How Secure and Sustainable are Nuclear Weapons?

- Health, Environmental and Safety Risks
- Nuclear NATO, Risks and Costs
- Nuclear Strategy and Middle East
- Future of Nuclear Arms Control
- NPT PrepComm, Conferences
How Long Can Nuclear Insecurity be Sustained?

Those who argue that nuclear deterrence has protected peace for five decades must live on a different planet. Probably, they don’t live at Semipalatinsk, Tomsk or Chelyabinsk, at the Nevada test site, Rocky Flats or Oak Ridge, in Lop Nur, Moruroa or the Marshall Islands, and many other places which have been contaminated during the Cold War nuclear arms race. They also must have ignored the dozens of wars that killed millions of people. And they do not belong to the hundreds of future generations that have to deal with the problem of nuclear waste from nuclear weapons development. An understanding of peace as the absence of nuclear war is too limited.

Even without nuclear war, tens of thousands of produced nuclear weapons and thousands of tons of nuclear waste kill and threaten security on all levels. Estimates of Cold War victims due to nuclear weapons development and testing are in the order of hundreds of thousands. Both superpowers did not hesitate to sacrifice their own populations, even less the populations of other countries and regions.

From today’s perspective it seems incredible that recently has been uncovered by a 100,000 page report of the US National Cancer Institute which examined the exposure of the American people to radioactive iodine-131 and the associated risks of thyroid cancer. From 10,000 to 75,000 cases of thyroid cancer in the U.S. will be the result of I-131 fallout.

Exact numbers on casualties cannot be given, partly because there is an ongoing scientific controversy on the impact of low-level radiation on health. But if recent research results are true (see the conclusions of Wolfgang Köhlnlein and Rudi Nussbaum), then more victims will appear than previously assumed.

And it is not only human life that is affected. For instance, according to recent reports, near the Sellafield plant in the U.K., pigeons have been found to be highly radioactive. Life as nuclear waste?

The nuclear arms race has left “nuclear wastelands” in many parts of the globe (so the title of a book by Arjun Makhijani, Howard Hu and Katherine Yih, of which we provide an excerpt here). Some of the worst damages occurred in the former Soviet Union (see Nils Bohmer and Alexey Yablokov for Northwest Russia). Another region contaminated under the veil of secrecy is the South Pacific, in particular Polynesia (see the summary from a recent study). Cleaning-up this mess would cost hundreds of billions of dollars, which add to the four trillion dollars of the nuclear arms race spent only in the US, not to speak of the former Soviet Union. It is no surprise that the Russian economy still suffers from the consequences of this heavy burden.

With nuclear weapons still in operation, there is also a continued risk of nuclear use, which could produce millions of casualties per year, as Ike Jeanes estimates with a computer model. The crux with nuclear weapons is that a few hundreds down to a few dozens are still sufficient to inflict unacceptable damage. With nuclear deterrence, decisions go so close to the edge of disaster that already minor events or malfunctions could cross the escalation threshold.

Despite these risks, the world’s main power block, led by the United States, still sticks to nuclear deterrence and inspires others, including Russia, to imitate this behavior. The old new strategy, as represented by the U.S. Presidential Decision Directive (PDD-60) (Götz Neuneck) can be interpreted as a warfighting doctrine against those who do not obey the rules imposed by the leader. A strategy to maintain world order by putting the South on a target list runs contrary to developments of creating a nuclear-weapon-free Southern hemisphere (Bahig Nassar).

The recent confrontation with Iraq was helpful to justify this strategy. Saddam, armed with Weapons of Mass Destruction (WMD) by Western suppliers, is the enemy needed (Xanthe Hall). Nuclear brinkmanship has brought the region closer to the incredible and unthinkible, but for this time war was avoided by the diplomatic initiative of UN Secretary General Kofi Annan. That hundreds of thousands of children have been dying of hunger and disease in Iraq due to sanctions since the Gulf War, can be easily forgotten in the US-Iraqi duel.

The conflict in the Middle East fits to the expansion of NATO towards Eastern Europe. NATOization of Europe alienates countries in East and South, increases Russian vulnerabilities and dependency on nuclear weapons, endangers the disarmament process, contributes to a pro-nuclear shift in non-nuclear countries and, by opening a new arms sales bonanza, distracts resources urgently needed for development (Jiri Matousek, Karina Wood, Alistair Millar). Even if NATO has “no intention, no plan and no reason” to deploy nuclear weapons, they still have “any option, any means, and any power” to do so. It is even possible that with NATO expansion there is “no intention, no plan and no reason” left for nuclear disarmament. The most urgent demand is therefore to de-nuke NATO, a demand that has been expressed by many during the “No to NATO Expansion” Speakers Tour of the United States. (Karina Wood)

In the near future, a number of important decisions have to be taken to reduce the nuclear threat, incuding START II and III, a fissile ban, no-first use, more nuclear-weapons-free zones, and ultimately a Nuclear Weapons Convention. Immediate steps could be taken, reducing the risk of accidental, unauthorized or erroneous use of nuclear weapons, as Steve Fetter points out, who also suggests restrictions on nuclear warhead and fissile-material stockpiles and on the operation and targeting of nuclear forces.

Martin Kalinowski outlines proposals for qualitative disarmament by treaty and describes his proposal for a WMD-free zone in the Middle East, which includes cooperative non-intrusive monitoring as confidence-building measure.

Quite promising are recent activities for citizen inspection and verification teams in the USA, the UK, Israel and other countries which could form a basis for societal verification in a nuclear-weapon-free world (see the account by Charles Lenchner). An opportunity to involve more NGOs in the decision-making process is the NPT PrepComm in Geneva, April 27 to May 8 to which NGOs have prepared in advance joint statements on various issues. The growing networks of NGOs around the globe form a backbone for containing the explosive path of current world development which endangers peace, environment and development at the same time.

One of the main reasons that the industrialized world is so interested in the Middle East and the Persian Gulf region is oil. Since fossil fuels will become more scarce in the coming decades, the causes for conflict will increase. The same is true for other resources, including water, food or biodiversity. Increasingly, the struggle for access to scarce resources becomes a motive for defense policy: the triangle of growth, force and violence needs the military to protect against its negative consequences (Jürgen Scheffran).

With this issue we want to point to the link between security and sustainability with regard to nuclear weapons. For David Krieger nuclear weapons make no contribution to either security nor sustainability. Liu Huaqiu calls them “cruelly inhumane” and for Tobias Damjanov nuclear weapons are the most unsustainable thing that can be imagined because they threaten the destruction of humanity as well as the biosphere (Tobias Damjanov).

In this regard, the abolition of nuclear weapons is an important contribution to sustainable development.

Jürgen Scheffran
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Security and Sustainability in a Nuclear Weapons Free World

David Krieger

There is a danger that the contemplation of security and sustainability in a nuclear weapons-free world will imply to some readers that nuclear weapons have in some way provided security and even sustainability. It is not my intention to imply this. I believe that nuclear weapons have never at any time provided security for their possessors, and that they make no contribution to sustainability.

The world that we currently live in—a world divided between a small number of states possessing nuclear weapons and a large number of states that do not—is neither secure nor sustainable. If nuclear weapons in fact provided security, logic would suggest that an effort be made to spread these weapons to other states. In fact, the opposite viewpoint has prevailed. Most states, including those currently in possession of nuclear weapons, support policies of non-proliferation.

The Non-Proliferation Treaty (NPT), which has been in force since 1970, requires a trade-off from the nuclear weapons states. In exchange for the non-nuclear weapons states agreeing not to develop or otherwise acquire nuclear weapons, the nuclear weapons states agreed in Article VI to negotiate in good faith to achieve nuclear disarmament. When the NPT was extended indefinitely in 1995, the nuclear weapons states promised the determined pursuit of “systematic and progressive efforts” to achieve nuclear disarmament.

The failure of the nuclear weapons states to make significant progress toward nuclear disarmament may result in undermining the NPT, and in the proliferation of nuclear weapons to additional states beyond the five declared and three undeclared nuclear weapons states. Such proliferation would further bolster the insecurity and unsustainability of the current international system.

Security

Security has two critical dimensions: protection from physical harm, and access to resources to meet basic needs. It also has a third dimension, an illusory psychological dimension, that operates at the level of belief systems. Nuclear arsenals do not provide security from physical harm. The only security they provide is in this psychological dimension, rooted in a belief in the efficacy of deterrence. The threat of retaliation with nuclear weapons is not physical protection; the protection provided is only psychological. An opponent’s fear of retaliation may or may not prevent that opponent from launching a nuclear attack based upon irrationality, faulty information, human error, or mechanical or computer malfunction.

A world without nuclear weapons would be one in which the threat of cataclysmic nuclear holocaust would be removed. Achieving such a world will require careful planning to assure that some states do not secretly retain nuclear weapons or clandestinely reassemble them. As states reduce their nuclear arsenals toward zero, an agreed upon plan will be required to assure transparency, accurate accounting of nuclear weapons and weapons-grade materials, effective procedures for verification of dismantlement and the controlled and safeguarded immobilization of nuclear materials and the production facilities to create them. The process of reducing nuclear arsenals to zero will be challenging both technically and politically, but it is a challenge that can be accomplished with determination and political will.

The process of nuclear weapons abolition will demand the creation of stronger systems of international security. Thus, achieving abolition will, by the nature of the process, coincide with strengthened international security arrangements. In order to have a security system that assures maximum protection against physical harm and access to resources to meet basic needs, it will be necessary to go even further in system design than the elements required to maintain security in a world without nuclear weapons. The main components of this security system would be:

1. All states would be allowed to maintain only weapons for defence against territorial invasion, and no weapons with offensive capabilities.

2. Each state would be subject to regular and challenge inspections by international teams to assure that it is neither maintaining nor creating any offensive weapons systems, particularly weapons of mass destruction.

3. All states would be required to make periodic public reports of the types and numbers of weapons in their arsenals.

4. An International Criminal Court would be responsible for holding individual leaders responsible for the most serious crimes under international law (crimes against humanity, war crimes, genocide, and international aggression), and for violations of the conditions specified in points 1 to 3 above.

5. A United Nations Inspection Force would be created to conduct inspections and monitor states for violations of points 1 to 3 above.

6. The United Nations Security Council would be responsible for enforcement of points 1 to 3 above, for apprehending serious violators of international law, and for assuring cooperation with the United Nations Relief Force.

7. The United Nations system—including the General Assembly, the World Bank, the UN Development Programme and other specialized agencies, and a UN Disaster Relief Force—would be charged with assuring that all peoples of all states have access to the necessary resources to meet their basic needs.

Sustainability

Sustainability is the protection of the resources required to meet basic needs for present and future generations, and the upholding of the quality of these resources. Sustainability requires environmental protection to ensure the quality of the air, the water, and the earth. It is no longer possible to ensure sustainability in any state anywhere in the world if all states do not cooperate in protecting the Earth’s resources and the common heritage of the planet—the atmosphere, the oceans and the land. Clean air and water and unpolluted topsoil to grow healthy crops must be maintained if we are to have a sustainable future.

Over 1000 nuclear weapons tests in the atmosphere and a roughly equal number of underground tests have already made a heavy assault upon the environment, as have thousands of tons of nuclear wastes, large quantities of which have already leaked into...
the earth, air and water. Sustainability will require not only a nuclear weapons free future, but a future in which nuclear wastes are also not generated by civilian nuclear reactors. Present and future generations are already burdened with enormous problems from the nuclear wastes created by both military and civilian nuclear reactors. Some of this waste will be a threat to life for tens of thousands, even hundreds of thousands, of years.

It is unfair to burden future generations with still more dangerous radioactive wastes. What has been produced to date has been the product of ignorance, arrogance, and blind faith, sadly, by some of the best minds of our time. Sustainability requires having an answer to the problem of dangerous wastes before they are produced rather than burdening future generations with these problems.

Beginning the Process

A world that is divided between nuclear “haves” and “have nots” is neither secure nor sustainable. Nuclear weapons pose a threat to humanity and to all forms of life. If they continue to be relied upon, at some point in the future they will again be used. It is a strong lesson of history that weapons once created will be used — as indeed nuclear weapons have already been used at Hiroshima and Nagasaki.

The challenge of the highest magnitude before humanity today is to ban forever these weapons which constitute such a serious threat to humanity’s future. The opportunity is before us with the Cold War ended. The nuclear weapons states have promised to negotiate in good faith to achieve nuclear disarmament. The International Court of Justice has stated its opinion that the nuclear weapons states are obligated to complete negotiations leading to nuclear disarmament in all its aspects. In fulfilling this mandate, these states must consider the issues of security and sustainability in a nuclear weapons free world.

A secure and sustainable world order without nuclear weapons is achievable. It cannot occur, however, so long as the nuclear weapons states are wedded to their nuclear arsenals. The first step in breaking their addiction is to begin negotiations in good faith to achieve their elimination. If they are to complete the journey, they must first begin and thus far serious negotiations to eliminate nuclear arsenals have not begun.

An international consortium of lawyers, scientists and disarmament experts led by the Lawyers Committee on Nuclear Policy (LCNP) with technical assistance from the International Network of Engineers and Scientists Against Proliferation (INESAP) have prepared a draft Nuclear Weapons Convention that has been introduced by Costa Rica to the United Nations General Assembly. This Convention — which draws upon previous international treaties including the Chemical Weapons Convention — provides indicators of the issues that the nuclear weapons states will have to resolve to achieve a treaty they can support. It provides a good starting point for the nuclear weapons states to begin the process of negotiations for abolishing their nuclear arsenals.

What is missing now is the political will to begin the process. Many actions of the nuclear weapons states suggest that they are more interested in “systematic and progressive efforts” to impede rather than achieve nuclear disarmament. There is only one way that this can change, and that is by the people making their voices heard. When the people of the world understand the extent to which their security and a sustainable future for their children and grandchildren is threatened by the continued reliance of the governments of the nuclear weapons states upon nuclear arsenals, they will demand that the promises of nuclear disarmament be kept. It is our job to bring about that understanding.

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Security and Sustainable Development

With or Without Nuclear Weapons?

Liu Huaqiu

Nuclear weapons remain a controversial issue. It is, however, the general view of the international community that a nuclear-weapon-free world would be conducive to global security and sustainable development.

As weapons of mass destruction, nuclear weapons are cruelly inhumane weapons. The July 8, 1996 decision of the International Court of Justice stated that it is generally illegal to use or to threaten to use nuclear weapons. From a legal point of view, it would be virtually impossible to use nuclear weapons without violating the laws of arms conflict. Other weapons of mass destruction, namely biological and chemical weapons, have been banned, but nuclear weapons, which are more destructive to life on earth and to human beings, are not banned. Isn’t this inherently contradictory?

In the view of some nuclear states, nuclear weapons can prevent war. This argument is groundless. After World War 2, regional wars and conflicts cropped up one after another. Nuclear powers were directly or indirectly involved in most of these wars and conflicts. It is true that no nuclear war broke out between the two major nuclear powers, United States and former Soviet Union, but the nuclear balance was unstable and led to a dangerous nuclear arms race. Both superpowers had recognized that a conventional war between them was highly likely to result in a nuclear war. Both countries would be defeated in the war which would bring calamity to the world. If the assertion that nuclear weapons can prevent war were correct, then it would be reasonable for quite a number of countries to say: “Given this, we will need to develop nuclear weapons”. Will it lead to further proliferation of nuclear weapons?

In a world with existing nuclear weapons, whole mankind is living in “a peace of terror”. We can still recall with fear the 1962 Cuban Missile Crisis in which the U.S and the Soviet Union were on the brink of a nuclear war. In addition, the list of historical false alarms is long; for instance, in 1979 someone even fed a war game simulation into a North American Air Defense computer. Thus, dangers of accidental nuclear war do exist. What is more: without elimination of nuclear weapons, there is the possibility of theft of nuclear weapons or weapon-grade fissile materials by terrorists and the danger of nuclear terrorism activities.

Some nuclear powers argued that they needed nuclear retaliation to contain biological and chemical weapon attacks from...
certain countries. I do not think the argument is fully grounded. Use of biological and chemical weapons will be surely subject to condemnation by people throughout the world, and first use of nuclear weapons which are more destructive will be inevitably subject to sanctions of the international community. Therefore the credibility and effect of using nuclear weapons to deter biological and chemical weapons is rather low. In fact, the nuclear power with such argument possesses the most powerful conventional force, far enough to contain or defeat biological or chemical weapons attack from its enemy countries.

The United States continues to adopt the extended nuclear deterrence, aiming at protecting its allies by using nuclear weapons and at the same time preventing them to develop nuclear weapons by providing them with a nuclear umbrella. But virtually, the very powerful conventional force of the U.S. is adequate to protect its allies. Actually, providing its allies with a nuclear umbrella to prevent them from developing nuclear weapons is not the best way to establish a nuclear-weapon-free-world.

The heavy economic burden as a result of the nuclear arms race has worn out the former Soviet Union down as well as half of the United States. Till today, U.S. spends 25-30 billion U.S dollars each year to keep its huge nuclear arsenal. This is still a tremendous economic burden. Moreover, environmental damage lingers for decades if not centuries after nuclear explosions. Vegetation in Bikini Island, a late-1940s U.S. nuclear weapons test site, still remains toxic, and on Mururoa Atoll, French underground tests have damaged fragile coral reefs. Testing and production of nuclear weapons have already destroyed major ecosystems around the world. In the former USSR, Lake Karachai in the Southern Urals is thought to be the most contaminated body of water on Earth—it is so radioactive that a person who stood on its shores for just one hour would receive a lethal dose of radiation. The nuclear weapons research, testing, and production complex in the United States consists of some 19 sites around the country occupying more than 3,900 square miles — more than the total land area of Delaware, Rhode Island and the District of Columbia combined. The Department of Energy (DOE) has conservatively estimated that the federal government will be required to spend USD230 billion over the next 75 years to “cleanup” the existing mess. Yet a current DOE planning document indicates that more wastes will be generated by nuclear weapons related activities over the next two decades than from the cleanup of past activities.1

It is in the opinion of many people that possession of the nuclear weapon is the symbol of major power. It is true that the five permanent members of the United Nations are nuclear states. However, with the role of nuclear weapons ever decreasing, comprehensive national strength is increasingly becoming the symbol of big power status.

Conclusions

We may draw a conclusion from discussion above: the establishment of a nuclear-weapon-free world is conducive to world security and sustainable development.

1. A nuclear-weapon-free world will remove from root the danger of nuclear war.
2. A nuclear-weapon-free world will fundamentally settle the issue of nuclear proliferation. Should nuclear states continue to maintain their nuclear arsenals, nuclear proliferation will be inevitable.
3. The establishment of a nuclear-weapon-free world is conducive to protect our living environment, to the benefit of our future generations.
4. A nuclear-weapon-free world will help to create a harmonious international environment and promote regional or global peace and stability, thus eliminating arms race and drastically reducing military expenditure which will in turn facilitate development in economic scientific, technological and cultural fields of all countries.

It is self-evident that in order to prevent some countries from breakout, a set of complete and rigid verification mechanisms (including societal verification) is necessary for the establishment of a nuclear-weapon-free world.

A nuclear-weapon-free world is helpful for world peace and sustainable development, yet it can not assure to attain world peace and sustainable development. In the view of the author, to achieve the goal of world peace and sustainable development, at least two factors should be taken into consideration.

1. Establish an international political and economic new order on the basis of the U.N. Charter and the Five Principles of Peaceful Coexistence: All countries of the world, big or small, should be equal, respect each other, refrain from interfering in the internal affairs of other countries and seek to settle disputes through peaceful negotiations so as to set up genuine democracy in international relations. The irrational and unjust old international economic order is an important factor in causing poverty and backwardness in developing countries. The international community, the developed nations in particular, should take truly effective measures to assist the vast number of developing countries to develop their economies, for instance, by helping nations of South East Asia to overcome the financial crisis. Without economic development and social progress in developing countries, it is hard to maintain long-term tranquility and prosperity in the world.

2. Strengthen the role of the United Nations: The status and the role of the U.N. in international affairs is irreplaceable by other international organizations or state groups. Efforts should be made to give more play to the role of U.N. in setting up a new world order, solving international disputes by peaceful means and promoting economic growth of all nations, developing nations in particular. All member states of U.N. are equal members of the organization. All international affairs should be dealt with in accordance with the purposes and principles of the U.N. Charter. No state has the right to override the United Nations acting as world leader.

The author believes that in a nuclear-free world with an international political and economic new order of democracy, justice and reasonableness, world security and sustainable development is sure to come into being.


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Sustainable Peace
Towards a Linkage Without Nuclear Weapons

Jürgen Scheffran

“In the course of some thousands of years the human species has established a great civilization. It has produced a multifarious culture which accumulated enormous treasures in art and literature. And it has created supreme edifices of science. Therefore, it is of supreme irony that these very developments, intellectual developments of the human species have lead to the creation of the tools of its self-destruction. There are many ways in which life on this planet can be extinguished. Of course there is the slow lingering death by poisoning the environment ... But there is also a way of extinguishing life in one act. That is made possible by the advent of nuclear weapons.”


At the end of the 20th century, our planet is in severe danger. A vast range of interrelated problems is threatening mankind and the biosphere we live in, including environmental destruction, climate change and biodiversity loss, poverty and hunger, population growth and refugees, drugs and crime, the spread of armament and violence. The solution of this complex web of problems, reminding to the Gordian knot, requires enormous efforts of the world’s societies and political systems. While efforts to heal the wounds are growing, the world’s power structures still prevent fundamental solutions which would resolve the problems at their roots. A mutually enforcing triangle of economic growth, political power and military force, accelerated by scientific and technical innovations and the quest for globalization, is driving the world towards a catastrophe.

Destructive growth and the balance of life

A main cause for mankind’s explosive path is exponential growth, not just of the size of human population but of the amount of goods produced and environmental damage inflicted. Growth is a substantial feature of life and nature controls growth by a dynamic balance of birth and death. If this balance is disturbed for a longer period, then either the organism and its population dies, or the limits of growth are established by over-consumption of available resources, resulting in increased death rates until a new balance is reached or the whole system breaks down. Mankind is on the edge of irreversibly destroying the resource base created by nature over millions of years: unlimited production leads to destruction.

Increasing scarcity of resources implies that those who live in the lower classes of world’s societies will be hit more severely, and often more deadly, than those who have still plenty of resources available and profit from the self-perpetuating machinery of growth. Even among the rich, however, the expectation of future risk leads to growing perceptions of insecurity on all levels, economic, social, ecological, political and military. As a consequence, security services all over the world are expanding, and those who have more to lose are more willing and more capable to defend their interests. A vicious cycle emerges, between insecurity associated with growth and the need to protect security by more growth.

With declining security, the military establishments use any opportunity to justify their existence that was questioned by the end of the Cold War. The masters of security are trying to expand their responsibilities into virtually any field of international relations that can be associated with an extended understanding of security, including nuclear targeting, counterproliferation and conventional warfare, the protection of oil fields and other natural resources, the defense of human rights as well as disaster relief and environmental protection. With more catastrophes created by the system they defend, they have more to defend.

Preventive Defense—bitter medicine

For instance, NATO deals with a number of activities related to environmental problems, and the Pentagon has established a Department for Environmental Security. The 1996 U.S. National Security Strategy identifies a number of environmental problems which are predominantly perceived as threats to national security:

“Increasing competition for the dwindling reserves of uncontaminated air, arable land, fisheries and other food sources and water, once considered ‘free’ goods, is already a very real risk to regional stability around the world. The range of environmental risks serious enough to jeopardize international stability extends to massive population flight from manmade or natural catastrophes, such as Chernobyl or the East African drought, and to large-scale ecosystem damage caused by industrial pollution, deforestation, loss of biodiversity, ozone depletion, desertification, ocean pollution and, ultimately, climate change.”

In a speech at Harvard University on May 13, 1996 the former Secretary of Defense William J. Perry even compared the new mission with medicine: “Preventive defense may be thought of as analogous to preventive medicine. Preventive medicine creates the conditions which support health, making disease less likely and surgery unnecessary. Preventive defense creates the conditions which support peace, making war less likely and deterrence unnecessary.”

No one would object if the military would perform its task in a more environmentally friendly way, would help those in danger by natural or man-made disasters or would be converted to environmental or other useful purposes. The problem, however, is that as long as the military exists, its main task is inherently contradictory to the goals of environmental protection. It is essentially based on means that are destructive, not only during their use but also during their development, production, deployment and even during their elimination. A “Green Helmet” can be no justification to maintain the huge and costly arsenals of destruction.

No other military “tool” proves this in such an obvious way as the atomic bomb. Nothing realizes and symbolizes the principles of growth, power and force more than the chain reaction of a nuclear explosion. It smashes nature into its tiniest pieces to inflict the maximum possible damage upon
life. Nuclear weapons are the peaks in the triangle of growth, power and violence, and this is exactly the reason why those who rely on that triangle want to keep nuclear weapons: they see it as the ultimate guarantee that their way of life can be protected. For them it is the Big Stick if something goes wrong with their system.

But this way of thinking cannot be generalized and can thus not be sustained. It undermines the fundament of its own existence. If the triangle and its nuclear guardians are demonstrated as the key to wealth and success by the Western power bloc, then nothing can in the long run prevent other powers in the world to imitate this behavior, to achieve economic growth, to aim for power, to use military force, to get the bomb: the supposed advantage can only last for a relatively short period and forces those who want to keep the advantage to multiply efforts and resources until none are left. Russia, China, India, Iran, Brazil and other states will follow the Western pathfinders, will form coalitions if expelled from the dominant power bloc. In the long run, Western States become a minority in world society, and will be treated as such if they try to dominate. The main question then will be: how will in a world of several major powers the shrinking cake of natural resources be distributed? What role will the military establishments and the then existing nuclear arsenals play?

One lesson from the Cold War is that in an unrestricted arms race everyone is bleeding. The reckless hunt for victory makes even winners to losers. The enormous devastations from the East-West confrontation have left open wounds for current and future generations. A new confrontation between North and South, fuelled by expansion of nuclear NATO and by targeting a nuclear-weapon-free South with more sophisticated (nuclear) weaponry, could create even deeper wounds. Nuclear weapons cannot be part of preventive defense. In their deadliness, they are a major cause of the global sickness.

Linking peace and sustainable development

To prevent the so-called “Clash of Civilizations” a development path needs to be demonstrated that can be generalized and extended to the whole world, a path that is compatible with the social and natural environments in all countries. This path is not just fantasy or pure vision. It has been already outlined in numerous studies and can be summarized by the term “sustainable development”. Though there is a wide-range of meanings of this concept, they are based on the definition of the Brundtland Report as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable development comprises strategies that try to achieve a balance between human beings, their societies and nature for present and future generations. Since sustainable development concerns the satisfaction of human needs without destroying the basic conditions of life, it could contribute to a truly preventive concept of global risk avoidance and preservation of peace, far more effective than all attempts to control violence in a non-peaceful world.

There is a fundamental relationship between sustainable development and peace: while sustainable development is an essential condition for peace, the preservation of peace is an essential condition for the cooperative implementation of sustainable development. On the other hand, if the world remains or becomes more violent and unpeaceful, sustainable development, requiring a large degree of cooperation, is threatened, which in return could be a cause for violent environmental conflicts. The inherent linkage between concepts of peace and sustainable development needs to be developed, not in a blocking but in a mutually stimulating way.

It is a crucial question for the future whether it will be possible to evade the vicious circle of economic growth, concentration of political power and aggravation of violence, and how an orderly transition can be made from a world of environmental destruction, underdevelopment and war to a peaceful and sustainable world. In order to avoid conflicts related to the scarcity of resources or at least to reduce their destructive effects, a bundle of measures is required that is not limited to the traditional means of conflict management, such as military intervention, arms control, refugee support and disaster operations. Concepts of sustainable development that are concerned on preventively excluding causes for conflicts (such as preservation and efficient usage of resources, equity and justice, strengthened cooperation, changing of lifestyle) also constitute a substantial contribution to the preservation of peace. Reversely does a peace that relies on avoiding dangerous conflict situations, on preventive arms control and reduction of violence, on the abolition of nuclear weapons and war, on compliance with human rights and cooperation, create the conditions for sustainable development. Though a world without conflicts may be neither achievable nor desirable, conflicts should avoid violence and need to be mediated in a way that helps in developing society.

There will be no role for nuclear weapons to play in a more peaceful and sustainable world, on the contrary: they prevent it because they are based on principles violating both peace and sustainable development. This is the reason why the world community, entering the new millennium, should get rid of these monstrous weapons that symbolize so badly the ending century of violence. They belong to the past, not to the future.


“Going back to the very basis of life, life is development. We start to develop from an embryo to go all the time: this is development. The human species is development, other species are, all life is development and the question is: can it be sustained? Can life be sustained in the face of the weird activities in which human society is now being involved.”

Joseph Rotblat, Closing words of the INES Conference, August 1996.
NATO, Security and Sustainable Development

Tobias Damjanov

Bascially, NATO’s understanding of what security means refers quite exclusively to a military definition. This, of course, is not surprising. Presumably, any military alliance does this because of the nature of military thinking, and because of the acceptance of establishing hierarchies and defending these structures by force. In NATO’s case, it appears a bit different - at least at first glance: It is claimed that the very existence of this alliance has always been to defend the values of Western democracy. Historically, however, one might wonder what, for example, Portugal under Salazar’s dictatorship, Greece under a military regime, or the war of the Turkish governments against the Kurds had, and have, to do with democracy. Much more confusing – and this is putting it very mildly indeed – is the question of how democracies – or any other societal structure – could possibly be defended by the threat of collectively committing suicide, which in NATO terms is called “nuclear deterrence”. Even after the dissolution of NATO’s only counterpart, the Warsaw Treaty Organisation, this has in a way continued. This leads me to a basic question: Is it really sufficient to define the security of a given social system only in military terms? If not, I’d like to go on to ask how other definitions of security, i.e. non-military, are taken into account, let alone defended - and which role would then the military defence of security play?

Let me first identify what I mean by referring to “other definitions of security”: Security of a given society consists of multifarious elements. Social security, and by that I mean in the widest sense the security of the basic rights and means of existence, is one of the major aspects which is usually very much intertwined with economic security. Security of economy, as well as of that of the standard of living depends to a large extent on development. Development in general, however, is a crossroads: as we have witnessed in the past, it is an unreflected development of industrial structures. For example, it does not lead automatically to everybody’s welfare and social security - on the contrary: the gap between the poor and the rich is dramatically increasing, which means that it benefits the seemingly stable security of one part of the population, while the other part is losing their security in terms of humane standards of living. And I haven’t even mentioned yet the consequences for the environment over the past few decades which are another major factor destroying the security of societies. This simplified example shows that development needs clarification: What are the targets of development? And who exactly benefits from which type of development - and who doesn’t? Is it a short-term development or a long-term development? And finally in summary: does development produce more overall security or less?

NATO: In defense of interests

Now you may guess what my point is. Actually, it is two-fold. One part is that the military can defend only one type of development – and it goes almost without saying that this is a type favoured and promoted by those political forces who themselves govern the military. You might consider, however, at least one major exception which is the military forces of liberation movements, but we are talking here about NATO – well, I must admit that I heard that some NATO politicians are considering NATO as a liberation force. Years ago, the army in my country even ran a propaganda campaign saying that NATO was the biggest peace movement. Now, NATO presents itself as an institution aiming at saving human rights – of course, the whole world over. What I mean is that you cannot expect that the military – in our case NATO - would defend anything else but the security of its governments, including - and this is essential – the governments’ model of development.

It is, of course, not by chance that I am highlighting this particular aspect here. NATO’s expansion policy towards former member states of the Warsaw Pact is an extraordinary example of what kind of security the political forces ruling NATO have in mind. Study the official documents which give reason for the policy of expansion, and you will find out the following: On the one hand, it is stated that Eastern European countries are in the process of becoming democratic societies, but their development appears to be unstable to a certain extent. This is where NATO fits in: it is claimed that cooperation with NATO or membership would help to stabilize the process of democatisation. On the other hand, it is also stated that only stabilized societies are worth becoming a member of NATO - and here I add: understandably, NATO would not like to voluntarily include instabilities in its “community”: they have enough difficulties among themselves, regarding, for example, the Euro-Atlantic partnership, the role of the Western European Union and so on. As far as security patterns in a broader sense and in the longer term are concerned, it is quite clear that the political aim of NATO expansion is simply to insure that the countries concerned follow a model of development which is in line of the developmental model of the Western countries - or rather: in line with the developmental approach of their ruling forces. The philosophy and the political understanding of what the development of a given society means is almost solely based on the governments of NATO’s nuclear weapons states, on a world order defined and implemented by the US, and on determining societies and international relations by (military) force and by the political power of elites.

Green Helmets?

The second part of my point is that NATO has been criticized as long as it has existed. The more constructive criticism has introduced models of alternative, collective and comprehensive systems of security; and more recently, this has been highlighted by drawing attention to the role of the OSCE (Organisation for Security and Cooperation in Europe) as a political alternative for cooperation and non-military conflict resolution. Proposals have been made as to how to establish a non-offensive defence approach in order to get rid at least of weapons of mass destruction and other offensive weaponry. In fact, arms control has taken place, although only to a small extent, and ideas have been considered whether it could be useful to deploy NATO forces only for humanitarian issues or even as “Green Helmets”, that is for ecological reasons.

All this and more is well-known I suppose, and I shall not go into further details to that point. Still, the military definition of security appears to be widely accepted even by those who criticize the military. What I mean...
is that demands for disarmament, for instance, are certainly justified. Usually, however, they were based on various criticisms of the military, of particular weapon systems, of increasing tensions, and so on. So, the starting points of demands for disarmament have mostly been one-dimensional. They have not taken into account that you need to address other dimensions of society as well, in order to achieve long-term and sustainable disarmament. Only the issue of arms conversion is a significant exception because of the necessity to view another dimension than the military alone. I am referring, of course, to the entire economic subsystems of societies.

Multidimensional security

Since a few years, the awareness about the global dimension of fundamental developmental problems of human societies is growing and broadening. From my point of view, this started at two levels: the worldwide concern about ecological misdevelopments and the nuclear issue. Stating that I don’t intend to neglect other misdevelopments such as neo-colonialism and the politico-economic North-South balance. These are obviously global problems as well. But so far the missing link is that you don’t find a comprehensive approach as how to address the complexity of the future of humankind in terms of the global context of both the multifarious aspects of security of living and the sustainability of humankind’s development.

Sustainable development has been introduced only recently, i.e. by the Report of the Brundtland Commission, and later (and more specifically) by the 1992 UNCED Rio Summit. Subsequently, the demand for sustainable development initiated multifarious programmes - such as the AGENDA 21 - and scientific research mainly in the field of natural sciences and ecology.

Although the common understanding of sustainability provides for an overall view of all aspects concerning nature and human beings in a global and comprehensive context, including all kinds of interrelation between human beings, their welfare and their needs, social and political sciences have so far somewhat neglected the question of sustainability, to say the least. In particular, the social dimensions of sustainability do not seem to be of major interest as compared, for example, to the corresponding efforts in the field of ecology, environmental protection and local sustainable development. Considering the various aspects of security as being part of the social dimensions, there is obviously a remarkable lack as far as the linkage between security patterns and sustainable development is concerned. Especially discussions about and analyses of different (international) systems of security politics and means of security are badly missing taking into account the relevance of sustainable development.

The role of the military in society

If you want to implement sustainable development, the question of security is certainly on the agenda. Focussing more specifically on the traditional understanding of security – that is the military definition – it has to be examined whether or not the military complies with sustainability. First of all, you have to identify that “the military” as a section of society is not simply the apparatus, the institution or the armed forces as such. According to the philosophy of sustainability, it includes all military relations, linkages and influences concerning all other sections of society:

- to the economy which obviously refers, among other things, to arms production but also to any other products related to or usable by the military;
- to scientific research and education;
- to environmental and ecological issues, especially to the military-related use of natural resources and to the impact the military has on nature itself;
- to the sector of public services and the administration.

Once you have identified the elements not compatible to sustainable development, you have to realize that you cannot simply replace or abandon them, because the process of replacing or abandoning could turn out as being unsustainable in itself. So you need to develop alternatives which have been checked upon their sustainable qualities, i.e. how they would contribute to the overall sustainable development of society. Furthermore, you need to know beforehand, how the process of introducing them would affect all other sectors of society which should be developed and structured towards sustainability.

After this more theoretical example, let’s have a look to the example of NATO’s extension policy towards Central and Eastern Europe: the first question should not be: is this extension needed or not, but how to develop the societies concerned in a sustainable way? Then you might ask how would NATO’s exention fit in? The wide-spread believe that NATO integration would help developing the nations in Central and Eastern Europe appears to me very much shortsighted. You might rather promote the idea that instead, these countries should better consider cooperating with or joining the European Union. In fact, there are many hints that NATO is seen as a way to become acceptable as a possible future EU partner. I wonder what the expectations are. It has already been mentioned that joining or cooperating closely with NATO is definitely a state-finances’ consuming business. Whatever the real costs are, one thing is for sure: the budgeting will be so excessive that the countries concerned will most likely not be capable of meeting the standards of EU membership. Talking about sustainable development, it should also be emphasised that EU membership is by large no guarantee for a healthy and comprehensive development of societies. So what to do?

The subject of this conference was NATO’s policy. My suggestion is to put all NATO-related questions and problems in the broader context of developmental issues. To be very clear, I am certainly in favour of radical disarmament, including the dissolution of military alliances such as NATO and the Western European Union. What I have tried to stress here, however, is that demands for disarmament need to be considered multi-dimensional. In other words: Peace is not the mere absence of war. Thus, to achieve sustainable peace you need to change not only military structures and military politics but also to establish alternatives which refer to the development of peaceful structures in society.

Sustainable development is not a magic word: you have to define what sustainability means to you and how it should become a political tool. Don’t leave it to the power elites who are already playing around with the term of sustainability trying to misuse it for their own purposes. One first step could be to initiate development from below in terms of grassroots movements. There is already an interesting and promising example which is the “Local Agenda 21”. This is the attempt to establish sustainable development in the communities and for the communities.
Global Environmental and Health Effects of Nuclear Weapons Production

Howard Hu, Arjun Makhijani

Roughly 70,000 nuclear warheads have been fabricated worldwide. This does not include reworking of materials and components of obsolete weapons into new ones. As we have discussed there are many aspects of environmental contamination resulting from nuclear weapons production that we cannot estimate due to lack of data. But we can make some order-of-magnitude estimates of waste generation and environmental contamination from some of the principal processes based on the information in Tables 1 and 2 (all waste and discharge estimates, except krypton-85, rounded to one significant figure):

- one hundred to two hundred million metric tons of uranium-mill tailings containing 100,000 curies (about 4,000 terabecquerels) each of radium-226 and thorium-230 from the estimated 400,000 metric tons of natural uranium used for military purposes;
- over 400,000 metric tons of depleted uranium;
- about 3 billion curies (100 million terabecquerels) of high-level radioactive waste from plutonium production (including only strontium-90, cesium-137 and their daughter radionuclides yttrium-90 and barium-137m). (This estimate is not corrected for radioactive decay; such a correction would reduce it by about one-half);
- twenty million curies (about 700,000 terabecquerels) of other radioactive wastes;
- emissions of about 145 million curies (5.5 million terabecquerels) of krypton-85 (non-decay-corrected) into the atmosphere due to reprocessing;
- thousands of square kilometers of land highly contaminated land from production processes and accidents;
- global contamination from fallout due to atmospheric nuclear-weapons tests amounting to 30 million curies (one million terabecquerels) combined of strontium-90 and cesium-137 (decay-corrected), and 10 million curies (0.4 million terabecquerels) of carbon-14 due to atmospheric testing. Additional inventories of fission products and un-fissioned plutonium have been left underground due to underground testing.

Assessing Global Health and Environmental Risks from Nuclear Weapons Production

Introduction by Arjun Makhijani

This article is a reprint of excerpts of Chapter 12, from the book, Nuclear Wastelands: A Global Guide to Nuclear Weapons Production and Its Health and Environmental Effects, edited by Arjun Makhijani, Howard Hu and Katherine Yih, MIT Press, 1995. The book was the result of a joint effort by the International Physicians for the Prevention of Nuclear War and the Institute for Energy and Environmental Research. The excerpt is reprinted with permission from MIT Press. Full references have been provided here. This introduction serves as a brief update.

The last few years have confirmed that the nuclear weapons production and testing of the past half century will continue to have profound health and environmental effects for uncounted generations to come. In 1997, the US National Cancer Institute released a study estimating substantial radiation doses to the thyroids of almost all US children resulting from milk contaminated with iodine-131 from fallout. Between 10,000 and 75,000 excess thyroid cancers are estimated to occur in the US alone from this single radionuclide. The estimates from global fallout to global populations will be much higher.

Additional information has also become available on the environmental problems. An in-depth study published by the Institute for Energy and Environmental Research in 1997[1], we found that there are far more highly plutonium contaminated wastes than previously assumed. These wastes were discarded and buried as “low-level” waste during the 1940s, 1950s, and 1960s. Further, it has previously been assumed that the migration of plutonium and other transuranic elements through the soil would be slow (on time scales of hundreds of centuries to reach the water table). This assumption was based on a limited, laboratory understanding of the behavior of transuranic. Actual data from several sites now shows that these radionuclides are migrating in decades and, in some case, have already reached the groundwater. In Idaho, they are threatening the Snake River Plain Aquifer. It would be wrong to assume that people far away from areas where nuclear weapons production are located are not affected by these developments. Nuclear Weapons plants are often located in or near agricultural areas. For instance, potatoes grown in southern Idaho are eaten all over the United States, and I suspect in many other parts of the world.

New data on the effects of underground nuclear testing are also worrisome. Limited data from the Nevada Test Site indicate that, contrary to official assumptions, plutonium is migrating away from the test locations. This indicates that the huge amounts of long-lived radionuclides left underground and undersea (in Polynesia) may pose threats far larger than anticipated.

Recent data from Britain underline further the unexpected way in which the contamination from materials production can spread through the environment, diffusing and re-concentrating by a variety of processes. Pigeons found near the Sellafield plant have been found to be highly radioactive. Their feathers are highly contaminated, apparently from nesting in abandoned nuclear facilities that have not even fully decommissioned. The pigeon droppings and meat are also contaminated.

Finally, in 1997, the US Department of Energy admitted what my colleagues and I at IEER had suspected for some time — that internal radiation doses were not integrated into worker dose records. Our suspicions were based on a study of the Fernald records discussed below. Internal measurements such as urine sampling data and whole body counts were not part of worker dose records, but kept as part of separate databases.[2] This reinforces our conclusions discussed in regard to the poor quality of much of the data and the epidemiological studies based on such data.

Most raw data on health and environment in most nuclear weapons testing and research facilities remains secret. The continuing revelations and assessments in the United States show how important full public disclosure is. The general trend of conclusions has been that the most data that has been revealed, the more serious the problems have been found to be.

Health, Environmental and Safety Risks of Nuclear Weapons

These summary estimates provide a starting point for the work ahead in making estimates of the contamination in specific areas and countries. They are to be regarded as indicative rather than definitive. Moreover, they do not convey the real extent of the damage. Some of the worst damage has been in the former Soviet Union. Entire river systems have been contaminated in some cases, as for instance with the river system near the Chelyabinsk-65 plant. Lake Karachay at Chelyabinsk-65 is perhaps the most contaminated body of water on Earth. The dose rate near the pipe that discharges radioactive wastes into it is 6 grays per hour, which would yield a lethal (LD50) dose in about 45 minutes.

Highly radioactive liquid wastes that result from reprocessing have been responsible for the worst accident resulting from nuclear weapons production, the explosion of a tank at Chelyabinsk-65 containing highly radioactive waste in September 1957. It resulted in the contamination of about 15,000 square kilometers of land and the evacuation of over 10,000 people. Dozens of tanks in the United States and elsewhere are at risk of explosions.

Uranium mining has been responsible for contamination not only in the nuclear weapons states but also in many other countries. Some of the most polluted areas from nuclear weapons production are in East Germany, which supplied the Soviet nuclear weapons program, and in the Third World, which supplied the programs of the United States, United Kingdom, and France. Even within the nuclear weapons states, uranium mining and resultant contamination have disproportionately affected tribal peoples.

The nuclear-weapons industry has contaminated groundwater, surface waters, seas, and oceans. For instance, the sea off Sellafield in England and the seas off Russia have been the dumping grounds for large amounts of radioactivity. In the United States and elsewhere, groundwater at many of the sites where weapons factories are located has become highly contaminated. While this water is not now being used for domestic consumption, it is not evident how its use can be regulated once institutional control of the sites is lost, or once they have been designated for other uses.

Decommissioning and cleaning up nuclear-weapons plants will produce additional large quantities of waste, the magnitude of which will become clear only over the next decade or so as decommissioning proceeds in the United States and possibly in other countries. Dismantlement of unwanted nuclear weapons and disposition of the fissile materials they contain present further formidable security and environmental challenges.  

Exposed Populations

Broadly speaking, the making of nuclear weapons has exposed five groups of people to environmental and health dangers: 1. workers at nuclear weapons facilities; 2. armed forces personnel who participated in atmospheric weapons testing; 3. people living near nuclear weapons sites; 4. people who were subjects of experiments; 5. the world’s inhabitants for centuries to come.

These categories include only those affected by the production and testing of nuclear weapons. As we have noted, the transportation, deployment, and possible use of nuclear weapons are not within the scope of this book. Generally, the most intensely exposed people have been workers in nuclear-weapons plants and testing facilities and members of the armed forces. Within these two populations, the extent of exposure varies according to the specific nature of their duties and length of service.

The third set of victims, often called “downwinders,” are people who live near nuclear-weapons facilities. The definition of “near” extends in some cases to hundreds of kilometers downwind, especially in the case of atmospheric nuclear-weapons testing and large intentional or accidental releases, such as those that occurred at Chelyabinsk-65 or at Hanford in the United States. Some downwinders have been as highly exposed as workers and armed-forces personnel. This is certainly the case for some affected by the explosion at Chelyabinsk-65, for iodine-131 exposures from the first two decades of operation of the Hanford plant, and for nuclear-testing downwinders among the people of Rongelap in the Marshall Islands and people living near the Soviet test site near Semipalatinsk in Kazakhstan. Recent revelations in the United States have brought to light human experiments involving thousands of people. Finally, there have been and will continue to be exposures to the entire global population, mainly due to atmospheric nuclear-weapons testing but also to releases of krypton-85 and other gaseous radionuclides from plutonium production. Given the long-lived nature of some of the radionuclides involved, these exposures will persist for thousands of years.

It is possible to make rough, order-of-magnitude estimates of the number of exposed armed forces and worker populations in some instances. The figure for exposed “downwinders” is considerably more fluid, mainly because of the interlinked problem of defining the boundary of the “downwind” area and uncertainties about doses to people off-site.

About 250,000 members of the U.S. armed forces participated in the atmospheric

Table 1: Radioactive Waste Production per Kilogram of Highly Enriched Uranium (order of magnitude U.S. estimates)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium mining waste</td>
<td>On the order of 100 metric tons, with 1 to 10 or more becquerels of uranium per gram of soil</td>
<td>1. Uranium requirements for plutonium production are not included; All figures except unit conversions are estimated to one significant figure.</td>
</tr>
<tr>
<td>Uranium mill tailings</td>
<td>About 100 metric tons; total 0.06 curies (about 2.2 gigabecquerels) thorium-230 0.06 curies (2.2) gigabecquerels radium-226 Heavy metals such as copper, arsenic, molybdenum, vanadium 0.02 to 2 kg of uranium emissions to the air (0.01 to 1 percent of production)</td>
<td>2. Overburden assumed to be the same order of magnitude as the ore in weight (Dehemel and Rogers 1993, table B.1-2). 3. Uranium ore grade 0.2%. Uranium emissions from mills and from processing are order of magnitude estimates based on limited U.S. data. 4. Uranium conversion losses to UF6 alone are about 0.5%.</td>
</tr>
<tr>
<td>Uranium processing</td>
<td>200 kilograms of depleted uranium Air emissions of uranium 0.02 to 0.2 kg (0.01 to 0.1 percent of production) Solid waste uranium content on the order of 2 kilograms (1 percent of production)</td>
<td></td>
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April 1998

Inesap Information Bulletin No. 15
nuclear-weapons-testing program. The number of workers in the U.S. nuclear-weapons complex at any time has been on the order of 100,000 since the mid-to-late 1950s, excluding workers in uranium mining and milling. (Current employment during the decommissioning phase is actually higher.) Considering some turnover of workers and recent increases in employment for clean-up operations, several hundred thousand people have at one time or another worked in the U.S. nuclear-weapons complex.

In the Soviet Union, the number of workers involved in the nuclear-weapons complex has been reported to be on the order of 1 million, including people engaged in uranium mining and milling. No reliable estimate is available for armed forces personnel involved. Large numbers of people were involved in uranium mining and milling in other countries. Perhaps the largest number in a single place was the 450,000 uranium mine and mill workers in East Germany, which supplied much of the uranium for the Soviet nuclear arsenal. Tens of thousands of people, at the very least, have been involved in uranium mining in China, including the period of particularly labor-intensive mining during the Great Leap Forward in the late 1950s and early 1960s.

While this book has not attempted to gather comprehensive data on the number of workers involved in this global industry, it would appear that at least two million people have been involved in various aspects of nuclear-weapons production and worldwide; the true figure is probably considerably higher.

The levels of exposure to radiation of the four population groups vary widely. Exposures due to global fallout are on the order of a few tens of microsieverts per year. However, the dispersed nature of fallout has resulted in exposure of billions of people to such levels of radiation.

Researchers have made various estimates of levels of exposures to downwinders. The most highly exposed groups that we know about are those living downwind and downriver of the Chelyabinsk-65 and downwind of the Semipalatinsk sites in the former Soviet Union, the people of Rongelap, and, in the case of thyroid doses, children living downwind of Hanford in the early years of production. The downwind exposures near Oak Ridge, Tennessee, may also be high, but this remains the subject of study and controversy.

The most highly exposed groups have tended to be workers. The most severe exposures of workers for whom some data is available were in the Chelyabinsk-65 graphite reactor and reprocessing plant. Worker doses in the early years averaged about 1 sievert, according to data published so far.

However, under many circumstances, notably in facilities that processed uranium, internal exposures may have been high among certain groups of workers. For instance, at the uranium-processing plant near Fernald, Ohio, data on employees indicate cumulative lung doses of several sieverts for some production workers. Yet neither the plant’s corporate contractors nor the Department of Energy calculated internal doses from urine and lung-counting data that were collected at the plant.

Even greater uncertainties exist in regard to internal exposures for armed forces personnel, notably to alpha-emitting radionuclides. Thus, the overall exposures to workers, armed forces personnel, and downwind populations will remain the subject of considerable uncertainty, and controversy, for some time. Because most official data on these subjects in most countries are still secret, it is impossible to know whether reliable quantitative estimates can be produced at least for an appreciable fraction of the exposed population.

### The Burden of Disease

As noted above, estimating the total toll on human health of nuclear-weapons production worldwide is almost impossible given the types of uncertainties discussed. Aside from the global fallout effects of nuclear weapons testing, estimated to produce hundreds of thousands of excess cancer fatalities over the centuries, uranium mining has been responsible for the largest collective exposures to workers. While precise global estimates are at present impossible, we note that one estimate puts the number of workers who have died of lung cancer and silicosis due to mining and milling in East Germany alone at twenty thousand people. But such estimates are often questionable or preliminary as yet.

Unfortunately, we cannot make similar estimates on a global level of the disease burden that may have resulted from occupational exposures in uranium mining, milling, and the industries related to plutonium reprocessing and nuclear-weapons manufacturing. It is

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**Table 2: Radioactive Waste Production per Nuclear Weapon**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium mining waste</td>
<td>2,000 metric tons, with a total of 2 to 20 gigabecquerels of uranium</td>
</tr>
<tr>
<td>Uranium mills</td>
<td>2,000 metric tons</td>
</tr>
<tr>
<td></td>
<td>1.2 curies (about 44 gigabecquerels) thorium-230</td>
</tr>
<tr>
<td></td>
<td>1.2 curies (about 44 gigabecquerels) radium-226</td>
</tr>
<tr>
<td></td>
<td>Heavy metals such as copper, arsenic, molybdenum, vanadium</td>
</tr>
<tr>
<td></td>
<td>0.4 to 40 kg uranium emissions to the air</td>
</tr>
<tr>
<td>Uranium processing</td>
<td>4 metric tons depleted uranium</td>
</tr>
<tr>
<td></td>
<td>Air emissions 0.4 to 4 kilograms</td>
</tr>
<tr>
<td></td>
<td>Solid waste uranium content on the order of 40 kilograms</td>
</tr>
<tr>
<td>Reprocessing, high-level waste</td>
<td>12,000 curies (440 terabecquerels) each of strontium-90 and cesium-137, and equal amounts of yttrium 90 and barium-137 (non-decay-corrected)</td>
</tr>
<tr>
<td>“Low-Level” waste</td>
<td>50 cubic meters containing 10 tera-becquerels of radioactivity</td>
</tr>
<tr>
<td>Transuranic waste</td>
<td>7 cubic meters containing 700 giga-becquerels of alpha radioactivity</td>
</tr>
</tbody>
</table>

1. Each nuclear weapon is assumed to contain 4 kg Pu-239 and 20 kg 93%uranium-235. Figures are rounded to one or two significant places, as indicated.
2. Uranium-related data were taken from table 12.2 and applied to 20 kilograms of highly enriched uranium.
3. Strontium-90 and cesium-137 figures assume that roughly 100 to 150 giga becquerels of each are produced per gram of plutonium production.
4. Low-Level waste and transuranic waste numbers are derived from U.S DOE 1992 and assumed to be evenly spread over the 60,000 weapons produced in the United States (including partially disassembled and reassembled warheads).
Health, Environmental and Safety Risks of Nuclear Weapons

instructive to note that many of the occupational mortality studies of uranium miners in the United States and Canada have estimated lung-cancer risks 2 to 6 times higher than expected. To the extent that this reflects generic risks shared by all uranium miners, and that working conditions have been similar or worse in other uranium-mining countries, this would mean that the mining of uranium for nuclear weapons has led to thousands of excess lung cancers. It is also apparent that a disproportionate share of that burden fell on indigenous or colonized peoples who lived in the areas of and were employed in the mines.

Findings of excess cancers in workers and off-site populations have been noted in many epidemiological studies discussed in this book, while in others they have not been detected. In general, it is difficult to determine the validity of these studies in the face of serious problems with the quality and completeness of the data. For instance, in 1994, U.S. officials admitted that even external dose data for workers have some serious deficiencies. In fact, portions of the data were fabricated in that zeros were entered into the radiation dosimetry records of workers when the badges were not turned in.

Russian data on health are clearly suspect. Even for groups of workers and off-site populations living near Chelyabinsk-65 with high exposures, health outcome data show far fewer than expected leukemia or other cancer fatalities. This result is at considerable variance with well-established risk factors from medical radiation exposure studies and follow-up of Hiroshima-Nagasaki survivors. It is reported that doctors were forbidden to make radiation-related diagnoses, on pain of punishment. Thus, while some dose data indicate that one should find relatively high levels of fatal cancers, the health findings do not correspond to the dose estimates. New diagnoses such as “weakened vegetative syndrome” and even “ABC disease,” unknown elsewhere, were created in Russia, possibly to fill the void for radiation-related diagnoses banned by nuclear authorities. [...]

It is also impossible at present to estimate the disease burden due to community exposures to non-radioactive chemical pollution emitted by industries associated with nuclear weapons. The database is so inadequate that it does not permit even qualitative discussion of the health impact for individual countries, to say nothing of worldwide estimates. There are anecdotal reports of damage that are inconsistent with radiation damage. Such damage may be linked to chemical discharges. However, such emissions have not been monitored carefully, or indeed at all for most of the period of nuclear weapons production, so far as publicly available data indicate.

In sum, from the data that are available on environmental releases, discharges, accidents, radiation doses and the current state of knowledge regarding the risks posed by exposure to radiation, it appears likely that health effects have been experienced on a significant scale. Continuing health risks will persist for decades.

Endnotes

4. ibid., pp. 17-20.
5. ibid., Chapter 3.

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Report on the Health Effect of French Nuclear Testing in Pòynesia Concluded

Children worked at French nuclear test sites in the Pacific; authorities failed to set up adequate health controls for former workers. A sociological inquiry into the health and well-being of Polynesian former nuclear test-site workers and islanders who lived within a radius of 500 km of the French test-sites in the Pacific reveals that 10% of the estimated 10,000-15,000 Polynesians who worked there from 1963 were under 18 years of age when they began work. 6% were children who were 16 years of age or younger.

This is one of the findings of a sociological inquiry conducted by a team made up of the Polynesian NGO Hiti Tau, the Eglise Evangelique de Polynésie Française and led by independent Dutch sociologists from the Agricultural University of Wageningen. The research was co-ordinated jointly by the World Council of Churches (WCC, Geneva-Switzerland), the Centre de Documentation et de Recherche sur la Paix et les Enfants (CDRPC, Lyon-France) and the European Centre on Pacific Issues (ECSIEP, Zeist-the Netherlands). It is the first time since the French nuclear test began in 1966 that Polynesian former test-site workers have been the subject of an independent inquiry. A representative number of 737 former test-site workers took part in the Survey. They answered a wide range of questions about recruitment, work and living conditions at the test-sites, motives for working there, the type of work they carried out, and the health-system that was set up for them.

Of the workers 41% said, they had worked in possibly contaminated zones, and 30% of claimed they were worked wit no protective clothing. Although a large majority (94%) of the test-site workers underwent a medical examination before they arrived at the test-sites, only 48.5% were examined at the end of their stay at the sites. This indicates that no health control system for the former test-site workers exists.

The position of the French authorities that there is no reason to believe that the nuclear tests harmed the health of the Polynesians is therefore biased, for the simple reason that the French authorities never bothered to collect relevant data to prove their claim.

Many former test-site workers complained about the health-system. They say, questions about whether a certain disease from which they are suffering, can be related to activities at the test-sites are often ignored or not taken seriously. Generally, there is no confidence in the health-system, shown by the fact that 91.3% of the former workers would like an independent medical inquiry to be carried out.

The results of the research are published in the book: Moruroa and US ‘Polynesians’ Experience during thirty years of nuclear testing in the French Pacific by Pieter de Vries and Hans Seur.

For further information contact: Hiti Tau, Gabriel Teltaraah, tel +689 52 13 71, fax -572880, email: hititau@gmail.fr, or Eglise Evangelique de Polynesie Francaise, Taaroanui Mareaa; World Council of Churches, John Newbury; CDRPC, Bruno Barillot; ECSIEP, Madeleen Helmer.

New Book on French colonialism in the Pacific

After Moruroa: France in the South Pacific

In a readable and highly informative style, Nic Maclean and Jean Chesneaux review the social, cultural, political and environmental impact of France’s presence in the region. They document French policy over two centuries, drawing on sources from Europe, Australia and the Pacific. With France’s “Grand Design” for the Pacific under challenge today, this authoritative study looks at the future for the South Pacific—after Moruroa. Nic Maclean, Jean Chesneaux, After Moruroa: France in the South Pacific, published by Ocean Press (April 1998), GPO Box 3279, Melbourne 3001, Australia, email: ocean_press@msn.co; 320 pages, paper Aust$29.95.
Moruroa and Us
Polynesians’ Experiences during Thirty Years of Nuclear Testing in the French Pacific

1. Introduction

A team of the Polynesian NGO Hiti Tau, the Eglise Evangélique de Polynésie Française (EEPFP) and two Dutch sociologists from the Agricultural University Wageningen (Peter de Vries and Han Seur), conducted in 1996 a research on the effects of the French nuclear tests on the health and well being of former test-site workers and islanders living in the vicinity of Moruroa and Fangataufa (the sites where the tests were carried out).

It is the first time since the beginning of the nuclear tests in 1966 that the Polynesian former test workers have been the subject of an independent inquiry. It is not officially known how many Polynesians worked for the French nuclear testing programme. Estimates run between 10,000 and 15,000. On the basis of a representative survey conducted among 737 former test site employees working and living conditions at the test sites could be documented. Questions were also asked about what involvement in “le nucléaire” had meant for them, for their families and their communities.

The sociological research comprised two phases. For six weeks, from June to August 1996, the qualitative phase was implemented. During this period the research team was trained and a series of in-depth interviews with former test-site workers, with governmental and non-governmental institutions (such as the labour unions), and with political parties took place. In addition in July 1996 a visit was made to Mangareva, located at 400 km from the test-sites. Based on this material and a literature study a questionnaire was elaborated for a large-scale survey. This survey was conducted during October-November 1996. Due to logistic limitations it was not possible to conduct the survey in the Gambier islands and Tuamotu atolls located close to the test-sites. However, a qualitative case study of the Gambier islands is included in the report. In French Polynesia former workers have not yet had the possibility to make their experiences and doubts known, something which together with the lack of basic information about the consequences of the nuclear tests has caused feelings or anguish, fear and powerlessness. Furthermore, numerous workers and inhabitants of outlying islands have fears about their health situation and attribute ailments (such as the increase in cases of cancer, of miscarriages, etc.) to nuclear testing. The purpose of this research was to document and quantify the anxieties and uncertainties of Polynesians concerning nuclear testing, giving special emphasis to their health situation. Given the lack of reliable medical and epidemiological statistics concerning the health situation of former test site workers, and others who were exposed to the risks of testing, a choice was made for a sociological approach. It has been possible, on the basis of a detailed description of working and life conditions on the test sites and on the basis of qualitative research in the Gambier-islands to make a sound assessment of the types of follow-up activities that are imperative for allaying current fears and anxieties by the population. Such follow-up activities include the provision of adequate health care services and legal assistance, and the commissioning of further research in order to investigate a number of changes and incidents (such as the widespread occurrence of ciguatoxic poisoning; the sudden increase in miscarriages, stillbirths, cancer and other diseases) that have not been accounted for by the French experts. Also recommendations are made as to the kind of organization that should beset up in order to address the issues that arise in this report.

Work and living conditions at the test-sites

A large majority of the Polynesians who worked at the test-sites worked there for more than two years (73%). One third (33%) worked for more than ten years at the sites. The main motivation for Polynesians to work at the test-sites was to earn money. Indeed salaries were good and topped up by a wide range of premiums. There were premiums for work, premiums for being away from home, dust-premiums, an end of Campaign premium etc.

Life at the sites was for a very large majority of the Polynesian workers characterised as being interesting, varied or exiting and only a minority (14%) described their work as being dangerous. The general work conditions were not at all experienced as bad. Certainly many Polynesians found life at the sites at times difficult as they missed their families and their communities. There were also disadvantages such as the prohibition to eat fresh fish where it was so abundant or to drink fresh coconut water. Work pressure was high and routine was only interrupted by the uncanny experience of the tests, which were announced only shortly before they took place.

Working at a nuclear site with complex regulations but few explanations about the scope and nature of risks, put many employees in an uncomfortable position. They were subjected to a complex system of instruction on the test sites, comprising a large array of rules and regulations, which made them dependent on decisions made within an official military system. At the same time there was a degree of inconsistency in the enforcement of these regulations, for example the demarcation of contaminated and safe areas could suddenly change, some workers were asked to carry out tasks in such areas, with what Some considered to be inadequate protection, while others were strictly forbidden to enter them.

When asked whether during their stay at the CEP sites workers had spent time in possibly contaminated areas, 49% answered yes, 41% stated they had worked in possibly contaminated zones. This is a high percentage because most employees who worked in possibly contaminated zones referred to the atmospheric era (the period between 1966 and 1974). Among the employees who worked in possibly contaminated zones 65% explained that they often worked in such zones. Almost 70% of them stated they had to wear protective clothing.

A majority (54%) of employees who worked in possibly contaminated zones share the opinion that at times they had to carry out certain tasks against their will. This percentage is much lower among workers who never had to enter contaminated areas to carry out work (37%).

When asked what type of risk they believe they were exposed to, approximately 21% of all employees stated that at times they were exposed to radioactivity or contamination. Among those who worked in possibly contaminated zones this figure is significantly higher (38%).

Many regulations were often inconsistent and tended to change in time For example the consumption of fish was forbidden during certain periods. Later, fishing was al-
Health

One of the main anxieties of the former test-site workers concerns their health and the health of their off-springs. Although the French authorities have always presented the test-sites as a scientific laboratory, research on the long term effects of the nuclear testing-program on the health of the test site workers was not contemplated. From the answers given by the former test-site workers it can be concluded that the French authorities did not even bother to collect relevant data on this subject. Although almost all employees (94%) had a medical examination before they arrived at the sites and 65% of them were also examined while working for the CEP, only 48.5% were examined at the end of their stay at the sites.

The nature of the activity at the test sites is itself a reason for establishing a long term survey on the health situation of the test-site workers. Moreover, as shown above, there has been inconsistency in the implementation of the safety rules and regulations. Not only at the test-sites do the regulations raise questions. One of the most alarming outcomes of the survey is the discovery that some of the workers were under the age of 18 at the time of recruitment and 6% were even children under 16 years of age. Many former test-site workers complained about the health-system. There is no transparency, questions whether a certain disease can be related to activities at the test-sites are often ignored or not taken seriously. Generally speaking there is no confidence in the current health-system, expressed by that fact that 91.3% of the workers would like that an independent medical inquiry to be carried out.

Incidents

The inquiry reveals a number of specific cases of individuals who were exposed to the risks of radioactive contamination with dramatic consequences. Some of them were former workers but there were others who were exposed to risks without knowing it. The following cases have been found:

- that of a former test site worker who was exposed to radioactive irradiation during decontamination work and who since then has endured a succession of ailments.
- that of a meteorological assistant who worked at Hereheretue in 1968-69 and who learnt that all his former colleagues died of cancer (see Chapter 3, Section 25)
- a test site worker who worked at the sites for more than 20 years became ill during a leave and liver cancer was diagnosed. His wife’s queries as to the possible relationship between his stay at the sites and his illness encountered total disbelief.
- that of a woman who worked for a firm where protective clothing from the test sites was cleaned and who contracted a serious disease. She was also threatened with dismissal when establishing a connection between radioactive contamination and her illness. At least one of her colleagues was sent for medical treatment to France (see Chapter 3 section 14).

All these people had one thing in common: that after becoming ill or learning about deeply disturbing events they had to face a wall of disbelief and disinterest on the part of French medical experts and some were subject to intimidation by the authorities.

To forget or not to forget

When former workers were asked whether they considered it important to continue with the discussion about the possible consequences of nuclear testing on the health and well-being of Polynesian families and society at large, or whether the topic should be laid to rest, now that the tests are over, 83% of the respondents answered that it was important to continue with the discussions. An even higher percentage (91.3 %) answered that further epidemiological research should be undertake about the consequences of nuclear testing on the health of the population. Not surprisingly, especially those workers who had worked in contaminated zones emphasised the need for indepth medical and epidemiological research. A first step in the Process leading towards better and more open communication would be the adoption by the French authorities of a strategy which takes for former employees and their anxieties seriously. Lifting the veil of secrecy, demystifying Moruroa, also implies carrying out independent medical and epidemiological research amongst for the employees and their families as well as comparative cancer research in Polynesia and the surrounding region. Considering the overall costs of the nuclear program, its impact upon Polynesian society, the experiences gained elsewhere, for instance with the American testing program in Nevada and the Marshall islands, it is astonishing that during the last 30 years apparently no measures were taken and data collected to prepare such investigation.

Yet, coming to terms with the nuclear era requires an active role by the Polynesians themselves. Attempts to address the doubts, the anxieties and all the questions which are still waiting for an answer should not result in a process whereby employees and other Polynesians are transformed, or transform themselves, from ignorant but active accomplices into passive and helpless victims. The fears and anxieties of the former test-site workers run parallel along with feelings of guilt about the fact of having actively participated, having been accomplices, in the nuclear testing program. Many workers feel that they are to some extent responsible for the possible negative health and ecological consequences of the CEP. It can be said that at present among many former test site workers the feeling prevails that in return for money they have put their own lives and the society at risk, leading to widespread feelings of alienation.

A first step to overcome the existing distrust is that France should face up to its responsibilities and respond to the legitimate queries of Polynesians. A second step in order to heat the wounds left by the nuclear tests would be the setting up of an organisation that could fulfil an intermediate function between Polynesians and their authorities.
False Alarm or Public Health Hazard? Chronic Low-Dose External Radiation Exposure*

Wolfgang Köhnlein, Rudi H. Nussbaum

Proponents of a practical threshold for radiogenic risk have ignored epidemiological findings of excess cancers among workers and have generalized about the effects of high doses from in vitro studies of DNA repair mechanisms. Aggregate studies of occupational exposures and of children x-rayed in utero show that the proposition of a safe dose range or dose rate is false. The repair system of the mammalian cell is never perfect. Epidemiological studies of exposed persons that have been accepted in the scientific literature show a statistically significant increase in cancer incidence in the exposed population, supporting the claim that very low doses cannot be regarded as safe with respect to cancer induction.

In doing so, however, they have:

1. Ignored epidemiological findings of excess cancers among workers occupation-
ally exposed to doses comparable to natural background, and
2. Generalized from in vitro (laboratory) studies of DNA repair mechanisms in animal and human cells mostly at rather high doses.

Conclusions

Combining the known mechanism of low-LET interactions in human cells with findings from several independent epidemiological studies clearly shows that the repair system of the mammalian cell is imperfect and that there is no harmless dose threshold.

This conclusion, drawn from the aggregate of scientific evidence, has complex ethical, economic, and political implications for continuing radioactive contamination of our soil, water, and atmosphere. The following two facts have to be faced:

1. There exists no confirmed or scientifically reliable method of ascertaining permanent isolation of radioactive wastes from the biosphere (measured in geological time spans).
2. Future statistically predictable reactor accidents, such as Chernobyl, will add worldwide somatic and genetic health detriment.

From this perspective, the authors deem continued application of nuclear technology for energy production, whether in the U.S. or as an export to developing nations, a violation of the fundamental spirit of the Universal Declaration of Human Rights.

How should the application of nuclear technology be managed and are there viable alternatives?

As radiologists and physicians in general become better informed about the lack of any risk-free threshold and about the magnitude of radiogenic risks, they will and should opt to minimize the use of radiation in diagnostic and therapeutic procedures. The saga of the early embrace of x-raying pregnant women and the ultimate warnings against such a procedure can serve as an object lesson. It is essential, however, that physicians include better informed patients in meaningful risk-benefit assessments.

The argument is now being made by the nuclear energy industry and its government and corporate supporters that nuclear energy generation is the only solution to forestall global warming. Studies by respected scientists, however, have shown that energy conservation, using state-of-the-art improvements in the efficiency of energy-driven devices, combined with the development of community-based alternative energy technologies including solar power, wind, biomass, and fuel cells, can meet the energy needs of both developed and developing nations. In addition, these technologies can also provide employment in both small and large enterprises, including jobs for those with advanced technical skills who presently work in the nuclear industries.

What is needed is a well-integrated policy that must include a reordering of national priorities. Such redirection of the enormous public and private resources presently invested in industries responsible for polluting the earth with chemicals and radiation can only be brought about by the effective commitment of informed citizens.

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On March 19-21, 1998 an international conference on the impact of low-level radiation took place at the University of Münster, Germany. For information contact Prof. Kohnlein. A conference publication is planned.
Intermediate Storage for Radioactive Waste and Spent Nuclear Fuel at the Kola Peninsula

The problems of nuclear waste and disused nuclear submarines are a product of the arms race and the cold war between the Soviet Union and the US. Russia still continues to build new nuclear submarines, but there are very few provisions being made to properly store old nuclear submarines and develop sufficient storage facilities for spent nuclear fuel and other radioactive waste.

Approximately 20,000 m³ solid radioactive waste is stored at 11 different places along the coast of the Kola Peninsula and in Severodvinsk. Liquid radioactive waste is stored at almost all of the naval bases, either in land-based tanks, or on board service ships or floating tankers. Most of these facilities are full, and a number of them are in a very poor condition. A project developed by Russia, the US and Norway is underway to extend the capacity of the treatment plant for liquid waste.

The Northern Fleet has 5 special tankers for the storage and transport of liquid radioactive waste. None of these ships are in a satisfactory condition, and 4 of them are over 25 years old. The Northern Fleet also has two larger ships for transporting spent nuclear fuel as well as 4 smaller barges for this purpose.

Onboard the civilian ship Lepse, there are stored 634 fuel elements, most of them are damaged. A project initiated by Bellona back in 1994 is now in good progress, and it will utilize robotics and remote controlled operations to remove the fuel.

The Northern Fleet’s largest temporary storage facility for spent nuclear fuel is situated at Zapadnaya Litsa in Andreeva Bay, about 40 km from the Norwegian border. In the 1980s, there were large leaks of radioactivity from an old storage pool. Approximately 21,000 spent nuclear fuel assemblies are stored here, corresponding to 90 nuclear naval reactors. The fuel assemblies are stored in three concrete tanks (in a very poor condition). Fuel assemblies are also stored in rusted containers outside without any form of protection from runoff.

There is also a similar, but smaller storage facility for spent nuclear fuel in Gremikha, where the reactor cores from submarines with liquid metal cooled fuel and damaged fuel are stored. In addition there are 7 service ships in a poor condition which are used for storing spent nuclear fuel. The total number of spent naval fuel assemblies stored in the Kola-region is about 26,000.

At this time, there are over 130 Russian nuclear submarines which have been taken out of service, of which close to 90 vessels belong to the Northern Fleet. These submarines have been laid up at Severodvinsk and nine other locations on the Kola Peninsula. The greatest risk to safety is presented by the over 70 submarines which have not yet been defuelled.

The submarines have not been defuelled because the transport by rail road to the reprocessing facility RT-1 in Mayak have been dramatically reduced in the later years due to economical and technical reasons.

The Mayak Chemical Combine has during its operating time experienced several accidents and releases of radioactivity to the environment. The most famous accident was in 1957 when a storage tank for liquid radioactive waste exploded, and a large amount of radioactivity was released. During the operation of the plant there have been large regularly releases of radioactivity. Today about 26 PBq (700,000 Ci) of long lived isotopes are released to the lake Karachai each year as a result of the reprocessing. This lake already contains 4,400 PBq (120 million Ci) of long-lived isotopes. The sediments from the lake are contaminated with radioactivity and are polluting the ground water at a rate of 80 meters per year.

Since the 21. of March the operation of Mayak reprocessing plant has been suspended by the Russian State Nuclear Inspection (GAN). The reason for this is that the vitrification facilities which have passed their design life-time, are taken out of operation. It’s uncertain when the reprocessing plant will start to operate again. The spent fuel transported to Mayak is for the time being temporary stored in wet storage, in a bad condition.

Besides the environmental problems with reprocessing in Mayak, there are also problems with transport of the spent fuel. For the time being there is only one set of train with TUK-18 containers, capable of transporting spent nuclear fuel to the facilities in Mayak. An estimate shows that it will take 10 to 15 years to transport the spent nuclear fuel from the close to 170 reactors which already are in storage and in obsolete submarines. In addition there will be spent fuel from submarines that will be taken out of operation in the future. The latest transport from Severodvinsk was delayed 1 month because of problems with repair of the TUK-18 containers in Mayak.

The spent nuclear fuel must also be transported with service ships from the storage places to the railway in Murmansk and Severodvinsk. There are several risk factors connected with the transport and loading operations of the spent nuclear fuel.

In addition there is some fuel which the Mayak Chemical Combine cannot accept for reprocessing. This includes fuel from liquid cooled reactors, defective and damaged fuel assemblies. Russian experts claim that about 10 % of the fuel at the Northern Fleet and shipyards cannot be reprocessed. American experts believe that up to 50 % of the fuel assemblies are damaged or defective according to US definitions. This will at least make them more difficult to handle, maybe impossible to reprocess. In addition there exist 13 reactor cores with nuclear fuel with cladding of zirconium, which cannot be reprocessed in Mayak.

Besides these problems, the Northern Fleet has to pay for delivering the spent fuel to Mayak. Starting from January 1, 1991, Mayak Chemical Combine has required full coverage of its expenses. The price for handling one train set with fuel was in last year 1,5 million USD. The Russian Navy lacks for the time being funds to pay for the reprocessing at Mayak, and at present, this is the most important reason for the fall of the rate at which spent nuclear fuel is transported to Mayak.

In light of the mentioned problems the best solution would be to construct a new regional interim storage facilities at Kola for the spent nuclear fuel, rather than transporting it to Mayak. This storage must have the capacity to handle the fuel in existing...
Environmental Problems in North-West Russia
Alexey V. Yablokov

The Russian North-West for this review includes Karelia and Komi Republics, Yamalo-Nenetsk autonomous region, Murmansk, Archangelsk, Leningrad (partly) and Vologda (partly) regions, the White Sea, southern and eastern parts of Barents Sea, eastern part of Kara Sea, and eastern part of Baltic (Finnish Bay). This territory is overcrowded by different scales and types of environmental problems. Some of these problems make this region highly environmentally unsafe both as much for Russia as for the neighboring parts of Scandinavia and whole Arctic. Many of North-West Russia’s environmental problems are connected with past military activities. Some are mentioned in the following:

I. Radioactive pollution from nuclear weapons and nuclear energy: previous Soviet nuclear weapons tests at Novaya Zemlya Island; dumping of radioactive wastes from the Soviet military, including several nuclear reactors (near the main dumping places in the Kara Sea the level of radioactivity is up to 109,000 Becquerel/kg dry weight for Cz-137); nuclear waste from Soviet/Russian navy bases on Kola peninsula (e.g. about 250 nuclear reactors, leaking radioactive waste); from Severodvinsk military area at the White Sea (the world biggest nuclear shipbuilding factory); the Kola nuclear plant (one of the worst, even for Russian standards); the two so-called “peaceful” underground nuclear explosions on Kola peninsula; nuclear wastes from the French (La Hague) and British (Sellafield) nuclear reprocessing plants (dispersed through sea currents all over Barents Sea and reaching White and Kara Seas).

II. Atmospheric pollution, visualized as the “Arctic Haze” phenomenon. The main sources of atmospheric pollution in the Russian North-West are: the Norilsk metallurgical plant on Taimyr peninsula; the Tiumen oil fields with numerous gas torches; the Vorcuta coal-burning plant (300,000 t annually), one of the biggest in Europe; the Tcherepovetz metallurgical plant “Severstal” (about 400,000 t atmospheric pollutants annually); 6 pulp factories in the Archangelsk, Karelion and Komi regions (about 125,000 t pollutants annually).

VII. Consequences of the previous chemical warfare preparation (the dumping in the White and Barents Seas and several places with the old storage along Finnish-Norway borders).

There are several industrial and other activities which can be especially dangerous for North-West Russia in the near future. Among them are:

1. The oil and gas development on the Barents and Kara shelves (especially Stockman and Bovanenkov gas fields);
2. The diamond industry (Archangelsk region and northern part of White Sea);
3. The year-round exploitation of the Northern Sea Pass;

The Federal Government has not enough money (and even more important -williness!) for solving abovementioned environmental problems. Some scientists and representatives of governments and some international organizations are trying to classify them to avoid public critique (the Nikitin case give us a visible example).
Nuclear Weapons are Obsolete*

Alexey Yablokov

The consequences of a civilian, military, or terrorist nuclear catastrophe would not leave a single safe corner on the entire planet. Our research shows that by the year 2000, up to 430,000 people will have died as a result of cancerous diseases caused by the development and testing of nuclear weapons, and the expected death toll in the more distant future is 2.4 million.

The health consequences of nuclear testing are worse than previously believed. Even small doses of radiation can cause damage to embryonic development, spontaneous abortion, premature birth, and an increase in the infant mortality rate in the period from one day to four weeks after birth. Nuclear technology also threatens the lives of up to 20 percent of all those professionally involved in its development because up to 20 percent of all people are sensitive to radiation and seven to ten percent are highly sensitive. Doses of radiation otherwise regarded as harmless are rather dangerous for such people.

Development of the nuclear component of modern society (both weaponry and atomic energy) has changed the meaning of such moral concepts as good, evil, justice, and others. For instance, politicians and the military now regard as acceptable the death by radiation of large groups of non-combatants during military conflicts. Immediate victory in a nuclear war justifies their risk of future death and degradation of their own population as a result of global climatic changes or contamination from radioactive fallout.

In August 1986, the director-general of the IAEA declared that the atomic energy system could cope with one Chernobyl every year. Ten years later, the head of MINATOM (the Russian Ministry of the Atom) declared that “one Chernobyl is not enough” to topple human civilization. The international community was offered the option of signing the Vienna agreement for compensation in case of accidents at nuclear power plants. The maximum sum per accident that may be claimed as compensation is $50 million, a sum—as demonstrated by Chernobyl—hundreds of times smaller than the real damage caused by an explosion at a nuclear power plant.

This dehumanized thinking process was influenced by the ideology of nuclear scientists interested first and foremost in the development and use of atomic technology. Now we are searching for ways to return to fundamental, humane values. This process requires the turnover of at least one generation, i.e., 20 years.

The period of nuclear brinkmanship between the two superpowers witnessed the accumulation of nuclear arsenals hundreds of times larger than needed for the defeat of any aggression. The political conception of “nuclear deterrence” is devoid of any scientific content, including the idea of “first strike.” This is true for Russia’s contemporary military doctrine as well as for analogous foreign ones.

Another fashionable excuse is that there are countries with unstable political regimes that may acquire nuclear weapons. Let us suppose that North Korea, Pakistan, Iran, or Iraq would use nuclear warheads in regional conflicts. Would Russia, the US, or any other nuclear power be able to carry out a nuclear strike on the territory of one of these countries? This would mark the end of world civilization. Another unacceptable argument is the need to prevent or ward off an attack with chemical or biological weapons.

Historically speaking, nuclear weapons are obsolete as military or political instruments. Their role proved to be inconsistent: France and Britain have lost their empires, the US and China were shamefully defeated in Vietnam, and the same happened to the USSR in Afghanistan.

However, reality shows that nuclear weapons will remain in the arsenal of the major powers until 2015-2025. Until then, the arsenals need to be carefully serviced, maintained, and monitored. The liquidation of nuclear weapons can and should be implemented after this period. This in no way means the general disarmament of the countries that possess this type of weapon. Nuclear arms could be replaced by other weapons able to protect a state’s political and economic interests.

Nuclear scientists and pro-nuclear politicians could not have foreseen:

- that unforeseeable non-military (moral, ethical, and ecological) imperatives against the use of nuclear weapons would appear;
- that military aggrandizement would be one of the reasons for the disintegration of one of the superpowers. The USSR collapsed at the height of its military potential and nuclear arsenal, a factor that contributed to its disintegration rather than preventing it;
- that the funds needed for the liquidation of nuclear weapons would equal those used for its creation.

Man will always strive to create tools that intimidate his enemies, and states will try to use these creations in international conflicts. If we want to preserve our civilization, we must invent the tools that will help us avoid conflicts—not win them.

The development of nuclear technology has given birth to the problem of nuclear terrorism and blackmail. In the 1970s, the US and USSR developed a miniature nuclear weapon (the “suitcase” version of the nuclear bomb), specially designed for behind-the-lines operations on enemy territory. Today, nuclear power plants and research reactors have become attractive targets for terrorists. One or a handful of men with a portable missile device may now threaten the lives of hundreds of thousands of people.

Even before the proliferation of high-precision weaponry, nuclear power plants became a highly efficient weapon themselves. The development of high-precision arms has increased this threat substantially. Today, a country does not need to be a nuclear power in order to trigger a nuclear explosion on enemy territory hundreds of times stronger than those at Hiroshima and Nagasaki. All it has to do is to sabotage a nuclear power plant.

Obviously, we should not blame the inventor and manufacturer of matches for fires. Matches may be used to set forests or houses on fire but they are no threat to the existence of the entire civilization. But nuclear “matches” are.

Problems related to the development of nuclear technology in general could be solved quickly by using the “admissible risk” approach, which has the potential to lay the groundwork for a scientific basis for the transition to a postindustrial civilization. Russian scientific thinking is lagging far behind in the development of this concept.

* Adapted from Nezavisimoe Voennoe Obozrenie, a supplement to Nezavisimaya Gazeta, No. 31 1997.

Alexey V. Yablokov served as a chairman of the special Presidential Commission on the radioactive dumping problem in 1992. Address: Center for Russian Environmental Policy, Vavilov str. 26, Moscow, W-333, Russia, 117808; tel/fax +(095) 952 - 30 07; email: anzus@glas.apc.org.
Evaluating and Reducing Nuclear Weapons Risk Over the Next Two Decades

The next two decades are apt to produce vast economic changes and may also include a reduction of, but not an elimination of, nuclear weapons. If so, how much will limits on the number of warheads, short of abolition, reduce risk? There are ways to evaluate this risk and to minimize the public health threat that is produced prior to abolition. This paper will illustrate the risk of death when weapon limits from 10,700 to 10 warheads are applied in nuclear weapon nations.

Reducing Risk of Death

It is helpful to review the basics. There are only two ways to reduce risk of death caused by nuclear weapons: 1) to reduce the probability of occurrence and/or 2) to reduce the severity of occurrence. All nuclear weapons risk reduction hinges on the ability to achieve desirable outcomes in these areas. The nuclear weapons problem poses such high risks of death that it requires that both be employed.

Nuclear deterrence presents an imbalance that is directly at odds with the principle of reducing severity. It effectively is the intent of nuclear deterrence to exchange a “large number of deaths” for a very “low probability” of their occurrence. By this technique, nuclear deterrence increases severity in the hopes of reducing probability. This technique can only be successful in reducing risk of war deaths if the reduction in probability is proportionally greater than the increase in severity. It is doubtful that nuclear deterrence meets this criterion.

A nuclear use results either from willful or accidental causes. Nuclear deterrence only purports to beneficially influence the probability of willful causes. It does not reduce accidental causes. Indeed, for the most part, it is the core source of accidental use.

Thus, in the post-Cold War era nations are now left relying on nuclear deterrence, although:

- it only has the potential to beneficially influence willful probabilities;
- it increases the severity of occurrence;
- and it fails to beneficially influence the probability of an accidental use.

The combined influence of the two components of risk, 1) probability and 2) severity, can be seen by using mathematical expectation. Mathematical expectation serves to measure risk and results from multiplying the probability of occurrence times the severity of the event, e.g., a 1/100 annual chance of a nuclear use (once in one hundred years) times 125 million deaths would produce an average 1.25 million deaths per year.

Expected deaths per year is the same as average deaths per year. By applying mathematical expectation for all options, one can evaluate the public health risk that the nuclear weapon system presents.

To Tame Chance

Simon Jackman has remarked appropriately that, “probability is the workhorse of statistics. . . . Probability provides a rigorous mathematical language for communicating uncertainly, for managing uncertainty, or, in Hacking’s phrase for ‘taming chance.” The nuclear weapons problem is highly amenable to modeling probability with the objective of “taming chance.”

I am the author of the computer program Nukefix, which does such modeling. While the numeric conclusions in the following will, of course, vary depending upon the data entered, they reflect outcomes from assumptions that, in my considered judgment, are reasonably optimistic. The data input, however, has not yet stood the test of extensive analysis or commentary by others, and thus outcomes from it should be regarded as an expression of my assessment alone.

On the other hand, the methods used in the program fall squarely within the mainstream of the laws of probability. Thus, in my view, they are on very solid ground and are suitable for evaluating the influences of probability and severity.

Risk of Death

Any future nuclear use is apt to “turn the world on its head,” and forever alter how we humans view the world. Notwithstanding, in order to effectively control the system, it is necessary to make distinctions in terms of severity, probability, and annual risk of death.

One of the chief characteristics of proliferation is that it makes a “small” (emphasis on the quotation marks) attack somewhere in the world more probable. The data that I used suggested that with nine nuclear weapon nations there would tend to be a 50% chance of a nuclear use within 22.7 years.

In 50% of cases in Fig. 1, the attacks tended to produce 12.9 million deaths or fewer, as indicated. Only a few warheads are required to cause a vast number of deaths. For example, India has three regions in which population densities exceed 40,000 per square mile (19.2 million people). Only 16 to 33 primitive nuclear warheads (25 kilotons TNT explosive yield) could utterly destroy these regions. That a single attack with so few weapons can cause as many deaths as were experienced in all of WWI is the chief reason that the median attack size is large and highly resistant to reduction, unless number of warheads are reduced to very low levels.

At the extreme, nuclear powers as large as Britain can produce attacks causing 120 million deaths, and superpowers can produce attacks up to a billion deaths [even if their likelihood is minuscule].

In Fig. 1, having the remote possibility of such massive attacks results in 18%...
of attacks being larger than 120 million. It also results in the average deaths caused by the aggressor being in the neighborhood of 78 million. Deaths in excess of 78 million would tend to occur in approximately 22% of the cases in Fig. 1. This suggests that nations may not be as far from grisly Cold War scenarios as they may wish to think.

If one is skeptical about the graph, one can explore yet more optimistic conditions in Nukefix, which would produce more favorable outcomes. Indeed, it is useful to do so, such an exercise can illustrate the levels of reliability nations must achieve in order to sustain “nuclear peace” for the long term and can provide an opportunity to engineer a system that presents a low annual risk of death.

Annual Risk of Death, a Major Public Health Epidemic

The Nukefix program suggests that deaths caused by the nuclear aggressor alone, over the long term, would average approximately 2.4 million deaths per year under conditions indicated by the relatively optimistic data at startup. Such a death rate, if continuous, would be sufficient to cause as many deaths within 3.1 months as the United States military suffered in all wars during the 20th century - World War I, World War II, Korea, Vietnam, and the Gulf War combined.

And, such an annual death rate would also be sufficient to cause far more deaths than the United States would experience in a typical year for any of the following public health risks: heart disease, cancer, deaths attributed to cigarette smoking, AIDS, lung diseases, all car accidents, or all deaths from guns in the United States (including all homicides, suicides and accidents).

By contrast, for all conventional wars in the 20th century to date, 95 nations delivered approximately 1.18 million deaths per year worldwide. The indicated average nuclear weapons risk caused by the aggressor alone (not including retaliations, fallout, etc.) of 2.4 million deaths per year would be produced by (and in the main be experienced by) 9 nations.

Expected deaths per year caused by the aggressor can be determined using fundamental actuarial principles, i.e., mathematical expectation. By using probability principles, which serve to explain deaths over long periods of time, one can develop instructive epidemiological data for nuclear weapon deaths. The goal is to reduce these deaths by preferentially altering probability and severity.

While expected deaths per year, if the initial data input was correct, would correctly reflect outcome over very long terms, we can expect that there will be considerable variability over terms of 100 years or less. Fig. 2, for example, indicates that in 50% of cases it would be reasonable to expect 1.16 million or more deaths per year and 32.4% of the cases would tend to exceed the average 2.4 million deaths per year.

Largely because vast attacks of up to a billion deaths are possible (albeit extremely unlikely), and because there is low probability of smaller attacks occurring in comparatively rapid succession, 10% of cases in Fig. 2 show that the nuclear weapon system would tend to produce approximately 13 million or more deaths per year from the aggressor alone. In sum, this graph suggests a very dangerous system, which, in some instances, still has the capability of going wildly out of control.

Table 1, the preliminaries

Table 1 illustrates the degree of risk reduction, other things being equal, that would be observed in Nukefix when going from 1996 upper limits of 10,700 warheads in the superpowers down to limits of 10 warheads per nuclear weapon nation. The principle feature is that reducing the number of nuclear warheads to one third of 10,700 (i.e., 3,500) does not reduce risk of death to one third of its former value. This occurs, in part, because, with fewer weapons, targeting is applied to areas that, on average, are more densely populated, and because arsenals of non-superpowers often are undiminished.

Table 1 indicates death per year at the median and at the average. In general the median is the more conservative figure and would tend to more closely approximate the outcome over a relatively short term. The average, on the other hand, best reflects the true state of the system, most particularly over the long term. It gives greater weight to the probability of large scale attacks.

The Influence of Warhead Reductions on Risk of Death

It takes only 354 to 800 Russian warheads to destroy every city and town in the United States that has a population density in excess of 1,000 people per square mile (36.3% of the U.S. population, 94 million people). Thus, START II treaty levels of 3,000 to 3,500 deliverable warheads by year 2007 (roughly a decade from now) offer little protection by way of reducing the severity of attack for nations like the U.S. or Russia. Only 10% of these numbers of warheads hitting cities in either nation would produce unprecedentedly appalling destruction. In Table 1, by reducing the upper limit on the number of warheads in the superpowers from 10,700 to 3,500, the expected deaths per year caused by the aggressor were reduced from approximately 2.4 to 1.8 million deaths per year. This benefit would accrue largely to China and India, because of their large populations.

Yet the reduction of risk of death at a START II 3,500 warhead limit is moderate. Risk of death would still be fully 77% to 88% of its 1996 level. Table 1 suggests that warheads would have to be cut to 1,000 or fewer warheads just to reduce risk of death to approximately one half of what it was at the 10,700 level in 1996. The reason that “deaths per year” is instructive is that it is evenhanded measure of risk. It allows us to explore what preventive actions are most effective. With it, one can also explore the separate influences of superpowers and of proliferation.

For example, in Table 1 at the 3,500 warhead level, 66% of the risk of death comes from the superpowers and 34% from other nations. Thus, arms reductions at this level still leave the superpowers as the primary cause of death. Russia and the United States together would produce a risk of approximately 1.2 million deaths per year. If the two superpowers, Russia and the United States together would produce a risk of approximately 1.2 million deaths per year.
States are removed from the system, deaths per year drop to approximately 629,000. Table 1 primarily illustrates the influence of arms reductions (severity). Added benefit can be achieved by additional controls designed to reduce probability. The consequences of changes in probability concurrent with arms reductions can be seen in the Nukefix “T” command.

Very Low Levels of Warheads

The distinguishing feature of nuclear weapons is that, even at very low levels, they present the prospect of the aggressor alone producing more deaths than were produced by all sides in past World Wars. Compared to the 40 million deaths produced by all sides in past World Wars, Russia will recoup its former economic strength in the near term. Such circumstances raise the uncomfortable prospect of an economically deprived nuclear superpower for many years to come.

In “The Limits of Safety: Organizations, Accidents, and Nuclear Weapons” Scott Sagan repeatedly pointed out that systems for maintaining safety at high reliability levels are sufficiently complex, expensive, and difficult to maintain that the maxim, “Richer is safer”, dominates. This brings into sharp focus the point that less affluent, or frankly impoverished, nuclear powers are apt to be much more likely to cause an accidental/inadvertent nuclear use than during the Cold War. Nations that face, or could face, adverse economic conditions include: Russia, North Korea, Pakistan, and India.

Accidental/inadvertent use poses a great threat, even in a competently managed system. In the post-Cold War era, the threat is exacerbated by the “Richer is Safer” phenomenon.

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Legend: #weap (upper limit on number of warheads allowed in each nation), %redm (reduced level of deaths per year at the median), DPYm (deaths per year at the median), %reda (reduced level of deaths per year at the average), DPYa (deaths per year at the average, i.e., expected deaths per year), %RU (percent of deaths per year caused by Russia and the United States), Russia (deaths per year caused by Russia), US (deaths per year caused by the US), %Onat (percent of deaths per year caused by nations other than the US or Russia), Onat (deaths per year caused by nations other than the US or Russia), popR (population density per square mile targeted by Russia), popUS (population density per square mile targeted by the US).

April 1998

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Information Bulletin No. 15

Inesap

Health, Environmental and Safety Risks of Nuclear Weapons

The Wall Street Journal, January 28, 1998 indicated that the Russian GDP had fallen 43% since 1989, a contraction worse than the Great Depression in the 1930s. To recoup from a 43% reduction will require many years of impressive economic growth just to bring Russia back to its 1989 GDP.

For Russia to recover from a 43% decline and regain the level of prosperity it experienced in 1989 would require approximately 17 years at a 3.36 % growth rate.

By comparison, the average growth rate in the US economy for the past century was approximately 3.3%. Thus, Russia would have to sustain a faster growth rate than one of the most capable economies in the world, just to recoup its 1989 position. And, to regain its relative economic position vis-à-vis the United States, Russia would need to achieve an economic growth rate fully 3.36% faster than the rate United States will experience over the next 17 years.

For these reasons, it is unlikely that Russia will recoup its former economic strength in the near term. Such circumstances raise the uncomfortable prospect of an economically deprived nuclear superpower for many years to come.

Scott Sagan repeatedly pointed out that systems for maintaining safety at high reliability levels are sufficiently complex, expensive, and difficult to maintain that the maxim, “Richer is safer”, dominates. This brings into sharp focus the point that less affluent, or frankly impoverished, nuclear powers are apt to be more likely to cause an accidental/inadvertent nuclear use than during the Cold War. Nations that face, or could face, adverse economic conditions include: Russia, North Korea, Pakistan, and India.

Accidental/inadvertent use poses a great threat, even in a competently managed system. In the post-Cold War era, the threat is exacerbated by the “Richer is Safer” phenomenon.

Nuclear weapon nations are in the peculiarly unsatisfactory position of primarily relying on deterrence, when the preponderance of nuclear dangers worldwide come...
from increased chance of accidental use. The probability of accidental use can easily be two to seven times the chance of a willful use.20

The Nukefix program shows that the protective influence of nuclear deterrence is not the distinguishing feature of the nuclear weapons system. The combined influence of accident and miscalculation, typically, has far greater influence.

In Nukefix by analyzing reliability levels needed to prevent accidents and reliability levels needed in deterrence decision-making, one can approximate the percentage of cases in which accident or miscalculation would tend to occur. For example, under reasonably optimistic conditions, as shown in base-case condition at startup, the program suggests that there would be a 89.2% probability [89.2% = 66.6% + 22.6%] that a nuclear first use would result from miscalculation or accident. Probability for all causes of a nuclear first use can be subdivided as follow:

- In 66.6% of cases, a nuclear first use would tend to result from an accidental use [This occurs when an accidental attack is twice as likely as a willful attack.]
- In 22.6% of cases, a nuclear first use would tend to result from a decision-making miscalculation in a willfully initiated attack, i.e., the aggressor lost the war. [This value can be derived from the probability of decision error and the probability of a psychological/psychiatric irrationality.]
- In 10.8% of cases, a nuclear first use would tend to result from a willfully initiated attack in which the attacking nation achieved its military objective, i.e., the aggressor won the war. [In this instance only a small proportion of willfully initiated wars are won by the aggressor. The rest are acciden
ts or miscalculations.

While there are obviously all sorts of variants in the kind of conditions that one can develop in a computer program by changing the data that is entered, the central trait of the nuclear weapons system is that it is difficult, with a proliferated world of nine nuclear weapon nations, to construct plausible scenarios of long-term nuclear peace where the influence of miscalculation and accident is acceptably low, when there is a predominant reliance on nuclear deterrence.

**China, the next two decades**

In contrast to the Cold War where the Soviet economy was often roughly 35% the size of the US economy,21 China’s economy is already roughly 57% the size of the US’s.

With each passing day the United States is now facing in China a nuclear weapons nation with more economic power than it ever faced before. If the United States’ economy sustains a 3.5% growth rate, and if China sustains a 8.8% growth rate, the two will be economic equals in 11.5 years, the year 2009. And, at these rates, within the two decade period that this paper addresses, China’s economy might well be 55% larger than the US economy.22

Such a relationship was already being considered in military terms by the Pentagon’s Office of Net Assessment in 1995, as indicated in Scientific American:

“One reason for a reassessment is that, within a few decades, the threat to the U.S. may come from not a small rogue regional power but instead from what has come to be known as a ‘peer competitor’: in essence, a new superpower, such as China, a resurgent Russia or perhaps even India.”23

**Unlearning the Lessons of Nuclear Deterrence**

For purposes of nuclear deterrence, in the 1960s, Secretary of Defense Robert McNamara defined unacceptable damage as being conservatively from 20 to 25 percent destruction of the populace and 50 percent of industrial capacity.24

Using McNamara’s assumption of attacking roughly 25% of the populace, note that it takes 1,025 to 2,189 U.S. warheads to destroy the area in which 24.8% of the Chinese reside, and it would take 709 to 1,600 Russian warheads (which are larger) to destroy the same area.25

In sharp contrast, it takes only 174 to 394 Russian warheads to destroy the area in which 25.5% of the U.S. population reside. This suggests a lopsided condition, where it takes only a few hundred warheads to destroy a large proportion of the US populace, but four times that many to have roughly the same relative impact on China.

Thus, if Russia and the US are of a mind to stick with their Cold War deterrence policies of both counterforce (predominantly “military”) and countervalue (civilian/city) targeting, they are apt to be highly resistant to reducing deliverable warheads to fewer than 1,200 and 1,525 respectively, if they allow for 500 counterforce warheads. And, if they argue for a more conservative assessment with 1,000 counterforce warheads, they respectively may be inclined to resist going beneath 2,600 to 3,200 warheads.26

For these reasons, START II levels of 3,000 to 3,500 warheads were not strongly objected to, because nations were substantially making a virtue out of a necessity. The arsenals were bloated, and they could be easily reduced without breaching conventional nuclear deterrence thinking.

However, the need to reduce nuclear weapons beneath the 1,000 warhead plateau at 1.2 million deaths per year will require breaking with long-held deterrence rationales. This brings us squarely to an event that occurred almost one hundred years ago.

In the midst of peace, fifteen years before WWI, Tsar Nicholas II of Russia proposed the Hague Conference, in 1899, as Paul Walters related, for the purpose “above all, of putting an end to the progressive developments of the present armaments,” the outcome being: “When the Conference met, a committee of military and naval experts was appointed, but the only result was to produce a number of reasons to prove that any agreed limitation of armaments was impossible [emphasis added].”27

In 1907 the second Peace Conference at the Hague was held, again called by the Tsar: “A British resolution, to the effect that military expenditures had much increased since 1899 and that governments should seriously examine the question, was adopted unanimously, all agreeing to do nothing at all. [emphasis added]”27

Similar to the “deterrence” era today, the period was characterized as the “Armed Peace”.28 WWI began unimpeded seven years later, with no vital interests at stake.29

**In Conclusion**

Public health is caught in an historical crosscurrent. The ascendancy of China and doubts of military intentions of adversaries wed nations to nuclear deterrence. And nuclear deterrence is also supported within mainstream academia, as summed up by the political scientist Scott Sagan: “Among both political scientists and historians who study this issue, a near-consensus seems to exist: a long and distinguished list of scholars argue that nuclear weapons have been a moderating force in international relations.”30

Nuclear deterrence theory, however, is being wrongly applied because it fails to account for the influence of accident. Few sce-
narios, even at the outer limits of plausible optimism, suggest that accident and miscalculation will account for significantly fewer than 50% of nuclear incidents. And, degradation in safety and increased probability of accidental use in Russia and some minor powers can be anticipated over the next two decades because of the “Richer is Safer” phenomenon.

This suggests that in the post-Cold War era a “laser beam” focus should immediately be directed worldwide towards preventing accident and miscalculation, not towards enhancing nuclear deterrence.

Moreover, nuclear deterrence is being wrongly applied, because its theoreticians have failed to adequately account for the annual risk of death that it produces. Conservative actuarial methods used here suggest that even a competent nuclear weapons system can present an annual risk of death that can exceed the number of deaths produced in a single year by major public health risks in the United States.

The reduction of warheads to 2,000 in each of the superpowers, as has been contemplated for START III, is not apt to reduce this risk of death by much more than 36% as shown in Table 1. Significantly deeper reductions in risk of death will require abandoning a nuclear deterrence rationale that is predicated on counter force targeting and on attacking 20 to 25% of an adversary’s population. So, absent an ideological sea change in military and governmental thinking, arms reductions may have a proclivity to stall at high levels of deaths per year - approximately 1.4 to 1.5 million per year and 1,500 to 2,000 warheads per superpower, as in Table 1.

Vanguard attempts to control weapons approximately two decades before WWII and WWII were quashed by military rationale. Reducing nuclear warheads to levels as low as 50 will require a major shift in mainstream governmental and military thinking. The path will have to be accurately and quite persuasively presented, or it, too, is apt to be rejected. The chief difference this time around is that the risk of death is far higher.

This paper illustrates how severity and probability can be evaluated for the purpose of reducing those deaths.

References


2. Accuracy in mathematical expectation depends on a correct estimates of probability and severity. The particular examples that follow assume that, on average, there would only be one chance in 270 years that the US would initiate a nuclear use of any size, and only one chance in 3,300 years that it would initiate an attack of maximum size. It was also assumed, on average, the US would initiate a nuclear attack of any size only once in 580 years, and it would initiate a maximum size attack only once in 2,900 years. All intermediate size attacks were also specified for each nuclear nation. To the extent that these probability assumptions would be insufficiently optimistic, the particular data presented in the following would tend to be unduly pessimistic. Contrariwise, if the estimates are excessively optimistic the presented data, too, would tend to be excessively optimistic. Similarly, faulty estimates in severity caused by errors in estimates of population density in the involved area, errors in estimates in the number of deliverable warheads, or errors in estimates of the size of warheads can produce misleading results. The population data used here was carefully derived, as was the area of death-dealing impact from blast and thermal effects. And, the Nukex user can vary probability and severity data via the “U” (Ultimate) command. In the main, making reasonable estimates is not an insurmountable problem. By making upper-limit, optimistic estimates of probability and conservative estimates of severity, one can have increased confidence that the case is not stated in an unduly pessimistic manner. Since the following estimates do not include estimates of deaths from radioactive fallout or nuclear winter/autumn, or from retaliatory attacks, it probably errs on the conservative side for estimates of total severity. Notwithstanding, it is necessary that considerable additional study be given to accurately estimating the components of probability and severity.


4. Ike Jeanes, Forecast and Solution: grappling with the nuclear (Blackburn: Pocahontas Press, 1996), pp. 28-34, 103, 137-143, 148-154, 239-256, 261-263 shows various methods for approximating the average annual probability per nation (composite RL). Where RL is the inverse of the annual probability, the 22.7 years is a consequence of a 295 RL. Nukex also illustrates methods for approximating RL, as in its “W” (Early Warning Command).

5. Fig. 1 appears in Nukex when the “Q” (Quick) command is entered and varies according to the data the user enters. The data shown here reflects the base-line starting condition developed from the range of probabilities and sizes of attacks under consideration. The bumps along the curve reflect the sum of the influences of individual nations. The curve is not the result of a single formula, but reflects the consequences of applying mathematical expectation to approximately 2,600 potential outcomes.


7. Worst case would be an attack on most densely populated regions of China. Based on the “Targeting the World” page in Nukex. Additional discussion is provided in the Nukex “M” command.


9. As can be seen when pressing the “DPY Method” button in the Nukex “U” command.

10. This data was developed using the Nukex, ver. 1.9f, “T” (Treaty) command. Small rounding off differences occasionally appear. Population density for the most extreme use is based on average Chinese population densities that would be blanketed by encirclement patterns, as can be determined by the “M” (Murder) and “T” commands in Nukex. Table 1 is based on a composite Reluctance Level of 295, which is to say an average annual probability of initiating a nuclear use of any size for each nation of 0.00339, i.e., 1/295, during the period under consideration. Note that probability for specific size attacks were reduced when the upper limit attack size was reduced, and the RL curve in the “U” command shifted leftward. Coincidentally, this is not inconsistent with the expectation that the probability of accidental use would be reduced when the number of weapons were reduced (an issue which is not dealt with here because of its complexity).

10. Note that coincidentally this is close to the previously referred to 1.18 million per year conventional war deaths.

12. The graph in Fig. 2 appears when the Nukex “Q” (Quick) command is entered.

13. Nukex, the “Targeting the World” page.


15. As can be seen on the “Deterrence” page in Nukex.


17. 1.75 = 100/(100-43); 1.75 = 1.033617


20. The Nukex start up screen suggests two times greater. The Nukex “W” (Early Warning) command suggests that for nations operating under launch-before-detonation policies that it can often be seven times greater.


22. Nukex, “Y” (EconomY) command. Any 5.3% spread favoring China produces substantially the same outcome.


25. Nukex, the “Targeting the World” page.

26. 1,209 = 709 + 500; 1,502 = 1,025 + 500 and 2,609 = 1,600 + 1,000; 3,189 = 2,189 + 1,000.


29. WWII also began because effective inhibitors were rejected many years (14 to 19 yrs.) in advance. Jeanes, Forecast and Solution, pp. 571-598.


31. Nukex, the “Deterrence” page
NATO Expansion, Nuclear Weapons and European Security

Jiri Matousek

Introduction

A decade has already elapsed from the end of the East-West confrontation and the Cold War. This era was marked by the nuclear arms race which escalated to mutual assured destruction (MAD) due to the accumulated multiple nuclear overkill. Some people have nearly forgotten that the paranoiac paradigm of stability assured by nuclear threat and balance of forces was broken through by the Soviet leader Mikhail S. Gorbachev who started to act in the spirit of “New Thinking”. This was soon reflected in many military-political initiatives, inter alia by adoption of a new clearly defensive doctrine by the Political Consultative Committee of the Warsaw Treaty Organization (WTO) in 1987, mainly through the option of the “No first use of nuclear weapons under any circumstances” by the USSR. This commenced the profound political changes in the Soviet Union and Central Eastern Europe and at the same time the process of nuclear disarmament and dramatic reduction of conventional forces.

Under Mikhail Gorbachev, the Soviets surrendered their East European “buffer zone” shortly before the Soviet Union expired at the end of 1991. Gorbachev agreed to withdraw Soviet troops from this region, acquiesced to the liquidation of the Warsaw Pact, and even permitted the reunification of Germany and the expansion of NATO into what was once the German Democratic Republic. Gorbachev also signed the Conventional Forces in Europe (CFE) Treaty, which provided for massive reductions in Europe's conventional forces, the Intermediate-range Nuclear Forces (INF) Treaty, which greatly reduced the continent's nuclear forces, and the Strategic Arms Reduction Treaty (START I), which made possible substantial reductions in the strategic nuclear forces of the Soviet Union and the United States. In turn, Gorbachev expected the West to refrain from expanding NATO into the vacuum created by the Soviet military withdrawal. Rather than NATO, Gorbachev believed the peace of the region would become the responsibility of the Conference (now the Organisation) on Security and Cooperation in Europe (OSCE), to which most of the nations of the continent belong.1

In the early 1990s, the world had once the unique opportunity to overcome the obsolete security system based on military political blocks and to create a quite new security architecture based on equality and universality, encompassing all European countries, as well as the transatlantic link, improving the ability to prevent conflicts and settle them peacefully by political means. The chance was there to create a new regional security organisation as envisaged by the UN Charter, under aegis of the United Nations. The core of it undoubtedly already exists in the Organisation for Security and Cooperation in Europe (OSCE).2

Instead, Europeans have been faced to the efforts not only to maintain the remaining obsolete tool of the post confrontation but even to strengthen it prior to the previously promised transformation. This means that the unique historical opportunity could be missed and instead of enhanced stability, new security concerns seem to emerge.

NATO and nuclear weapons

Besides the mentioned progress in nuclear disarmament and arms control, one of the most important achievements of the changed political environment of the 1990s is the advisory opinion of the International Court of Justice (ICJ) of July 8, 1996, declaring the use and threat of use of nuclear weapons to be generally contrary to international law.

NATO still insists in retaining nuclear weapons. Up to 200 US nuclear bombs are still deployed in seven European NATO member states, Britain and France possess their Eurostrategic, as well as operational and tactical nuclear weapons. What is more important, NATO refuses to refrain from its doctrine to use nuclear weapons first. Even though the ICJ asserted that it “cannot conclude definitely” whether the threat or use of nuclear weapons would be illegal “in an extreme circumstance of self-defence, in which the very survival of a state would be at a stake”, this doubtful area of uncertainty does not cover NATO nuclear strategy. Indeed, NATO threatens to use nuclear weapons even when no member state is threatened in its very survival.4 NATO nuclear forces serve much broader political purposes, as can be quoted from an important document on NATO strategy:5 “The nuclear forces of the Alliance continue to play a unique and essential role in Alliance strategy... A credible Alliance nuclear posture and the demonstration of Alliance solidarity and common commitment continue to require widespread participation by European Allies involved in collective defence planning, in nuclear roles, in peacetime basing of nuclear forces on their territory and in command, control and consultation arrangements”.

NATO’s nuclear strategy has not been changed since the ICJ advisory opinion. Moreover it seems that the growing NATO-ization of the European Union has contributed to the shift in the pro-nuclear weapon bias in a couple of countries that now comprise the European Union. In the late 1960s and early 1970s three approaches emerged. It was France which took the most pro-nuclear weapons stance. It was joined by Portugal, especially in its opposition to a comprehensive test ban. The NATO core group, composed of Belgium, Germany, Italy, Luxembourg, the Netherlands and until the late 1970s also Britain and Greece, although rejecting or abstaining on fewer General Assembly resolutions than France or Portugal, still exhibits a strong nuclear weapons bias consistent with NATO doctrine. Finally, there were six countries supporting almost all resolutions favouring nuclear disarmament, i.e. Austria, Finland, Ireland and Sweden and to a lesser extent also Denmark and Spain. By the 1990s, the alignments had changed dramatically. There are only two groups now - 12 nations that vote consistent with NATO line, and three others (Austria, Ireland and Sweden) that struggle to remain receptive to nuclear disarmament.6

As a result of proposed NATO expansion, the number of states, committed to the NATO nuclear strategy will be increased. No matter, whether NATO deploys nuclear
In the name of defence of "western values". The readiness to accept even nuclear weapons leading Czech politicians, like former minister Vojtech Jasny, can be understood only in terms of having the right to deploy offensive as well as defensive weapons on the territory of new members, nor any need to change any aspect of NATO's nuclear posture or nuclear policy - and do not foresee any future need to do so". NATO also stated that it does not intend to build or use a nuclear weapons infrastructure on the territory of its new members.

But in spite of it, some statements, like e.g. by M. Albright that the new member states would have the same rights as the old ones, can be understood only in terms of having the right to deploy offensive assets including nuclear weapons. Even the leading Czech politicians, like former minister J. Zieleniec declared readiness to accept even nuclear weapons in the name of defence of "western values".

Moreover, the Founding Act fails to provide an internationally bounding guarantee that NATO will not deploy nuclear weapons in the new member states. NATO unilaterally reserves the right to change its declared policy on nuclear deployments. It is intended that they will become full and equal members and thus eligible to fully participate in NATO nuclear sharing and decision-marking arrangements. Full membership status includes the right to ask for the deployment of US-nuclear weapons as well as an obligation to accept that US nuclear weapons can be deployed at least during wartime (Denmark, Norway).

Participation of non-nuclear weapons states in NATO nuclear sharing includes the possibility that the control over nuclear arsenals in wartime will be transferred to the armed forces of non-nuclear weapon states (NNWS). Peacetime storage of nuclear weapons on the territory of new NNWS and peacetime training of the use of nuclear weapons are possible, which is already the case for existing NATO member NNWS. It is evidence that e.g. in Norway where nuclear weapons should not be deployed in the peacetime, US nuclear weapons on aircraft and submarine carriers are actually present for about 200 days a year for "training purposes".

**Violation of the NPT**

NATO nuclear sharing and decision making arrangements are perceived as a violation of Articles I and II of the Non-Proliferation Treaty (NPT) by many non-NATO NNWS. Agreement among the parties to the NPT as to whether this is in compliance with or in violation of the NATO countries’ obligations under the NPT has never been reached. Nevertheless, during both the NPT Review and Extension Conference in 1995 and the 1997 PrepCom for the Review Conference in 2000 the issue was again subject to controversy. On the other hand, it should be emphasized that the Russian Federation has withdrawn all of its nuclear weapons from the territory of foreign countries.

The seriousness of the NATO declaration on “no intention, no plan and no reason to deploy nuclear weapons...” in the Founding Act as quoted above, is considerably weakened by NATO unwillingness to commit itself not to do so. Moreover, it appears quite disturbing as an unreasonable hangover from its past inebriation with the hypothetical (albeit unproven) “deterrent usefulness” of nuclear weapons in Europe.

The strict refusal by NATO of the proposal to establish a Nuclear-Weapon Free Zone (NWFZ) in Central and Eastern Europe significantly diminishes the credibility of NATO with regard to the possible deployment of nuclear weapons in this area, where till now no nuclear weapons have been deployed. The establishment of such NWFZ would sanction the status quo and it should be welcome to NATO because it would consolidate the exclusion of any deployment of Russian nuclear weapons (e.g. in Belarus or Ukraine).

At present, the nuclear component in European security is highly questioned. European Union members are in the process of developing their own security and defence identity. The Treaty on the European Union (Maastricht Treaty) commits them to eventually frame “a common defence policy, which might in time lead to a common defence”. This will put the future of the British and French nuclear arsenals onto Europe’s agenda, which is not likely to happen soon. Great difficulties to achieve consensus are to be expected in the discussions on common defence, including its nuclear component, especially due to the countries with long traditions in neutrality like Austria, Sweden and Finland, not to speak about changing defence postures even in the traditional member states, including UK.

**Possible consequences of the NATO enlargement**

After the end of the Cold War and the disbandment of the WTO, three options were open to NATO:

- NATO might have also decided to disband. This was perhaps the most logical outcome, under the circumstances: but, as the optimist would say, politics is seldom governed by logic alone (the pessimist would say that politics has nothing to do with logic). The strong vested interest of the NATO bureaucratic machinery in its self-preservation was probably the main reason why the option to disband was never really seriously considered.
- A second possibility for NATO was to avoid any substantive change, to wait and see. This is often the safest option. “If it ain’t broke don’t fix it”. But such a course of action - or rather inaction - might have been interpreted as lack of recognition of the epochal changes. Indeed, much of the pressure for NATO enlargement came from the countries of Central and Eastern Europe.
- The third option was to enlarge. This is the choice that has now been made, with the decision by NATO in Madrid to accept, as a first step, Poland, the Czech Republic and Hungary. Under present circumstances, the issue of NATO enlargement seems now to focus more on how to do it than on whether or not to do it.

The crucial issue are the relations with Russia. The end of the Cold War has entailed a transformation of the relations between the Western world and Russia, from adversarial to non-antagonistic and perhaps even friendly and cooperative. This development has steered humankind away from an epochal change. Indeed, much of the pressure for NATO enlargement came from the countries of Central and Eastern Europe.

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The crucial issue are the relations with Russia. The end of the Cold War has entailed a transformation of the relations between the Western world and Russia, from adversarial to non-antagonistic and perhaps even friendly and cooperative. This development has steered humankind away from a course leading towards self-annihilation. It is because of this danger that several wise persons oppose NATO enlargement: indeed, it is precisely because of the risk of antagonizing Russia, that the most senior American expert on Russia, George Kennan has dubbed the expansion of NATO “the most fateful error of American policy in the entire post-Cold War era”. 

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Inesap
Building new enemy images

In the Central-East European states, the reasons for entering NATO were from the beginning, i.e. from 1993, mainly ideological - to share common Western values and to be committed to defend them. Whereas the official documents, like the concisely formulated defence doctrine in then Czechoslovakia\(^2\) clearly stated, that the state had no enemy, which was confirmed in the White book on the Defence of the Czech Republic in 1995,\(^3\) the leading politicians, advocating for NATO membership, were continuously evoking certain Russophobia misusing the sensitive population’s resentments on the suppression of the “Prague Spring” of 1968. It is argued with the instability in Russia, possible migration from the East, smuggling arms and drugs and the like. It seems that NATO as a defence community lost any enemy. Perestroika and current transformation and collapse of the USSR have changed this potential of actual adversary insofar that it ceased to exist. It seems therefore that transforming NATO means to look for new defence targets. This implies, according to the present Czech political leadership, the defence against new Russia. The leading idea of counterbalance of the so called Western against Eastern values seems to be weak ideological justification of NATO membership. This is, on the other hand, a very dangerous idea of the new bipolarity.

This new enemy imaging can be seen in the TV clips in the Czech public television, as well as on the billboards with the face of L. Brezhnev, clearly offending the feelings of the older generations, bearing in mind 140 thousands of the Soviet soldiers who fell on the Czechoslovak territory liberating it during the World War II.

Also the enthusiastic slogan at the end of the speech of M. Albright during her visit in Prague last summer “We shall jointly defend the New Europe” (without indicating an adversary) belongs to such ideological arsenal, at least indirectly. For me personally, who remembers the dark years of Nazi-occupation, these words are more than familiar: Defending “New Europe” belonged to the propagandistic arsenals of Joseph Goebbels, Hitler’s minister of propaganda.

New dividing line in Europe

Creating an expanding military fortress in Europe with a new dividing line some hundred kilometers east of the Cold War divide is the wrong legacy to leave at the end of the bloodiest century in the history. It will clearly divide Europe. For them, who will be inside, more security is promised in order to defend democracy and freedom, those, who remain behind will be considered most probably as the second order population of this continent, who did not yet reach the right to be defended. For me personally, it is extremely bitter that the new dividing line would proceed across the former Czechoslovakia, precisely on the same line of former borders of the Holy Roman Empire of the German Nation and Kingdom of Hungary in medieval times.

Cold War redux

Excluding Russia and other former Soviet allies and former Soviet republics is alienating and will undoubtedly force them to look for other partners in order to restore balance of forces distorted due to NATO extension. First of all, Russia will seek for restoring balance of conventional arms and forces and to adopt legitimate measures for enhancing its security, if the NATO military machinery would approach to its borders. It is not excluded, it is rather probable that Russia will seek for other partners, mainly among independent states, former Soviet republics, but even “unfriendly friends” not to be isolated facing an enlarged NATO. NATO extension engineered through Russia’s weakness rather than its consent has led Russia to begin strengthening relations with its neighbours, China and Iran. A possible Eurasian military alliance to counterbalance NATO could be created, launching something like a new Cold War, creating actual enemies.

Nuclear proliferation

As it was analysed above, new member states would be brought to the nuclear decision making table. While the NATO-Russia Founding Act\(^7\) speaks on “No plans, no intentions and no need” to deploy nuclear weapons on the territory of new member states, it does not contain any guarantee that they indeed will not be stationed there. Attracting more militaries to the decision-making is nuclear proliferation, making more nations dependent on nuclear arsenals. This is against every NATO member’s legal commitment under the Non-Proliferation Treaty. Moreover even the non-deployment but only using the air bases on the territory of the new states for temporal landing of aircraft with nuclear payload should be assessed as actual proliferation. In the case of deployment of nuclear assets one can assume that they would be targeted and consequently, they themselves would become targets. This has never been taken into consideration by politicians of countries running under NATO umbrella. This means that there are actually two kinds of NATO expansion going on now. One is geographic - an eastward push towards Russia. But the other is doctrinal: NATO’s nuclear posture is now shaping the policies of the European Union.\(^6\) This tackles also the NATO-newcomers.

Undermining disarmament

Advocates of the NATO enlargement argue that it is not directed against anybody and that it will not endanger Russia. Every realistic politician and citizens with common sense will agree with Mikhail Gorbachev that Russia’s security concerns should be left to it.\(^11\) Russian bitterness over NATO expansion is not only being seized upon ultra-nationalists who are exploiting a growing sense of isolationism and defeat. It is quite legitimate to think about Russian security from the perspective of democratic forces. Since NATO announced its intention to expand, Russia renounced its policy of “no first use” of nuclear weapons in 1993. (At present only China has this option). Vis-a-vis to approaching the NATO war machinery, Russian Federation will undoubtedly restore the distorted balance in conventional forces. This will question the CFE Treaty. One can expect increasing military presence in the western part of Russia’s territory. Russian Federation will accelerate the re-joining process of the CIS, when its change to a defence community is highly probable. Facing actual nuclear proliferation, as explained above, Russian Duma will hesitate to ratify the START II agreement. The visions to negotiate further deep reductions of nuclear warheads of the United States and Russia to, say, the year 2000 on each side as envisaged within the START III agreement will become far behind the horizon.

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\(^2\) Předložena na hory během českého ministerstva obrany
\(^3\) Do 1995, kdy bylo napsáno v Bílém knihrje československého ministry of war.
\(^4\) Záhy poté, co bylo napsáno v Bílém knihrje československého ministry of war.
\(^5\) Když bylo napsáno v Bílém knihrje československého ministry of war.
\(^6\) Když bylo napsáno v Bílém knihrje československého ministry of war.
\(^7\) Když bylo napsáno v Bílém knihrje československého ministry of war.
\(^8\) Když bylo napsáno v Bílém knihrje československého ministry of war.
Increasing arms sales

Adopting new member states and bringing them to the same standards with the old Sixteen in the sense of compatibility and interoperability means to buy new military equipment items, not only weaponry but also command, control and communication technology and other subsidiary equipment corresponding to NATO standards. This seems to be one of the reasons of expanding NATO, profitable mainly for the US military industrial complex. That is the reason why the enlargement is supported even by the American Federation of Labor-Congress of Industrial Organizations (AFL-CIO) in the US: it can positively influence jobs in the defence industries. It is exactly, why the largest opposition exists in other NATO countries without prospects in the arms sale bonanza to Central and Eastern Europe. This argument appears mainly in France where the enlargement is criticised as being not in the interests of NATO security but merely in the interests of the US weapon manufacturers.

Costs

There are various estimates, varying between USD 40 to 125 billion over the next 10 years. For propagandistic reasons, e.g. in the Czech Republic, the costs are presented as only limited to the membership fee. This has been estimated recently by former Minister of Defence M. Vyborny, as being equal to six beers (which should be acceptable by Czechs). The US propagandists seem to be much better. In the official material bearing signatures of many outstanding US officials, including several former US presidents you can read that the price for Peace (which is the euphemically described NATO enlargement) is only one candy bar.

No matter how much will be the exact overall price for the NATO extension, it is to add the costs of the new round of the arms race in further times due to above mentioned consequences. This will again postpone the urgent global agenda connected with sustainable development, saving future of human kind and of planet Earth.

Alternatives to NATO enlargement

There is a very simple alternative to NATO enlargement. It is not to enlarge, and instead develop the relations to the rest of Europe including Russian Federation on the base of the Partnership for Peace Programme (PIP). As I can assess it, being personally involved in many activities within the PIP, this framework enables any political, military technological and military activities among NATO members and former WTO member states, as well as among traditional neutral or non-alligned states, who signed it. This can serve as an example of cooperation of NATO members with non-member states within PIP.

It is often argued that NATO membership is good for UN peace-keeping and humanitarian operations, and Bosnia is presented as an example. It is however quite the opposite. In some phase of this unhappy mission, NATO became, as a matter of fact, one of the belligerents, bombarding one of the fighting sides after unjustified suspicion of having hit the Sarajevo marketplace, which never has been proven. NATO is sometimes presented as a security organisation. This is, of course, not true. NATO is, and remains, even after transformation (which should have been started before any extension) to be more political than military, nothing more than a defence community. It can never play the role of an Pan-European security architecture because it will most probably never encompass all European states.

The likely candidate for a democratic organisation, encompassing all European states, having also a transatlantic link, representing the overall decision-making security body for Europe is undoubtedly the Organisation for Security and Cooperation in Europe (OSCE). This is the core of the future security regional organisation, envisaged by the UN Charter, which can act under the aegis of UNO.

Only such organisation, based on equality and universality can be engaged in preventing conflicts, in settling them peacefully by only political means, and if necessary, to be used for peace-keeping and in the worst case also for peace-making.

The necessary shift from the intervention option and military solutions to the conflict prevention option requires drastic readjustments of the current disparity between budgets of NATO and OSCE. OSCE actions have already demonstrated that OSCE member states are able, without the help of NATO, to prevent conflicts from openly breaking out, and to allow democratic elections to take place. Early detection, early warning, negotiations, mediation, consultations, arbitration, sanctions, and follow-up procedures are important existing components of the OSCE mandate. The help of NGOs would be invaluable for all of these components to be adequately fulfilled.

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De-nuke NATO

“...The likely consequences of nuclear war have no politically, militarily or morally acceptable justification, and therefore the threat to use nuclear weapons is indefensible. — Sadly, the Cold War lives on in the minds of men who cannot let go the fears, the beliefs, the enmities of the Nuclear Age. They cling to deterrence, clutch it tattered promise to their breast, shake it wistfully at bygone adversaries and balefully at new or imagined ones. They are gripped still by its awful willingness not simply to tempt the apocalypse but to prepare its way.”

General Lee Butler USAF, (ret.), former Commander-in-Chief, United States Strategic Air Command (1991-94)

Nato does not provide, in the long-term, a security system that will sustain peace in Europe. Expanding the NATO nuclear-armed “defensive alliance” to nuclear-armed Russia’s borders is dangerous folly. Rather than a consolation of democracy and the extension of “an area in which wars don’t happen”, as U.S. Secretary of State, Madeleine Albright would have it, expanding NATO eastward is a provocative, destabilizing act which is heightening nuclear tensions between the West and Russia.

Russia is desperate for Western financial assistance. The United States could be negotiating deep arms reductions in the Russian arsenal on a reciprocal basis for economic assistance. But instead of offering a 1990s Marshall Plan for Russia (which would be in the economic and political interests of the West, and would address the “loose nukes” danger), the United States has pushed NATO to embark upon a Marshall Plan for arms contractors in Central and Eastern Europe. In the face of this expansion, it is more urgent than ever that the United States consider the removal of its nuclear weapons from Europe: if, as NATO says, Russia is not the enemy, then withdrawing nuclear bombs from Europe would go a long way to defusing NATO-Russian tensions. It would be a sign of faith for Russia that could spark reciprocal acts of cooperative arms control, and by “calming the Bear,” provide Central Europe with a far greater sense of security than inclusion in NATO currently offers them.

The number of U.S. nuclear weapons in Europe has shrunk dramatically, from over 6,000 of many types in the early 1980s to some 150 B-61 tactical nuclear bombs at 10 air bases in seven countries today: Belgium, Germany, Greece, Italy, the Netherlands, Turkey and the U.K. NATO’s European nuclear arsenal also includes Britain’s Trident II missiles, a maximum of 96 deployed on its three Vanguard submarines patrolling the North Atlantic. At the end of March, Britain eliminated the Royal Air Force’s tactical nuclear bombs, a move the British government said was in line with NATO policies; however, the estimated 30 U.S. tactical B-61s at USAF Lakenheath remain. Over the past decade the Soviet Union, and then Russia, similarly consolidated a far-flung arsenal of tens of thousands of locations in Eastern Europe and fourteen republics to about ninety sites in Russia where 22,500 nuclear weapons are deployed.

While these dramatic reductions in nuclear weapons in Europe are certainly welcome, we must not be fooled by the arms control “numbers game” into thinking that NATO and Russia are consequently progressing along a natural trajectory to disarmament. The numbers of weapons are down; but in terms of nuclear military planning and operational procedures, nothing much has changed. Nine years after the fall of the Berlin Wall, NATO and Russia retain illegal “first strike” nuclear policies; both the United States and Russia continue to keep roughly 5,000 of their strategic nuclear weapons on a “hair-trigger” alert, ready to be launched at a moment’s notice; and both continue to adhere to an overall strategic concept known as mutual assured deterrence or MAD.

The Cold War nuclear arms race began because the United States was so alarmed by the Soviet Union’s overwhelming conventional superiority that it felt military equity could only be achieved through the assertion of nuclear strength. Today, the tables are turned as Russia faces a “victorious” resurgent NATO that with its three new members will have an enormous and growing conventional military advantage over Russia of 5:1. Now, with its conventional military forces reduced to ineffectiveness - as demonstrated in Chechnya - and a rocky economy, many in the Russian government feel that Russia has no alternative but to increase reliance on its nuclear weapons. We have already seen evidence of this in Russia’s recent abandonment of Gorbachev’s pledge never to be the first to use nuclear weapons in the event of war, and in the Duma’s intransigence over ratification of START II.

Destroying the European Security Architecture

Last September, the Fourth Freedom Forum led a “citizens’ fact-finding mission” to Europe on NATO expansion. In Moscow they met with Sergey Barburin, leader of the anti-NATO bloc within the Russian Duma (with more than 250 members out of 450 deputies), who proclaimed that NATO expansion is “destroying the architecture of European security.” He, and two other deputies from the Communist Party and Agrarian Party reported that the Duma had recently adopted a resolution condemning the previous agreement to withdraw Russian nuclear missiles from Belarus.

Earlier this year, Victor Mikhailov, then Russian Minister for Atomic Energy, proposed the construction of thousands of low-yield “mini-nukes,” and the re-opening of production lines for a variety of ballistic missiles, as well as for redeployment of tactical nuclear weapons back into Belarus – all as responses to NATO expansion. Mikhailov also suggested Russia should consider withdrawing from the INF treaty and the CTBT, and cutting off new NATO members from Russian energy and other exports as a retaliation for expansion. On January 23, the Duma approved a resolution asking the Russian president and government to devise a program to counteract NATO expansion. The resolution described NATO enlargement as the “most serious military threat to our country since 1945” and charged that NATO member states “have not renounced the use of force as a method to resolve foreign-policy problems.”

General Eugene Habiger, commander of the U.S. Strategic Command, recently reported that Russia has begun production of its new SS-27 strategic missile and is building new submarines armed with multiple-warhead missiles and new bomber-launched nuclear cruise missiles. He said Russia is also building a new “Borey class” of strategic submarines that will be fielded around 2005 with a new SSX-28 missile. A new
Russian air-launched cruise missile is also in the works. Meanwhile, the United States recently introduced a new nuclear bomb into its arsenal, the “bunker-busting” B-61 11, and is operating a $4.5 billion a-year experimental nuclear weapons program which will likely produce designs for more new nuclear warheads.

**Cold War II?**

This disconcerting and depressing set of circumstances has moved General Lee Butler—who just four years ago as the commander of the U.S. Strategic Command was responsible for setting U.S. policy for deter-ring a nuclear war and, if deterrence failed, fighting such a war—to observe that, “our present policies, plans and postures governing nuclear weapons make us prisoners still to an age of intolerable danger.” If NATO’s expansion promotes NATO’s nuclear posture continues unchecked and unchallenged, we are very likely to enter Cold War II.

Today, the U.S. is the only country that stations nuclear weapons outside its national borders, and NATO provides the nuclear umbrella that facilitates this. NATO’s continued deployment of nuclear weapons in Europe, even at reduced levels, along with its refusal to respect the International Court of Justice’s unanimous call for the immediate initiation of comprehensive disarmament negotiations, is in direct violation of the pledge made by the nuclear weapons states at the time of the indefinite extension of the Non-Proliferation Treaty in 1995, to pursue withdrawal “systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons.”

The Non-Aligned Movement of 113 non-nuclear weapons states, led by South Africa, is challenging NATO’s nuclear posture at the 1998 NPT Preparatory Committee meeting. These countries are requesting that NATO adjust its nuclear doctrine to better reflect the goals of the NPT; they want assurances for parties to the NPT that they will not be targeted by NATO’s nuclear weapons, and that the nuclear-haves will begin disarmament in earnest. They point out how NATO and the NPT are fundamentally at odds. The purpose of the NPT is to prevent the spread of nuclear weapons to those states which currently are non-nuclear, and to reduce and eventually eliminate the arsenals of the nuclear weapons states. But NATO insists that “nuclear forces continue to play an essential role in NATO strategy,” and by extending its nuclear umbrella to three new members NATO is effectively engaging in an act of nuclear proliferation.

If NATO won’t give up its nuclear weapons, non-nuclear states will grow increasingly frustrated by the blatant hypocrisy being displayed by countries who are signatories to the North Atlantic Treaty and the NPT, and some may decide to acquire nuclear weapons. The NPT is in real danger of unraveling.

**What to do?**

So what is to be done? I certainly don’t have all the answers, but here are some suggestions:

- NGOs should strongly support the Non-Aligned Movement’s effort to hold NATO accountable to its NPT commitments. We must use the NPT structure to lobby NATO states to give negative security assurances to non-nuclear weapons states, to adopt a no first use policy and strengthen their commitment to disarmament in a meaningful way.
- NGOs in the NATO countries which host U.S. nuclear weapons should seek to pass resolutions or bills in their parliaments calling for the withdrawal of U.S. nuclear weapons from their soil.
- U.S. NGOs should work with critics of NATO expansion and arms control supporters in the Senate to develop legislation calling for a comprehensive re-examination of NATO’s nuclear posture, including an independent study to evaluate prospects for the withdrawal of NATO’s nuclear weapons from Europe. If we fail in our attempts to stop Senate ratification of NATO expansion, it may be possible to get a Senator to attach such a statement as a condition of ratification or an amendment. (Such a condition or amendment would be very unlikely to pass, but it would serve the purpose of bringing attention to the important issue of the role of NATO’s nuclear weapons in European security.)
- European NGOs should continue and escalate the direct actions at nuclear weapons storage sites in NATO member states. Direct action brings media attention to the existence of the U.S. bases, and keeps the weapons’ role and risks in the public consciousness.
- We must convince NATO member governments to utilize the newly established Nuclear Experts Group of the NATO-Russia Permanent Joint Council as a forum for discussing disarmament measures. This body could become the perfect forum for U.S. and Russian nuclear planners to negotiate the removal of U.S. nuclear weapons from Europe in return for major arms control measures from Russia, such as taking its nuclear missiles off alert.
- We need to point out to our policy makers the contradictions in NATO’s mission: Why does NATO need to be a nuclear-armed military alliance when its own officials state that NATO’s main role and focus in the coming decades will be preventive diplomacy, peace-keeping and peace-enforcement missions, “fostering the spread of democracy,” and the like? Cooperative peace-keeping/enforcement type missions have no use for a nuclear deterrent. NATO’s nuclear weapons and its policy of first use actually jeopardize peace keeping, conflict prevention and democracy’s growth in Europe by antagonizing Russia and undermining meaningful disarmament progress.
- We must advocate the Organization for Security and Cooperation in Europe (OSCE), not the NATO military alliance, as the vehicle needed to forming a pan-European security system. We must publicize the fact that the nonviolent East European Revolution did not occur solely because NATO “won.” The nonviolent overthrow of Soviet occupation in part occurred because the Conference on Security and Cooperation in Europe (later OSCE) successfully forged confidence-building measures and promoted democracy and respect for human rights. The CSCE was formed not as an appendix to NATO, but as a mechanism to link NATO and the Warsaw Pact states. In this regard, CSCE was successful. The OSCE, which includes the United States and Russia in its 53 members, has a record of monitoring elections, providing negotiators for conflicts, and if the political will and resources were invested, could be an effective regional security organization.

We must certainly do everything we can to prevent NATO expansion, remembering that if one NATO member state fails to ratify the expansion, it cannot go forward. But whether or not NATO expands, NGOs should step up the call for the demilitarization of NATO as a step towards the creation of a European nuclear-weapon-free zone, and the surest way to promote arms control cooperation between the West and Russia.

**Please join me and many others on-line to discuss how to get to a nuclear-weapon-free Europe by sending an e-mail message to Majordomo@igc.apc.org, leave the subject line blank, and in the message text write: subscribe start3-europeynsf@igc.org <your email address>**

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**Nuclear NATO: Risks and Costs**
The “No to NATO Expansion” Speakers Tour of the United States

Karina Wood

“The Clinton Administration’s rush to enlarge NATO has undercut debate on the merits and risks of this most important foreign policy decision. Citizen groups are alarmed by the lack of debate on NATO expansion and by the ‘insider deal’ mentality of the State Department and Congress, and have taken it on to themselves to stimulate public discussion by organizing a nationwide speakers tour opposing NATO expansion.”

Karina Wood, Coordinator of the No to NATO Expansion Speakers Tour

The “No to NATO Expansion Speakers Tour” was designed to raise public awareness of the serious risks and costs of NATO expansion, and stimulate the debate in the United States that was absent but so sorely needed. The tour took place January 26 - February 22, 1998, timed to occur in the weeks leading up to the Senate vote of ratification, anticipated in February 1998. (At the time of writing, the ratification vote has been delayed until after the Congressional Easter/Passover recess, and is likely to be taken up at the end of April-beginning of May.)

During the four weeks of the speakers tour, seventeen prominent international and U.S. foreign policy and arms control & disarmament experts spoke at public meetings and press conferences in eighteen cities in thirteen states.

The speakers were interviewed on over 40 radio shows, and several TV shows. The tour stops stimulated newspaper stories, meetings with Senators and their staffs, meetings with newspaper editorial boards, and also inspired many letters and calls to Senators, and the production of and requests for op-eds and articles.

In October 1997, when preparations for the speakers tour began, the Clinton Administration’s plans for swift ratification of NATO expansion were running smoothly. Secretary of State Albright had just successfully wooed the support of the powerful chair of the Senate Foreign Relations Committee, Jesse Helms, who scheduled Senate hearings on NATO expansion immediately. Despite strong criticism and opposition from many in the foreign policy establishment and academia, the witnesses called to testify on NATO expansion before the Senate were dominated by advocates of expansion. There was no organized public resistance to the Administration’s foreign policy folly, and no organized opposition in the Senate. Many in the arms control and disarmament community, while opposed to NATO expansion, were resigned to its enactment in the face of overwhelming bipartisan support in the Senate and very little interest in the national media. However, a handful of U.S. disarmament NGOs, determined that the potentially disastrous effects of NATO expansion upon prospects for nuclear and conventional disarmament be challenged, decided that a nationwide speakers tour featuring prominent North American and European critics of NATO expansion would be an effective way of sparking public debate on the issue, and encouraging opposition in the Senate.

Between January 26 - February 22 1998 speakers tour activities included:

- Twenty-four public events (meetings, debates and press conferences)
- Nine editorial board meetings
- Forty-three radio shows
- One television show

The speakers were:

International:
- The Honorable Dr. Alla Yaroshinskaya, advisor to President Yeltsin, former member of the Russian Duma (parliament), Russia
- Colonel Jiri Matousek (ret.), former Director, Czechoslovak NBC Defense R&D Establishment, Czech Republic
- Dr. Miroslav Polreich, former Czechoslovak ambassador to the Vienna Conventional Forces in Europe negotiations 1990-92
- General Sir Hugh Beach (ret.), four-star general, British signatory to the Statement on Nuclear Disarmament by International Admirals and Generals, Vice-Chair, Council on Arms Control (UK)
- Major-General Leonard V. Johnson, CD (ret.), Canada
- Mr. Douglas Roche, former Canadian ambassador for disarmament, President, Global Security Consultants (Canada), Chair, Canadian Network for Abolition 2000, Canada
- Mr. David Knight, Chair of the Campaign for Nuclear Disarmament, U.K.

United States:
- Senator Gary Hart (ret., D-CO)
- Senator Gordon Humphrey (ret., R-NH)
- Rear-Admiral Eugene Carroll, USN (ret.), Deputy Director, Center for Defense Information
- Dr. Ivan Eland, Director of Defense Policy Studies, CATO Institute, author, March 1996 Congressional Budget Office report “The Costs of Expanding the NATO Alliance”
- Dr. William Hartung, arms trade expert, Director, Arms Trade Resource Center, World Policy Institute
- Professor Carl Kaysen, David W. Skinner Professor of Political Economy, Emeritus, Security Studies Program, Massachusetts Institute of Technology
- Mr. Geoffrey Kean, former Director of International Affairs, IBM, Corporate Intelligence Group
- Professor George Rathjens, Secretary-General, Pugwash Conferences on Science and World Affairs, Professor Emeritus, Center for International Studies, Massachusetts Institute of Technology
- Dr. Richard Ullman, Professor of International Affairs, Princeton University
- Ms. Katrina vanden Heuvel, editor, The Nation

Cities visited:
Cambridge/Boston, MA; New York, NY; Princeton, NJ; New Haven/Yale University, CT; Philadelphia, PA; Manchester, NH; Washington, DC; Tampa, FL; Gainsville, FL; Atlanta, GA; Chicago, IL; Milwaukee, WI; Seattle, WA; Portland, OR; Eugene, OR; San Francisco/Bay area, CA; Santa Barbara, CA; Los Angeles, CA.
The speakers tour project was initiated by Fourth Freedom Forum, Peace Action, Women’s Action for New Directions and Physicians for Social Responsibility. The other NGOs which became sponsors were: Americans for Democratic Action, the British American Security Information Council, Center for Defense Information, Council for a Livable World, Demilitarization for Democracy, the International Peace Bureau, and Taxpayers for Common Sense. The Women’s International League for Peace and Freedom also helped to organize some events.

Collaboration with the Mainstream Media Project, a nonprofit public education organization which places leading progressive authorities on radio interview shows across the country, enabled our speakers to reach large numbers of Americans. The Mainstream Media Project booked a majority of our speakers’ radio show appearances. Talk radio is the popular democratic medium in the United States today, allowing listeners to interact with guests from within and without the political ruling elite to conduct a largely uncensored, lively dialogue listened to by thousands. By working closely with the Mainstream Media Project, the “No to NATO Expansion” Speakers Tour brought the opinions of leading U.S. and foreign critics of NATO expansion into the living rooms, offices and cars of hundreds of thousands of Americans who had not previously been exposed to such points of view.

The press department at the Center for Defense Information was instrumental to publicizing the speakers tour by formulating and distributing media alerts and press releases to key reporters and editors in Washington, DC and nationwide.

The speakers tour succeeded in stimulating discussion of the merits of NATO expansion outside the policy circles of Washington, D.C. Members of the public who attended the meetings, heard the speakers on the radio, or read about them in their newspaper were educated about the dangers of NATO expansion, and exposed to new ideas and arguments. Grassroots activists became more focused and inspired to campaign on NATO expansion, and became involved in coalition work as a result of the tour activities. Senators who had not received a single telephone call or letter about NATO expansion began to hear from their constituents in the wake of the tour.

Throughout March and April, the NGOs who worked together on the speakers tour have continued public education efforts and have been urging the Senate to delay its ratification vote until at least June, to allow time for a thorough and informed debate. In March, sixteen Senators requested that Senate Majority Leader, Trent Lott, delay the vote until June. Although Senator Lott rejected their appeal, the ratification vote was in fact postponed until late April - a victory we activists are taking some credit for. Opposition to expansion in the Senate has strengthened considerably in the past few months, and support is reportedly slipping. An April 3 public opinion poll by The Pew Research Center shows a dramatic drop in public support for NATO enlargement, from 63% approval in September 1997 to only 49% approval in March 1998. The survey suggests while opposition to NATO enlargement has not grown (it is constant at 18%), as the public has learned more about the issue, anxieties have risen and support has fallen significantly. The speakers tour and other educational and lobbying efforts of arms control and disarmament NGOs has surely contributed to these changes in the minds of elected representatives and the public.

In the weeks leading up to the Senate vote, the Mainstream Media Project has organized a series of “radio town hall meetings” to stimulate debate in the sixteen states which have Senators who are undecided on NATO expansion. Popular talk radio shows will host shows debating the merits of NATO expansion, featuring the undecided Senator plus a guest in favor of and a guest opposed to expansion. Members of the show’s audience will call in and ask their questions. A nationwide advertisement campaign is being run by Business Leaders for Sensible Priorities, and the Fourth Freedom Forum will sponsor what we hope will be a nationally and internationally televised “town hall meeting” in which top Clinton Administration officials and leading critics of expansion will face off and answer questions from an audience of the public. Look out for us on your TV!

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**The Costs of NATO Expansion**

*Alistair Millar*

### Cost Estimates

There have been five principle cost studies to date, three of which have been produced entirely in the United States. The other two have come from NATO’s Senior Resource Board (which the United States rejected for its faulty assumptions and costs that were to low). The other has been offered by the Polish Government, which lists 19 target areas to achieve a minimum of logistical changes at a cost of $84 million in fifteen years. This appears quite low because it is incomplete, and excludes military modernization. This point is addressed in a US State Department Telegraphic Reprint from the Polish Embassy which notes that the tougher question is where to get the cash to upgrade essential military hardware. Only 20% of the

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*Slightly corrected contribution to the Alba Köri “No-to-NATO Conference”, Budapest, Hungary, November 1997.*
Polish army’s equipment is considered modern and compatible with NATO standards. All of the costs estimates to date are “notional” and depend on how big a threat planners assume the alliance will face, what forces will be needed to keep NATO credible against a potentially resurgent Russia (this is very unlikely in the near term if at all) and exactly what NATO’s other missions will be.

The first of the American cost estimate studies was produced by the Congressional Budget Office (CBO) in March of 1996 and estimated that the price for expansion varies considerably based on different assumptions; they offered a range anywhere from $61-125 billion. The following month the RAND corporation produced figures between $10 billion and $110 billion with $42 billion being the most likely. The most frequently cited study was released by the Clinton Administration, through the State Department in February of this year. This study estimates that costs will be lower, between $27-35 billion, giving figures based on what the Administration believes will be affordable to the United States. It divides the costs up between the Alliance as follows: 50% current European members plus Canada; 35% new members; and 15% for the United States. The Administration is littered with pitfalls. It fails to do a bottom up costing of the detailed military improvements needed for expansion and numbers are just picked to suite what the parliamentarians in member countries want to pay without sufficient analysis, not based on fact and often cannot be verified. The study assumes that each nation would purchase the I-Hawk defense system, originally phased out. Furthermore the study assumes that each nation would purchase 18 F-16 fighter planes, in reality new members are coming down.

The basis for all the costs studies is based on NATO’s 1991 Strategic Concept. This document still makes frequent references to the Soviet Union and its republics and the USSR. It is out of date and cannot possibly provide sufficient rational for NATO in the Post Cold War era, let alone what the costs of expansion will be. What do you expect to get in return for your investment? As you all well know Article Five of the NATO Washington Treaty pledges that an attack on one member will be considered an attack on all of them. This sounds like a strong, comfortable security blanket being offered to you who still have vivid memories of Soviet domination, particularly in 1956. I urge you to pay special attention to a recent interpretation of Article Five from the White House. In September US Senator Kay Baily Hutchison (R. Texas) submitted a letter and some questions to Clinton on NATO expansion. The fourth question reads as follows:

“Under Article V of the treaty, NATO’s security guarantees will extend to all new member nations of Central Europe. Is a border dispute involving one or several of the new NATO members so vital a national security threat to the United States that we are willing to risk American lives?”

The Clinton Administration answered the question this way:

“Article V states that members will consider an attack on one an attack against all. It does not define what actions constitute an “attack” or prejudice what Alliance decisions might then be made in such circumstances. Member states, acting in accordance with established constitutional processes, are required to exercise individual and collective judgement over this question.”

That doesn’t sound like the iron clad security guarantee that you think you are paying for. Instead it is flimsy and open to interpretation. After spending vast amounts of money on defense instead of social and economic concerns in this part of Europe, will it be worth it?

Loans

Over the last two years, economic aid to this region has gone down while military spending has dramatically increased. During 1996 the Clinton Administration diverted $15.6 billion from economic assistance funds into military funding. For 1997 this conversion will use a further $7 billion and has already been authorized in the United States. At a time when Central and Eastern European nations are in the middle of a costly transformation to a market economy, spending money on militarization instead, will increase instability and threaten security in the region rather than strengthen it. The International Monetary Fund has already warned the Western Governments, especially the United States not to push Central and Eastern Europe to spend on defense and jeopardize their domestic reform programs. If you had a referendum in this country based on the IMF’s recommendations on military spending, Hungary’s approval of NATO expansion may not be so imminent. Would you rather have tanks and fighter planes or hospitals and schools?

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The U.S. Presidential Decision Directive 60
New Targets, Old Policy

Götz Neuneck

The current arms control process seems to be saturated and loses momentum. Today disarmament is an adjustment to the new realities after the cold war, in a new security environment. The Natural Resources Defense Council in a new study estimates that at present some 36,000 nuclear warheads are stored in the arsenals of the five declared nuclear powers of which 98 percent are in the possession of Russia and the U.S. With the provision that the START-2 Treaty is ratified by the Russian Duma and that START-1 and START-2 are fully implemented in 2007, the nuclear arsenal of the United States will be reduced from around 15,000 warheads to some 10,000 nuclear warheads including 3,500 deployed strategic and 950 operational tactical warheads. Today, the United States is the only country with nuclear warheads outside its territory.

Russia also proceeded in eliminating its strategic forces under the START-1 provisions. In January 1996 the Russian strategic forces consist of 10,240 operational nuclear warheads, the submarine fleet consists of 450-500 warheads. China is continuously modernizing its submarine fleet. It will probably possess 260 operational nuclear warheads. France submarine fleet consists of 260 operational nuclear warheads. China is continuously modernizing its nuclear arsenal which is estimated at 400 to 450 warheads. It can be concluded that these stocks of nuclear weapons are in no way justified by the new political realities. The remaining nuclear arsenals of the United States and Russia exceed by far the level of a minimum deterrence presumably needed to insure against a resurgence of the competition between the old super-power rivals. The 1997 study “The Future of U.S. Nuclear Weapons Policy” concludes by saying: "The United States has accomplished much to lay the foundations for stricter controls on and dramatic reductions in nuclear weapons, as well as fundamental changes in nuclear operations. But much more needs to be done by the United States and Russia, as well as by other nuclear powers. The world looks to the United States, as the sole remaining superpower, for leadership."

The Presidential Decision Directive PDD-60

The top secret Presidential Decision Directive PDD-60, signed by President Clinton in November 1997, replaces a directive signed by President Reagan in 1981 and gives new guidance to the U.S. military on targeting nuclear weapons. PDD abandoned previous references to win a protracted nuclear war with the former Soviet-Union by no longer targeting Russian conventional forces. Accordingly Robert Bell, senior director for defense policy at the National Security Council (NSC) “calls for U.S. war planners to retain long-standing options for nuclear strikes against military and civilian leadership and nuclear forces in Russia”. Bell also stated that “the directive’s language further allows targeters to broaden the list of sites that might be struck in the unlikely event of a nuclear exchange with China”. Moreover, it is widely believed that the list of targets was reduced from 16,000 (in 1985) to 2,500 thus resulting in “fewer but more widespread targets”. According to PDD-60 not only allows the use of nuclear weapons against “rogue states”, but also against an attacker using weapons of mass destruction (WMD). Against the US territory, troops or allies.

During a luncheon adress at the Arms Control Association on February 18, 1998 Robert Bell described the three-part strategy of the Clinton Administration how to deal with the WMD threat: Part one is preventing the spread and use of WMD by arms control treaties and multilateral non-proliferation regimes, part two is nuclear deterrence by maintaining “a strategic posture across the triad of strategic forces” and part three means involving “active means of defeating WMD including missile defenses and counter-proliferations attack capabilities”.

Living SIOP, Adaptive Planning

The changes in the US nuclear doctrine were based on a seven year lasting review process. Especially, the US military sees in the “increasingly capable Third World threats” a justification for maintaining strategic and non-strategic nuclear weapons. The Gulf War, the clandestine Iraqi nuclear weapons programme and the missing US target data processing capabilities for the “southern hemisphere” accelerated the changes in the nuclear doctrine and posture. A globally-focused, flexible “Strategic War Planning System” (SWPS) was introduced in 1992. A “living SIOP” (Single Integrated Operational Plan) was developed to establish a “real-time nuclear war plan which could receive virtually instantaneous war fighting commands and upgrades”. The core of this planning system is “adaptive planning”. It allows to expand the US nuclear weapon capabilities to include WMD targets outside Russia in countries such as Iran, Iraq or North Korea.

Adaptive planning makes limited nuclear operations in regional contingencies against “rogue” nations in a short time with reduced nuclear arsenals possible thus solving the dilemma that is created by extending the target list globally if the number of nuclear weapons continued to decline in the START-II/III process. Hence, “adaptive planning” makes future reductions of the nuclear arsenals possible, but did not change the US nuclear declaratory policy. The distinction between strategic and tactical nuclear planning was also cancelled in 1992: “The new SWPS will achieve a preliminary theater support of non-strategic nuclear weapons planning by January 1998, and the goal is optimized adaptive planning within the theaters. (...) As a result, nuclear Tomahawk land-attack missiles assigned to nuclear submarines and dual-capable aircraft, like the F-16 and F-15E the US Air Force currently deploys in Germany,
Italy, Turkey, and the United Kingdom, will be incorporated into STRATCOM nuclear planning, albeit in coordination with the regional commanders.\textsuperscript{2,15}

It is reported that in February 1996 regional nuclear counterproliferation was formally included into the US nuclear doctrine when the Joint Chiefs of Staff released the “Doctrine for Joint Theater Nuclear Operations” (Joint Pub 3-12.1). The version of February 9, 1996 explains: “The threat of nuclear exchange by regional powers and the proliferation of WMD have grown following the end of the Cold War. Currently, short-, medium-, and intermediate-range missiles capable of carrying nuclear, biological, or chemical warheads are the primary threat in theaters”.\textsuperscript{16} PDD-60 has to be seen as a series of detailed nuclear attack options for the Post-Cold war period.

**Consequences for the nuclear forces modernization**

Introducing a post-Cold War nuclear guidance means also modernizing and upgrading the nuclear weapon systems and infrastructure. The Navy is creating a SLBM Retargeting System (SRS) which allows Trident submarines at sea a greater capability to attack fixed and mobile sites.\textsuperscript{17} The USAF is upgrading its B-2 bombers for nuclear counterproliferation missions.

Today the USA has more than 3000 nuclear warheads operational for immediate launch from ICBM and SLBM on alert. An extra reserve supply of non-deployed nuclear warheads, the “hedge”, provides an additional upload capability. The large Russian arsenal is still in the focus of the US nuclear forces.\textsuperscript{18} PDD-60 clears the way for modifications of new US nuclear weapons such as the B61-11 which allows to introduce new capabilities for targeting new proliferators in the “Third World”. The B61-11 program started in October 1993 to develop a nuclear “Earth Penetrator”. The bomb burrows several meters before exploding. The Pentagon did not have such a weapon to target buried command bunkers or chemical-weapons factories beneath the earth. Scientists from Sandia National Laboratory are studying other B61 designs to limit or minimize collateral damage or other effects such as the electromagnetic pulse (EMP).\textsuperscript{19} To cover also the “Southern Hemisphere” it is necessary to implement data targeting technologies from the Northern Cold-War coverage to obtain a “global capability”. For example, the MILSTAR satellite communication system is designed to provide secure global command and control capabilities for nuclear warfighting.\textsuperscript{20}

Former Commander-in-Chief of the US Strategic Command STRATCOM General Lee Butler describes the option to threaten chemical or biological attackers as an “outmoded idea”.\textsuperscript{21} He and others are arguing, that “conventional retaliation would be far more “ proportionate, less damaging to neighboring states and less horrific for innocent civilians”.\textsuperscript{22}

The use of nuclear weapons to deter the use of chemical or biological attacks by merging proliferators of the Third World is not convincing. On the one hand, it is doubtful that regional troublemakers really are impressed by the US threat to use nuclear weapons. Would the US really plan the death of 10,000 or 100,000 innocent people in largely populated areas caused by one nuclear explosion? What if the use of B/CW is spread out in a clandestine way? The effects of B/CW are hardly predictable and not comparable with the consequences of nuclear weapons. The threat of B/CW can also be addressed, by the superior US conventional forces and additional defensive measures. Finally, such a policy legitimizes the use of nuclear weapons to deter other than that posed by nuclear weapons themselves and it violates negative security assurances given by the nuclear weapon states.

The directive maintains the ambiguity of the U.S. policy by threatening with nuclear weapons anyone attacking U.S. territory or troops with chemical or biological weapons, thus complicating the negative security assurances and further nuclear disarmament. Robert Bell reiterated that the United States sees no problems with the given security assurances: “It is not difficult to define a scenario in which a rogue state would use chemical weapons or biological weapons and not be afforded protection under our negative security assurances.”\textsuperscript{23} These guidelines still reserve the right to use nuclear weapons first during a conflict.

**Contradictions to the NPT**

According to the then Secretary of Defense Bill Perry, “in deterring this threat, we depend both on a strong conventional military force and a smaller but still powerful nuclear force. In our nuclear posture review, we reaffirmed the importance of maintaining nuclear weapons as a deterrent. But I would like to point out that both our conventional and nuclear force, as deterrents, not only must be strong, but they must be perceived that the United States has the will power to use that strength.”\textsuperscript{24}

In effect these ambivalent statements are in contradiction with the negative security guarantees given some days before the NPT extension conference in 1995. On 5-6 April 1995, the five nuclear-weapon States published declarations\textsuperscript{25} giving “negative security assurances” applicable to the NPT. Russia, France, Britain and the United States declared in separate statements that “these countries will not use nuclear weapons against non-nuclear-weapon States parties to the NPT, except in the case of an invasion or attack on their territories, its armed forces or other troops, its allies or States towards which it has a security commitment, carried out or sustained by such a non-nuclear-weapon State, in association or alliance with a nuclear-weapon state.” China declared “not to use or threaten to use nuclear weapons at any time or under any circumstances” and “not to use or threaten to use nuclear weapons against non-nuclear-weapon States or nuclear-weapon-free zones at any time or under any circumstances.”

One has to argue that the possession and the attempt to find new military roles for nuclear weapons could be an encouragement for other countries to develop weapons of mass destruction and that this process could be a serious obstacle for further nuclear disarmament. Furthermore, it can be argued that the U.S. has sufficient conventional forces that could counter non-nuclear threats if they occur and that the U.S. should invest in improving the international nonproliferation effort including better financial support for the IAEA or a continuation of the Nunn-Lugar program.

The increasing capability to target potential proliferators armed with nuclear, chemical and biological and radiological weapons has changed the US declaratory nuclear policy and continues to reshape the US nuclear posture. There is also the possibility that other nuclear weapon states could take up this rationale thus enduring
the role of nuclear weapons in the post-Cold War period. Correctly, the BASIC-Report resumes: “By using nuclear weapons in this way, the United States is sending a message that nuclear weapons are important for achieving prestige in world affairs and for accomplishing military and political objectives. Pointing with nuclear weapons at regional troublemakers will provide them with a justification to acquire nuclear weapons themselves. Encouraging nuclear proliferation can only increase the risk to US security in the long term.”

Russian vulnerabilities

In an article from the Bulletin of the Atomic Scientists by Bill Arkin and Hans Kristensen it became clear that the US has now a greater capability to destroy the Russian nuclear forces than ten years ago. Russia’s nuclear forces, especially the mobile SS-25 and its ballistic missile submarines are in a miserable shape thus creating crisis instabilities and an emerging vulnerability: “Russia’s vulnerability is undoubt edly the underlying reason why START II remains unratified in Moscow and strategic arms reductions falter.”

At the end of December 1997 President Boris Yeltsin signed Decree No. 1300 which has not been released up to now. The document, titled “National Security Concept of the Russian Federation”, bypassed the Russian Duma, discusses future threats, national interests and the fundamentals of the national security strategy. For example, it calls for retaining sufficient nuclear forces to inflict destruction on any individual aggressor and even a coalition which uses either conventional or nuclear weapons that threaten the existence of Russia as a state. It also advocates a robust R&D effort such as the deployment of the mobile and silo-based Topol M-2 ICBM (SS-27), a new tactical system of nuclear weapons with a range of 400 km, small nuclear warheads, weighing less than 90 kg and the construction of a new class of advanced Boreia-class nuclear-powered submarines.

On February 4, 1998 Russian President Yeltsin warned that a U.S. attack in Iraq could lead to a world war: “One must be careful in a world that is saturated with all kinds of weapons, and sometimes in the hands of ... terrorists. (...) We must try at the same time to make Clinton feel that with his actions in Iraq he can lead to a world war.”

Clintons press secretary M. McCurry said on February 2, 1998 that a U.S. response to any biological attack would be “devastating and overwhelming”. Not mentioning Iraq, this statement was seen as a veiled warning to Iraq, which denied inspections of its remaining suspected weapon sites.

The 1993 Russian military doctrine stated to reserve the right to initiate the use of nuclear weapons if it is attacked by a non-nuclear-weapons state allied with or supported by a nuclear-weapons state. According to U.S. intelligence sources, Russia plans to reduce its ground forces by up to 50 per cent, and intends to put greater emphasis on the use of nuclear weapons in future conflicts.

ABM Treaty and Ballistic Missile Defense

The 1972 ABM Treaty was signed to prevent the deployment of defense technologies against the long-range strategic missiles of the U.S. and Russia. As such defense can be overwhelmed by offensive missiles, the two superpowers were encouraged to maintain relatively large numbers of nuclear missiles, thus complicating future reductions. After the Gulf War the US decided to develop more capable theater missile defenses. According to some analysts, programs such as the Army’s Theater High Altitude Area Defense (THAAD) or the Navy’s Theater Wide System are in principle also capable to intercept long-range missiles. The U.S. Administration’s original position was that THAAD was not able to intercept strategic missiles. However, analyses from independent analysts demonstrated that if THAAD worked as claimed against 3,500 km range TBMs, it would also be effective against strategic missiles.

Their mobility and high production rates also raise concerns that they could also be deployed to defend the U.S. territory. It is important to note that the effectiveness of the planned TMD systems is primarily dependent on their ability to deal with countermeasures.

In 1993 the U.S. began discussions with Russia to modify the ABM treaty. Whereas Russia wanted to limit testing (and the interceptor’s speed to 3 km/s), the US wanted the treaty to permit deployment of any TMD-System as long as the system was not tested against incoming targets with a speed of 5 km/s.

On September 26, 1997 the United States and Russia signed two separate “Agreed Statements” to specify which system could be considered treaty compliant.

The “low-speed agreement” says that any system will be permitted if its interceptors do not travel faster than 3 km/s and if the system is not tested against targets that fly faster than 5 km/s. Unfortunately the “high speed agreement” only specifies that a treaty-compliant system must fulfill the same testing restrictions as the low-speed system and that the parties will “hold consultations and discuss” their “questions and concerns”. For the U.S. this means that each party will rely on its own responsibility to determine treaty compliance. The agreement prohibits also the deployment of space-based interceptors and introduces two principles:

1. The scale of deployment of high-speed systems in terms of number and geographic scope.
2. The deployment of high-speed systems only if they do not pose “a realistic threat to the strategic nuclear force” of the other country.

According to L. Gronlund from the MIT, the second principle introduces a new “force-on-force” interpretation because it permits intercepting strategic missiles as long as they do not threaten the entire retaliatory force of the other side. Whereas a mobile TMD system does not constitute a real threat to an arsenal of several thousand nuclear weapons, it could in principle threaten an arsenal of a few hundred missiles thus complicating future nuclear reductions to low levels.

Defensive weapons including ballistic missile defense (BMD) systems are a major component of counterproliferation. Most of the budget for the Defense Counterproliferation program is spent on BMD systems. Confronted with such a massive program a study by U.S. scientists which analyzed the global missile threat and its dynamics for the next decade came to the conclusion that investing heavily in BMD programs is “misguided and dangerous”: “Essential international arms control treaties designed to reduce the threat of weapons of mass destruction have been held hostage to other issues. Funding is slashed for programs which provide the
front line of defense against the nuclear danger by reducing the threat itself, while billions of dollars are being poured into ballistic missile defense, the last and more questionable line of defense.”

References

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8. Ibid.
9. Ibid.
10. In the Pentagon terminology “rogue states” are used for countries such as Iran, Iraq, Libya, Syria and North Korea. WMD refers to nuclear, biological, chemical and radiological weapons.
15. Ibid., p. 12.
18. “Russia is not an enemy. Nonetheless, Russia remains capable of destroying America’s way of life. By most estimates, Russia retains some 20,000-25,000 nuclear weapons, and Russian political and military leaders repeatedly stress their reliance on nuclear weapons for their own security.” Statement of General Eugene E. Habiger, USAF, Commander-in-Chief, US STRATCOM before the Senate Armed Services Committee, March 13,1997.
20. Ibid.
21. Ibid., p.3.
24. William J. Perry, DoD News Briefing,16:00-16:34, April 11, 1996.
25. See for the four statements in UN-documents: The Arms Control Reporter 7-95, 850.393.
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35. Ibid.
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Disarmament Groups Force DOE to Release Portions of Secret “Stewardship” Plan for Nukes

Agency Now Admits it Will “Replace” Nuclear Weapons in Stockpile and Develop “New Nuclear Options for Emergent Threats” (Press Release 4/20/98)

The Department of Energy (DOE), in an attempt to fend off a legal challenge to its nuclear “stewardship” program brought by the above groups and others, has released a declassified version of its October 1997 “Stockpile Stewardship Plan” to a federal court. This newly-released “Green Book,” so called, provides new admissions regarding DOE’s plans to indefinitely maintain a large nuclear arsenal, gradually replace existing weapons with modified or new ones, develop “new nuclear options for emergent threats,” and create the capability to build thousands of additional nuclear weapons “if needed.” The provision of “new nuclear options” has been, up to now, strenuously denied by DOE.[...]

Features of DOE’s plan, revealed for the first time in this document, include:

- The supposed “need” for a 10 petaflop or faster supercomputer—a machine at least 10,000 times faster than the fastest experimental supercomputer operating today (p. 8-18);
- The near-term “need” to certify modifications to the nuclear explosive portions of some U.S. weapons, including a new fire-resistant-pot-containing primary for B61 tactical gravity bombs (p. 4-15 and 1-11);
- A program to provide a “continuum of warhead design options” (p. 5-9) to replace the warheads on the Navy’s submarine fleet, giving new ground-burst (and hence hard target kill) capability for those reentry vehicles which now carry W76 warheads—the most powerful weapon type now in stockpile (p. 10-20);
- Provision for the actual manufacture of these new submarine-launched warheads, an admitted driver for DOE’s manufacturing modernization plan (called “ADaPT,” for “Advanced Design and Production Technologies”) (p. 10-21);
- A DOE plan that would allow the agency to double the “shot” rate at NIF after the facility is built, yet the “[c]ost for implementing the increased shot rate is not in the baseline project [i.e. not in the budget submitted to Congress for funding] (p. 9-28); and
- “Hedge” production plans and “demonstrations” that, when implemented, would allow DOE to quickly increase U.S. nuclear weapon production to “cold war levels of building” (p. 6-18)...
U.S. Global Strategy to Maintain World Order
The New Role of NATO and the US Central Command

Bahig Nassar

1. US nuclear weapons in South West Asia

Apart from several countries and islands, such as Japan and Guam, where US nuclear weapons are deployed, these weapons are deployed only in two regions: Western Europe under NATO command and the Middle East and the Gulf area (South West Asia) under US central command.

However, US nuclear weapons had been deployed with the full consent and approval of European countries, whereas these weapons can be deployed at any time in South West Asia (SWA) without any agreement concluded with the countries concerned.

On January 27, 1980, following the entry of the Soviet troops in Afghanistan, president Carter unilaterally declared his Doctrine on US policy in SWA, stating: “Let our position be absolutely clear. Any attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force.” Consequently, the U.S. Rapid Deployment Force (RDF) had been created.

On January 1, 1983, the Reagan administration, established a new US Central Command (US CENTCOM) to project power and command. The RDF was in charge for a vast area, extending from East Mediterranean to Pakistan and from the joint Turkish and Iraq borders (NATO frontiers) in the North to the African Horn region in the South with Diego Garcia island in the Indian Ocean as its central base. The decision to set up this new geographic unified command which was the first to be created by US in 35 years, was taken without the approval or the prior notification of the countries of the region.

According to the Report of C. Weinberger, the then US Secretary of Defense, to the Congress on the FY (fiscal year) 1985 Budget, FY 1987 authorization request and FY1986-90 Defense programs the US CENTCOM “is charged with achieving US National Security Policy objectives in SWA, including the Persian Gulf and Horn of Africa. Its primary responsibilities are to ensure continued Western access to Persian Gulf oil; to deter Soviet aggression and preserve regional stability, and to halt and if possible reverse the spread of Soviet influence. While, in principle, most of our general purpose forces could be used for rapid-response missions, we have identified a certain number of units that could readily be allocated to US CENTCOM for this purpose” (see table).

Information compiled by “Intervention and Nuclear Weapons: Facts and figures on the Mediterranean” issued by the World Peace Council, 1985, nuclear weapons assigned to CENTCOM are the following:

- Army and Marine Corps: equipped with 203.2-mm nuclear capable self-propelled howitzers. Neutron shells can also be launched by this artillery
- Strategic Bomber Squadrons: each strategic B-52 bomber can carry 20 cruise missiles with an explosive capacity equal to 300 Hiroshima bombs. Twenty-eight strategic bombers with 560 cruise missiles are assigned to the RDF.

2. NATO links to the South

From the first inceptions of establishing the RDF and its Central Command the USA made every effort to link their operation with NATO.

The Reagan administration took a step and convinced its allies that the USA must be free to move its NATO forces out of Europe to other regions, (International Herald Tribune, May 17-1982). On December 2, 1983, European states parties to NATO, approved a communiqué, issued by defense ministers, co-ordinating their military actions with the US-RDF deployments and operations in areas outside the traditional zone of NATO. On the basis of na-
tional decisions, they will extend facilities “to assist such deployments needed to strengthen deterrence in such areas.”

Speaking about co-operation amongst NATO member states in support of RDF operations, Weinberger stated in his above-mentioned report to the Congress:

“We and our NATO allies are studying ways for the allies to compensate in Europe for any diversion of US NATO-oriented forces to South West Asia.”

However, more deep and organic links tightening the relation between NATO command in Europe and the US Central Command in South West Asia (the ME and the Gulf area) had been established during the second Gulf War when a broad coalition of forces, traditional and nuclear, were created to drive back Iraqi forces from Kuwait. Lessons drawn from this war had led to the following steps:

- On July 18, 1991, President Bush, during a visit to Greece, declared that several US units in Germany would be transferred to bases in Italy and Greece to be close to the oil fields in the gulf.
- A huge arms build up in the gulf was established by foreign powers especially the USA, while rapid interventionist forces of many European countries were ready to project power on the Middle East and the Gulf to protect their interest.
- NATO commands were allowed to undertake operations outside the traditional areas of its former activities.
- A special interventionist force was created by Italy, France, Spain and Portugal for operations in the Southern flank of the Mediterranean and military celebrations on this occasion took place in Florence, Italy, on November 9, 1996.
- In February, 1996, a military alliance was created between Israel and Turkey. Arab countries were invited to join after concluding the necessary settlements with Israel in order to establish a regional military structure pact. It should be noted that Turkey is a NATO member state while other ME countries are under the control of US Central Command.
- After NATO expansion to the East, talks are underway with several countries in the Mediterranean region to expand NATO to the South. NATO command is conducting, at present, these talks with Morocco, Tunis, Egypt, Jordan and Israel. Other talks may be conducted with each of the other countries of the Southern Mediterranean once they changed their policy to suit NATO principles and aims. They will not be NATO full members but a kind of a special link is under discussion to involve them in NATO global policy. Nuclear weapons are assigned to NATO and US Central Commands, while US, Israel, British and French units involved in the above mentioned plans are carrying weapons of mass destruction.

3. What are the consequences of all these plans?

1. In spite of the dismantling of the Soviet regime and the settlements concluded between Israel and several Arab countries, arms built up is escalating and the Israeli and US nuclear weapons are proliferating in the ME and the Gulf area.
2. Peace in the ME will be maintained by nuclear deterrence while US will use force to prevent the countries of the region (except Israel) from acquiring weapons of mass destruction.
3. Instead of transforming the ME into a zone free from weapons of mass destruction with security measures which will equally benefit all the countries of the region, plans are implemented to establish military alliances among them through links with NATO or by creating regional military structures around the already existing Israeli-Turkish alliance. Similar to the role of US nuclear weapons within the framework of NATO, Israeli and US nuclear weapons can continue its deployment within the future military structures and alliances.
4. A process of interlinking NATO with US CENTCOM is underway. However, NATO expansion to the East and its links with US CENTCOM in the South are assuming global dimensions. Both of them are no more military edifices to confront Soviet “threats.” Their function, at present, is to support the new World Order dominated by the USA. Together with its alliance with Japan and the US military build up in the Pacific, three main targets are supposed to be attained: (1) pressures will be born on Russia and China. (2) US sway over its allies in Europe and the Pacific will be strengthened and (3) the chaotic relations among many countries of the Third World (including ME countries) will be controlled. Among all these structures, NATO will assume the central role in the US global strategy designed to maintain World Order with deterrence, nuclear and conventional.
5. Undoubtedly several steps had been recently taken in the field of disarmament, including the CTBT, the reduction of nuclear weapons and the discussions underway to conclude a Treaty to prohibit fissionable material for the production of weapons. However, there are grave flaws and deep holes, which run contrary to the above mentioned steps and create a base for a new strategy, such as the lab-tests to produce more sophisticated mini nukes allowing their actual use in military operation and the rejection of the nuclear weapons states to get rid of the fissionable material formerly produced. The restructuring of the former military alliances and the changes of their missions are meant to serve the new US global nuclear strategy designed to maintain the current internationalization and globalisation of economies, policies and cultures in a way that suits its vital interest the worldover.

4. Conclusion

Special plans are very much needed to foil these US plans in order to attain the target of eliminating all nuclear weapons by the year 2000 (or beyond). Among them is to delink and separate NATO from the US Central Command by preventing Mediterranean countries from establishing special relations with NATO, to transfer the ME into a zone free from all weapons of mass destruction and above all to dismantle NATO, the US Central Command and the other alliances which are in charge, at present of implementing the new US nuclear strategies. These targets are tightly linked with the efforts now underway to eliminate nuclear weapons by the year 2000. The more NGOs advance in one of the two tracks the more the targets of the other are likely to be achieved.

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The United States Versus Iraq
An Analysis of the Gulf Conflict

Xanthe Hall

Observers from the UN Oil for Food Programme, Unicef and World Health Organization (WHO) are among the other residents of the canal hotel in Baghdad where the UN Inspectors of UNSCOM live. There is a barely disguised animosity between the humanitarian workers and the inspectors, who live on the top floor and “think they are in charge”, one nutrition expert reportededly said. The inspectors are scathing of the humanitarian workers, who they think are duped by the Iraqis and too sympathetic. Conversely, they have been dubbed “UN-Scum” by the other hotel residents, a name originally coined by the Iraqis.

The problem lies with the arrogance of some of the inspectors that has given UNSCOM a bad reputation. These were mostly the ex-US military personnel. Their behaviour has been deliberately provocative in an Islamic country: drinking too much and shouting, treating the hotel personnel and the Iraqis generally as menials, were examples of this. One US-American reportedly played the Spice Girls at top volume on his cassette recorder on returning to Iraq at Habbanja airport.1

The Iraqi accusation that secret service officials were among the inspectors from the start, along with ex-US military personnel that took part in the invasion of Iraq in 1991, seems to be confirmed by various sources. The neutrality of UNSCOM is therefore undermined, and leads to the perception by Iraq that the inspections contravene their sovereignty.

The sanctions

Malnutrition and other medical data from Iraq show that the sanctions have probably killed more Iraqis since than Allied bombs during the 1991 Gulf War. Denis Halliday, UN Humanitarian Coordinator for Iraq, the originator of the idea of doubling the amount of oil for food, sees the sanctions as a torment for the Iraqi people, inconsistent with the human rights pro-

vision of the UN charter, and undermining the moral credibility of the UN. Money is deducted from the Oil for Food programme for compensation for Iraq’s invasion of Kuwait and for UN operations in Iraq, leaving a pitiful amount for food and medicine. Even after doubling the amount, this will not be sufficient.2

According to UNICEF studies, one quarter of Iraqi children under the age of six - about one million children - are malnourished. It is estimated that approximately 800,000 people have died in the seven years of the embargo, of which 320,000 were children under 5 years old.

Exporting the bomb to Iraq

Sales to Iraq of arms and the means to produce weapons of mass destruction during the war with Iran are a direct cause of today’s conflict with Iraq. Apart from the massive amounts of conventional arms that were exported to Iraq and other Middle Eastern countries in the eighties, the means to produce nuclear, biological and chemical weapons were supplied mostly by Western companies. More than half of the companies listed in a study by the Simon Wiesenthal Center in Los Angeles as suppliers of technology are German. These companies were particularly helpful in the field of poisonous gas production and missile technology.3

According to General Wafik Samarrai, leading strategist in the Iraqi army, who fled to Syria in 1994, the Germans were crucial for the acquisition of materials and know how for the production of chemical weapons. The whole operation was directed from the Iraqi embassy in Bonn because the leading firms were to be found in Germany. Samarrai claims that the German authorities turned a blind eye to their activities because of the amount of business for German industry that they brought. On top of this, it was important to them that Iran, which propagated an Islamic revolution, should not be allowed to get the upper hand. Without this massive amount of help to build weapons of mass destruction, claims Samarrai, the Iraqis could not have held out against Iran for so long. Iraqi agents worked together with the German secret service, exchanging information about Iran’s combat capabilities. The General claims further that during the 1991 Gulf War, Iraq’s top agent, German diplomat Juergen Gietler, passed on information about the planned US invasion, including a letter from Bush to Kohl containing allied troop information.4

According to “Der Spiegel”, UN inspectors set up a secret database in which they have collated all the information about suppliers to Iraq of components, material and know-how to build weapons of mass destruction. Again, German companies rank high on the list for supplying the means for the nuclear programme, the modified Scud missile, and poisonous gas production. But Switzerland, France, Great Britain, Italy, Japan, Romania and the United States are also listed.5

Although export laws in most of the above listed countries provide for control over supplies of arms and weapons technology that could effectively prevent companies from exporting, the problem is a political one. The list of importing countries that are most critically looked at are those who are considered to be potential aggressors towards the exporting country. Before Iraq invaded Kuwait, it was not viewed in this way, and the majority of export applications were passed without question. Moreover, companies exporting dual-use goods – products that have civil as well as military usage – could easily circumvent these controls. There are indications that at some levels the arming of Iraq was seen positively in the hope of defeating Iran. This kind of “proxy war” was mostly driven by United States foreign policy and exploited by German and other companies, knowing that their governments would follow the US line.

Nuclear weapons programme

Iraq’s nuclear programme has been, according to UNSCOM and the IAEA, destroyed. Iraq was, however, with the help of many Western companies, very close to having the capacity to produce nuclear
In order to produce the fissile material necessary, Iraq built up to 10,000 centrifuges to enrich uranium. Components and designs were delivered by German companies. According to the UN, however, the supply of nuclear components was not a question of isolated incidents, but rather a systematically established network of foreign know-how, materials and technology. Companies, such as the H+H Metallform did not only supply their own products, but helped Iraq to find other companies and experts. The amount of knowledge and training accumulated by the Iraqis in this period of time (1989 - 1991) allows them to maintain the theoretical capacity to rebuild nuclear weapons in the future, according to UN experts.

Iraq signed the NPT in 1969, ten years after initiating its civil nuclear programme. The first supplies came from the Soviet Union, but then Iraq turned to western Europe for its technology. In 1975, Iraq signed a cooperation agreement with France and a year later with Italy. Uranium was supplied by Portugal and Nigeria. Egypt, Pakistan and Brazil became important partners for uranium enrichment technology, which they had received from Germany. Then Iraq decided to buy directly - more than eleven tons of fuel rods were ordered from the Hanau company NUKEM. Fortunately, at the last minute the export licences were not granted for this deal.

The Israeli bombing of the Osirak research reactor in 1981 put back the Iraqi nuclear programme years. Iraq had its hands full with the war against Iran, during which time it concentrated on building up its chemical and biological weapons programme (also with German and US assistance). From 1988 onwards, however, Iraq made substantial progress with German assistance, particularly in the field of uranium enrichment until the nuclear weapons programme was destroyed by allied bombs in 1991.

Iraq’s nuclear weapons programme demonstrates clearly the dangers of artificially separating “civil” and “military” nuclear technology. The way to the bomb was paved by Iraq’s nuclear energy programme and, but for the invasion of Kuwait, might have succeeded. All of the supplies to Iraq for its civil programme (mostly from the Soviet Union, France and Italy) were known to the IAEA and the fissile materials were covered by IAEA safeguards under the NPT. Only the enrichment plants remained unreported until after the 1991 Gulf War was over.6

The diplomatic solution

The world sighed with relief when Kofi Annan came back to New York with an agreement under his belt. The US reaction, however, was similar to that of the last diplomatic solution brokered by the Russians, which was described by one journalist as like a child’s reaction to finding that its Christmas present is a pair of sensible grey socks. Like the ending of a Hollywood film that indicates that a sequel is already being planned, time was not lost in introducing a resolution to the UN to secure their backing for a military strike should the agreement be broken. Despite disagreement about the interpretation of the wording of this resolution, the US has already made it clear that it now has the right to use military force.

Annan tried to help the US not to lose face by stating that the show of force had been helpful in securing a diplomatic solution. This was indeed useful to Clinton who claimed he had planned it all along. This brings us to the very core of the meaning of deterrence and its inherent risks. Using the threat of military force to deter depends upon the credibility of the will to carry it through. In the Cold War this went as far as being planned to kill millions upon millions of innocent people and threaten the very existence of the human species as well as nature itself. Even if it was true that Clinton was only threatening to use force on Iraq to deter, his military planners were surely working out exactly how to carry out “a massive and decisive military strike”.

The United States administration is planning on using military force. The question is only when. At the beginning of March, the defence ministry announced it would be vaccinating US troops against Anthrax (despite the suspicions that earlier vaccinations during the Gulf War were a possible cause of the Gulf War Syndrome). Simultaneously, the Presidential Office applied for an extra $1.361 billion for a military strike, raising the amount to $4.35 billion.7

The use and threat of use of nuclear weapons

The transcript of the US Department of Defence Briefing on January 27 1998 clearly shows that the United States did not rule out the use of nuclear weapons against Iraq. When asked if the use of nuclear penetrating bombs had been ruled out, the DoD spokesman, Kenneth Bacon replied, “I don’t think we’ve ruled anything in or out in this regard. Our position is that we would respond very aggressively.”

Prior to this, a Presidential Decision Directive was issued codifying the expansion of roles for nuclear weapons to include nuclear reprisals against non-nuclear states who use weapons of mass destruction, or for the incineration of chemical and biological agents on the ground or in flight, as well as preemptive strikes against nuclear, chemical and biological installations and command and control centres. The US mission, as described by Bacon in the DoD briefing was “to get rid of Saddam Hussein’s weapons of mass destruction.” Although the option of achieving this through the inspections was still receiving lip service, the use of military force to achieve this goal was clearly being planned.

When asked if it was not difficult to drop a bomb on a chemical weapons plant without poisoning the atmosphere, Bacon replied, “That’s certainly something that the planners would take into account, but without getting into specifics, I can’t go beyond that now.” This was meant to implicate that the US military was aware and dealing with this problem. One speculation was that the use of a “bunker-buster”, a deep penetrating bomb would do the job, and that one such bomb had been developed which would purportedly cause the walls of the bunker to fall inwards on top of the chemical or biological weapons after penetration, so that no toxins would be released into the atmosphere. This device was named the “Wall-Eye Bomb”. Also question of the use of high temperatures to
incinerate the chemical or biological arsenal suggested the desired use of nuclear weapons.

Speculation about the use of the B61-11 nuclear bomb also helped to transfer the message to Iraq that the use of nuclear weapons was not ruled out. The deployment of the B2 bomber, designated to deliver the B61-11, was also openly discussed. It was reported that there were differing opinions on the potential performance of the bomber, which could be detrimental or beneficial to its marketing, according to its success or failure in an attack on Iraq. Only after Yeltsin blurted out a warning to Clinton that he “might get into a World War”, did the US administration issue a statement that they had no intentions or plans of using nuclear weapons. This wording echoes, however, the wording used in the Founding Act between NATO and the Russian Federation, where NATO declares it has no intention or plan to deploy nuclear weapons in new NATO member states, but still does not rule out the option of doing so. This can also be applied to the statement of the administration on Iraq. The recent test of the B61-11 in Alaska increases speculation on its use.

Stephen Schwartz, guest scholar at the Brookings Institution, puts forward a convincing case for believing that a policy of deliberate ambiguity on the use and threat of use of nuclear weapons was enacted during the recent round of the Gulf conflict. This was also the case during the 1991 Gulf War where messages of the same nature were issued, and subsequently these veiled threats have been used as an argument for the success of deterrence. Neither confirm nor deny has long been US official policy. Although off-the-record conversations imply that use was not really contemplated in the 1991 Gulf War, one can assume that the threat needs to be escalated to remain credible, hence the speculation over which nuclear weapon would be suitable to perform the mission during the recent conflict.

The danger of such an escalation of threat is clear from the Cold War. In order to assure credibility of deterrence, plans become increasingly real and deployment brings inherent risks. The threat has increased controversy with Russia, which is already reviewing its nuclear weapons policy in the light of NATO expansion. Moreover, the message to all other nations, including Iraq, remains clear: nuclear weapons confer power on a state which is decisive in a conflict even when not used, which conventional weapons do not. The correctness of this message is extremely debatable, especially as there is no concrete evidence that nuclear weapons actually deterred Saddam Hussein from using weapons of mass destruction during the 1991 Gulf War, only hearsay.

Citizen’s inspections

During the conflict an idea emerged in several places in the world simultaneously. NGOs in Europe and America began discussing the idea of going to Iraq and inspecting Saddam’s palaces themselves as Citizen’s Verification Teams. The idea was to provide neutrality and build confidence. But it was recognised that such a mission required expert knowledge. Suggestions were made to find scientists among our ranks who could go, to be accompanied by lawyers, mediators, doctors and parliamentarians. One suggestion was to ask the whole Canberra Commission to go. In the end, the diplomatic solution overtook these ideas, but they still remain on the drawing board for the next round of this conflict.

The idea of Citizen’s Inspections has been steadily growing for some time. The “Marshalls of International Law” who have inspected nuclear bases and command and control centres in Europe were inspired by the Advisory Opinion of the World Court. Professor Rotblat has often spoken of the need for societal verification after the elimination of nuclear weapons to prevent breakout. It should not, however, be left only up to the scientists to find the courage to become whistleblowers, citizen’s must claim the right to access to military installations in order to verify that no weapons of mass destruction are being produced, tested or stored.

The Nuclear Weapons Abolition Days have been set up within the Abolition 2000 Network to lend a framework to inspections of sites where there is good reason to believe that actions are being prepared which contravene international law. Of course, at this time it is illegal to “trespass” on such installations in most countries, and these actions constitute civil disobedience. We could also work on a parallel line - openly offering the services of our experts to the UN as Non-Governmental Verification Teams - combined with the demand that all states suspected and known to have weapons of mass destruction be inspected.

This idea is still in its infancy and requires more thought. But one thing is for certain: the conflict has not ended and it will end in further and massive bloodshed. It is not just a case of stopping the US from bombing Iraq. It is also a question of taking away the perceived justification: the development in Iraq of weapons of mass destruction. An enormous amount of mediation work has to be done here, not just with the most obvious conflict parties - the US and Iraq - but within the Middle East. Conflicts such as these should be referred by the United Nations to the World Court rather than being left in the hands of the Security Council. And most important of all - the sale of all arms to this region needs to stop.

References


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FOLLOWING up on the UN’s inspection teams in Iraq, and the efforts of anti-nuclear activists around the world, an Israeli Citizen’s Verification Team decided to pay a visit to a no-longer secret nuclear missile base. The Israeli Citizen’s Verification Team (ICVT) was made up of anti-nuclear, peace, environmental, and political activists who gathered to protest Israel’s nuclear policy and the continuing imprisonment of Mordecai Vanunu. (Including the Committee for Free Vanunu, Nuclear Holocaust Preventers, the Israeli Young Communist League and others.)

Saturday, April 4, 1998, our team arrived at “Egozi” air force base, located in the area surrounded by Revadim, Kfar Menachem, and Zachary, the base does not appear on any map, and the gate has no welcoming sign with the name of the base. The main entrance is located at the end of a short access road that also leads to a nature preserve, where tourists might stop for a picnic.

One member of the team used a Geiger counter to check radiation levels. While the readings varied (700 - 7,000), it was obvious that they were more than 100 times the levels recorded in Jerusalem. I approached the gate to speak to the guard together with Smadar, who held the Geiger counter. We showed the soldier, who told us he was a reservist, the radiation levels we were reading. He was surprised and interested. We explained that it was necessary to see the commander of the base, to ask him to let us inside to investigate the nuclear weapons inside the base. He asked us what we would do if allowed inside. I told him we would take notes for the UN and other bodies interested in reducing the risk of nuclear war. In the end I explained why it was necessary for Israel to give up nuclear weapons.

The other members of the team lined up opposite the gate, effectively blocking it to traffic. They held up signs and banners calling for nuclear disarmament, public debate on Israel’s nuclear policy, and the release of Mordecai Vanunu, who has spent nearly twelve years in solitary confinement.

The duty officer arrived and asked me what I wanted. I told him that he is suspected of planning war crimes to be committed in the future. Nuclear weapons kill indiscriminately, destroying all life within a particular radius, and permanently damaging the environment. Even if never used on purpose, the existence of this base poses a risk to the area in case of an accident. I reminded him that just following orders was not considered a legitimate defense according to international humanitarian law, and he should expect to be prosecuted for his role in deploying weapons of mass destruction — if they should ever be used. He was presented with a letter containing more in the same vein.

He refused to accept the letter, and informed the CVT that the police had been called. After an hour, a single police vehicle arrived, with two officers who did not have instructions to arrest anyone. After it was made clear that we would leave rather than face arrest, they seemed pleased and prepared to leave. At this point, the duty officer came up to them and told them that someone was seen photographing the base. The culprit was an American tourist who joined at the last minute. He was terrified! In the end he was released without being detained, due to the intervention of the taxi driver mentioned above. The real photographer was never identified and photos are still available upon request.

The CVT left the site at approximately 6:00, promising to return again with residents of neighboring communities. While the existence of the base itself is an open secret in the area, information on the nuclear issues at stake are relatively unknown.

Israel is confronted with two choices: a policy of peaceful relations with the neighboring Arab states, backed up by conventional military forces, or a policy of aggression backed up by non-conventional weapons. As long as our government chooses the latter, other countries have the impetus to develop non-conventional weapons of their own. The alternative is built on enforceable treaties that will keep the Middle East nuclear free. Including Israel.

Charles Lenchner, Israeli Citizen Verification Team, Forwarded by : the Nuclear Resister - “a chronicle of hope”, PO. Box 43383, Tucson AZ 85733. Information about and support for imprisoned anti-nuclear activists: Felice & Jack Cohen-Joppa, editors, tel +1-520-323-8697, email nukeresister@igc.org. A comprehensive survey on “Citizen Actions, Inspections and Resistance” can be found on the web http://www.pgs.ca/pages/citinsp.htm, where this article and the following list are taken from.

Citizen Inspections - Recent Events
21 August 1997, USA Nevada Test Site Activists Sentenced In Subcritical Direct Action Blockade.
26 February 1998, Bangor, Trident submarine base, Washington state, USA: A citizens weapons inspection team led by a Canadian MP flew over the base in a private plane and identified 24 bunkers and 3 submarines.
1 March 1998, Tucson USA, Members of a Citizen’s Inspection Team (CIT) were arrested at the main gate of Davis Monthan AFB in Tucson as they attempted to inspect the base for suspected weapons of mass or indiscriminate destruction.
5 March 1998, Lawrence Livermore, nuclear weapons laboratory, California, USA: 7 citizens inspectors arrested on a fact-finding mission. The team carried UN flags.
18 March 1998, Kleine Brugel, B-61 nuclear bomb store, Belgium: Citizens nuclear weapons inspection team including a Belgian MP visited the base. 3 of the 4 members of the team who were able to get 200 metres inside (200m) before they were stopped by Military Police.
26 March 1998, Lawrence Livermore, nuclear weapons laboratory California, USA: Visit by citizens verification team who will request interviews with management, unfettered access.
26 March 1998, Los Alamos, nuclear weapons laboratory, New Mexico, USA: Visit by citizens verification team who will request interviews with management, unfettered access.

● Mordechai Vanunu, has spent nearly 12 years in Ashkelon Prison, Israel as a prisoner of conscience. Most of this time he was in solitary confinement. Write in his support.
● Phil Berrigan, long-time peace activist and brother of Daniel Berrigan, SJ is incarcerated at the FCI Petersburg, Virginia facility for his Prince of Peace Plowshares Act of Conscience against a nuclear-capable Aegis Cruiser at Bath Iron Works in Maine. Contact Phyllis Turner Jepson, Pax Christi USA.
Steps towards a Weapons of Mass Destruction Free Zone in the Middle East

1. Introduction

With respect to the proliferation of weapons of mass destruction the Middle East appears to be one of the most threatened regions in the world. The recent crisis about the UN-inspections in Iraq underscored the need to design credible and consensual steps towards aWeapons of Mass Destruction Free Zone (WMDFZ) in the Middle East.

For many years the UN General Assembly as well as the IAEA General Conference have regularly adopted a resolution on a Nuclear Weapons Free Zone (NWFZ) in the Middle East. The NPT PrepCom in 1997 in New York decided to allocate special time to address this goal. The multilateral working group on Arms Control and Regional Security (ACRS) in promoting mutual confidence and security in the Middle East could have been another forum to support the establishment of a NWFZ in the Middle East.

All countries of the region with the exception of Israel have signed the NPT. In the case of a few signatories there are suspicions that clandestine nuclear activities may take place without being detected by nuclear safeguards. Anyway, due to the complicated interconnectedness of the three kinds of weapons of mass destruction and because it is vital not to single out Israel, it became a consensus among countries in the region that the attention should be prepared with the support of the scientific community and NGOs.

It is proposed here to apply a non-intrusive monitoring approach. Considering the character of the political relations in the region, particularly the state of the peace process, there is no doubt that suggesting intrusive verification inspections would at the present time and presumably also in the near future be premature. Both the modest progress in the Arms Control and Regional Security (ACRS) Working Group activities between 1992 and 1995 and successful arms control in other world regions lead to the conclusion that intrusive verification inspections will be politically acceptable only after a sufficient foundation of confidence has been built. To achieve such state of relations practical experience in cooperation as well as time is needed. The establishment of cooperative non-intrusive monitoring would in itself constitute a confidence-building measure.

The bilateral approach offers a useful tool to make progress in a situation in which countries are not prepared to accept the full implementation of international inspections. It paves the way for a multilateral arrangement. The mechanism for doing so may start by conducting measure-

2. Cooperative non-intrusive monitoring as confidence building measure towards a WMDFZ in the M.E.

What is required now in the Middle East are intermediate steps and elements for a cooperative monitoring system. This should be able to provide confidence that all countries in the region have ceased to produce biological, chemical and nuclear weapons as well as to test related delivery systems. Such an intermediate step has much in common with intermediate steps that are helpful on a global scale to reach the goal of a nuclear weapons free world. Mutual learning for both areas can be expected.

Remote monitoring of non-production of nuclear weapons.

The NPT was extended indefinitely in 1995. Two new international agreements with relevance for remote monitoring of nuclear weapons’ activities are currently in the process of implementation: The additional safeguards protocol and the CTBT. Also, the IAEA General Conference agreed in October 1997 to hold an expert workshop on the Middle East in 1998.

The Comprehensive Test Ban Treaty Organisation starts to establish its monitoring network in the Middle East. Israel has signed the CTBT. The new Protocol (INFCIRC/540) which has the purpose of strengthening the effectiveness and improving the efficiency of nuclear safeguards allows for environmental monitoring. A number of Arab states expressed their objection to the strengthened safeguards system as long as it does not apply to Israel. It could be signed by Israel without a fundamental change in its policy, because it is not restricted to full scope safeguards according to any small step towards reaching the ultimate goal. Nabil Elaraby, Permanent Representative of Egypt to the United Nations, suggests to begin a preparatory phase for the establishment of a NWFZ in the Middle East. Likewise, Yitzhak Lior from the Ministry of Foreign Affairs of Israel favours a step-by-step approach and regional controls as basic features which made the Tlatelolco Treaty possible and successful.

As the experience of ABACC, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials, demonstrates, bilateral or trilateral agreements offer an immediate and significant confidence-building measure that may evolve into a regional arrangement and that could be prepared with the support of the scientific community and NGOs.

■ Martin B. Kalinowski

April 1998
INFCIRC/153, but can also be applied to facility related safeguards (INFCIRC/66) which are in force in Israel.

Israel said that, while the Agency’s 93+2 Programme presented a shift in the attention of the Agency’s safeguards system to undeclared facilities, the technical implications of this shift had not yet been satisfactorily resolved and further development was needed, especially concerning capabilities or wide area detection of undeclared facilities. The Model Protocol itself mentions wide area monitoring, but makes its application dependant on approval by the IAEA Board of Governors.

Environmental monitoring of radionuclides has the additional benefit of assessing the environmental impact of nuclear activities which is relevant for international relations due to the transboundary transport of radionuclides.

Non-intrusive monitoring of non-production of biological and toxin weapons

The Biological and Toxin Weapons Convention (BWC) has been in force since 1975. However, initially it did not include effective provisions for verification. In 1986 a major step forward was made in openness and verification when the five-year review conference reached agreement on exchanges of information about all high-containment biological research facilities and all unusual outbreaks of disease or toxin-related illness. Currently, a verification system for the Biological Weapons Convention is under negotiation in Ad Hoc Group sessions in Geneva. In the past, a number of mock inspections have been conducted to gain experience and to demonstrate their effectiveness.

Non-intrusive monitoring of non-production of chemical weapons

The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (CWC) entered into force on 29 April 1997. By the end of 1997 Iran was the only state in the Middle East which had ratified the CWC. Israel has signed it, but not yet ratified.

The chemical industry has obligations for declaration and will be subject to verification inspections on a basis of managed access. The CWC has an extensive Verification Annex and the Organisation for the Prohibition of Chemical Weapons (OPCW) is in the process of establishing its work. Remote verification is of minor importance for the CWC. Environmental measurements have some significance in investigating an allegation of the use of chemical weapons in a war. It has to be studied whether any confidence building measures by using specific non-intrusive monitoring technologies could be established before the CWC is ratified. Perhaps such approaches may still be of interest beyond the verification of the CWC after its ratification.

Remote monitoring of non-testing of delivery systems

International treaties with regard to delivery systems are still in a premature state. The Missile Technology Control Regime (MTCR) is restricted to export controls. Neither does it put any restrictions on the signatories’ own delivery systems nor does it include any provisions for verification. The proposed Zero Ballistic Missile (ZBM) regime is the ultimate goal. More realistic is a regional agreement for non-acquisition of further delivery systems or a freeze of their development and testing. The testing of missiles constitutes a fact that can easily be monitored from remote sites on ground, in the air or from space. The non-deployment of missiles can be verified with airborne visual inspection or from space. This involves tested and proven technology that has been used for the SALT and START treaties as well as for the Open Skies Treaty. In addition, procedures for on-site inspection and portal-perimeter monitoring of critical missile-related facilities will be considered, similar to the INF and START Treaties. Immediate steps could include confidence-building measures, in particular the announcement of ballistic missile launches beyond a certain range.

3. Proposed activities:

1. Develop a political concept for cooperative non-intrusive monitoring as a confidence building measure towards a WMDFZ in the framework of a regional security system in the Middle East.

2. Assess the successes and problems of UNSCOM in Iraq and Open Skies in Europe to draw lessons for cooperative non-intrusive verification in the Middle East.

3. Assess the progress and implications of implementing the CWC, BWC, CTBT, MTCR and the additional safeguards protocol in the Middle East.

4. Suggest and evaluate new technical and related political measures for cooperative non-intrusive monitoring.

5. Provide scientific evidence for the effectiveness of wide area monitoring methods for undeclared facilities and activities related to the production of nuclear weapons and delivery systems.

6. Undertake field-tests and implement pilot-scale instruments to demonstrate the technical effectiveness of specific non-intrusive monitoring measures and to provide for a precedence of cooperative remote monitoring for confidence building.

7. It has to be studied whether any confidence building measures could be established and could contribute to a cooperative non-intrusive verification system for weapons of mass destruction in the Middle East.

8. Follow the progress of the BWC Ad Hoc Group sessions to learn about realistic proposals with relevance for the Middle East.

9. Develop confidence building measures and verification procedures related to missile control in the region.

10. Develop a strategy for a political and technical process to implement promising measures which will be identified in the here proposed previous activities.

4. Conclusion

The difficult and endangered peace process in the Middle East has in the past precluded any significant progress towards a Weapons of Mass Destruction Free Zone in this region, and this is difficult to change. It is proposed here to choose a non-intrusive monitoring approach. Considering the character of the political relations in the region, particularly the state of the peace process, there is no doubt that suggesting intrusive verification inspections would at the present time and presumably also in the near future be premature. The establishment of cooperative non-intrusive monitoring would in itself constitute a confidence-building measure.

Acknowledgement

The following persons deserve acknowledgement for their comments and reflections to this
Qualitative Disarmament by Tritium Control

A linkage between nuclear disarmament and non-proliferation within a cut-off agreement

**Introduction**

Although a negotiating mandate for a verified agreement on a cut-off of the production of fissile material for weapons was agreed at the Conference on Disarmament (CD) in Geneva in early 1995, negotiations never actually started. In 1997 the CD could not agree at all on its agenda. In face of this current impasse at the CD, three strategies may be of importance to make any progress:

1. Make use of other multilateral fora to reach agreements between a limited number of states.
2. Agree on an international inventory of weapons-usable nuclear material as an important and agreeable starting step for progress towards a cut-off agreement.
3. Identify further steps which have equivalent impact on all relevant states. Especially the impact on recognised and threshold nuclear-weapon-states should be balanced.

All three of these strategies are discussed in a previous paper. The third one will be dealt with here. It will be shown that tritium control could meet the demand for equivalent steps.

**Integrating disarmament into the cut-off mandate**

Overcoming the current impasse at the CD will necessarily require some compromise between States which emphasise disarmament and those which stress non-proliferation. For a successful start of negotiations on a cut-off agreement this can mean to follow one out of two approaches. Either a linkage is made between a cut-off mandate and separate negotiations on nuclear disarmament, or disarmament measures are integrated within the cut-off mandate.

The first approach might be realised by immediately starting negotiations towards a Nuclear Weapons Convention (NWC) which might serve as a framework for progress in both nuclear non-proliferation and disarmament in a reciprocal way. Although many non-aligned states favour or even demand the first approach, only the second one is considered in this paper. It belongs to the step-by-step approach which is complimentary to the first one, the comprehensive approach.

The second approach aims at including special provisions into a cut-off agreement which have a disarming effect on nuclear-weapon-states. Frequently it is stated that the reduction of stockpiles from past production may serve this purpose. This is definitely the case, if these reductions go as far as eliminating any military nuclear material that is not placed in nuclear weapons of the active arsenal. Nevertheless, this paper recommends to consider tritium control as a provision with leads to qualitative disarmament with a similar but stronger effect compared to dealing or sequestration of nuclear weapons.

Before introducing this concept of qualitative disarmament by means of a tritium production cut-off, another argument on including a disarmament provision into the cut-off is explained to provide further motivation.

**Disarmament provision to balance the non-proliferation effect**

Besides of giving in the demand to link non-proliferation and disarmament measures there is another strong argument speaking in favour of integrating a disarmament measure into a cut-off agreement. It is the clearly accepted demand that a cut-off agreement should be non-discriminatory. Some people take the narrow view that only obligations which are physically identical for all states would be non-discriminatory. However, it has to be taken into account that identical provisions may have different impact on the perceived national security interests of different groups of countries.

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1. For example, the report on Proliferation: Threat and response by the Office of the US Secretary of Defense (Washington, November 1997) puts far the most attention to the proliferation in the Middle East.
3. At the same time Lior makes the point that a number of other preconditions are of importance, including good neighbourliness. See Yitzhak Lior, Middle East - Future Perspectives, in: Alves/ Cipollone (1997), p.91-93.
5. See also F.H. Hammad, Monitoring and verification of a Middle East Weapons of Mass Destruction Free Zone, INESAP Information Bulletin No. 14, November 1997, p.41-44.
8. The Model Protocol additional to the agreement(s) between .... and the International Atomic Energy Agency for the application of safeguards (INFCIRC/540, Vienna, September 1997) says in its Article 9 that a country "shall provide the Agency with access to locations specified by the Agency to carry out wide-area environmental sampling, (...). The Agency shall not seek such access until the use of wide-area environmental sampling and the procedural arrangements therefore have been approved by the Board and following consultations between the Agency and ....".
10. These proposals are part of a proposed project of INESAP which was developed by the author in cooperation with F.H. Hammad, Ayman Khalil and Reuven Pedatzur.
For example a provision that all states should stop the production of fissile material for weapons purposes or outside of safeguards seems attractive due to the identity of demands on all states, but it has different impacts on various states. The nuclear-weapon-states do not need further production of fissile materials and in general have already a production moratorium in place. On the other hand, the threshold states may have the feeling that their nuclear options are significantly restricted especially if stocks from past production are included in the ban.

A mandate at the CD which is in this sense discriminatory and any agreement based on such a mandate will be hardly acceptable to those states which see themselves in a disadvantage. Therefore, it is imperative to search for reciprocal measures which have equivalent impact especially on the five recognised nuclear-weapon-states and on the nuclear threshold states.

Thus, the only way of taking reciprocity serious is to accept the different impact and to even aim at a cut-off agreement that includes both provisions which have a non-proliferation effect on threshold countries as well as a disarmament effect on nuclear weapon states. Any measure that puts the unsafeguarded weapons usable material and production facilities in nuclear threshold states under some sort of control serves per definition the goal of non-proliferation. Therefore, it is necessary to look for provisions which are clearly serving nuclear disarmament.

Clearly, the reduction of weapon usable materials from past production has a disarmament effect. Is there a chance to find reciprocal provisions by including past stockpiles into the cut-off agreement and how should these be defined?

One could follow the argument that the reduction of stockpiles of nuclear-weapon usable material is a disarmament measure. In fact it would help to freeze the current active arsenal and it would make past progress in nuclear disarmament irreversible. It can even be counted as disarmament, if one takes the view that warheads are completely disarmed only after their dismantlement and after transferring the material from the military realm to international safeguards.

It remains the question whether unsafeguarded stockpiles in nuclear threshold states should be included into the ban as well.

When looking from the perspective of going from very deep cuts down to a nuclear-weapons-free world one can get a more clear understanding of equivalent steps. The nuclear threshold states have a policy of nuclear ambiguity which means that they neither deny nor confirm whether they have nuclear weapons. They are known to possess sufficient amounts of nuclear-weapons usable material to produce a number of nuclear weapons. It is suggested here that never in the process towards a nuclear-weapons free world shall these states be recognised as nuclear-weapons states. When these states join the nuclear disarmament progress they should reduce the upper limit of their stocks of nuclear-weapons usable materials while the recognised nuclear-weapon states further reduce the limits of their nuclear arsenals. In the last step towards eliminating nuclear weapons the threshold states should surrender the remaining stocks of material while the nuclear-weapon states surrender the remaining nuclear weapons. The complete surplus of nuclear material of the latter may be put under control at an earlier stage.

From this logic it becomes apparent that the reductions of stocks of weapons usable materials in the two different groups of countries are not equivalent. Materials in threshold states should be regarded equivalent to nuclear weapon states further reduce the limits of their nuclear arsenals. Therefore, the current mandate at the CD for cut-off negotiations cannot be made non-discriminatory simply by including reductions of stocks from past production in all countries into the agreement.

**Technical steps for qualitative disarmament**

A different way to address disarmament within a cut-off treaty can be identified when considering qualitative disarmament of nuclear weapons. There are various proposals of qualitative disarmament under discussion. These include dealerting a No-First-Use Treaty, and withdrawal of nuclear weapons from foreign territory. The effect of qualitative disarmament lies in marginalizing nuclear weapons. Eventually it will be a small step for complete elimination of the remaining and qualitatively disarmed arsenal. This concept is different from quantitative disarmament, since it would not reduce the number of nuclear weapons. However, the numbers can be reduced at the same time by different agreements.

A linear grade of technical steps of qualitative disarmament is defined here by the increased time required to prepare a qualitatively disarmed nuclear weapon for delivery to a military target. In effect, a low grade of qualitative disarmament prevents the effective capability for launch-on-warning. A high grade of qualitative disarmament may result eventually in disassembling all nuclear warheads and abandoning the capability of rapid re-deployment. The following steps of qualitative disarmament with increasing time required for making them ready for delivery can be taken:

1. **Technically the first step of qualitative disarmament of nuclear weapons is to put them off alert.** This can be done by removing the targeting coordinates from the executing computer programmes which control the delivery systems. This is a narrow notion of dealerting. It is easily and possibly even automatically reversible within minutes.

2. **Dealerting can be improved by removing nuclear warheads from delivery systems.** This is reversible within hours.

3. The third grade of qualitative disarmament is achieved by removing the nuclear warheads from the deployment site of the delivery system. This proposal is also known as sequestration. According to the above given definition sequestration is the more effective the further away the storage site is located. Providing for a sufficient distance, the weapons can be put back on alert within days.

4. As a fourth step, nuclear warheads can be dismantled into main components which are stored at different places. For example three different storage sites can be found for the fissionable core element (e.g. the plutonium pit), the tritium ampoule and the metal casing. All sites can be different from the place which holds the equipment for assembling the weapon. To reverse this step, it will probably take weeks.

5. Yet another improvement of qualitative disarmament can be achieved by removing tritium from nuclear warheads. Assuming that all nuclear weapons today rely on tritium for boosting of their yield, they are rendered dysfunctional after removal of their tritium. All weapons can be restored to full capability by replacing the tritium. Two variants of tritium control are possible.
a) If the production of tritium is banned, this kind of qualitative disarmament will only affect a limited number of warheads after the decay of the military tritium inventory went below the demand of the current arsenal.

b) The complete arsenal could be involved, if the tritium ampoules are removed from all nuclear warheads and their positions are sealed and inspected to verify that no tritium is replaced. It takes a few months to reproduce tritium and it may take years to construct a production facility in the case that no reactor is kept in cold stand-by for this purpose.

Qualitative disarmament effect with a weak timetable through a ban on tritium production

As a result of these considerations, a measure within an agreement on nuclear-weapons usable materials that may have some impact on disarmament in the nuclear-weapons-states would be a control of further production of tritium (variant (a) of the above given point 5 of qualitative disarmament). This is because fresh supplies of this material may be necessary some time early in the next century in the case that nuclear disarmament stops to keep pace with the natural decay of this radioactive superheavy hydrogen isotope at 5.5% per year. Therefore, it is suggested here to take a ban on tritium production in recognised nuclear-weapons-states as a measure that is equivalent to an appropriate control of fissile materials in threshold states. In the year 1988 a similar suggestion with the intention of using the decay of tritium as a forcing factor for nuclear disarmament stops to keep pace with the natural decay of this radioactive superheavy hydrogen isotope at 5.5% per year. Therefore, it is suggested here to take a ban on tritium production in recognised nuclear-weapons-states as a measure that is equivalent to an appropriate control of fissile materials in threshold states. In the year 1988 a similar suggestion with the intention of using the decay of tritium as a forcing factor for nuclear disarmament stops to keep pace with the natural decay of this radioactive superheavy hydrogen isotope at 5.5% per year. Therefore, it is suggested here to take a ban on tritium production in recognised nuclear-weapons-states as a measure that is equivalent to an appropriate control of fissile materials in threshold states.

The advantage of such an approach is that a weak linkage is established between non-proliferation efforts directed against threshold states and disarmament measures addressing the recognised nuclear-weapons-states. This weak linkage avoids the seemingly unbridgeable gap between nuclear disarmament and non-proliferation. The linkage is weak because a ban on tritium production may never have a restricting effect on nuclear arsenals provided that independently conducted disarmament keeps pace with the decay of tritium. If START II is realised no tritium production is necessary for at least the next two decades. Thus, the decay of tritium provides a soft and - if perceived to be necessary, a reversible - time-bound framework for nuclear disarmament and thus enables to achieve a compromise between the NAM states and the nuclear-weapon-states regarding such a demand.

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2. A draft model NWC was drafted by NGOs and launched on April 7, 1997 in New York. The drafting group was convened by the Lawyers Committee on Nuclear Policy (LCNP) and input on physical and technical issues was provided by the International Network of Engineers and Scientists Against Proliferation (INESAP).
6. A warhead without tritium is still a nuclear weapon with a significant yield because the unboosted fission primary still works with an explosive yield of around one kiloton TNT. In case of warheads with selectable yield the lowest yield which is of military interest is still working without tritium. See M.B. Kalinowski, The impact of complete elimination of tritium on a nuclear arsenal. See appendix A, pages 187-196 in M.B. Kalinowski, L. Colschen: International Control of Tritium to Prevent Horizontal Proliferation and to Foster Nuclear Disarmament, Science and Global Security 5 (1995) 131-203.

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Future Directions in Nuclear Arms Control and Verification

Steve Fetter

To date, nuclear arms control has focused on restricting the number and capabilities of strategic nuclear delivery vehicles—intercontinental missiles and bombers. In the future, it will become increasingly important to combine these measures with restrictions on nuclear warhead and fissile-material stockpiles and on the operation and targeting of nuclear forces. Restrictions on nuclear warheads, materials, operations, and targeting would not only help improve stability, but would also help reduce the risk of accidental, unauthorized, or erroneous use of nuclear weapons. A major challenge is verifying compliance with such restrictions. This paper outlines the technical possibilities for verifying limits on stockpiles of warheads and fissile materials, on the dismantling of nuclear warheads and the disposition of fissile materials, and on the launch-readiness of nuclear forces in the hope of stimulating further research on these topics.

Introduction

The last decade has seen great progress in nuclear arms control between the United States and the former Soviet Union. The INF Treaty eliminated all ground-launched weapons with ranges between 500 and 5,500 kilometers. The START I Treaty cut in half the number of strategic warheads deployed by the superpowers, from nearly 25,000 in 1989 to about 13,000 in 1998. The START II Treaty, which has not yet been ratified by Russia, promises to cut these arsenals in half again, to a combined total of less than 7,000 deployed strategic warheads. In addition, both countries have agreed to reduce the number of nonstrategic nuclear warheads, although these commitments are informal and not subject to verification.

These reductions, while certainly welcome, are not enough. The risks posed by nuclear weapons would remain unacceptable even after the full implementation of START II. These risks are of several types. First, there is the risk that additional countries might acquire nuclear weapons, either through theft or diversion as a result of a more general weakening of the nonproliferation regime. Faced with these risks, and in the absence of hostility between the nuclear powers, some former civilian and military leaders have called for a general prohibition on nuclear weapons. As a practical matter, this is premature. Prohibition will not be possible until relations among the major powers in particular, Russia, China, and the major NATO countries—are more like current relations among the United States, the United Kingdom, and France.

In the meantime, we can reduce the risks posed by nuclear weapons through properly designed and implemented arms control measures, and simultaneously prepare the foundation for much deeper reductions in the number of weapons, perhaps all the way down to zero. These measures should include: verified reductions in the total number of nuclear warheads, including nondeployed and nonstrategic warheads, and in stockpiles of weapon-useable fissile materials; reductions in the readiness of nuclear forces, and corresponding increases in the warning time of an attack; a shift away from counterforce strategies and targeting doctrines; and a robust firebreak between theater and strategic-capable missile defense systems.

Each of these arms control measures raises new verification challenges, which are reviewed below.

Reductions in Warheads

To date, nuclear arms control has focused on restricting the number and capabilities of strategic nuclear delivery vehicles—intercontinental missiles and bombers. The number of nuclear warheads mounted on deployed strategic delivery vehicles is subject to verification under START II, but the numbers of nonstrategic or nondeployed warheads are not limited by any agreement. Although limits on delivery vehicles and launchers will remain of central importance, it will be increasingly important to complement these with controls on all nuclear warheads.

This is recognized in the March 1997 Joint Statement of Presidents Clinton and Yeltsin issued in Helsinki, which calls for a START-III agreement that includes “measures relating to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads...to promote the irreversibility of deep reductions including prevention of a rapid increase in the number of warheads.” The Presidents also agreed to “explore, as separate issues, possible measures relating to...tactical nuclear systems, to include appropriate confidence-building and transparency measures,” and to “consider the issues related to transparency in nuclear materials.”

Agreed limits on nuclear-warhead and fissile-material stockpiles, together with associated transparency and verification measures, would have several benefits:

First, they would build confidence in each side’s understanding of the size of the other’s stockpiles of nuclear weapons and fissile materials, and the rate of reduction in these stockpiles.

Second, they would build confidence that the nuclear arms reductions being carried out are irreversible, and that the potential for rapid and large-scale breakout from agreed limitations is very low.

Third, they would build confidence that nuclear weapons and fissile materials are secure from theft or unauthorized use, and provide information needed to strengthen mutual cooperation toward that end.

Finally, such measures would build political support for ratifying and implementing the START agreements, would lay the foundation for deeper reductions in nuclear arsenals; and would strengthen the nonpro-
liferation regime by demonstrating a commitment to further nuclear arms reductions.

A comprehensive transparency regime would have several components, including initial declarations and exchanges of information, baseline inspections to gain confidence in the accuracy and completeness of the declarations, and inspections to verify the dismantling of warheads and the ultimate disposition of warhead components.

**Declarations:** We should begin with a comprehensive declaration or exchange of data on the location, status, type, and serial number of every nuclear device that exists. The location of a warhead would be a particular storage bunker or delivery vehicle. The status would indicate whether the warhead is in the active or reserve inventory or whether it is slated for dismantling and, if so, when. If steps had been taken to render the warhead unusable, such as removing tritium, batteries, or other components, this could be indicated as well. The serial number could serve as a tag for the warhead, or special tags could be developed and applied for this purpose. The declaration would be updated at agreed intervals—every six months or so.

Declarations would be valuable even without transparency measures. Early declarations would build confidence and would stimulate both governments to engage in declarations and exchanges of information, such as the rates of deployment of nuclear weapons or fissile materials. The serial number could serve as a tag for warhead components, this could be indicated as removing tritium, batteries, or other components, this could be indicated as well. The serial number could serve as a tag for the warhead, or special tags could be developed and applied for this purpose. The declaration would be updated at agreed intervals—every six months or so.

**Baseline inspections:** But the real value in declarations would come with their verification, and the second element of a transparency regime would be baseline inspections to verify the accuracy of the declaration. Since deployed strategic warheads are covered by START and all tactical warheads are in storage, the baseline inspections would mostly involve verifying the number of nonstrategic and nondeployed warheads in storage bunkers.

Inspectors could visit a particular bunker on short notice and verify that the declared number of warheads is present—no more, no less. Alternatively, inspectors could randomly select a small number of warheads for inspection and verify that the serial numbers on the warheads matched those listed in the declaration. Sampling could greatly reduce the number of warheads that are examined. For example, if a random sample of 20 or 30 warheads turned up no undeclared warheads, then one could be highly confident that significant numbers of undeclared warheads do not exist at that site.

There are, however, two key problems in verifying a warhead declaration. The first is knowing that an object which is declared to be a warhead of a particular type really is a warhead of that type. This could be dealt with by developing “fingerprints” or templates of warhead types, and using random sampling to verify that a particular warhead is an authentic warhead of the declared type. For example, Russia could present one or more SS-18 warheads for fingerprinting, or warheads could be selected from a deployed missile by U.S. inspectors.

A set of agreed characteristics could be measured: length and diameter; mass; the relative strength of neutron emissions or gamma-ray emissions; or heat output. A signature of this type could be extremely difficult to spoof. If such measurements would reveal sensitive weapon design information, an automated system could be devised to give a simple “yes” or “no” answer to the question, “Is this an SS-18 warhead?”

A second, more severe, problem in verifying declarations is knowing that they are complete. How could the United States and Russia be confident that the other had not hidden a few hundred or even a few thousand warheads? Warheads are so small and inconspicuous that we can never be absolutely sure that there are no hidden warheads. We can, however, substantially reduce uncertainties and, over time, develop confidence in the declaration.

Challenge or anytime-anywhere inspections are often mentioned as one way to detect undeclared warheads, if they exist. This does not seem very promising, however, because a well-designed plan to hide warheads would give few clues about where to look. A better approach would be to exchange historical information on the nuclear stockpiles as part of the initial declaration. For example, we could exchange information on the history of every nuclear device ever manufactured, including the dates and locations of assembly and disassembly and movement between various storage and deployment facilities. In addition, data could be exchanged on the production of fissile materials and warhead components, and on the location, design, and operation of facilities involved in the production of warheads and fissile materials. These records could be examined for internal consistency, for consistency with the stockpile declaration, and for consistency with archived intelligence data.

In some cases, on-site inspections might be able to confirm the accuracy of the declaration. For example, measurements of isotope ratios in the permanent structural components of plutonium-production reactors and in depleted uranium tailings, could be used to verify declarations of plutonium and HEU production. Using one technique, the total amount of plutonium produced by a graphite reactor can be verified with an accuracy of about 5 percent.

Uncertainties in the completeness of the declaration cannot be eliminated, but current uncertainties could be reduced substantially. Unclassified U.S. government estimates of the number of warheads in the Russian stockpile are said to be uncertain by plus or minus 5,000 warheads, and former Minister of Atomic Energy Mikhailov has been quoted as giving widely divergent estimates for the size of Russian warhead and fissile-material stockpiles.11 Unless these uncertainties are reduced through a program of declarations and transparency measures, it may be difficult to sustain a cooperative program to reduce the risks posed by nuclear weapons.

**Dismantling:** If we can establish a baseline inventory of nuclear warheads, we can proceed to verifiably dismantle them. There are three main methods for verifying the dismantling of warheads. The first is to verify that a nuclear warhead had been removed from the stockpile, and that the corresponding nuclear components—in particular, the plutonium pit—had been placed in a monitored storage facility. For example, Russia could verify that a U.S. warhead had been removed from the storage area at Pantex, and that some days later a pit had been placed in the storage area. The “fingerprinting” procedures mentioned earlier could be used to assure that the object to be dismantled was an authentic warhead of a given type, and that the object which is
subsequently placed in storage was an authentic pit. It may be possible to verify that the pit was taken from a certain type of warhead (by comparing the radiation signatures of the warhead and pit), or from a particular warhead (by irradiating the warhead with a burst of neutrons and measuring the fission-product gamma-ray signature of the pit some days later). Again, sampling could be used to minimize the number of warheads or pits that would be subjected to detailed examination.

A second method would be perimeter-portal monitoring at the dismantling facility. The portal would be equipped with a system to detect and verify the authenticity of warheads entering the facility, and to detect fissile materials exiting the facility. Components containing plutonium or uranium would be stored pending their ultimate disposition under mutual monitoring; other components could be destroyed or recycled, as agreed by the parties.13

A third method would track the warhead and its components through the dismantling process. Although this is often considered to be excessively intrusive, it may be possible to protect sensitive information. The monitoring party could, for example, track the movement of warhead up to the disassembly cell, track the movement of the fissile components from the disassembly cell to the storage area, and verify that the disassembly cell contained no warheads or warhead components both before and after the disassembly procedure. Monitoring could be done by on-site inspectors, or remotely using secure video links or radio beacons.

Disposition: The final component of a warhead transparency regime would be the disposition of the warhead components. The goal is to render the materials in these components at least as unavailable or unattractive for use in future nuclear weapon production as materials which are commonly available in the civilian nuclear fuel cycle, such as low-enriched uranium or spent reactor fuel. In the case of high-enriched uranium, transparency measures have already been negotiated to verify that material from dismantled warheads is being converted into low-enriched uranium for civilian reactor fuel. Disposing of plutonium components will be more difficult.14 The plutonium could be used to fabricate mixed-oxide fuel elements for civilian reactors, but the resulting fuel would be more expensive than fresh uranium fuel, and neither country has facilities to fabricate plutonium fuels. Alternatively, the plutonium could be mixed with vitrified high-level radioactive wastes. In either case, traditional IAEA-type safeguards should be able to verify that no plutonium has been diverted.

Reduction in Readiness

Despite the end of the Cold War, the United States and Russia continue to maintain thousands of nuclear weapons on alert, ready to be launched within a few minutes of an order to do so. During the Cold War, both sides believed that the ability to launch nuclear forces quickly was a necessary and appropriate hedge against the possibility of a surprise attack against its nuclear forces. This was true despite the fact that both sides maintained—and still maintain—substantial forces that cannot be destroyed by a surprise attack.

The balance of risks has shifted decisively against such a posture in recent years. The fear of calculated attack by the Soviet Union has been superceded by a risk of accidental, unauthorized, or erroneous attack by Russia. Russia, to protect against the possibility of a sudden attack involving the thousands of U.S. warheads maintained on high alert, reportedly relies on its capacity to launch its ICBMs and pier-side SLBMs on warning of a missile attack. But Russia’s attack warning system is seriously fragmented and degraded: only three of its nine modern radars are working at all, seven of the ten older “Hen House” radars lie outside Russian territory, and two of the nine slots in its constellation of early warning satellites are empty.15 The dangers of this hair-trigger posture were illustrated when the launch of a harmless Norwegian scientific rocket triggered the first-ever activation of Yeltsin’s “nuclear briefcase.”16

Maintaining nuclear forces on high alert is difficult and dangerous enough in the best of conditions, but Russia is in the midst of a extended political and economic crisis that could worsen rapidly. Within the armed services, wages go unpaid for months, morale is low and corruption is high, and facility maintenance and personnel training are deferred. On several occasions electrical power has been cut off to strategic nuclear facilities because bills were not paid, and communications have been disrupted because thieves were “mining” cables for valuable metals.17

The stain on both countries would be relieved if neither had to worry about the possibility of instant nuclear attack. The United States and Russia took a step in this direction by removing nuclear weapons from bombers, but more must be done. The launch-readiness of nuclear forces should be reduced in ways that are readily transparent to the other side, so that both sides can be assured that a large-scale surprise attack is not possible. Care must be taken, however, to do this in ways that do not create advantages—real or perceived—for quickly realerting forces or for striking first in a crisis.

In the near term, these goals could largely be achieved by maintaining a survivable force no larger than that required to fulfill the core deterrent mission, and by taking all other forces off alert. The core mission could be fulfilled by two to four submarines at sea, each armed with 50 to 100 warheads. These submarines need not—and should not—be capable of firing their missiles on short notice, but it might be difficult to demonstrate this to other countries without compromising their survivability. All other forces could be rendered incapable of rapid launch in ways that would be readily verifiable. For example, bombers could be based away from nuclear weapon storage areas. For ICBMs or in-port SLBMs, one could remove a key component, such as the shroud, guidance system, or warheads. For silo-based ICBMs, one also could obstruct or disable the silo door. Inspectors or remote monitoring devices could verify that missiles and bombers had not been readied for launch, and could provide timely warning of any attempt to do so.

The longer-term challenge is to verify that all delivery systems—even subs and mobile missiles on patrol—are incapable of being used quickly, without compromising their ability to fulfill the core deterrent mission. A number of ideas have been suggested, but all have drawbacks. It has been suggested, for example, that U.S. subs simply could patrol out of range of targets in Russia, but this would require that Russia be able to verify, on a more-or-less continuous basis, and in crises as well as in peace-
time, that U.S. subs had not moved within range. Although technical schemes can be envisioned that would make this possible—for example, requesting a particular sub to surface within a certain amount of time—it is likely that they would be resisted by the navy. Also, unlike U.S. subs, Russian subs normally do not patrol the open oceans, and doing so might compromise their survivability. Another concept relies on removing a key component, such as the guidance system. Again, how would Russia know that the component had not been reinstalled? Similar questions arise with land-mobile ICBMs. This is an area where creative technical thinking is needed.

As a related confidence-building measure, the United States and Russia should adopt cooperative practices to assure each other that neither is preparing to launch a nuclear attack. Today, verification of alert status and warning of attack are provided solely by national technical means such as photoreconnaissance, attack-warning satellites, and early-warning radars. All five nuclear weapons states could gain from an evolving program to share such intelligence with each other, or to install sensors (video cameras, seismic sensors, and the like) near the nuclear forces of other states to verify their status. A program to exchange military officers would also enhance confidence over time in the low alert rate and benign intentions of the other side.

**Shift in Strategy**

Despite the end of the Cold War, there is ample evidence that the United States and Russia still cling to nuclear doctrines that emphasize early strikes on nuclear and command and control targets and attacks directed at the political and military leadership. A policy of targeting opposing nuclear forces for rapid destruction puts pressure on the other side to continuously stand ready to launch its vulnerable forces (particularly ICBMs and pier-side SLBMs) on a few minutes notice, before these could be destroyed by a sudden attack. Fear of such attacks could trigger a launch of nuclear forces in response to a false warning, or a massive response to a small accidental or unauthorized attack. A doctrine that provides for the rapid launch of nuclear forces during peacetime simply cannot be justified today, when the probability of an accidental or inadvertent launch may be far greater than the probability of a deliberate nuclear attack. Even an option to launch under attack is unwise, because it forces political and military leaders to make momentous decisions in a few minutes with very incomplete information on the nature or origin of the attack.

The United States and Russia should adopt strategies that would not require prompt attacks on counterforce targets or imperil major fractions of the nation’s population. Target planning might focus on major military facilities or core infrastructure such as energy network nodes located outside large urban areas, designed in all cases to minimize civilian casualties to limit the pressure for escalation and to allow political leaders to negotiate an end to nuclear attacks.

It is difficult to imagine how changes in targeting could be verified. War plans are carefully guarded secrets, and changes in them can at best be verified indirectly through corresponding changes in force posture. A dialogue between U.S. and Russian military leaders on this subject, combined with an expanded program of officer exchanges, could help pave the way toward greater mutual understanding.

**Demarcation of Defense**

A strong linkage exists between reductions in the size and readiness of offensive forces and limits on defenses. This linkage was captured in the preamble to the Anti-Ballistic Missile (ABM) Treaty, in which the United States and the Soviet Union agreed that

“Effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons [and] ... would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms.”

U.S. plans to develop and deploy systems capable of providing even a limited defense of the U.S. territory could weaken and possibly destroy the value of the ABM treaty. The Cold War may be over, but the United States and Russia will not agree to reduce their nuclear forces unless they are confident that the residual force could fulfill the core deterrent mission. If the United States deploys a system capable of intercepting Russia’s missiles, Russia will take steps to ensure that its missiles could penetrate the defense. These steps could include refusing to implement START II, increasing the number of deployed warheads, or increasing the readiness of its ICBMs and pier-side SLBMs to launch on warning of an attack. China’s missile force is far smaller and would be more vulnerable to a missile defense, and it too might take steps to increase its offensive potential if the U.S. deployed a highly capable missile defense. It was precisely this sort of action-reaction syndrome that the ABM Treaty was designed to prevent.

Proponents of missile defense in the United States often point to the possibility of attacks by so-called “rogue” nations, such as North Korea or Iran. But current and foreseeable threats from these quarters are so limited that they do not justify deploying systems that would be capable of destroying Russian or Chinese missiles. In view of the limited nature of the missile threat, deployments of defensive systems should take place only if all the nuclear powers agree, at least tacitly, that such systems would not interfere with cooperative efforts to reduce the size and readiness of their nuclear forces. Otherwise, such deployments would lead to a net decrease in security and stability.

Various technical constraints on missile-defense systems have been proposed to create a firebreak between tactical and strategic-capable defenses. Limits on the speed of interceptors or test warheads, intercept altitude, the number and geographical distribution of interceptors, sensor technology and integration, and the sale of technology to third parties should all be investigated. Again, this is an area that is ripe for new and creative thinking.

**Conclusion: Technical Challenges in Verification**

Because this is an audience of physicists, I’ll conclude with a summary of the technical challenges for arms control verification that lie ahead.

- **Nuclear archeology:** how can one verify that a country has produced a certain number of nuclear weapons or a certain amount of HEU or plutonium?
Fingerprinting: how can one verify that a warhead or pit is authentic, without revealing details about its construction? Dealing: how can one verifying that a missile is incapable of firing, without revealing its location or otherwise making it vulnerable to attack? Strategy: how can one verify that a country no longer plans to target its forces against the forces and command and control systems of the other side? Demarcation: how can one verify that theater missile defense system do not pose a threat to the strategic missile forces of the other side?

Each of these challenges could benefit from creative and original thinking, and I hope that some of you will be stimulated try. Thank you.

References


4. In June 1995, the United States proposed a modest stockpile data exchange agreement, which called for exchanging data, on a confidential basis, on total current inventories of nuclear weapons and fissile materials, as well as the total number of nuclear weapons dismantled each year since 1980, and the type and amount of fissile material produced each year since 1970. Unfortunately, Russia rejected the proposal as “too comprehensive.”

5. Let f be the fraction of warheads at the site that are undeclared, n be the number of warheads sampled, and P be the probability that at least one of the sampled warhead is undeclared (i.e., a violation is detected). If the total number of warheads at the site is much larger than n, then $P = 1 - (1 - f)^n$. If f = 0.1 and n = 30, then $P = (1 - 0.930) = 0.067$. In other words, if 10 percent of the warheads at a site are undeclared, then it is highly likely (about nineteen chances in twenty) that a random sample of 30 warheads would contain an undeclared warhead. If the total number of warheads at the site is not much larger than the number sampled, the probability of detecting a violation is much higher. Let N be the total number of warheads from which the sample of n is drawn, and $M = f \cdot N$ be the total number of undeclared warheads; then $P = 1 - (N/M) (N-n)/(N-M+n)!N!$. For example, if N = 100 and f and n are as above (0.1 and 30, respectively), then $P = 1 - 0.9070!/60!100! = 0.977$.


7. The CIVET (“Controlled Intrusiveness Verification Technology”) system, developed at Brookhaven National Laboratory, accomplishes this task with a high-resolution gamma-ray detector and a special-purpose computer without permanent memory.

8. Indigenous production of nuclear warheads involves numerous steps, including: (1) the mining and refining of uranium ore; (2) the fabrication of uranium fuel and targets for plutonium-production reactors; (3) the operation of these reactors; (4) spent-fuel reprocessing, plutonium purification, and storage of high-level wastes; (5) fabrication of plutonium pits; (6) warhead assembly; (7) warhead storage, deployment, and maintenance; (8) warhead dismantling. In principle, data could be collected on these and other steps, and these data could be examined in detail to verify its internal consistency, and its consistency with other information.


11. In 1992, the CIA estimated that Russia had 30,000 nuclear weapons, “plus or minus 5,000.” (See “Testimony of Lawrence Gershwin before the House Defense Appropriations Subcommittee,” 6 May 1992.) Subsequent statements by Russian Minister of Atomic Energy Victor Mikhailov that the Russian stockpile peaked at 45,000 warheads cast doubt on the CIA estimate, and emphasized further the difficulty of estimating warhead stockpiles with national intelligence alone.


13. A possible complication is the fact that warhead maintenance and remanufacturing activities might still be occurring at the facility. To deal with this, it might be best to segregate these activities. For example, Pantex could designate a certain area for maintenance and remanufacturing, and another area for dismantling. It would be necessary, of course, to verify that the maintenance facility wasn’t being used to increase the stockpile, but this could be done by requiring a strict balance between the number of warheads and pits entering and exiting the maintenance facility. Some people worry that, by observing maintenance and remanufacturing activities, the monitoring party might learn of vulnerabilities in the force. If, for example, Russia observed that all the W-76 Trident warheads were being rebuilt, it might conclude that that system had a major reliability problem. Even so, it is difficult to see how that knowledge would confer a significant and usable military advantage. U.S. policy is to maintain a mix of warheads in the stockpile, so that the failure of any one system would not cripple the deterrent capability of the overall force.


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Landmine Detection and Nuclear Verification
Report on Expert Session “Disarmament and Verification”
62nd conference of the German Physical Society (DPG) in Regensburg

Götz Neuneck, Jürgen Scheffran

This year’s expert session “Disarmament and Verification” took place during the spring conference of the DPG on March 25th and 26th, 1998 in Regensburg, Germany. Its focal theme was “Landmine Detection and Nuclear Verification”. In his introductory presentation, Professor Roy Schwitter of the Department of Physics of the University of Texas provided a survey of the extent of the land-mine problem and the technology employed for their detection. According to estimates, 110 million armed mines are buried in at least 64 countries. Until recently, 20 new mines were deployed for every swept mine world-wide. About 100 designs are known, costing more in destruction than in production. Various detection technologies were explained, such as NQR and x-ray technologies.

Professor van Genderen of the International Institute for Aerospace Survey and Earth Science in Enschede presented possibilities for the detection of mines or the visualisation of their deployment through satellite or air-reconnaissance images. Larger areas can be scanned with the help of optical procedures (multi-spectral cameras), thermal IR techniques (3-5 microns, 8-14 microns) and micro-waves (x-and p-band). Based on this information, appropriate maps can be developed, which support trained personnel in finding and disarming mines considerably faster. Dirk Kilfit of the company Rheinmetall outlined various technical problems of explosive detectors and mine sweeping units.

As an application of sensor verification to peace keeping, Jürgen Altmann and Reinhard Blumrich (University of Bochum) presented measurements and calculations for the determination of ground impedance, based on experiments with acoustical and seismic sensors during take-off and landing of jet airplanes.

Steve Fetter, professor at the University of Maryland, gave an introduction into the problems and verification procedures related to future nuclear disarmament. In the past, nuclear arms control was limited to restricting the numbers and capabilities of nuclear delivery vehicles and launchers. In the future, nuclear warheads, nuclear-weapons-usable materials and the operation of nuclear forces will become increasingly important. Jürgen Scheffran (IANUS, Technical University Darmstadt) explained technical and other procedures to verify compliance with a nuclear-weapon-free world in the context of a Nuclear Weapons Convention and introduced a model to compare various verification measures. Martin Kalinowski (IANUS, TU Darmstadt) presented measurements of atmospheric krypton-85 close to the reprocessing plant at Karlsruhe, Germany which could be used to detect plutonium separation from large distances.

In the context of the control and disposal of nuclear weapons materials, Roland Schenkel of the European Institute for Trans-Uranic Elements (Karlsruhe) described new work on highly sensitive particle analysis of environmental probes for discovery of clandestine nuclear activities. Such methods would allow to make better judgement on transfer paths and sources of nuclear weapons materials. Christoph Pistor and Alexander Glaser (IANUS, TU Darmstadt) presented results of their diploma thesis on burn-up calculations for nuclear materials. Roland Reimers (University Bremen) indicated short-term measures for reducing proliferation incentives with regards to surplus weapon plutonium.

André Gsponer of the Geneva “Independent Scientific Research Institute” warned on the scientific-technical possibilities of circumventing the nuclear Test Ban Treaty with laboratory experiments (laser fusion, heavy ions and anti-protons) and new computer simulations. He presented cases to exemplify the state of research in various countries.

The last part of the expert session dealt with the possibilities of verification by alteration detection in multitemporal satellite images (Irmgard Niemeyer, Research Center Jülich) and thermal mapping of facilities and vehicles by means of multi-spectral scanners (Boris Prinz, CENSIS Hamburg). Two lectures with game-theoretical content showed the application of mathematics in inspection games (Daniel Rothenstein, Research Center Jülich) and in models of negotiations in technology cooperation (Stefan Pickl, IANUS TU Darmstadt). Götz Neuneck presented a summary on the extent, cost and technologies of disarmament measures for surplus nuclear, chemical and conventional weapons.

The audience of the various sessions consisted of 30 to 100 interested participants. This event, which for the fourth time was organized along with FONAS, the German research association on science, disarmament and international security (Forschungsverbund Naturwissenschaft, Abrüstung und internationale Sicherheit), was facilitated by Götz Neuneck and J. Scheffran. The release of a conference publication is planned. Persons interested in becoming involved with the newly-constituted “Working Group on Physics and Disarmament” (AKA) should write to G. Neuneck, IFSH, Falkenstein I, D-22587 Hamburg or to J. Altmann, Institute for experimental physics III, RU Bochum, D-44780 Bochum.

Steve Fetter’s presentation during DPG expert session
Preparing for wars or imposing peace: a challenge for the year 2000
National conference of Peace Activists in France

Lysiane Alezard

Last November, the Mouvement de la Paix (France) initiated a national conference of peace activists to discuss the major challenges ahead of us to build a nuclear-weapon and war free 21st century.

During two days, 300 delegates from all parts of the country and from various backgrounds exchanged ideas and put forward some proposals for action and reflection. This was not quite a traditional “Congress” of the Mouvement de la Paix, not a statutory one, but rather a forum. The reason for this was that we felt the need to confront different views and experiences to address issues of vital importance for our near future. Doing so implied opening up to all those individuals and personalities concerned with war and peace problems, and not only to “organized” peace activists.

1. The need to abolish all nuclear weapons.

Opened by Martin Butcher and the National secretary of Pax Christi France, this discussion was a key one. Indeed, in the recent years, many steps forward have been achieved. From the campaign against French tests, to the signing of a CTBT, from the extension of the NPT to the decision of the ICJ declaring the threat and use of nuclear weapons illegal; from the Canberra Commission to the appeal of admirals and generals: public opinion now has major supports and supporters in their demand to eliminate all nuclear weapons.

Where do we go from here? This question is particularly relevant in the French context. There are no more underground tests. France has dismantled its strategic missiles, closed down its nuclear test site. How can we mobilize public opinion further and make sure all new nuclear programmes are stopped, when people tend to believe all this is already over?

At this particular point, it may be useful to recall the content of Article 6 of the NPT, since this is the snag in the so called “minimum nuclear deterrence” of French policy. Nuclear powers commit themselves to moving “towards complete nuclear disarmament”. France, like all other four nuclear powers did sign the NPT. Is it not therefore inconsistent to have taken this international commitment and at the same time continue to modernize the nuclear arsenal? Is it consistent with a continuation of laboratory testing which, as no one can deny, will eventually give way to actual tests?

Our role is no doubt to point out such inconsistencies, and demand a real public discussion on this issue. Indeed, for 1998, and this has just been confirmed by Prime Minister Jospin, new nuclear programmes will be carried out further. This means our government will be spending money this year on developing another new generation missile (M51) to be operational in 2008. Another words, France is already saying to the world: “in the 21st century, we shall continue to base our security policy on nuclear weapons”. This contradicts a general feeling in public opinion, but also among leading experts who more and more point at the obsolescence of nuclear weapons.

This is the reason why participants deemed it essential to develop a broad information campaign as well as continue to take action on nuclear sites. Such a campaign will target the main objectives: stopping the simulation programme which candidate Jospin, in 1997, found “useless and too costly”; demanding a Convention for the elimination of nuclear weapons, which could be convened in Paris in 2000.

2. To build a new security, moving out of the military order.

Campaigning for a world free of nuclear weapons echoes an aspiration to live in a safer and better world. It meets a major concern to get rid of the old military order. The whole issue was introduced by Mr. Bertrand, an expert on security and conflict prevention issues, who has long worked for the United Nations.

It appeared quite clearly that the question is not so much “is it possible to move out of the military order?” as “it is necessary to move out of the military order”. This is based on the current situation where, obviously, the question of “peace” has become a positive one. In other words, it has become more obvious that conflicts cannot be settled by violent means or by war. The experience of the Gulf war has played a major role in this respect.

We find ourselves at this particular moment in our civilization when military solutions, the idea that “if you want peace, prepare for war”, all these ideas have come to a state of exhaustion. They are deemed incapable to solve the problems raised to human kind. A range of reflections came about as to the three or four decades of Cold war. Then, a leading theme to mobilize public opinion was the preposterous accumulation of nuclear weapons which did not protect people and countries but became a danger for human kind. Today, have we not reached the point where nuclear weapons have to be eliminated not only because they are a danger to human kind, but also because it has become necessary to build new solutions to guarantee peace and security?

This growing idea in public opinion that a natural situation is one of peace rather than one of conflict and violence has forced ambivalent positions on the part of big powers. For instance, the United States boast to wage wars with “no dead”, which sounds very good. Except that you still wage a war and that people die, on the other side. Which was obvious with the Gulf War in 1991, and the problem is still unsolved.

The current situation in the world is therefore one of major contradictions: people generally believe it is necessary to reduce military dangers and wars, while mainstream strategies go against such aspirations.

This is where the role of peace movements comes. A lot of attention was paid to the whole international movement to ban landmines and its aftermaths in terms of public opinion mobilization. In order to be effective, peace movements need to have objectives adapted to the situation, in the
framework of a general approach aiming at moving out of the military order. This means audacity and ability to mobilize public opinion.

As far as France is concerned, in the new political context of a left wing majority in parliament and of strong aspirations to change, it is necessary that France make a deep-going change in the area of security. For the timebeing, France has a defense policy, but France does not have a security and peace policy. Which means it is our responsibility to push further in public opinion the demand to transcend the current military order.

3. Choosing human beings rather than arms.

Introduced by a union activist working in arsenals, this workshop focused on the question of conversion in a new and dynamic way. Given the economic situation of France, with 12% of unemployment, it is often argued that reducing military spending might add to the number of jobless. Actually, while military spending have been steady in France over the last ten years, 100,000 jobs have been lost in military industries.

No doubt that this complex issue makes it essential to have more frequent encounters between peace activists and union activists. All the more so as diversification is an attempt to meet the needs of populations and to build an alternative society based on alternative security.

As a matter of fact, conversion is no utopia. A lot of projects exist and have been elaborated by a range of workers and engineers. What is at stake is to make them known and demand that resources be spent on them. A broad range of examples were given to us which showed their usefulness and validity in a number of areas: in the fishing industry, for radars, weather forecasts, prevention of natural hazards, waste disposals...

The question of “choosing human beings rather than arms” also points to a close connection between disarmament and development. As Reverend Martino emphasized in a recent speech at the UN, “We cannot simultaneously pay for war and peace”.

As a matter of fact, 800 billion dollars were spent globally in 1997 on armaments, while 1.5 billion people live in great poverty. The responsibility of great powers is at stake when the percentage of the GDP spent on public development aid is on the decrease. Which strongly contradicts commitments taken in the recent years both in the G7 and at the UN General Assembly.

Many participants emphasized the criminal role played by the arms trade, whether it be light weapons or landmines. The campaign to ban landmines has been met with major successes, and should not calm down until all mines have been removed by those who laid them in millions.

These were some of the leading issues tackled at the National Conference of peace activists, together with the question of European security, in the presence of many European peace activists. They gave way to a more coherent approach of war and peace problems, with the general concern to promote a culture of peace. Backed up by UNESCO programmes, this means pushing forward a conception of a society in which human and international relations are no longer based on the use of force, on violence, but rather on cooperation and mutual understanding.

On the year of the 50th anniversary of the universal declaration of human rights, there is still one right to fight for - the right for peace. This led us to elaborate a national campaign for 1998, for the human right to peace, with the following objectives: imposing a radical change in the security policy of France, promoting a non military security in Europe, therefore campaigning to eliminate nuclear weapons and to stop the arms trade. This “Peace planet” campaign will consist of a caravan addressing public opinion in as many places as possible with the Abolition 2000 international petition and with a substantial leaflet to promote a public discussion on these issues.

Note: For interested readers, the Conference memo is available in French at the Mouvement de la paix email mvtpaix@globenet.org.

Lysiane Alezard, Mouvement de la paix, Paris, France. tel +33 1 40 12 09 12, fax -11 57 87, email mvtpaix@globenet.org.

Healing the century of violence: towards sustainable peace

XIIIth World Congress of the International Physicians for the Prevention of Nuclear War, University of Melbourne, 4th - 8th December 1998.

The general aim of the congress is to build global solidarity amongst the peace movement and facilitate networking. Conferences like this provide an opportunity for concerned medical practitioners to get together; reflect, work and plan together; share information and experiences; renew and build bonds of trust, friendship and understanding which are the essential glue of the anti-war movement.

It will be the first to be held in the southern hemisphere, and so will have a strong element of Asia-Pacific regional issues and the impact of development on the region’s indigenous peoples.

Two major speakers have confirmed they will address the congress:

- Jose Ramos Horta: Nobel Peace Prize winning East Timor activist
- Richard Butler: UN Iraq weapons inspector

Major workshops and session at the congress will include:

- Abolition of Nuclear Weapons
- Energy for all 6 billion of us
- Landmines
- Third world debt
- Threats to health from war and environmental problems
- The ethics of science and war
- Regional conflicts and the rights of indigenous peoples

The program will include plenty of opportunities for networking, including a full calendar of social and cultural activities with a strong Australian flavor.

The full conference registration brochure is expected to be available in May - if you would like to receive a copy, please inform me and I will mail you a copy direct. Before and after that mailing, any new information about the conference will be posted on our website - http://www.ozemail.com.au/~mapw

Students will be offered a discounted registration fee. We are also looking for volunteers to help run the logistics of the congress - in return they can attend for free with meals etc provided.

Contact Greg Barber at the Medical Association for Prevention of War (Australia) on +61 3 9625 1532 (pager) or email: imapw@ozemail.com.au.

Lysiane Alezard, Mouvement de la Paix, Paris, France. Tel +33 1 40 12 09 12, Fax -11 57 87, Email mvtpaix@globenet.org.

Note: For interested readers, the Conference memo is available in French at the Mouvement de la paix email mvtpaix@globenet.org.

Lysiane Alezard, Mouvement de la Paix, Paris, France. Tel +33 1 40 12 09 12, Fax -11 57 87, Email mvtpaix@globenet.org.
Statement by Heads of State and Civilian Leaders on Elimination of Nuclear Weapons

“The end of the Cold War has wrought a profound transformation of the international political and security arena. Ideological confrontation has been supplanted by burgeoning global relations across every field of human endeavor. There is intense alienation but also civilized discourse. There is acute hostility but also significant effort for peaceful resolution in place of violence and bloodshed.

Most importantly, the long sought prospect of a world free of the apocalyptic threat of nuclear weapons is suddenly within reach. This is an extraordinary moment in the course of human affairs, a near miraculous opportunity to realize that noble goal. But, it is also perilable: the specter of nuclear proliferation cannot be indefinitely contained. The urgent attention and best efforts of scholars and statesmen must be brought to bear.

Leaders of the nuclear weapon states, and of the de facto nuclear nations, must keep the promise of nuclear disarmament enshrined in the Non-Proliferation Treaty of 1970 and clarified and reaffirmed in 1995 in the language codifying its indefinite extension. They must do so by commencing the systematic and progressive reduction and marginalization of nuclear weapons, and by declaring unambiguously that their goal is ultimate abolition.

Many military leaders of many nations have warned that all nations would be more secure in a world free of nuclear weapons. Immediate and practical steps toward this objective have been arrayed in a host of compelling studies, most notably in the Report of the Canberra Commission on the Elimination of Nuclear Weapons. Among these proposals, we, the undersigned, fully subscribe to the following measures:

1. Remove nuclear weapons from alert status, separate them from their delivery vehicles, and place them in secure national storage.
2. Halt production of fissile materials for nuclear weapons.
3. End nuclear testing, pending entry into force of the Comprehensive Test Ban Treaty.
4. Launch immediate U.S./Russian negotiations toward further, deep reductions of their nuclear arsenals, irrespective of START II ratification.
5. Unequivocal commitment by the other declared and undeclared nuclear weapon states to join the reduction process on a proportional basis as the U.S. and Russia approach their arsenal levels, within an international system of inspection, verification, and safeguards.
6. Develop a plan for eventual implementation, achievement and enforcement of the distant but final goal of elimination.

The foregoing six steps should be undertaken immediately.

The following additional steps should be carefully considered, to determine whether they are presently appropriate and feasible:

● Repatriate nuclear weapons deployed outside of sovereign territory.
● Commit to No First Use of nuclear weapons.
● Ban production and possession of long-range ballistic missiles.
● Account for all materials needed to produce nuclear weapons, and place them under international safeguards.

The world is not condemned to live forever with threats of nuclear conflict, or the anxious fragile peace imposed by nuclear deterrence. Such threats are intolerable and such a peace unworthy. The sheer destructiveness of nuclear weapons invokes a moral imperative for their elimination. That is our mandate. Let us begin.”

Speech by Alan Cranston
former U.S. Senator,
Chair of the State of the World Forum,
National Press Club (excerpts)

This statement was drafted by a number of leaders, from a number of lands, primarily Americans and Russians.

Leaders were signing it up to the last minute. Altogether, when the list closed this morning, there were 117 signatures from 46 nations, including 47 past or present presidents and prime ministers.

Among them are former heads of state from four of the five declared nuclear powers: Michel Rocard of France, Mikhail Gorbachev and Egor Gaidar of the Soviet Union and Russia, Lord James Callaghan of the U.K., and Jimmy Carter of the U.S.

China, the fifth nuclear power, is represented by a former ambassador and by a prominent leader of what the Chinese uniquely call a G.O.N.G.O. — a Government Organized Non Governmental Organization. China’s official policy was stated at the U.N. on September 25, 1996, by Vice Premier and Foreign Minister Qian Qichen who said, “We always stand for the complete prohibition and thorough destruction of nuclear weapons.”

The three principle nations under the nuclear “umbrella” are represented by former Chancellor Helmut Schmidt of Germany, Shin Hyon-Hwak of Korea, and—not surprisingly—five former prime ministers of Japan including the most recent, Tomiichi Murayama.

Notable among present heads of state on the list is President Eduard Shevardnadze of Georgia, who as Soviet Foreign Minister did so much, along with President Gorbachev, President Ronald Reagan and Secretary of State George Shultz, to reverse the super power nuclear arms race.

Prominent individuals from two of the three threshold nuclear states, Israel and Pakistan, signed on. No one did from India; but India officially supports abolition—on condition that a deadline be set for achieving it. Two Indian Generals did sign the companion abolition statement made by professional military leaders a year ago.

For a list of signatories go to:  http://www.worldforum.org/nwep-list.html.
Agreement reached on international guidelines for the management of plutonium

The almost four year long negotiations on international guidelines for the management of plutonium have been completed before the end of 1997. According to IANUS findings, the result is unsatisfactory.

Since the beginning of 1994, nine countries which use and produce plutonium have negotiated in Vienna with the goal of achieving an increased safety and more transparency in the worldwide handling of the nuclear-weapon-useable material plutonium. A strong motivation for these negotiations was fed, according to critics, by the goal of rising the acceptance for the usage of plutonium. Increasing protest against that had come not only from citizens’ pressure groups and non-governmental organisations (NGOs) but also from a number of governments mainly opposing naval transports of plutonium from France to Japan. Aside from the five recognised nuclear weapon states, Germany, Japan, Belgium and Switzerland participated in the negotiations.

Between December 1997 and January 1998, all nine countries sent a note to the Secretary General of the International Atomic Energy Agency (IAEA) in Vienna. The finally achieved agreement on “Guidelines for the Management of Plutonium” can in principle be welcomed. The measures contained in it are rated as insufficient not only by the critics of the usage of plutonium. They represent a meagre compromise even in the view of participating countries. Insufficiencies remain in the civilian as well as in the military sector.

For instance, the non-nuclear states were not even able to achieve that plutonium stockpiles stemming from disarmament will be put under controls of similar fashion to the internationally established nuclear safeguards for civilian plutonium. A part of the nuclear weapon states has merely declared its willingness to put a limited amount of weapon material under some kind of control, according to own judgement and within the bounds of existing agreements on voluntary inspections. A special control regime is supposed to be created to this end, while the non-nuclear states will not be able to have any influence on its structuring and implementation. This pledge is still very far away from the—seen from the disarmament perspective—desirable international control of all military plutonium stockpiles.

There is supposed to be no limitations on the production and usage of plutonium in the civilian sector, although this had at least been part of the negotiations. Not only for the reduction of proliferation risks would this have meant a necessary progress. A US proposal, which however was harshly rejected by France and the UK, aimed at stopping the reprocessing of spent fuel elements for the purpose of plutonium separation and its continuation within the limits of requirement for the reuse of plutonium in MOX fuel elements. The result would be a drastically reduced stockpiles that would approach a near-zero-inventory of plutonium. The French plutonium stockpiles from the reprocessing of German fuel elements alone can be estimated to lie within 14 to 20 metric tons.

One big hope was that the new international plutonium regime would bring transparency on the amounts of plutonium. Already before the beginning of the Review and Extension Conference for the Non Proliferation Treaty (NPT) in April 1995, most of the nine countries negotiating in Vienna had publicly bound themselves to the annual publication of data on their plutonium stockpiles. Information of this kind have always been subject to confidential classification in Germany and most other countries. The federal government used to declare to have passed all responsibility on this to EURATOM and therefore had no knowledge on amounts of German plutonium. Nothing substantial will change in this respect except for the duty to ask EURATOM for data and to pass them on to the IAEA. Among other things, the negotiations were held on a common format for the plutonium balances. Unfortunately, the agreed format of annual plutonium balances does not create the desired transparency. The figures are rounded to 100 kg only and the data are aggregated for all facilities of one kind, irrespective whether they are within the territory of the country or abroad.

Additional information is available from Martin Kalinowski and Wolfgang Liebert (IANUS, Darmstadt University of Technology, Germany; address: see impressum)
Fissile Materials, Controls, Inventory and IAEA Safeguards
Towards universal, comprehensive and transparent accountancy, safeguarding and disposition of military and civilian fissile materials.

NGO Statement to NPT PrepCom in Geneva

This paper addresses fissile materials. This is a complex issue and among NGOs, as among Governments, there are some significant areas of disagreement. It is widely accepted that the control of fissile materials plays an important role in the transformation of the non-proliferation regime into a nuclear-weapon-free world regime. The crucial question is how a reduction of unsafeguarded stockpiles of fissile material can be managed in a way that a nuclear-weapon state or a nuclear threshold state can move towards becoming a non-nuclear-weapon state. For declared nuclear-weapon states, this transformation will be linked to the destruction of the last remaining nuclear weapons. A clear method for the undeclared nuclear states to join the cut-off and disarmament process needs to be worked out. One component of this would be for them to reduce the upper limit of their stocks of nuclear-weapon usable materials while the recognised nuclear-weapon states further reduce their nuclear arsenals. The last step would involve placing all remaining stocks of fissile material in all countries under international safeguards.

Banning the production of fissile materials for weapons: an NPT pledge

At the first NPT PrepCom in New York in 1997 it was proposed that special time should be reserved in the NPT review process to discuss the cut-off issue. In this short statement we would like to focus on what delegates might consider during this specially reserved time. It should be kept in mind that the participation of the undeclared nuclear states, which are not Parties to the Treaty, is central to this discussion.

Progress towards a cut-off agreement at the Conference on Disarmament (CD) is currently deadlocked. One important reason for this is that insufficient connection has been made between a cut-off treaty and progress on disarmament, which includes the asymmetry of existing stockpiles. There are two broadly different perspectives for how to make progress, though with some cross-overs. Some NGOs consider that a cut-off agreement should be one of the very next steps towards non-proliferation and disarmament and that negotiations should commence as soon as possible on the basis of the mandate agreed by the CD in March 1995. Others hold that without specific disarmament steps on the part of nuclear weapon states a cut-off agreement would simply reinforce existing disparities. Both perspectives offer constructive ways to move forward, which we will try to represent in turn.

1) The first view: getting the FMCT underway. The first view considers that most of the nuclear weapon and threshold states will not be prepared to allow a cut-off treaty to reduce their existing military stocks. In recognising such problematic realities, incremental steps at other fora could be considered, enabling progress in parallel with the FMCT negotiations. The main purpose of these incremental steps would be to reinforce the moratoria of countries that have ceased production, to increase transparency, and to increase pressure on countries that continue production for nuclear weapons. Last and not least, the nuclear weapon states need to demonstrate in this process their commitment to take real steps towards nuclear disarmament, such as the de-alerting of nuclear forces, some kind of tritium control, establishment of an ad hoc scientific group to consider the technical aspects of nuclear disarmament, and a disarmament discussion process at the CD.

It might, however, be possible for the nuclear weapon states to discuss a declaration of stockpiles or a commitment to minimise non-military stockpiles outside of safeguards. All civilian fissile materials and military material declared excess to weapons requirements should be placed under IAEA safeguards. Other steps in this preliminary process could be:

- There should be a full and accurate accounting of the location, amount and form of all fissile materials in each country, without exception. This will reduce the danger of withdrawal of materials at a later stage. Some advocate that imposing criminal penalties on national leaders for failure to fully account for fissile materials would aid complete declarations. Others believe that this would be impractical and imprudent.
- Verification can follow upon declarations and does not need to be simultaneous with it. Safeguards can be gradually introduced while non-intrusive methods are used to verify stocks outside of safeguards. When an inventory becomes subject to international safeguards the prior declarations can be checked by undertaking a full physical inventory measurement and by applying the methods of nuclear archaeology.
- All military materials production facilities, whether currently active or not, should be shut down and dismantled. The dismantlement of facilities should probably follow agreements on transparency and verification. This is because the facilities contain physical evidence of total production.
- At this interim stage, special arrangements may need to be negotiated if some countries want stand-by or even new tritium production capacity. Verification arrangements would need to be agreed for such facilities.

2) FMCT linked to nuclear disarmament. The second school argues that a cut-off agreement should only have a significant impact on nuclear disarmament and the nuclear weapon states should undertake the following steps as part of the process:

a) each NPT nuclear weapon state to unilaterally formalise its existing freeze on fissile material production for nuclear weapons and make a full and accurate accounting of the locations, forms and amounts of fissile materials;

b) all military materials production facilities to be shut down and dismantled;

c) a ban on production of nuclear pits;
d) the excess stocks of weapon-usable materials to be placed under international safeguards;
e) a ban on tritium production.

With these commitments on the part of the nuclear weapon states a meaningful coupling of the non-proliferation and disarmament aspects of a fissile materials ban could be achieved.

Dealing with plutonium and HEU stocks

International transparency for plutonium and highly enriched uranium (HEU) inventories is critical for achieving a successful non-proliferation regime. The guidelines on plutonium management that were agreed by nine countries in late 1997 constitute a modest step in that direction though several issues have not been resolved satisfactorily. A special problem is that annual plutonium balances are required only to within 100 kg accuracy. This leaves a lot of room for potential diversion. International transparency must be complemented by national materials management strategies.

The risk of fissile material should be thought of not simply as arising from material produced for weapons purposes, but extend to a broader category of weapons-usable materials, which includes almost all plutonium. Stocks of unirradiated plutonium should be minimised. One immediate step is to put a moratorium on the reprocessing of spent fuel at least as long as separated plutonium is still available for commercial purposes. From the non-proliferation point of view it is desirable to ban civilian reprocessing. Economic and ecological arguments already speak against the use of plutonium for fresh fuel.

Safeguarding of plutonium at bulk handling facilities can never be perfect. Besides proliferation risks posed by state actors there is always a terrorist threat. This applies even to plutonium in unirradiated MOX fuel. Reactor-grade plutonium can be used for nuclear weapons and may even be of advantage for designing a crude nuclear weapon because no external neutron source is required to start the chain reaction due to the enhanced neutron background of plutonium-240 and higher isotopes.

Stocks of HEU - both military and civilian - should be reduced to the lowest levels practical, and civilian use of HEU should be eliminated. Nuclear-weapon states should put excess HEU under safeguards. The blending down to low enriched uranium needs to be accelerated and carried out under verified conditions.

How can plutonium be disposed of? As a first step, the metal pits can be made unusable, e.g. by squeezing them out of shape and transforming them into oxide. The plutonium can then be militarily guarded and stored to the same standards of security that are desirable for nuclear weapons. A further step recommended by many NGOs is to immobilise plutonium into non-weapon-usable form, for example in glass or ceramic, mixed with radioactive waste.

Some NGOs also believe that irradiating plutonium as a mixed oxide (MOX) nuclear reactor fuel would be an acceptable option for putting plutonium into non-weapons-useable form. However, very few NGO representatives accept this MOX strategy. One argument put forth in favour of reactor irradiation is that it downgrades its isotopic composition. But this degraded form of plutonium can still be used for making nuclear weapons. Finally, an approach to transmuting plutonium without simultaneous power generation has also been advocated by some. This presents great research challenges especially if it is to be accomplished efficiently and without the use of existing or new reprocessing technologies.

Mr. Chairman, distinguished delegates, you can see that our debates reflect the difficulties of actually controlling weapons useable materials in a practical and equitable fashion. But we are all convinced that doing so will ultimately be required for achieving lasting non-proliferation and disarmament.


go statement to the second Preparatory Committee meeting for the NPT Review Conference in the year 2000, April 27 to May 8, 1998 in Geneva. The statement was coordinated by Martin Kalinowski in an open process to which 40 experts were invited individually. Input was provided and reflections were given by a number of experts, especially by Owen Greene, F.H. Hammad, Wolfgang Liebert and Abdul Nayyar. These persons do not necessarily subscribe to all points made in the statement.

INEDAP Briefing Papers


Sponsored by the Nuclear Age Peace Foundation

These briefing papers are distributed free at the Geneva PrepCom to reach delegates, NGO representatives and the media.

No. 1/1998: Beyond technical verification (Martin Kalinowski, Wolfgang Liebert, Jürgen Scheffran)

No. 2/1998: Multilateralising the nuclear disarmament process (Owen Greene)

No. 3/1998: Cut-off in the NPT review process (Martin Kalinowski)

No. 4/1998: Why Stockpile Stewardship is incompatible with the process of nuclear disarmament (Andrew Lichtermann, Jacqueline Cabasso)

No. 5/1998: Regional monitoring and verification system for a Weapon-of-Mass-Destruction-Free Zone in the Middle East (F.H. Hammad)

No. 6/1998: New German research reactor using HEU raises concern (Wolfgang Liebert)

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Nuclear Weapons Convention: Outline of a Model Treaty*

Merav Datan, Alyn Ware

The United Nations recently circulated a Model Nuclear Weapons Convention (MNWC or model NWC) as a discussion draft. The model, drafted by an international team of lawyers, scientists and disarmament experts, offers a plan for the prohibition and elimination of nuclear weapons in a series of graduated steps.

The purposes of the model NWC include demonstrating the feasibility of the elimination of nuclear weapons and encouraging governments to enter into nuclear disarmament negotiations. Planning beyond immediate steps could catalyze the negotiating process because these incremental steps are interlinked.

Background

The MNWC assumes a political climate ready for the elimination of nuclear weapons, an assumption which requires some suspension of disbelief. Security policies based on the threat of mass destruction are deemed necessary for the foreseeable future by Nuclear Weapons States (NWS) and some allies. However, engaging in the process of designing a Nuclear Weapons Convention is useful in two main ways:

1) It can help overcome some of the barriers that make nuclear abolition appear utopian, and
2) It can help prepare us for the day when the political will to begin negotiations materializes.

The point at which States are ready to negotiate such a convention could come sooner than we think. History often produces surprising speed to developments that had been expected to take a long time, such as the crumbling of the Berlin wall or the conclusion of a landmines convention.

Already there are signs that foreshadow the need for a Nuclear Weapons Convention. When that need emerges, the concerns associated with nuclear proliferation will likely be even more urgent than they are today. It would be wise, therefore, to have begun considering the political and physical requirements for verifiable elimination of nuclear weapons. (…)

Responses

Responses to the MNWC have been strong and growing. Feedback highlights the political and technical questions that must be resolved for verifiable and coordinated large-scale nuclear disarmament to begin. Areas that present the greatest uncertainty about developing a regime for elimination of nuclear weapons, the open questions and critical issues, include the following:

● Will the elimination of nuclear weapons mean a different international security system? Yes. Some governments still 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.

● 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 irreversible measures leading to a world in which developing nuclear weapons will mean starting from scratch. Such a program will become increasingly difficult to conceal as the infrastructure is converted or allowed to erode. But 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.

● Do Nuclear Weapons States (NWS) and Non-Nuclear Weapons States (NNWS) have different roles in nuclear arms control and disarmament? Yes. The asymmetry between NWS and NNWS in the current non-proliferation regime will mean different functions and obligations on their respective parts in the move toward elimination of nuclear weapons. Although the NWC seeks to overcome existing inequities, disarmament and verification will of necessity involve greater NWS responsibility and access to certain information as long as nuclear weapons exist. NNWS will likely require concrete reassurance that material and key information is being handled as agreed.

Conclusion

A recurrent response to the model NWC is that it is premature, that given today’s political environment it is premature to consider and discuss a framework for the prohibition and elimination of nuclear weapons. It is indeed premature to expect agreement on the objectives of the NWC or the details of its verification regime. But it is not premature to begin devising a plan for complete nuclear disarmament, to be ready when the political climate is favorable. Nor is it premature for States to begin developing the verification mechanisms for nuclear disarmament.

In light of the ongoing threat posed by nuclear weapons, and the damage, both direct and indirect, that they cause, discussions of a Nuclear Weapons Convention should be seen as an urgent need rather than a premature wish. The model NWC is offered to States and NGO’s in the hopes that it can inspire and enrich this discussion.

Merav Datan is Research Director and Alyn Ware Executive Director of the Lawyers’ Committee on Nuclear Policy, 666 Broadway, Room 625, New York, NY 10012, USA; tel +1-212-674-7790, fax -6199, email lcnp@aol.com.

INESAP at the NPT PrepCom meeting 1998 in Geneva

INESAP activities in preparation for, at and after the second Preparatory Committee meeting for the NPT Review Conference in the year 2000, April 27 to May 8, 1998 in Geneva (April 9, 1998)

In cooperation with Abolition 2000 and a number of NGOs. Sponsored by the Nuclear Age Peace Foundation

1) INESAP outreach to delegates and the public

1.a.) Briefing panels during PrepCom.
INESAP will co-organise two main events:
Panel 1 on Tuesday, April 28, 6:30-8:30 pm
Complete disarmament of nuclear weapons: with distinguished speakers organised by INESAP and the Nuclear Age Peace Foundation in cooperation with INES, ipb, LCNP/IALANA, IPPNW and Abolition 2000. The following key note speakers accepted the invitation: David Krieger as facilitator (USA), Joseph Rotblat (UK), Douglas Roche (Canada), Miyoko Matsubara (Japan).

The main topics of the panel discussion may address:
- the end of nuclear deterrence as a meaningful strategic global or regional concept,
- immediate steps of nuclear disarmament and towards a NWFW,
- the framework of a NWFW,
- the draft proposal of a NWC.

Panel 2 on Thursday, April 30, 2-4pm
The Nuclear Weapons Convention (NWC): Political strategies and verification organised by INESAP and LCNP
- 2-3pm:
  - Chair: Idea and purpose of a NWC, presentation of the new draft of the Model NWC (mNWC)
  - Alyn Ware: Responses from the political arena to the Draft mNWC and strategies for its promotion
- Merav Datan: Open questions and critical issues of the mNWC
- 3-4pm:
  - IANUS: Presentation on the preliminary ideas of the proposed INESAP study with the title “Beyond technical verification: Transparency, verification, and preventive control for the Nuclear Weapons Convention” concerning the concept of the study, verification and safeguards technologies, chances and limits of a technological approach, preliminary political consequences

1.b.) Briefings and briefing papers
Five briefing papers are disseminated for free at the Geneva PrepCom to reach delegates, NGO representatives and the media. INESAP offers the following oral briefings during the PrepCom meeting. The first one comes in addition to the five printed briefing papers.
- April 28, 1-2pm: HEU for research reactors, the case of the new FRMII in Garching (Wolfgang Liebert)
- April 29, 1-2pm: Cut-off in the NPT review process (Martin Kalinowski, Wolfgang Liebert)
- April 29, 5-7pm, WSLF-Panel: „Stockpile Stewardship” is incompatible with nuclear disarmament (J. Cabasso)
- April 30, 3-4pm, INESAP/LCNP-Panel: Beyond technical verification (M. Kalinowski, W. Liebert, Jürgen Scheffran)
- April 30, 1-2pm: Multilateralising the nuclear disarmament process (Owen Greene)
- May 1, 1-2pm: Cooperative non-intrusive monitoring for a WMDFZ in the Middle East (F.H. Hammad, R. Pedatzur)

1.c.) Letter to governments of selected countries
A number of countries which will not include the recognised nuclear weapon states will be selected and important persons in the foreign ministries will be personally informed about the concept and preliminary findings and policy proposals of the starting work for the INESAP study „Beyond technical verification: Transparency, verification, and preventive control for the Nuclear Weapons Convention”. The criteria for selecting a country are:
- membership in the UN Conference on Disarmament, such that a specific interest in receiving and perceiving our information and evaluation can be expected,
- recent activities which show an active role in the international debate on disarmament issues,
- indication that a multilateral initiative towards a NWFW and related steps could be supported by the government

1.d.) Internal working meetings of INESAP
- Thursday, April 30, 5-8pm: Informal discussion about our political strategy at the PrepCom and afterwards, first considerations on the contribution of INESAP to The Hague Appeal for Peace
- Sunday, May 3, 10am-5pm: Preparatory meeting for the INESAP 1998 Conference in Amman, Jordan, planning of further activities within the INESAP project on a Middle East WMDFZ
- Monday, May 3, 10am-5pm: Informal discussion on an international conference on Nuclear-Weapons-Free Zones

2.) INESAP support for other NGO activities at the NPT PrepCom in Geneva:

2.a.) Support for the Middle Power Initiative pressing for a NWC
A further objective of the letter to selected governments (see point 1.c.) aims at supporting the multilateral initiative started by Douglas Roche and known as the „Middle Power Initiative” (MPI). The idea of Douglas Roche is that a number of around
10 middle power countries should adopt a policy to urge the USA to take a clear commitment towards complete nuclear disarmament. INES and INESAP are invited as an international co-sponsor of the MPI. INESAP may use its international network to help to convince a few (more) governments to speak out for complete nuclear disarmament. The focus of INESAP will be on support for the Nuclear Weapons Convention.

2.b.) Planning for The Hague Appeal for Peace

INES is a member of the organizing committee of the Campaign for The Hague Appeal for Peace. INESAP will contribute to the major international citizens’ peace conference to be held May 11-16, 1999 in The Hague, The Netherlands. A planning meeting for The Hague Appeal for Peace is scheduled for May 8 and 9, 1998 in Geneva. INESAP proposes to organise a large section of this conference on abolition of nuclear weapons. The idea is to evaluate what has been achieved with regard to the goal of abolishing nuclear weapons by the year 2000 and what is missing. Half a year before this deadline, it is high time to raise tremendous public awareness and increase pressure to the governments of relevant countries. This part of the conference may have several sessions which feature prominent persons from specific branches. One day may be reserved for military leaders, one day for scientists, one day for artists. One main purpose of the event should be to attract high media coverage world-wide.

The underlying assumption is that the US administration is the dominant force in the international arena and that other nuclear weapon countries would follow suit, if the US takes a courageous step towards nuclear disarmament. In addition to the growing pressure from NGOs, expert studies, Generals and Admirals and not least the advisory opinion of the International Court of Justice, it appears feasible and most efficient to convene a number of governments to make use of their influence and raise issues related to complete nuclear disarmament in Washington. See: Douglas Roche, Breaking the Disarmament Deadlock. Dealing with objections to and forming a plan for the abolition of nuclear weapons, INESAP Information Bulletin No. 14, November 1997, p. 4-6.

ABOLITION 2000 Working Group for the NPT Prep Comm

Schedule of 1998 NPT PrepComm Events

DAILY throughout the Prep Comm: 8-9am Abolition 2000 Daily Caucus. 9-10am NGO Disarmament Committee daily briefings.

Sunday, April 26
Time TBA: NGO Disarmament Committee Orientation for all NGO’s present.

Monday, April 27
Morning: 1998 NPT Prep Comm opens. Morning/Afternoon: Abolition 2000 Public action/demonstration on the Place de Nations. 11:00 am: NGO Orientation for groups not present on Sunday 1-3pm Vijali Hamilton - artist presents her work for World Peace. 6:00 PM (Following NPT Session) Presentation to Ambassador Eugeniusz Wyzner of over 13 million signatures calling for nuclear abolition by the Abolition 2000 Network (E Bldg., Outside conference room XX, 3rd floor) 6:30-8:30pm: Reception and Meeting, Religious Working Group of Abolition 2000, including leaders of various faith communities. Ecumenical Centre.

Tuesday, April 28
1-2pm: INESAP Briefing: HEU for research reactors, the case of the new FRM II in Garching: Wolfgang Liebert. 3-6pm: NGO presentations at the NPT Prep Comm. 6:30pm: Abolition 2000 with INES/INESAP/IALANA/IPB/IPPNW/LCNP: Towards a Nuclear Weapons Free World: Joseph Rotblat, David Krieger, Douglas Roche, Mioko Matsubara

Wednesday, April 29

Thursday, April 30

Friday, May 1
1-2pm: INESAP Briefing: Cooperative non-intrusive monitoring for a Weapons of Mass Destruction Free Zone in the Middle East: F.H. Hammad, Reuven Peretzur. 2-10: Abolition 2000 annual meeting (part 1).

Saturday, May 2
9-12pm: Abolition 2000 annual meeting (part 2). 2-6pm Middle Power Initiative for Nuclear Abolition - Consultation Session, MPI Steering Committee.

Monday, May 4

Tuesday, May 5

Wednesday, May 6th
5-7pm: Abolition 2000 with: Women for a Free and Independent Pacific: Nuclear Waste, Colonialism and Environmental Racism. Myrla Baldonado, Gabriel Telariahi, Rachel Julian, Michael Simmons. May 6 or 7th: IPB to host meeting of landmines and nuclear disarmament activists on sharing of strategies and lessons to be learned from Ottawa process.