guidelines and standards of Article X {Nuclear Material}.

C. Prevention of Production of Nuclear Weapons

3. All nuclear [weapons] facilities and deployment sites shall be subject to verification, including challenge inspections at any time and non-destructive detection of hidden warheads, to ensure compliance with obligations under this Convention not to develop, produce, or deploy nuclear weapons.

X. Nuclear Material

A. Reconstruction and Documentation

1. All military and civilian nuclear material shall be documented and declared according to the guidelines and standards set forth in Article III {Declarations} and the Verification Annex.

2. Special Nuclear Material

a. Records of production and use of special nuclear material produced in the past shall be reconstructed to the extent possible through analysis of past records, measures of transparency including national legislation aimed at disclosure of information, interviews, and any other appropriate means.

b. All special nuclear material storage sites and related nuclear facilities usable for production of special nuclear material shall be subject to preventive controls, including inventory verification as set forth in the Verification Annex.

B. Control of Special Nuclear Material

3. Subject to Section C below, production and use of proscribed nuclear material is prohibited. Existing inventories of special nuclear material shall be subject to preventive controls and storage and disposal in accordance with the guidelines and standards set forth below and in separate verification agreements.

4. All treatment of nuclear material that improves its quality to the level of proscribed nuclear material or improves the accessibility of proscribed nuclear material is prohibited, including, inter alia, separation of plutonium from spent fuel, enrichment of uranium in U-235 beyond unavoidable civilian requirements or beyond 20%, or extraction of tritium from heavy water, with the exception of exemption quantities.

5. All existing stocks of special nuclear material shall be placed under preventive controls until a safe method of final disposal is found and approved by the Agency. All handling of proscribed nuclear material except for such handling as necessary for the purposes of this Convention shall be prohibited.

6. [Burning of special fissionable material is prohibited unless the net amount of fissionable material resulting from such burning is reduced.]

7. Facilities for the production, research and testing of special nuclear material may be converted to uses consistent with the purposes and obligations of this Convention. Conversion of such facilities may include research and development for methods of demilitarization and disposal of proscribed nuclear material, including immobilization and final disposition of plutonium.

C. Licensing Requirements

8. The Agency shall establish a licensing process for civilian use of proscribed nuclear material which is not prohibited.

Although all nuclear material presents some proliferation-related risks, the emphasis in this article is on nuclear-weapons-usable-material (special nuclear material). Efforts at reconstructing records of past production and transfers and accounting for current inventories of special nuclear material should begin as soon as possible. No distinction is made in this article between military and civilian material, as it is the material, not the source, which is of concern regarding possible diversion to nuclear weapons. In practice, however, there will be some differences in reconstructing and documenting the material from different sources. In general, civilian facilities have kept better records than military facilities since the former were subject to a greater degree of national and international monitoring and control, and safety in civilian facilities was often a higher priority than in military facilities.

Paragraph 6 would prohibit the use of MOX fuel and HEU in reactors as well as certain concepts of transmutation.

XI. Nuclear Facilities

A. Nuclear Weapons Facilities

1. All nuclear weapons production facilities shall cease operations prohibited under this Convention and shall be closed or converted to purposes not prohibited under this Convention.

2. All nuclear weapons testing facilities shall cease operations and shall be permanently closed [or converted to purposes not prohibited under this Convention].

3. All nuclear weapons research facilities shall be closed or converted to research in accordance with paragraph 4.

4. Funding of research for the purposes of designing, modernizing, constructing, modifying or maintaining reliability of nuclear weapons is prohibited. Funding of research for the purpose of developing knowledge in the physics of nuclear explosions is prohibited. Funding of research in safety mechanisms for existing nuclear weapons is permitted only until all nuclear weapons are dismantled. Funding of research for the purposes of safe dismantling and destroying of nuclear weapons and for safe disposal of special nuclear material is permitted.

5. [All nuclear reprocessing facilities shall cease operations and shall be permanently closed.]

6. All nuclear facilities shall be subject to preventive controls.

7. All plans for the destruction or conversion of nuclear weapons [production, research and testing facilities and principal nuclear] facilities, submitted in accordance with Article IV {Phases for Implementation}, shall include provisions or recommendations for the placement of former employees of such facilities in positions of employment consistent with their experience and expertise and with the object and purpose of this Convention. Such positions and recommendations may include employment within a converted facility, employment for the destruction of a nuclear facility, employment for the destruction of nuclear weapons or disposition of special nuclear material, or employment within the Agency for the purposes of verification.

B. Command, Control, and Communications Facilities and Deployment Sites

8. Each State Party shall make the following changes to nuclear targeting commands and command systems in accordance with Article IV {Phases for Implementation}:

1. Rescind alert status on all nuclear weapons ;

2. Remove targeting coordinates from all command and control systems; and

3. Remove navigational information for all nuclear armed missiles from the navigational systems.

9. Each State Party shall, in accordance with Article IV {Phases for Implementation} and the Verification Annex, destroy any facility, system or sub-system designed or used solely for the purpose of launching, targeting, directing or detonating a nuclear weapon or its delivery vehicle, or for aiding or assisting in any of these purposes.

10. Each State Party shall, in accordance with Article IV {Phases for Implementation} and the Verification Annex, and in order to prevent use for purposes prohibited under this Convention, destroy or convert any facility, system or sub-system which is used for the purpose

Nuclear weapons production and research facilities may contain or consist of plants and equipment useful for the implementation of the Convention. For this reason, it may be more suitable to convert rather than close down some of these facilities. Under conversion, however, verification that nuclear weapons research and production have stopped could be difficult..

See Critical Questions on Research and Conversion.

of launching, targeting, directing or detonating a nuclear weapon or its delivery vehicle, or for aiding or assisting in any of these purposes, and which is also used for purposes not prohibited under this Convention.

11. Any facility, system or sub-system designed and used for detection of activities prohibited under this Convention is permitted.

12. All plans for the destruction or conversion of command, control, and communications facilities and deployment sites submitted in accordance with Article IV {Phases for Implementation} and the Verification Annex, shall include provisions or recommendations for the placement of former employees of such facilities in positions of employment consistent with their experience and expertise and with the object and purpose of this Convention. Such positions and recommendations may include employment within a converted facility, employment for the destruction of a nuclear facility, employment for the purpose of gathering information, including National Technical Means, and employment within the Agency for the purposes of inspection or other methods of verification.

The model NWC proposes the destruction of delivery vehicles designed solely for the purpose of delivering nuclear weapons. It does not prohibit dual-use delivery vehicles. However, requiring dual-use delivery vehicles to be converted to non-nuclear capability would only provide limited confidence, as reconversion back to nuclear capability would not be difficult. For this reason, it is proposed there be an additional optional protocol on prohibiting certain dual-use delivery vehicles which are destabilizing irrespective of whether they carry nuclear weapons or conventional payloads,

XII. Nuclear Weapons Delivery Vehicles

1. All deployment, development, testing, production, or acquisition of delivery vehicles and launchers designed solely for the purpose of delivering nuclear weapons {Schedule 1} is prohibited.

2. All delivery vehicles and launchers designed solely for the purpose of delivering nuclear weapons shall be destroyed according to Article IV {Phases for Implementation} and the Verification Annex.

3. All delivery vehicles capable of use for the delivery of nuclear weapons or non-nuclear weapons {Schedule 2} shall be destroyed according to Article IV {Phases for Implementation} or converted for purposes not prohibited under this Convention.

Schedule 1 - Nuclear Weapons Delivery Vehicles to Be Destroyed
Intercontinental Ballistic Missiles
Submarine Launched Ballistic Missiles
Heavy Bombers
Ballistic Missile Submarines
Ground Launched Cruise Missile

Schedule 2 - Delivery Vehicles To be Destroyed or Converted
Air-to-Surface Ballistic Missiles
Ground Launched Ballistic Missiles
Air Launched Cruise Missile
Sea Launched Cruise Missile
Nuclear-capable fighter bombers
Cruise Missile Submarines
Attack Submarines
Warships

[Schedule 3 - Transport Vehicles Not Designed for Nuclear Weapons to be Subject to Preventive Controls]

XIII. Activities Not Prohibited Under This Convention

See Optional Protocol Concerning Energy Assistance.

1. Each State Party has the right, subject to the provisions of this Convention [and other agreements and regulations relating to nuclear material] to the research, development and use of nuclear energy for peaceful purposes.

2. Each State Party shall adopt the necessary measures to ensure that research, development and use of nuclear energy within its territory or under its control is undertaken only for purposes not prohibited under this Convention. To this end, and in order to verify that activities are in accordance with obligations under this Convention, each State Party shall subject nuclear facilities and nuclear material listed in the Annex on Nuclear Activities, Components and Equipment of this Convention, or any other activities so declared by the Agency, to verification measures as provided in the Verification Annex.

1. [In the exercise of military activities not prohibited under this Convention,] each State Party shall adopt the necessary measures to ensure that [weapons and] weapons delivery systems are only developed, produced, otherwise acquired, retained, transferred, tested or deployed in a manner consistent with this Convention. To this end, and in order to verify that activities are in accordance with obligations under this Convention, each State Party shall subject weapons delivery systems including command, communication, control and production facilities to verification measures as provided in the Verification Annex.

XIV. Cooperation, Compliance and Dispute Settlement

A. Consultation, Cooperation, and Fact-finding

1. States Parties shall consult and cooperate, directly among themselves, or through the Agency or other appropriate international procedures, including procedures within the framework of the United Nations and in accordance with its Charter, on any matter which may be raised relating to the object and purpose, or the implementation of the provisions, of this Convention.

Cooperation, compliance and dispute settlement: The NWC includes provisions for consultation, cooperation and fact-finding to clarify and resolve questions of interpretation with respect to compliance and other matters. These procedures would be time-crucial to ensure essential evidence is not lost. Compliance and enforcement provisions are linked to transparency and confidence-building measures among States Parties.

2. Each State Party undertakes to cooperate with the Agency and with other States Parties in the improvement of the verification, destruction and conversion regimes, with a view to developing specific measures to enhance the efficient, safe and cost-effective verification, destruction and conversion procedures and methods of this Convention.

3. Without prejudice to the right of any State Party to request a challenge inspection, States Parties should, whenever possible, first make every effort to clarify and resolve, through exchange of information and consultations among themselves, any matter which may cause doubt about compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous. A State Party which receives a request from another State Party for clarification of any matter which the requesting State Party believes causes such a doubt or concern shall provide the requesting State Party as soon as possible, but in any case not later than [48] hours after the receipt of a request to clarify a possible threat of use of nuclear weapons or [10] days after the receipt of a request to clarify any other matter, with information sufficient to answer the doubt or concern raised along with an explanation of how the information provided resolves the matter. Nothing in this Convention shall affect the right of any two or more States Parties to arrange by mutual consent for inspections or any other procedures among themselves to clarify and resolve any matter which may cause doubt about compliance or gives rise to a concern about a related matter which may be considered ambiguous. Such arrangements shall not affect the rights and obligations of any State Party under other provisions of this Convention.

Procedure for requesting clarification

4. A State Party shall have the right to request the Executive Council to assist in clarifying any situation which may be considered ambiguous or which gives rise to a concern about the possible non-compliance of another State Party with this Convention. The Executive Council shall provide appropriate information in its possession relevant to such a concern.

5. A State Party shall have the right to request the Executive Council to obtain clarification from another State Party on any situation which may be considered ambiguous or which gives rise to a concern about its possible non-compliance with this Convention. In such a case, the following shall apply:

a. The Executive Council shall forward the request for clarification to the State Party concerned through the Director-General not later than [24] hours after its receipt;

b. The requested State Party shall provide the clarification to the Executive Council as soon as possible, but in any case not later than [48] hours after the receipt of a request to clarify possible threat or use of nuclear weapons or [10] days after the receipt of a request to clarify any other matter;

c. The Executive Council shall take note of the clarification and forward it to the requesting State Party not later than [24] hours after its receipt;

d. If the requesting State Party deems the clarification to be inadequate, it shall have the right to request the Executive Council to obtain from the requested State Party further clarification

e. For the purpose of obtaining further clarification requested under subparagraph d, the Executive Council may call on the Director-General to establish a group of experts from the Technical Secretariat, or if appropriate staff are not available in the Technical Secretariat, from elsewhere, to examine all available information and data relevant to the situation causing the concern. The group of experts shall submit a factual report to the Executive Council on its findings;

f. If the requesting State Party considers the clarification obtained under subparagraphs d and e to be unsatisfactory, it shall have the right to request a special session of the Executive Council in which States Parties involved that are not members of the Executive Council shall be entitled to take part. In such a special session, the Executive Council shall consider the matter and may recommend any measure it deems appropriate to resolve the situation.

6. A State Party shall also have the right to request the Executive Council to clarify any situation which has been considered ambiguous or has given rise to a concern about its possible non-compliance with this Convention. The Executive Council shall respond by providing such assistance as appropriate.

7. The Executive Council shall inform the States Parties about any request for clarification provided in this Article.

8. If the doubt or concern of a State Party about a possible non-compliance has not been resolved within [60] days after the submission of the request for clarification to the Executive Council, or it believes its doubts warrant urgent consideration, notwithstanding its right to request a challenge inspection, it may request a special session of the Conference in accordance with Article VIII {Agency}. At such a special session, the Conference shall consider the matter and may recommend any measure it deems appropriate to resolve the situation.

Procedures for challenge inspections

9. Each State Party has the right to request an on-site challenge inspection of any facility or location in the territory or in any other place under the jurisdiction or control of any other State Party for the sole purpose of clarifying and resolving any questions concerning possible non-compliance with the provisions of this Convention, and to have this inspection conducted anywhere without delay by an inspection team designated by the Director-General and in accordance with the Verification Annex.

10. Each State Party is under the obligation to keep the inspection request within the scope of this Convention and to provide in the inspection request all appropriate information on the basis of which a concern has arisen regarding possible non-compliance with this Convention as specified in the Verification Annex. Each State Party shall refrain from unfounded inspection requests, care being taken to avoid abuse. The challenge inspection shall be carried out for the sole purpose of determining facts relating to the possible non-compliance.

11. For the purpose of verifying compliance with the provisions of this Convention, each State Party shall permit the Technical Secretariat to conduct the on-site challenge inspection pursuant to paragraph 9.

On-site inspections and techniques would include both systematic, baseline inspections and challenge inspections (anytime-anyplace) of declared and undeclared facilities, utilizing a range of techniques, including visual inspection, record checks and non-destructive measurement (e.g., with portable x-ray and gamma-ray detectors) and could be assisted by identification techniques, such as tagging, tamper-indicating seals in nuclear power plants and “fingerprinting” of delivery systems. Perimeter portal monitoring systems would track the flow of items and materials relevant for nuclear weapons.

12. Pursuant to a request for a challenge inspection of a facility or location, and in accordance with the procedures provided for in the Verification Annex, the inspected State Party shall have:

a. The right and the obligation to make every reasonable effort to demonstrate its compliance with this Convention and, to this end, to enable the inspection team to fulfil its mandate;

b. The obligation to provide access within the requested site for the sole purpose of establishing facts relevant to the concern regarding possible non-compliance; and

c. The right to take measures to protect sensitive installations, and to prevent disclosure of confidential information and data, not related to this Convention.

13. With regard to an observer, the following shall apply:

a. The requesting State Party may, subject to the agreement of the inspected State Party, send a representative who may be a national either of the requesting State Party or of a third State Party, to observe the conduct of the challenge inspection.

b. The inspected State Party shall then grant access to the observer in accordance with the Verification Annex.

c. The inspected State Party shall, as a rule, accept the proposed observer, but if the inspected State Party exercises a refusal, that fact shall be recorded in the final report.

14. The requesting State Party shall present an inspection request for an on-site challenge inspection to the Executive Council and at the same time to the Director-General for immediate processing.

15. The Director-General shall immediately ascertain that the inspection request meets the requirements specified the Verification Annex, and, if necessary, assist the requesting State Party in filing the inspection request accordingly. When the inspection request fulfills the requirements, preparations for the challenge inspection shall begin.

16. The Director-General shall transmit the inspection request to the inspected State Party not less than 12 hours before the planned arrival of the inspection team at the point of entry.

17. After having received the inspection request, the Executive Council shall take cognizance of the Director-General's actions on the request and shall keep the case under its consideration throughout the inspection procedure. However, its deliberations shall not delay the inspection process.

18. The Executive Council may, not later than 12 hours after having received the inspection request, decide by a three-quarter majority of all its members against carrying out the challenge inspection, if it considers the inspection request to be frivolous, abusive or clearly beyond the scope of this Convention as described in paragraph 9. Neither the requesting nor the inspected State Party shall participate in such a decision. If the Executive Council decides against the challenge inspection, preparations shall be stopped, no further action on the inspection request shall be taken, and the States Parties concerned shall be informed accordingly.

19. The Director-General shall issue an inspection mandate for the conduct of the challenge inspection. The inspection mandate shall be the inspection request referred to in paragraphs 9 and 10 put into operational terms, and shall conform with the inspection request.

20. The challenge inspection shall be conducted in accordance with the provisions of the Verification Annex. The inspection team shall be guided by the principle of conducting the challenge inspection in the least intrusive manner possible, consistent with the effective and timely accomplishment of its mission.

21. The inspected State Party shall assist the inspection team throughout the challenge inspection and facilitate its task. If the inspected State Party proposes, pursuant to the Verification Annex, arrangements to demonstrate compliance with this Convention, alternative to full and comprehensive access, it shall make every reasonable effort, through consultations with the inspection team, to reach agreement on the modalities for establishing the facts with the aim of demonstrating its compliance.

22. The final report shall contain the factual findings as well as an assessment by the inspection team of the degree and nature of access and cooperation granted for the satisfactory implementation of the challenge inspection. The Director-General shall promptly transmit the final report of the inspection team to the requesting State Party, to the inspected State Party, to the Executive Council and to all other States Parties. The Director-General shall further transmit promptly to the Executive Council the assessments of the requesting and of the inspected States Parties, as well as the views of other States Parties which may be conveyed to the Director-General for that purpose, and then provide them to all States Parties.

23. The Executive Council shall, in accordance with its powers and functions, review the final report of the inspection team as soon as it is presented, and address any concerns as to:

a. Whether any non-compliance has occurred;

b. Whether the request had been within the scope of this Convention; and

c. Whether the right to request a challenge inspection had been abused.

24. If the Executive Council reaches the conclusion, in keeping with its powers and functions, that further action may be necessary with regard to paragraph 23, it shall take the appropriate measures to redress the situation and to ensure compliance with this Convention, including specific recommendations to the Conference. In the case of abuse, the Executive Council shall examine whether the requesting State Party should bear any of the financial implications of the challenge inspection.

25. The requesting State Party and the inspected State Party shall have the right to participate in the review process. The Executive Council shall inform the States Parties and the next session of the Conference of the outcome of the process.

26. If the Executive Council has made specific recommendations to the Conference, the Conference shall consider action in accordance with Section B.

B. Measures to Redress a Situation and to Ensure Compliance, Including Sanctions

27. The Conference, taking into account the recommendations of the Executive Council, shall take necessary measures, as set forth in paragraphs 28, 29 and 30 to ensure compliance with this Convention and to redress and remedy any situation which contravenes the provisions of this Convention.

28. In cases where a State Party has been requested by the Conference or the Executive Council to redress a situation raising problems with regard to its compliance and fails to fulfill the request within the specified time, the Conference may, inter alia, decide to restrict or sus-

pend the State Party from the exercise of its rights and privileges under this Convention until the Conference decides otherwise.

29. In cases where damage to the object and purpose of this Convention may result from non-compliance with the basic obligations of this Convention, the Conference may recommend to States Parties collective measures which are in conformity with international law. Such measures may include restrictions or suspensions of all assistance in nuclear activities outlined in Schedule 2 of the Annex on Nuclear Activities, Components and Equipment. If the State concerned continues in its failure to comply with the request, further sanctions may be imposed.

30. The Conference, or alternatively, if the case is urgent, the Executive Council, may bring the issue, including relevant information, conclusions and recommendations, to the attention of the United Nations General Assembly and the United Nations Security Council.

31. The threat or use of nuclear weapons shall be deemed to be a threat to the peace subject to the provisions of the United Nations Charter.

See Critical Questions on Enforcement and Security.

C. Settlement of Disputes

32. Disputes that may arise concerning the application, implementation or interpretation of this Convention shall be settled in accordance with the relevant provisions of this Convention, including Section B and in conformity with the provisions of the Charter of the United Nations.

33. When a disputes arises between two or more States Parties, or between one or more States Parties and the Agency, relating to the application, implementation or interpretation of this Convention, the parties concerned shall consult together with a view to the expeditious settlement of the dispute by negotiation, mediation, arbitration or by other peaceful means of the parties' choice, including recourse to appropriate organs of this Convention and, by mutual consent, referral to the International Court of Justice in conformity with the Statute of the Court.

34. If other peaceful means of settlement are not found, a State Party in dispute with one or more States Parties may refer the dispute to the International Court of Justice, in conformity with the Statute of the Court [and the Optional Protocol Concerning the Compulsory Settlement of Disputes]. The States Parties involved shall keep the Executive Council informed of actions being taken.

35. The Executive Council may contribute to the settlement of a dispute by whatever means it deems appropriate, including offering its good offices, calling upon the States Parties to a dispute to start the settlement process of their choice and recommending a time-limit for any agreed procedure.

36. The Conference shall consider questions related to disputes raised by States Parties or brought to its attention by the Executive Council. The Conference shall, as it finds necessary, establish or entrust organs with tasks related to the settlement of these disputes in conformity with Article VIII {Agency}.

37. The Conference and the Executive Council are separately empowered, subject to authorization from the General Assembly of the United Nations, to request the International Court of Justice to give an advisory opinion on any legal question arising within the scope of the activities of the Agency. An agreement between the Agency and the United Nations shall be concluded for this purpose in accordance with Article VIII {Agency}.

38. This Section is without prejudice to Sections A and B.

XV. Entry Into Force

A. Conditions of Entry Into Force

1. This Convention shall enter into force [..] days after the date on which the following conditions are met:

a. [All] Nuclear Weapons States have deposited their instruments of ratification; and

b. All Nuclear Capable States [not party to the Nuclear Non-Proliferation Treaty] have deposited their instruments of ratification; and

c. At least [..] States in total have deposited instruments of ratification.

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

Two-tier entry into force allows early entry into force for individual states.

B. State Waiver of Entry Into Force Requirements

For States who waive the entry into force requirements, this Convention shall enter into force on the 30th day following the date of deposit of their instrument of ratification or accession.

Entry into force is one of the most politically difficult provisions, as was evidenced in the CTBT negotiations. It is unlikely that any of the Nuclear Weapon States will assent to the Convention unless all Nuclear Weapon States and nuclear "threshold" States assent. On the other hand, if by the time of signing, most Nuclear Weapon States have decided that possession of nuclear weapons has no more strategic value, as they did in the case of chemical weapons, they may agree to a less restrictive entry-into-force requirement in order to advance the timetable for the elimination of nuclear weapons.

Drafters have opted for a somewhat restrictive entry-into-force requirement, including all Nuclear Weapon States, all nuclear capable States which are not parties of the NPT (this would include all current threshold States) and a minimum number of other States. This recognizes that all other nuclear capable States are in any case already obligated not to develop or acquire nuclear weapons under the NPT, making their early accession to this Convention less urgent.

XVI. Financing

1. The costs of the Agency's activities shall be paid by States Parties in accordance with the United Nations scale of assessment adjusted to take into account differences in membership between the United Nations and this Agency. The budget of the Agency shall comprise two separate chapters, one relating to administrative and other costs, and one relating to verification and compliance costs.

2. Each Nuclear Weapons State shall meet the costs of destruction of weapons, proscribed nuclear material and nuclear facilities under its authority. Each Nuclear Weapons State shall meet the costs of verification of nuclear facilities under its authority, except for instances of challenge inspections which are funded according to the provisions of the Verification Annex.

3. The Agency shall establish a voluntary fund to assist States Parties to comply with paragraph 2 where such compliance imposes undue financial burdens on them.

XVII. Amendments

1. Any State Party may propose amendments to this Convention. Any State Party may also propose changes, as specified in paragraph 4, to the Annexes of this Convention. Proposals for amendments shall be subject to the procedures in paragraphs 2 and 3. Proposals for changes, as specified in paragraph 4, shall be subject to the procedures in paragraph 5.

2. The text of a proposed amendment shall be submitted to the Director-General for circulation to all States Parties and to the Depositary. The proposed amendment shall be considered only by an Amendment Conference. Such an Amendment Conference shall be convened if one third or more of the States Parties notify the Director-General [not later than [60 days] after its circulation] that they support further consideration of the proposal. The Amendment Conference shall be held immediately following a regular session of the Conference unless the requesting States Parties ask for an earlier meeting. In no case shall an Amendment Conference be held less than 60 days after the circulation of the proposed amendment.

3. Amendments shall enter into force for all States Parties 20 days after deposit of the instruments of ratification or acceptance by all the States Parties referred to under subparagraph b below:

a. When adopted by the Amendment Conference by a positive vote of a majority of all States Parties [with no State Party casting a negative vote]; and

b. Ratified or accepted by all those States Parties casting a positive vote at the Amendment Conference.

4. In order to ensure the viability and the effectiveness of this Convention, provisions in the Annexes shall be subject to changes in accordance with paragraph 5, if proposed changes are related only to matters of an administrative or technical nature.

5. Proposed changes referred to in paragraph 4 shall be made in accordance with the following procedures:

a. The text of the proposed changes shall be transmitted together with the necessary information to the Director-General. Additional information for the evaluation of the proposal may be provided by any State Party and the Director-General. The Director-General shall promptly communicate any such proposals and information to all States Parties, the Executive Council and the Depositary;

b. Not later than 60 days after its receipt, the Director-General shall evaluate the proposal to determine all its possible consequences for the provisions of this Convention and its implementation and shall communicate any such information to all States Parties and the Executive Council;

c. The Executive Council shall examine the proposal in the light of all information available to it, including whether the proposal fulfills the requirements of paragraph 4. Not later than 90 days after its receipt, the Executive Council shall notify its recommendation, with appropriate explanations, to all States Parties for consideration. States Parties shall acknowledge receipt within 10 days.

d. If the Executive Council recommends to all States Parties that the proposal be adopted, it shall be considered approved if no State Party objects to it within 90 days after receipt of the

recommendation. If the Executive Council recommends that the proposal be rejected, it shall be considered rejected if no State Party objects to the rejection within 90 days after receipt of the recommendation;

e. If a recommendation of the Executive Council does not meet with the acceptance required under subparagraph d, a decision on the proposal, including whether it fulfills the requirements of paragraph 4, shall be taken as a matter of substance by the Conference at its next session;

f. The Director-General shall notify all States Parties and the Depositary of any decision under this paragraph;

g. Changes approved under this procedure shall enter into force for all States Parties 180 days after the date of notification by the Director-General of their approval unless another time period is recommended by the Executive Council or decided by the Conference.

XVIII. Scope and Application of Convention

A. Relation to other International Agreements

1. Nothing in this Convention shall be interpreted as in any way limiting or detracting from the obligations assumed by any State under the United Nations Charter; the Treaty on the Non-Proliferation of Nuclear Weapons; the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water; the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean; the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof; the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies; the South Pacific Nuclear Free Zone Treaty; the African Nuclear Free Zone Treaty; the Southeast Asia Nuclear Weapon Free Zone Treaty; any other treaties establishing nuclear weapon free zones; the Comprehensive Nuclear Test Ban Treaty; the Treaty Between the U.S.A. and the U.S.S.R. on the Elimination of Their Intermediate-Range and Short-Range Missiles; the Treaty Between the U.S.A. and the U.S.S.R. on the Reduction and Limitation of Strategic Offensive Arms; the Treaty Between the U.S.A. and Russia on Further Reduction and Limitation of Strategic Offensive Arms; the Treaty Between the U.S.A. and the U.S.S.R. on the Limitation of Anti-Ballistic Missile Systems; or under agreements with the International Atomic Energy Agency.

2. Pursuant to Article VIII {Agency}, the Agency may enter into agreements with the implementing organizations of other international agreements for the purpose of sharing information necessary or applicable to the verification tasks of each organization involved, or for any other purposes that would further the objectives of the international agreements concerned.

B. Status of the Annexes

3. The Annexes form an integral part of this Convention. Any reference to this Convention includes the Annexes.

C. Duration and Withdrawal

4. This Convention shall be of unlimited duration.

5 Withdrawal from this Convention shall not be permitted [upon ratification by all Nuclear Weapons States].

The model NWC provides for no withdrawal, reflecting the view that the prohibition of nuclear weapons, and the obligation to eliminate them, have entered the realm of customary international law from which there should be no exception.

D. Reservations

6. The Articles of this Convention shall not be subject to reservations. The Annexes of this Convention shall not be subject to reservations incompatible with its object and purpose.

XIX. Conclusion of Convention

A. Signature

1. This Convention shall be open for signature for all States before its entry into force.

B. Ratification

2. This Convention shall be subject to ratification by States Signatories according to their respective constitutional processes.

C. Accession

3. Any State which does not sign this Convention before its entry into force may accede to it at any time thereafter.

D. Depository

4. The Secretary-General of the United Nations is hereby designated as the Depository of this Convention and shall, inter alia:

1. Promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or accession and the date of the entry into force of this Convention, and of the receipt of other notices;

2. Transmit duly certified copies of this Convention to the Governments of all signatory and acceding States; and

3. Register this Convention pursuant to Article 102 of the Charter of the United Nations.

E. Authentic Texts

5. This Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

Optional Protocol Concerning the Compulsory Settlement of Disputes

The States Parties to this Protocol, expressing their wish to resort to the compulsory jurisdiction of the International Court of Justice, unless some other form of settlement is provided for in the Convention or has been agreed upon by the Parties within a reasonable period, have agreed as follows:

Disputes arising out of the interpretation or application of this Convention shall lie within the compulsory jurisdiction of the International Court of Justice, and may accordingly be brought before the Court by an application by any party to the dispute being a Party to this Protocol.

See Critical Question on Nuclear Energy.

Optional Protocol Concerning Energy Assistance

The States Parties to this Protocol:

Desiring to prevent any threat to the aims and objectives of this Convention from arising due to the proliferation of nuclear technology which could aid or assist in the development of nuclear weapons,

Desiring further to prevent any threat to health and the environment arising from the excessive creation of radionuclides in nuclear reactors,

Affirming the right to the development of sustainable and environmentally safe energy sources,

Have agreed as follows:

1. Not to manufacture, assemble, transfer or otherwise acquire nuclear reactors.

2. Not to use any existing reactor, nor the products from the use of any nuclear reactor.

3. To close any existing nuclear reactors within [five] years of signing this protocol.

4. To assist other Parties to this protocol in the development and use of non-nuclear, sustainable energy sources.

5. To create a voluntary fund for the purposes of implementing paragraph 4.

Annex on Nuclear Activities

A. Guidelines for Schedules of Nuclear Activities

Guidelines for Schedule 1

1. The following criteria shall be taken into account in considering whether a nuclear activity shall be included in Schedule 1:

a) It is an activity specifically prohibited under Article I of this Convention

b) It is an activity the purpose of which is to aid or assist in any activity specifically prohibited under Article I of this Convention.

c) It is an activity which poses a grave risk to the object and purpose of this Convention by virtue of its high potential for aiding and assisting activities specifically prohibited by this Convention.

d) It has little or no use for purposes not prohibited under this Convention, or alternatively its use for purposes not prohibited under this Convention can be safely substituted by another activity.

2. Schedule 1 activities are prohibited.

Guidelines for Schedule 2

3. The following criteria shall be taken into account in considering whether a nuclear activity shall be included in Schedule 2:

a) It is an activity not specifically prohibited under Article I of this Convention

b) It is an activity the purpose of which is not to aid or assist in any activity specifically prohibited under Article I of this Convention.

c) It is an activity which poses some risk to the object and purpose of this Convention by virtue of its potential to aid and assist activities specifically prohibited by this Convention.

4. Schedule 2 activities are permitted unless otherwise determined by the Conference in accordance with Articles [Agency, Technical Secretariat] and [compliance].

Guidelines for Schedule 3

5. The following criteria shall be taken into account in considering whether a nuclear activity shall be included in Schedule 3:

a) It is an activity not specifically prohibited under Article I of this Convention

b) It is an activity the purpose of which is not to aid or assist in any activity specifically prohibited under Article I of this Convention.

c) It is an activity which poses no risk to the object and purpose of this Convention

6. Schedule 3 activities are permitted.

B. Schedule of Nuclear Activities

Schedule 1

(1) Production of nuclear weapons

(2) Use of nuclear weapons

(3) Threat of use of nuclear weapons

(4) Production and any use of special nuclear material

(5) Production of metals or alloys containing plutonium or uranium

(6) Weaponization: This covers the research, development, manufacturing and testing required to make nuclear explosive devices from special fissionable or fusionable material

(7) Nuclear fuel fabrication using plutonium, uranium-233, uranium enriched to 20% or more in uranium-235

(8) Import, construction or use of research and power reactors of any kind utilizing uranium enriched to 20% or more in uranium-235, uranium-233,plutonium or MOX as a fuel or any reactor designed specifically for plutonium production. This includes critical and sub-critical assemblies

(9) Reprocessing of irradiated fuel or irradiation targets containing nuclear-weapons capable material. This includes the use of hot cells and associated equipment

(10) Enrichment of uranium in isotope U-235 beyond 20% and any preparatory steps in this process, including the preparation and storage of UCI4 and UF6 enriched to more than 3% in U-235. {The preparation of UC14 and UF6 from natural uranium will not be forbidden by the NWC. After enrichment it should not be stored in this form which would be appropriate feeding material for further enrichment beyond 20%.}

(11) Production, separation, and enrichment of the isotope of plutonium-239 , hydrogen, tritium and lithium-6.

(12) Production of antiprotons, antimatter, nuclear isomers and super-heavy elements in significant quantities

Schedule 2

(1) Import, construction, use of research and power reactors of any type using natural uranium or uranium enriched to less than 20% in uranium-235 as a fuel. This includes critical and sub-critical assemblies, but excludes reactors specifically designed for plutonium production.

(2) Prospecting, mining or processing of ores containing uranium and/or thorium

(3) Preparation of chemical compounds containing uranium enriched to less than 20% in uranium-235 and thorium; excluding the preparation of UCI4 and UF6 enriched to more than 3% in U-235.

(4) Nuclear fuel fabrication using natural uranium or uranium enriched to less than 20% in uranium-235.

(5) Production of particle and laser beams of all kind.

(6) Nuclear fusion experimental devices based on inertial confinement, including diagnostics

Schedule 3

(1) Application of radiation and isotopes in food and agriculture:
- soil fertility, irrigation and crop production
- [plant breeding and genetics]
- animal production and health
- insect and pest control
- [food preservation]
- other uses upon approval

(2) Applications of radiation and isotopes in medicine
- diagnostic and therapeutic medicine including dosimetry
- Radiotherapy by teletherapy and brachytherapy
- nutrition and health-related environmental studies
- other uses upon approval

(3) Application of radiation and isotopes in industrial processes
- Radiography and other non-destructive testing methods
- Industrial process control and quality control
- Radiotracer applications in oil, chemical and metallurgical processes
- Development of water and mineral resources
- Industrial radiation processing
- Other uses upon approval

(4) Applications in research with and production and disposal of radioactive isotopes and elementary particles
- Conditioning and disposal of radioactive wastes
- Nuclear fusion experimental devices based on magnetic confinement, including diagnostics
- Production of isotopes both radioactive and stable. The production of the isotope Pu-239, titanium and lithium-6 is prohibited.
- Import, construction and use of neutron sources, electron accelerators, particle accelerators, heavy icon accelerators
- Research on radiation physics and chemistry and on the physical and chemical properties of isotopes except in areas relevant to activities not prohibited by or subject to authorization under this Convention

Annex on Nuclear Weapon Components

Guidelines for Schedule 1

1. A component shall be included in Schedule 1 if it is produced solely for the purpose of incorporation into a nuclear explosive device.

2. Manufacture, transfer or stockpiling of Schedule 1 components is prohibited.

Guidelines for Schedule 2

3. The following criteria shall be taken into account in considering whether a component shall be included in Schedule 2:

a) The component is produced for incorporation into a nuclear explosive device

b) The component is also used for purposes not prohibited under this convention, but is not produced in large commercial quantities for such purposes

c) There exist alternative components for the purposes cited in paragraph (b).

4. Manufacture, transfer or stockpiling of Schedule 2 components is prohibited.

Guidelines for Schedule 3

5. The following criteria shall be taken into account in considering whether a component shall be included in Schedule 3:

a) The component is produced for incorporation into a nuclear explosive device

b) The component is also used for purposes not prohibited under this convention, but is not produced in large commercial quantities for such purposes

c) There do not exist alternative components for the purposes cited in paragraph (b).

6. Manufacture, transfer or stockpiling of Schedule 3 components is permitted only in accordance with the provisions established by the Agency.

Guidelines for Schedule 4

7. The following criteria shall be taken into account in considering whether a component shall be included in Schedule 4:

a) The component is produced for incorporation into a nuclear explosive device

b) The component is also used for purposes not prohibited under this convention, and is produced in large commercial quantities for such purposes

[c) There do not exist alternative components for the purposes cited in paragraph (b).]

8. Manufacture of Schedule 4 components is permitted only in accordance with the provisions established by the Agency.

Purposes and Uses of the Model Nuclear Weapons Convention

The purposes of the model NWC includes demonstrating the feasibility of a framework approach to the elimination of Nuclear weapons, and encouraging governments to enter into nuclear disarmament negotiations. Another purpose is to educate and engage the public in the progress toward nuclear disarmament. The process of designing and debating a nuclear weapons convention is useful in a number of ways:

1 It can help identify policies that are inconsistent with the goal of nuclear disarmament;
2 It can help overcome some of the barriers that make nuclear abolition appear utopian; and
3 It can help prepare societies for the day when political will to begin negotiations emerges.

Since its release in 1997, the MNWC has been the subject of several roundtables, panels, and workshops at the governmental and non-governmental level. These include:

1 Preparatory Committee for the 200 Review of the Non-Proliferation Treaty: the MNWC was the subject of several formal and informal gatherings during the 1997 and 1998 NPT PrepCom meetings.

2 United Nations Conference on Disarmament: A roundtable discussion of 20 government delegations to the Conference on Disarmament in Geneva was held on August 6, 1997, hosted by the Quaker United Nations Office. The roundtable, and the reception that followed and included a number of other delegations as well, focused on the content and use of the MNWC.

3 Capitals: The MNWC has been studied in the capital cities of a number of governments through foreign and defense ministries. Most recently Costa Rica held a special governmental meeting to discuss further use of the MNWC.

4 Consultation of Nuclear Weapon States: In March, 1998, the Oxford Research Group held an informal consultation in Neemrana, India, where the MNWC was debated. (See “India, Nuclear Weapons & Global Security” Oxford Research group, current Decisions Report No. 20, June 1998.)

5 United Nations Roundtable: In March, 1998, Costa Rica hosted a roundtable meeting of government delegations at the United Nations in New York to discuss the MNWC.

6 United States House of Representatives: On June 1, 1998, U.S. Representative Lynn Woolsey (D-Ca.) hosted a congressional briefing on the MNWC in Washington, DC, attended by representatives from 30 congressional offices. Following the briefing, Rep. Woolsey introduced House Resolution 479, which welcomes the MNWC and calls on the U.S. president to initiate negotiations leading to the conclusion of a nuclear weapons convention. The resolution was introduced in 1999 as House Resolution 82. (See Documents Section.)

7 Scientific Review: The MNWC was presented and debated at several meetings of the International Network of Engineers and Scientists Against Proliferation and at the 9th and 10th Summer Symposia on Science and World Affairs (1997 and 1998 respectively), sponsored by the Union of Concerned Scientists.

Section 3

Comments and Critical Questions

A D-5 Trident II missile spins out of control after being launched from the nuclear-powered strategic missile submarine USS Tennessee. Photo: US Navy.

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Enforcement

Critical Question: Can a Nuclear Weapons Convention be enforced?

How to enforce nuclear abolition is one of the most frequently asked questions regarding the Nuclear Weapons Convention. The model NWC emphasizes compliance over enforcement. It is more effective to persuade states to comply with the Convention than it is to have to respond after a violation with enforcement measures.

However, should compliance fail, enforcement may be necessary depending on the degree of non-compliance and the threat posed. The model NWC includes some provisions for enforcement including the restriction of States' rights, suspension of assistance in nuclear activities, and other sanctions. But, ultimate authority remains, as with the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention, and the Biological Weapons Convention, with the United Nations Security Council. The model NWC includes a provision making the threat or use of nuclear weapons a threat to the peace, requiring action by the Security Council. Another provision makes threat or use of nuclear weapons a crime for which individuals shall be held accountable before the International Criminal Court.

Both the composition and the mandate of the Security Council are regularly raised in consideration of this question. This leads to concern about the current and possible future international security regimes and the concept of security itself. (See Critical Question on Security.)

It has been suggested that in addition to Security Council authority to respond to a breach, including by use of force, the right of individual states to respond with force to a breach if the Security Council does not act (for example, due to a veto) should be recognized. However, to the extent that such a right goes beyond the present right of inherent self-defense against an armed attack under the UN Charter, it could prove destabilizing to international security arrangements generally and also serve as a disincentive for present nuclear weapon states agreeing to an NWC.

Some also suggest that the Security Council should be granted a small number of nuclear weapons to be able to threaten or use in response to nuclear breakout. Most of the MNWC drafters oppose this idea on the grounds that 1) there are adequate non-nuclear means for responding to breakout, 2) the retention by any entity of nuclear weapons would justify the deterrent posture, and could lead to retention by certain states of their own nuclear weapons as a counter-balance to those of the Security Council, and 3) it is difficult to see how any threat or use of nuclear weapons, whether by a state or the Security Council, could conform with international rules of humanitarian law.

Experience with the NPT indicates that for most states in the world, enforcement will not be an issue. Almost all non-nuclear weapon states parties to the NPT — the vast majority of states in the world — have complied with their obligation under that treaty not to acquire nuclear weapons. Cases of actual or possible violation illustrate that while an effective international response can be difficult and problematic, it nonetheless is possible. In the case of Iraq's violation, there has been a vigorous response based upon inspections, sanctions, and force by the Security Council, and the United States the IAEA has declared Iraq now to be in compliance although the future of UNSCOM is uncertain at this time. In any event, the experience UNSCOM offers important lessons about intrusive verification.

In the case of North Korea's possible violation, because Security Council action was in doubt, a group of States led by the United States has sought to induce compliance with a package of incentives.

Responses to the question of enforcement overwhelmingly favor reliance on incentives for compliance rather than threat, force, or sanctions.

Moreover, in a nuclear-weapon free world, the international response to a breach of the NWC by small or mid-sized powers would almost certainly be more effective than under the NPT. Among other reasons, present nuclear weapon states would no longer have their own nuclear threat, and would have very strong incentives to ensure that no other state acquires that capability.

Violation of the NWC by a major military power, including those states that are now both nuclear-armed and permanent members of the Security Council with a veto, obviously would pose serious problems for a nuclear weapon free regime. Certain reforms, such as restricting the power of the veto or providing that the General Assembly could act in the absence of Security Council action, may be useful in addressing that possibility. But, in the near-term, the stability of a nuclear weapon free regime may depend on the assessment by major powers that it is in their security interests and on the normative force of the prohibition of acquiring nuclear weapons that would grow as the regime was institutionalized and endured. These are significant factors. Moreover, the development of a nuclear weapon free regime will itself change the security situation. In the longer term, owing in part to the NWC, global collective security arrangements may develop that are capable of effectiveness against any state breaching the NWC.

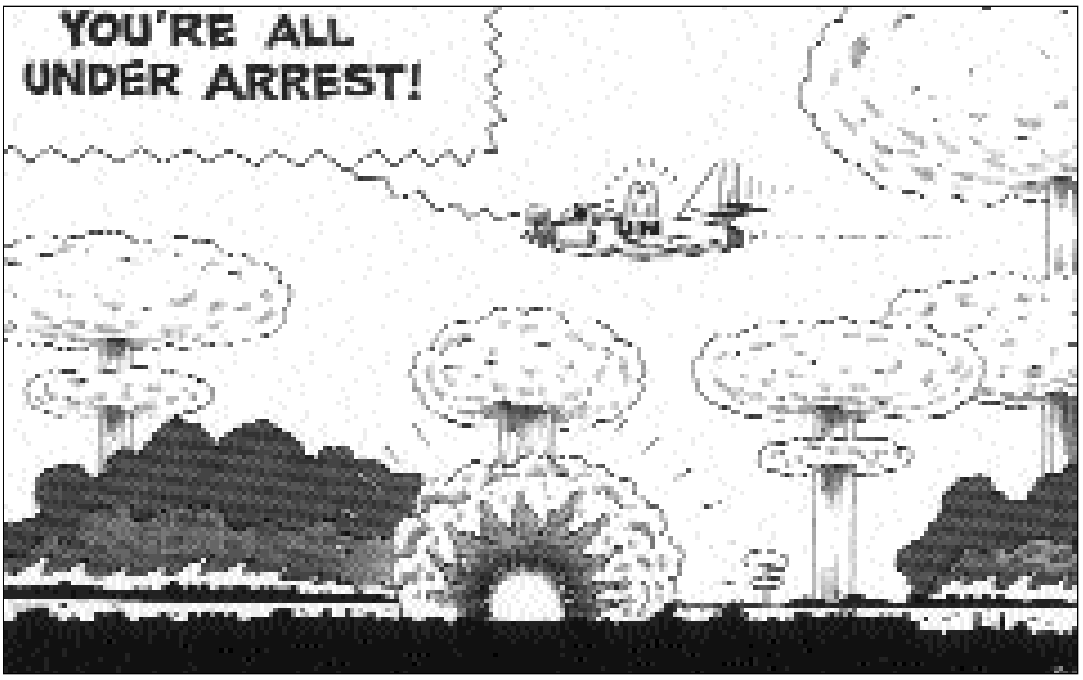


Illustration: Laurence Clark. Courtesy of the Alexander Turnbull Library, Wellington, New Zealand.

Comment: Treaties are not enough

Present-day political culture derives from a long history of "might is right." This means that militarily and economically strong country can make or break agreements at their will, and enforce them on the weak with equal arbitrariness. For instance, nuclear weapons states have signed the NPT, which requires an early end to the nuclear arms race. Yet after three decades, all five continue to modernize their arsenals. Other than China, none have even accepted the World Court's unanimous advisory opinion that Article VI requires the achievement of nuclear disarmament in all its aspects. Nuclear apartheid can continue even after it has been declared to be illegal.

The CTBT provides a similar lesson. Though Article I bans all nuclear explosions, including peaceful nuclear explosions, nuclear weapons states (and some others) interpret it as allowing nuclear fusion explosions in laboratories. This interpretation of the CTBT will allow the modernization of present arsenals, as well as the development of entirely new types of nuclear weapons, notably pure fusion weapons.

Some of the most difficult nuclear disarmament issues relate to the minimization of the risk of (i) a break out of the treaty and (ii) retaliation with nuclear weapons in case breakout results in the use of nuclear weapons. To address these concerns, any nuclear weapons convention must contain features that go well beyond the complete verified dismantlement of nuclear weapons and related infrastructure, since both of these can be re-constituted. Unlike many existing treaties, such as the NPT and CTBT that permit withdrawal (usually at short notice and no specified penalty), the NWC must completely prohibit withdrawal under any circumstances. Activities violating the treaty should be punishable under the Nuremberg code. This would allow the individuals making the decisions to be held accountable under international law. Further, the role of the World Court clearly needs to be strengthened so that it can effectively deal with violations by any state, including present-day nuclear weapon states.

Such features, which are essential to enduring nuclear disarmament, cannot be successfully incorporated into a NWC unless there are profound changes in the present political, military, moral, and economic framework of which nuclear weapons are just one part. For instance, current military and political deterrence doctrine legitimizes the killing by states of children in an adversary country in retaliation for a nuclear attack even though such an idea is generally regarded as immoral and illegal at individual or non-state party levels. Unless such retaliation by a state is rejected by the majority of the people of nuclear weapons states as immoral, there is little chance that a nuclear weapons convention with the necessary features can be negotiated. The resistance of the United States to the International Criminal Court is a case in point.

Finally, huge nuclear weapons budgets have created powerful vested interests that a treaty alone cannot overcome. Even the decision to bomb Hiroshima was made with an eye to justifying World War II nuclear weapon budgets and hence to post-war allocations of funds. As another example, the CTBT gave birth to "stockpile stewardship" programs that have increased the flow of money into nuclear weapons maintenance modification, design, and laboratory testing. A full conversion of nuclear establishments from their Cold War functions to management of weapons-usable materials and nuclear wastes as well as to clean-up of vast areas that have been contaminated is an essential part of the disarmament process. Such a restructuring of functions will reduce the economic incentives for continued maintenance of nuclear weapons capacities and help reduce the risk of a breakout from a nuclear weapons convention.

-Arjun Makhijani, Institute for Energy and Environmental Research

Security

Critical Question: Will a Nuclear Weapons Convention mean a different international security system?

"We have guided missiles and misguided men."

-Martin Luther King, Jr.

Some governments consider the threat of nuclear weapons to be a vital component of their security. This posture will have to change before they agree to eliminate these weapons, and this change will help create a different security system, with greater reliance on non-violent conflict resolution, demilitarization and international law.

Existing international security mechanisms may be strengthened and new ones created in the process, but these are not necessary prerequisites to developing a plan for the elimination of nuclear weapons. Such security systems already exist, albeit in undeveloped or underused form. The NWC cannot prescribe the elements of an alternative security system. Rather, as it evolves, the NWC should incorporate and reinforce developments towards demilitarization and less reliance on force as a method of conflict resolution.

Security is related to the question of enforcement because the latter will be the Achilles' heel of any regime that relies primarily on threat or use of force for security and defense. Collective security doctrines further complicate the power balance and have the potential to aggravate perceptions of threat.

Today security is primarily based on military might in the form of policies of mass destruction, first use of nuclear weapons, and overwhelming offensive capacity. If this trend continues, it will lead to development of new weapons and increasingly sophisticated methods of warfare. These could include pure fusion weapons, weapons that defy the conventional-nuclear distinction, unforeseen means of mass destruction, militarization of space, and information technology warfare. Possible ways to reduce reliance on policies of security through military might include avoiding military "solutions" to human problems, and democratizing the security debate.

Whatever international security regime emerges, the NWC should emphasize compliance over enforcement. Compliance must be more attractive than non-compliance. The question then becomes how to design incentives. The NPT offered assistance in nuclear energy to non-nuclear weapons states. The NWC should offer assistance in alternative energy possibilities, in recognition of the proliferation risks and verification difficulties associated with nuclear energy. Other forms of development or humanitarian assistance related to nuclear disarmament and its risks could also provide incentive.

A recurrent question is how to reduce the existing incentives to develop nuclear weapons and increase the repercussions enough to dissuade pursuit of the nuclear option. If a nuclear free regime were accepted, non-compliance would be universally condemned and likely result in ostracism and other negative consequences to the violating State in such areas as trade, aid, cooperative endeavors and political influence. This is the reverse of the current situation where the possession or possible development of nuclear weapons generates international power and attention.

It is important to recognize, however, that for a great majority of states, nuclear weapons are already not necessary for their peace and security, even in the current international order. The national security of one state, and the collective security of a group of states cannot, by definition, be separated from larger regional and international security issues. One group's self defense policies are often seen as aggression by others, and in today's political environment, this means arms races and escalating militarism.

"Security" as the rationale for developing arsenals of nuclear weapons is not compatible with security in the sense of common survival. Pursuit of security through militarism —

“hard” security — has undermined “soft” security concerns such as health, development and sustainability. “Hard” security pursuit has diverted resources away from social needs. “Hard” security has also been claimed as the domain of governments and military experts, and decisions are often made secretly or otherwise undemocratically, even though these decisions affect everyone. A wiser and fairer approach, therefore, is to link security with survival at every level — global, regional, national and local.

Comment: Security

A Nuclear Weapons Convention can only be effective if the parties agree that they are better off without nuclear weapons than with them. That is, the agreement sought and reached in the ratification of a NWC is the process of eliminating the threat or use of nuclear weapons. A NWC must rest on a preexisting agreement that nuclear weapons must be eliminated. That is, states will negotiate and become complying parties to the NWC if and when they have reached the conclusion that they have a current obligation to negotiate a treaty for nuclear disarmament in all its aspects. Because of the existence of nuclear weapons (and other weapons and tactics of mass destruction), an international security regime which relies on the threat or use of greater force has become a present threat to the existence of all human beings, including all states and our common ecosystems.

-Anabel Dwyer
Lawyers’ Committee on Nuclear Policy

Breakout

Critical Question: How can the NWC prevent breakout?

There is no magic formula to prevent a State breaking out from a Nuclear Weapons Convention and pursuing a nuclear weapons capability. The key to breakout is irreversibility of the disarmament process. A concerted effort to eliminate not only nuclear weapons but the infrastructure behind them will require sequenced measures--perhaps incrementally reversible but cumulatively irreversible--aimed at building confidence and leading to a world in which developing nuclear weapons will mean starting from scratch. Such a program will become increasingly difficult to conceal as elements of the nuclear weapons industry are destroyed, converted or allowed to erode.

The potential for a state to break out of the NWC and pursue a nuclear weapons program will exist as long as there is the nuclear material, including that produced by use of nuclear energy. The likelihood will decrease, however, as progress is made on nuclear disarmament and reliance on nuclear weapons is stigmatized. Concern over breakout, though valid, should not prevent progress on nuclear disarmament. The real risk of breakout inherent in a nuclear disarmament regime must be measured not against a perfect nuclear weapons free world--where breakout is impossible--but against the world we live in today, where pursuit of nuclear weapons programs is a potential temptation to some states and even non-state actors. The question becomes whether we are safer from intentional, accidental or unauthorized use of nuclear weapons in today's "non-proliferation" regime or in a future regime directed toward complete nuclear disarmament.

The potential for a state to break out of the NWC and pursue a nuclear weapons program will exist as long as there is the nuclear material, including that produced by use of nuclear energy. The likelihood will decrease, however, as progress is made on nuclear disarmament and reliance on nuclear weapons is stigmatized.

In the model NWC, nuclear facilities and nuclear materials would be subject to "preventive controls". These controls would be an expanded version of IAEA, Euratom, and regional safeguards, with emphasis on preventing diversion of materials to weapons purposes in addition to detection of diversion. The degree of intrusiveness and strictness of preventive controls

Comment: Breakout

If the key to breakout is the irreversibility of the disarmament process, it is essential that the NWC be unequivocal in this regard. This will require a major departure from the approach taken in the NPT and the CTBT, which relies upon statements of intent not backed by measurable objectives. This has allowed the nuclear weapon states, thus far, to circumvent meaningful compliance with the historical intent of these treaties.

While the Preamble to the CTBT claims that "the cessation of all nuclear weapon test explosions and all other nuclear explosions, by constraining the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of nuclear weapons, constitutes an effective measure of nuclear disarmament...," the Treaty fails to define a nuclear test. In fact, the nuclear weapon states, separately and in cooperation with each other, are using the CTBT as a justification for undertaking major new programs to replace underground nuclear test explosions through advanced technological means. The most recent annual White House national security strategy report asserts that the U.S. must continue to maintain, for "deterrence" purposes, a "robust triad of strategic forces," and states further: "We must also ensure the continued viability of the infrastructure that supports U.S. nuclear forces and weapons. The Stockpile Stewardship Program will guarantee the safety and reliability of our nuclear weapons under the Comprehensive Test Ban Treaty."[1]

Such programs also represent the antithesis of the NPT Article VI obligation to "pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race and an early date and to nuclear disarmament," which was reaffirmed by the nuclear weapon states in the Principles and Objectives for Nuclear Non-Proliferation and Disarmament adopted with the NPT extension decision in May 1995. This obligation was reinforced by the International Court of Justice in July 1996, which unanimously held that "there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control." In fact, expanded laboratory-based experimental programs in the nuclear weapon states fundamentally are intended to ensure that nuclear disarmament does not occur as a consequence of the CTBT. Moreover, new nuclear weapons designs, modifications and improvements directly contravene the "cessation of the nuclear arms race" Article VI requirement and the April 1995 Declaration by France, Russia, the United Kingdom and the United States in connection with the NPT that "the nuclear arms race has ceased."[2] In addition, the close interconnections between research, design and testing of thermonuclear weapons and other forms of advanced weapons research have the potential to ignite entirely new arms races. The potential development of pure fusion weapons, using inertial confinement fusion and other Stockpile Stewardship technologies, exemplifies this inherent danger.

If the NWC is to minimize the potential for breakout, the closure and monitoring of the nuclear weapons infrastructure in all nuclear weapons states must begin early in the process of disarmament. Nuclear weapons research, testing, and component production should be halted while reductions are in progress, not after, with nuclear weapons production and research facilities subject to intrusive verification regimes at the earliest possible time. Fissile materials accounting, already a challenging task, is rendered more so by the continued fabrication and testing of weapons components in classified facilities. Early cessation of both research and production activities also makes evasion of emerging verification regimes and covert production of components or manufacturing equipment particularly suited to a hidden long-term nuclear weapons capability more difficult. The continued pursuit of increased nuclear weapons knowledge by one state -– including everything from systematization of fissile materials understanding to more rapid, flexible, and easily scaled production techniques — will be matched to a greater or lesser degree by others. The longer such activity continues prior to achievement of an abolition regime, the greater and more widespread the technical capability for breakout is likely to be.

-Jacqueline Cabasso and Andrew Lichterman
Western States Legal Foundation

U1A complex, an underground laboratory of tunnels built 960 feet beneath the ground, designed to conduct subcritical high explosive experiments to test nuclear weapon materials.
Photo: US Department of Energy.

References

1. “A National Security Strategy For A New Century,” The White House, October 1998, p. 12. Available on the World Wide Web at http://www.whitehouse.gov/WH/EOP/NSC/html/documents/nssr.pdf
2. CD/1308, 7 April 1995

Deterrence

Critical Question: What is the future of nuclear deterrence?

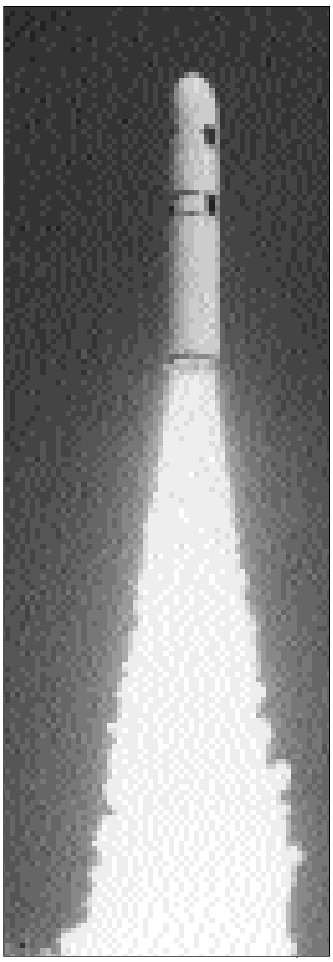
Nuclear deterrence has served as a vital component of the security posture of nuclear weapon states and their allies since WWII. Many believe that it has protected these states from attack and has prevented a third world war from occurring. Such beliefs are difficult to prove or disprove. It is true that none of the nuclear weapon States themselves have been attacked. However all of them have been involved in wars, and indeed have lost wars despite their nuclear arsenals. It may also have been other factors that prevented attack on the nuclear weapon states. Countless other nations which do not have nuclear weapons or alliances with nuclear weapon states have not been attacked either.

Doubts are multiplying regarding the effectiveness of current nuclear deterrence doctrine, especially against a desperate regime and a religious extremist or other terrorist group. A threat of nuclear retaliation in these circumstances is utterly useless. Yet a greater threat to the government of a nuclear weapon state could barely be imagined. (See Critical Question on Terrorism.)

Nuclear deterrence advocates further claim that nuclear weapons should be retained as an “insurance policy," in case diplomacy or other forms of war prevention fail. However, this approach has fatal flaws because nuclear deterrence itself could fail:

"[Deterrence] evolved from an increasingly convoluted morass of unwarranted assumptions, unprovable assertions and logical contradictions. By the end of the first decade of the Cold War, it had effectively served to suspend rational thinking about the ultimate aim of national security: to ensure the survival of the nation."

-General Lee Butler, February 2, 1998



The warhead on the Trident II missile is slated for re-design. Photo: US Navy.

- By design: Deterrence relies on a "credible" threat of use in order to deter an attacker. In a conflict situation, antagonists may decide that the point has been reached that they have to launch a nuclear attack or lose the deterrent value of their weapons. A crisis may also be created by the very weapons themselves, as in the Cuban Missile Crisis. "Counter-proliferation" policies identifying a role of nuclear weapons in countering a chemical or biological attack have widened the range of settings in which "credibility" could drive nuclear use. {See below}

- By accident: Nuclear forces remain on alert in a launch-on-warning posture in order to maintain "survivability" of weapons should an attack occur (i.e., "use 'em or lose 'em"). In times of tension, a mistake in early warning information could lead to an inadvertent nuclear "response". The risk of this is exacerbated by the Y2K question in nuclear weapons command, control and communication systems.

It also needs to be asked: Is nuclear deterrence really deterrence? The possession of nuclear weapons can make the possessing country a nuclear target rather than immune to nuclear attack. The nuclear deterrent may in fact be a nuclear magnet.

Current nuclear deterrence doctrine has additional problems:

- The adherence to it by some States leads to nuclear proliferation, as other States imitate this policy.

- It creates constant pressure to improve nuclear arsenals.

- It places the whole world at risk, not only the nuclear weapons states, and is thus a violation of the sovereign rights and humanitarian rights of the world's nations and peoples.

- It creates and perpetuates an unstable, hostile attitude between nuclear possessor States, and inhibits cooperation in promoting true security.

Finally one must ask what deterrence does to us as a society. Gandhi noted after the bombing of Hiroshima and Nagasaki, "We have yet to see what it does to the soul of the destroying nation." Does threatening to incinerate millions of people and destroy the environment desensitize us and make us more ready to inflict harm in other areas? Does it create a form of hopelessness about the human condition and an acceptance of the belief that ultimately we must threaten to destroy in order to achieve our desires? Has this posture been a contributor to the horrific increase in social violence and despair in this century? If so, rejection of deterrence will indeed assist humanity in its quest for the development of a more humane international society.

The United States has given conflicting signals about both preemptive and retaliatory use of nuclear weapons against non-nuclear weapons, including chemical or biological weapons. According to the Air Force "Nuclear Operations,"

> "If US objectives are more limited, a counterforce strategy of employment might be more appropriate. This refers to the use of weapons against the enemy's immediate war-fighting capability. While there will certainly be long-term effects from the use of a nuclear device against any target, counterforce strategy focuses on the more immediate operational effect. Nuclear weapons might be used to destroy enemy WMD before they can be used, or they may be used against enemy conventional forces if other means to stop them have proven ineffective. This can reduce the threat to the United States and its forces and could, through the destruction of enemy forces, bring an end to the conflict."[1]

References

1. Air Force Doctrine Document 2-1.5 (15 July 1998, P.8-9)

For more discussion, see R. Jeffrey Smith, "Clinton Directive Changes Strategy On Nuclear Arms," Washington Post, December 7, 1997, and Stephen I. Schwartz, "Miscalculated Ambiguity: US Policy on the Use and Threat of Use of Nuclear Weapons," Disarmament Diplomacy No. 23, available at www.acronym.org. See also Robert Bell, "Strategic Agreements and the CTB Treaty: Striking the Right Balance", 28 Arms Control Today No. 1 (January/February 1998)

Terrorism

Critical question: How could a nuclear weapons convention deal with the growing threat of terrorists acquiring and possibly using nuclear weapons?

A report released by IPPNW in 1996, “Crude Nuclear Weapons: Proliferation and the Terrorist Threat,” concluded that, “unless radical steps are taken urgently, it will not be a question of whether terrorists can acquire or build a nuclear device, but when.”

Non-State organizations would not be parties to a nuclear weapons convention and would thus not be party to the verification regime agreed to by states parties. In addition, non-State organizations may have less restraint on threatening to use or on using nuclear weapons should they acquire them. This leads some commentators to question whether a nuclear weapons convention could prevent nuclear terrorism. If not, should a small number of nuclear weapons be retained to respond to nuclear terrorism?

To respond to the second question — A terrorist organization is unlikely to be deterred by a State with nuclear weapons, because: a) It would be difficult for the State to find a target to retaliate against or threaten such retaliation against. Unlike a State, a terrorist organization does not usually have a territory or large military facilities against which to target a weapon of mass destruction. b) Terrorists are most often prompted by a psychology of “heroic” response to perceived aggression including the acceptance of personal death in the battle. A threat of nuclear weapons against them would likely increase their perception of the “evil” of the state they are fighting against, and give them justification for responding in kind. Rather than deterring them from using nuclear weapons it would likely stimulate them to.

A nuclear weapons convention, on the other hand, would make it much more difficult for a terrorist organization to acquire or build a nuclear weapon. Once all nuclear weapons are eliminated, terrorists would not be able to steal a bomb. And once all nuclear materials and facilities are placed under safeguards it would be difficult for terrorists to acquire bomb making materials and technical assistance. The verification systems established under a nuclear weapons convention would make it easier to discover a potential terrorist threat from diversion of fissile material or technical expertise in time to prevent the building of a bomb.

In addition, a nuclear weapons convention would reduce or remove the political power of nuclear weapons for a terrorist organization. Terrorists commit terrorist acts either to retaliate against perceived aggression, or to generate support for their cause through maximizing publicity. Once nuclear weapons have been prohibited, there could be no perceived aggression requiring a nuclear response, and any threat or use of such a weapon would be condemned universally and eliminate support for a terrorist’s cause.

The Legal and Moral Case for De-Alerting Nuclear Weapons

US Strategic Air Command Headquarters at Offut Air Force Base, Nebraska, USA. ”
Photo: US Air Force.

The United States now has 2500 nuclear warheads deployed on hair-trigger alert, ready for launch from land and submarine-based missiles against pre-designated targets within minutes of an order to do so. The deployment is accompanied by longstanding declared policies of massive retaliation against nuclear attack and of possible first use in response to non-nuclear aggression by nuclear-armed states and their allies.

This posture places our country in an ongoing state of illegality. The International Court of Justice explained that international law prohibits threats of use of force which would inflict indiscriminate harm, unnecessary suffering, and disproportionate damage to the environment. While stating no definitive position regarding an extreme circumstance of self-defense in which the very survival of a state is at stake, the Court concluded that threats of use of nuclear weapons are generally illegal. Yet through its present force deployment and policies regarding use the United States is continuously making such threats.

De-alerting involves separation of warheads from delivery systems and other measures lowering readiness for use and consequently also reducing the chance of inadvertent, unauthorized, or accidental use. De-alerting through coordinated actions carried out by the United States, Russia, and other nuclear weapon states, together with changes in declaratory policies, would enable the United States to cease its practice of threatening to employ indiscriminate, unnecessary, and disproportionate force. Global de-alerting would eliminate any perceived risk of imminent deliberate nuclear use by another state, and nuclear threats could no longer be defended as necessary to national survival because they deter such use.

De-alerting would also provide a space free of the nuclear threat for the peaceful resolution of international disputes as required by the United Nations Charter and for the negotiated elimination of nuclear arsenals as required by the Nuclear Non-Proliferation Treaty. The International Court of Justice affirmed that there is a legal obligation to pursue in good faith and bring to a conclusion negotiations on nuclear disarmament in all its aspects.

De-alerting as part of a transition to abolition would also begin to move the United States out of the state of immorality inherent in the possession of nuclear weapons. It would contribute to ending what Lee Butler, former commander of US strategic nuclear forces, called the "spectacle of democratic societies clinging to the proposition that threats to the lives of tens of millions of people can be reconciled with the underlying tenets of our political philosophy". How can our country both prepare and threaten to engage in unimaginable mass slaughter and pursue the higher purposes of a "more perfect union" promised by the Constitution?

De-alerting in its own right and as a step towards abolition is necessary to reduce the risk of unintended use and to meet elementary requirements of humanity, law, and morality.

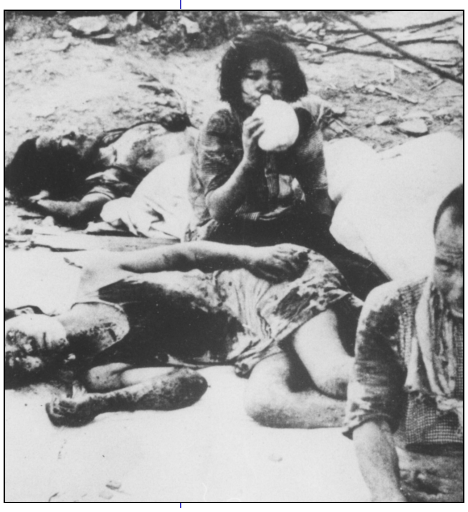
- Lawyers’ Committee on Nuclear Policy, US Affiliate of IALANA

Health and Environment

Health and Environmental Consequences of the Production, Testing and Use of Nuclear Weapons

In the name of deterrence, a dubious notion anyway (see Critical Question on Deterrence), a third world war has been launched by the nuclear weapon states. The battlefield is the entire globe. The ammunition is invisible. The war is covered up by false reports and denial. The casualties are hidden, shunned, blamed, rejected. Nuclear weapons have turned national security on its head and lead to the widespread killing and maiming of peoples in order to save them.

In 1984 the United Nations Human Rights Committee noted that "It is evident that the designing, testing, manufacture, possession and deployment of nuclear weapons are among the greatest threats to the right to life which confront mankind today," and concluded that "The production, testing, possession, deployment and use of nuclear weapons should be prohibited and recognized as crimes against humanity."[1]



Some of the injured and dying the day after the bomb was dropped on Nagasaki.
Photo: Yosuke Yamabata

The actual human cost will never be known. Many of the individual cases of health problems and deaths likely to be caused by radiation from the nuclear weapons cycle are difficult to link to it. Radioactive elements enter the body furtively and do their damage secretly leaving no business cards. They will continue their rampage until they are exhausted, which for some radioactive elements will be over a hundred thousand years from now. While the story of the nuclear age has no complete ending, it does have a beginning.

Use of nuclear weapons

On August 6, 1945, a nuclear weapon with an explosive force equivalent to that of the detonation of about 15 thousand tons (kilotons) of TNT was detonated above the city of Hiroshima. Three days later, another nuclear weapon, based on the fission of plutonium rather than uranium but of similar explosive force, was detonated over the city of Nagasaki. Each of these bombs caused the deaths over the next few days of almost 100,000 people and the deaths over succeeding months of tens of thousands of others.

John Hersey describes the consequences of the Hiroshima bomb and the role played by a physician of Hiroshima:

> The lot of the majority of physicians of Hiroshima — with their offices and hospital destroyed, their equipment scattered, their own bodies incapacitated in varying degrees, explained why so many citizens who were hurt went untended and why so many who might have lived, died. Of the one hundred fifty doctors in the city, sixty-five were already dead and most of the rest were wounded. In the biggest hospital, that of the Red Cross, only six doctors were able to function, and only ten nurses. The sole uninjured doctor on the Red Cross Hospital staff was Dr. Sasaki....
>
> Dr. Sasaki worked without method, taking those who were nearest him first, and he noticed soon that the corridor seemed to be getting more and more crowded. Mixed with the abrasions and lacerations which most people in the hospital had suffered, he began to find dreadful burns. He realized then that casualties were pouring in from outdoors. There were so many that he began to pass up the lightly wounded; he decided that all he could hope to do was to stop people from bleeding to death. Before long, patients lay and crouched on the floors of the wards and the laboratories and all the other rooms, and in the corridors, and on the stairs, and in the front hall, and under the portecochere, and on the stone front steps, and in the driveway and courtyard, and

This child from Nagasaki suffered third degree burns that exposed the bone.. Photo: Yasuo Tomishige.

for blocks each way in the streets outside. Wounded people supported maimed people; disfigured families leaned together, many people were vomiting .. . .

In a city of two hundred and forty-five thousand, nearly a hundred thousand had been killed or doomed at one blow; a hundred thousand more were hurt. At least ten thousand of the wounded made their way to the best hospital in town, which was altogether unequal to such a trampling since it had only six thousand beds, and they had all been occupied. The people in the suffocating crowd inside the hospital wept and cried for Dr. Sasaki, and the less seriously wounded came and pulled at his sleeve and begged him to go to the aid of the worse wounded. Tugged here and there in his stockinged feet, bewildered by the numbers, staggered by so much raw flesh, Dr. Sasaki lost all sense of profession and stopped working as a skillful surgeon and a sympathetic man; he became an automaton, mechanically wiping, daubing, winding, wiping, daubing, winding....

Many of Dr. Sasaki's patients soon developed the devastating features of acute radiation sickness: severe gastrointestinal problems, uncontrolled bleeding, hair loss, and extreme susceptibility to infection. With the city's medical facilities almost entirely destroyed, effective care for the injuries caused by blast, heat and radiation was virtually impossible.[2]

During the 1950s new types of nuclear weapons were developed. Based on nuclear fusion rather than nuclear fission, these new "thermonuclear" or "hydrogen" bombs had a destructive force equal to 1,000 times the force of the bombs detonated over Hiroshima and Nagasaki. In the 1950s first the United States and then the Soviet Union tested these new weapons.

In 1961, a group of Boston physicians analyzed the consequences of the use of these new weapons on cities. An entire issue of the *New England Journal of Medicine* , one of the most important medical journals in the United States, was dedicated to articles on "The Medical Consequences of Thermonuclear War." Analyzing an attack on the U.S. postulated in 1959 by the Joint Congressional Committee on Atomic Energy, a new group called Physicians for Social Responsibility (PSR) documented in clinical detail the health effects of nuclear explosions. Severe traumatic injuries and massive burns, combined with life-threatening radiation-exposure, would kill 1,300,000 people in the Boston area alone on the first day, with another 1,250,000 injured. With widespread destruction of health care facilities, approximately 1,000,000 of these injured would die. The authors concluded that attempted responses by health professionals after nuclear weapons had exploded would be almost entirely futile and that civil defense efforts offered little benefit.

The World Health Organization summarizes the nature and effects of nuclear weapons in the following terms:

"Quantitatively nuclear weapons are vastly more powerful than conventional weapons. The explosive power of all the nuclear arsenals is now about 5,000 times greater than that of all the explosives used in the Second World War.

Qualitatively the difference between nuclear and conventional weapons is of even greater significance. Nuclear weapons also produce additional lethal effects by radiation. Apart from the direct effects of radiation, the radioactive materials from a nuclear bomb can be transported to a great distance from the site of the explosion, as has recently been demonstrated on a very much smaller scale by the accident at Chernobyl. Moreover, radiation from the fallout may be an obstacle to rescue operations and effective care of injured survivors and have harmful or lethal effects long after the explosion."[3]

After studying the health effects of the use of nuclear weapons, The World Health Organization, concluded that "no health service in the world can alleviate in any significant way a situation resulting from the use of even one single nuclear weapon."[4]

The International Court of Justice noted that "The destructive power of nuclear weapons cannot be contained in either space or time. They have the potential to destroy all civilization and the entire ecosystem of the planet."[5]

The U.S. and U.K. argued before the International Court of Justice that the use of precisely targeted, lower yield nuclear weapons would not have the same effects as those described in the WHO studies. However the Court did not accept this argument. Even the lowest yield of nuclear weapons in the current arsenals, about 1 kiloton, would still produce large quantities of radiation. More significant is the fact that most deployed nuclear weapons are not the low yield tactical weapons, but high yield strategic weapons, most of which are 10-100 times more powerful than the bombs used on Hiroshima and Nagasaki.

More significant is the fact that most deployed nuclear weapons are not the low yield tactical weapons, but high yield strategic weapons, most of which are 10 — 100 times more powerful than the bombs used on Hiroshima and Nagasaki

An understanding of the massive levels of death and irremediable suffering that would result from an explosion of even a single nuclear warhead near a populated area compels a simple conclusion: no such explosion must ever happen — whether by accident, through a terrorist act, or in a war.

Prior to the Chernobyl nuclear disaster, expert nuclear scientists estimated that the probability of an accident at that facility was less than one chance in 10,000 years. Even if the odds of any single nuclear warhead exploding near a city were as low as that unrealistic estimate, the continued existence of tens of thousands of such warheads would make the combined likelihood of such a disaster in the years ahead a near certainty.

Consequences of Nuclear Weapons Tests

"I was eight years old at the time of the Bravo test on Bikini in 1954. I woke up with a bright light in my eyes. There was a huge brilliant light that consumed the sky. Soon after we heard a big loud noise and the earth started to sway and sink...A little later...it began to 'snow' in Rongelap. We had heard about snow from the missionaries, but this was the first time we saw white particles fall from the sky. We kids were playing in the powder, but later everyone was sick and we couldn't do anything.... My own health has suffered as a result of radiation poisoning. I cannot have children. I have had seven miscarriages. One was severely deformed — it had only one eye. Many of my friends keep quiet about the strange births they had. They gave birth, not to children as we like to think of them, but to things we could only describe as "octopuses", "apples", "turtles" and other things in our experience. The most common have been "jellyfish" babies. These babies are born with no bones in their bodies and with transparent skin. We can see their brains and hearts beating. There are no legs, no arms, no head, no nothing."[6]

Of all the activities concerning, nuclear weapons, testing has been the most destructive of human health and the environment. China, France, India, Pakistan, Russia, US and UK have collectively conducted over 2000 nuclear explosions for testing purposes, approximately 500 above ground or under water and the rest underground.

The story of Lijon Eknilang is just one of the many in the test sites and adjacent areas in the Marshall Islands, Te Ao Maohi (French occupied Polynesia), Maralinga, Nevada, Kazakhstan, Lop Nor, Novaya Zemlya, Kiribati, Pokhran. It has been estimated that global fallout from nuclear testing will lead to over 2 million cancer fatalities alone, not counting other health effects.[7]

Despite a de facto moratorium on testing, France began preparations to resume testing at Moruroa in 1995.??? This child in Rarotonga joined more than 1,500 people (one-quarter of the island's population) in protest France was forced to stop testing by the global outcry, which included a boycott of French products.
Photo: Greenpeace/Morgan.

Radiation Day at Chelyabinsk Ecology School, 1992. May 19 is Radiation Day at the Chelyabinsk Ecology School in Russia, sited on a dead river at the edge of the city's metallurgical district. Each year on this day students practice safety routines designed to protect them from a sudden release of radiation from the Chelyabinsk-65 complex 160 kilometers to the north. Photo: Robert Del Tredici

Government reporting on health effects of nuclear weapons testing has often been inaccurate, incomplete or non-existent. The US government, for example, neglected to conduct systematic studies of the effects of radioactive iodine-131 from atmospheric tests between 1945 and 1962, until it was mandated to do so by the US Congress in 1982. It took them another 15 years to release the study and even then downplayed the problem.

The National Cancer Institute, which reported the findings, estimated that I-131 fallout from nuclear weapons tests had caused 10,000 to 75,000 cases of thyroid cancer. These are indeed high figures and cause for considerable concern. But critics noted that the real figures are probably much higher. NCI provided no basis for its thyroid cancer risk estimates and appeared to have ignored evidence from Chernobyl, where thyroid cancer rates have been running ten times higher than expected from conventional calculations based on extrapolation from exposures at Hiroshima and Nagasaki. North Dakota health department analysts estimated that I-131 in fallout may have increased the rate of thyroid cancer in that state alone by 5 to 10 percent.

The American Public Health Association noted that if disclosures of the releases had been made public at the times they occurred, implementation of federal protective action guidelines — including removal of soil, destruction of milk and dairy cows, destruction of contaminated human and animal food, and public education about protective measures — would have been required. Instead, no public warnings were issued (although the Eastman Kodak corporation was warned in advance of some of the tests, to protect its film stocks).

Troops at Operation Buster, Nevada Test site, US, November 1951. Photo: Defense Nuclear Agency

What is probably even more significant is that the study focused on only one radioactive element, iodine, the effects of which are able to be treated with considerable success. The study did not focus on other radioactive elements from nuclear testing, including strontium, caesium, plutonium and carbon, the health effects of which are much more difficult to treat.

Governments of the other nuclear weapon states have been similarly reluctant to reveal the full extent of the health and environmental problems from nuclear testing. Thus, non-governmental organizations (NGOs) have had to fill the gap.

During the late 1950s and early 1960s NGOs in the US collected the deciduous teeth of children and showed the replacement of calcium with radioactive Strontium-90. The publicity given to these findings by Physicians for Social Responsibility and other groups was an important factor in the negotiation of the Limited Nuclear Test Ban Treaty, which banned nuclear tests in the atmosphere, in space and under the oceans, in 1963.

"Israel Torres was half buried in a trench by the explosion of a bomb in 1957, and he began to vomit immediately...He began to suffer from severe headaches, dizziness and muscle spasms. The doctors denied that the radiation to which he had been exposed could have caused his illness... Just after the blast, a machine that was passed over Israel Torres' body began to tick wildly. The man who held the machine said to him, Marine, you have had it.... When he wrote to the military asking for the reading on the green badge he wore to record his exposure to radiation, he was told they had lost his particular badge. In 1982, a man who had been a medic in the army at the same test site in 1957 said he had been ordered to lie about the amount of radiation registered on each badge. He kept two sets of books, one with the true figures and another with lower, false figures."[8]

The Soviet Academy of Medical Sciences determined in 1989 that residents of Semipalatinsk, near the main test site in Kazakhstan, had experienced excess cancers, genetic diseases, and child deaths because of radiation exposure from pre-1963 атмospheric tests. This helped the formation of the "Nevada-Semipaltinsk" movement which led to the closure of the nuclear test site in 1991.

The conclusion of the Comprehensive Test Ban Treaty in 1996 signalled the near end to the era of nuclear testing. However the legacy will remain for centuries as the radiation from the tests, whether dispersed throughout the environment, or concentrated in the underground test sites, will continue to threaten human health until the radioactive elements become stable.

Among the most highly exposed groups of downwinders are those who live near Semipalatinsk nuclear weapons test site in Kazakhstan.
Photo: Yuri Kuidin.

Consequences of Nuclear Weapons Production

There are over 4,500 contaminated Department of Energy sites in the United States. Production facilities for nuclear weapons, such as those at Feed Materials Production Center (OH), Hanford Reservation (WA), Los Alamos (NM), Rocky Flats (CO), Oak Ridge (TN) and Savannah River (SC) are heavily polluted and some have been demonstrated by epidemiologic surveys to have elevated levels of cancer in surrounding communities. The Department of Energy knowingly polluted its nuclear weapons production facilities and the areas surrounding them without warning either its workers or those living in the endangered areas around the plants. Furthermore, the impact of this pollution has been disproportionately concentrated in areas in which poor people and people of color live.

Dispersion of these toxicants is an ongoing process. For example, waste storage tanks at Hanford containing millions of gallons of highly toxic processing chemicals and radionuclides are reaching groundwater and flowing towards the Columbia River 7 miles away. Spent nuclear fuel at this same facility is at risk of spontaneous combustion due to uranium hydrides. Such a fire would spread deadly radionuclides across the agricultural belt of the northwestern United States.

Production sites in the former Soviet Union are even more heavily contaminated. These include: Chelyabinsk 65 ("Ozyorsk") in the Urals, with radioactive wastes dumped into the Techa River and Lake Karachay; Dimistrovgrad; Tomsk; and Krasnoyarsk. Russian authorities have now admitted injecting approximately a billion curies of radioactive substances underground at both Tomsk and Krasnoyarsk. While the estimate of U.S. dispersion of radioactivity into the environment from nuclear weapons production is 3 million curies, in the former Soviet Union it is 1.7 billion curies.

Worker at the Rocky Flats Plant examining a plutonium button inside a glove box designed to protect workers from radiation.
Photo: Department of Energy.

Conclusion

Nuclear weapons, built and deployed by a powerful elite, have waged a third world war against humanity resulting in casualties of nearly 13 million people, and effects lasting for centuries. The war has been effectively silenced — denied by those conducting it and suppressed by those suffering from it.

Susan Griffin has compared the invisibility of the nuclear war to that of domestic abuse.

> "It is most common for a man who has raped a child to deny that the rape occurred, and to imply that the child made the story up, or, if evidence is presented, to claim the child initiated the rape by seducing him. And these claims cause a second suffering as terrible as the first.

A child beaten to within an inch of her life will reach out longingly for the parent who is separated from her. She will attempt to protect this parent from the scrutiny of the world. And she will mimic her father's logic by blaming herself for his abuse of her.

A psychologist studied the men who were exposed to these bombs and later became ill, and discovered that, when they became enraged at the government for denying the truth, they felt guilty for their rage."[9]

The nuclear threat must be stopped by exposing it and eliminating the weapons. Even then the toxic remnants will need to be carefully guarded for generations to come, and will continue to serve as a reminder of the folly of humanity in the 20th century to have conducted such a senseless war.

"In the dim light of a hospital room, seven year old Jimmy was remembering the day on which he was told he had leukaemia. He remembered his mother's tears, his father's bewildered anger, the alien feeling of the hospital's environment. Then his mind replayed the nausea and diarrhoea caused by radiation therapy and chemotherapy, his hair falling out and kids laughing at him...Jimmy died gently, utterly exhausted having lost so much blood. His tissue had broken down completely, and he was bleeding from every body opening. His bed looked like a battlefield.[10]

Jimmy's story is one of hundreds of thousands of similar stories related to the nuclear age. Radiation released from each step in the nuclear weapons production cycle, plus that released in the testing of nuclear weapons, has spread invisibly and insidiously around the planet. This radiation causes cancers, congenital defects, mental retardation, immune destruction, cancer, stillbirths and other health problems. In human terms, the cost has been astronomical. Rosalie Bertell has estimated that "The global victims of the radiation pollution related to nuclear weapon production, testing, use and waste conservatively number 13 million."[11]

References

1. Human Rights Committee General Comment 14(23) on Article 6 of the International Covenant on Civil and Political Rights, November 2, 1984.

2. John Hersey. Hiroshima. New York: Vintage Books, 1989

3. World Health Organization. Effects of Nuclear War on Health and Health Services. Second Edition. Geneva: World Health Organization, 1987.

4. World Health Assembly Resolution 46.60, adopted 14 May 1993.

5. International Court of Justice Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, July 8, 1996.

6. Lijon Eknilang, "Learning from Rongelap's Pain", Pacific Women Speak Out, edited by Zohl de Ishtar, The Raven Press, Christchurch, 1998

7. IPPNW and IEER: International Commission to Investigate the Health and Environmental Effects of Nuclear Weapons Production, reported in "Radioactive heaven and Earth: The health and environmental effects of nuclear weapons testing in, on and above the Earth." The Apex Press, New York, 1991.

8. Susan Griffin, "A Chorus of Stones," Doubleday, New York, 1992, p 42

8. Susan Griffin, "A Chorus of Stones," Doubleday, New York, 1992, p 44

10. “No Immediate Danger: Prognosis for a Radioactive Earth", Rosalie Bertell, The Women's Press, London 1985, p 1.

10. “No Immediate Danger: Prognosis for a Radioactive Earth", Rosalie Bertell, The Women's Press, London 1985, p 105

Additional references by topic:

Hiroshima –

John Hersey. Hiroshima. New York: Vintage Books, 1989

Robert J. Lifton. Death in Life: Survivors of Hiroshima. New York: Random House, 1968.

Use of Thermonuclear Weapons – David G. Nathan, H. Jack Geiger, Victor W. Sidel, Bernard Lown. The Medical Consequences of Thermonuclear War: Introduction, New England Journal of Medicine, 266: 1126-1127, 1962

Victor W. Sidel, H. Jack Geiger, Bernard Lown. The Medical Consequences of Thermonuclear War: The Physician's Role in the Postattack Period. New England Journal of Medicine, 266:1137-1145, 1962.

Alexander Leaf. New perspectives on the medical consequences of nuclear war. New England Journal of Medicine 315:905-912, 1986.

Nuclear Tests –

H. L. Rosenthal, J.E. Glister, J.T. Bird. Strontium -90 Content of Deciduous Human Incisors. Science 140:176-177, 1963

"Estimated Exposure and Thyroid Doses Received by the American People from Iodine-131 in Fallout Following Nevada Atmospheric Nuclear Bomb Tests." National Cancer Institute Publication Number 97-4264, October 1997

H. Jack Geiger. NCI Study Raises New Concerns About Fallout-Related Thyroid Cancer. Medicine and Global Survival 5(1):8-10, 1998.

David Rush. An Atempt to Cover Claims? Or Continuing Obfuscation? Medicine and Global Survival 5(1):3-6, 1998.

Anthony Robbins, Arjun Makhijani, KatherineYih. Radioactive Heaven and Earth: the Health and Environmental Effects of Nuclear Weapons Testing In, on and above the Earth. New York: Apex Press, 1991.

A. Yemelyanenkov, V. Popov. The Atom Declassified: Points of View. Berlin: H & P Druck (Offsetdruckere: Körtestrasse 10, Berlin 61), 1992.

Nuclear Weapons Production –

Complex Cleanup: the Environmental Legacy of Nuclear Weapons Production (Doc.#OTA-0-484). U.S. Congress Office of Technology Assessment, Washington: US Government Printing Office, 1991.

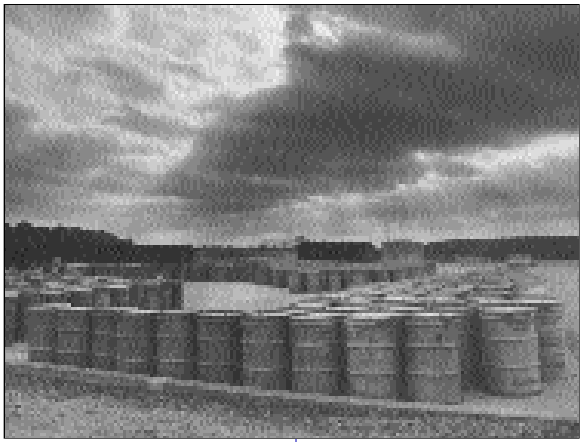
Arjun Makhijani, Howard Hu, Katherine Yih, eds. Nuclear Wastelands, Cambridge, Mass: MIT Press, 1995.

Howard Hu, Arjun Makhijani, Katherine Yih. Plutonium: Deadly Gold of the Nuclear Age. Cambridge, Mass: International Physicians Press, 1992.

Accidental Launch –

Lachlan Forrow, Bruce G. Blair, Ira Helfand, George Lewis, Theodore Postol, Victor W. Sidel, Barry S. Levy, Herbert Abrams, Christine Cassel. Accidental Nuclear War: A Post-Cold War Assessment. New England Journal of Medicine 338:1326-31, 1998:

CleanUp, Disposition and Safe Disarmament



Barrels of transuranic waste in temporary storage at the E. Area Burial Grounds, Savannah River Site, South Carolina, US. This waste is contaminated with plutonium. More than 300,000 such barrels from nuclear weapons production are buried or stored around the country. Photo: Department of Energy.

The implementation of a nuclear weapons convention would require dismantling thousands of nuclear missiles and disposing massive quantities of nuclear materials. In addition, many facilities involved in the production of nuclear weapons are severely contaminated. Experience to date indicates that more attention, research, and funding are necessary for safe nuclear disarmament, disposition, and cleanup.

Not only does the production, testing, storage and use of nuclear weapons lead to environmental and health damage, (See Critical Question on Health and Environment), but the process of dismantling the weapons also carries major risks. These risks include: accidents to or hijacking of the nuclear weapons during their transport to the site of dismantling; the hazards to the workers during the process of dismantling the weapons; and health and environmental damage associated with the removed components, including their transport, storage, and destruction.

In 1989, a committee of the U.S. Senate expressed concern that the Department of Defense had devoted too little money and effort to finding ways to comply with nuclear arms reductions in "an environmentally benign manner." For example, pursuant to the Intermediate-Range Nuclear Forces (INF) Treaty, hundreds of Pershing missiles were burned in the open air or exploded on a test stand at the Pueblo Army Depot in Colorado. These procedures can release clouds of toxic hydrochloric acid when the missiles' solid fuel combines with moisture. (See Defending the Environment, 1989).

Virtually all the experience with the disassembly and destruction of nuclear weapons in the United States has been gained over the past decade at the Pantex nuclear weapons facility, located about 17 miles northeast of Amarillo, Texas. It is operated for the U.S. Department of Energy by a contractor, the Mason & Hanger-Silas Mason Co., and is the U.S. primary assembly and disassembly plant for nuclear weapons. Prior to 1989 the Department of Energy had considered Pantex to be a relatively clean and safe facility. Since 1989 Pantex has been repeatedly criticized for its safety and health problems. These problems have included: radiation accidents in 1989 and 1990 resulting in workers being exposed to tritium and depleted uranium; inadequate staffing, training and procedures designed to protect workers and the environment from radiation; and violations in the general worker safety program.

Why “Cleanup” is a Massive Problem (US case):

- Extremely dangerous materials
- Inadequate scientific foundations
- A history of secrecy and deception
- Difficulty of setting cleanup goals and priorities
- Inadequate contracting system

Source: Facing Reality: Nuclear Weapons “Cleanup” - Prospect Without Precedent, Council on the Department of Energy’s Nuclear Weapons Complex, 1995, p. 8.

Observers regard the situation in Russia as even more critical. In fact, disarmament efforts in Russia and former Soviet states have relied heavily on U.S. assistance. The discussion below indicates the importance of cooperation in this area and offers one example of such cooperation in the area of safe warhead transportation:

The task of eliminating huge numbers of nuclear warheads in a limited period of time has generated a complex set of problems. These problems are related to non-proliferation policy, maintaining the momentum of nuclear reductions and making this elimination irreversible forced by the creation of a new nuclear security agenda. In general, these problems can fall into five categories:

- securing nuclear weapons and weapons-usable fissile materials
- limiting fissile material production and use
- implementing irreversibility of nuclear reductions
- disposing of excess fissile material
- controlling nuclear technology and knowledge.

Contaminated rubble and soil from the demolition of a uranium processing facility and debris from a munitions factory and chemical plant have been dumped in Weldon Spring Raffinate Pit 4 in Missouri.
Photo: US Department of Energy.

Of course, all of these problems are closely related and mutually reinforcing. Today there are fifteen different activities in which the U.S and Russia are involved in the solving these problems. Some of them have been solved rather quickly, others will require more time and effort. The situation will be described only with [one] of them.

Nuclear warhead transportation and security

The realization of safe transport in a short period of time ,without any loss of thousands of nuclear warheads to the central storage facilities required serious organizational work, technical equipment, and large financial expenditures. For example, during only the past two years about 200 millions of dollars were spent by Russia to arrange a transportation of nuclear warheads. I would like to point out here, that the transportation problem facing Russia was quickly recognized by the world community and essential help was provided by the U.S, U.K, and Germany. The U.S. provided specially designed super-containers. These were also supplied by the United Kingdom, in addition to vehicles for safe and well-protected transportation of nuclear weapons. Special equipment for emergency response teams and armored blankets made of Kevlar to protect containers with dismantled nuclear weapon components were delivered by the United States. Germany supplied heavy-duty manipulators for remote handling of high-level and toxic radioactive materials as well as nuclear warheads. Thanks to this assistance all transportation procedures were accomplished without incidents or loss of nuclear warheads.

Source: Anatoli Diakov, "US-Russian Collaboration on Nuclear Weapons-Usable Material Production and Stockpiles" INESAP Information Bulletin No. 13, July 1997, pp. 24-25. (Also contains descriptions of material storage, protection, control and accounting, as well as disposition, transparency and irreversibility.)

Related to the question of disarmament and cleanup is the problem of disposition of weapons usable material, particularly plutonium. No satisfactory solution has been found to date. Among the proposed options are the following:

1 Monitored and secured storage of plutonium for an indefinite period while a solution is sought,

2 Fabrication of plutonium into mixed oxide (MOX) fuel to be used in commerical power reactors (see discussion below),

3 Fissioning of plutonium in an accelerator or a nuclear reactor,

4 Deep geologic disposal or sub-seabed disposal of plutonium

5 Launch of plutonium into the sun

6 Destruction of nuclear warheads in an underground nuclear explosion.

Comment: Disposition

It may be that there is no certain way of rendering permanently safe the enormous amounts of weaponisable nuclear materials already in existence. In which case, the materials should not be buried in supposedly stable underground repositories, even in glass coffins, as has been proposed. They are not dead, and there is nothing to be gained by trying to hide the evidence of the collective stupidity that overtook large parts of humanity in the last fifty or so years. If almost all societies can poison the minds of generation after generations of children by turning relics of their past wars into monuments to national glory, then it is worth leaving the weaponisable nuclear material where it is and building permanent active storage for it, above ground, and treating these sites as lasting monuments to the cold war and the nuclear age. If, as is often argued, fear of what may happen in a nuclear war has kept nuclear weapons from being used, then perhaps something that acts as a reminder of what happened when societies thought that nuclear weapons and the threat of nuclear war were a way of solving differences may help prevent war itself.

-Zia Mian
Center for Energy and Environmental Research, Princeton University

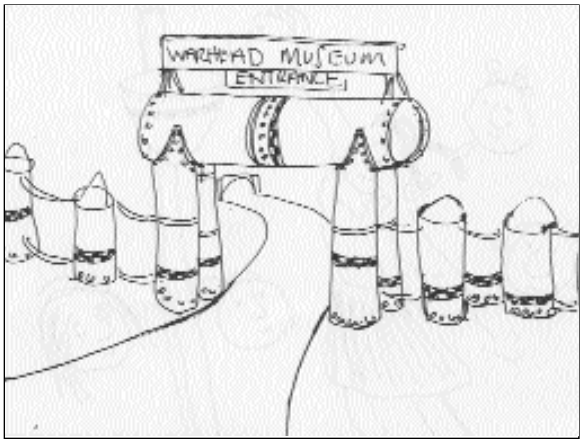


Illustration: Tony Thomson.

Comment: Disposition

Unlike enriched uranium, plutonium poses special problems when one decides to "get rid of it." Enriched uranium can simply be diluted to low enriched uranium and fabricated into fuel for nuclear power plants. Plutonium cannot be "diluted" – both "reactor grade" plutonium, the material produced in an average nuclear power plants and "weapons grade," material produced in special reactors for the use in sophisticated nuclear weapons can be used in nuclear weapons. With isotopes that have half-lives of 86 – 380,000 years, it will take 860 to 3.8 million years for the material to completely decay.

The problem is further exacerbated by the fact that there are no acceptable methods to eliminate plutonium. Shooting it into the sun or at the least into outer space would be expensive and risky – a Challenger-type disaster with a plutonium payload could potentially harm many people. Diluting plutonium in the oceans is politically unfeasible and may be scientifically unfeasible, too. Destroying it in underground nuclear explosions would be hazardous and environmentally unsound, not to mention a violation of the CTBT. The only other option is to transmute or transform it into other isotopes in a nuclear reactor or accelerator. The only problem is that the technology for such a process is only theoretical at the moment, and would take at least 25-50 years to fully develop. Furthermore, transmutation would require the construction of new nuclear reactors, which may be problematic in some countries (like the United States). Fortunately, there are ways to minimize access to plutonium by burying underground in a geologic repository, by putting it into a deep borehole, 2-6 km in depth, or by burying it in deep sea muds. One can further reduce access by immobilizing plutonium in a glass form or in a ceramic matrix prior to burial. Or, one can "burn" the plutonium as mixed oxide fuel (MOX fuel) in nuclear reactors and transport the spent MOX fuel to a geologic repository. Finally, instead of minimizing access, plutonium could be stored above-ground indefinitely with tight security, but this option presupposes continued political stability and a continued commitment to the NWC.

Only the United States and Russia have considered the question of plutonium disposition so far. Both countries have agreed to declare 50 metric tons of plutonium each as excess to military needs. The United States has adopted a "dual-track" method for dispositioning plutonium: immobilizing it in a ceramic matrix and burning it as MOX fuel in commercial reactors. Both the immobilized plutonium and the spent MOX fuel would then be put into a mined geologic repository. Russia is very attached to plutonium as a fuel form and would like to burn all of it as either MOX fuel or directly in breeder reactors. At the moment, it has only one breeder reactor (one is under construction). Russia has made no formal declarations of its intentions, in contrast to the United States.

Because there are no straightforward solutions to plutonium disposition, it would be difficult for the NWC to require the use of specific technologies for plutonium disposition, especially as the technology to disposition plutonium may improve in the future. Consequently, the NWC may be best off only requiring general conditions, such as physical protection standards. At the moment, no global standards exist for the physical protection of fissile materials like plutonium. For example, some countries (like the United States) require guards protecting plutonium to be armed, whereas other countries (like Japan) do not arm the guards protecting plutonium stockpiles. Consequently, it could be useful for the NWC to have a clause on physical protection for all fissile materials.

-Allison Macfarlane, Belfer Center for Science and International Affairs
Kennedy School of Government, Harvard University

Comment: Disposition

The MOX scheme has the support of a dying civilian nuclear power industry, bolstered by the argument that MOX burning will make the material safe from terrorists. The best, cheapest,and quickest way to secure the material from theft is to put it behind gates with guns and guards while a new generation of scientists, untainted by the inadequate thinking of the current weapons designers, is provided adequate resources to re-visit the disposition problem anew. We need a Disposition Project on the scale of President Kennedy's ten-year program to "put a man on the moon".

With adequate resources and new thinking, we may discover new properties of nuclear materials which will enable us to render them inert over a shorter period of time than the current 240,000-year toxic lifespan of plutonium. In the meantime, nuclear waste should be stored as near to the site where it is generated as can be safely managed, in above ground monitored storage, until a new generation of scientists, untainted by cold war weapons-work and ecological unconsciousness, has addressed the disposition conundrum, with adequate resources, fresh thinking, and a commitment to solutions that will not further pollute the earth. Just as the Hebrew children wandered in the desert for forty years so that no one born into slavery would enter the promised land, no one who ever worked at the weapons labs should be part of the Disposition Project.

-Alice Slater
Global Resource Action Center for the Environment (Grace)

Nuclear Energy

Critical Question: How should the NWC handle the nuclear fuel cycle?

Responses to the model NWC have been particularly divided on nuclear energy and on the compatibility of verifiable nuclear disarmament with nuclear physics research and nuclear power. The model NWC addresses nuclear weapons; it does not restrict or encourage the use of nuclear energy. Whatever the future of nuclear energy, the NWC should have a strict verification regime, with tight monitoring and control of materials, facilities and activities susceptible to diversion for military or terrorist purposes.

The question of plutonium reprocessing and mixed oxide (MOX) fuel fabrication has a direct impact on the verifiability of nuclear disarmament. Proliferation risks are enhanced by the availability of nuclear materials, and separated plutonium in particular. It seems likely that the viability of verifiable nuclear disarmament in a world with nuclear energy will turn o the degree of surveillance, accounting and control of nuclear facilities that those affected are willing to tolerate.

In contrast to the nuclear industry, the chemical industry provided essential support to the Chemical Weapons Convention. The nuclear industry, however, is not governed by the market but is subsidized. It benefits from the military posture as it exists. There should be a robust and open debate on nuclear energy.

Opinions are extremely divided on nuclear energy — the examples here touch on some but not all of the aspects of this debate. At the basis of all these perspectives, however, there is generally a set of common concerns: for future sources of energy, the health of the planet, and sustainable development. Nuclear energy is never praised for its own value — rather, it is compared to undesirable alternatives and a lack of satisfactory solutions to global energy and environmental needs.

Advocates of nuclear energy no longer claim it is “too cheap to meter” as they did a few decades ago. Nor are the claims about its risks to life today and in the future as dismissive of safety concerns as they have been in the past. Likewise, the proliferation risks have been acknowledged more readily, both directly and indirectly. Directly, one can cite the 1994 Convention on Nuclear Safety which requires "an effective separation between the functions of the regulatory body and those of any other body or organisation concerned with the promotion or utilisation of nuclear energy".

The entry into force requirements of the CTBT carry indirect recognition of the connection between nuclear energy and the risk of nuclear proliferation. It requires all nuclear capable states to sign the treaty before it can enter into force.

Comment: Nuclear Energy

I agree that there should be much more thorough and open debate on nuclear energy. I would add that it should be international, with inputs from people who are citizens of a wide variety of countries with regard to their past and current nuclear activities. These should include announced or unannounced possession of nuclear weapons (including Israel); the nearly 50 countries that have nuclear power plants and/or research/test reactors with thermal power outputs greater than about 1 megawatt; and any other countries that are openly seriously considering use of nuclear energy for peaceful or military purposes. I would also include the dozen or so countries within which work is proceeding on R&D on inertial or magnetic confinement fusion power systems.

It has been my conviction for decades that solar energy is, by far, the best alternative, anywhere in the world, for meeting all human energy needs. I therefore keep pressing for completely open, urgent international development and demonstration of solar powered total energy systems to displace the present and widely projected dependence on fossil and nuclear fuels worldwide. I expect the environmental and economic benefits of such a global effort to become evident to everyone within less than a decade.

– Theodore B. Taylor, former nuclear weapons designer, Los Alamos National Laboratory; now an independent consulting physicist, Wellsville, NY

Comment: Nuclear Energy

The fundamental problem with banning nuclear weapons but allowing nuclear power is that they have the same energy source: the fission of uranium and plutonium isotopes. To use uranium in a nuclear weapon, it must first be enriched in the isotope U-235. At the same time, most of the nuclear power plants in the world also require enriched uranium, though not enriched to the degree used in nuclear weapons. To create plutonium for use in nuclear weapons, uranium-based fuel must be "burned" in a nuclear power reactor. In 1974, India showed the world that diversion of nuclear material for a "peaceful" nuclear explosion was indeed possible.

On the other hand, nuclear power may be needed in the 21st century to replace energy from fossil fuel power plants that emit greenhouse gases. Nuclear power is seen by a number of Asian countries, themselves either fossil-fuel-poor or loathe to expand dirty coal-burning plants, as a reliable energy source to fulfill the increasing electricity demands of their rapidly growing populations. Finally, who are western countries, having enjoyed the "luxury" of energy benefits from nuclear power, to inform developing Asian countries that they cannot have nuclear power?

Currently, the IAEA verifies that non-nuclear weapon states signatories to the NPT do not divert nuclear materials from energy to weapons purposes. With the exception of Iraq, the IAEA has done its job successfully. There will be no way to ensure completely that an individual country, especially a former nuclear weapons nation, will not break out of the NWC. Unless the NWC nullifies the NPT, there will be no reason to have a parallel organization to the IAEA. Nations, however, may wish to "update" or "recreate" the IAEA, and perhaps doing so under the auspices of an NWC is the path to follow.

There are two processes in nuclear materials handling for nuclear energy and nuclear weapons that are, in my mind, the most vulnerable to diversion activities: reprocessing of spent fuel and enrichment of uranium. The latter, as noted, is necessary for fuel fabrication in most light water type reactors, the most common reactor design. Only CANDU (Canadian deuterium-uranium) reactors use natural uranium, but they have their own proliferation problems. Fuel requires only 3-4% enrichment, whereas nuclear weapons require at least 20% enrichment. Therefore, careful monitoring of the enrichment process is necessary. As it stands now, only a few facilities worldwide can enrich uranium, though, each country that uses nuclear power would rather not be dependent on another for the main component of its fuel. Nonetheless, there may be some way to control the uranium enrichment market, but I'm not certain the NWC should do so.

Reprocessing of spent nuclear fuel is perhaps more worrying than enrichment in terms of proliferation. It easily can create a plutonium economy, and plutonium, no matter whether it is "weapons grade" or "reactor grade" can be used in nuclear weapons. Currently, only Russia, France, Britain, Japan, and Germany reprocess their spent fuel. India has plans to, and has reprocessed some material already for use in nuclear weapons. Germany recently announced that it plans to phase out reprocessing. Such a move may be the death knell for reprocessing plants in Britain and France, which rely heavily on Germany's business. Japan is finally coming to the realization that reprocessing is a very expensive method for producing electricity. At today's prices, uranium is so cheap that it does not make economic sense to use anything but uranium-based fuel. The dream of breeder reactors, which France, Japan and Russia clung to, is fading in France and Japan, but Russia continues to cling to the idea. The only country currently enthusiastic about plutonium as a good nuclear fuel is Russia, which has no money to reprocess spent fuel, build new reactors, or

even run the ones they have very efficiently. So, commercial reprocessing may die a slow death. The NWC may want to restrict reprocessing activities, but again, doing so may cause it to lose signatories (Russia, in particular). It may be better for concerned countries to encourage those that reprocess to stop, and for the NWC to avoid this question and the question of nuclear energy.

Allison Macfarlane (See Comment on Disposition for affiliation)

Comment: Nuclear Energy

The problem of nuclear energy is complicated by the fact that there is no such thing as non-weapon-grade plutonium. The material used by the nuclear weapons states and what they call weapons-grade is a designer material, a bomb designer's ideal material. It is what they use to make sophisticated, small, efficient nuclear weapons. The reality is [that] it is possible to make nuclear weapons out of almost any kind of plutonium at all. Every state that has a nuclear power plant produces plutonium, and the amount of plutonium that has been produced and stockpiled world wide is:

Military stockpiles of all kinds of plutonium — 250 tonnes

Plutonium that has been separated from used civil nuclear fuel — 120 tonnes

Plutonium in spent fuel that has not been separated — 790 tonnes

The military stockpile of plutonium that's already been set aside in the whole world is about 250 tons — it is nearly all weapons-grade material. Half this much has been produced in civilian nuclear power stations as part of the process of making electricity and already separated from the spent fuel. That's all material that can be used to make nuclear weapons, more or less as it is. There is another 790 tonnes, three times the military stockpile, still sitting as spent fuel. In other words, addressing the military plutonium is barely addressing a quarter of the problem.

-Zia Mian (See Comment on Disposition for affiliation.)

Knowledge and Reversibility

Critical Question: Can the Nuclear Weapons Convention put the nuclear "genie" back in the bottle?

"Absent action, the knowledge and skills base unique to nuclear weapons will atrophy."
-The Stockpile Stewardship and Management Program, US DOE, Office of Defense Program, May 1995.

A recurring argument in the debate over elimination of nuclear weapons is that the "nuclear genie is out of the bottle" — that nuclear physics cannot be unlearned. Because of this, it has been argued, there is no point in pursuing the elimination of nuclear weapons. True, nuclear weapons knowledge cannot be unlearned. In fact, it would be foolish to base any non-proliferation regime on the assumption that knowledge is lacking. But current proliferation risks are not merely a result of the discovery of the splitting of the atom. They are also the end product of long-standing policies to exploit this discovery for military purposes. Making nuclear disarmament irreversible will therefore involve a gradual dismantling of the entire nuclear weapons infrastructure, beginning with greater, not lesser, awareness of the potential risks posed by scientific discoveries.

The MNWC actually stresses the importance of keeping up the public availability of nuclear weapons related knowledge in order to facilitate societal verification and conversion. However, it is virtually impossible to reconstruct a complicated technical device from its blueprints without recurring to the implicit knowledge of the very experts who designed and constructed it. Therefore, nuclear weapons can be "disinvented" to some degree simply by retirement of the experienced weapon designers and by destruction of data storage media that contain most of the technical information relevant for nuclear weapons. A suggested approach is to eliminate all nuclear weapons related classified information, i.e., to destroy all design information and to declassify whatever is not destroyed.

On a more negative note, the current plans for laboratory testing and computer simulation would further knowledge of nuclear weapons. The improved simulation technology is highly incompatible with the goal of a nuclear weapons free world. At the end of an era of comparatively primitive trial and error, a scientific revolution is now being initiated. With it, the theoretical understanding of nuclear weapons is supposed to be deepened. In addition new scientists and testers are being primed for systematic conservation of the knowledge relevant for nuclear weapons. If these developments continue, it will become more difficult in the future to disinvent sophisticated designs of nuclear weapons.

Comment: Knowledge

This is an extremely complex subject. Present and past knowledge of a wide variety af technical concepts has evolved from basic principles of design and analysis that are no longer secret. This knowledge has spread dramatically during the past decade or so. Much that is considered secret by governments of announced or unannounced Nuclear Weapon States is not in others. I therefore tend not to be hopeful that control of information is likely to be very effective in curbing the proliferation of nuclear weapon concepts in countries with either rudimentary or advanced understanding of the relevant design principles. The proliferation of actual nuclear weapon arsenals now and in the short term future are, I believe, therefore best controlled by verified physical control of the key materials needed for making nuclear weapons. These key materials are now plutonium, highly enriched uranium, and tritium.

This type of international control of nuclear weapons may no longer be applicable if present efforts to develop pure fusion explosive weapons succeed. This possibility, the likelihood of which is strongly debated by experts, cannot be openly assessed because some of the key considerations remain secret.

- Ted Taylor (See Comment on Nuclear Energy for affiliation)

Comment: Knowledge

Many who advocate retention of substantial nuclear weapons facilities and arsenals for the foreseeable future rest their case in large part on two claims. Abolition of nuclear weapons is seen as impossible because the knowledge needed to make nuclear weapons cannot be disinvented. At the same time, many of the same people argue that we must keep and constantly modernize a huge complex of nuclear weapons research and testing facilities, because the knowledge needed to maintain an adequate deterrent is so fragile that it requires enormous effort to retain it.

The argument that retention of a nuclear arsenal is essential once the knowledge needed to make nuclear weapons is widespread has many flaws. Perhaps most important is that it implicitly compares a world without declared nuclear arsenals to a perfect, risk free world, in which there is no possibility of either breakout by a nuclear weapons state or proliferant or covert retention of small arsenals. The proper ground for comparison is the world we now inhabit, one bristling with nuclear weapons, some in decaying military structures, with a nonproliferation regime in tatters and new nuclear and ballistic missile races underway in South Asia. It is only in this context that the discussion of "reversibility" can be more than another abstract technical debate. The argument that large, active nuclear weapons establishments are necessary to sustain an acceptable deterrent rests on assumptions about the role of nuclear weapons which still receive far too little attention in arms control debates. Deterrence for several nuclear weapons states means far more than deterring an adversary's nuclear weapons use. Rather, nuclear weapons are seen by the dominant factions in those states as an integral part of military policies which deem necessary and rightful the capacity to apply overwhelming force in response to a wide range of perceived threats, including threats to military forces deployed far beyond national boundaries. Only in this context does the constant refinement of large and diverse nuclear arsenals become understandable.

The proper ground for comparison is the world we now inhabit, one bristling with nuclear weapons, some in decaying military structures, with a nonproliferation regime in tatters and new nuclear and ballistic missile races underway in South Asia.

The assertion that constant increases in nuclear weapons knowledge are essential because nuclear weapons knowledge cannot be eliminated increasingly becomes a self-fulfilling prophecy. As the nuclear weapons states develop more sophisticated means to simulate nuclear weapons phenomena, and as techniques of nuclear weapons production also are developed to improve their flexibility and capacity to move quickly from design to production, the proliferation of nuclear weapons knowledge is bound to increase, and the technical barriers to reconstitution of a nuclear arsenal will tend to diminish. The technical capabilities which are touted as necessary to counter proliferation and use of weapons of mass destruction have the potential to make nuclear weapons proliferation more likely, and abolition of nuclear weapons more difficult to achieve.

Jonathan Katz, a member of a 1994 JASON panel which evaluated the U.S. nuclear weapons "stewardship" program, advocated an alternative "curatorship" approach in which new experimental facilities like the NIF "are not built, experiments are not conducted, and design and development skills are allowed to atrophy. Only those skills required to remanufacture weapons according to their original specifications are preserved." Stewardship would add little to confidence in the nuclear weapons stockpile, Katz argued, while posing proliferation risks due to the knowledge which could diffuse from nuclear weapons "stewardship" programs, particularly those involving inertial confinement fusion:

> "....NIF would bring together weapons scientists with scientists who are doing unclassified work on inertial fusion. They would rub elbows, share facilities, collaborate on unclassified experiments, and communicate their interests and concerns to each other. Information and understanding would diffuse from the classified to the unclassified world, even without any technical violations of security....

Weapons work is so advanced in the United States that the NIF would not advance it; but NIF could be of tremendous use to nations where nuclear weapons work is less advanced. The lowering of the barriers to proliferation of both fission and fusion weapons that NIF would bring is surely not in the national interest....

As nuclear weapons grow older, it is inevitable that confidence in their performance will erode. But stewardship cannot remedy that. The source of confidence in the nuclear stockpile is the original testing program, combined with the faithful remanufacture of weapons components to original specifications. Curatorship is sufficient to make this degree of confidence possible, and stewardship can do no better....

Curatorship makes more sense than stewardship. It is cheaper, more proliferation resistant, and it is plainly more suitable for a world in which a nuclear arms race no longer exists."

The problem of "reversibility" in an abolition regime is an abstract theological debate in a world where the powerful are turning their backs on disarmament and returning to the rule of force in international affairs.

We are entering a time in which full scale nuclear arms races are beginning once more. Today, they are principally races among new nuclear weapons states, manifesting the deterioration of the nonproliferation regime, attributable in large measure to the failure of the nuclear weapons states to make significant progress towards nuclear disarmament in a decade of unprecedented opportunity. The complexity of the multilateral nuclear confrontation is growing as sophisticated nuclear weapons capabilities continue to spread, each new turn making the technical and political tasks of achieving abolition of nuclear weapons more difficult.

National Ignition Facility (NIF) under construction at Lawrence Livermore National Laboratory in California would pursue research on fusion reactions for a whole new generation of weapons. Photo: Brian Quintard, Lawrence Livermore National Laboratory.

In the end, the road to abolition requires political, not technical, inventiveness. Every round of technological innovation in the nuclear weapons sphere has proliferated, only making the world more dangerous and the path to abolition more complicated. The problem of "reversibility" in an abolition regime is an abstract theological debate in a world where the powerful are turning their backs on disarmament and returning to the rule of force in international affairs. Elimination of nuclear weapons will require profound political change within the nuclear weapons states, leaps of faith and building of confidence on all sides, and an international security regime which is truly multilateral. The "reversibility" of nuclear abolition, and the degree of risk it represents, cannot be discussed meaningfully until we are at least stumbling towards abolition rather than marching towards war.

— Jacqueline Cabasso and Andrew Lichterman
Western States Legal Foundation. See comments on Research and Breakout.

Conversion

Critical Question: How should the Nuclear Weapons Convention handle conversion?

Conversion refers to the least disruptive transformation of nuclear weapons facilities and supporting industries to non-weapons purposes. The education, skills, and training necessary for large-scale nuclear disarmament, from research and development to implementation, are one answer to the "jobs" argument, often used to defend the nuclear weapons industry.

There is, however, disagreement as to the most appropriate type of work for weapons designers, whether as part of the disarmament process or in a completely separate field (e.g., medicine). On the one hand, the knowledge, skills and technology necessary for verifiable nuclear disarmament are today in the hands of the nuclear weapons establishment. Thus conversion of this infrastructure seems the most efficient way to preserve jobs and redirect expertise. On the other hand, opponents argue, the mentality of the nuclear weapons infrastructure would prevent it from being truly able to participate in a nuclear disarmament regime.

The viability of conversion would seem to turn on the ability of a disarmament culture to permeate the nuclear weapons infrastructure and the scientific educational and training institutions that feed into it. Research and development priorities, with the emphasis on military ambition, have limited the options available to scientists, and participation in weapons research, in turn, has shaped the political outlook of the scientific establishment. It is not possible to predict with certainty whether scientific research and education institutions can be transformed from a weaponization mentality to a disarmament mentality. The feasibility of such a transformation will depend greatly on the larger cultural context in which scientists are educated, trained and politicized. If nuclear weapons are stigmatized rather than glorified in political discourse and popular movies, they will also be less appealing as objects of scientific pursuit than they are today.

Even without transformation to a nuclear disarmament regime, research is desperately needed for cleanup of the radioactive and other hazardous waste produced by 50 years of a nuclear arms race. For nuclear disarmament to progress, research is also needed in the area of plutonium disposition and verification technology. Assuming that a good faith reordering of research and development priorities is possible, conversion of the nuclear weapons complex would seem to be the most efficient way to develop a nuclear disarmament regime.

Conversion, if it is possible, would likely take more than one generation and it would depend on changes in policy and popular culture. It also depends on whether nuclear disarmament research can be made as economically enticing and intellectually exciting as nuclear weapons research has been for many. (See Critical Question on Research.)

"I have to cast my lot with those who age after age, with no extraordinary power, reconstitute the world."

- Adrienne Rich, Poet

Comment: Conversion

What would happen to nuclear weapons laboratories in a world where nuclear weapons had been abolished by international treaty? Presumably the weapons laboratories, together with universities and NGOs, would play an important role in studying how to disarm in a stable and verifiable way, how to dismantle nuclear weapons cleanly and efficiently, and how to dispose of the material in the weapons safely. But, if we believe that a world without nuclear weapons is possible to achieve, what should the weapons laboratories do once such a world has been achieved?

It is fashionable on the left to say that, if they are no longer needed, weapons laboratories should be "converted" to other purposes. I have to confess that this puzzles me. We did not "convert" the typewriter industry when computers were invented; we let it shrivel and (nearly) die. In our society, which tends to trust the invisible hand of the infinitely wise free market to allocate economic resources, it's generally assumed that, once an industry's product is no longer needed, it's best to lay off the people making products we no longer use and let them find new jobs in industries whose products we want. Why should a nuclear weapons laboratory be any different? And why should the alternative, central planning by the government, work any better in the U.S. than it did in the Soviet Union?

The problem with "converting" the weapons laboratories is that it's like asking an elephant to be a giraffe. If you wanted a new clean car engine or environmental remediation technologies, you wouldn't ask Microsoft to do it because they have no experience in the field; so why would you ask a nuclear weapons laboratory?

Having said this, I would not close the weapons laboratories outright. They are large, complex organizations with many subcultures, of which the weapons subculture is only one — albeit the largest and most important one. Still, the Livermore Laboratory, for example, has a biomedical division, it has an atmospheric sciences division, it has people working on new computer chip technologies, new automobile engines and so on. Such programs could become the nucleus for a smaller, different kind of laboratory if the laboratory was no longer dominated by managers who worked their way up through the weapons programs.

But what of the weapons scientists? Many of these have given the best years of their lives to their country and, if their curriculum vitae are classified and their skills narrow and esoteric, it will not be easy for them to find new jobs, especially if they are middle aged. Besides, if they are fired en masse, the politicians representing their districts will fight to save their jobs. Thus I would suggest a kind of GI Bill for weapons scientists. I would lay them off with very generous severance payments that they could use to start their own businesses, go back to college, play the stock market etc. This would compensate the weapons scientists for their sacrifice, keep federal money flowing into the local economy for a while, and it would, in the long run, be cheaper than keeping the weapons labs at their present size

-Hugh Gusterson, Anthropology Program
Massachusetts Institute of Technology

Comment: Conversion

The U.S. nuclear weapons laboratories constitute a politically powerful, self-perpetuating, multi-billion dollar industry. Almost mystically rooted in their origins as developers of the first atomic and hydrogen bombs, their power is amplified by the lack of recognized independent nuclear weapons expertise and their monopoly on access to decision makers. The link between control over nuclear weapons-relevant information and influence over nuclear weapons policy has been formally institutionalized by the "certification" process, an element of the "Stockpile Stewardship" program, in which the weapons laboratories annually "certify" the "safety" and "reliability" of the nuclear arsenal. As one of the Clinton Administration's prerequisites for acquiescence to the CTBT, the certification process provides an opportunity for the weapons laboratories to call for resumption of underground testing if they are not given what they consider adequate alternative resources to "certify" the stockpile — a temptation which may grow in appeal if nuclear weapons begin to lose their central place in U.S. national security dogma. The concentration of arms control and nonproliferation policy and technology work at the weapons laboratories has further consolidated their influence over nuclear weapons policy.

Monitoring and verification technologies also employ a facilities and skills base which is centered largely at the weapons laboratories. The difficulties of sorting out what is truly needed for monitoring and verification of the nuclear disarmament process alone from attempts to continue weapons development are substantial. Combined with an extensive counterproliferation program in which nuclear weapons play a central role and an ambitious nuclear weapons "stewardship" program which will entail new generations of multi-use high energy density, hydrodynamic testing, and computing capabilities, they may be insurmountable.

Conversion will require radical and profound changes at the highest levels in national security and foreign policies, coupled with the lifting of secrecy and a greatly increased level of public participation in decision-making at the local/community level. These developments will necessarily be accompanied by a major realignment of powerful economic interests.

- Jacqueline Cabasso and Andrew Lichterman, Western States Legal Foundation

(See Comments on Breakout and Knowledge.)

Comment: Conversion

We have observed the response of the US nuclear weapons labs to the end of the cold war and the moratorium on nuclear testing. First they came up with AGEX, (Above Ground Experiments) and then they sold the Congress on the grotesque "stockpile stewardship" program which enables weapons workers to design new nuclear weapons in computer simulated cyberspace with the addition of so called "sub-critical" nuclear tests. These tests, while shattering plutonium in underground tunnels, 1,000 feet below the desert floor at the Nevada test site, do not cause a chain reaction, and so the weapons labs argue that they do not "count" as nuclear tests and are permitted under a "Comprehensive" Test Ban Treaty.

The culture of the weapons labs makes them a very poor bet for conversion. It would be foolish and naive, given our experience to date, to assume any "good faith reordering of research and development priorities" by the labs. Thus, conversion would not be the most efficient way to achieve a nuclear disarmament regime and should not be addressed in a Nuclear Weapons Convention. It would be far more efficient to send all the weapons designers and their teams to medical school,or muster them out with full pay until retirement, using the $4.5 billion per year over the next 10 years now budgeted for stockpile stewardship. We would still have enough funds left over to fix every broken down school in America and wouldn't be plagued by new loopholes and twisted interpretations of our commitment to disarmament by the current weapons establishment

-Alice Slater (See Comment on Disposition)

Comment: Conversion

Conversion does not minimize disruption of the entities being converted, it refers instead to transforming military industries into civilian industries in a manner in which the benefits outweigh the costs. And disarmament tasks are not conversion, they simply substitute a disarmament program for a weapons program. This is exactly what the stockpile stewardship claims to be, and over 50% of the budget of that program is currently being spent on research and development of new weapons. Conversion should concentrate on people, not facilities. Unfortunately, attempts to challenge scientists and engineers at the labs are mainly associated with new weapons design and testing.

The only measures of viability for conversion are market-based. One cannot assume a good faith reordering of research and development priorities if the weapon labs control the research funds. Only the market, not another government project, can guarantee a reordering of research funds.

Research isn't desperately needed for cleanup of nuclear waste. DOE has research units scattered around the complex. What is needed is a commitment to pursue cleanup. "Innovative" research from the labs has centered on breeder reactors, MOX burning and other methods of disposition that create more, not less, waste. Similarly, research in plutonium disposition and verification technologies is ongoing around the US. Again, viable methods have been by-passed so we can engage in MOX burning.

-William Weida
Economics Department, Colorado College

Research

Critical Question: How should the NWC handle research related to nuclear weapons?

Los Alamos National Laboratory, one of the three major labs responsible for creating and maintaining the US nuclear stockpile.
Photo: Department of Energy.

The question of research has triggered some of the most emotional responses to the model NWC. Any suggestion of state or international control over scientific work is inherently disturbing, not only to scientists. There is intense disagreement about whether certain types of nuclear physics research should be limited or prohibited, and what prohibitions would even be possible.

An approach to research that relies primarily on prohibition of certain activities or knowledge will meet resistance and its effectiveness will depend greatly on enforcement rather than compliance. Today's vast accumulated knowledge about the weapons applications of nuclear physics is not a direct and inevitable consequence of the splitting of the atom. It is the result of deliberate research and development priorities based on considered policy, which has led to an availability of weapons related work and lack of meaningful alternatives. The social and political manifestations of dependence on military power and nuclear capability for security also play a role. Scientists do not make choices in a cultural vacuum.

Defining what constitutes nuclear weapons research is a difficult threshold question. Whether an area of research is in conflict with the purposes of the NWC depends largely on intent and will remain unclear and controversial as long as any nuclear weapons are being maintained. In today's world, such controversy is inevitable because a policy of maintaining a nuclear arsenal allows for a "grey" area regarding the intent of research related to nuclear weapons. An example of this is the debate in the United States over what constitutes design of new weapons, as opposed to modification of existing weapons types or additional safety features. These types of debates will dissipate under a regime committed to the elimination of nuclear weapons. Grey areas will decrease even further once weapons are actually eliminated and no research is necessary for their interim maintenance and storage.

Research essential to nuclear weapons, if it is to be restricted, may need to be handled differently from research that may support or enhance a nuclear capability but primarily has other purposes. Again, intent plays a critical role here, as almost any area of scientific research can lend itself to military applications. The answer to this dilemma is to cultivate a culture of scientific responsibility rather than approach science and scientists with suspicion. Scientists should learn about proliferation risks and develop the tools to recognize potential diversion of scientific discovery to aggressive purposes. (See Critical Question on Nuclear Weapons Knowledge and Reversibility.)

Prohibiting nuclear weapons research does not necessarily create pragmatic or ethical problems. Where there is no policy of nuclear weapons dependence, as in Africa, a prohibition on research or the seeking, receiving, assisting or encouraging of research is generally acceptable. This is evidenced in the Treaty on an African Nuclear Weapon Free Zone (Treaty of Pelindaba), which prohibits States from conducting research, seeking or receiving assistance in research, or assisting or encouraging research on "any nuclear explosive device by any means anywhere" (Art. 3). However, where there is a long history of nuclear weapons research, a direct prohibition may be controversial or impossible until dependence on nuclear weapons is generally rejected. For this reason the model NWC suggests a prohibition on funding as an alternative to a direct prohibition on research.

The United States Stockpile Stewardship and Management Program has as one of its goals attracting young scientists to keep the knowledge necessary for a nuclear capability alive. (See Critical Question on Conversion.) Scholarships, fellowship, education and training programs, and intellectually stimulating research opportunities feed today's nuclear capability in the United States and elsewhere. In fact, the current disrepair in the former Soviet Union's nuclear complex is directly related to the collapse of the economic and educational systems that supported the vast nuclear weapons structure. (See Critical Question on Economic Aspects.)

Research is desperately needed for safe, secure and irreversible nuclear disarmament. Most of the knowledge, skills and mechanisms essential to safely reversing nuclear armament are today in the hands of the scientific and technical staff of the nuclear weapons complex and supporting agencies, such as the International Atomic Energy Agency. Thus the most efficient and least disruptive way to further nuclear disarmament research would be to transform the weapons related institutions and redirect the skills of their staff. Many supporters of nuclear abolition, however, question whether the institutions that have produced today's nuclear arsenals are capable of change. There is concern that any NWC provisions that allow or encourage nuclear disarmament research would function as loopholes allowing maintenance of a nuclear weapons capability. (See Critical Question on Conversion.)

Comment: Research

I don't believe that you can ban research in the purest sense of the term. How can you tell scientists to stop thinking about an issue — especially when the issue (nuclear weapons physics) is so closely tied in to other areas of academic physics? And how would you verify such a ban? The only thing you can verifiably ban are certain large experiments — such as nuclear tests or laser fusion shots. These take immense amounts of money, complex social organization and political will to orchestrate and can be banned by treaty if there is a will to do so. Computer simulations of nuclear tests are in a different category, and I don't see any realistic way to ban them.

If there were a NWC, I would expect the decline of nuclear weapons research to be a very gradual affair — with some continuation of basic research initially as the political price for such a convention. Presumably if there were such a convention, it would at first be accompanied by the survival of a fairly substantial group of stewards maintained as a hedge against a new arms race. The stewards would rightly say that they wouldn't be very good at being stewards unless they were allowed to do some sort of basic research into their field — short of making new weapons. But over time the existence of such a group would be seen as an extravagance and bright people would not be very interested in joining such a dead-end profession provided there was no resumption of the nuclear arms race internationally. It would help if there were no further production of fissile material, of course. Furthermore, as the group of scientists who had participated in nuclear tests died off, it would become harder to transmit nuanced nuclear weapons knowledge to a new generation of scientists. The knowledge and research that survived would seem, like alchemy, of increasingly questionable value.

Hugh Gusterson, Associate Professor, Anthropology program, MIT
(See Comment on Conversion)

Comment: Research

Under the pretense of maintaining the "safety" and "reliability" of the nuclear weapons stockpile, Stockpile Stewardship is intended to preserve the capacity to maintain, test, modify, design and produce nuclear weapons, with or without underground testing.

"Stockpile Stewardship" is a nuclear weapons research and testing program of Cold War proportions that will keep nuclear weapons in the arsenal, in the budget, and in the career paths of scientists well into the next century. Under the pretense of maintaining the "safety" and "reliability" of the nuclear weapons stockpile, Stockpile Stewardship is intended to preserve the capacity to maintain, test, modify, design and produce nuclear weapons, with or without underground testing. Some of the key Stockpile Stewardship technologies have been developed as "dual-use" scientific facilities that can be used for both high energy physics research and bomb science. Prime examples are the multi-billion dollar, stadium-sized National Ignition Facility, a laser fusion installation presently under construction at the Lawrence Livermore National Laboratory in California, and the virtually identical "Projet Megajoule," under construction in France, which have the potential, in combination with other ongoing experimental research, to lead to the development of pure fusion weapons. Most Stockpile Stewardship facilities have little to do with maintaining either the safety or reliability (itself a highly debatable proposition) of existing weapons as they await disablement and dismantlement on the path to elimination. Rather, they are intended to serve as training grounds for the next generation of nuclear weapons designers as well as the tools of the trade.

It is often stated that we can't or shouldn't prohibit certain types of research. However, we don't have to pay people to design weapons of mass destruction. What's needed is an engineering-based "stewardship" approach to ensure the safe and secure containment of nuclear weapons, their components and materials, under international supervision, as nuclear weapons are phased out and eliminated. We support a prohibition on funding for nuclear weapons research, as suggested in the model NWC.

— Jacqueline Cabasso and Andrew Lichterman, Western States Legal Foundation

(See Comments on Breakout, Knowledge, and Conversion.)

Comment: Research

The weapons labs should be shut down after a treaty is signed. There should be an international prohibition on government funding of research for nuclear weapons design, development, testing and production. Such a provision would be a totally appropriate international control on government-funded research for the future of the planet. Research should be permitted on verification and materials disposition, and the language of the treaty should be specifically limited solely to those two areas of research. While the verification research may require the use of older experienced weapons lab personnel, their contribution to solutions on the disposition of materials such as plutonium has been worse than nothing at all. Their latest scheme, to burn plutonium as MOX fuel, will create extraordinary planetary hazards as hundreds of thousands of tons of lethal material are shipped around the world — by plane, ship, train, and truck — to be burnt up in civilian reactors which will cause even more deadly environmental contamination.

-Alice Slater, Global Resource Action Center for the Environment

(See Comments on Disposition and Conversion)

Economic Aspects

Critical question. Will nuclear weapon states, particularly Russia, be able to afford to eliminate their nuclear weapons?

The full cost for the total dismantlement and destruction of nuclear weapons and disposal of fissile material is impossible to determine at this point in time, and depends on a number of policy decisions regarding, among other things, the speed of destruction, the types and complexity of verification systems adopted and the method of fissile material disposal.

Experience from the START I and INF Treaties indicates that costs will be extremely high. Projected U.S. costs for dismantlement and verification under these treaties is approximately $31 billion.[1] However, this does not include cleanup costs which could reach a staggering $365 billion. Russian costs are likely to be comparable, if they are to enact cleanup operations commensurate with the requirements.

Russia is already experiencing difficulties in meeting the costs of current programs of dismantlement and disposition, threatening the continuation of such programs. In response the US has provided $1.5 billion to help in dismantlement, and has agreed to spend $8 billion - $12 billion to purchase Highly Enriched Uranium from the dismantled bombs. However this may bring some economic return to the US as it will be used in nuclear power facilities.

While the nuclear weapons States are responsible for the costs of eliminating the weapons they have created, the Model Nuclear Weapons Convention provides for the establishment of a voluntary fund to assist States who might otherwise be unable to fulfill their disarmament obligations.

As large as the disarmament costs may be, the alternative of maintaining nuclear weapons would be even more costly, as it merely delays the disarmament costs into the future, and adds extra costs to maintain the weapons. The US is currently spending $30 billion annually on nuclear weapons programs, and has spent over $5.5 trillion since 1940.[2] These programs continue to add to the future costs of weapon destruction and clean-up. In purely dollar terms, it will thus be more economic to move from the current nuclear weapons maintenance and modernization program to a nuclear disarmament program.

Proponents of nuclear weapons research and development (R&D) often cite economic benefits of such research, arguing that such R&D generate technological “spin-offs” which have led to economic advancement.[3] For example, NAVSTAR satellites, originally developed to provide pinpoint accuracy for ballistic missiles, are now finding widespread commercial use in automobile electronic atlases and hand-held directional finders. However, the extent of civilian benefits from nuclear weapons spending is necessarily restricted due to the secrecy of much research and the specific orientation to military purpose.[4] If a comparable amount of public money were spent in civilian research and development, the returns would most likely be much greater.

References

1 “Atomic Audit: The Costs and Consequences of US Nuclear Weapons since 1940", Stephen Schwartz (ed), Brookings Institution, 1998.

2 Costs for the programs of the other nuclear weapon states are not available.

3 See, for example, “The Star Wars Spin-Off ”, New York Times Maazine, August 24, 1986.

4 See, for example, “Labs Struggle to Promote Spin-Offs”, Science, vol 240, May 13, 1988, pp 874-76

Comment: Economic Aspects

Russian cleanup costs will certainly be larger than ours because of the lax environmental standards followed in Russia. Our cleanup costs may be as much as $1 Trillion — the $350+ Billion in the essay comes from a DOE estimate that omitted many costs. The cheapest short-run alternative for the Russians is not to clean up at all — and the cheapest course of action is may be to retain most of their nuclear weapons. The Russians probably spent an amount similar to the US to develop and deploy nuclear weapons. A French researcher recently claimed that the French spent $1.5 trillion on their entire effort to develop and deploy nuclear arms.

Spinoffs are always more expensive to develop than if the product/item had been developed directly. As a result, they always represent an economic loss compared to more efficient methods of development.

The real economic issue that is not addressed here is the 'future cost' of all the weapon work we are now doing. The essay on economics tends to view nukes and their waste as past events that need to be corrected. While this is true, the production of both weapons and waste continues unabated. And the costs continue to mount.

- William Weida (See Comment on Conversion)

Section 4

Verification

Part of a Pershing II missile being destroyed. Under the 1987 INF Treaty, more than 200 of these missiles were retired and destroyed.
Photo: US Army

Principles of Verification

A nuclear weapons convention will only be effective if it can be adequately verified, both in political and technical terms.[1] Verification policies should be designed to assure early detection and interpretation of information necessary for preventing prohibited activities or permitting timely response.[2]

A viable regime should assure states at the very outset that participation provides a better guarantee of security than maintaining the nuclear option. A guiding principle should be the search for a regime sufficiently restrictive to ensure the highest level of confidence in compliance, but also sufficiently permissive to allow states to join without jeopardizing their legitimate security interests and commercial activities

To discuss the possible options and means for the verification of an NWC, it is useful to refer to some general principles of adequate verification:

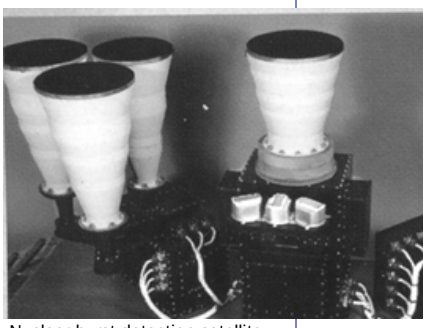
1. International law should enhance international security and stability and avoid the risks of an unrestrained situation that could lead to arms races or war.

2. Verification is a comprehensive iterative process, with political, legal, diplomatic, economic, technical and military dimensions, for judging compliance with international law, containing the risk of cheating and increasing time for adequate response.

3. The verification process balances between those provisions that are to be verified (tolerance threshold) and those activities that can be verified (monitoring threshold).

4. The demands, requirements and costs of verification depend on specific treaty provisions and the associated risk of cheating.

5. Because existing verification means are not perfect, the residual risk needs to be reduced to tolerable levels by adequate responses, offsetting eventual military threats by and advantages for the cheater.



Nuclear burst detection satellite sensor system.
Photo: Cooperative Monitoring Center.

The verifiability of a treaty is not an absolute issue, but a matter of degree depending on political assumptions and requirements as well as the available resources and capabilities for verification, which are not only technical. Most crucial is the question of "tolerable" degrees of verifiability and their associated residual risks. Between friendly nations even the lowest standards of verification could be tolerable because the incentive for and probability of cheating are likely to be negligible. As long as there is a gap between the tolerance threshold and the monitoring threshold, either the verification capabilities must be improved, depending on the available means and resources, or the political requirements must be reduced to achieve the desired security gains by the treaty within the given resource limits. Thus, verification concerns assessing the difference between the desired situation and the actual situation, and the agreed path connecting both.

If the actual path deviates from the agreed path more than is tolerable, then the verification system should provide a timely alarm. Thus the following questions are to be considered for the verification process:

- Which agreed states, items and activities should be achieved, limited or prohibited during given periods with a given confidence and certainty (what are the requirements/tasks of verification)?
- Which verification means could be applied to monitor actual states and activities (what are the means of verification)?

- Can an intolerable deviation from agreed states, items and activities be detected in time with reasonable verification efforts (what are the benefits, costs and risks of verification)?

Political Verification: Building on Existing Regimes

Political verification of an NWC will have organizational and societal requirements. Organizational means of verification include state, regional and international bodies as well as national legislation and bi- or multi- lateral arrangements. Societal verification means large-scale governmental and non-governmental participation in the implementation of an NWC. Such participation would be sought through affirmative obligations to report non-compliance and provide guarantees of protection for suppliers of information.

Each of the following examples has relevance to the functions and the forms of authority necessary for nuclear disarmament:

- CWC: The Chemical Weapons Convention establishes a comprehensive framework for elimination of an entire class of weapons to be implemented through the Organisation for the Prohibition of Chemical Weapons. It proposes, among other measures, a system for on-site inspections unprecedented in its intrusiveness. How successful this system is in promoting compliance and confidence will be instructive in considering the degree and type of intrusiveness to build into an NWC.
- CTBT: The verification provisions of the CTBT suggest a system for gathering and processing information. The International Monitoring System under the supervision of the Technical Secretariat includes facilities for seismological, radionuclide, hydro-acoustic and infrasound monitoring. The Technical Secretariat is to store and process information through its International Data Centre on behalf of States Parties. Application of this model to a NWC would require, for example, review of the provisions for data receipt and initiation of requests for data to adjust for the security and transparency considerations particular to the nuclear weapons infrastructure.
- IAEA: The IAEA safeguards regime is the primary model for accountancy, containment and surveillance of nuclear material. However, the dual function of the IAEA—timely detection of diversion and promotion of "peaceful" uses—makes its direct application to a disarmament regime problematic. Because of unavoidable measurement uncertainties, loss of material within facilities and lax practice, the IAEA safeguards material-accounting system cannot with confidence detect the diversion of weapons size quantities of nuclear material sufficient for the manufacture of dozens of weapons (the limits became obvious in the case of Iraq). The task of differentiating between military and civilian applications of nuclear material--widely though not unanimously recognized as a primary source of IAEA shortcomings--will become more difficult if reliance on nuclear energy increases. Some of the changes proposed in the IAEA 93+2 Programme and Additional Protocol reflect strategies and policies aimed at improving the conditions for safeguarding.[3]
- INF/START: The START and INF treaties provide positive examples of bilateral verification procedures for nuclear disarmament. They shed light on the role of confidence-building and the ability to adjust for confidentiality concerns. The verification provisions of these treaties apply to delivery vehicles rather than warheads. New guidelines for verification of warhead dismantlement, removal of warheads from

deployment and de-alerting would be necessary for START III and beyond. A salient question in this context is the expansion of bilateral to multilateral procedures. This process must balance considerations of security, transparency, and confidentiality.[4]

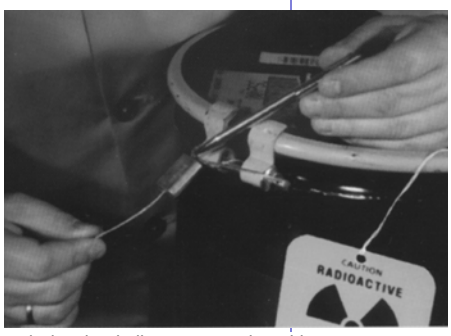
Several recent studies have explored the verification of deep reductions in nuclear arsenals and the special requirements of elimination of nuclear weapons. One proposal for a "verification scheme for deep cuts" would begin bilaterally, incorporating the other NWS through transparency and confidence-building measures, leading to proportional or gradual reductions down to very low levels, in order to lay the foundation for eliminating nuclear weapons.[5]

Societal Verification

The model NWC incorporates the concept of societal verification through individual rights and obligations, including citizen reporting and protection for whistle-blowers. According to Joseph Rotblat,

> The main form of societal verification is by inducing the citizens of the countries signing the treaty to report to an appropriate international authority any information about attempted violation going on in their countries. For this system of verification to be effective it is vital that all such reporting becomes the right and the civic duty of the citizen.[6]

Societal verification requires transparency and education. Scientists and nuclear industry workers should be alert to the potential links between nuclear science and nuclear proliferation. This responsibility could be developed through training to identify activities that are, or border on, prohibited activities. Supplying additional information on a voluntary basis increases confidence in compliance. By definition, this approach is not the "Big Brother" model of suspicion and surveillance where citizens watch each other and the state watches all citizens, as some have suggested. Rather, societal verification aims for openness and trust in scientific and industrial endeavors. Indeed, secrecy and mistrust undermine the openness and free flow of ideas necessary for good science and its productive application.



A device that indicates tampering with a nuclear material container. Photo: Department of Energy

In addition to the governmental tasks of verification, societal verification would substantially extend the basis of information and would be a contribution to the protection and creation of democratic rights in all parts of the world. NGOs could play an important role in this process. No state which secretly strives for nuclear weapons can be sure that persons involved in clandestine activities would not transmit their knowledge for a reward to the international community which then could take appropriate reactions.

Iterative Verification Phases

Verification is not a static one-time activity of applying the above-mentioned means, but a dynamic, iterative process with the four phases of declaration, monitoring, inspection and enforcement being repeated successively and in parallel:

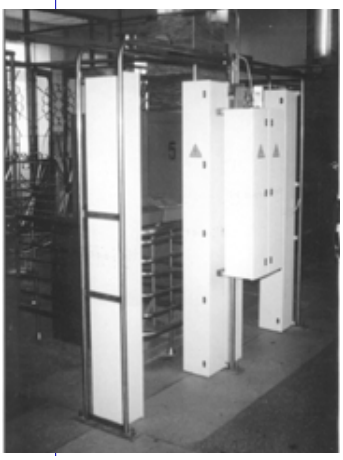
1. Declaration and registration provides the necessary information of the initial situation as a starting point for verification to allow comparison with future changes, either agreed or prohibited. All treaty-limited items are tagged, identified and registered.

2. Monitoring aims at detecting prohibited objects or activities. Continuous monitoring requires information gathering over larger units of time. Remote sensors on satellites and aircraft provide monitoring of large areas. Such sensors can detect larger objects, in particular

transport vehicles and buildings. The problem, of course, is to identify treaty-limited items among the vast number of existing civilian and military objects. However, regular cartographic mapping provides a basis to compare with remote sensing and detect irregularities/inconsistencies between official mapping information and actual remote sensing data.

3. Inspection: As soon as a suspicion of a treaty violation is raised, the inspection mechanism is applied to check whether it is justified or not. During inspections, the inspectors could request all the necessary detailed information from the inspected party, including the opening of rooms, access to computer codes and interviews with personnel and neighbors. In addition, a wide range of non-destructive on-site monitoring devices (like portal perimeter controls) could be applied to understand the structure and function of equipment. Cooperation and consultation within the international agency could help in gaining and proving the information.

4. Negotiation/prevention/enforcement: If sufficient information has been gathered to indicate a treaty violation, negotiation and enforcement mechanisms could apply. The first step would be to demand from the suspected violator the ending of prohibited activities or the destruction or conversion of prohibited objects. If the object or activity of concern is to be excluded from nuclear weapons use, additional preventive control measures are applied. If the suspected violator refuses any of these measures, a negotiation process is started, during which the motivations of the violator and the possible coordinated actions of the international community are explained. It would be important to leave the violator the option of a face-saving exit as early as possible. Ideally, enforcement measures should be preventive and involve minimal invasion.



Pedestrian portal monitors at the Siberian Group of Chemical Enterprises Enrichment Plant. Photo:.Department of Energy

In the past, the iteration process was incomplete. Neither remote monitoring and challenge inspections nor prevention and enforcement were possible under the IAEA safeguards system; the global spread of nuclear energy made diversion for military purposes too easy. This explains the limited effectiveness of safeguards, as in the case of Iraq. Monitoring without inspection or enforcement can raise suspicions but not prove or prevent them. Therefore, more emphasis should be given to integrated mechanisms realizing all four tasks.

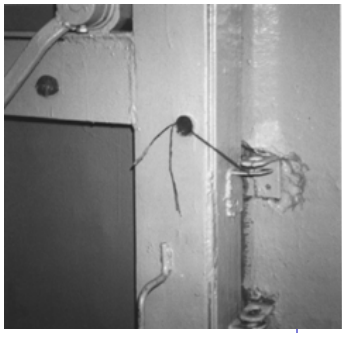
Preventive Controls

The Model Nuclear Weapons Convention proposes preventive controls on nuclear weapons usable material to guard against breakout of the ban to manufacture nuclear weapons. In general there are two ways of diverting nuclear-weapon-usable materials for illegally acquiring nuclear weapons, either by illegally producing nuclear materials, or by illegally removing nuclear material from existing stocks.

In order to detect such illegal activities the (NPT) foresees nuclear safeguards on special nuclear materials to verify compliance. The officially declared intention of these safeguards is not to prevent diversion of such materials. The IAEA insists on not having a police function but only the role of inspection. The purpose of nuclear safeguards is the timely detection of diversion after it has happened. The detection should be made early enough to allow for political reactions aimed at stopping the proliferating country before a bomb is manufactured from the diverted material.

Critique of safeguards

One severe criticism of the current nuclear safeguards system is that it cannot even achieve the limited goal of detection. This refers to the problem that large amounts of material unac-



Soviet-era wax and string acting as a "seal" on nuclear material in Russia. Photo:.Department of Energy

counted for (MUF) will inevitably occur at any large bulk handling facility. This problem is exemplified drastically with the publication of the US plutonium inventory for the first 50 years.[7] While there is a current stockpile of about 100 tons of plutonium, the amount of not less than 2.8 tons of plutonium is unaccounted for. This is enough material for hundreds or even a thousand nuclear weapons. This raises a big concern. Will we ever have the chance to get enough confidence that no nuclear-weapons-usable material is diverted by any country which possesses large amounts of such materials?

Another severe criticism of nuclear safeguards is that clandestine nuclear weapons programs are very difficult to detect. The experiences with clandestine nuclear weapons programs in Iraq and other countries call for very strong and efficient verification as long as nuclear installations with significant amounts of nuclear-weapons-usable materials are existing. The 93+2 Programme of the IAEA resulted in a number of improvements which strengthen the effectiveness and improve the efficiency of the nuclear safeguards system. The MUF-problem is not even tackled by these measures and there will still remain deficiencies with other detection problems.

The Model NWC strives to prevent the construction of nuclear weapons and puts the technical barrier for diverting nuclear-weapon-usable material as high as possible. Effective prevention would not be possible as long as weapons-usable nuclear material is available and it can be diverted for use in nuclear weapons at any time. The above mentioned problem of MUF leads to the conclusion that not only prevention but also the verification of the NWC would be very much facilitated by a significant reduction of the accessibility of nuclear-weapons-usable materials and production technology. Therefore, the Model NWC demands to reduce the inventories as well as the reproducibility of nuclear-weapon-usable materials to the lowest possible level.[8]

Controlling nuclear energy

In theory the highest barrier would be realised in a world without nuclear energy. However, it should be pointed out that the abolition of nuclear weapons can be accomplished, though less easily, even without abolishing nuclear energy. The second best approach is to restrict the use of those nuclear technologies which have the highest relevance for nuclear proliferation and in addition to make the remaining special nuclear materials as inaccessible as possible for any country.

The Model Nuclear Weapons Convention goes beyond technical verification. Any kind of nuclear technology and any sort of nuclear material which is relevant for the manufacturing of nuclear weapons is either banned or put under preventive controls. A number of measures are required to enforce and verify the provisions of the NWC regarding special nuclear material:

Cut-back of inventories and reproducibility:

- Elimination or reduction of stocks
- Ban on production and production technology
- Qualification ban: no further refinement or improvement (separation, enrichment, etc.) of existing stocks

Cut-back of accessibility:

- Non-retrievable storage of banned or excess materials
- Technological barriers for the access to remaining materials

- Physical protection under control of the inspection agency
- No national access to internationally monitored and guarded storage
- Restrictions on activities which are vulnerable to diversion (use, handling, transport)

Verification of non-diversion:

- Verification of non-production
- Verification of non-removal from existing stocks
- Verification of other treaty obligations (e.g. elimination or non-retrievable storage)

Verification Endnotes

1 This section adapted from Merav Datan and Jurgen Scheffran, "Principles and Means for Verification of a Nuclear Weapons Convention" and Martin Kalinowski, "Beyond Technical Verification: Integrated Prevention and Detection of Diversion of Special Nuclear material in the Nuclear Weapons Convention", INESAP Information Bulletin No. 14, November 1997. See also David Fischer, "Safeguards for a World Free of Nuclear Weapons", ibid.

2 Recent publications discuss the requirements and possibilities of nuclear disarmament verification: Paine, Cochran, Norris, "Techniques and Procedures for Verifying Nuclear Weapons Elimination", Canberra Commission Background Papers, August 1996; Steve Fetter, Verifying Nuclear Disarmament, Washington, DC: Henry L. Stimson Center, Occasional Paper No. 29, October 1996; R. Guthrie, "The Transition to a Nuclear-Weapon-Free World: A New Model for the Verification Framework", Verification Matters, Briefing Paper 97/1, April 1997.

3 Suzanna van Moyland, "Programme '93+2': Evolution in IAEA Safeguards" in Verification 1997: The Vertic Yearbook, edited by Richard Guthrie.

4 For a full discussion of proposed immediate nuclear disarmament measures and accompanying verification measures, see generally: "Nuclear De-alerting: Taking a Step Back", UNIDIR Newsletter No. 38; Bruce Blair, "Global Zero Alert for Nuclear Forces", Brookings Institution, 1995; Paine, Cochran and Norris, "Practical Interim Steps Toward Nuclear Weapons Elimination and a Fissile Material Control Regime for Nuclear Weapon States" Canberra Commission Background Papers; Matthew Bunn, "'Pit-Stuffing': How to Disable Thousands of Warheads and Easily Verify Their Dismatlement", Federation of American Scientists Public Interest Report, Vol. 51, No. 2, March/April 1998; Owen Greene, "Multilateralising the Nuclear Disarmament Process" INESAP Information Bulletin No. 14, November 1997.

5 Patricia M. Lewis "Laying the Foundations for Getting to Zero: Verifying the Transition to Low Levels of Nuclear Weapons" Vertic Research Report No. 1, September 1998.

6 Joseph Rotblat, "Societal Verification" in A Nuclear-Weapon-Free World: Desirable? Feasible? Edited by Joseph Rotblat, Jack Steinberger, and Bhalchandra Udgaonkar, Westview Press, 1998.

7 Department of Energy, Plutonium - The first 50 years, Washington, February 1996.

8 Similar proposals have been put forward earlier. See especially Lisbeth Gronlund and David Wright, "Beyond Safeguards: A program for more comprehensive control of weapon-usable fissile material", report by the Union of Concerned Scientists, Cambridge, May 1994. This report defines type 1 controls which limit the production and use of fissile material for weapons or outside of safeguards, and type 2 controls which limit the production and use of weapon-usable fissile material for all purposes, including civil purposes that are safeguarded, and the operation of facilities that can produce weapon-usable fissile material.

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Fifty-second session
Agenda item 71

GENERAL AND COMPLETE DISARMAMENT

Letter dated 31 October 1997 from the Chargé d'affaires a.i. of the Permanent Mission of Costa Rica to the United Nations addressed to the Secretary-General

I have the honour to enclose herewith the Model Nuclear Weapons Convention which has been carefully drafted by an international consortium of lawyers, scientists and disarmament experts led by the Lawyers Committee on Nuclear Policy.

On 15 December 1994, the General Assembly adopted resolution 49/75 K, in which it requested the International Court of Justice to render its advisory opinion on the question: "Is the threat or use of nuclear weapons in any circumstance permitted under international law?"

On 8 July 1996, the International Court of Justice delivered its advisory opinion on the above question, in which it concluded unanimously that: "There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control" (see A/51/218, para. 105).

Moreover, on 10 December 1996, the General Assembly adopted resolution 51/45 M, entitled "Advisory opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons," in which it:

> "Underline[d] the unanimous conclusion of the Court that there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control;
>
> "Call[ed] upon all States to fulfil that obligation immediately by commencing multilateral negotiations in 1997 leading to an early conclusion of a nuclear-weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat or use of nuclear weapons and providing for their elimination;
>
> "Request[ed] the Secretary-General to provide the necessary assistance to support the implementation of the present resolution". (paras. 4, 5, 6)

The Model Nuclear Weapons Convention is submitted as a work in progress setting forth the legal, technical and political issues that should be considered in order to obtain an actual nuclear-weapons convention.

The existence of nuclear weapons continues to endanger all peoples and nations. We believe that we should carry through with the tasks that non-governmental organizations have started, in order to create legal instruments to bring about the complete elimination of nuclear weapons.

We consider the Model Nuclear Weapons Convention an effective and helpful instrument in the deliberative process for the implementation of General Assembly resolution 51/45 M.

Therefore, I kindly request Your Excellency to have the draft nuclear weapons convention circulated as an official document of the General Assembly, under agenda item 71.

(Signed) Melvin SÁENZ-BIOLLEY
Ambassador, Deputy Permanent Representative
Chargé d'affaires a.i.

WORLD COURT ADVISORY OPINION ON LEGAL STATUS OF NUCLEAR WEAPONS — DISPOSITIF

The World Court gave a 34-page main Advisory Opinion, plus over 200 pages of separate statements and dissenting Opinions by individual judges. The final paragraph of the main Opinion, known as the "Dispositif", follows:

"For these reasons, THE COURT

(1) By thirteen votes to one, Decides to comply with the request for an advisory opinion;

IN FAVOUR: President Bedjaoui (Algeria); Vice-President Schwebel (US); Judges Guillaume (France), Shahabuddeen (Guyana), Weeramantry (Sri Lanka), Ranjeva (Madagascar), Herczegh (Hungary), Shi (China), Fleischhauer (Germany), Koroma (Sierra Leone), Vereshchetin (Russia), Ferrari Bravo (Italy), Higgins (UK); AGAINST: Judge Oda (Japan).

(2) Replies in the following manner to the question put by the General Assembly:

A. Unanimously, There is in neither customary nor conventional international law any specific authorization of the threat or use of nuclear weapons;

B. By eleven votes to three, There is in neither customary nor conventional law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such;

IN FAVOUR: President Bedjaoui; Vice-President Schwebel; Judges Oda, Guillaume, Ranjeva, Herczegh, Shi, Fleischhauer, Vereshchetin, Ferrari Bravo, Higgins;

AGAINST: Judges Shahabuddeen, Weeramantry, Koroma.

C. Unanimously, A threat or use of force by means of nuclear weapons that is contrary to Article 2, paragraph 4, of the United Nations Charter and that fails to meet all the requirements of Article 51, is unlawful;

D. Unanimously, A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict particularly those of the principles and rules of international humanitarian law, as well as with specific obligations under treaties and other undertakings which expressly deal with nuclear weapons;

E. By seven votes to seven, (by the President's casting vote), It follows from the above-mentioned requirements that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law;

However, in view of the current state of international law, and of the elements of fact at its disposal, the Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake;

IN FAVOUR: President Bedjaoui; Judges Ranjeva, Herczegh, Shi, Fleischhauer, Vereshchetin, Ferrari Bravo; AGAINST: Vice-President Schwebel; Judges Oda, Guillaume, Shahabuddeen, Weeramantry, Koroma, Higgins.

F. Unanimously, There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control."

Source: "Legality of the Threat or Use of Nuclear Weapons" (Advisory Opinion of July 8), UN Document A/51/218 (1996), reprinted in 35 I.L.M. 809 & 1343 (1996). Also available at the website: http://www.law.cornell.edu/icj1/opinion.htm.

United Nations A/C.1/53/L.45

General Assembly

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United Nations General Assembly Resolution 53/77 W.

Fifty-third session
First Committee
Agenda item 71 (p)
General and complete disarmament: follow-up to the advisory opinion of the International Court of Justice on the *Legality of the Threat or Use of Nuclear Weapons*

Algeria, Bangladesh, Brazil, Brunei Darussalam, Burundi, Colombia, Costa Rica, Ecuador, Egypt, El Salvador, Fiji, Ghana, Guyana, Honduras, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Kenya, Lao People's Democratic Republic, Lesotho, Malawi, Malaysia, Mexico, Mongolia, Myanmar, Namibia, Niger, Nigeria, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Samoa, San Marino, Sierra Leone, Singapore, Solomon Islands, Sri Lanka, Sudan, Suriname, Thailand, United Arab Emirates, Uruguay, Viet Nam and Zimbabwe: draft resolution

Follow-up to the advisory opinion of the International Court of Justice on the *Legality of the Threat or Use of Nuclear Weapons*

The General Assembly,

Recalling its resolutions 49/75 K of 15 December 1994, 51/45 M of 10 December 1996, and 52/38 O of 9 December 1997,

Convinced that the continuing existence of nuclear weapons poses a threat to all humanity and that their use would have catastrophic consequences for all life on Earth, and recognizing that the only defence against a nuclear catastrophe is the total elimination of nuclear weapons and the certainty that they will never be produced again,

Reaffirming the commitment of the international community to the goal of the total elimination of nuclear weapons and the creation of a nuclear-weapon-free world,

Mindful of the solemn obligations of States parties, undertaken in article VI of the Treaty on the Non-Proliferation of Nuclear Weapons, particularly to pursue negotiations

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in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament,

Recalling the Principles and Objectives for Nuclear Non-Proliferation and Disarmament adopted at the 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, and in particular the objective of determined pursuit by the nuclear-weapon States of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons,

Recalling also the adoption of the Comprehensive Nuclear-Test-Ban Treaty in its resolution 50/245 of 10 September 1996, and expressing its satisfaction at the increasing number of States that have signed and ratified the Treaty,

Recognizing with satisfaction that the Antarctic Treaty and the treaties of Tlatelolco, Rarotonga, Bangkok and Pelindaba are gradually freeing the entire southern hemisphere and adjacent areas covered by those treaties from nuclear weapons,

Noting the efforts by the States possessing the largest inventories of nuclear weapons to reduce their stockpiles of such weapons through bilateral and unilateral agreements or arrangements, and calling for the intensification of such efforts to accelerate the significant reduction of nuclear-weapon arsenals,

Recognizing the need for a multilaterally negotiated and legally binding instrument to assure non-nuclear-weapon States against the threat or use of nuclear weapons,

Reaffirming the central role of the Conference on Disarmament as the single multilateral disarmament negotiating forum, and regretting the lack of progress in disarmament negotiations, particularly nuclear disarmament, in the Conference on Disarmament during its 1998 session,

Emphasizing the need for the Conference on Disarmament to commence negotiations on a phased programme for the complete elimination of nuclear weapons with a specified framework of time,

Desiring to achieve the objective of a legally binding prohibition of the development, production, testing, deployment, stockpiling, threat or use of nuclear weapons and their destruction under effective international control,

Recalling the advisory opinion of the International Court of Justice on the *Legality of the Threat or Use of Nuclear Weapons*, issued on 8 July 1996,

Taking note of the relevant portions of the report of the Secretary-General (document A/53/208 dated 5 August 1998) relating to the objective on the implementation of resolution 52/38 O,

1. *Underlines once again* the unanimous conclusion of the International Court of Justice that there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control;

2. *Calls once again upon* all States to immediately fulfil that obligation by commencing multilateral negotiations in 1999 leading to an early conclusion of a nuclear weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat or use of nuclear weapons and providing for their elimination;

3. *Requests* all States to inform the Secretary-General of the efforts and measures they have taken on the implementation of the present resolution and nuclear disarmament, and requests the Secretary-General to apprise the General Assembly of that information at its fifty-fourth session;

4. *Decides* to include in the provisional agenda of its fifty-fourth session the item entitled "Follow-up to the advisory opinion of the International Court of Justice on the *Legality of the Threat or Use of Nuclear Weapons*".

VOTE ON RESOLUTION 53/77 W:

In favour: Afghanistan, Algeria, Angola, Antigua and Barbuda, Argentina, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Benin, Bhutan, Bolivia, Botswana, Brazil, Brunei Darussalam, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Costa Rica, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Democratic Republic of the Congo, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, Gambia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Ireland, Jamaica, Jordan, Kenya, Kuwait, Lao People's Democratic Republic, Lebanon, Lesotho, Libya, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Nepal, New Zealand, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Saudi Arabia, Senegal, Seychelles, Sierra Leone, Singapore, Solomon Islands, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Syria, Thailand, Togo, Trinidad and Tobago, Tunisia, Uganda, Ukraine, United Arab Emirates, United Republic of Tanzania, Uruguay, Vanuatu, Venezuela, Viet Nam, Yemen, Zambia, Zimbabwe.

Against: Albania, Andorra, Belgium, Bulgaria, Canada, Czech Republic, France, Germany, Greece, Hungary, Israel, Italy, Luxembourg, Monaco, Netherlands, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Turkey, United Kingdom, United States.

Abstain: Armenia, Australia, Austria, Azerbaijan, Belarus, Croatia, Cyprus, Denmark, Estonia, Finland, Georgia, Iceland, Japan, Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Norway, Republic of Korea, Republic of Moldova, Tajikistan, The former Yugoslav Republic of Macedonia, Turkmenistan, Uzbekistan.

Absent: Dominica, Federated States of Micronesia, Namibia, Palau.

13. **Non-Proliferation Treaty** — **European Parliament Resolution passed 13 March 1997**

B4-0197, 0221, 0241 and 0253/97

Resolution on the Non-Proliferation Treaty

The European Parliament,

- having regard to its previous resolutions on non-proliferation,

A. whereas the first nuclear NPT Preparatory Committee (Prepcom) since the Treaty's indefinite extension in 1995 will meet on 7-18 April 1997 in New York,

B. recalling the active role played by the EU during the NPT Review Conference in May 1995,

C. whereas the NPT Conference in 1995 resulted in agreements on strengthening the review process of the Treaty, principles and objectives for nuclear non-proliferation and disarmament and an indefinite extension of the Treaty,

D. welcoming the conclusion of the negotiations for the Comprehensive Test Ban Treaty (CTBT) and its adoption by the UN General Assembly in September 1996 and the signature by all Member States of the Union, and believing early ratification to be essential,

E. believing moves towards nuclear disarmament by the nuclear weapons states to be an essential complement to non-proliferation measures taken under the Treaty and in other fora, according to their obligations under Article 6 of the NPT,

F. whereas the first Prepcom will establish a precedent for the future review of the NPT,

G. believing that the advisory opinion of the International Court of Justice (ICJ), the report of the Canberra Commission and the statement by former generals and admirals of 4 December 1996 on the obligation to pursue nuclear disarmament in good faith are important contributions to the implementation of Article 6 of the NPT,

H. welcoming resolution 51/45M of the UN General Assembly on the advisory opinion of the ICJ and calling for the commencement of negotiations leading to a nuclear weapons convention in 1997,

1. Calls on the Council to make sure the Prepcom is used to assess progress made on the 1995 principles and objectives and to make concrete recommendations to the next Prepcom and to the Review Conference in the year 2000;

2. Calls on the Council to focus on making the implementation of the Treaty as efficient as possible and to promote the universality of the Treaty;

3. Calls on the Council to adopt a common position aimed at promoting the review process and strengthening the NPT and further EU non-proliferation policy;

4. Calls on all Member States of the European Union to ratify the CTBT urgently, and to adopt a joint action under Article J.3 TEU to promote signature and ratification by other states, to include all necessary assistance to these states to enable them to comply with the provisions of the Treaty;

5. Calls on the Members States to support the commencement of negotiations in 1997 leading to the conclusion of a convention for the abolition of nuclear weapons;

6. Instructs its President to forward this resolution to the Council, the Commission and the President of the first NPT Prepcom.

106TH CONGRESS
1ST SESSION

H. RES. 82

Recognizing the security interests of the United States in furthering complete nuclear disarmament.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 24, 1999

Ms. WOOLSEY (for herself, Ms. RIVERS, Mr. GEORGE MILLER of California, Mr. HINCHEY, Mr. MCGOVERN, Mr. STARK, Mr. FALEOMAVAEGA, Mrs. MINK of Hawaii, Mr. MARKEY, Mr. TOWNS, Mr. FRANK of Massachusetts, Ms. KILPATRICK, Mr. DEFAZIO, Ms. ESHOO, Mr. WAXMAN, Mr. HILLIARD, Mr. FILNER, Mr. RUSH, Mr. TIERNEY, Ms. SLAUGHTER, Ms. MCKINNEY, and Mr. BLUMENAUER) submitted the following resolution; which was referred to the Committee on International Relations

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RESOLUTION

Recognizing the security interests of the United States in furthering complete nuclear disarmament.

Whereas on February 2, 1998, former President Jimmy Carter and more than 100 former or current heads of state and civilian leaders from 46 nations issued a statement that "the world is not condemned to live forever with threats of nuclear conflict, or the anxious fragile peace imposed by nuclear deterrence" and that "the sheer destructiveness of nuclear weapons invokes a moral imperative for their elimination";

Whereas on December 5, 1996, General Lee Butler (U.S. Air Force Ret.) and more than 60 other retired generals and

admirals from 17 countries issued a statement that "the continuing existence of nuclear weapons in the armories of nuclear powers, and the ever-present threat of acquisition of these weapons by others, constitute a peril to global peace and security and to the safety and survival of the people we are dedicated to protect," and that "the creation of a nuclear-weapons-free world" is both "necessary" and "possible";

Whereas the development and maintenance of nuclear arsenals are extraordinarily expensive;

Whereas the end of the Cold War and the current strategic environment provide an unprecedented opportunity to revise our national policies on nuclear weapons;

Whereas the United States has a vital security interest in promoting the nonproliferation and disarmament of nuclear weapons;

Whereas the only security from the threat of nuclear weapons is their elimination under strict and effective international control;

Whereas the United States has undertaken, under Article VI of the Nuclear Non-Proliferation Treaty, to pursue negotiations in good faith on effective measures relating to nuclear disarmament;

Whereas the long-term viability of the nonproliferation regime is at risk if the United States fails to implement the Article VI obligation;

Whereas the United States has successfully achieved nuclear arms reductions and other arms control measures through bilateral negotiations and reciprocal actions;

Whereas on July 8, 1996, the International Court of Justice, in response to a request for an advisory opinion from the

United Nations General Assembly, concluded that "the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict" and that "there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control";

Whereas on December 9, 1997, the United Nations General Assembly adopted by an overwhelming majority Resolution 52/38 O following up on the advisory opinion of the International Court of Justice and calling upon all states to fulfill their nuclear disarmament obligation by commencing multilateral negotiations in 1998 leading to the early conclusion of a nuclear weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat, or use of nuclear weapons and providing for their elimination, and requesting all states to inform the Secretary-General of the United Nations of the efforts and measures they have taken on the implementation of the resolution and nuclear disarmament; and

Whereas on November 17, 1997, Costa Rica submitted to the Secretary-General of the United Nations a Model Nuclear Weapons Convention as a "work in progress setting forth the legal, technical, and political issues that should be considered in order to obtain an actual nuclear weapons convention," and the Model Nuclear Weapons Convention subsequently was translated into the 6 official United Nations languages and circulated as a United Nations document (A/C. 1/52/7): Now, therefore, be it

Resolved, That the House of Representatives—

(1) welcomes the Model Nuclear Weapons Convention as a discussion document intended to further negotiations on complete nuclear disarmament;

(2) urges the President to initiate multilateral negotiations leading to the early conclusion of a nuclear weapons convention; and

(3) requests the President to inform the Secretary-General of the United Nations of the efforts and measures the United States has taken on the implementation of United Nations General Assembly Resolution 52/38 O and nuclear disarmament.

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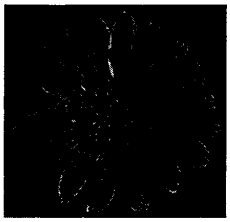

Abolition 2000

A Global Network to Eliminate Nuclear Weapons

'Sunflowers instead of missiles in the soil will insure peace for future generations.'
– US Secretary of Defense William J. Perry, June 4, 1996, the day Ukraine officially gave up its nuclear weapons. Russian and Ukrainian defense secretaries joined him in a ceremony planting sunflowers on a former missile silo.

Abolition 2000 Statement

In April 1995, during the the Non-Proliferation Treaty Review and Extension Conference, activists from around the world recognized that the issue of nuclear abolition was not on the agenda. They joined to write the following statement that has become the founding document of the Abolition 2000 Network. Over 600 NGOs on six continents have now signed it and are participating in various working groups to accomplish the eleven points listed here. To sign onto this statement please send your contact name, organization name, address, fax, telephone and email to: David Krieger, Abolition 2000 Network, 1187 Coast Village Road #123, Santa Barbara, CA 93108, USA tel:+1 805-965-3443, fax: +1 805-568-0466, email: wagingpeace@napf.org.

TO JOIN THE ABOLITION EMAIL LIST SERVER, SEND A MESSAGE TO MAJORDOMO@IGC.APC.ORG. WRITE: SUBSCRIBE ABOLITION-CAUCUS [YOUR EMAIL ADDRESS HERE].

A secure and livable world for our children and grandchildren and all future generations requires that we achieve a world free of nuclear weapons and redress the environmental degradation and human suffering that is the legacy of fifty years of nuclear weapons testing and production.

Further, the inextricable link between the 'peaceful' and warlike uses of nuclear technologies and the threat to future generations inherent in the creation and use of long-lived radioactive materials must be recognized. We must move toward reliance on clean, safe, renewable forms of energy production that do not poison the environment for thousands of centuries. The true 'inalienable' right is not to nuclear energy, but to life, liberty and security of person in a world free of nuclear weapons.

We recognize that a nuclear weapons free world must be achieved carefully and in a step by step manner. We are convinced of its technological feasibility. Lack of political will, especially on the part of the nuclear weapons states, is the only true barrier. As chemical and biological weapons are prohibited, so must nuclear weapons be prohibited.

We call upon all states -- particularly the nuclear weapons states, declared and de facto -- to take the following steps to achieve nuclear weapons abolition. We further urge the stated parties to the NPT to demand binding commitments by the declared nuclear weapons states to implement these measures:

1. Initiate immediately and conclude by the year 2000 negotiations on a nuclear weapons abolition convention that requires the phased elimination of all nuclear weapons within a timebound framework, with provisions for effective verification and enforcement.*
2. Immediately make an unconditional pledge not to use or threaten to use nuclear weapons.
3. Rapidly complete a truly comprehensive test ban treaty with a zero threshold and with the stated purpose of precluding nuclear weapons development by all states.
4. Cease to produce and deploy new and additional nuclear weapons systems, and commence to withdraw and disable deployed nuclear weapons systems.
5. Prohibit the military and commercial production and reprocessing of all weapons-usable radioactive materials.
6. Subject all weapons-usable radioactive materials and nuclear facilities in all states to international accounting, monitoring and safeguards, and establish a public international registry of all weapons-usable radioactive materials.
7. Prohibit nuclear weapons research, design, development, and testing through laboratory experiments including but not limited to non-nuclear hydrodynamic explosions and computer simulations, subject all nuclear weapons laboratories to international monitoring, and close all nuclear test sites.
8. Create additional nuclear weapons free zones, such as those established by the treaties of Tlatelolco and Rarotonga.
9. Recognize and declare the illegality of the threat or use of nuclear weapons, publicly and before the World Court.
10. Establish an international energy agency to promote and support the development of sustainable and environmentally safe energy sources.
11. Create mechanisms to ensure the participation of citizens and NGOs in planning and monitoring the process of nuclear weapons abolition.

A world free of nuclear weapons is a shared aspiration of humanity. This goal cannot be achieved in a non-proliferation regime that authorizes the possession of nuclear weapons by a small group of states. Our common security requires the complete elimination of nuclear weapons. Our objective is the definite and unconditional abolition of nuclear weapons.

* The convention should mandate irreversible disarmament measures, including but not limited to the following: withdraw and disable all deployed nuclear weapons systems; disable and dismantle warheads; place warheads and weapons-usable radioactive materials under international safeguards; destroy ballistic missiles and other delivery systems. The convention could also incorporate the measures listed above which should be implemented independently without delay. When fully implemented, the convention would replace the NPT.

Abbreviations

ABM	Anti-Ballistic Missile
BWC	Biological Weapons Convention
C3	Command, Control and Communications
CTBT	Comprehensive Nuclear Test Ban Treaty
CWC	Chemical Weapons Convention
DOD	Department of Defense (U.S.)
DOE	Department of Energy (U.S.)
FMCT	Fissile Materials Cutoff Treaty
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICC	International Criminal Court
ICJ	International Court of Justice
INF	Intermediate-range Nuclear Forces
MINATOM	Ministry of Atomic Energy (Russia)
MNWC	Model Nuclear Weapons Convention (also model NWC)
MOX	Mixed Oxide (fuel)
MUF	Material Unaccounted For
NATO	North Atlantic Treaty Organisation
NGO	Non-Governmental Organization
NNWS	Non-Nuclear Weapons State
NPT	Nuclear Non-Proliferation Treaty
NWC	Nuclear Weapons Convention
NWS	Nuclear Weapons State
OPCW	Organisation for the Prohibition of Chemical Weapons
SS&M	Stockpile Stewardship and Management Program (U.S.)
START	Strategic Arms Reduction Treaty
UN	United Nations
UNSCOM	United Nations Special Commission

On the cover: “What kind of security do we want?”
The caption to this UN photo reads,
“Military security at any cost and beyond all need —
or the security that comes from a life that is
free from fear and distrust, poverty and dispair?
The UN was created to help the world find real security.
If the world fails — if we fail — to find a way to disarm,
the world’s children — our children —
might have no future at all.”
United Nations 149,785 (DB)

Model Nuclear Weapons Convention Drafters and Consultants

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Organizations are listed for identification purposes only. Drafters and consultants do not necessarily agree with all the provisions of the model NWC or any other parts of this book.Additional contributors are indicated in Section 3, Comments and Critical Questions.