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Targeting the Law

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Targeting or Protecting the Law
Bombing for non-proliferation and disarmament does not work

One year ago the media celebrated the victorious final of the US-led war in Iraq and the end of the Saddam regime. Did the war really end? Obviously not, as fighting continues today until, at an increasing scale. Was it a victory? Hard to defend this view in face of a country in ruins, chaos and fighting wars to eradicate threats caused by terror of weapons mass destruction. The “easy war” turned into a disaster, as many warned in advance.

Bombing for disarmament, seeking dominion to stop proliferation is not a promising strategy. It is neither effective nor sustainable nor legal. Building weapons and fighting wars to eradicate threats created by nuclear weapons mass destruction is a contradiction in itself. The current US administration still seems to believe in this logic that became the basis for its wars against proliferation. It rather spurs proliferation and undermines the basis of the existing non-proliferation regime.

Certainly the current regime is far from being perfect. At its core is the 1970 Non-Proliferation Treaty (NPT) that restrains the number of Nuclear Weapons States (NWS) to the USA, Russia, UK, France, and China, who are also the permanent five (P5) in the UN Security Council. All other member states gave up their nuclear weapons option and in return received the “inalienable right” to use nuclear energy (Art. IV), and the obligation by the NWS to stop the arms race and disarm their arsenals (Art. VI). The weaknesses of this deal are obvious: the discrimination between nuclear haves and have-nots created double standards; the proliferation of “peaceful” nuclear energy facilitated the spread of the bomb, despite controls by the International Atomic Energy Agency (IAEA); the NWS did not stop the arms race nor get rid of their nuclear arsenals. Some states used “Atoms for Peace” as a cover to conceal nuclear weapons activities, accepting the atoms and neglecting the peace. Among them are Israel, India, and Pakistan, who built the bomb outside the NPT, as well the suspects Iraq, North Korea, and Iran, who pursued their options within, and violated current prohibitions by the established and emerging nuclear weapon states hit the NPT at its core. First of all, 15 years after the end of the Cold War, the US and Russia still maintain massive stockpiles of nuclear weapons, more than 30,000 bombs. These huge arsenals provide an excuse for others to go for the bomb and they also generate risks for accidental war. Either way, the Bush administration is pushing ahead with research on new nuclear weapons, including mini-nukes and bunker busters, and builds a new bomb factory in Los Alamos. Missile defense and space weapons add to this new strategic triad. In this view arms control, like the former ABM Treaty and the Comprehensive Test Ban Treaty (CTBT), only restrict one’s own military superiority. Even the weak Strategic Offensive Reduction Treaty (SORT) of 2002 is already seen as an obstacle.

Driven by these bad examples, the other NWS follow suit, further inspired by concerns that missile defense could make their arsenals obsolete. Whole regions become involved in new arms races, such as the Middle East, South Asia, and North-East Asia. Those who want can serve their interests on black markets, as the case of Pakistan’s A.Q. Khan vividly shows. The dangerous technology may trickle down to terrorists. Rather than stopping the nuclear chain at its source, the established members of the nuclear club try to keep their options and criminalize those who want to do alike. With its Proliferation Security Initiative (PSI), the US government does not restrain the demand or supply of WMD but only attempt “to stop the flow of such items at sea, in the air, or on land.” This policy has found its way into the proposed UN Security Council resolution on “non-proliferation” released on March 24, 2004, creating a blueprint to combat proliferation with military means.

George W. Bush goes even further. Reacting to a proposal by IAEA Director Mohammed El Baradei to operate facilities producing nuclear weapons material only under international control, he suggested to give critical nuclear technologies and know-how only to those states that already have these technologies. Keeping nuclear power in the hands of the “good guys” has been US policy for a while, but establishing this as international law would require a revision of Art. IV of the NPT. This is unlikely to find consensus and would alienate key developing countries who see this as another form of discrimination. By shattering two main pillars of the NPT, represented by Art. IV and Art. VI, Bush questions the old deal and contributes to the crisis of the NPT without providing real alternatives.

These truly exist: nuclear disarmament and renewable energy. While international law is under attack, it is still time to protect it. As disappointing the existing regime may be, it is all we got. Without the NPT we might well be in a world with more nuclear weapons states, and we had no handle to push the P5 to fulfill their obligations under Art. VI. The NPT is part of a larger system of international law, creating norms which provide a fundament for international security. Non-proliferation, arms control, disarmament, verification, conflict resolution, negotiations, and diplomacy may not have the real-time effect a strike with a cruise missile has in Baghdad. They require more time and patience than military adventurism, but are better suited to build a solid fundament for the future.

This Bulletin focuses on developments that undermine the non-proliferation regime and on activities to protect it. A major focus is on US plans to develop new mini-nukes and bunker busters, and to build a new bomb factory in Los Alamos. Vertical proliferation is also pushed in the UK (Kate Hudson) and France (Dominique Lalanne). European non-nuclear weapon states (Greg Mello), misiles (Andrew Lichterman), and space weapons (Jeffrey Lewis) and to seek dominance with the PSI (Luis Gutiérrez Esparza). Vertical proliferation is also pushed in the UK (Kate Hudson) and France (Dominique Lalanne). European non-nuclear weapon states (Greg Mello), misiles (Andrew Lichterman), and space weapons (Jeffrey Lewis) and to seek dominance with the PSI (Luis Gutiérrez Esparza). Vertical proliferation is also pushed in the UK (Kate Hudson) and France (Dominique Lalanne). 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The Bush Administration entered office with an unapologetic vision of global U.S. military dominance, including a clear endorsement of the explicit role of nuclear weapons in that dominance. In this vision, the credible threat of nuclear strikes with existing and proposed new kinds of weapons, either pre-emptive or retaliatory, would deter a wide range of possible attacks on the United States as well as on U.S. forces, allies, and interests around the world. In the words of the December 2001 Nuclear Posture Review, “Nuclear weapons play a critical role in the defense capabilities of the United States, its allies and friends. They provide credible military options to deter a wide range of threats, including WMD (weapons of mass destruction) and large-scale conventional military force. The nuclear capabilities possess unique properties that give the United States options to hold at risk classes of targets [that are] important to achieve strategic and political objectives.”

Beyond deterrence, nuclear weapons are said to offer “something more.” The Congressional Research Service calls this other form of power “coercion.” The Defense Science Board recently used the term “compellence” for the same idea.

To the Administration and its domestic political allies, “credible” threats involving “appropriate” nuclear weapons assure our allies, reduce their incentives to proliferate, reassure the American public, and dissuade potential adversaries from pursuing threatening capabilities. Merely investing in nuclear programs and infrastructure would, in their view, enhance deterrence by making the threat of being attacked by newer, supposedly more capable weapons more credible. At the same, new nuclear weapons factories would dissuade other countries from competing militarily with the U.S. by virtue of the scale, capability, flexibility, and surge capacity of the U.S. nuclear complex.

Given the narrow scope and mostly unfortunate outcome of the recent congressional debate on nuclear weapons it is apparent that the Administration’s views are not opposed by the majority of current members of Congress. How many in Congress would actively support what might be called ‘the new nuclearism’ in the face of stronger and more principled opposition is a question that must remain unanswered until that opposition appears.

The State of the Debate: Four Skirmishes

Implementation of these remarkable ideas is being energetically pursued across a broad front by both the National Nuclear Security Administration (NNSA) and the Department of Defense (DoD). In sharp contrast, arms control and congressional concern has focused almost exclusively on four small but symbolic parts of this agenda:

- Low-yield nuclear weapons (mini-nukes), currently situated in a broader budget line called the “Advanced Concepts Initiative” or ACI (fiscal year 04 funding: $6 million, with $4 million currently unavailable pending submission to Congress of a required overall plan for the nuclear weapons stockpile; FY05 request $9 million).

- Although it appears to be a small program, ACI provides formal authorization for research into any and all possible nuclear weapons across the weapons complex. As Linton Brooks, Administrator of the NNSA put it in a memo to the nuclear labs, weapons scientists should now “close any gaps” and leave “no novel nuclear weapons concept” unexplored. Brooks specifically mentioned “agent defeat” and “low collateral damage” weapons as being on his wish list. After thanking the labs for their help in overturning the mini-nuke ban, Brooks reiterated, “We should not fail to take advantage of this opportunity.”

This triumphant memo elicited a caustic response from David Hobson and Peter Visclosky, the Chairman and Ranking Minority Member, respectively, of the House Energy and Water Appropriations Subcommittee, complaining that Mr. Brooks’ discussions with the subcommittee did not accurately disclose the extensive ambitions of this program.

ACI’s other principle purpose is to develop new leaders among the up-and-coming nuclear weapons scientists and to provide for “personal contacts [by weapons scientists] with members of the U.S. Strategic Command and the Defense Threat Reduction Agency, among others, to gain an understanding of what weapons might be of value to DoD, and to give DoD a sense of what weapons technologies may be available.” This particular partnership has been extremely important in advancing nuclear weapons interests ever since the Manhattan Project, and in the last decade and a half has been crucial in the formation of today’s nuclear revival.

- The Robust Nuclear Earth Penetrator, or RNEP, described by NNSA as a “high-yield” weapon (FY04 funding: $7.5 million; FY05 request $27.6 million).

RNEP is to be a modification of one or both of two existing free-fall bombs, either the B61 or the B83. Both of these bombs have multiple yield options, ranging from a potential low of about 300 tons up to about 350 kilotons (the B61) or 1.2 megatons (the B83). If built, it may well be a multi-yield weapon, with one or...
more high-yield options. The budget for RNEP, predictably enough, is poised to expand in the years ahead.9
■ Enhanced readiness to conduct nuclear explosive tests (FY04 funding: $10.8 million; FY05 request: $24.7 million; FY05 request: $30 million).

This year’s legislation directs NNSA to get ready to conduct a nuclear test within 18 months of an order to do so.
■ A large-scale manufacturing facility for plutonium weapon cores, or pits, currently called the Modern Pit Facility or MPF (FY04 funding: $10.8 million; FY05 request: $29.8 million).10

The MPF, if built, would have a capacity of a few hundred plutonium pits per year (officially, 250 to 450 pits/year).11 The actual capacity to be achieved by 2020, when the facility would be fully online, is hard to pin down because the technologies for pit manufacturing are evolving as they are further developed at Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL).

The MPF would supplement existing pit manufacturing facilities at LANL, centered at Technical Area 55 (TA-55), Building PF-4. These LANL facilities now have a capacity of about 50 pits/year. LLNL could also manufacture about 50 pits/year if most other plutonium programs at the facility were terminated.12

For reasons that will be explained shortly, these existing facilities are far from adequate to support a large arsenal. A radical expansion of these facilities, on the other hand, raises the specter of either an “MPF by another name” – or, alternatively, a staged, multi-site increase in production capacity. New construction would begin at LANL under this scenario, to be followed by construction of the MPF elsewhere. “Elsewhere” is probably the Savannah River Site (SRS), which NNSA ranked just behind LANL in overall attractiveness.13 It is quite possible that NNSA is already pursuing this “dual-track” option (or “triple-track,” if LLNL is included), in continuity with the intent of the Department of Energy (DoE) during the Clinton Administration.

The authorization and funding for these four programs were among the most hotly-debated issues in the FY04 defense budget cycle, despite the fact that the amount of money ‘in play’ during the debate was less than 1% of the total NNSA FY04 nuclear weapons budget ($6.51 billion appropriated, including administrative costs).14 It is a still smaller portion of all U.S. spending on nuclear weapons (totaling perhaps four times NNSA spending), and a miniscule fraction of U.S. military spending overall. The amounts cut from the original request by the loyal opposition from these four line items amounted to $19.5 million, less than 10% of the increase in the overall NNSA nuclear weapons budget from FY03 to FY04 ($284 million, administration included).

In terms of authorizations, the Administration also got most of what it asked for. The nominal time needed to conduct a nuclear test was lowered from 24 to 18 months. The RNEP, ACI, and MPF were also approved in principle and funded, at least for the time being.

The ban on designing mini-nukes was fully repealed.

The executive branch must return to Congress for specific authorization to further develop and build the new weapons, but that is what must be done every year in any case. Such authorization can occur in a secret process, outside the normal budget process, and need not involve more than eight members of Congress – as was done to authorize engineering and production of the B61-11 earth-penetrator in 1995.15

To reiterate, while these relatively small programs were being debated with little success by the opposition, fully nine-tenths of this year’s expansion of the U.S. nuclear weapons infrastructure and programs, or about 99% of the whole, passed Congress without even any debate.

What was not debated included: the size and composition of the U.S. stockpile, planned “transformational” replacements and upgrades to nuclear delivery systems; all questions of nuclear doctrine and targeting; an extensive upgrade of nuclear command and control underway in connection with new non-nuclear “global strike” capabilities that will enable rapid nuclear attack planning and execution; modification of existing nuclear weapons to give them significant new military characteristics, the large NNSA experimental, computational, and infrastructure projects other than the MPF, with total life-cycle costs no doubt in the $100 billion range; and finally, any approach to non-proliferation and nuclear security that even faintly acknowledges U.S. obligations under Article VI of the nuclear Non-Proliferation Treaty (NPT).

Can These New U.S. Nuclear Weapons Programs Be Stopped?

Of course they can – if those who oppose them do so ardently, vigorously, and intelligently enough. Can they be stopped if the debate about nuclear policy remains narrowly focused on a few incremental issues like the four listed above? Probably not. There are many reasons for this; the space available here allows examination of this question for just one of these controversial proposals, the Modern Pit Facility.

The primary stages of all deployed U.S. weapons contain fissile cores – pits – made with plutonium. Unless they get too hot, these pits remain metallurgically stable for decades.17 But how many decades? This is not clear. The official position of both nuclear design laboratories (Los Alamos and Livermore) in late 2002 was that, given the information at hand, the minimum pit longevity lies in the range of 45-60 years.18

Approximately 80% of the pits in the circa 10,500-weapon U.S. stockpile were made in the 1980-1989 period; as many as 2,200 may remain from the 1969-1979 decade.19 This means that some deployed pits may reach 45 years of age in 2014, if the very oldest pits have not already been retired. Each year after 2025 will see increasing numbers of deployed pits exceeding 45 years of age. As U.S. military command authorities apparently see the issue, already, each year that passes only increases the possible need for the large-scale, rapid ‘reconstitution’ of one or more pit types.
There is much more that could be said, but this sketch may suffice to show that it is difficult to argue against establishing a large pit manufacturing capability in the next decade or two, if a U.S. arsenal in the 10,000-weapon range is to be supported over the coming several decades. Since it will take a decade or more to complete such a facility – NNSA estimates 15 years, plus another two years to achieve full-scale production – it is likewise difficult to argue that the initial planning and design for such a facility should not start now, more or less.

To put it another way, if many thousands of nuclear weapons are considered both legitimate and important, Congress will see little downside in preparing the ground for the MPF or its equivalent, conducting the required environmental and citing studies and the conceptual design for the facility. The annual investment required will be relatively modest, as we see in this year’s budget request ($30 million). Relatively small expenditures such as these are typically seen as merely prudent investments, an insurance policy as it were, to avoid a potential national security ‘catastrophe.’ As an aside, it seems to be the reputation of nuclear weapons as supposedly-legitimate ‘absolute weapons’ which lends them near-‘absolute’ political potency in such situations.

Delay is often a good political outcome in such struggles, often the best one can hope for. But any delays in a MPF will only increase the perceived technical need for it, all other things being equal, because the number of years left of absolute surety in pit performance, whatever that number may be for each class or cohort of pits, is declining. Thus “confidence” in the stockpile, as the term is used in U.S. debates, is declining. In the final analysis, the number of years of absolute surety left for each pit or class of pits is unknowable (the ‘absolute’ requirement, again, is inherent in the perceived ‘absolute’ role of the weapons). It is unknowable if for no other reason than because variations in pits as manufactured and deployed are not known and cannot be known in any statistical or inferential sense without dismantling the weapons. To the extent the remaining sure pit life is known, that information is the somewhat-subjective product and property of the weapons laboratories. Therefore each year that passes only increases the putative need for surge production capacity. Since it takes a long time to build such a facility, the very scale and complexity of the project becomes an argument for its capacity. In other words, the scale of the proposed facility justifies itself, given the scale of the arsenal and the ineluctable uncertainties of pit manufacturing and aging.

Downsizing the proposed facility is probably not a realistic political goal. As noted above, the ultimate production rate for a given facility is unknown, preliminary estimates aside. Further, most of the cost of a pit manufacturing plant lies in providing the basic facility itself, and the economies of scale are such that a mere 10% increase in building size can provide twice as much production capacity and flexibility.20

Some have argued that LANL’s TA-55 could substitute for the MPF. From the standpoint of scale and flexibility, it cannot even begin to do so, even if it began maximum production this year (which it assuredly cannot). Therefore any policy dependent upon existing LANL facilities becomes an argument for the rapid and radical expansion of those facilities – a MPF by another name – or for supplementing them with a dedicated single-purpose facility elsewhere, namely the MPF. As mentioned before, the most likely ultimate outcome of such a LANL-based pit policy, given LANL’s poor track record in pit production, a LANL culture that is inimical to large-scale production, and LANL’s expressed lack of interest in large-scale pit production, would be three pit production sites – R&D facilities at LANL and LLNL and production at LANL and a MPF, the former likely providing a special or small-production-run weapon capability.

In the long run, there are no arguments, either weak or strong, against a pit manufacturing capability if there are going to be nuclear weapons with pits. There could, however, also be nuclear weapons without pits, made of highly enriched uranium (HEU).21 Senior weapons scientists have advocated consideration of these weapons for the future stockpile.22

There are arguments for surge production, and hence for an MPF or its equivalent, that are independent of aging. One would be a policy shift in which the Navy sought insensitive high explosive (IHE) for its primaries, citing a renewed interest in safety. Another would be a re-evaluation of the inherent reliability of any primary, suggesting that other, more ‘robust’ primaries might be better if we had them. The replacement warhead design would be described as one that would age more gracefully, was more inherently reliable, and required replacement less often, and so generated less nuclear waste and operational safety problems in the long run. As droll as these arguments are, they might be adequately persuasive.

The Indispensable Argument

In the final analysis, the only safe nuclear weapon is one which does not exist, and the only nuclear weapon which does not have to be replaced eventually is one which the possessor does not want. The only way to fully eliminate the risk of unreliability in aging warheads – the political driver for the MPF – is to retire and dismantle aging warheads. It is only with a much smaller arsenal that the U.S. can avoid building a new pit production facility sooner or later – which, to Congress, means starting the long process of building one now.

Aiming for a much smaller arsenal – which Mr. Bush has already done rhetorically at least in the Moscow Treaty – would ease the immediate pressure for an MPF in a number of ways. First, by decreasing the total eventual production requirement, it postpones the date on which production would need to begin. Second, some of the older primaries could be retired first, stabilizing or lowering the average age of pits in the
stockpile somewhat. Third, in the short run at least, there would be more back-up possibilities for the remaining weapons, since U.S. nuclear weapon physics packages, and components within them, are fairly highly interchangeable. W78s, B61s, W84s, and W80s may all be adaptable to the reentry bodies on Trident -missiles, to take one example.23 Other substitutions are also possible.

How much time for much-needed debate would an order-of-magnitude stockpile cut provide? Only a few years, probably, but those years would be a very precious opportunity. Real debate may occur about the costs of the highly-militarized and highly-nuclearized U.S. global empire. The financial impact, at least, cannot be avoided forever.

If, however, neither the legitimacy nor relevance of nuclear weapons is strongly challenged, no doubt the money will be found, even under conditions of fiscal austerity, not just for the MPF but for all four of these controversial programs.

As far as the MPF is concerned, this is the upshot: if we seek to defeat the MPF on narrow technical grounds, we can win, and not merely-technical arguments that any population can be based, or any common cause created with other issues in society. Merely technical arguments are inherently non-political – even anti-political – and weaken us. We can and must use them, but only as part of a larger context, from which they derive their human meaning and political strength.

Because of all these factors, it seems that the MPF debate is actually a cryptic referendum on the future of the U.S. stockpile and hence on the role of nuclear weapons in the security policy of the United States. We must join this debate, all of us, including and even especially Europeans. The nuclear weapons advocates in the Bush Administration certainly have, and they are so far defining the terms of debate.

If we who are concerned about Mr. Bush’s ‘new nuclearism’ misread the nature of this debate – the debate about the MPF and the other controversial new weapons programs listed above – thinking that what is in question is a separable, specific ‘new’ proposal which can be defeated without questioning the legitimacy of nuclear weapons as a whole, we will be wasting our resources and talents in a losing and lonely struggle. If, on the other hand, we gladly embrace the challenge which Mr. Bush has given us, a challenge to explicitly re-open debate about the legitimacy and importance of nuclear weapons in U.S. security policy, I think we will discover a great many co-operating causes rising in our favor.

The nuclear weapons advocates have made their proposals. What are ours?


4 Nuclear Posture Review, op.cit.


8 Jon Medalia, op.cit., p. 39.


11 The 250 pits/year figure would require two worker shifts, according to NNSA, but is nonetheless inherent in the smallest facility under NNSA consideration.

12 LANL replaced its original plutonium facility (at Technical Area TA-21, “DP Site”) in 1978 with its present TA-55 PP-4 facility, which has 59,600 sq. ft. of DoE ’hazard category I’ plutonium-handling space and supporting facilities. Livermore’s modern-era Superblock facility (Building B332 and ancillary facilities) contains 25,000 sq. ft. of ‘hazard I’ plutonium space, or about 42% of LANL’s. Leaving aside questions regarding the appropriateness of the location, the LLNL facility is more than large enough to produce up to 50 pits/year, if there were no other missions competing for the space and if the facility were supplied with recycled plutonium already ‘cleaned’ of impurities like Am-241. Alternatively, LLNL could provide process development, freeing production equipment at LANL and other sites for actual production. This appears to be the path NNSA has chosen for the present; NNSA proposes to increase the administratively limit for plutonium present in the LLNL Superblock from 700 kg to 1,500 kg and to conduct pit production research and development in that building, among other missions (Draft Site-wide Environmental Impact Statement for Continued Operation of Lawrence Livermore National Laboratory and Supplemental Stockpile Stewardship and Management Programmatic Environmental Impact Statement, February 2004).

13 US Department of Energy, Modern Pit Facility Screening Report; www.mpfeis.com. The ranking scores for the sites were 219,
While the main focus of debate over U.S. nuclear weapons programs has been on warhead upgrades like the Robust Nuclear Earth Penetrator, the Pentagon and its contractors are poised to begin development of a new generation of long-range delivery systems. These range from cheap, versatile missiles to more accurate and maneuverable re-entry systems capable of delivering either conventional or nuclear weapons. Such systems, intended primarily to increase the already formidable U.S. advantage in conventional weapons and to reduce political obstacles to fighting the “small wars” of a global military empire, may in the long run be more dangerous than proposed improvements in nuclear warheads. At the same time, the government is considering options for replacement of the intercontinental ballistic missiles that are core of the U.S. nuclear arsenal, with the goal of “maintaining U.S. qualitative superiority in nuclear warfighting capabilities in the 2020-2040 time frame.”1 New delivery systems for nuclear weapons would involve many of the same technologies, from more maneuverable re-entry vehicles to improvements in guidance systems that would be developed for long-range missiles carrying non-nuclear payloads. These technologies could provide the building blocks for new nuclear capabilities, particularly in combination with warhead modifications now in progress or under consideration.

New or modified nuclear weapons such as the Robust Nuclear Earth Penetrator and weapons with lower yields are intended to make nuclear weapons use more effective for particular missions, such as destruction of deeply buried targets and of chemical and biological agents, and to lower political obstacles to nuclear weapons use by reducing levels of death, destruction, and contamination.2 But significant questions remain about the efficacy of nuclear weapons for such missions, and the taboo against nuclear weapons use, although perhaps weakening among U.S. elites, remains strong in most of the world.3 New types of ballistic missiles, capable of delivering a wide range of conventional weapons from...
the United States at global range with great accuracy, or of being launched in large numbers from forward deployed delivery platforms, would be extremely tempting instruments for the newly articulated U.S. preventive war doctrine. In the eyes of their advocates, such systems allow the rapid application of overwhelming force with impunity from afar, avoiding practical and political obstacles ranging from obtaining basing and overflight rights from U.S. allies growing increasingly uncomfortable with aggressive U.S. policies, to combat casualties that make interventions more difficult to sustain politically at home. Among the “examples of technological advances that might provide the USAF with capabilities that will help overcome or alleviate U.S. domestic constraints” identified by a RAND study were “[h]ighly effective unmanned weapons, such as cheap standoff munitions and space-based assets, that pose no risk of U.S. casualties.”

The push for conventional ballistic missiles with global range is giving added impetus to programs that have been underway for years aimed at modernizing existing strategic ballistic missiles and expanding their roles. After the Cold War, U.S. missile technology research and development continued, although slowed by reduced funding. These programs, however, already were accelerating in the late 1990s, as the contractor and service constituencies of the strategic nuclear forces, the weapons laboratories and their representatives in Congress worked to repackage much of the high-tech Cold War military, including nuclear weapons and their delivery systems, for a new “counterproliferation mission.” These efforts received an enormous boost as virtually all constraints on military budgets were removed following the September 11, 2001, attacks. Programs already in progress to modernize existing missiles and command and control systems received increased funding, and concepts for new systems, including a variety of ideas for global delivery of non-nuclear weapons, quickly became programs.

New and improved ballistic missile systems now proceeding or under consideration include:

- A program to increase the accuracy of the reentry system for the W76 nuclear warhead for Trident submarine launched ballistic missiles (SLBMs). The original W76 system was less accurate than the newer W88 Trident warhead, the most modern deployed nuclear warhead. Together with warhead modifications already underway for the W76, this upgrade likely would increase the ability of the W76 to destroy hard targets such as missile silos.
- A maneuvering re-entry vehicle called the Common Aero Vehicle (CAV) that would glide to the target with considerable ability to maneuver and decelerate and that could carry a variety of conventional weapons of the kind that can be dropped from aircraft. Although only non-nuclear payloads currently are being considered, the CAV could be designed to carry nuclear weapons as well. The CAV is envisioned to be deliverable in a variety of ways: via current or new-design ballistic missiles, and in the future by a “Hypersonic Cruise Vehicle” that would take off and land like an airplane, delivering several CAVs from near space, or by a military space plane or “space operations vehicle” that could deliver CAVs from space.
- New land-based intercontinental ballistic missiles (ICBMs), designed to replace the existing Minuteman III missiles that are the land-based element of the old nuclear “strategic triad.” This program is in its early stages, with contractors being asked for concepts to support an analysis of alternatives, including nuclear ICBMs with new capabilities, such as improved re-entry vehicle maneuverability. The alternatives analysis also will consider a variety of ideas for delivering non-nuclear weapons with ICBMs.
- A new intermediate range ballistic missile to be deployed on submarines, capable of carrying either nuclear or conventional warheads. This program also is in its early stages, with contractors being asked to submit concepts.
- It is impossible to tell in advance which set of new missile concepts will be developed and deployed. What is clear, however, is that the United States government has embarked on an intensive campaign to modernize its strategic arsenal and to obtain significant new capabilities for both nuclear and non-nuclear weapons with global range, great accuracy, and a broad range of options tailored to destroy any target that military contingency planners can imagine. There is considerable overlap among the technologies applicable for many of the new weapons concepts being considered or already underway. Improvements in re-entry system accuracy or maneuvering capabilities limited by policy to non-nuclear weapons applications today could be applied to nuclear weapons systems in the future. These delivery system improvements, furthermore, are proceeding together with upgrades in nuclear warheads and of the entire U.S. apparatus for planning and executing nuclear strikes.

The United States justifies this new round of arms racing as necessary for “counterproliferation” purposes, and essentially has proclaimed that no further progress on its part in meeting its disarmament obligations under Article VI of the Non-Proliferation Treaty is warranted until all threshold nuclear states have chosen or been forced to abandon their nuclear ambitions. It is worth remembering that the United States, Russia, and the United Kingdom all agreed to their obligation to negotiate for “cessation of the arms race at an early date” and for the elimination of their nuclear arsenals in the face of far graver threats: their mutual efforts to target each others’ nuclear forces for destruction. The arms racing dynamic then created military forces capable of ending human civilization in the act of preserving themselves, an insane contradiction that the nuclear weapons states were forced to acknowledge, however grudgingly, in accepting the NPT bargain. Today the same mad logic flourishes once more, springing anew in inverted form from its roots in the massive institutions spawned by the arms race. Because we possess world-destroying arsenals, we ar told, we can and must use them to threaten others who wish to develop equally threatening
increased capabilities articulated in the NPR, such as prompt accurate strike, defeat of critical targets and selective nuclear options.” See Statement of Rear Admiral Charles B. Young, Director, Strategic Systems Programs, before the Strategic Sub-committee of the Senate Armed Services Committee April 8, 2003. The program “is intended to demonstrate a near-term capability to steer a SLBM warhead to Global Positioning Satellite (GPS)-like accuracy,” culminating in flight tests by 2007. See U.S. Navy, RDT&E Budget Item Justification Sheet (R-2 Exhibit), February 2003, PE 20101211N, Strategic Submarine and Weapons Systems Support, Project J0951.

A document distributed on the web to inform potential contractors interested in the September 2003 Air Force Space Command “Request for Information/Initial Delivery Vehicle Concept Call for the next generation Land Based Strategic Deterrent (LBSD) Analysis of Alternatives (AoA)” (hereafter LBSD AoA RFI) stated, for example, that “The Common Aero Vehicle (CAV) is currently a specific conventional-only delivery vehicle with high lift-over-drag characteristics. A high lift-over-drag vehicle can be designed and built that can carry nuclear weapons” (p. 4).

This document, along with the above Request for Information and other relevant documents, have been archived on the Western States Legal Foundation Government Military Space web page, at www.wslfweb.org/space/spacedocs.htm. For more on the Common Aero Vehicle program, see Andrew Lichterman, The Military Space Plane, Conventional ICBM’s, and the Common Aero Vehicle: Overlooked Threats of Weapons Delivered Through or From Space, Western States Legal Foundation Information Bulletin, Fall 2002, www.wslfweb.org/docs/mscav.pdf.


See generally LBSD AoA RFI, LBSD MNS, and Missiles of Empire.


See generally Sliding Towards the Brink, op. cit.

See Statement by Assistant Secretary of State John S. Wolf, Representative of the United States of America to the Second Session of the Preparatory Committee for the 2003 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, April 28, 2003. Wolf stated there that the NPT is “dangerously out of balance,” with too much emphasis on disarmament and not enough on proliferation. He portrayed the Strategic Offensive Reduction Treaty (Moscow Treaty) as sufficient to meet U.S. disarmament goals, despite the fact that the Treaty does not require the destruction of a single warhead or delivery system, and places no limits on qualitative improvements in the thousands of nuclear weapons that will be retained with no end in view.

Clina and France, two of the original five nuclear weapons states, did not join the NPT until the early 1990s.
Space Weapons in US Defense Planning

Jeffrey Lewis

What are the prospects for space weaponization? The question is particularly important as the world approaches what promises to be a bruising 2005 Non-Proliferation Treaty Review Conference (NPT Review). The conference on Disarmament (CD) in Geneva remains deadlocked while the United States reviews its support for the Fissile Material Cutoff Treaty. Although the 2000 NPT Review identified thirteen practical steps to demonstrate good faith in the commitment to pursue disarmament, the declared nuclear powers areunlikely to make progress on these steps before 2005.

Preventing the weaponization of outer space is not explicitly one of the thirteen steps. The vision of expanded military activities in outer space articulated by the Bush Administration, however, draws heavily on the outline of the Nuclear Posture Review and has complicated efforts to build consensus for a work plan in the CD.1

US National Security and Space Policy

The Nuclear Posture Review called for modernizing US strategic forces by adding anti-ballistic missile and conventional long-range strike systems, both of which may include space-based elements. The United States Department of Defense (DoD) typically does not use the term “space weapon” to describe these systems – instead, the DoD divides military space operations into four mission areas:

1. Space control operations provide freedom of action in space for friendly forces while, when directed, denying it to an adversary, and include the broad aspect of protection of US and US allied space systems and negation of adversary space systems.

2. Space force enhancement operations multiply joint force effectiveness by enhancing battlespace awareness and providing needed warfighter support.

3. Space support operations consist of operations that launch, deploy, augment, maintain, sustain, replenish, de-orbit, and recover space forces, including the command and control network configuration for space operations.

4. Space force application would consist of attacks against terrestrial-based targets carried out by military weapons systems operating in or through space. The force application mission area includes anti-ballistic missile (ABM) systems and force projection.2

Of these four mission areas, some of the space control and space force projection missions are what most observers think of as “space weapons.” The publication of several US military documents outlining these capabilities, including the 1998 US Space Command Long Range Plan and the US Air Force’s biennial Strategic Master Plan, have resulted in considerable criticism of the United States, particularly from the Russian Federation and China. Concern over US military activities in outer space has contributed to the deadlock in the CD and may complicate the NPT Review.

Much of the concern centers on suspicion of the motives of the United States. But the actual intentions of the Bush Administration are not clear – the White House ordered a review of the 1996 National Space Policy, but the results regarding national security matters have not been made public. Officially, the Clinton-era National Space Policy (1996) and DoD Directive Space Policy (1999) continue to define US government statements regarding military activities in outer space, with the single exception of ABM systems.3 These policies are reflected in the doctrinal statements and transformation plans outlined by the Joint Chiefs of Staff, service headquarters, and combatant commands (see Table 1).


Table 1: Selected Documents Relating to Space and Transformation

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<thead>
<tr>
<th>White House</th>
<th>DoD</th>
<th>Joint Chiefs of Staff</th>
<th>Air Force</th>
<th>Air Force Space Command</th>
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Table 1: Selected Documents Relating to Space and Transformation


that one of the biggest threats to future space capability may be the unintended consequences of well-intentioned people signing up to certain treaties and restrictions today that in and of themselves seem to be very innocent,” General Ronald Fogelman (USAF, Ret) noted. “And as you go down the road, they could end up tying our hands in ways that would very much limit our ability to continue to be dominant.”

Broad policy documents, from the National Space Policy down to the Air Force Transformation Flight Plan, do not, however, indicate which programs will survive the thicket of political, technological, and budgetary hurdles. For example, Air Force Space Command (AFSPC) published an analysis, represented in Figure 1, that “depicts what resources would be required to acquire all the capabilities for which AFSPC is responsible in the timeframes desired by the warfighter” against an estimate of available resources – total obligation authority (TOA).5 “AFSPC TOA is inadequate,” Air Force Space Command concluded that the requirements are “un-executable.”6

Documents such as the Strategic Master Plan and Transformation Flight Plan are, in fact, largely wish lists designed for the budgeting process. The requirements set by such documents are typically optimistic and subject to alteration, particularly by the US Congress. Identifying the programs likely to reach operational testing and deployment requires a careful examination of the documents produced to support the President’s annual budget request and the authorization and appropriations bills passed by Congress.

Of the many force projection and space control programs, which are the most likely to be tested and deployed in the next few years? Based on an analysis of the fiscal year (FY) 2004 and 2005 Budget Requests, the two most important programs, for opponents of space weaponization, are space-based ABM systems and micro-satellites capable of autonomous proximity operations.7

**Force Projection and Space-Based ABM Systems**

Pentagon plans for space-based force projection are largely space-based ABM programs. The Pentagon does have active research programs to develop hypersonic vehicles and space-based kinetic energy weapons called hypervelocity rod bundles. Hypersonic vehicle concepts, however, are currently being designed to transit space – although there are longer term plans for Space Operations and Space Maneuver Vehicles that would allow on-orbit basing of hypervelocity rod bundles and the Common Aero Vehicle, a hypersonic glide vehicle.

In the near-term, space-based force projection platforms are likely to appear in the form of space-based ABM interceptors to enhance the Ballistic Missile Defense System (BMDS), which will stand-up in Alaska by the end of this year. In December 2002, President George W. Bush indicated that the US would continue the “development and testing of space-based defenses, specifically space-based kinetic energy (hit to kill) interceptors and advanced target tracking satellites.”8

The FY 2004 Budget Request anticipated a major effort to research these technologies, including the creation of a space-based ABM test bed starting in 2008. After substantial Congressional resistance during the authorization and appropriations process, the FY 2005 Budget Request has substantially fewer funds dedicated to space-based missile defenses, but several programs remain.

The principle program that supports space-based interceptors is the BMDS Interceptor program – a boost-phase kinetic energy interceptor which is intended to be based on land, at sea, and in space. In FY 2004, Congress reduced the line item for

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**Figure 1: Air Force Command Required and Available Resources.** The heavy gray line depicts anticipated total obligation authority (available resources). Source: Air Force Space Command, Strategic Master Plan FY06 and Beyond, October 1, 2008, p. 13.
BMDS Interceptors by $182.0 million and ordered the Missile Defense Agency (MDA) to focus on land- and sea-basing modes, rather than space. Consequently, MDA has shifted most of the funding for the space-based component of the BMDS Interceptor program into the land and sea components. However, the FY 2005 budget request contains some funding for two space-based boost-phase-related activities.

- **$68.0 million for the Near Field Infra Red Experiment (NFIRE) satellite, funded as “Experimentation & Test.”** NFIRE, scheduled to launch during early 2006, is a risk reduction effort for the space-based interceptor. The satellite will collect data on the characteristics of missile plumes and hard bodies outside the atmosphere, as well space and earth horizon backgrounds. MDA will conduct two missile “fly-bys” to allow NFIRE “a close-up view of a burning ICBM at conditions that are truly real world.” During the second test, NFIRE will simulate an engagement by launching “a kill vehicle for a fly-by of a burning missile.” MDA is not attempting to hit the ballistic missile and the kill vehicle lacks an axial stage that would allow it to conduct engagements in real world conditions. The NFIRE was originally scheduled for launch in June 2004. However, after Congress cut BMDS Interceptors and ordered MDA to focus its efforts on ground-based interceptor programs, MDA reprogrammed about $37.5 of the $82 million identified for NFIRE and slipped the launch date to early 2006.

- **$10.5 million for Space-Based Interceptor Test Bed activities.** The funding is intended to initiate technology development and testing of advanced, lightweight space-based interceptor components including development of a liquid axial stage and reductions in kill vehicle (KV) and lifejacket weight. This is substantially less than the $119.5 million that MDA originally intended to request for FY 2005.

MDA also conducts a substantial amount of research that could support future space-based efforts in the Ballistic Missile Defense Technology program, which funds the development of new component technologies and innovative concepts that can be integrated into future Block improvements of the BMDS system. All of the research efforts have been consolidated under a single project, Advanced Technology Development, which contains efforts such as Sensing Systems Technologies, Engagements Systems Technologies (including the Multiple Kill Vehicle program) and the High Altitude Airship.

- **Sensing Systems Technologies** is a $72.1 million effort that includes an unspecified amount for a micro-satellite program to investigate “small satellite concepts, payloads, and applications for future BMDS technology demonstrations and test assets.” In 2003, MDA awarded California-based SpaceDev an $800,000 contract “to design three formation-flying microsatellites” as an alternative to the Space-Based Tracking and Surveillance System (STSS) designed to track missiles in boost phase.

- **Engagement Systems Technologies** is an $85.4 million effort that includes an unspecified amount for the Multiple (formerly Miniature) Kill Vehicle (MKV) program. MDA hopes to use as many as twelve MKVs on a single ground-based interceptor to provide multiple intercept opportunities in the mid-course of a ballistic missile’s flight. MDA is reportedly exploring other basing modes, including sea-based.

Remaining work on the Space-Based Laser (SBL) program, which was canceled in 2002, has been shifted into the Advanced Technology Development Project. Although MDA is soliciting proposals from the laser and electro-optics industry that could revive the SBL, MDA appears to be focusing on using lasers to improve tracking, weapon guidance, and imaging. MDA is decommissioning the Lockheed Martin facility in California where integrated ground tests of the high-power laser and optical subsystems were conducted.

### Space Control and Autonomous Proximity Operations

In the near-term, the Pentagon is focusing on reversible measures to control space, including a pair of ground-based systems to temporarily interfere with communications and reconnaissance satellites. The Counter Satellite Communications System is a mobile system “intended to disrupt satellite-based communications used by an enemy for military [command, control and communications],” while the Counter Surveillance Reconnaissance System, currently in the initial design phase, will impair reconnaissance satellites with “reversible, non-damaging effects.” These two systems are expected to reach initial operating capability in 2004 and 2007, respectively.

The Pentagon has a range of destructive anti-satellite programs in various states of completion, including the moth-balled Kinetic Energy Anti-Satellite (KE ASAT) program, which program officers believe they could demonstrate on orbit for about $60 million, as well as an air-launched anti-satellite missile. The arms control community should monitor the development of these systems, but — for the time being — they are not serious threats unless the Bush Administration decides to conduct a KE ASAT test for purely political purposes.

The most serious prospect for the weaponization of space is from progressively smaller satellites capable of autonomous proximity operations — orbital maneuvers that would allow satellites to inspect other satellites, diagnose malfunctions and provide on-orbit servicing. Such satellites could also provide sophisticated surveillance in space and would make excellent anti-satellite weapons.

In fact, the Defense Technology Area Plan (2000) called for “the development of micro-satellite vehicles with significant capability” including the ability to “conduct missions such as diagnostic inspection of malfunctioning satellites through autonomous guidance, rendezvous, and even docking techniques.” Future demonstration missions are planned by NASA, DARPA and the Air Force (see Table 2).

NASA’s Demonstration of Autonomous Rendezvous Technology (DART) is an advanced flight demonstrator scheduled for launch in 2004. Once in orbit, the DART satellite will rendezvous with a DoD communic-
tions satellite and perform several autonomous rendezvous and close proximity operations, such as moving toward and away from the satellite using navigation data provided by an advanced video guidance (AVG) sensor and other on-board sensors. Orbital’s contract for DART is valued at $47 million.

The Air Force’s Experimental Spacecraft System (XSS) is a series of Air Force Research Laboratory satellites designed to demonstrate imaging applications of proximity operations. The most recent satellite, the XSS-10, was launched in 2003. That satellite maneuvered to within 35 meters of an expended Delta II rocket body, transmitting digital images, and conducted a number of other on orbit maneuvers for twenty-four hours before completing its mission; the next satellite in the series, the XSS-11, is schedule for launch this year. Unlike the XSS-10, the XSS-11 will remain in orbit for a year and conduct close-proximity operations to multiple targets of opportunity. The USAF requested $18.6 million in FY 2005 for the XSS micro-satellites. Lockheed’s contract for the XSS-11 is valued at $21 million.

DARPA’s Orbital Express will demonstrate the feasibility of using automated spacecraft to refuel, upgrade, and extend the life of on-orbit spacecraft. Boeing is building two satellites – the Autonomous Space Transport Robotic Operations satellite (ASTRO) and a surrogate next generation serviceable satellite (NEXTSat) – for an on-orbit demonstration of autonomous satellite servicing set for launch in March 2006. DARPA is spending $56.6 million in FY 2005 on its Orbital Express program. Boeing’s contract for ASTRO and NEXTSat are valued at $113 million.

There may be other research into autonomous proximity operations at the classified level. At least one Air Force classified small- or micro-satellite is schedule to launch on a Minotaur launch vehicle in 2005; its function is unknown.

Although none of these satellites is a dedicated anti-satellite system, each has that capability. As the head of the Air Force XSS program told Space News: “You can’t closely inspect a vehicle – say, one with an on-orbit malfunction – without getting ‘close’ and approaching from the right angle. To refuel, obviously you’d have to get more than close, and ‘dock’ with the vehicle.”

The three programs are already contributing to an innocuous “anti-satellite” mission of sorts: NASA is planning to launch an autonomous “space tug” in 2006, using technology from DART, XSS and ASTRO, to de-orbit the Hubble Space Telescope. “We actually think that having these programs that are funded right now to look at aspects of this issue are really going to be a great help,” noted one NASA official. The same might be said by Air Force Officials, one of whom told Space News that the “XSS-11 can be used as an ASAT weapon.” In fact, the “single strongest recommendation” of the Air Force’s 1999 Microsatellite Technology and Requirements Study, was “the deployment, as rapidly as possible, of XSS-10-based satellites to intercept, image and, if needed, take action against a target satellite” based on technology from the Army’s Kinetic Energy Anti-Satellite program. The XSS-11 is a pathfinder for the notional “microsat payload imager,” outlined in the Air Force Space Command Strategic Master Plan FY02 and Beyond, and the “flexible orbit counter-meter resolution, which SSTL hoped to use as a demonstration of the possible applications of a constellation of remote sensing micro-satellites for natural disaster monitoring and mitigation. The second satellite, SNAP-1, built by SSTL alone, was designed to conduct a proximity operations near TsinghuaSat-1. SNAP-1 successfully maneuvered to within 9 meters of the Chinese satellite, transmitting a digital image.

Despite the innocuous mission and relatively limited capabilities of TsinghuaSat-1, the DoD identified it as evidence that China is developing “parasitic microsatellites” for use as anti-satellite weapons. In addition to concern that the Chinese were developing micro-satellites, the DoD may also have been concerned about Chinese affiliation with a project involving proximity maneuvers; the launch of a Chinese micro-satellite with the capability of SNAP-1, let alone the XSS-11 or DART, would generate intense concern in many quarters of the United States. If the Chinese were to conduct a proximity maneuver near a US satellite, the reaction would be apoplectic.

<table>
<thead>
<tr>
<th>Satellite</th>
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<td>DARPA</td>
<td>Boeing</td>
<td>Mar. 2006</td>
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Table 2: Upcoming Autonomous Proximity Demonstrations. Sources: See endnotes 17-26.
Absent a legal regime to establish ground-rules for inspections and other proximity operations, serious incidents are possible: In July 1993, the US Navy stopped and inspected a Chinese ship, the Yinhe, which the CIA claimed was carrying chemical weapons precursors to Iran. The inspection found no chemical weapons precursors, but the incident was, briefly, a serious issue in the US-China relationship. Is an Yinhe-type incident possible in outer space? Already, some proponents of micro-satellites are proposing that the United States develop a micro-satellite “space guard” force, analogous to the Coast Guard, to patrol low earth and geostationary orbit.22 Although proponents point to the stabilizing effect of the US Navy in combating piracy, there is a plausible case to be made that such efforts may stimulate other states to pursue micro-satellites and other anti-satellite capabilities — since a space-guard force could just as easily be used to deny other states the ability to operate in outer space.

An INCSPACE agreement, or a set of “rules of the road,” may be more politically palatable in the United States than an agreement designed explicitly to constrain US military capabilities. Recently, the United States Congress approved a pilot program to sell US satellite tracking data to foreign and commercial entities, “consistent with the best interests of national security.” An agreement about “rules of the road” would, in my view, provide a more comprehensive definition of the United States’ national interest — a definition that encompasses the common interest of all countries in preserving the orbital environment and promoting international cooperation in preserving the interest of all states in the use of outer space for peaceful purposes.

The author would like to thank the John D. and Catherine T. MacArthur Foundation for its generous support.

Conclusion

Regulating space-based ABM interceptors and micro-satellite proximity operations will be difficult. The Bush Administration, in abandoning the ABM Treaty, clearly stated that it desires the freedom of action to develop an open-ended missile defense architecture that will eventually include space-based elements. Micro-satellites are inherently dual-use, greatly complicating any anticipated restrictions. At the same time, many members of Congress, including many moderate Republicans, are uncomfortable about space-based ABM and anti-satellite capabilities. It was, in fact, a Republican Congress that substantially reduced funding for space-based interceptors. Perhaps one solution is to focus on operational restrictions to prevent provocative maneuvers in orbit or military activities that create debris. Michael Krepon has suggested an “Incidents in Space” (INCSPACE) agreement modeled on the 1972 Incidents at Sea Agreement.33 Others have suggested similar “rules of the road” agreements for space operations.


2 These definitions are drawn from: US Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Publication 3-14, August 9, 2002; pp. IV-1 to IV-10; www.dtic.mil/doctrine/jel/new_pubs/pj3_14.pdf.


5 Total obligation authority (TOA) is the value of programs regardless of financing, i.e. TOA may include funds appropriated by Congress, proceeds from the sale of items or money available from prior years; budget authority is the value of the annual new authority to incur obligations. A helpful glossary is located at: The Money speak-to-English Dictionary, American Forces Press Service; www.defenselink.mil/news/Feb1999/n20031999_9992034.html.


10 Missile Defense Agency, Exhibit R-2 (PE 063886C) 5; www.defenselink.mil/comptroller/defbudget/ty2005/budget_justification/pdfs/rdtandma/MDA.pdf. An R2, or detailed program summary, is a budget document that contains basic information about funding levels and work activities.


14 Kerry Gildea, Possible Funding Boost In FY ’04 Budget Could Lead To KE-ASAT Flight Test, Defense Daily, December 17, 2002.


Europe – the Leading Space Power?

Regina Hagen

“On the global space scene, the most striking development is the ongoing revision of US space policy,” the Director General of the European Space Agency (ESA) observed. In his view, the increasing pace of US military space activities, together with the expansion of the European Union (EU), the implementation of a European Security and Defense Policy, increased security requirements, and the important role space technology plays for many different users, forces the ESA to re-define its role. This means that in the future ESA is to contribute to European “defense and security.”

This move is somewhat astonishing for an organization that just a few years ago vehemently denied any cooperation with the military, emphatically rejected any reference to the “dual use” of space technology, and by its Constitution is confined to work “for exclusively peaceful purposes.”

ESA could consider such re-orientation only in the light of several policy decisions of the EU, such as the commitment to a Common Foreign and Security Policy (CFSP) in the Maastricht Treaty in 1993, the definition of the so-called Petersberg Tasks by the Heads of State and Government of the Western European Union (WEU) at their meeting at Petersberg/Bonn in the same year, and finally by the agreement on an outline for a European Security and Defense Policy (ESDP) in 2000.

Since then, “peaceful” does not necessarily mean “peaceful” in the European Union. Thus, for example, in addition to “humanitarian and rescue tasks,” the Draft European Convention lists “tasks of combat forces in crisis management, including peace-making” among the Petersberg tasks. That development fits in very well with the ideas of some ESA leaders. Space proved a difficult environment in the past years. Due to the economic crisis, public investments were restricted forcing the cancellation of several space research projects. Some large commercial projects also fell through, with major repercussions for the space industry.

Under these circumstances, “military globalization” is seen as an opportunity. The national armies in Europe are not equipped for combat missions between the Atlantic Ocean and the Far East. As in other areas, they fall short of US capabilities for reconnaissance, fast and secure communication, and reliable time control and positioning.

A New Chapter of European Spaceflight

Satellites play a key role in such capabilities – and with them the ESA. In past years and in the course of many meetings, the European Space Agency and the European Commission have staked out a new partnership. While doing so, the taboo of military tasks for ESA has eroded rapidly.

In a joint Communication from the Commission to the Council and the European Parliament – Europe and Space: Turning a New Chapter, the new partners concluded: “Space presents a security dimension, which has thus far only been dealt with, at European level, in the context of the WEU. The forthcoming integration of the WEU into the EU and the new steps taken at the European Summit in Helsinki towards the development of a Common European Security and Defense Policy (CESDP) are prompting the European Union to take space capabilities into account, for instance in decision-making for the planning and monitoring of the Petersberg Tasks (conflict prevention and crisis management).” The paper proposes to build a satellite-based information network in order “to fulfill governmental and political needs such as defence…”

Jeffrey Lewis is a graduate research fellow at the Center for International and Security Studies at the University of Maryland, College Park (CISSM); School of Public Affairs, 2101 Van Munching Hall, College Park, MD 20742, USA, tel. +1-301-405 75 53, lewisj@umd.edu.
the evolution of the European Space Agency.” Carl Bildt (former Swedish Prime Minister), Jean Peyrelevade (President of Crédit Lyonnaise), and Lothar Späth (CEO of Jenoptik) developed a set of recommendations. Their report Towards a Space Agency for the European Union saw “it as logical to use the capabilities of ESA also for the development of the more security-oriented aspects of the European Space Policy. As the efforts of the European Union in these fields are geared to the so-called Petersberg tasks …, we do not see any problem with the Convention of ESA.”

Meanwhile, a charm offensive aimed to reframe European space development in a new way that would make military space technologies seem natural and necessary “Security” and “defense” are now covered by the concept of “utilitarian” activities: developing space systems to support public services … for the benefit of citizens. Suddenly, the “military” concept previously rejected has been given a positive meaning, and the boundaries of the ESA Constitution, while formally unchanged, had been redrawn to include it.

An “international report” on space and security policy in Europe, issued in autumn 2003, starts out by stating that “Space is a strategic asset.” The report contends that “The development of dual-use technologies calls for a ‘European’ approach to space security, linking the present national defence programs with mainly civilian European programs.” Consistent with this finding, a native European Space Policy Institute has been founded in Vienna in order to “initiate, support and promote political and societal debate to raise the public awareness of the importance of space-based infrastructures and services.”

For the time being, the re-definition of European space policy came to end in the Framework Agreement between the European Community and the European Space Agency of October 2003 and the so-called “White Paper” of November 2003. After an allegedly open public discussion, in reality conducted in closed workshops and completely ignored by the media, an “Action Plan (Europe Space Programme)” including a list of recommended actions for the implementation of the European Space Policy was formulated. The document’s drafters encouraged Europe to take the military space discussion to the next level, representing it as “The Opportunity: To supplement existing space-based capabilities in Europe and examine new ones needed for establishing a credible security capability with high EU added value.”

The Example of Galileo: a Transatlantic Struggle for Power

All documents quoted above mention two systems to make the case: GMES and Galileo. GMES is more of a European initiative than a full-fledged project. Global Monitoring for Environment and Security was launched in 2000 as “a joint endeavor by ESA and the European Commission to establish an independent capability for global monitoring, in support of European environment and security goals. GMES is envisioned as a complete decision-support system…” By 2008, the system is to link research and earth observation satellites so that satellite data and intelligence derived from it can be used by policy makers. Experience with the system will also play a role in “influencing the design of future European satellite systems.”

Galileo is a good example of the problems that result from the military orientation of European space policy. Originally planned as a strictly civilian system – and as such promoted by the European decision-making bodies, Galileo is a system of 30 global navigation satellites. Slated to be available by 2008, Galileo is to provide real-time navigation, timing, and positioning signals for a wide range of applications. Uses range from fully automatic airplane landing, railway control, fisheries, and oil prospecting to positioning for mountain hikers.

Reports on Galileo usually withhold information about its dual-use capability. Satellite navigation can be used for the precise targeting of missiles and bombs. Remote control of unmanned aerial vehicles is inconceivable without such help. The military also uses satellite-based global positioning data to locate its troops precisely on the battlefield. Up to now, the main source of such information has been the Global Positioning System (GPS), a system developed, maintained, and operated by the US Department of Defense. Galileo promised European independence in this field.

The possibility that an independent provider of this key capability could emerge is precisely what brought the US into the arena. A British scholar once observed that “To the US military, any space programme it does not control is a challenge to its formal policy of dominating space militarily.” Determined to preserve its dominance and to protect its own aerospace industry, Washington insisted on “discussions.” When it became clear that Europe would not do without, the two sides engaged in lengthy negotiations on precision, frequency, and the right to turn the system off. In the end, the Europeans were the losers. Far from guaranteeing Europe’s independence from the US, the new system will now transmit its signals for civilian use on less suitable frequencies with lower precision than originally planned. In addition, the US reserved the option to jam the signals in a crisis after “discussion” with the Europeans. Accordingly, signal usability for both industry and commercial users will be uncertain and the budgeted investments – up to euro 3.6 billion – may be a terrible waste of money.

Galileo raises other issues as well. International co-operation is a high priority for Europe. Co-operation agreements have been signed with China and India, raising arms control questions. The US have already made clear that they will closely observe any technology transfer to China, reserving an option to prevent transfer of technologies it considers sensitive.

The agreements with India preclude transmission of encrypted signals for security and military applications from the outset. India took also has negotiated a parallel agreement with the Russian Federation for the civilian and military use of Russia’s Glonass system. Glonass has been troubled with failures in the past. Un-
under the new agreement, 8–9 new Glonass satellites are to be launched with Indian support, in order to bring the system back to full operability. Thus the arms spiral is being renewed.

**European – And National, Too**

In Germany, the military use of space will not be limited to GMES and Galileo.

SAR-Lupe (meaning “synthetic aperture radar – magnifying glass”) is Germany’s first satellite-based reconnaissance system. The procurement decision was taken against the background of national space reconnaissance capabilities found to be non-existent during the Yugoslavia war. The prime contractor is OHB-System (Bremen), in which the French military company Thales holds a majority stake. To be completed in 2007, the system will consist of five identical small satellites that deliver highly detailed radar images on a 24-hour basis for the German Armed Forces. According to German Defense Minister Peter Struck, the system will meet “military requirements … for worldwide coverage.” Implementation of this project is “at the same time a prerequisite for participation in a joint European space-based reconnaissance system, to which the partners contribute systems with different sensors.”

The French contribution, for example, consists of its military optical Helios satellites.

After several failed bi- and trilateral projects, SATCOMBw (German Armed Forces satellite communication) is a new German attempt to provide a satellite-based military communication system “within and for remote operation areas.” Phase I has already been implemented and uses civilian satellite capacities to provide communication networks for out-of-area operations – among others in Afghanistan. In phase 2, data will be transmitted via dedicated military communication satellites. A total of 935 million euros is budgeted through 2013.

**Problems, Drivers, and Arms Races**

The military re-orientation of space policy confronts both ESA and the European Union with several problems. Although ESA and EU membership are almost identical, Switzerland and Norway are members of ESA but not of the EU. ESA’s integration into ESDP and CFSP and therefore into European military planning is likely to be problematic for the neutral Swiss confederation. EU countries Greece and Luxembourg recently have acceded to ESA, but this will not (yet) be true for new EU members after the May 1, 2004, extension round.

When it comes to a policy of peace, however, the real problem lies in the fact that the massive military use of space technology by the US and their explicit intention to dominate space militarily and to deploy weapons in space to that end, is on the verge of sparking a global space arms race. Even the ESA Director General takes the US military as a yardstick for European space capabilities: “The US Air Force, the executive agent of the American DoD [Department of Defense], will continuously increase its role in space and will, if the present focus in defence is maintained, be the world’s premier space agency.”

Rather than joining together to stop this emerging arms competition, Europe apparently is gearing up to join the race. The old arms racing dynamic appears to be reasserting itself: Where technical feasibility and financial means permit, technical developments by one country are copied by other countries or power blocs, with little apparent thought about the long-term consequences.

In this case, US space dominance, US unwillingness to share information with its allies, and the striving for military independence result in a European desire to make space technology better available for the European military arsenals. As in the US, this will increase European military dependence on satellite systems. From here it is only a small step to fears that space systems might become a key “asset” that could be targeted by an adversary – and to the decision to deploy space weapons to. That’s a vicious circle with no way out in sight.

Jean-Jacques Dordain has been Director General since July 2003.

1 ESA Strategy Department, Agenda 2007 – A Document by the ESA Director General, Noordwijk, Oktober 2003; http://esamultimedia.esa.int/docs/BR-213.pdf.


4 Towards a Space Agency for the European Union, Report by Carl Bildt, Jean Peyrefitte, Lothar Späth to the ESA Director General, presented in Paris on November 9, 2000; http://esamultimedia.esa.int/docs/anex2_wisemen.pdf.

5 ESA Strategy Department, op.cit.


10 ESA website: GMES: global intelligence for Europe; update on April 1, 2004; www.esa.int/esaSA/SEMHPYV1SD_earth_0.html.


13 Satellitenkommunikation für die Deutsche Bundeswehr – an interview with German Defense Minister Dr. Peter Struck, Raumfahrt Conrect 4+5/2003.


15 ESA Strategy Department, op.cit.

Regina Hagen is INESAP Coordinator; inesap@hrzpub.tu-darmstadt.de.
NATO Nuclear Doctrine and the NPT
A Dangerous Contradiction

Karel Koster

There is a peculiar ambiguity in the NATO defence doctrine. Sixteen of the nineteen member states of NATO are defined as being ‘non-nuclear weapons states’ in the Non-Proliferation Treaty (NPT). At the same time they belong to an alliance that regards nuclear deterrence as a key part of its military doctrine. This contradiction has long exerted a negative influence over attempts by the international community to take serious steps towards nuclear disarmament. Criticism of the 1998 Indian and Pakistan nuclear tests; the active support of the war against Iraq by European NATO member states on the basis of the alleged presence of weapons of mass destruction; the diplomatic offensive directed against Libya, Iran, and North Korea, supported by NATO non-nuclear-weapon states – all these political manoeuvres highlighted the obvious contradiction between relying on a nuclear deterrent on the one hand and condemning its adoption by any other state on the other.

The ambiguity came to the fore at the NATO summit held in April 1999 in Washington D.C. In the Strategic Concept adopted at that summit, paragraphs 62 and 63 reafirmed the “essential role” played by the “nuclear forces of the Allies.”

At the same time, a Summit Communiqué was released, in which an opening was created for an evaluation of NATO nuclear policy. Paragraph 32 states: “All Allies are States Parties to the central treaties related to disarmament and non-proliferation of weapons of mass destruction, the Nuclear Non-Proliferation Treaty, the Biological and Toxin Weapons Convention and the Chemical Weapons Convention, and are committed to the full implementation of these treaties.” A year later, the so-called “paragraph 32 report” reafirmed the contradiction: Section 4.2.1, paragraph 72 says: “To protect peace and to prevent war or any kind of coercion, the Alliance will maintain for the foreseeable future an appropriate mix of nuclear and conventional forces based in Europe and kept up to date where necessary, although at a minimum sufficient level.” And paragraph 103 states: “As States Parties to the Non-Proliferation Treaty, all Allies are committed to and will continue to pursue vigorously the principles and objectives of the NPT as the cornerstone of the nuclear non-proliferation regime and the essential foundation for the pursuit of nuclear disarmament.”

There is, thus, a clear contradiction concerning nuclear strategy within the Alliance. Official opposition to existing policy was first formulated publicly by the German and Canadian Foreign Ministers in the second half of 1998. Fischer argued for a No First Use clause to be included in NATO’s new Strategic Concept, while Axworthy called for “new initiatives” and “new thinking” to resolve the “evident tension between what NATO allies say about proliferation and what we do about disarmament.” Although the new Strategic Concept did not go as far as either Minister urged, the Communiciqué language quoted above highlights at least a degree of hesitation and reflectiveness in NATO circles over its nuclear posture.

NATO’s Nuclear Infrastructure and Arrangements

NATO not only underwrites a nuclear strategy, it also has access to the wherewithal to implement it. The British and French ballistic missile submarine fleets “contribute to the overall deterrence and security of the Allies.” Four US Navy Trident submarines are assigned to the NATO Supreme Allied Commander Europe (SACEUR) and, most significantly, the aircraft of six member states are equipped to deliver air-launched free-falling nuclear bombs. Of especial political importance is the status of these bombs and the weapons systems used to deliver them. While the French, British, and US submarine-launched ballistic missiles (SLBMs) are under the respective national control of the nuclear weapons states, the gravity bombs made available to the NATO planners have a status all their own. 180 nuclear bombs are stored at as many as 15 airfields in Belgium, Germany, Italy, Netherlands, Turkey, Greece, and the UK. They are in fact American, while designated for use not only by US aircraft, but also by the air forces of the six non-nuclear weapons NATO states mentioned above.

It is this particular status which lies at the root of much discussion concerning the NATO nuclear ‘umbrella’ and the Alliance’s collective obligation under the NPT. The fact is that these bombs are available for use in case NATO as a whole should go to war. In such an eventuality, the bombs would be dropped on their targets by aircraft flown by NATO pilots, in accordance with plans and using tactics developed by NATO staff.

In view of this clear involvement of the non-nuclear weapons member states of the Atlantic Alliance, two key questions arise:

- Under which conditions will the NATO nuclear weapons be used?
- Is such use in accordance with the NPT and other international commitments signed by the NATO member states?

NATO First Use

According to well informed sources, a revised version of a classified NATO
document (MC 400/2) describing the Alliance’s military doctrine – the translation of the Strategic Concept into operational terms – apparently retains the possibility that nuclear weapons could be used against states armed with biological or chemical weapons, even if they have signed the NPT. This document was unanimously adopted at the North Atlantic Council on May 16, 2000, after the Military Committee had agreed to it on February 7.7 That is, NATO doctrine allows the North Atlantic Council to advise its members to use nuclear weapons against states using, threatening to use, or even simply possessing weapons of mass destruction. Luke Hill, at that time Brussels correspondent of the US-based Defense News, quotes one NATO official as stating that nuclear weapons “are our only weapons of mass destruction. Nuclear weapons could constitute, in case there is a threat against NATO or any member through (weapons of mass destruction, including biological and chemical), the only deterrent we have.”7a

Such a policy bears a not altogether incidental similarity to that adopted in 1996 by the US Joint Chiefs of Staff, which allows for nuclear strikes against states or even “actors” using or preparing to use weapons of mass destruction against US targets.8

NPT Obligations

According to paragraphs I and II of the Non-Proliferation Treaty, nuclear weapons may not be transferred or received by the signatories.9 So if the procedure followed in wartime actually transferred nuclear weapons to the ‘sharing’ state, it would be illegal. Officials of the states concerned counter this reasoning in a number of ways.

According to one line of argument, an exception for paragraphs I and II was created when the treaty was being negotiated in 1968, based on the contention that the prohibitions were designed to define normal peacetime practice and would not apply to conditions of general war. Such a line was followed, for example, by the Belgian Minister of Foreign Affairs Louis Michel on May 11, 2000. Asked in Parliament about the legality of NATO attacking states armed with WMD, he replied that the NPT “does not apply in time of war. According to the Vienna Convention arms-related treaties or treaties with such implications are suspended in time of war.”10 Amazingly, however, then-Dutch Minister of Foreign Affairs Jozias van Aartsen, when asked the same question in June 2000, took issue with his Belgian colleague: “I disagree with this statement. There has also been an exchange of opinions about this with Belgium at civil servant level. In the opinion of the Government there is no question of a violation of the Non-Proliferation Treaty, not even in time of war.”11 Dutch diplomats at the NPT Review Conference in 2000 also insisted both that the NPT would remain valid in time of war and that Articles I and II would not be violated by NATO during any conflict, as there would be no question of transferring control of the nuclear weapons to the sharer states. The pilot, plane, and nuclear device would be under the command of SACEUR, who, not unimportantly, is always an American. By means of this structure, there would be no transfer to another entity at all: neither NATO nor the NATO allied pilot would control the bomb.

Negative Security Assurances

This somewhat convoluted logic is also applied to the ‘negative security assurances’ (NSAs) given to NPT members. When the Treaty was extended indefinitely in 1995, this was a question of vital importance. The member states, in exchange for repudiating in perpetuity any intention to develop nuclear weapons, demanded that the nuclear weapons states would guarantee that they will never attack them with nuclear weapons. In UN Security Council resolution 984 (1995), such guarantees were apparently given. However, official documents published by the Russian and US Governments call the pledges into question. On January 10, 2000 the Russian Federation officially reaffirmed the ‘first strike’ option it had first adopted in 1993.12 The US Joint Chiefs of Staff document from 1996 stated that “offensive operations against enemy WMD and their delivery systems should be undertaken once hostilities become inevitable or commence.”13

The Nuclear Posture Review presented to the US Congress at the end of 2001 in combination with the National Strategy to Combat Weapons of Mass Destruction (December 2002) reaffirmed this basic tenet of US strategic offensive doctrine.14

Of course, NATO nuclear doctrine is not the same as that of the US. Historically, however, US nuclear doctrine has tended to be adopted by NATO. After all, the ‘shared’ nuclear weapons are American. There is even a paragraph in the Nuclear Posture Review that directly refers to NATO nuclear doctrine.15

And the June 2002 NATO Nuclear Planning Group Communiqué adopted ministerial “guidance to further adapt NATO’s dual-capable aircraft posture.”16

Furthermore, NATO itself did not officially adopt the negative security assurances given in resolution 984. This was explained by The German Minister of Foreign Affairs van Aartsen as follows: “There is no question of a contradiction between the relevant NATO policy and the negative security assurances provided by the nuclear weapons states. This is because decisions about the use of nuclear weapons are the responsibility of the nuclear weapons states and not NATO. The nuclear weapons states are committed to the NSAs which they have themselves given.”17 Van Aartsen also expressed agreement with the opinion of his Danish counterpart, Niels Helveg Petersen, that the NPT does not prohibit the use of nuclear weapons against states armed with biological and nuclear weapons.18

Criticism of NATO Nuclear Policy

Such reasoning has a distinctly evasive and theological air, a quality which has not gone unremarked on by NPT states. In a Working Paper
presented at the 1998 NPT Preparatory Committee (PrepCom), the Non-Aligned Movement (NAM), representing 113 States Parties, called on the nuclear weapon states “to refrain from nuclear sharing with nuclear weapons States, non-nuclear weapons states and States not party to the Treaty for military purposes under any kind of security arrangements.” 20 At the 1999 PrepCom, Egypt explicitly attacked NATO nuclear ‘sharing’ procedures: “Neither Article I nor Article II suffer any exceptions. Notwithstanding the clear and unambiguous nature of articles I & II of the NPT, NATO’s so-called ‘nuclear sharing’ arrangements and its concepts regarding nuclear deterrence … raise significant doubts over the extent of compliance of some NATO members with the provisions of both these articles…” 21

A widely shared concern has been that NATO expansion will increase the number of states involved in the Alliance’s nuclear structure. As South Africa argued at the 1997 PrepCom: “The planned expansion of NATO would entail an increase in the number of non-nuclear weapon states which participate in nuclear training… [and] which [would] have an element of nuclear deterrence in their defence policies.” 21 Although no nuclear weapons are stationed on the territory of Poland, Hungary or the Czech Republic, they, like all NATO member states except France, are involved in the planning arrangements for the use of the nuclear weapons in time of war. Neither has NATO given cast iron guarantees not to deploy nuclear weapons on the territory of new member states, stressing only that it has no plans to do so. In fact the enlargement of NATO amounts to a process of creating nuclear-weapons-free-zones-in-reverse.

Annual votes at the United Nations on the resolutions of the New Agenda Coalition (NAC), which call for more definite steps towards nuclear disarmament and stress that “each article of the NPT is binding on the respective States Parties at all times and in all circumstances,” also confirm this tendency. In the 1999 vote, for example, the US, UK, France, Poland and Hungary voted against the resolution, while the rest of NATO abstained. 22

The NAC resolution of autumn 2000, by adopting slightly weaker language taken from the final document of the NPT Review Conference earlier that year gained the support of all the NATO countries except France, which abstained.

Later versions of the annual NAC resolutions failed to achieve a better result than abstentions from the NATO European member states (with the notable exception of Canada) and opposition from the nuclear weapons member states US, France, and the UK. The existing nuclear deterrents of these states as well as NATO nuclear doctrine formed an obstacle to more outright support of the NAC efforts.

Shifting in NATO Policy – A Credible Option?

The question now is, can the cautious criticism voiced in the past in a number of fora by a small number of NATO states be transformed into a more substantial process? Unfortunately, informal statements by Dutch diplomats and politicians the last few years suggest that the process may be limited to transparency and confidence building measures. In itself this would be a positive development, but in terms of addressing the basic contradiction between NATO nuclear policy and commitments under the NPT, such a narrow reform agenda is clearly inadequate.

More recently the main thrust of critical comment from NATO member states has come from Canada, acting largely on its own. Germany made a number of suggestions in a separate position paper presented at the NPT PrepCom 2002 in New York, while Belgium, Norway and the Netherlands did the same at the PrepCom 2003 in Geneva. 23

Taken at face value, there is certainly some goodwill in the Alliance towards making serious moves in the direction of the final document of the NPT Review Conference. That document, it should be noted, included an “unequivocal undertaking by the nuclear-weapon states to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States Parties are committed under Article VI,” an unprecedentedly clear declaration of intent backed by a programme of clearly defined intermediate policy objectives. These include a commitment to apply the “principle of irreversibility” to “nuclear disarmament, nuclear and other related arms control and reduction measures,” and the following steps “by all the nuclear-weapon states leading to nuclear disarmament in a way that promotes international stability, and based on the principle of undiminished security for all:

- Further efforts by the nuclear-weapon states to reduce their nuclear arsenals unilaterally.
- Increased transparency by the nuclear-weapon states with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to Article VI and as a voluntary confidence-building measure to support further progress on nuclear disarmament.
- The further reduction of non-strategic nuclear weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process.
- Concrete agreed measures to further reduce the operational status of nuclear weapons systems.
- A diminishing role for nuclear weapons in security policies to minimise the risk that these weapons ever be used and to facilitate the process of their total elimination.
- The engagement as soon as appropriate of all the nuclear-weapon states in the process leading to the total elimination of their nuclear weapons.” 24

In terms of the limited review apparently underway, the principle of irreversibility would prevent the taking back into NATO service of the hundreds of American tactical nuclear weapons removed from Europe during the last decade. Transparency measures, meanwhile, are particularly popular with officials from the Dutch Ministry of Foreign Affairs, who unfortunately at the same time continue to adhere to the official ‘no
The enthusiasm of NATO Governments for the removal of the free-fall bombs is doubtful. The ambiguity of NATO’s doctrine has remained right through to the North Atlantic Council Meetings of Dec 2003. For example the Dec. 2003 communiqué stated:

“9. The nuclear forces based in Europe and committed to NATO continue to provide an essential political and military link between the European and North American members of the Alliance.

10. (…) We reaffirmed our full commitment to the NPT and to the goal of universal adherence to it. We recognised the NPT as the cornerstone of the global nuclear non-proliferation regime and reiterated our continuing commitment to all our obligations under this Treaty.”

Furthermore, the NATO commitment to the 13 “practical steps for the systematic and progressive efforts” of the Final Document of the NPT Review Conference partly quoted above have steadily weakened, more or less in parallel with the increasing emphasis by the Republican administration of US President Bush on the horizontal proliferation aspect of the NPT, to the detriment of the vertical proliferation side, i.e. the obligation in Article VI to move towards nuclear disarmament.

This wariness, however, may be transformed in the light of recent developments in the direction of a European Security and Defence Policy. Such a basic, long-term shift has become ever more visible, even in traditionally Atlanticist Dutch foreign policy, and similar movements in the policies of other member states may have significant consequences for Alliance nuclear policy. In the intermediate term, this might result in a withdrawal of US sub-strategic nuclear weapons from the territory of European NATO member states. This will, however, confront the anti-nuclear movement with a new challenge: the UK and French nuclear strike forces. In the past French ministers have openly suggested that the French and UK nuclear forces could be turned into a European deterrent. If this were carried through a new violation of the NPT might arise if these national nuclear forces were transferred to a new entity, a European supra-national decision-making body. In that case removal of the US sub-strategic weapons assigned to NATO would not mark the end of a nuclear-armed Europe but unfortunately a new beginning.

Conclusion

In the absence of any popular mass movement against nuclear weapons, it has become increasingly clear that only pressure from within NATO may persuade the Alliance's three nuclear weapons states that international arms control is not only a viable option but ultimately safer and more rational than any attempt to impose unilateralist policies against proliferation on the rest of the world. To encourage this approach, it would be useful if the NATO states which have occasionally shown themselves prepared to move faster in other contexts – Belgium, Germany, Netherlands, and Norway – were to follow the example of Canada’s increasingly vocal and forthright stance in favour of nuclear disarmament. A strong, broad pro-reform voice will provide the best opportunity for serious steps to be taken to counter a possible renewal of the nuclear arms race.

6 Answer given by Foreign Minister van Aarsen, Dutch Parliament, July 17, 2002.
9 Article I reads: “Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly…” Article II reads: “Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly.”
11 Van Aartsen, written Parliamentary answer, June 14, 2000. Some of the confusion about NPT obligations in peacetime and war can be attributed to the question of how ‘war’ is defined. PENN Research Report 2000.1, op.cit., p. 25.
13 US Joint Chiefs of Staff, op.cit.
15 "Dual-capable aircraft and nuclear weapons in support of NATO. DoD will not seek any change to the current posture in FY22 but will review both issues to assess whether any modifications to the current posture are appropriate to adapt to the changing threat environment. A plan is already underway to conduct a NATO review of U.S. and allied dual capable aircraft in Europe and to present recommendations to Ministers in summer of 2002. Dual capable aircraft and deployed weapons are important to the continued viability of
Targeting the Law: Non-Proliferation Under Attack

Kate Hudson

The likelihood of vertical proliferation is one of the greatest challenges facing the peace movement today. New nuclear weapons have certainly been on the US nuclear agenda since at least the mid-1990s, but there can be no doubt that under the Bush administration this orientation has been consolidated and accelerated. Whilst the talk amongst nuclear planners in the 1990s was of countering regional threats and ‘rogue states,’ the US Nuclear Posture Review (NPR) of January 2002 clarified the extent of the new nuclear ambitions. Setting out the direction of US forces for the next 5-10 years, the NPR outlined a major change of approach, establishing a New Triad of offensive strike systems – both nuclear and non-nuclear, active and passive defences, and a revitalised defence infrastructure – “to provide new capabilities in a timely fashion to meet emerging threats.” Clearly, the NPR consolidates the concept of the offensive strike system and reinforces the policy of nuclear first use. It also encompasses the development of new nuclear weapons.

Taken together with the US Department of Defense’s document Joint Vision 2020, issued in May 2000, outlining how the US will achieve full spectrum military dominance on land, sea, air, and space, an alarming scenario confronts us. Joint Vision 2020 addresses full spectrum dominance across a range of conflicts, including nuclear war. The US missile defence programme is clearly a facet of this, already bringing the beginnings of a new nuclear arms race as states seek ways to penetrate the Star Wars ‘shield.’

If one was in any doubt about the overarching nature of the US administration’s vision with regard to military policy, one only needs to visit the website of the Project for the New American Century (PNAC), established in spring 1997, PNAC is supposedly a non-profit educational organisation whose goal is to promote US global leadership. Actually it is a neo-conservative think-tank with Cheney, Rumsfeld and Wolfowitz among its founders, which argues that US global leadership is good for both the US and the world, and that such leadership requires military strength, diplomatic energy, and commitment to moral principle. It specifically harks back to what it terms “the Reagan administration’s success,” including a military “that is strong and ready to meet both present and future challenges.”

In this context, the NPR is alarming, generally for world peace and specifically for nuclear non-proliferation. As stated in the document Bunker Busters published by the British American Security Information Council (BASIC), “Of all the international regimes to be affected by the NPR, the Nuclear Non-Proliferation Treaty (NPT) may suffer the greatest blow. While the Bush administration professes to uphold the broad structure of the NPT, its plans contradict some of the 13 steps to advance the treaty agreed by all states parties in May 2000. Ongoing attempts to develop new, more usable nuclear weapons, and a refusal to rule out their use against non-nuclear states, raises serious doubts about Washington’s commitment to ensure ‘a diminishing role for nuclear weapons in security policies.’”

The concept of non-proliferation, as enshrined in the NPT, encompasses both horizontal and vertical proliferation, yet that very concept is under threat from the drive by the US and UK towards a policy of counter-proliferation, rather than non-proliferation. Described by Fiona Simpson as “a paradigm shift,” counter-proliferation concentrates entirely on the
prevention of horizontal proliferation and, as such, counter-proliferation policies clearly undermine the NPT framework. They also further undermine the multilateral non-proliferation regime through its possible substitution – as in the case of Iraq – by pre-emptive disarmament wars, carried out by a tiny minority of the international community. Missile defence is clearly part of the counter-proliferation approach, for it enables first strike without fear of retaliation.

The Role of the UK

The role of the UK in these developments is a significant one, not just because of the UK government’s backing for the Iraq war, but because some disturbing policy changes have been taking place. Prime Minister Tony Blair has begun to shift the terrain towards changes in international law to legitimise pre-emptive war – a very relevant development in this context because of the likely role for new nuclear weapons designed actually to be used in a first strike capacity in future pre-emptive wars. The speech Blair gave in his own parliamentary constituency of Sedgefield in March 2004 was extremely significant, not so much because he tried to switch the justification for the war from the threat of weapons of mass destruction to Iraq’s non-compliance with UN resolutions, but because he made a fundamental attack on international law, with regard to the legitimisation of pre-emptive war. Blair said that he was reaching for a different philosophical framework of the last few years. As outlined above, it is clear that the 2002 US Nuclear Posture Review has raised serious concerns about the US’ plans to develop new nuclear weapons designed actually to be used in pre-emptive wars. Yet it is also clear that British policy seems to have moved in the same direction. As Jane’s Intelligence Digest observed in August 2003, the UK’s 1998 Strategic Defence Review clearly stated that nuclear weapons would not be used against a non-nuclear state not in material breach of its nuclear non-proliferation obligations unless it were to attack the UK – the so-called negative security assurances. In March 2002, Geoff Hoon “came strikingly close to the US position...[he] revealed a major change in UK thinking: that if British troops were threatened by chemical or biological weapons, the Blair government reserved the right to use nuclear weapons.” Clearly that constitutes a significant lowering of the nuclear use threshold.

Furthermore, Jane’s also reports on Britain’s cooperative programmes with all major US nuclear weapons laboratories and the massive government investment in the Atomic Weapons Establishment (AWE) at Aldermaston in Berkshire. In their assessment, there is an apparent radical shift in Britain’s nuclear doctrine, and this includes a greater variety of nuclear weapons. These developments are not ones which inspire confidence in the motivations behind the new philosophical rhetoric of Blair. On the contrary, we must resist the rewriting of international law where it is designed to legitimise unilateral aggression, and we must campaign vigorously against government policies which sanction nuclear first strike and the development of new nuclear weapons clearly designed to be used in pre-emptive wars.

As a result of the current developments, AWE Aldermaston is becoming a central focus for peace campaigners in Britain today. AWE Aldermaston, established in 1950, is responsible for most of Britain’s nuclear research activities, as well as developing weapons designs and pro-

In saying this, Blair was reverting to the notion of intervention in a country on humanitarian grounds, which was raised at the time of the illegal war against Yugoslavia in 1999. After that war he called for “a doctrine of international community, where in certain clear circumstances, we do intervene, even though we are not directly threatened.” Given the nature of many regimes around the world, this approach is one that has some resonance, and it has been followed by the arguments from Labour MPs Clive Soley and Ann Clwyd, that international law must be reframed to put human rights over state sovereignty in extreme cases – where “regime change is not just politically justified but morally necessary.” The campaign to shift hearts and minds on this issue has clearly started. But we should not allow the pseudo-philosophical veneer to obscure the real issue. In the war on Iraq, Bush and Blair did not have law on their side; the majority of the international community opposed it; the majority of the UN Security Council opposed it; NATO and the European Union were split over it; the majority of the world’s population opposed it. People were just not convinced the war on Iraq was the right way to deal with the complex problems facing the world. Bush and Blair should have accepted that message and looked for a different approach. That would have been a real doctrine of international community – to listen to the views of the majority of the world’s peoples and nations, not drive ahead disregarding others and then try and change the rules to ensure that in future international law is not an obstacle because it has been rewritten to suit one’s own purposes. It is not even the case that the status quo of international law should automatically be defended in perpetuity. If the international community wants to change it then it should – but it must be the whole community, not just two or three of the world’s most powerful nations who want to impose their will. Those laws exist to protect smaller nations and that framework must not be adjusted without adequate defence of all nations’ rights to self-determination. We must have protection of human rights throughout the world, but that cannot be used as a means to enshrine in law the right of the powerful to intervene anywhere in the world that they choose.

Nuclear Modernization in the UK

The UK government is, however, in a weak position to claim the moral high ground on these issues for it has subscribed to the whole increasingly alarming US foreign and military policy framework of the last few years. As outlined above, it is clear that the 2002 US Nuclear Posture Review has raised serious concerns about the US’ plans to develop new nuclear weapons designed actually to be used in pre-emptive wars. Yet it is also clear that British policy seems to have moved in the same direction. As Jane’s Intelligence Digest observed in August 2003, the UK’s 1998 Strategic Defence Review clearly stated that nuclear weapons would not be used against a non-nuclear state not in material breach of its nuclear non-proliferation obligations unless it were to attack the UK – the so-called negative security assurances. In March 2002, Geoff Hoon “came strikingly close to the US position...[he] revealed a major change in UK thinking: that if British troops were threatened by chemical or biological weapons, the Blair government reserved the right to use nuclear weapons.” Clearly that constitutes a significant lowering of the nuclear use threshold.

Furthermore, Jane’s also reports on Britain’s cooperative programmes with all major US nuclear weapons laboratories and the massive government investment in the Atomic Weapons Establishment (AWE) at Aldermaston in Berkshire. In their assessment, there is an apparent radical shift in Britain’s nuclear doctrine, and this includes a greater variety of nuclear weapons. These developments are not ones which inspire confidence in the motivations behind the new philosophical rhetoric of Blair. On the contrary, we must resist the rewriting of international law where it is designed to legitimise unilateral aggression, and we must campaign vigorously against government policies which sanction nuclear first strike and the development of new nuclear weapons clearly designed to be used in pre-emptive wars.

As a result of the current developments, AWE Aldermaston is becoming a central focus for peace campaigners in Britain today. AWE Aldermaston, established in 1950, is responsible for most of Britain’s nuclear research activities, as well as developing weapons designs and pro-
ducing most nuclear weapon components. Indeed, it is the home of Trident warhead production, maintenance, research, and development. According to activists, it is currently equipping itself to build new nuclear weapons and a new range of site facilities are planned at a huge cost of around £2 billion: “This could enable AWE to build a replacement for the Trident warhead system, or to build lower yield ‘mini-nukes’ or battlefield nuclear weapons.” The Site Development Strategy Plan, published in August 2002, included “new supercomputers, a high powered laser, hydrodynamic testing facilities and non-specific ‘laboratories.’” In May 2003 the New Scientist magazine announced that AWE were intending to recruit more than 80 specialist scientists, but according to Jane’s the planned expansion includes 300 new scientists.

A central feature of the new developments is the provision of testing facilities for a new warhead design. Central to the plans has been a massive new laser plant, Orion, which could be used in the simulated testing of nuclear weapons. Orion would replace the current Ministry of Defence (MoD) laser, HELEN, which has a 1 terawatt (million million watt) capacity, which despite its massive power – probably generating up to three million degrees centigrade – is not strong enough to “generate the temperatures and pressures experienced within a nuclear warhead.” The UK government position is that by better simulating the conditions, the vastly stronger Orion will ensure the reliability of the UK’s Trident warheads without resort to physical test explosions, but analysts agree, says the UK Nuclear Free Local Authorities organisation, that Orion, “would create the ability to test design and build not only a strategic successor to Trident, but also a new generation of tactical nuclear weapons or ‘mini-nukes.’” It would subvert the purpose of the Comprehensive Test Ban Treaty that the UK government has signed and ratified, and it would further undermine the Nuclear Non-Proliferation Treaty.

“No New Nukes”

Campaigners have recently achieved a success with regard to the laser development. The Ministry of Defence has temporarily withdrawn Orion from the planning process following legal arguments from peace activists. Since July 2002, the MoD has been required to carry out environmental impact assessments on all new projects. This had not been done in this case and a local resident threatened a judicial review. This setback is much to be welcomed but there can be no doubt that new nuclear weapons remain high on the nuclear agenda.

But as activists we do have a great opportunity with regard to the development of new nuclear weapons: we can prevent them coming into existence. All too often we find ourselves campaigning for the removal or abolition of some already existing monstrosity. Now we must harness the enormously increased public awareness of weapons of mass destruction and concern over nuclear proliferation to stop these developments. For this reason the current initiative of the Campaign for Nuclear Disarmament (CND) goes under the title “No New Nukes” and has included organizing, together with other peace campaigners, the Aldermaston 2004 march to highlight the government’s plans. Tactical nuclear weapons and ‘bunker busters’ are designed to be used, and may well be used in further pre-emptive wars unless we can stop them: we must reverse these policies and strengthen the non-proliferation regime to achieve our goal of the global abolition of nuclear weapons.

3. Ibid.
5. Fiona Simpson, Non-proliferation and Counter-proliferation: Complementary or Incompatible?, Basic Washington Nuclear

Kate Hudson is Chair of the Campaign for Nuclear Disarmament; kate.hudson@lsbu.ac.uk.

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New Nuclear Strategy, New Nuclear Weaponry
France Prepares a Nuclear Future

Dominique Lalanne

In the past, the French “Force de Frappe” (nuclear strike force) was supposed to deter only one enemy: the USSR. This is no longer the case and a new strategy has emerged from some official reports. Now, the use of nuclear weapons on the battlefield cannot be excluded. Participation in regional conflicts is being prepared, even when no “vital” interests are involved. For these reasons, France will update its complete nuclear arsenal within 15 years and is preparing a long term plan up to the year 2040.

The New Strategy

The new strategy has been clearly explained by the President of France, Jacques Chirac, in an official speech to the famous Institute for High Studies for National Defence (IHEDN) on June 8, 2001: “The choice is no longer between the complete annihilation of a country and no action. The damage to which a potential aggressor exposes itself will be primarily directed at its power, political, economic, and military centers.”

A more precise description of this new strategy of progressive strikes is contained in a report of the Senate Foreign Affairs Commission for the fiscal year 2003 budget: According to Senate Representative Jean Faure, “In this respect, we must adapt deterrence to a regional conflict where our survival is not at stake. Our concept can no longer be described as ‘anti-city deterrence,’ it has evolved to a deterrence that can be ‘adapted’ to a variety of threats. This new approach for French deterrence means we must also choose new deterrence tools for the future. Our nuclear forces must be able to credibly hold at risk a much larger range of targets in order to ensure deterrence under all circumstances. Selective yields and improved penetration of the nuclear warheads and a larger variety, enhanced range, and higher precision of the carrier systems are among the new parameters we need to consider when modernising our nuclear arsenal over the next 15 years.”

The Situation in 2003

In 2003, the French nuclear arsenal was clearly more powerful than that of the British or even the Chinese. With 350 nuclear warheads, two nuclear submarines constantly patrolling the oceans, nearly 80 aircraft bombers, and one aircraft carrier, French politicians claim that French deterrence is currently at the “minimum level.” When comparing with China, which owns more nuclear warheads (400), the basing and range of missiles must also be considered. China has 120 ground-based missiles, 120 tactical missiles, and 130 air-launched missiles, but only one submarine with 12 missiles. In contrast, France has 80% of its missiles in two submarines at sea. The French level of deterrence is therefore much higher.

More precisely, the current Force Océanique Stratégique (FOS, strategic sea force) has four submarines, the so-called SNLE (sous-marin nucléaire lance engin), with two permanently at sea, equipped with 16 strategic missiles each, each missile with six hundred kiloton warheads TN75. Two of these submarines are of the totally new type (“new generation”) SNLE-NG.

The M45 missiles and the TN75 nuclear warheads are also rather new and were introduced in 1997. Only one submarine is equipped with older M4 missiles, but these are to be replaced by the end of 2004.

The air-based component of the Force de Frappe has two types of aircraft: the Mirage 2000N with a range of 3,000 km (57 jets) and the Super-Étendard with a range of up to 1,500 km (19 jets). The last Mirage 2000N was delivered in 1993, but the technological concept is from the 1980s. The Super-Étendard dates back to the 1970s. It is equipped with ASMP missiles (Air-Sol-Moyenne Portée) with the launch altitude determining the range (80–250 km).

Since 1987, the ASMP has been equipped with the TN81 300 kiloton nuclear warhead.

This is the French arsenal at a time when, ironically, a modernization program is being planned up to the year 2015 in order to maintain a “minimum deterrent,” according to President Chirac.

New Equipment for the Navy

There are three objectives for the FOS in the 2003-2008 military program:

Firstly, the replacement of two older SNLE submarines (Indomptable) by the new SNLE-NG that have much lower acoustic levels and so a greater invulnerability. An arsenal of four submarines is considered to be the minimum required to guarantee at least two submarines at sea at any one time, to cover the case of “one of them being possibly neutralized,” Representative Jean Faure said in his report. The first SNLE-NG named Le Triomphant was in service in 1997 and the second, Le Téméraire, in December 1999. The two new submarines ordered in 2000 are Le Vigilant (expected at the end of 2004) and Le Terrible (for 2010).

The second objective is to replace the M4 ballistic missile currently in place in the SNLE-type submarine Le Redoutable with the new M45 missile and a new TN75 warhead by the end of 2004. This is the only submarine still retaining the M4 missile as the L’Inflexible, which was due to be in service until 2007, was refurbished.
in 2001. The two new generation SNLE-NGs were equipped with these weapons so as soon as they came into service – as the third will be when it is finished in 2004.

The third objective is to replace, after 2010, the M45 missile with a new one, the M51. This would initially carry the current TN75 nuclear warhead but this would be replaced after 2015 with a new TNO (tête nucléaire océanique) warhead. The M51 missile is to have a longer range (6,000 km instead of 4,000 km) so as to be able to reach Beijing from a North Cape launch. In addition its stealth capability will theoretically be a “technological quantum leap.” The new missile is to be linked to a new “penetration system,” guided by the planned European Galileo network of GPS satellites, to give much improved accuracy over the current inertial system.

It should be noted that there is also a new doctrine for the use of the FOS. During the Cold War, the procedure was to launching all of the missiles in a matter of minutes. This was for two reasons: firstly, the goal of deterrence was for the destruction of a maximum number of cities and secondly, because the launching of one missile would immediately give away the submarine’s position and therefore make it an easy target for Soviet forces. All has changed. There is no more pre-targeting of missiles as this can be decided at sea, and it is proposed that it should be possible to launch only one missile – possibly with only one warhead. The minimum yield of the new TNO warhead, to be available in 2015, is being kept secret but it will have a maximum explosive power of 150 kilotons.

New Equipment for the Air Force

The Air Force is the visible part of deterrence and is characterized by its mobility and ease of use and flexibility. Based on the ground or on an aircraft-carrier and linked to a theater missile defense (TMD) system, it will perform the major role in the new strategy for distant theaters. A second aircraft-carrier for this component is due to be built in partnership with the UK.

The first step towards a TMD system will use the SAMP/T anti-ballistic missiles with a range of 600 km. Four of these are due to be in operation in 2008 and ten in 2012. A study is being conducted for a new MR3 radar to detect the launch origin of incoming missiles.

After 2007 all existing aircraft are due to be replaced by the new Rafale Marine and Rafale Air planes, to be equipped with the new ASMP-A missile, carrying the new TNA warhead. The ASMP-A is due to be delivered in 2007. It will have a longer range than current similar missile types and a “trajectory diversification” system which makes it very difficult to intercept. It was especially designed for the Mirage 2000N and so will be fitted to these first, but in 2008 it will also be incorporated into 20 Rafale Air and 20 Rafale Marine aircraft. In 2015, 20 new Rafale Marine planes will be fitted with ASMP-A missiles with a further 20 due to be in service by 2017.

New Research Facilities

Currently, there are three fields of research and development involving the development of new types of nuclear weapons. Two of them, the upgrade of computer systems and the new Airix generator are short- and medium-term projects (10-20 years), while the third one, the Megajoule laser, is to develop new types of pure fusion weapons over the long term (30 to 40 years).

The official justification for these new investments is that they are required to replace actual testing as the Pacific test site is now closed. It has also been suggested that, in order to keep high level scientists in the military sector it is necessary to develop new facility types and an attractive long-term scientific program. This clearly indicates that the ultimate goal is not the elimination of nuclear weapons, as required by article VI of the Non-Proliferation Treaty, but the continuing modernization of French nuclear capabilities, in other words “vertical proliferation.”

New Computers

The computer project of the French nuclear weapons complex, known as Tera, saw the delivery of the first new computer system to the CEA (Commissariat à l’Énergie atomique) at the end of 2001. It is the first such European center for computing and has been said to be 100 times better than the system available in 1996. Two other facilities are planned to be in operation by 2009, which are predicted to improve performance by an additional factor of 20 and resulting in a capacity of around 100 Teraflops (100 billion operations per second).

The Airix Generator

The Airix generator is being constructed to investigate the pre-ignition phase of a nuclear explosion. In order to develop new warheads it is crucial to understand what happens in the compression phase of the explosion where ignition is to take place. There is no need to create a real nuclear explosion to obtain this information. So called “cold testing” methods – where the fissile material is replaced by a non-fissile one with the same mechanical properties – employ the use of high-speed X-ray radiography to experimentally verify computer simulations.

The Airix generator has been operating at its first stage level since mid-2000 and the facility is due to be completed in 2011.

The Megajoule Laser

The goal of the Megajoule laser is to study the ignition process of the hydrogen fusion reaction (or more precisely of its deuterium and tritium isotopes). This facility will be quite similar to the National Ignition Facility (NIF) currently under construction in California. The Megajoule project is due to start operation with 240 lasers in 2011. A first module of eight lasers, the LIL (ligne d’intégration laser) has been in operation since April 2002 in order to verify the expected performance. The final decisions concerning the design of Megajoule are going to be made this year (2004).

A fusion nuclear reaction is quite different from a fission one. The fission nuclear reaction uses the fissile material uranium-235 or plutonium-
239 as fuel to produce an explosion relatively easily because it will occur as soon as a single “critical mass” (11 kg for U-235 and 5 kg for Up-239) is achieved. To create this situation, all that is needed is two or more subcritical pieces of the fissile material and a standard chemical explosive to bring them together in an instant. The serious disadvantage with this situation is that the requirement of a “critical mass” makes “small nuclear bombs” impossible. The Hiroshima explosion was equivalent to 13 kilotons of TNT and the smallest plutonium bombs correspond to 1 kiloton – these are the so-called “mini-nukes.”

In the case of nuclear fusion, the release of energy in the form of an explosion occurs when the hydrogen, deuterium, and tritium isotopes are maintained at the right temperature and pressure for a minimum confinement time. This can be achieved, for example in the Megajoule laser, with only milligrams of fuel, in which case the explosive power will be less than 5 kilos of TNT equivalent. The important point here is that there is no minimum level of fuel and therefore explosion. The great difficulty lies in obtaining the physical conditions necessary for ignition – a temperature of at least 10 million degrees is needed. That is why currently the only way to make an H-bomb (with hydrogen isotopes) is to trigger it with an A-bomb (with Pu-239 or U-235) in order to reach the required ignition temperature and pressure.

The challenge to Megajoule is to reach the ignition conditions with a high-powered laser and, perhaps more importantly, to understand how the first spark of energy propagates through the confined fuel mixture. Until this process is understood it may not be possible to build a pure fusion bomb. Results of this research are expected around 2020-2030 and, if successful, could lead to small, fast lasers being used to produce nuclear fusion. Of course, Megajoule is of such a size (a few hundred meters) that it could never be used as a bomb. The program requires that special micro-lasers be developed by 2030-2040 that, if successful could make usable pure fusion bombs possible by 2050.

These pure fusion bombs would be the perfect mini-nuke for the battlefield. Unlike nuclear fission, there is no radioactive pollution as the final product is only helium, but there are many more high-energy neutrons produced than with Pu-239 or U-235 fission. By tuning the output power (which depends on the mass of deuterium-tritium used), the device can be made into a notorious “neutron bomb” which is extremely damaging to life.

**Conclusions**

It came as a surprise to many that the French attitude to its nuclear weapons changed abruptly after 2000 especially after the many promising disarmament steps that were taken in the 1990s. The French government finally endorsed the Non-Proliferation Treaty in 1992 (22 years after its entry into force) and, perhaps more significantly, abandoned its use of the ground-based Hades and the Plateau d’Albion missiles. The Pacific Nuclear Test Site was dismantled, and the Comprehensive Test Ban Treaty was signed. This was followed by the total termination of the production of fissile material and the closure of the Marcoule and Pierrelatte production centers.

Ironically, the change in attitude occurred at a time when the French Government had declared a firm commitment to eliminate its nuclear arsenal. It is clear that the change was strongly influenced by the new US concept of counter-proliferation, rather than non-proliferation. During the Cold War, nuclear weapons were key to maintaining an “equilibrium of terror.” The end of the Cold War signaled a time for “strategizing” a new role for nuclear weapons, which took a decade. The new French policy in fact runs parallel to that of the US. “Modernizing” is the key word, and its goal is preparing the weapons for future battlefields.

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**US not to reduce nuclear arsenal to Moscow Treaty levels**

25 March 2004, Washington

The United States will not cut its nuclear arsenal to levels designated by an arms accord it concluded two years ago with Russia because it must hedge against an uncertain future, a top administration official announced.

The Moscow Treaty signed with great fanfare by Presidents George W. Bush of the United States and Vladimir Putin of Russia in May 2002 calls on both sides to reduce their strategic nuclear warheads to between 1,700 and 2,200 by 2012. But it refers to “operationally deployed” weapons, essentially offering both governments a loophole that allows them to move an unlimited number of warheads into storage and keep them indefinitely under lock and key.

While US officials have often praised this option, Wednesday’s remarks by Undersecretary of Energy Linton Brooks before the Senate Subcommittee on Strategic Forces represented the first official indication the Bush administration had actually decided to exercise it. “The 2012 nuclear stockpile will be substantially reduced from current levels,” Brooks told lawmakers. “But reductions will not lower the stockpile to 1,700-2,200 total warheads.”

He said the retained warheads will be needed for routine maintenance of the arsenal, for meeting “commitments to allies,” and to address threats that may arise in the future...

(extract from www.channelnewsasia.com).
The PSI and Unipolarity
Realities of a Bitter Age

Luis Gutiérrez Esparza

Last year, on May 31, 2003, in the royal castle of Wawel, Krakow, during a state visit to Poland, U.S. President George W. Bush delivered another forceful blow to world peace. This latest onslaught is part of the hegemonic strategy of absolute domination that the Bush administration has assumed in its efforts to consolidate a unipolar vision of the world that the international community rejects with certain timidity but— with a few exceptions—has ended up accepting in real life.

The so-called “Krakow initiative” or, more formally, the Proliferation Security Initiative (PSI), is in principle aimed at halting the trafficking and increase in weapons of mass destruction (WMD). In formalizing his proposal, Bush’s explanation was as follows: “The greatest threat to peace is the spread of nuclear, chemical, and biological weapons. And we must work together to stop proliferation. ... When weapons of mass destruction or their components are in transit, we must have the means and authority to seize them.”

Although he attempted to cloak his words in the rhetoric of legality, the U.S. President promoted and continues to promote a dependent mechanism used by Washington, outside the confines of the United Nations, to control international air space and maritime routes. Initially, Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, and the United Kingdom responded to the call, emphasizing—according to an official statement from the White House released on September 4—“the need for proactive measures to combat the threat from the proliferation of weapons of mass destruction.”

The goal, to be sure, appears worthy of approval. In practice, however, other nations—Brazil, China, Canada, Russia, South Korea, India, and Pakistan, for the time being—have expressed their concern that the United States seeks to use an instrument of such a scope to strengthen its supremacy in the production of cutting-edge nuclear, ballistic, biological, and chemical technology and to control global transportation routes.

If the PSI is indeed concretized as conceived by Bush and his strategists, Washington will monopolize espionage, the interception of ships on the high seas and aircraft in international air space, and multilateral control devices, all under the pretext of the simple suspicion that WMD or their components could be in transit.

The countries that openly oppose the U.S. proposal have pointed to the danger of a quite flexible interpretation of the legal basis for intercepting international transport, as understood by Washington. A first consequence would be the displacement of other producers of weapons and chemical, biological, and nuclear products, in benefit of the U.S. industrial complex.

According to the interpretation offered by the Bush administration, almost all cutting-edge technology products can be used in the production of WMD and for the same reason, they can be subject to confiscation by the United States and its allies. This immediately and directly threatens compliance with purchase-sale contracts worldwide and with free international trade, which would become a virtual monopoly of large U.S. corporations and, to a lesser extent, Washington’s European and Asian partners.

The threat of bioterrorism, for example, which has still not thus far been concretized in specific incidents, has allowed Washington to unilaterally impose much stricter measures of control over foodstuffs and agricultural products exported to the United States and its allied or nearby countries. This, in reality, is an instrument of pressure on exporter countries, which contradicts the norms of the World Trade Organization.

In this sense, the law on bioterrorism is, from the point of view of the Latin American countries, a new and virtually impenetrable barrier to the development of free international trade in agricultural products. This measure, coupled with the U.S. government’s protectionist measures, will sooner than later cause the collapse of the economies in the region.

To be sure, no one can have doubts on the importance of strengthening measures to prevent the proliferation of weapons of mass destruction and in this sense, Bush’s initiative is aimed in the right direction. However, the way in which its functioning has been structured moves away from such real and desirable objectives, to become an element of hegemonic domination.

The principles that should prevail in the Proliferation Security Initiative should respect international law and the system of norms accepted within the framework of the United Nations. Otherwise, the blow to world legality will be devastating and perhaps definitive.

Nuclear Proliferation Horizontally...

Meanwhile, the number of countries able to produce nuclear weapons now reaches 35 to 40. The most recent members of the club are India, Pakistan, and North Korea. Others, whose respective histories in this regard are surrounded by the veil of secrecy and good doses of clandestine operations, include Israel, Iraq, Libya, South Africa, Taiwan, Argentina, and Brazil. In addition, there are those that are currently considering the possibility of joining the group, such as Japan, Syria, and Saudi Arabia. An en-
vironment of uncertainty and volatility with regard to global security precipitate such decisions, even if for diverse circumstances some nations—such as Iraq and Libya—have had to suspend their activities in this respect, due to economic considerations and external pressures.

International terrorist organizations such as al Qaeda have tried to obtain nuclear weapons and perhaps already have some. The basic knowledge on how to manufacture an atomic bomb has spread indiscriminately, even in easy to access manuals, and the necessary components for such weapons often lack adequate monitoring. Al Qaeda, for example, thanks to the efforts of the great master of global terrorism, Osama bin Laden, managed to obtain technical assistance from the Pakistani nuclear program. Its participation in the high-level drug trade represents a constant access to fresh funds, even though Bin Laden’s personal fortune continues to clock in at around 30 billion dollars. Thus, the elite squadrons of al Qaeda have the resources—if they wish—to develop nuclear arms and to acquire missiles or other devices that can be deployed against specific targets.

The construction of a rudimentary atomic bomb by a person of average intelligence is not an impossible task. The hypothetical individual would need to acquire enough uranium, but it would not have to be of the highly enriched type, in the case of a rather primitive, but not less murderous, bomb. An imaginative, highly motivated person with certain basic abilities could cause truly catastrophic damage with a nuclear bomb of this nature.

For the same reason, Russia and China began to modernize their nuclear arsenals with new submarines capable of firing missiles with multiple nuclear warheads and new intercontinental ballistic missiles. The latter are the most terrifying of all, because they can bring death foretold in a guaranteed mutual destruction from one end of the world to the other.

This qualitative modernization is a form of vertical proliferation that is in opposition to nations’ commitments to nuclear disarmament, according to Article VI of the Non-Proliferation Treaty (known as NPT). The collapse of the non-proliferation system is evident. Nuclear proliferation continues despite the existence of a series of international agreements designed to prevent it. The illegal traffic in nuclear arms, the violations of the treaties, and the contempt with which the United States has been acting, particularly during the administrations of Bush Sr., Ronald Reagan, and Bush Jr., have combined to make the non-proliferation system of little value and irrelevant.

The International Atomic Energy Agency’s Director General feels that the NPT is obsolete because, in fact, it has already experienced a generalized collapse. Based on this reality, a rapid proliferation of nuclear weapons can be predicted among nations, transnational terrorist groups, organized crime, and individuals whose motivation is ideological, religious, or simply mercenary. This will occur unless a new non-proliferation system that is well structured, solid, and obligatory, replaces the one that was gradually destroyed by the hegemonic ambitions of the U.S. government and that of several of its most well-known allies.

Tadatoshi Akiba, Mayor of the martyred city of Hiroshima and President of Mayors for Peace, an organization that represents 580 cities with much more than 250 million inhabitants, declared that “we are against the idea that some one could, for any reason that he considers legitimate, unleash a nuclear holocaust… We are against the idea that trillions of dollars should be spent on total nuclear destruc-

... and Vertically

At the same time, the new U.S. nuclear doctrine announced by President Bush that proclaims Washington’s right to launch preventive attacks with nuclear weapons, against countries considered hostile that have or could have arsenals of this nature, as well as other weapons of mass destruction, has caused an inevitable response on the part of those who, quite rightfully, feel that their security is threatened.

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questionably much more destructive than the actions perpetrated by Islamic fundamentalists.

Motivated and supported by the U.S. industrial complex, Bush and his accomplices virtually pulled from out of their sleeves the theory of nuclear mini-bombs, which, with five kilotons of power, would be acceptable – according to the theory of the Christian fundamentalists who maneuver the President of the United States at their whim and constitute the real power of the new right – for use in limited wars, such as the unilateral and illegal aggressions against Yugoslavia, Afghanistan, and Iraq.

It is likely that, on the eve of the presidential elections, Bush and his accomplices will abstain from openly renouncing the treaty banning the proliferation of weapons of mass destruction. But with the publicity coup involving the capture of Saddam Hussein and the impressive credibility of an important segment of the U.S. population, President Bush seems to have his re-election sown up. If this turns out to indeed be the case, Bush would not be inclined to accept obstacles in the way of implementing his main strategic designs. These include imposing U.S. hegemony, taking control of the world’s natural resources – especially energy reserves –, introducing weapons into outer space, and using the above-mentioned mini-bombs against all those who dare to get in his way.

Meanwhile, Bush has allocated 25 million dollars for the modernization of the Nevada polygon, where the U.S. government seeks to renew nuclear tests. In the re-election agenda, an important weight is assigned to the development of new nuclear weapons for their employment in so-called limited conflicts or, as the hawks in the U.S. Congress prefer to express it, “to defend the country’s most important national interests anywhere that they might be threatened.”

Thus far, Congress has approved 6.3 billion dollars for nuclear arms programs in 2004. This decision, coupled with the more than clear intentions of Bush and his main collaborators, implies a green light for re-launching the nuclear arms race.

For the time being, Great Britain, the U.S.’ main European ally, is evaluating options to produce its own mini-bombs and London’s military strategists are drafting a new doctrine, similar to that of their North American counterparts, which would allow such weapons to be used within bounds that only exist in the deranged minds of their theoreticians.

It cannot be expected that other countries will remain indifferent or sit back with their arms crossed. To begin with, Russia’s reaction can be expected to be of considerable scope. For the time being, in the Western capitals the news that the Russians have deployed new intercontinental missiles with high-precision technology was received like a bucket of cold water. Some weeks ago, in the city of Tatischevo, near Saratov, Russian Defense Minister Sergei Ivanov placed a powerful batch of Topol-M missiles (known in the West as SS-27) in a state of alert. Some 45 missiles were involved, the most modern such weapons, sufficient as a deterrent against a possible U.S. aggression.

But if Washington continues developing new weapons and places, for example, nuclear projectiles with mini-bombs in its submarines, in a way that could threaten Moscow from Russia’s own costs, at the same time that the United States has the country encircled by military bases established in European and Asian countries that had been part of the former Soviet Union, the Kremlin’s response will necessarily be drastic. And this is not even considering what the other members of the nuclear club, such as China, France, India, Pakistan, and Israel, might do.

The PSI and Unipolarity

Since the passage of a UN Security Council Resolution (UNSCR) in 1966 imposing selective economic sanctions on Rhodesia, and the subsequent British maritime blockade which it authorized – the Beira Patrol – naval interception of suspect ships has been one of the methods available to the community of nations to resolve crisis. However, the practice only took off after the Cold War had ended, with the imposition of UNSCR 661 in August 1990, imposing an oil blockade on Iraq and Kuwait in the aftermath of the Iraqi invasion. Faced with the complex internal disputes in the former Yugoslavia, a weapons embargo was implemented by a September 1991 UN resolution and enforced at sea by NATO and European countries. A sea-borne weapons blockade was at that time one method whereby interested states could be seen to be taking action on the conflict without too much danger to their personnel.

Naval interdiction operations in general and the PSI in particular face a number of challenges to effec-

PSI and Interception Practices

Effectively what the PSI does is further extend – in characteristically Bush administration fashion – the now relatively common practice of naval interception operations aimed at blocking activities the international community deems illegal. Ship interception operations in ‘peacetime’ have become frequent since Iraq invaded Kuwait in August 1990. However, the ‘searching’ of aircraft is a much more difficult business, as the only guaranteed means of stopping an aircraft in flight is to shoot it down. Numerous international incidents have been precipitated by such acts, including the Downing of a private rescue aircraft by Cuban fighters in 1996, the destruction of a missionary aircraft in Peru in April 2001, and the Cold War Soviet shoot down of the South Korean commercial flight KAL 007 in 1983.

Given the fraught situation with stopping and searching aircraft, it is most likely that PSI operations will be limited to naval activity for some time to come. Specifically in the case of North Korea, the country is almost surrounded by South Korean, Japanese, Russian, and Chinese airspace, and each of those four countries has an operation fighter interception capability. What is required here to, for instance, stop or greatly impair North Korean aerial transport of WMD is agreement by China (principal) and other countries to close their airspace to such flights, rather than a multi-lateral initiative.

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Naval interdiction operations in general and the PSI in particular face a number of challenges to effec-
tive implementation. These include legal authorization, the political problems involved in constructing and maintaining a ‘coalition of the willing,’ logistical constraints, as well as rules of engagement difficulties. While international law can always become a subject of debate, most states believe at the moment that only a UN resolution can authorize interception and search on the high seas, outside nations’ territorial waters, which would otherwise be piracy. Given the wide dismay with many recent U.S. international initiatives, which have been viewed as unilateral and perhaps unwise, the PSI is unlikely to gain such legal backing in the foreseeable future.

Interlinked with the difficulty of legal authority is the political muddling of a coalition to mount such operations. While at the political level assembling countries interested enough in the PSI may be difficult, it has been agreed that joint civil-military interdiction training exercises would be mounted “as soon as practicable.”

PSI naval operations will be easiest logistically if the most nations possible participate. However, in the current early stage of the initiative’s development it seems only the United States and Australia will be willing to participate, and it seems unlikely given Japanese and South Korean skepticism that any interception operations under the banner of the PSI will commence in East Asia for some time to come. Interdiction activities may however be practiced in East Asia as part of the routine, continuing web of U.S. and allied naval exercises without being termed as part of the PSI initiative.

Further action will first require a major change in international attitudes and in the real purposes of the U.S. government, to allow boarding foreign ships in international waters, hitherto seen as unlawful. For the time being, the world fears a new outburst of hegemonic military operations designed just to confirm the overwhelming U.S. domination as the sole superpower in a bitter age of unipolarity.

Luis Gutiérrez Esparza is President, Latin American Circle for International Studies (LACIS), and the Fundación por la Paz en la Era Nuclear (FPEN), Mexican chapter of the Nuclear Age Peace Foundation (NAPF); latamcent@hotmail.com.

**Mordechai Vanunu to Be Released – But Not Free**

April 21, 2004. If you can believe the word of the state of Israel, that is the day that Mordechai Vanunu will be released from prison for the crime of telling the world the truth about his government’s secret nuclear weapons program. The date is just five months short of his full 18-year sentence.

He will, however, not be free then. The former nuclear plant technician will face serious restrictions after his release from jail. The restrictions are based on clauses 108-109 of the State of Emergency statute passed in 1945 under the British Mandate. Under the regulations, Vanunu will be allowed to choose his town of residence, but will be forbidden to leave city limits unless he reports his intentions to the local police force. In addition, Vanunu will not be allowed to approach any border terminal, including Ben-Gurion International Airport, the country’s ports, or borders with the Palestinian Authority, as stipulated in a list of crossing points to be given to him by security officials. Also, Vanunu will not be allowed to be in contact with foreigners – whether in face-to-face meetings or by telephone, fax, or email – including foreign citizens residing in Israel. Vanunu also will not be allowed to approach foreign embassies and divulge details to anyone regarding the Dimona plant where he worked or the circumstances of his being kidnapped and transported to Israel. And he will not have passport privileges, and therefore, cannot leave the country. These restrictions will be in effect for six months. During that time, his behavior will be reviewed: if he does not try to circumvent the prohibitions, the restrictions might be lifted. The officials will warn Vanunu that should he try to violate the restrictions, he could be placed on trial.

If the Israeli government doesn’t unconditionally release Mordechai Vanunu, The “US Campaign to Free Mordechai Vanunu” wants your help to apply maximum pressure and demand that they do so. Check out the website www.nonviolence.org/vanunu/ for details.
Export of the Hanau MOX Facility and Its Possible Military Uses in China

Wolfgang Liebert and Michael Sailer

The Hanau plutonium plant was planned in the 1980s in order to produce special fuels for German nuclear power plants. For this purpose, plutonium, originating from the reprocessing of spent fuel elements, was to be processed together with uranium oxide to form uranium-plutonium mixed oxide (MOX) fuel elements. The plant is so designed that the ceramic fuel elements can be produced in several chemical and mechanical process steps; these include pulverizing, compressing, sintering, and grinding, as well as filling the fuel tablets into fuel rods. In principle, the plant in Hanau is capable of producing a variety of end products: uranium fuel elements (without addition of plutonium), MOX fuel elements with a plutonium content of around 5% for use in typical power reactors, or MOX fuel elements with a plutonium content of 40% or more intended for use in breeder reactors.

The technical design of such a plant is especially complex and expensive, because it is necessary to solve a number of safety-related problems. These include, in particular, the problem of criticality (the possibility of a chain reaction owing to the handling of fissile materials in high and extra-high concentrations must be excluded), the risks to employees from radiation (especially through neutrons) and the risks posed by respirable radioactive dusts (especially plutonium dusts). As a consequence, the processing operations in the plant are performed either under remote control or using so-called gloveboxes, whose complex ventilation systems with pressure graduation prevent releases into the working areas. In addition, the plant components are provided with elaborate shields against neutron radiation.

The Hanau MOX facility was unable to go into operation because of fundamental concerns, unresolved issues of licensing under atomic energy law and lack of economic competitiveness of MOX fuel rods in comparison with conventional uranium fuels. After relinquishment on the part of Siemens, the builder and operator, the export of the plant to Russia was discussed from 1995 to 2000. This idea came to nothing. Now, consideration is being given to exporting the plant to China. This, in turn, throws up some serious questions relating to the plant’s usability for military purposes, the risks of nuclear proliferation associated with the export of the plant, and the question of whether it appears possible to restrict the use of the plant to exclusively civil uses. The present paper provides information and assessments on these issues.

Potential Use for Military Purposes

The Hanau plant is of modular construction and could therefore – at least in part – also be used directly for military purposes. For instance, a partial use for plutonium processing for the nuclear weapons programme is quite conceivable. A nuclear weapon requires the production of plutonium metal (around 4-8 kilograms) in the form of hollow sphere segments (so-called ‘pits’). Substantial parts of the Hanau plant can be used for this purpose. These include not only equipment for analysis purposes, but also plant components for the cleaning of plutonium, for its chemical conversion into metallic form, and for its dimensionally accurate mechanical processing. Equally, parts of the plant could be used for the recycling of nuclear weapons, with the plutonium cores being removed from older weapons and being reused in new weapons of similar or new design. This likewise requires the plutonium to be processed and, if necessary, cleaned.

In principle, all the parts of the Hanau plant are suitable for the processing of 100% fissile material and therefore for the handling of weapons-grade plutonium if – in order to achieve criticality safety – the quantities of fissile material present in the plant components are limited. The Hanau plant’s remote control equipment and use of gloveboxes would facilitate the handling and processing of weapons-grade plutonium. The gloveboxes could also be operated in an inert gas atmosphere (argon, for example), this being useful in connection with the processing steps for nuclear weapons containing metal plutonium.

Apart from such a direct military use of parts of the plant, the Hanau plant could also be used to copy essential sub-technologies of military interest. The copied technologies could then be used elsewhere for the processing of plutonium for the production of warheads.

An indirect form of military use might consist in the production of fuel for plutonium-producing reactors for the weapons programme. Such reactors, which may be of various types, require the production of fuels in a corresponding plant. This might involve the production of uranium or MOX fuels for special production reactors or for power reactors used for the weapons programme in parallel with the production of power. Fuel could also be produced for a fast breeder reactor which could then be used for plutonium production for weapons purposes.

China’s Bomb And Nuclear Policy

As is well known, China is one of the five established nuclear powers with a permanent seat on the UN Security Council. China’s path to the atom...
bomb was levelled in part by support from the Soviet Union. In the second half of the 1950s, there was massive nuclear ‘friendly help’ which was only ended in 1960 when it became clear to the Soviets that they were unable to establish control over the Chinese programmes and that China’s goal was independent access to nuclear weapons. Following the withdrawal of Soviet advisers and engineers as well as termination of assistance with the already started construction of essential nuclear facilities, China initially set out on the uranium path to the bomb and suffered something of a delay before successfully coming onto the plutonium path.

The first nuclear weapons test took place as early as 1964 and involved an explosive force equivalent to 20 kilotonnes (kt) of TNT using highly enriched uranium (HEU). This first test already used a design which is, in principle, also suitable for the use of plutonium (implosion type). On this basis, China was able in 1966 to detonate a first fusion-booster 200 kt nuclear weapon. One year later came the first test of a thermonuclear device using uranium-235 and uranium-238 as well as fusible materials (lithium and deuterium) whose explosive force was of the order of magnitude of megatonnes. It took until late 1968 to test the first plutonium weapon. In 1971, China succeeded in testing a fusion-booster plutonium bomb. It is reported that China in 1988 tested a nuclear weapon with a high proportion of neutron radiation (so-called neutron bomb). By 1996 China had carried out a total of 45 nuclear weapons tests. The first test of an intercontinental ballistic missile took place in August 1981 with the Dong Feng 5 (Easterly Wind).

China is a straggler within the club of official nuclear powers. This is true also of its efforts at nuclear non-proliferation. Whereas the major nuclear powers have enforced the Limited Test Ban Treaty since 1963, it was only in 1980 that China stopped its above-ground nuclear weapons tests. Only in 1984 did China become a member of the International Atomic Energy Agency (IAEA). Not until 1992 was the nuclear Non-Proliferation Treaty signed. Only since 1997 has China supported international agreements of major supply countries on export controls in the field of weapons of mass destruction. In the decades before, China had apparently provided other countries with nuclear assistance of relevance for weapons, such as Pakistan (plutonium technology, centrifuge components), Iran (technologies in the field of uranium enrichment), and Algeria (research reactor).

**Nuclear Weapons Arsenal**

There is only a limited amount of reliable information on China’s nuclear weapons, because there are no detailed or comprehensive Chinese statements on which to rely. China’s present arsenal of nuclear weapons is likely to include some 400 warheads. Its nuclear weapons systems consist of a variety of ballistic missiles of different ranges, bomber planes based on Russian technology and one nuclear-equipped submarine which is reportedly only partially operational. Of particular significance are probably 20 intercontinental Dong Feng 5 ballistic missiles (also known as CSS-4) with a range of 13,000 km. Their warheads have a destructive force equivalent to 4–5 million tonnes of TNT. The build-up of this 33 – China’s only – intercontinental ballistic missile system made only slow progress (only seven systems had been deployed by 1998).

China’s fleet of bombers is considered to be obsolete, likewise the majority of its rocket systems. The only solid-fuel rocket type is in use in the submarine. All other nuclear missiles are operated on liquid fuel, i.e. they are not on constant alert. However, like all the other nuclear powers, China is modernizing its arsenal. As is customary in nuclear weapons programmes, old warheads are periodically removed from the arsenal and replaced by new or more modern systems, for which the fissile material is processed and re-used. Although the Dong Feng 1 programme, whose goal was an intercontinental system with multiple warheads, has apparently been discontinued, intensive work is under way on the Dong Feng 31 programme instead. This is a solid-fuel missile of improved accuracy and with a range of 8,000 km.

Multiple independently targetable re-entry vehicle (MIRV) warheads are being developed for this missile system. In 2000, knowledge was gained of a missile test with multiple warheads involving, in particular, the release of dummy warheads suitable for defeating or penetrating a missile defence system. Development work on MIRV systems has apparently already been in progress since the 1980s, as a response to US plans for missile defence programmes (which have changed since then only in their concrete technical design). The scandals of the late 1990s in relation to real or alleged Chinese espionage in US weapons laboratories turn on such modern nuclear weapons systems. China is in the meantime thought to have a MIRV capability, although MIRVing has apparently not yet occurred. According to a US National Intelligence Estimate of 2001, China is believed to be capable of building 75-100 MIRV warheads by 2015. The Dong Feng 31 is also being developed in a version with intercontinental range and is expected to replace the presently deployed Dong Feng 5 systems.

**Fissile Material Production**

China’s production of fissile materials for nuclear weapons can only be estimated with great uncertainty on the basis of presumed production capacities. It is assumed that, between 1964 and 1987 or 1989, a quantity of between 15 and 25 tonnes of highly enriched uranium was produced. Production of plutonium was started only later. At the Jinquan nuclear energy complex, a special production reactor went into service in 1967 and it was not until 1970, at the same location, that a slightly larger military reprocessing plant started operation, capable of separating the produced plutonium from the spent fuel elements. Initially, Soviet technology was used for this purpose. Later, China was able to employ its own separation technology, which is related to the PUREX process used in Western countries.

Owing to Chinese-Soviet co-operation, the first generation of nuclear plants with an important role in the weapons programme were situated a
few hundred kilometres from Mongol-
ia – within easy range of the Soviet military. Therefore, since the end of the 1960s, so-called ‘Third Line’ nuclear facilities have been constructed in the centre of China, thus more or less doubling all the essential facilities for materials production and also for nuclear weapons research and production. The latest estimate of Chinese plutonium production by independent US researchers Wright and Gronlund from 2003 states that, by 1991, around 2-5 tonnes of plutonium had been separated. In the mid-1990s, China announced that it had stopped its production of fissile materials for nuclear weapons in 1991. If one assumes that a few hundred warheads each contain 4-8 kilograms of plutonium, then China could have reserves of plutonium which, according to these estimates, might be between just a few hundred kilograms and up to around three tonnes.

**Impending Nuclear Weapons Expansion**

US strategic planning has for some years been undergoing profound changes (Nuclear Posture Review of 2001, National Security Strategy of 2002, etc). Accordingly, the main objectives include the ongoing maintenance and modernization of the nuclear weapons arsenal, its integration into the offensive US capabilities, the build-up of ballistic missile defences, the development of bunker-busting nuclear weapons intended for actual use, as well as pre-emptive warfare – in particular against the ABC weapons potentials of other countries.

Regardless of whether a US ballistic missile defence system can ever work, China considers its limited nuclear deterrent potential to be under threat and possibly at risk of being knocked out in the medium term by a pre-emptive US attack. This applies in particular to its small number of bunkered intercontinental ballistic missiles, which would be capable of reaching the whole of the USA. The fact of the matter is that US nuclear weapons are targeted at China and plans currently pursued by the US are giving fuel to Chinese suspicions.

Consequently, China is expected to respond to the US plans. According to the logic of nuclear strategists, the Chinese leadership must aim for the quantitative and qualitative upgrading of its arsenal in order to reduce its vulnerability to a US attack on its bunkered intercontinental ballistic missiles in combination with the possibly limited implementation of US ballistic missile defences. A suitable means of maintaining Chinese ‘deterrent potentials’ would be to deploy a far larger number of modernized intercontinental ballistic missiles, and also to equip them with multiple warheads, which would have to be newly produced (possibly adding decoys to the payload). The limited build-up with 200 warheads would already necessitate around one tonne of plutonium. No reliable assumption is possible as to whether China has the required corresponding reserves of plutonium. In the case of a larger-scale expansion program, which must be expected, China would be dependent on resuming its production of plutonium.

It must give cause for concern that, despite its declared moratorium on the production of fissile materials for weapons-related purposes, China has for a number of years refused to work together with the other nuclear powers to negotiate a formal cutoff treaty which would provide a binding international regulatory framework for a corresponding ban on production.

**Breeder Project**

With Russian assistance, an experimental breeder (Chinese Experimental Fast Reactor, CEFR) has been under construction since 2000. This fast breeder reactor will probably not be completed before 2005 and requires plutonium-uranium mixed-oxide fuel (MOX) of an average fissile material enrichment of around 50%. Almost 100 kg of uranium-235 and around 120 kg of plutonium are required for the initial fuel load. Therefore, a MOX facility like the Hanau plant is urgently required for the production of the fuel elements. China’s need is underlined by its previous efforts, once reported but now cancelled, to acquire fuel elements originally intended for the operation of the never-commisioned German breeder in Kalkar.

The purpose of breeders is to produce additional plutonium from natural uranium, positioned in the so-called breeding blanket around the reactor core, using the fast neutrons produced therein. This plutonium is of the highest weapons-grade quality, with an extremely high proportion of plutonium-239. Consequently, the use of breeders would be particularly attractive for a nuclear weapons programme. A precedent is the use of the French experimental Phénix breeder for the French nuclear weapons programme. According to information from the IAEA, although – in contrast to the normal goal of a breeder programme – the Chinese CEFR does not envisage the production of plutonium, the design of the core includes storage space for spent fuel elements in the periphery of the core which could certainly be used for breeding. In addition to the experimental 65 MW CEFR breeder, China is already planning a large power reactor.

**Dual Use, Chinese Style**

In China there is no serious separation between the civil and military parts of the nuclear programme. This can be illustrated with reference to the role of the China National Nuclear Corporation (CNNC). A state-owned enterprise established in 1988 as the successor to the Ministry for Nuclear Industry, the CNNC comprises some 200 enterprises and institutions with almost 300,000 employees. Its purpose is to satisfy both military and civil requirements in the nuclear field. This is a classic dual-use enterprise with the widest possible responsibility, including the procurement, processing and production of fuel, the reprocessing of fuel, the treatment of waste, research and development for new reactors, technology transfers within China and with other countries, nuclear safety and radiation protection, etc. The CNNC has set up a number of sub-enterprises and was re-organized in 1999 together with other nuclear institutions. According to information from the CNNC itself, the civil proportion of its work within the associated institutions amounted to only 5% in 1980, whereas
by 1996 it had risen to 75-80%. This is also a clear indication of China's nuclear ambitions in the energy sector. China is engaged in co-operation with nuclear firms from Germany, France, Canada, Russia and the US, which have a strong economic interest of their own in the expansion of the Chinese nuclear programme. Although a number of – in some cases imported – power reactors are already connected to the grid, nuclear power still accounts for less than one percent of all primary energy. In view of the high growth rates in primary energy demand of, on average, 3-4% per year, the International Energy Agency anticipates – in spite of massive plans for nuclear expansion – that, even by 2020, nuclear energy will still not account for even two percent of all primary energy use.

**Will Safeguards Work?**

The question is whether a military use of the Hanau plant or parts of it could be rendered impossible by safeguards implemented in China by the International Atomic Energy Agency (IAEA). IAEA safeguards are carried out in all those countries which are States Parties to the nuclear Non-Proliferation Treaty (NPT). The IAEA monitoring system in non-nuclear weapons states presently provides for the complete accounting of all flows of fissile materials between a country’s various installations in the form of the recording of incoming and outgoing materials. In addition, for some more complex (and particularly sensitive) installations, the flow of fissile materials is monitored within the installation itself at designated ‘transfer points’ which are in each case contractually fixed.

As a nuclear weapons state, China enjoys a privileged special status within the NPT and, accordingly, is not under any obligation to allow such complete monitoring of all its nuclear installations. All the five established nuclear weapons states allow only a small number of their installations to be monitored by the IAEA, with the consequence that there can be no accounting of the flows of fissile materials. Therefore, it is scarcely possible to prevent an indirect use of the Hanau plant for the production of plutonium for the nuclear weapons programme. If the aim is to prevent uranium or MOX fuels produced in the Hanau plant from being used in plutonium-producing reactors for the Chinese nuclear weapons programme, then the safeguards-based monitoring regime would also have to include all transfers from the plant to such reactors. Furthermore, it would be necessary to monitor all potential plutonium-producing reactors, including the experimental breeder reactor, and their spent fuel elements, including transfers to other plants (especially reprocessing plants). At any rate, IAEA monitoring of the Hanau plant itself would be completely inadequate and, in actual fact, pointless. This means that China would, in principle, have to submit to a safeguard system of the kind established in non-nuclear weapons states which allows inspection of the entire flow of fissile materials.

**Need for New Types of Inspections**

Even the described safeguard system would not be sufficient, because it involves in essence the accounting of the flows of fissile materials. This would do little to prevent the direct military use of parts of the Hanau plant. An effective inspection regime for the plant, once re-erected in China, would have to include regulations on what specific source, intermediate, and end products (permitted materials) could be handled in the plant and what technical options could be used for an appropriate inspection regime (inspection methods, locations, and intervals). Such an inspection regime does not presently exist and would have to be specially developed.

Equally, it would be necessary to implement safeguard inspections for the event that parts of the Hanau plant were re-erected in the civil-military or military nuclear industry elsewhere in China or for the event that copies were made of sensitive parts of the plant for use in the weapons programme. Once again, the conventional IAEA system of the accounting of fissile materials is inadequate in this case. The IAEA would only be presented with basic data on the construction of the plant and not with detailed information on the technical design of all the components; likewise, the ‘asset history’ of the components is not covered by the IAEA monitoring regime. These restrictions on the knowledge available to the IAEA are justified in particular on competition grounds in order to protect national or company-specific know-how. Accordingly, the IAEA would not seriously be able to check which specific parts of the plant were actually re-erected at the plant’s new site, whether parts of the plant had been replaced and brought to other locations for use there. This is true to an even greater extent with regard to monitoring the use of any copies of technical components. An effective inspection regime would first have to record all the parts of the plant in detail, oversee their re-erection in China, establish a reporting regime for any subsequent changes and define an inspection regime for all essential components covering the entire life-cycle of the components. Such a nuclear inspection regime is so far without parallel and would have to be specially developed.

**Risks of the Plutonium Economy**

The construction of the Hanau fuel plant in China would represent a clear step towards the beginning of an extensive plutonium economy which China is planning. To date, however, there is still no sign of a major commercial reprocessing plant capable of separating from radioactive wastes sufficient quantities of plutonium for such a nuclear programme. The capacity of the Hanau plant, which could process five tonnes of plutonium per year, is at any rate massively oversized both for the present situation of the energy industry in China and also for the foreseeable future. (China has officially stated that it has not to date separated any plutonium from its civil power reactors. The military reprocessing capacities thought likely to exist at the moment would also be too small for use within the energy industry. Moreover, the complex separation and reuse of plutonium has proved to be uneconomic everywhere in the world).
The separation and processing of plutonium, the transport of plutonium and its handling at many different sites with the aim of its use in a reactor creates diverse possibilities for plutonium to be diverted for weapons-related purposes. Consequently, Germany cannot have an interest in helping countries in other parts of the world to gain access to a technology which is so proliferation-prone.

These aspects were already considered in the case of the – cancelled – export of the Hanau plant to Russia. In the case of China, however, there is not even the intention to use the plant to make plutonium from disarmed warheads more inaccessible.

**Where Would the Export of the Plant Lead to?**

We must earnestly ask what the Chinese leadership wishes to use the Hanau plant for. High technology from the West obviously arouses fundamental desires. This gives cause for concern, because the structure of the Chinese nuclear complex is such that imported technology can be expected not to be put just to civil use, but may also resurface in a military context.

Since the high technical and safety standards of relevant components (or copies of them) must appear attractive, the possibility cannot be ruled out that parts of the Hanau plant will be used directly for the production of warheads as part of the nuclear weapons programme, thus contributing to the ongoing modernization of the Chinese nuclear weapons arsenal. Equally, it is likely that the plant will be used indirectly for military purposes, namely for the production of fuel for plutonium-producing reactors. The military use of the Chinese breeder programme, which is dependent on a MOX facility like the Hanau plant, would be especially attractive for the weapons programme.

It would be naive to assume that China will not react to the new nuclear-strategic plans of the US. Massive Chinese nuclear weapons expansion would require plutonium in greater quantities than before. This would be especially true if China were to introduce multiple warhead technology (MIRV) for its weapons systems. Additional plutonium production would then probably be necessary, as would the expansion and/or modernization of a Chinese capacity for warhead production. The Hanau plant could thus become one important element within a Chinese nuclear weapons expansion programme.

Consequently, exporting the Hanau plant to China harbours a high risk of its being used directly or indirectly for military purposes, even if an inspection regime (IAEA safeguards) is established for the plant covering the various aspects discussed above. If more serious measures were to be taken to prevent possible military use, then much more would need to be done. China, as a nuclear weapon state, would have to declare itself willing to allow additional monitoring of the flows of fissile materials in all potentially downstream installations. These include all possible plutonium-producing reactors, including the breeder, the reprocessing plants, as well as further installations. Such willingness, however, is most unlikely, because China, as a privileged nuclear power, will not consent to forms of monitoring of its civil-military nuclear programme which are not also established in the other nuclear weapon states. Even then, the typical form of IAEA monitoring of flows of fissile materials would not be sufficient. In order to rule out the possibility of direct military use of parts of the plant, it would even be necessary, as explained in greater detail above, to develop and then establish a completely new inspection regime. This would have to focus on the real end products of the plant, on all sensitive components, their whereabouts, as well as their possible use in other locations.

If, in response to US policy, there is quantitative and qualitative nuclear weapons expansion on the part of China, with the export of the Hanau plant from Germany making its contribution to this process, this would be a�ascio for German non-proliferation and disarmament policy. Chinese nuclear weapons expansion can serve neither German nor global interests. Consideration should also be given in this regard to the further destabilization of East and Southeast Asia, a region which is, already today, being seriously affected by the nuclear policy pursued by North Korea. The chain of reactions in countries such as Taiwan, India, Pakistan, and Japan would be vast.

China’s actual intentions in seeking to import the plant remain unfathomable. The capacity of the Hanau plant would be completely oversized for a long time in relation to Chinese ambitions to establish a plutonium economy in the energy sector. The inherent risks are considerable. It has been German policy, consciously and properly, to adopt a different approach in Germany itself, namely to put an end to the plutonium economy.

As a final point, the provisions of the German Foreign Trade and Payments Act stipulate that the possibility of military use of exported goods must be ruled out. In our opinion, such a possibility definitely cannot be ruled out if the Hanau plant were exported to China.

**Michael Sailer**

Michael Sailer is Deputy Director of Öko-Institut (Institute for Applied Ecology) in Darmstadt; m.sailer@oeko.de.

**Wolfgang Liebert**

Wolfgang Liebert is Senior Researcher at the Interdisciplinary Research Group Science, Technology and Security (IANUS) at Darmstadt University of Technology; liebert@hrzpub.tu-darmstadt.de.

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Resolving the North Korean Nuclear Programs
Technical Approaches

- Jungmin Kang

The second round of six-party talks on the North Korean nuclear issue held in Beijing, China on February 25-28, 2004, saw certain agreements on major principles, such as the non-nuclearization of the Korean Peninsula, but failed to make any progress on the most urgent issues such as North Korea's controversial highly enriched uranium (HEU) program and on details such as freezing and dismantling the North Korean nuclear programs, both those based on the plutonium program and on the HEU program, and the compensation that would follow. The result of the talks is that the six nations agreed to hold more senior-level talks before July 2004 and to form a lower-level working group to handle details, but without any breakthrough in the issues.

Background

Tensions on the Korean Peninsula increased due to the North Korean plutonium program, and the prospect of war hung over the peninsula in June of 1994. Fortunately, following three high-level negotiations between the US and North Korea, the two countries concluded the 1994 U.S.-North Korea Agreed Framework (so-called Agreed Framework) to produce an overall settlement of the nuclear issues on the Korean peninsula on October 21, 1994, and calmed the crisis on the Korean peninsula.

Until December 2002, the Agreed Framework had frozen the North Korean plutonium program in return for the supply of two light water reactors (LWR) and 500,000 tons of Heavy Fuel Oil annually to North Korea.

However, North Korea lifted the freeze on its plutonium-based nuclear program and expelled the International Atomic Energy Agency (IAEA) inspectors in December 2002 because the US halted its shipment of Heavy Fuel Oil in November 2002, accusing North Korea of having a secret HEU program in violation of the Agreed Framework. At that point, LWR construction was far behind schedule. The second North Korean nuclear crisis has begun then.

Since then, the situation on the Korean peninsula has continued to deteriorate. According to Dr. Siegfried S. Hecker, a Senior Fellow at Los Alamos National Laboratory who visited Yongbyon on January 8, 2004, the 5 MWe reactor has been restarted and the spent fuel pond, in which about 8,000 spent fuel rods had been stored, was empty. North Korea claimed to have processed all 8,000 spent fuel rods to extract plutonium during one continuous campaign between mid-January and the end of June 2003. North Korea showed Dr. Hecker what was claimed to be a sample of plutonium metal produced during that campaign.

There were a couple of attempts to solve the North Korean nuclear crisis peacefully among the interested nations: the three-party talks in April 2003 (China, North Korea, and the United States), and the first six-party talks in August 2003 (China, Japan, North Korea, Russian Federation, South Korea, the United States). However, they just resulted in confirming each side's arguments between the US and North Korea.

The US has persistently demanded complete, verifiable, and irreversible dismantlement (CVID) of the North Korean nuclear programs, both plutonium- and HEU-based. The United States did not back down from making this demand throughout the second round of six-party talks on the North Korean nuclear program that were held in Beijing, China, in February 2004. North Korea has denied its HEU program and strongly refused the US demand of “CVID.”

Even though the U.S. welcomed the results of the second six-party talks, North Korea regarded the talks as having “no positive result.” The results of the talks were that the six nations agreed to hold more senior-level talks before July and form a lower-level working group to handle details, but without any breakthrough in the North Korean nuclear issues.

The North Korean Plutonium Program

According to David Albright of the Institute for Science and International Security, North Korea might have removed a sufficient amount of spent fuel to contain up to about 11 kg plutonium from the 5 MWe reactor, including spent fuel containing plutonium from the IRT-2000 research reactor at Yongbyon.

North Korea removed and stored about 8,000 spent fuel rods containing about 25-30 kg plutonium from the 5 MWe reactor since 1994. North Korea claims to have processed all these 8000 spent fuel rods to extract plutonium by the end of June 2003.

As of January 8, 2004, the 5 MWe reactor has been in operation, and another 8000 fuel rods have been loaded since early 2002. About 6 kg plutonium produced annually will be accumulated in the 8000 fuel rods if the 5 MWe reactor continues its operation.

More than 50 kg plutonium annually would be produced at the 50 MWe reactor at Yongbyon and more than 200 kg at the 200 MWe reactor at Taechon once their construction is finished. However, this will take at least another two years.

The maximum capacity of the Yongbyon reprocessing facility is known to be about 0.38 t spent fuel daily, up to about 0.76 t spent fuel if the second reprocessing line in the
same facility is constructed. This means that 8,000 spent fuel rods with a weight of 50 t could be reprocessed within 132 days if North Korea reprocessed 0.38 t spent fuel daily. However, the practical capacity of the Yongbyon reprocessing facility would be much lower than this because the facility has been frozen for a decade, even though its maintenance has been kept.

The North Korean HEU Program

According to the US government, North Korea acknowledged its secret HEU program when James Kelly, Assistant Secretary of the US State Department, visited Pyongyang in October 2002. However, it is said that Kelly told the North Korean officials that the US knew that North Korea was violating the Agreed Framework by covertly enriching uranium, but that he did not produce any evidence. North Korea has denied its HEU program. The existence of a North Korean HEU program is still controversial.

The HEU production capability of North Korea depends on the number of centrifuges North Korea has. One centrifuge could produce up to about 30 g of weapon-grade HEU annually, with approximately five separate work units. Therefore, at least 850 centrifuges are needed to produce 25 kg weapon-grade HEU, which the IAEA defines as the “significant amount” of weapon-grade HEU needed to build one bomb. This assumes that all centrifuges would actually be in continuous operation the whole year.

North Korea could not make centrifuges by itself, considering its low level of industrial technology. The typical rotor of centrifuge is spun rapidly at 50,000-70,000 rpm. The North Korea would need to smuggle a large number of centrifuges from abroad to produce a significant amount of HEU.

The following statement of John Bolton, Under-Secretary of the US State Department, implies the current status of HEU production capability of North Korea. According to Fred McGoldrick, a nuclear consultant, in 2003, John Bolton said “What we have said publicly and in consultation is not that the North Koreans have nuclear weapons produced through the enrichment program” but that the North Koreans “are seeking a production scope capability to produce weapons-grade uranium.”

Priority of Concerns

Besides using spent fuel containing up to about 11 kg plutonium that North Korea might have extracted before 1994, North Korea already has separated, as claimed, or could soon separate 25-30 kg plutonium from the 8,000 spent fuel rods. The 5 MWe reactor, in operation since early 2002, could produce another 6 kg plutonium annually in its reloaded 8000 fuel rods. Accumulation of plutonium in the fuel rods increases with time.

Considering the low industrial technology of North Korea and the large number of centrifuges and time-consuming job needed to produce HEU, North Korea is not expected to produce significant amounts of HEU in the near future.

Therefore, we need to pay more attention to stopping the progress of the North Korean plutonium program rather than the HEU program.

Concluding Remarks

First of all, North Korea should immediately re-freeze its re-started plutonium program and accept the return of the IAEA inspectors for confirmation.

Secondly, North Korea should be co-operative on the process of verification of its plutonium produced and separated recently and/or before 1994, with inspections performed by the IAEA or other special inspection groups. Since 100% verification cannot be achieved, the US and North Korea should negotiate on the verification level of the North Korean plutonium program. It would take more than 3-4 years to finish the verification even if North Korea is willing to be very cooperative.

Thirdly, after verification, North Korea should be cooperative in the process of dismantlement of its nuclear facilities relevant to plutonium production and separation.

The above recommendations are based on the assumption that the US and North Korea reached the same conclusion in removing the North Korean nuclear program by whatever negotiations.

Regarding the controversial North Korean HEU program, the US should have technical talks with North Korea to discuss the US beliefs about the program. If the US is chanting the term “CVID” like a mantra, the North Korean HEU issue cannot be resolved. Detection of an HEU program is very difficult because of the characteristics of the enrichment process of uranium. Unless North Korea makes the unlikely decision to allow all its military bases and underground bunkers to be subjected to inspections, nuclear inspections would be impossible.

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Jungmin Kang (Ph.D) is a Nuclear Analyst in Seoul, South Korea; tel. +82-16-503 23 78; jm Kang55@hotmail.com.

New INES Newsletter

INES Newsletter No. 44 of February 2004 is available, either in printing (contact ines.office@web.de for a copy) or on the web (www.inesglobal.org/news44.htm). It contains the following articles:

- Peace and Sustainability Under the Umbrella of US Military Policies
- The case of the Middle East by Bahig Nassar
- Chemical Weapons Convention after the First Review Conference by Jiri Matousek
- The dawn of a pseudoscience - Between astrology and revealed truth: Economy by Hugo Estrella Tampieri
- Sending humans to Mars won’t save the earth - A press statement by Scientists for Global Responsibility
- Farewell to Luis Masperi - Hugo Estrella Tampieri
- INES Council 2003
- Peace and conflict in a time of globalization
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The Nuclear Confrontation in South Asia

M. V. Ramana and Zia Mian

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I. Introduction

The 1998 nuclear tests by India and Pakistan dramatically worsened the security situation for over a billion people in the subcontinent. Since then the two countries have continued to engage in a slow but steady arms race involving qualitative and quantitative developments and a gradual consolidation of nuclear weapon infrastructure. Nuclear use doctrines are taking shape. There have also been two major military crises, both prominently featuring nuclear threats.

Section II of this chapter presents an overview of Indian and Pakistani relations since the 1998 nuclear tests. Section III discusses the crisis of 2002. Section IV describes the nuclear doctrines of India and Pakistan and nuclear force developments are covered in section V. Section VI examines the role of nuclear weapons, and section VII presents the conclusions.

II. Overview: 1998-2002

The Lahore Declaration

Once the incendiary rhetoric characterizing the immediate aftermath of the nuclear tests had subsided, India and Pakistan appeared to take their first steps towards arms control and détente, partly in order to assuage domestic and international fears. As with the superpowers during the cold war, India and Pakistan sought to move the terms of the nuclear debate away from disarmament and towards managing the nuclear threat. The culmination of this process was the Lahore summit meeting in February 1999 between Indian Prime Minister A. B. Vajpayee and Pakistani Prime Minister Nawaz Sharif. The Lahore Declaration committed both countries to “take immediate steps for reducing the risk of accidental or unauthorized use of nuclear weapons and discusss concepts and doctrines with a view to elaborating measures for confidence building in the nuclear and conventional fields, aimed at prevention of conflict.” The accompanying Memorandum of Understanding signed by the foreign secretaries of the two countries called for limited transparency measures. Unfortunately, even these steps were not implemented. Nevertheless, the Lahore Declaration offers a possible basis for limiting the threat of nuclear weapons in the region and initiating nuclear disarmament, should the two countries reach a period of better diplomatic relations.

The Kargil War

The slight hopes that the Lahore meeting offered for restraint in South Asia were dashed within a few months. In May 1999, just one year after the nuclear tests, two months of bitter fighting broke out when Pakistani soldiers and Islamic militants crossed the Line of Control (LoC) dividing Pakistani Kashmir from Indian Kashmir and occupied a mountain ledge near the town of Kargil. To dislodge them, the Indian Army both literally and figuratively had to fight an uphill battle, taking heavy casualties in the process. Estimates of the total number of casualties sustained by both sides vary from 1,200 to 2,000.

For the first time since the 1971 war that led to the independence of East Pakistan and the creation of Bangladesh, India used its air force to launch attacks. In response Pakistan put its air force on ‘red alert,’ scrambled its own fighters and tested air raid sirens in its capital city, Islamabad. Both countries conducted army exercises at various points along the borders and both navies were put on alert.

Political leaders, strategic analysts and sections of the media in both countries called for a more aggressive war and the opening of new fronts. There were calls in India for the bombardment of Pakistani supply routes to Kargil. Some went even further. Kushabhau Thakre, then national president of the ruling Bharatiya Janata Party (BJP), suggested that the ultimate aim, after evicting infiltrators from the Kargil region, should be to take back the part of Kashmir held by Pakistan.
Pakistan denied that its armed forces were involved and claimed that the fighters were Kashmiris fighting for independence, but the international community was not convinced and demanded that Pakistan order the fighters to withdraw. As Indian troops gained ground and Pakistan stood isolated diplomatically, Nawaz Sharif flew to Washington, where President Bill Clinton bluntly told him he should withdraw Pakistani forces or be prepared for fullscale war with India. Based on information from intelligence sources, Clinton informed Nawaz Sharif that the Pakistani Army had mobilized its nuclear-tipped missiles. Unnerved by this disclosure (Sharif reportedly seemed “taken aback” when confronted with this fact) and the resulting potential for disaster, Nawaz Sharif agreed to immediate withdrawal, shedding all earlier pretensions that Pakistan had no control over the attacks.

There are also reports suggesting that nuclear weapons were kept ready on the Indian side. The most credible of these reports claimed that India activated all its three types of nuclear delivery vehicles and kept them at what is known as ‘Readiness State 3’ – meaning that some nuclear bombs would be ready to be loaded on their delivery vehicles at short notice. These temporary deployments may well become regular practice, driven by the belief attributed to Indian policymakers that Pakistan’s willingness to exploit its nuclear weaponry means that India would have to find ways of waging limited war that would not lead to the eventual use of nuclear weapons.

The 1999 Military Coup

The coup in Pakistan in October 1999 led by General Pervez Musharraf was a key development. Musharraf was seen in India as the architect of the Kargil War and relations between the two countries deteriorated sharply. The only major meeting between the leaders of the two countries’ governments, the Agra Summit of 14-16 July 2001, produced no agreement.

The coup has also allowed India to portray differences between itself and Pakistan as a conflict between a democratic nation and a dictatorship – with mixed success. This is encapsulated in the argument, put forward by some Indian leaders, that India and the United States have a special relationship as “the largest democracy and the oldest democracy” – an argument that has, at best, received a lukewarm reception in the USA.

III. The Crisis in 2002

On 13 December 2001, Islamic militants attacked the Indian Parliament in Delhi. Fourteen people were killed, including five of the assailants. Claiming that the Islamic militant group Lashkar-e-Taiba was responsible for the attack, Indian leaders issued an ultimatum warning of dire consequences if Pakistan failed to close down the offices of the Lashkar-e-Taiba and those of another militant group, the Jaish-e-Mohammed. Although Musharraf probably did not order or authorize the attack, India cut off communications with Pakistan. The Indian ambassador in Islamabad was recalled to Delhi, road and rail links were closed, and Pakistani airlines were banned from using Indian airspace.

At the height of the ensuing crisis, over half a million troops, about two thirds of them Indian, were moved to the border. According to Indian Defence Minister George Fernandes, the Indian military was “raring to go.” He also warned Pakistan not to consider using nuclear weapons, saying: “We could take a strike, survive, and then hit back … Pakistan would be finished.” Pakistan Foreign Minister Abdul Sattar was quoted as saying that his anxieties were “mounting not only by the day but by the hour.” Perhaps because of concerns about the possibility of an Indian strike on Pakistani airbases, the Pakistani Air Force practiced landing and taking off from the Islamabad-Lahore highway. Fortunately, the Indian Government did not launch an attack, in part because of General Musharraf’s statement on 12 January 2002 that he was banning the Lashkar-e-Taiba and the Jaish-e-Mohammed, and the situation settled down somewhat.

In May 2002 two attacks were carried out in Kashmir within two weeks, the first of which was on the wives and children of Indian soldiers posted in the region. Once again India claimed that the attacks were perpetrated by gunmen who had crossed from Pakistan “three or four days” before. As proof, it claimed that a chocolate bar made in Pakistan was found in a pocket of one of the attackers.

India moved five warships from its east coast to the Arabian Sea. On 22 May, Prime Minister Vajpayee told front-line troops in Kashmir that the time had come for a “decisive fight,” adding “we will win again.” Soon after, an Indian Army officer briefed a senior journalist about plans for a quick attack that would set back “Pakistan’s military capability by at least 30 years, pushing it into the military ‘dark ages,’” adding that “casual-
ties in men and machines in such an operation will be high and the military has firmly told the politicians to prepare the nation for losses and delayed results, as fighting will be fierce. Details of the plans for attack, with a ‘D-day’ of 15 June 2002, have since been confirmed by the current Indian Army chief. Leaders on both sides made a number of nuclear threats. Fortunately, the situation cooled down within weeks.

In a parallel with the 1962 Cuban missile crisis, there were also incidents that could have accidentally led to war. In March 2002, a senior Indian Air Force officer flew a transport plane across the LoC and spent 11 minutes in Pakistan’s airspace, during which time a surface-to-air missile was fired by Pakistan, damaging his aircraft. The Indian officer then tried to hide his mistake by reporting to the chief of the air force that the incident was minor and had created no problems. It was only when the Indian Army forward posts filed their reports, which were eventually passed on by the chief of the army to the air force, that the magnitude of the incident became clear.

Although it did not develop into war, there are a number of factors that make the 2002 crisis more dangerous than the Kargil War – especially in its implications for India-Pakistan relations in the future. Unlike Kargil, where Pakistan is clearly seen to have lost – especially politically – the 2002 crisis is claimed as a victory by both sides. On the Indian side, General Musharraf’s January 2002 promise that he would rein in Pakistan-based militant organizations is seen as proof that India’s “coercive diplomacy” worked. Indian leaders also emphasize that the military crisis forced the international community to recognize Pakistan’s support for terrorism.

Pakistan claims the opposite. Despite the huge build-up of forces by the Indian side, and much talk of attacking so-called terrorist camps within Pakistan, India did not actually conduct any military attacks. That a massive military confrontation with strong nuclear overtones is seen as a victory for one side is dangerous enough, but both sides viewing it the same way increases the likelihood that similar incidents will occur in the near future.

There are also those in India who see General Musharraf’s concessions as not being particularly effective in controlling the militancy in Kashmir. However, the conclusion drawn from this is not to seek a different political strategy but instead to call for a more aggressive military response, including strikes into Pakistan. This again makes the situation very unstable.

The Changed International Climate after 11 September 2001

The international context for the South Asian military confrontation in 2002 was set by the terrorist attacks on the USA of 11 September 2001. Indian leaders used the opportunity to portray the Kashmir issue as primarily one of terrorism and India as its victim. It was quick to offer airbases and other logistical support to the US military with the aim of isolating Pakistan. The USA, on the other hand, wanted to exploit Pakistan’s geographical advantage and its close ties to the Taliban. Realizing the dangers of civil instability that could arise from allying with the USA, Pakistani leaders hesitated but, in the end, agreed to provide support for the USA’s military campaign in Afghanistan.

The key impact on the 2002 crisis came from the decision by the USA to unilaterally bomb Afghanistan without a UN Security Council resolution. Immediately, several Indian politicians, media commentators and military personnel called publicly for India to follow the USA’s lead and attack facilities in the part of Kashmir held by Pakistan. In November 2001, for example, even before the attack on the Indian Parliament, a meeting of high-level Indian army officers recommended “hot pursuit” of terrorists in Pakistan-occupied Kashmir and destroying their training camps. These sentiments may have been accentuated by the response of US leaders to the 13 December attack. Both President George W. Bush and Secretary of State Colin Powell were reported to have said that India had the right to self-defence. Many media commentators interpreted this to mean that the USA wanted India to destroy purported terrorist camps in Pakistan, as was done in Afghanistan.

The trend has continued. Soon after the crisis subsided, Indian Foreign Minister Jaswant Singh claimed that every nation had the right of pre-emption, adding, “It is not the prerogative of any one country.” While India has not so far attacked across the border, this opinion is now an accepted part of the political and strategic discourse within India.

The Role of the International Community

India and Pakistan have been among the largest importers of conventional arms for many years. After 11 September, traditional suppliers continued to sell weapons, in some cases to both countries. However the USA, which had previously followed a highly restrictive approach regarding arms exports and military assistance to India and Pakistan, became more active in selling weapons and offering military assistance to India and Pakistan as part of its efforts to influence policy in the region.

The arms race is unequal. Pakistan has a smaller economy and lower rate of economic growth. Seeking to persuade the USA to increase military aid to Pakistan, Pakistani leaders have argued that peace in the region can be neither guaranteed nor durable because of the growing disparity in conventional weaponry. It is ironic that the same argument was used to advocate nuclear weapons prior to the 1998 tests. General Musharraf has claimed that Pakistan’s conventional deterrence prevented the war.

The Role of the USA

With India and Pakistan vying for US support, it is not surprising that US diplomacy was able to play a role in the de-escalation of tensions. Anxious not to have India and Pakistan get in the way of the prosecution of its war in Afghanistan, US leaders made a number of promises to both sides. In particular, sanctions imposed after the nuclear tests of 1998 were lifted and Indo-US military ties in-
creased to a level described as “unprecedented” by General Richard B. Myers, Chairman of the US Joint Chiefs of Staff. Several highlevel officials made visits to the region and the crisis received the personal attention of President Bush and others. This balancing act paid off. However, in the event of other militant attacks, or similar triggers, in the future it is not certain that the situation could be resolved in a similar way.

IV. Doctrines

Indian Doctrines

In August 1999, shortly after the Kargil War, the Indian National Security Advisory Board released its draft report on Indian nuclear doctrine (Draft Nuclear Doctrine, DND). Although the board’s recommendations have not been accorded the status of official policy, the DND remains the most comprehensive view of India’s emerging nuclear posture. Largely modelled on the doctrines and deployment postures of the nuclear weapon states, the DND states that “India shall pursue a doctrine of credible minimum nuclear deterrence.” According to the DND, this requires: (a) sufficient, survivable and operationally prepared nuclear forces; (b) a robust command and control system; (c) effective intelligence and early-warning capabilities; (d) planning and training for nuclear operations; and (e) the will to employ nuclear weapons. The requirement for India to have ‘operationally prepared’ nuclear forces is usually interpreted to mean deployment of nuclear weapons on delivery vehicles. Deployment of India’s nuclear weapons would, according to the DND, involve a “triad of aircraft, mobile land-based missiles and sea-based assets” structured for “punitive retaliation” so as to “inflict damage unacceptable to the aggressor.” The DND envisaged an “assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time.”

In January 2003, the Indian Government published a brief official nuclear doctrine. This reiterated some of the elements of the DND, including the plan to build and maintain a “credible minimum deterrent” and the statement that “nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.” In common with the DND, the official statement does not define ‘minimum,’ leaving open the possibility of a constantly expanding arsenal. Although it claimed to have a posture of no-first-use, wherein ‘nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere,’ it went on to significantly weaken the policy by claiming the right to nuclear retaliation if India was attacked using chemical and biological weapons. The policy may also reflect the advice of the National Security Board, which had recently argued that India should drop the no-first-use policy. The caveat about CBW attacks may well be the first step in completely repudiating the no-first-use policy.

Parts of the military and the more hawkish sections of the strategic community are the main players pushing for the development of a larger and more usable nuclear force. The triad structure recommended by the DND is an example of their influence. The armed services support this structure because each service would like to have nuclear weapons of its own. They have also been involved in a struggle over who would control the nuclear arsenal. The growing role of the military is also likely to generate pressures for a launch-on-warning posture for the nuclear arsenal that brings with it a grave risk of accidental nuclear war.

Pakistani Doctrines

In Pakistan, the overwhelming dominance of the army has left no scope for other political and bureaucratic players and institutions.

There has been no official pronouncement on nuclear weapons use or deployment doctrines in Pakistan. A newspaper article by Agha Shahi, Zulfiquar Ali Khan and Abdul Sattar, former Foreign Secretary, Air Marshal and Foreign Minister, respectively, may illuminate the typical thinking of Pakistani policy makers. The article stressed survivability of the arsenal and the necessity for it “to be upgraded in proportion to the heightened threat of pre-emption and interception. … In the absence of an agreement on mutual restraints, the size of Pakistan’s arsenal and its deployment pattern have to be adjusted to ward off dangers of pre-emption and interception.” The authors also suggest that: “A high state of alert will become more necessary as India proceeds with deployment of nuclear weapons.”

With regard to the use of weapons, the article argued in favour of following NATO’s flexible response strategy of using nuclear weapons even in response to a conventional attack. “The assumption [is] that if the enemy launches a general war and undertakes a piercing attack threatening to occupy large territory or communication junctions, the ‘weapon of last resort’ would have to be invoked.”

Another account, based on comments by General Khalid Kidwai, Director of the Pakistani Army Strategic Plan Division, states that nuclear weapons will be used only “if the very existence of Pakistan as a state is at stake.” This would include situations where: (a) India attacks Pakistan and takes a large part of its territory; (b) India destroys a large part of Pakistan’s armed forces; (c) India imposes an economic blockade on Pakistan; or (d) India creates political destabilization or large-scale internal subversion in Pakistan. Finally, it has also been suggested that, if India were to penetrate to a line joining Gujranwala, Multan, Sukkur and Hyderabad, then ‘it is likely Pakistan would have to accept defeat or employ nuclear weapons.’

It seems fairly clear that Pakistan’s policy makers envisage the use of nuclear weapons in a variety of contingencies, although these contingencies are perhaps delineated in the hope that they may never come to pass.

India, reflecting its conventional military superiority over Pakistan, has
claimed that it has a no-first-use policy, although, as noted above, this policy has been weakened somewhat in the recent nuclear doctrine. In response, Pakistan has asked India to sign a no-war pact. Since India has refused to sign such a pact, there has been an impasse.43

V. Nuclear Force Developments

India and Pakistan continue to produce fissile materials and develop missiles.44 There have been no official statements regarding plans for the eventual size of nuclear arsenals from either side. While it is possible to find semi-official arguments for arsenals involving anywhere from 100 to over 400 nuclear weapons, the size of the nuclear forces are currently, and will remain, limited by the constraints of their fissile material and missile inventories. Pakistan’s nuclear arsenal is smaller and will almost certainly remain so.

Currently, neither country is believed to keep its nuclear weapons mounted on missiles and ready for launch. However, they would be able to prepare their nuclear weapons for launch within a fairly short period of time – possibly within a few hours. This time period could be significantly shorter if the weapons were fully integrated into the armed forces. India has been gradually moving towards this position. Should India continue along this path, Pakistan is certain to follow.

In the midst of the 2002 crisis, both India and Pakistan tested new nuclear capable missiles. India began in January 2002 with a test of a 700 km version of the Agni—clearly specific to Pakistan since it is not capable of reaching any significant targets in China.45 Pakistan responded by testing three missiles (the 1500 km Ghauri, the 300 km Ghaznavi and the 180 KM Abdi) later in the year. In December 2001, India moved the short-range, nuclear-capable Prithvi missile to locations close to the border, bringing major Pakistani cities such as Islamabad, Rawalpindi, Lahore and Faisalabad within striking range.46 The following month, it was reported that Prime Minister Vajpayee had granted authorization for the armed forces to use the missile at their discretion.47

Indian Nuclear Force Developments

In March 2002 the Indian government announced its decision to induct the 2000 km range Agni-II missile, capable of delivering a nuclear warhead, into the military.48 Unlike the prototypes developed in the 1980s, the newer versions of the Agni missile are solid-fuelled, enabling them to be fired rapidly. A special missile regiment has been formed to operate the missile.49 There have been other, less publicized, signs of the imminent military deployment of nuclear weapons. Military officers have reportedly been undergoing training in the handling of nuclear devices at the Bhabha Atomic Research Centre.50 India conducted large-scale military exercises in May 2001, during which Indian President Abdul Kalam – the ‘father’ of the Indian missile programme – revealed that the armed forces were training to use nuclear weapons.51 It is known that the Indian armed forces have been making detailed plans for operations involving nuclear weapons. Following the publication of the DND in 1999, the three armed service headquarters were reportedly “involved in drawing up detailed schemes for inducting a variety of nuclear armaments and ancillary and support equipment in their orders-of-battle ... [and] appropriate command and control frameworks.”52 Subsequently, the air force publicly announced that it had decided on its operational plans.53 There may, of course, be other more secret preparations.

In January 2003, the Indian Government announced that it had set up a twolayered structure called the Nuclear Command Authority (NCA) to manage its nuclear and missile arsenals. The NCA is comprised of the Political Council, chaired by the prime minister, and the Executive Council, chaired by the national security adviser to the prime minister. According to the announcement, the Political Council is the sole body able to authorize the use of nuclear weapons. However, “arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities” are also mentioned, that is, it anticipates contingencies in which someone other than the prime minister may have to, and will be able to, order the use of nuclear weapons.

Pakistani Nuclear Force Developments

On 9 January 2003, the Ghauri (sometimes called the Hatf V) missile was inducted into the army. Receiving it, President Musharraf, who is also the army chief-of-staff, stated that it was “a proud day” for him “to accept the Ghauri on behalf of the army’s Strategic Forces Command” and expressed the hope that the induction would “radiate the necessary effects of deterrence.”54 The 750 km range Shaheen-I was handed over to the military in March.55 These ceremonies were largely formalities – in reality the Pakistani Army has always controlled the nuclear and missile programmes.

The domination by the armed forces is also reflected in the organization responsible for formulating policy and exercising control over the development and employment of Pakistan’s strategic nuclear forces – the National Command Authority, created in February 2000.56 Pakistan’s National Command Authority has three components: the Employment Control Committee, the Development Control Committee and the Strategic Plans Division. The military’s representatives are in a majority in all of them.

The Employment Control Committee is chaired by the head of the government and includes the cabinet ministers of foreign affairs, defence and the interior; the chairman of the Joint Chiefs of Staff Committee (JCJSC); the military service chiefs; the director-general of the Strategic Plans Division (a senior army officer), who acts as secretary; and technical advisers. This committee is thought to have been charged with making nuclear weapon policy, including the formulation of policy on the decision to use nuclear weapons.

The Development Control Committee manages the nuclear weapon
complex and the development of nuclear weapon systems. It has the same military and technical members as the Employment Control Committee but lacks the cabinet ministers that represent the other parts of government. The Development Control Committee is chaired by the head of the government and includes the CJCSC (as its deputy chairman), the military service chiefs, the director-general of the Strategic Plans Division and representatives of the weapon research, development and production organizations. These organizations include the A.Q. Khan Research Laboratory in Kahuta; the national development complex; and the Pakistan Atomic Energy Commission. The committee also includes the newly created National Engineering and Scientific Commission, headed by Samar Mubarakmand, who was formerly the head of technical development at the Pakistan Atomic Energy Commission and led the team that conducted the nuclear weapon tests.

The Strategic Plans Division is located in the Joint Services Headquarters under the CJCSC and is led by a senior army officer. This division acts as the secretariat for the NCA and has responsibility for planning and coordination and, in particular, for establishing the lower tiers of the command-and-control system and its physical infrastructure.

VI. The Role of Nuclear Weapons

Threats and Nuclear Brinkmanship
One of the recurring themes in recent South Asian military crises has been the threatened use of nuclear weapons by leaders in India and Pakistan, following the practices of Soviet and US leaders during the cold war. These tactics predate the 1998 nuclear tests. While formally denying that they possessed nuclear weapons, Pakistan’s leaders at times played on the widely held belief in the international community that Pakistan did have a nuclear weapon capability. Although the facts remain controversial, it is widely believed, especially in Pakistan, that Pakistani leaders resorted to nuclear threats during the military crises in 1987 and 1990 as a way of signalling their determination to forestall potential Indian attacks or invasions. During the Kargil War, Indian and Pakistani officials and ministers delivered indirect and direct nuclear threats no fewer than 13 times.

The 2002 crisis was no exception to this pattern. Jana Krishnamoorthy, president of the ruling BJP, set the tone when he warned in December 2001 that, if a nuclear weapon is used by Pakistan, “its existence itself would be wiped out of the world map.” For his part, Prime Minister Vajpayee warned that “no weapon would be spared in self-defence. Whatever weapon was available, it would be used no matter how it wounded the enemy.” Indian Army Chief General Sundararajan Padmanabhan claimed that if Islamabad dared use its nuclear weapons: “The perpetrator of that particular outrage shall be punished, shall be punished so severely that the continuation of any form of fray will be doubtful,” and expressed his readiness “for a second strike” since he felt that India had “enough” nuclear arms.

In Pakistan, former Chief of the Army General Mirza Aslam Beg declared: “We can make a first strike, and a second strike or even a third.” In December 2002, General Musharraf disclosed that he had planned for an “unconventional response” to a possible Indian attack across the border. The subsequent explanation that he meant “people rising against the Indian armed forces” left most observers unconvinced.

Unofficial discourse
Hindu nationalist groups in India and Islamic fundamentalist groups in Pakistan have also indulged in nuclear threats. Of these, the statements made by the Rashtriya Swayamsevak Sangh (RSS), the backbone of the Sangh Parivar ‘family’ of Hindu nationalist organizations, of which the ruling BJP is the parliamentary wing, are noteworthy.

During the Kargil War, the RSS newspaper Panchjanya put out this call: “The time has come again for India’s Bhooma to tear open the breasts of these infidels and purify the soiled tresses of Draupadi with blood. Pakistan will not listen just like that. We have a centuries-old debt to settle with this mindset. It is the same demon that has been throwing a challenge at Durga since the time of Mohammad Bin Qasim. Arise Atal Behari! Who knows if fate has destined you to be the author of the final chapter of this long story? For what have we manufactured bombs? For what have we exercised the nuclear option?”

During the Kargil War, another RSS newspaper, The Organiser, wrote that Pakistan’s “very existence has become inimical not only for India but for the entire civilized world. Pakistan deserves to be punished for all its errors of commission and omission … [The] time has come to solve the problem of Pakistan forever and for all.” Similarly, the head of the Vishwa Hindu Parishad, another member of the Sangh Parivar family of Hindu nationalist organizations, stated that Prime Minister Vajpayee “should break Pakistan into 40 parts.” These statements are significant because there has been a gradual shift within the ruling BJP towards a more militant attitude towards relations with Pakistan. Hardliners have found it useful to take advantage of events such as the attack on the Indian Parliament to expand their power base within the BJP and further their agenda. This shift has accelerated since the anti-Muslim pogrom in Gujarat in March-May 2002. The Gujarat Chief Minister, Narendra Modi, is considered by many to be a future challenger to Vajpayee. In the November 2002 state elections in Gujarat, he deftly brought foreign policy, especially Pakistan’s purported support for terrorism, into the campaign.

The strategy had resonance with the voters, in part because of the attack on a Hindu temple in Akshardam, Gujarat, by Islamic militants in September 2002. One of Modi’s campaign slogans was that a victory for the Congress Party (the main opposition party) would result in celebrations in Islamabad. While campaigning for Modi in the elections, L. K. Advani, Deputy Prime Minister and a prominent BJP hard-liner, challenged Pakistan to a fourth war.

Pakistani religious groups are not as close to power as their Indian
counterparts. However, their views are important because of their extensive involvement in the militancy in Kashmir and their ideas about jihad (holy war). As Qazi Hussain Ahmad of the Jamaat I-Islam, one of the largest Islamic groups, declared in 1993: “Let us wage Jihad for Kashmir. A nuclear-armed Pakistan would deter India from a wider conflict.”69

Shortly after the attack on the Indian Parliament, a radical Islamist group, the Jamiat-ul-Mujahideen, faxed a statement to a news agency in Srinagar in the Indian part of Kashmir with the message that the jihad in Kashmir was launched with the sole aim of starting a war between India and Pakistan.70 This, the statement predicted, would ultimately result in a resolution of the Kashmir issue. However, there is little evidence of widespread support for radical Islamic ideologies in the Pakistani military or security services.

Perceptions of Nuclear Deterrence

Leaders in both India and Pakistan see the 2002 crisis as having been resolved in their favour – at least partially. Since India had a greater military presence on the border and was threatening to attack, albeit in a limited fashion, it should not be surprising that Pakistani leaders have credited their nuclear weapons with having deterred India.

Indian leaders have also asserted the efficacy of nuclear deterrence and the power of their nuclear weapons. However, “they cannot agree on what this power is or does, and even contradict each other on its role and function.”71 First, Prime Minister Vajpayee claimed that the recent crisis showed that India had, in effect, successfully called Pakistan’s nuclear bluff. Next, President Abdul Kalam claimed that nuclear weapons had averted any kind of war. (Embarrassingly, this was in essence the same claim as that made by President Musharraf and contrary to what Prime Minister Vajpayee was saying). Finally, General V. P. Malik, former Chief of Army Staff, stated that nuclear weapons were largely irrelevant for conventional warfare and played no deterrent role during the Kargil War or in the 2002 crisis.

Indian views on the role of Pakistani nuclear weapons are even more puzzling. A section of the Indian nuclear policy-making community has had a ten-dency to belittle Pakistan’s nuclear capability.72 In the past, for example, leading scientists have declared that Pakistan could not have enriched uranium to the levels required to make a bomb. The nuclear tests by Pakistan ended such speculation.73 However, the idea reappeared in a different guise during the 2002 crisis. K. Subrahmanyam, an influential Indian strategist, suggested that, in the aftermath of 11 September, and with the increased US presence in Pakistan, if Pakistan were to deploy any nuclear missiles the USA would destroy them.74 Pakistan would not therefore be able to use its nuclear weapons – a comforting, if fallacious, idea.

The most important lesson of the Kargil War for Indian leaders was that India would have to find ways of waging limited war without provoking Pakistan to cross the nuclear threshold. In other words, India has embarked upon a search for strategic space in which to act. In January 2000 Defence Minister George Fernandes, once a trade union leader and one of the few prominent political leaders to oppose the 1974 nuclear test,75 declared that the Kargil War had shown that the nuclearization of India and Pakistan had not made conventional wars obsolete.76 Instead, it “simply imposed another dimension on the way warfare could be conducted.” More recently, Fernandes warned that if Pakistan launched a nuclear attack, it would be “wiped out.”77 This should be seen in conjunction with his stated desire to find the strategic space in which a limited war could be waged. By promising massive retaliation, rather than flexible response, there is an expectation that limited war will stay at the conventional level.

Reflecting the thinking popularized by US nuclear strategists such as Herman Kahn in the 1950s,78 Malik elaborated on his concept of limited war: “The escalation ladder would be carefully climbed in a carefully controlled ascent by both protagonists.”79 An indication of the initial step in such a ladder comes from Musharraf’s statement that the decision not to cross the LoC “may not be applicable to the next war.”80 This emphasis on crossing the border, despite the fact that it would be into a nuclear-armed Pakistan, shows the persistence of institutional practices within the Indian military. As General V. R. Raghavan – former Director General of Military Operations for the Indian Army – observes, offence has been “the defining emphasis” in wars between India and Pakistan and “this pattern is unlikely to change in a future war. Indian plans are firmly based on taking a future war into all Pakistani territory, even if the conflict commences in Jammu and Kashmir.”81

The view, held in Pakistan, that Pakistan’s nuclear weapons protected it during the Kargil War and prevented the war from escalating is open to question. Riedel suggests that, during the meeting at Blair House between Clinton and Nawaz Sharif, Pakistan was looking for US support to ward off an Indian attack.82 Moreover, as argued above, the Kargil War was actually caused by nuclear weapons because their possession by Pakistan emboldened its army to carry out the plan.83

VII. Conclusions

Following the Indian nuclear tests of May 1998, L. K. Advani claimed that “India’s decisive step to become a nuclear weapon state has brought about a qualitatively new state in India-Pakistan relations, particularly in finding a lasting solution to the Kashmir problem.” In the intervening period, there has been no evidence of any solution to the Kashmir problem, but it is clear that there is now a qualitatively new state of relations between the two countries – an altogether more dangerous one.

This new relationship is more belligerent and aggressive and nuclear threats play a prominent role. There have also been major military crises and small wars, and there is a likelihood of similar occurrences in the future. The military on both sides, but especially in India, have been making plans to deal with such contingencies, including the use of...
nuclear weapons. The situation is likely to become worse with the further nuclear deployments by both India and Pakistan.

The one redeeming feature, in the aftermath of the nuclear tests, has been the emergence of an active peace movement in South Asia. Both India and Pakistan now have national coalitions of civil society groups working for nuclear disarmament and peace. Over and above the desire to avoid war and potential nuclear catastrophe, the large costs imposed by nuclear armaments on the already poor economies and the environmental impacts of the process of manufacturing and testing these weapons have been major motivating factors. The success of this movement may be the best hope for true and sustained peace in the region.

1 On 11 and 13 May 1998 India carried out a series of 5 nuclear explosions. Pakistan conducted its own series of 6 explosions on 28 and 30 May 1998. Both states declared a moratorium on further testing shortly afterwards. Independent seismologists have challenged official claims about the number and yields of these nuclear tests.

2 The Lahore Declaration is available at www.indianembassy.org/South_Asia/Pakistan/lahoredeclaration.html.


6 See, e.g., Take the fight to Pakistan, exhots retired general, Rediff on the Net, 5 July 1999, www.rediff.com/news/1999/jul/05 kashl2.htm. The argument is based in part on the assessment that Pakistan's nuclear arsenal is too limited to undertake anything more than a limited deterrence strategy.


9 Chengappa, R. (a senior journalist with India Today who has extensive contacts with defence personnel), Weapons of Peace: The Secret Story of India's Quest to be a Nuclear Power (Harper Collins: New Delhi, 2000), p. 437.


21 Chink in the armour, Asian Age, 12 May 2002.


24 Possibility of war cannot be ruled out, Times of India, 12 Dec. 2001.

25 Sultan Shahin (note 12).


27 For details of arms transfers to India and Pakistan in 2002 see chapter 13 in SIPRI Yearbook 2003.


34 Draft report (note 32), emphasis added.


39 Shahi, A., Ali Khan, Z. and Sattar, A., Securing nuclear peace, News International, 5 Oct. 1999. It is important to remember, however, that military planning and policy making in Pakistan are dominated by the army and not by the foreign office or the air force.


42 This may include either a naval blockade or a denial of access to Indus River waters.


44 For an argument about how these two offers could be usefully linked, see: Haidar, E., Managing nuclear weapons in South Asia: in search of a model, in: M. V. Ramana and C. Rammanohar Reddy (eds.), Prisoners of the Nuclear Dream (Orient Longman: New Delhi, 2003).

45 For details see chapter 15 and appendix 15A in SIPRI Yearbook 2003.


47 Thapar, V., Pakistan missiles moved near the border in Punjab, Hindustan Times, 25 Dec.
2001. The Prithvi missile is not believed to be armed with nuclear warheads. However, it has the capability and there are no guarantees that it will not be, especially during a military crisis—as Chengappa’s account of deployment during the Kargil War suggests (note 9).


53 IAF draws up nuclear strategy, Times of India, 8 Oct. 2002.


59 Bidwai and Vanaik (note 13) p. vii.

60 Pak would be wiped out if it uses nuclear bomb: BJP, Times of India, 25 Dec. 2001.


63 Hoodbhoy, P., What, us worry?, Los Ange- les Times, 9 June 2002, www.zmag.org/ content/showarticle.cfm?SectionID=4&tite miID=1927. To put this in perspective, Gen- eral Beg’s view of nuclear war is that “you can die crossing the street or you could die in a nuclear war. You’re got to die some day anyway.”


67 Following an arson attack on a train carrying Hindu activists, in the town of Godhra, Gujarat, in which 58 people were killed, gangs associated with the Sangh Parivar group of Hindu nationalist organizations killed over 2000 people, most of them Mus- lims. According to India’s National Human Rights Commission, Gujarat Chief Minister Narinder Modi is said to have instructed his police force not to intervene as Hindu mobs killed Muslims and burned their property. The few police officers who tried to intervene were removed from their jobs. “We have no orders to save you:” state participa- tion and complicity in communal violence in Gujarat, Human Rights Watch, vol. 14, no. 3 (Apr. 2002), www.hrw.org/reports/2002/ india/India402-03.htm#P386_67534. For some distinctive aspects of the pogrom see Ramana, M. V., Gujarat and the politics of hate, Daily Times, 2 May 2002, www.goocites. com/m_v_ramana/gujarat.htm.


73 To save face, many went on to claim that Pakistan had stolen its technology from other countries.


77 India warning over nuclear war, BBC News, 7 Jan. 2003, news.bbc.co.uk/2/hi/ south_asia/2636157.stm.

78 Kahn, H., On Thermonuclear War (Prince- ton University Press: Princeton, N.J., 1961), discussed the constellation of nuclear forces that result in the smallest risk of being used; and On Escalation: Metaphors and Scenarios (Frederick A. Praeger: New York and Lon- don, 1965), addresses the issue of the use of nuclear weapons during war.


81 Raghavan, V., Limited war and nuclear escalation in South Asia, Nonproliferation Review vol. 8, no. 3 (fall/winter 2001), pp. 82-98, p. 90.

82 Riedel (note 8).

83 See, e.g., Hoodbhoy (note 63).

For God and Profit

Pervez Hoodbhoy

There is widespread skepticism, both domestically and internationally, of the Pakistani establishment’s claim that it knew nothing of Dr. A.Q. Khan’s activities as he roamed the globe, handing out recipes for making the deadliest weapon known to mankind. Excellent reasons back this skepticism.

It is impossible that the government was unaware of the shady undertakings of Pakistan’s highly celebrated bomb-maker – a metallurgist who is often, but wrongly, referred to as a “nuclear scientist” – for the simple reason that he had widely and openly advertised his wares over the last decade. For example, every year, 2003 included, when the proliferation controversy heated up and his surreptitious activities turned out to be a nightmare. Even as the proliferation controversy was already hot, Islamabad was festooned with colorful banners advertising workshops on Vibrations In Rapidly Rotating Machinery, and Advanced Materials, sponsored by the Khan Research Laboratories (also known as the Kahuta Laboratories). The workshops had obvious and immediate utility for centrifuge technology, essential for producing bomb-grade uranium.

In earlier years, Dr A.Q. Khan and his collaborators had published a number of papers on critical issues regarding the balancing of centrifuges and magnetic bearings. These dealt with technical means of enabling centrifuge rotors to spin close to the speed of sound without disintegrating, essential for making bomb-grade uranium. It could scarcely be more blatant. But to make absolutely certain the message was being received, Kahuta issued glossy brochures aimed at “classified organisations.”

As part of the alleged plea-bargain with General Musharraf’s government, Dr A.Q. Khan’s megalomaniac ego and his escapades over the last decade and a half, eventually turned out to be a nightmare. Even as the proliferation controversy heated up and his surreptitious activities came to light, he defiantly declared in a Geo-TV interview in late December: “Who made the atom bomb? I made it. Who made the missiles? I made them for you.”

While Dr A.Q. Khan’s famed lust for wealth and real estate may have been part of the motivation to proliferate, the real cause lies elsewhere. From the inception of the nuclear bomb programme, the Pakistani establishment has sought to turn its nuclear ambitions and success into larger gains. For one, it wanted and gained the support of hundreds of millions of Muslims the world over by claiming to provide a Muslim “success story.” For another, it enabled Pakistan to enjoy considerable financial and political benefits from oil-rich Arab countries. Among others, Libya reportedly bankrolled Pakistan and may even have supplied raw uranium. After Pakistan successfully tested in May 1998, the Saudi government preferred an unannounced gift of four-billion-dollars worth of oil, spread over a period of five years, to help Pakistan tide over difficulties caused by the resulting international sanctions.

Both General Zia ul Haq, under whose rule the bomb programme achieved success, and the succeeding Chief of Army Staff, General Mirza Aslam Beg, who headed the Pakistan army from 1988-1991, subscribed to a pan-Islamic vision. Possessed by the idea of “strategic defiance” of the US, and of turning Pakistan’s nuclear capability to its full strategic and financial advantage, Beg in particular wanted strong defence ties with Iran. According to Ishaq Dar, who was Pakistan’s minister of finance in the Nawaz Sharif government, Beg had suggested a 12-billion-dollar price tag for nuclear assistance to Iran. It seems that some scientists in Kahuta followed up on these ideas.

It is a supreme irony of history that Iran and Libya – both Islamic countries and recipients of Pakistan’s nuclear largesse – split the beans on Pakistan. In his marathon press conference in which he announced that Dr. A.Q. Khan’s plea for pardon had been accepted, General Musharraf lashed out at the two countries for caving in to international inspectors and turning over documents on their nuclear programmes. “Our Muslim brothers did not ask us before giving our names,” he said. He showed no gratitude at their having exposed an international crime ring.
General Musharraf is reported to have given Colin Powell his “four hundred percent assurance that there is no such interchange taking place now.” This may be enough for the Americans, worried as they are about Musharraf’s life and his government’s stability. But it is worth remembering that this is not the only instance of scientists from Pakistan’s nuclear weapons complex selling their skills. Two years ago, it was scientists from the Pakistan Atomic Energy Commission who wanted to play their role in the jihad, and in a fit of Islamic solidarity, went to Afghanistan and met with Osama and the Taliban. It is hard to believe they were the only ones so inclined.

Pakistan’s bomb-makers, like the bomb itself, have become a problem. They have seriously darkened the country’s reputation by engaging in illegitimate nuclear commerce. Worse, they have put it in serious danger of a devastating attack by the United States if a nuclear device is ever used against an American city. It is very likely that should this cataclysmic event ever happen, the Americans will bomb first and look for proof later.

Pakistan will have to put its nuclear house in order. Anything less than strict and complete accountability, regardless of rank or reputation, will leave the door open for those who may wish to try their luck, or in whom the ‘fire of faith’ burns bright. Whether for profit or God, Dr A.Q. Khan and his cohorts, have long violated the laws of the state they have always claimed to defend. To pardon this heinous crime against humanity, and allow them to keep their ill-gotten wealth, is a travesty of justice and the law.

Beyond A.Q. Khan
The Gas Centrifuge, Nuclear Weapon Proliferation, and the NPT Regime

■ Alexander Glaser

The recent exposure of an operating supplier network around the Pakistani scientist A.Q. Khan has propelled the front-end of the nuclear fuel cycle back into the center of the non-proliferation debate. The ongoing debate is focused upon measures that emphasize export controls and technology denial as a primary means to halt nuclear proliferation.1 These are insufficient or even inadequate proposals because they address only part of the problem. The gas centrifuge for uranium enrichment is a highly proliferation-prone technology. Nonetheless, its large-scale commercial use has never been seriously discouraged. Indeed, the centrifuge plays an increasing role in the enrichment industry and all facilities recently built, under construction, or planned are based on centrifuge technology. In 2001, for the first time, a larger enrichment capacity was provided by centrifuges than by the gaseous diffusion process.

As will be argued below, the fact that advanced centrifuge technology has been developed and deployed in various regions of the world without having a competitive technological alternative to it, may become a central dilemma for future nuclear energy use – unless an internationally acceptable and non-discriminatory supply system can be devised and agreed upon.

Centrifuge Technology

The development of centrifuges for isotope separation began in the 1930s and had already been considered for uranium enrichment during the Manhattan project. In the early days, the technology was not competitive with alternative enrichment processes, because huge facilities based on the gaseous diffusion process were already under construction or operational and no further capacities were needed. Nonetheless, development of the gas centrifuge continued after World War II, especially in the Soviet Union, but later also in Western Europe and the U.S. With the installation of significant capacities in the U.K., the Netherlands, and Germany since the 1970s and the technological advances that came along with the associated research and development programs, the modern gas centrifuge gradually became the workhorse of the international enrichment industry. Table 1 lists centrifuge facilities worldwide and their respective operational status.2

In essence, the gas centrifuge is a rapidly rotating, vertically oriented rotor, into which a uranium-containing gas (UF₆) is injected. Once following the motion of the wall, the gas molecules experience an enormous centrifugal force and accumulate on the inner surface of the rotor. Based on an elementary physical effect, the relative abundance of the lighter uranium-235-containing molecules increases with distance from the wall due to the mass difference of the two relevant uranium isotopes. This effect can be used to extract a product from the machine that is slightly enriched in the desired isotope.3 In practice, several thousand machines have to be connected in parallel to generate significant uranium throughput and connected in series to achieve adequate enrichment of the product – a configuration called cascade.4

The Safeguards Approach to Centrifuge Facilities

The first enrichment facilities in the world were built for military purposes and, hence, designed and used for HEU production. These facilities were unsafeguarded then and usually still are so today. Until the mid-1970s, supply of enrichment services for commercial purposes

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Pervez Hoodbhoy is professor of nuclear physics at Quaid-e-Azam University, Islamabad; hoodbhoy@isb.pol.com.pk.
was monopolized by a few nuclear-weapon states. Only then it became obvious that non-nuclear-weapon states, namely some Western European countries with advanced nuclear programs, would aspire and acquire independent enrichment capacities, which would be placed under safeguards.

For these reasons, work on safeguards procedures on enrichment facilities started relatively late and was then focused on centrifuge facilities, the main candidate to be covered by safeguards. Furthermore, studies carried out under the auspices of the IAEA in the 1970s revealed that no simple safeguards concept existed that would be adequate for centrifuge enrichment facilities. This is mainly due to the fact that centrifuge facilities show a high degree of operational flexibility, which complicates safeguards procedures in general. At the same time, they do also involve sensitive technologies, which is why technology holders have been generally concerned that design information might be compromised by visual access to the machines. Unsurprisingly, the question of whether or not inspectors would have access to the cascade halls at all was subject of considerable debate during negotiations on safeguards concepts for centrifuge facilities.

The original safeguards concept developed specifically for centrifuge facilities under an INF-CIRC/153-type agreement emerged from the discussion and analysis of the Hexapartite Safeguards Project (HSP) that convened from 1980 to 1983. In essence, the HSP approach, which became the de facto standard for centrifuge facilities since then, envisions two conceptually different activities:

- Activities outside the cascade halls are primarily based on "conventional" safeguards practices and are focused on material accountability to deter or detect diversion of declared material.
- Activities inside the cascade halls are used to verify that no material beyond the declared enrichment level, and in particular no HEU, is being produced. Access to the cascade areas is governed by the so-called Limited Frequency Unannounced Access (LFUA) concept, which regulates delay and maximum duration of the visits, as well as permitted activities of the inspectors.

More recently, safeguards techniques applied in centrifuge facilities have been extended by Environmental Sampling (ES) or High Precision Trace Analysis (HPTA). Approved by the IAEA in 1995 and used on a routine basis since then, the method consists in the collection of deposited particles with swipe samples, usually taken during inspections of the cascade areas along the agreed access routes. Subsequently, these samples are analyzed off-site allowing extremely accurate determination of the composition of the feed and product material. This method is a formidable tool to identify traces of HEU in general and has been extremely successful so far. As a result, clandestine production of HEU in a safeguarded declared facility has become an extremely risky undertaking for a potential proliferator as it is effectively doomed to be uncovered sooner or later.

### Proliferation Challenges

Uranium enrichment technology has always been recognized as a highly sensitive technology. Indeed, it is the only technology used in the civilian nuclear fuel cycle whose technicalities were not shared within the Atoms for Peace program—contrary to the details of plutonium reprocessing. While some enrichment processes are more proliferation-prone than others, the main barrier preventing a faster spread in the past was the difficulty to master enrichment technologies, a feature inherent to all known processes. Possible proliferation risks associated with enrichment technologies in general, and with centrifuge technology in particular, are listed in Table 2.

Only one category of proliferation and diversion scenarios for enriched uranium are addressed by traditional safeguards measures applied in declared facilities under an INF-CIRC/153-type agreement. Current safeguards standards are very effective in verifying that no declared material has been diverted and that no HEU has been or is being produced in the facili-

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### Table 1: Centrifuge enrichment facilities of the world.

<table>
<thead>
<tr>
<th>Country</th>
<th>Location/Name</th>
<th>Status</th>
<th>Start-Up</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>BRN Aramar</td>
<td>Operational</td>
<td>1992</td>
<td>5 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>BRF Armaraz</td>
<td>Operational</td>
<td>1998</td>
<td>4 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Resende</td>
<td>Under Construction</td>
<td>2004</td>
<td>120 tSWU/y</td>
</tr>
<tr>
<td>China</td>
<td>Shaanxi</td>
<td>Operational</td>
<td>1997</td>
<td>200 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Lanzhou 2</td>
<td>Under Construction</td>
<td>2005</td>
<td>500 tSWU/y</td>
</tr>
<tr>
<td>France</td>
<td>GBII Tricastin</td>
<td>Planned</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>Jülich</td>
<td>Operational</td>
<td>1964</td>
<td>Laboratory</td>
</tr>
<tr>
<td></td>
<td>Gronau</td>
<td>Operational</td>
<td>1985</td>
<td>1,800 tSWU/y</td>
</tr>
<tr>
<td>India</td>
<td>Rattechali</td>
<td>Operational</td>
<td>1990</td>
<td>3–10 tSWU/y</td>
</tr>
<tr>
<td>Iran</td>
<td>Natanz</td>
<td>Under Construction</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Israel</td>
<td>Al Furat</td>
<td>Destroyed in 1991</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>Dimona</td>
<td>Operational</td>
<td>1980</td>
<td>Pilot scale</td>
</tr>
<tr>
<td>Japan</td>
<td>Ningyo-Toge</td>
<td>Shutdown in 2004</td>
<td>1979</td>
<td>75 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Ningyo-Toge</td>
<td>Shutdown in 2004</td>
<td>1989</td>
<td>200 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Rokkasho</td>
<td>Operational</td>
<td>1992</td>
<td>1,050 tSWU/y</td>
</tr>
<tr>
<td>Libya</td>
<td>Abandoned in 2004</td>
<td></td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Almelo</td>
<td>Operational</td>
<td>1973</td>
<td>2,200 tSWU/y</td>
</tr>
<tr>
<td>North Korea</td>
<td>?</td>
<td>Under Construction</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Kahuta</td>
<td>Operational</td>
<td>1984</td>
<td>5 tSWU/y</td>
</tr>
<tr>
<td>Russia</td>
<td>Sverdlovsk</td>
<td>Operational</td>
<td>1949</td>
<td>7,000 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Severik</td>
<td>Operational</td>
<td>1950</td>
<td>4,020 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Angarsk</td>
<td>Operational</td>
<td>1954</td>
<td>1,000 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Krasnoyarsk</td>
<td>Operational</td>
<td>1984</td>
<td>3,000 tSWU/y</td>
</tr>
<tr>
<td></td>
<td>Capenhurst</td>
<td>Operational</td>
<td>1972</td>
<td>2,300 tSWU/y</td>
</tr>
<tr>
<td>US</td>
<td>Portsmouth</td>
<td>Awaiting license</td>
<td>?</td>
<td>Pilot scale</td>
</tr>
<tr>
<td></td>
<td>?</td>
<td>Planned</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

Total centrifuge capacity operational in 2004: ~ 23,000 tSWU/y  
Total enrichment capacity available in 2004 (all processes): ~ 53,500 tSWU/y  
Total enrichment capacity required in 2004: ~ 35,000 tSWU/y
ty – the latter aspect strongly benefit-
ing from the environmental sampling
techniques introduced in the 1990s and
supplementing the somewhat limited
LFUA concept.

However, current safeguards
procedures are based on the funda-
mental assumption that no unde-
clared material is processed in the fa-
cility – and they are not designed to
detect such an activity. To address
this issue, one could require addi-
tional surveillance in the facility or
install instruments monitoring urani-
um flow and enrichment on a con-
tinuous basis.8 Such a strengthened
safeguards approach would require
revision and a negotiated upgrade of
the existing one.

Detection of Undeclared Facilities
With covert HEU production in a
safeguarded facility becoming more
difficult to conceal effectively, the
construction of undeclared facilities
ironically becomes more attractive or
“inevitable” for a potential prolifer-
tor. Clearly, detectability of such facil-
ities would be highly desirable – but
the experience made recently in Iran
points in a different direction.

The main concerns specific to
centrifuges relevant in this context are
their low energy consumption and the
small process area compared to alter-
native processes in use today, namely
gaseous diffusion: the footprint of a
centrifuge facility large enough to
produce 25 kg of HEU annually is
about 600 square meters and its ener-
gy consumption would be less than
100 kW.9 Both numbers indicate that
detection by satellite remote-sensing
techniques is virtually impossible.
Another option to detect an unde-
clared nuclear facility would be to use
wide area environmental monitoring
(WAEM) to collect characteristic par-
ticle samples emitted by the plant.
Note, however, that an enrichment fa-
cility based on the centrifuge process
uses equipment operated under high-
vacuum conditions. Leaks primarily
lead to an inflow of air into the cen-
trifuge equipment, not to a significant
release of gas molecules from the sys-
tem. Even though the presence of ura-
nium-containing particles in any op-
erational or previously operational
facility can be detected inside the build-
ing with the above-mentioned sam-
ppling techniques, for plausible reasons,
a centrifuge facility is no major emitter
of characteristic signatures that would
be readily detectable via WAEM.

Again, safeguards are obviously
not designed for this category of pro-
liferation scenarios. The provisions in
the IAEA Additional Protocol do
however facilitate detection of unde-
clared facilities substantially, although
not necessarily in a timely manner.

Breakout Scenario
Finally, an existing and declared en-
richment facility may be used for
overt HEU production in a breakout
scenario. The use of nuclear technolo-
gies under national control for this
proliferation path can never be ex-
cluded once a political decision has
been taken to violate a safeguards
agreement or related international
treaties, to which the country is a par-
ty. Nonetheless, contrary to other en-
richment processes, a centrifuge facili-
ty can be reconfigured and used to
produce HEU without delay – a fact
that is obviously of serious concern in
the present context.

Due to the high separation fac-
tor of a modern gas centrifuge, only a
small number of stages is required to
enrich uranium to significant urani-
um-235 fractions. The hold-up time
of the material in each stage reported-
ly is in the order of 10-20 seconds and,
as a consequence, the total mass of
uranium (as UF6 gas) present in the
cascade is extremely low, typically be-
tween several 100 grams and one kilo-
gram.10 A low inventory is equivalent
to a short period of time required to
achieve a new enrichment level, which
typically is in the order of one hour. It
should be emphasized that alternative
enrichment processes, like the gaseous
diffusion process or the chemical ex-
change process – the latter studied in
the 1980s – have equilibrium times in
the order of several months or even
years, which makes facilities based on
these processes rather unattractive as-
sets to rely upon in a breakout-sce-
nario compared to the alternative plu-
tonium-extraction route.

What Can Be Done About
It? Moving Beyond Traditional
Frameworks

For the above reasons, in many cir-
cumstances, even a comprehensive
safeguards approach may be consid-
ered inadequate to address all prolif-
eration risks associated centrifuge
technology. As a remedy, the idea of
multinational operation of sensitive
nuclear facilities – or even of an inter-
nationalized nuclear fuel cycle –
comes to mind. This idea is not new.
In fact, the concept was invoked in the
earliest days of post-war organization
of atomic energy.

To begin with, it is worthwhile
to examine existing arrangements and
assess their non-proliferation impact.
Both existing multinational arrange-
ments for uranium enrichment, Uren-
cos and Eurodif,11 were not designed
with non-proliferation criteria in
mind, but mainly to minimize and
share economic risks involved in de-
veloping enrichment technologies
able to compete with existing U.S.
supplies. It is not surprising, there-
fore, that these arrangements do not
hold out very well against an analysis
of non-proliferation criteria. Table 3
compares both arrangements with re-
spect to their non-proliferation attrib-
utes using a set of criteria based on an
erlier analysis.12

<table>
<thead>
<tr>
<th></th>
<th>Declared Facility</th>
<th>Undeclared Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covert (operation as declared)</td>
<td>Diversion of LEU (abrupt or protracted)</td>
<td>Production of HEU (possibly using LEU feed)</td>
</tr>
<tr>
<td>Covert (with modifications)</td>
<td>Excess LEU production (or production of HEU)</td>
<td></td>
</tr>
<tr>
<td>Overt</td>
<td>Break-out scenario</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Proliferation scenarios associated with enrichment technology
A detailed discussion of multinational concepts is beyond the scope of this article, but the single most important criterion from the non-proliferation perspective is the requirement that multinationally operated fuel cycle facilities have to be a substitute of, rather than an addition to, corresponding facilities under national control. Otherwise, the virtues of multinational operation are almost entirely lost. This is obviously the most fundamental flaw of the Urenco arrangement since each participant carries out national centrifuge research and development – and each partner ultimately built its own enrichment facility.14

Nonetheless, multinational facilities, even “poorly” designed arrangements, have indisputable and important virtues – and even though they are no stand-alone solution to address emerging proliferation concerns, they may represent the only approach capable of minimizing proliferation risks in the long-term, especially if the criteria of Table 3 are applied when such arrangements are set up.

**Urgent Action Needed**

Any future energy scenario partially based upon nuclear energy will require large-scale operation of enrichment facilities. As shown above, the modern gas centrifuge, which is the favored enrichment technology today and already dominates the market, is highly proliferation-prone and difficult to safeguard and detect.

Nonetheless, the U.S., France, and China are gradually abandoning their gaseous diffusion plants and plan to replace them with centrifuge facilities. Capacities in the original Urenco countries are being expanded and additional countries, often without significant domestic nuclear programs (like Brazil or Iran), are independently pursuing centrifuge development. It is therefore likely that a growing number of countries will have access to centrifuge technology in the near future. Unfortunately, no alternative enrichment processes with more favorable non-proliferation characteristics have been seriously considered since the 1970s and, hence, no alternative technology can compete economically with the gas centrifuge today. Finally, we might also witness an erosion of the technological barriers that slowed down the spread of centrifuge technology in the past.

The response to this dilemma has to be manifold – envisioning both short-term and long-term strategies. First, in addition to measures that are taken as a response to the exposure of the A.Q. Khan network, the current safeguards standards should be revised and substantially upgraded. Reluctance of those already operating safeguarded facilities to do so is predictable, but it will be key to convince all parties involved that the objectives are of utmost importance – and also in their own best interest.

France and the U.S., both planning to build new enrichment facilities based on the centrifuge process, must set positive examples in this respect and design their facilities safeguards-friendly from the ground up.

In the longer term, these measures alone will not be sufficient. With centrifuge technology in widespread use, we are apparently reaching a limit where national control plus international safeguards becomes an unacceptable compromise. The Director General of the IAEA, M. El-Baradei, in his Statement to the Fifty-Eighth Regular Session of the United Nations General Assembly on November 3, 2003, emphasized this important aspect: “In light of the increasing threat of proliferation, both by States and by terrorists, one idea that may now be worth serious consideration is the advisability of limiting the processing of weapon usable material (separated plutonium and high enriched uranium) in civilian nuclear programmes – as well as the production of new material through reprocessing and enrichment – by agreeing to restrict these operations exclusively to facilities under multinational control. These limitations would naturally need to be accompanied by appropriate rules of assurance of supply for would-be users.” Are such proposals realistic? – Most think that they are not. Nonetheless, previous fruitless discussions of multinational or international fuel cycle arrangements were focused on reprocessing facilities, including plutonium and waste storage. Especially, the Western European countries were suspicious about such initiatives in the 1970s and 1980s, at a time when they were expanding their nuclear programs or exports.15

Today, there is certainly a higher level of convergence of international nuclear fuel cycle policies, less economic competition on the international export market for nuclear technologies, and broader acceptance of nuclear supplier guidelines. More generally, in the political arena, there is now nearly universal support of the NPT and a strong sense of urgency that the regime has to be strengthened. If the A.Q. Khan incident served as a wake-up call for the international community

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Urenco</th>
<th>Eurodif</th>
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<tbody>
<tr>
<td>Only NPT parties</td>
<td>Yes</td>
<td>Yes (was: No)</td>
</tr>
<tr>
<td>Governmental participation</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>International safeguards</td>
<td>Yes</td>
<td>Yes (was: No)</td>
</tr>
<tr>
<td>Withdrawal exclusion</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Prohibition of national control</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Multinational R&amp;D only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>One facility</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Prohibition of technology transfer</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Exclusion of internal technology sharing</td>
<td>No</td>
<td>Yes (in theory)</td>
</tr>
<tr>
<td>HEU production exclusion</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Proliferation-resistant process</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 3: Non-proliferation criteria applied to the Urenco and Eurodif frameworks
to get such a discussion started, something useful could ultimately emerge from the current crisis of the NPT regime.

The prospects of internationalization and progress in nuclear disarmament are closely related. The recent renewed interest of the U.S. in new nuclear weapons, the possibility of resumed nuclear testing, and the new nuclear posture are undermining any possible progress in the area of reducing the military relevance of nuclear weapons – and hence also, of a more internationalized structure of the nuclear fuel cycle.

1 This strategy is exemplified in U.S. President G.W. Bush's speech given at the National Defense University on February 11, 2004, articulated in the following excerpt: “The world’s leading nuclear exporters should ensure that states have reliable access at reasonable cost to fuel for civilian reactors, so long as those states renounce enrichment and reprocessing. Enrichment and reprocessing are not necessary for states seeking to harness nuclear energy for peaceful purposes. The 40 nations of the Nuclear Suppliers Group should refuse to sell enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale functioning enrichment and reprocessing plants.”

2 Data for centrifuge facilities retrieved from IAEA Integrated Nuclear Fuel Cycle Information System (INFCIS) in March 2004, except for the case of India and the unconfirmed case of Israel.

3 In addition to the radial effect, an axial flow of the gas along the rotor is established, which substantially increases the separative power of the centrifuge and also allows for convenient extraction of product and waste at the ends of the rotor.


5 See footnote 2.


8 For instance, flow rates and enrichment levels are monitored in the Chinese Shaanxi enrichment facility, which uses Russian centrifuge technology. For a detailed discussion, see: A. Panasyuk, et al., Tripartite Enrichment Project: Safeguards at Enrichment Plants Equipped With Russian Centrifuges, IAEA-SM-367/8/02, 2001.

9 About 6000 separative work units (SWU) are needed to produce 25 kg of weapon-grade HEU from natural uranium. As can be inferred from aerial views of existing centrifuge facilities, the specific capacity of typical plants is 10-22 SWU/yr per square meter of the facility’s total footprint. Urenco quotes 40-50 kWh per SWU for its advanced technology.

10 See Krass, op. cit., p. 45 and p. 133 (Table 6.2), for exemplary numerical data.


12 Krass, op. cit., p. 71 (Table 3.1).

13 See for instance Scheinman, op. cit., for an excellent discussion of virtues and limits of multinational frameworks.

14 The concept did not solve the problem of dissemination of centrifuge design information. Urenco involuntarily became a source of centrifuge technology for proliferating states, namely directly in the cases of Pakistan and Iraq – and from Pakistan to some other countries.


Alexander Glaser is a physicist and research associate with the Interdisciplinary Research Group in Science, Technology, and Security (IANUS) at Darmstadt University of Technology, Germany; alexander.glaser@physik.tu-darmstadt.de. IANUS, Hochschulstr. 4a, 64289 Darmstadt; tel. +49-6151-16-2950 fax. +49-6151-16-6039.

Igor Sutyagin, 39, was a researcher with the U.S. and Canada Institute of the Russian Academy of Sciences. Since 1998 he was the head of the subdivision for Military-Technical and Military-Economic Policy. He is the author and co-author of more than one hundred articles and books on military policy, nuclear weapons, and non-proliferation treaties in Russia, the United States, and various countries in Asia. Among others, he co-authored “Russian Strategic Nuclear Forces” (edited by Pavel Podvig, MIT Press, 2001).

On October 27, 1999, Igor Sutyagin was detained by the Russian security service, the FSB and accused of treason and espionage. The first trial ended in 2001. The judge returned the case to the FSB for further investigation. The case was transferred to the FSB headquarters in Moscow. The second trial began in November 2003. It was marked by serious irregularities – for example, the first jury, assembled in November 2003, was dismissed without explanations.

On April 7, 2004, the Moscow City Court sentenced Igor Sutyagin, a researcher from the U.S. and Canada Institute in Moscow, to 15 year hard labor. This sentence shocked the Russian society and the international community. Igor’s only “wrong-doing” was that he was involved in legitimate scientific analysis of publicly available information.

The prosecution of Igor Sutyagin sets a very dangerous precedent. It shows that in today’s Russia the security services can bring an accusation of espionage against anyone. The Russian judicial system is too weak to assure a defendant a fair trial under the pressure from the FSB.

As the case of Igor Sutyagin makes its way through the appeal process, he needs your help. Please, do what you can – you’ll find ideas on what you can do at www.sutyagin.org. Persecution of scientists for their research must not be allowed to continue.
Recalibrating the U.S. Nuclear Non-Proliferation Effort

Daryl Kimball

For over five decades, the United States and other responsible nations have sought to prevent the spread and build-up of nuclear, chemical, and biological weapons. During and after the Cold War, many Republican and Democratic policymakers, scientists, doctors, concerned citizens, and dedicated public servants have worked to impose restraints on unbridled weapons competition and worked to prevent their use.

Through arms control, non-proliferation, and effective diplomacy, dozens of states have abandoned their nuclear, chemical, biological, and missile programs. The existing weapons states’ ambitions to develop and stockpile new types of weapons in greater numbers have been blunted. Despite these successes, there are many unfinished disarmament tasks left over from the Cold War, and new proliferation challenges have arisen. The situation requires a re-commitment to core disarmament and non-proliferation principles and objectives and the pursuit of new initiatives to strengthen the regime.

The Value of the Non-Proliferation System

As the international community prepares for the 2005 nuclear Non-Proliferation Treaty (NPT) Review Conference, it is important to recall that the NPT has helped to limit the number of nuclear weapon states to the original five (U.S., U.K., France, Russia, and China), plus three others (India, Israel, and Pakistan) that have not joined the treaty. North Korea’s nuclear weapon status remains unclear.

The use of nuclear weapons against non-nuclear weapon states has become and remains taboo, though the United States and Russia maintain ambiguous stances on the matter. Co-operation with international inspections and safeguards against weapons proliferation are now a standard expectation of all states. Major suppliers of nuclear technology and ballistic missiles have established export control systems to limit the availability of technologies needed to build and deliver nuclear weapons. Dozens more states might have the bomb today if not for the NPT and associated measures including nuclear export controls, nuclear weapons free zones, and intrusive international weapons inspections.

Non-proliferation and arms control efforts have also reduced the threat posed by U.S.-Soviet nuclear weapons. Bilateral nuclear arms control agreements helped corral the Cold War arms race, prevented a defensive missile arms race, reduced offensive arsenals, and increased transparency and opportunities for diplomacy, thereby reducing instability and the risk of nuclear war. Since the breakup of the Soviet Union, new co-operative programs have successfully dismantled and secured vast quantities of Cold War weapons stockpiles at dozens of locations. In addition, decades on-again, off-again efforts to ban nuclear testing culminated in the 1996 Comprehensive Test Ban Treaty (CTBT) and the current de facto global test moratorium, which restricts the ability of states to improve their nuclear arsenals.

New Challenges and Imprudent Responses

But even as the non-proliferation system has become more sophisticated, the challenges it confronts have become more complex and there are many parts of the disarmament and non-proliferation agenda that remain unfinished. Over the last decade, the NPT has endured successive crises involving Israeli and North Korean nuclear weapons programs. Iran has been found to have pursued secret nuclear activities that could provide it with bomb-making capability in the not too distant future. The non-NPT member states – India, Pakistan, and Israel – have advanced their nuclear weapons programs with relative impunity. The specter of terrorism, the proliferation of ballistic missile technology from North Korea, the existence of nuclear black market networks based out of Pakistan’s government-run weapons laboratories have added a new layer of risk.

Meanwhile, the United States and Russia have failed to capitalize on key opportunities to substantially and verifiably dismantle significant portions of their still massive Cold-War-era stockpiles of strategic and tactical weapons, which number over 20,000 bombs. As a result, the United States and Russia maintain outdated Cold War nuclear targeting plans. The latent risk of an accidental nuclear exchange and theft of non-strategic nuclear devices from Russia persists.

In the face of these developments, it has become fashionable for some U.S. policymakers to dismiss arms control and non-proliferation as ineffective against problem states and irrelevant for friendly states, including Russia. The Bush administration has spent much of its first three years in office pursuing policies focused on stopping unfriendly states from getting nuclear weapons. Its approach has downplayed the role of preventive diplomacy and arms control and emphasized military pre-emption or the threat of pre-emption, including the threat of use of nuclear weapons in non-nuclear situations, improved export controls, interdiction of dangerous weapons shipments, and unproven missile defenses.

Instead, the threat of nuclear (as well as chemical, biological, and mis-
sile) proliferation must be met with firm resolve and dealt with through a balanced and comprehensive array of strategies. The strategy of the Bush administration is out of balance and far too limited in scope and scale. While better controls on the global trade of dangerous weapons are useful, they are insufficient. Pre-emptive military action against states alleged to be seeking nuclear weapons is fraught with peril.

As the recent U.S. experience in Iraq shows, wars cost lives and money and lead to unintended consequences. Iraq’s nuclear program was actually dismantled through special international weapons inspections, which likely would have contained the Iraqi weapons threat if they had been allowed to continue.

Proliferation problems in North Korea and Iran defy easy military solutions. In both cases, multilateral diplomacy aimed at the verifiable halt of dangerous nuclear weapons and missile activities is the preferred course. Strategic missile defenses are not only unproven and costly, but their promotion in the years ahead could exacerbate rather than reduce ballistic missile threats. Some Bush administration officials and members of Congress are actually seeking to ease U.S. enforcement of export controls on the sale of ballistic missile technology in order to encourage greater “missile defense cooperation.”

Rather than pressing forward with meaningful and lasting nuclear weapons reductions with Russia, the Bush administration has insisted on an approach that amounts to little more than a gentleman’s agreement between presidents. The 2002 Moscow Treaty will allow each side to maintain approximately 2,000 deployed strategic weapons with many thousands more in reserve. Its much-touted strategic nuclear reductions represent long-delayed reductions that were originally endorsed in 1997 minus necessary verification and dismantlement requirements envisioned by earlier U.S. and Russian negotiators.

Worse still, the Bush administration is pressing ahead with new research on new nuclear weapons systems to defeat chemical and biological targets and, in particular, deeply-buried and hardened targets. The White House has recently asked Congress for US$ 27 million for research and system testing of a modified, high-yield bunker-busting nuclear warhead and has outlined a plan to spend another US$ 485 million over the next five years to develop and produce the weapon. New types of nuclear weapons and excessive nuclear force levels are inappropriate and ineffective against likely security threats and they undermine the legitimacy of U.S. non-proliferation efforts.

An Action Agenda

Leading states in the international community — most particularly the United States — must strengthen and adapt preventive diplomacy and arms control to meet today’s security challenges. The evolving nature of the nuclear threat requires a comprehensive, consistent, and energetic global non-proliferation strategy. Here are some key components of such an approach:

1. Improving international nuclear weapons monitoring and inspection capabilities to encourage compliance and detect and deter cheaters

Reliable and credible information is key to mobilizing national and international coalitions to address international security dangers. The Iraq experience underscores the limitations of U.S. national intelligence and the importance of helping to strengthen international weapons monitoring and inspections regimes.

This involves redoubling efforts to persuade more of the NPT States Parties to agree to the Additional Protocol allowing more extensive International Atomic Energy Agency (IAEA) inspections. The three non-members of the treaty — India, Israel, and Pakistan — should also be pressed to allow similar inspections on a voluntary basis. In addition, if key states such as India, Pakistan, China, and the United States were to finally ratify the Comprehensive Test Ban Treaty, another valuable monitoring system to detect and deter nuclear explosions and to allow short-notice, onsite inspections would become operational.

The United States and others states must also fill existing gaps in the international weapons monitoring system, particularly with respect to chemical, biological, and missile proliferation. For example, there are no international institutions to verify Libya’s pledge to end its biological weapons activities and its ballistic missile work. As a result of a 2001 Bush administration decision to scuttle a seven-year effort to negotiate a verification regime for the Biological Weapons Convention (BWC), no such system exists today. Moreover, the Organization for the Prohibition of Chemical Weapons (OPCW), which is charged with enforcing the Chemical Weapons Convention (CWC), is relatively new and untested in conducting the challenge inspections required to verify the end of Libya’s chemical weapons efforts. Some states suspected of chemical weapons possession are not party to the CWC. The U.S. should work harder to achieve universal membership in the CWC and reconsider its opposition to a verification system for the BWC.

Another important way to strengthen international weapons monitoring and verification is to maintain the UN Monitoring and Verification Commission (UNMOVIC), or create a similar entity under the control of the Secretary-General or the Security Council, as a permanent resource to be activated on a case-by-case basis. It would work in co-operation with the IAEA and the OPCW to deal with difficult proliferation cases and fill existing gaps in weapons monitoring and verification. Former U.S. weapons inspector David Kay’s recent revelations vindicate the IAEA’s and UNMOVIC’s past reporting that there was no evidence that Iraq possessed chemical, biological, or nuclear weapons or had reconstituted its nuclear weapons programs prior to the U.S. invasion.

2. Expand and accelerate efforts to secure and dispose of existing nuclear materials and weapons stockpiles

Over the past decade, the U.S.-Russian Cooperative Threat Reduction effort has made the world safer by im-

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proving security and taking much of the Soviet-era nuclear, chemical, and biological weapons arsenal and infrastructure out of circulation. Still, more must be done. Russia still needs assistance to eliminate its 40,000 metric ton stockpile of chemical weapons. Russia’s biological weapons research facilities and personnel must be transformed into a non-weapons-producing mode. Russia’s sprawling nuclear infrastructure remains vulnerable, with only half of the facilities fully equipped with modern security systems to prevent theft or diversion of weapons and materials. The Bush administration and Congress must work together to substantially increase the current annual U.S. investment of roughly US$1 billion in these programs and remove unnecessary restrictions and bureaucratic obstacles that threaten the continuation of contracts on important projects. European states can and should contribute significant additional resources to this effort, which increases the security of the entire international community.

3. Pursue new restrictions on access to nuclear weapons technologies to make it more difficult for new states to obtain nuclear material for weapons

International efforts to curb the spread and buildup of nuclear weapons arsenals greatly depend on controlling the production and stockpiles of the key ingredients for the bomb: highly enriched uranium and plutonium. However, the NPT’s Article IV guarantee of access to “peaceful” nuclear technology and the broad diffusion of that technology have allowed some states like Iran to acquire the capability to enrich uranium, while other states, like North Korea, could acquire plutonium production facilities useful for weapons.

Better Regulation of the Fuel Cycle:

Following the recent disclosures of illicit Pakistani nuclear assistance to Libya and Iran, President Bush has proposed that the 40-member Nuclear Suppliers Group (NSG) not sell enrichment and reprocessing equipment to any state that does not already have the capability. He has also proposed that these nuclear supplier states not provide equipment to nations that have failed to agree to a tougher set of IAEA inspections. Although a push for new and tighter nuclear export restrictions through the NSG is long overdue, long-term success requires the application of the same standards to all states and more aggressive efforts to eliminate other means of fissile material production.

Several important, additional issues need to be considered and other options should be explored. First, the Bush formula would allow significant nuclear suppliers not part of the NSG, such as Pakistan, to continue to peddle their wares. The recent disclosures about transfers of uranium and uranium-enrichment equipment from the Khan Research Lab warrant, at the very least, revisions to Pakistan’s lax export-control system and full Pakistani co-operation with IAEA investigators.

In addition, those states currently without enrichment or reprocessing capabilities, such as Brazil and Iran, will strongly resist efforts to deny them access to such technologies. If these and other states are to be expected to agree to tougher restrictions, their access to low-enriched uranium fuel for light-water reactors (LWRs) will need to be assured.

The solution to this obstacle requires the creation of a long-term, multinational nuclear fuel supply that would make national possession of uranium enrichment plants unnecessary and uneconomical. One approach is to develop a new arrangement that would bar enrichment and reprocessing capabilities but continue to guarantee access to nuclear fuel supplies and regulate spent fuel disposition under the supervision of the IAEA. Another option is to provide low-cost access to fuel for LWRs through market-based consortia.

Fissile Material Cutoff Treaty:

Another vital step would be a global treaty that would ban the production of highly enriched uranium and plutonium for weapons by all states and could help to establish baseline information on global stockpiles. Since the early 1990s, states at the Geneva-based Conference on Disarmament (CD) have sought to begin formal talks on a Fissile Material Cutoff Treaty (FMCT). But FMCT negotiations have been stymied by China since 1999 in an attempt to gain leverage on its priority issue: a treaty for the prevention of an arms race in outer space (PAROS). Unwilling to constrain its ambitious plans for missile defense systems that could include space-based weapons, the United States has said there is no arms race in outer space and will only allow exploratory discussions on the subject.

Successive CD presidents and, more recently, a group of five ambassadors have tried to bridge the political differences by proposing the start of negotiations on the FMCT in an ad hoc committee, and simultaneously beginning substantive discussions – but not negotiations – on PAROS and, as several non-nuclear weapon states have proposed, general discussions on nuclear disarmament.

In August of 2003, China indicated it could agree to this formula, but the United States has balked. Last November at the United Nations, the U.S. representative voted for a resolution supporting the FMCT. However, he noted that the United States had – after nine years of support – commenced a “review” of the concept. In January, Assistant Secretary of State for Arms Control Steve Rademaker told Arms Control Today that “We are looking at the threshold question, does an FMCT make sense?”

From a U.S. perspective, the FMCT is a win-win proposition. A universal measure, it would reinforce the NPT, voluntary nuclear export controls, and help contain the nuclear programs of the three NPT holdout states: India, Israel, and Pakistan.

4. Engage in discussions with “states of proliferation concern” to address underlying conflicts and work to bring such states into the community of responsible nations

Regional conflict and perceptions of insecurity are major factors that lead states to seek nuclear and other unconventional weapons. The pursuit of nuclear weapons in volatile regions such as the Middle East, South Asia, and the Korean Peninsula only undermine long-term global security.
**North Korea:** The Bush administration’s refusal to resume bilateral talks with North Korea in 2001 and its tough talk and hesitancy to engage in discussions after the leadership in Pyongyang began reviving its plutonium production program have made a dangerous situation worse. It is vital that the United States undertake more serious negotiations toward an agreement leading to the verifiable dismantlement of North Korea’s nuclear program.

North Korea has indicated that it will verifiably dismantle its nuclear weapons programs, but it will not do so if its concerns are not also met. Bush’s willingness to discuss a security pledge should signal to North Korea that he is not only being responsive to his negotiating proposals but to his fears about U.S. aggression.

So long as North Korea agrees to give up its entire nuclear weapons program, allows re-entry of inspectors, and suspends further plutonium separation or uranium enrichment, the Bush administration should pledge not to attack North Korea and allow the resumption on non-nuclear energy aid. The pledge should continue as long as the North is actively dismantling any nuclear weapons and fissile-material production facilities and fully cooperating with on-site inspections, according to the terms and timetable of a new agreement.

Even if a non-aggression pledge changes North Korea’s behavior in the short term, the path forward remains littered with hazards. Conducting effective diplomacy requires more than issuing non-negotiable demands. The President and his closest advisers must overcome internal differences about its negotiating stance and begin to engage in a genuine give-and-take with North Korean officials.

**Other States:** In the past several months, two other states long suspected of pursuing nuclear and chemical weapons—Iran and Libya—have been persuaded to allow intrusive international inspections through multilateral strategies involving preventive diplomacy, international non-proliferation treaties and inspections, economic sanctions and incentives. Iran’s previously unreported nuclear program activities require that it provides full co-operation with the IAEA to clarify its record and ensure compliance with its legal obligations under the NPT. At the same time, if Iran demonstrates through its actions that it is choosing not to build nuclear weapons, the United States and other leading nations should respond with positive measures to make it clear that compliance with international non-proliferation standards is more beneficial to their security than the pursuit of weapons of mass destruction.

The United States and other nations also have an important role to play in reviving the Indian-Pakistani dialogue on limitations on their nuclear and missile competition. While the opportunity for progress appears limited now, such efforts are needed to hold back the steady advance in each nation’s nuclear capabilities and the lingering danger of a regional nuclear war.

5. The United States and other nuclear weapon states must reduce the role of nuclear weapons in their own security policies

In the end, nuclear risk reduction requires more than just pressure on a few of the nuclear “have-nots”—it requires greater restraint and leadership from the nuclear “haves,” particularly the United States. So long as one state continues to possess nuclear weapons, other states will feel compelled or justified to seek nuclear, chemical, or biological weapons and the means to deliver them.

**No New Nuclear Weapons:** At times, some current officials in the Bush administration say the right things. In 2002, Secretary of State Colin Powell said that he told the leaders of nuclear-armed India and Pakistan, which were then teetering toward war, that “I can see very little military, political, or any other kind of justification for the use of nuclear weapons. Nuclear weapons in this day and age may serve some deterrent effect, and so be it. But to think of using them as just another weapon in what might start out as a conventional conflict in this day and age seems... to be something that no side should be contemplating.”

But the Bush administration has refused to apply the same logic to its own policies. To date, the Bush administration has reinforced and expanded the role of nuclear weapons by pursuing research leading to the development of new nuclear weapons and stating that U.S. nuclear weapons may be used in non-nuclear conflicts. If Congress does not block the Bush administration’s plans to research and develop a new class of nuclear weapons, hawks in the United States may push for the production and deployment of bunker-busting nuclear weapons with yields in the range of 100 kilotons, or even for the resumption of nuclear testing of a new warhead type, within the next two to three years.

The rationale for these new nuclear weapons is described in the United States’ 2002 National Security Strategy, which considers nuclear weapons as a mere extension of the continuum of conventional weapons in the U.S. arsenal. According to a January 31, 2003, Washington Times article, President Bush approved a national security directive that specifically allows for the use of nuclear weapons in response to biological or chemical attacks. According to the article, the classified National Security Presidential Directive 17 states that “The United States will continue to make clear that it reserves the right to respond with overwhelming force—including potentially nuclear weapons—to the use of [weapons of mass destruction] against the United States, our forces abroad, and friends and allies.”

This is the wrong course. Current U.S. efforts to enhance the credibility and range of options for the use of nuclear weapons blur the bright line that has separated nuclear and conventional warfare since the bombing of Nagasaki. Coming from the United States, the world’s pre-eminent military and political power, such policies only undermine non-proliferation efforts by suggesting to other states that nuclear weapons are legitimate and necessary tools that can achieve military or political objectives. So long as nuclear weapons exist, national policies on their use
Protecting the Law: Non-Proliferation and Disarmament

should limit them to deterring a nuclear attack launched by another nuclear weapon state. No new nuclear weapons are required or justified, and the United States should also maintain its nuclear test moratorium and reconsider ratifying the CTBT. Accelerate and Dismantle Excess Arsenals: Meaningful U.S.-Russian strategic nuclear reductions have been effectively stiff-armed as a result of the so-called Strategic Offensive Reduction Treaty of 2002. Under the agreement, each side has pledged to reduce operationally deployed strategic forces to roughly 2,000 warheads. But thousands of U.S. and Russian non-strategic warheads remain unregulated. Further eroding its security value, the current U.S. proposal would allow either side to exceed the numerical limits on deployed warheads by simply notifying the other party. Worse still, in keeping with the new U.S. National Security Strategy, the treaty will allow Washington to rapidly redeploy a “hedge arsenal” of about 2,400 stored warheads when the treaty expires in 2012.

While discussions on transparency measure related to the treaty continue between the two governments in Geneva, there has been very little progress. Discussions on non-strategic nuclear weapons are not on the agenda of either side.

In the next year, the United States and Russia should agree to resume formal talks on new verification measures to increase confidence that the planned strategic withdrawals are proceeding apace. Both sides should also agree to make public the details on their warhead stockpiles, the pace of their reductions and dismantlement activities, and agree not to deploy nuclear weapon systems with fundamentally new military capabilities.

Conclusions

The danger of nuclear weapons and nuclear proliferation remains but can be addressed with the right set of strategies and more effective leadership from the international community. But, the mix of policies and strategies outlined and pursued by the George Bush administration is out of balance. Success hinges on crafting and energetically pursuing a comprehensive and consistent approach to make the acquisition, accumulation, and use of nuclear weapons more difficult and to reduce the saliency and allure of these terror weapons.

Nuclear non-proliferation policies must not only address the problem of “rogue” states and terrorists, but also the arsenals of the existing nuclear powers and the states that are outside the non-proliferation system: India, Israel, and Pakistan. These efforts should draw from existing programs and activities, reinforce and expand bilateral and global arms control measures, and be pursued in collaboration with U.S. allies and friends through the UN and other bilateral and multilateral bodies.

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Toward the 2005 NPT Review Conference

David Krieger

As we move toward the 2005 Non-Proliferation Treaty (NPT) Review Conference, the world is experiencing increased extremism and instability. The extremism has manifested in the form of significant attacks by clandestine international terrorist organizations, such as those on 9/11, and acts of retaliation by powerful states that may or may not be directly related to the initial assaults. Neither the terrorists nor the state leaders involved have demonstrated reasonable regard for established rules of international law.

In the background of this clash between extremist organizations and governments lurks the ever present danger of the use of nuclear and other weapons of mass destruction. The possibility of course exists that groups like al Qaeda could somehow acquire nuclear weapons from a sympathetic state or from criminal elements. Should such a group attain nuclear weapons it is unlikely they could be deterred from using them, particularly since they have no fixed location that could be threatened with retaliation in accord with the theory of deterrence.

At the same time, the United States has put in place policies that appear to lower the barriers to the use of nuclear weapons. The 2001 Nuclear Posture Review calls for contingency plans to use nuclear weapons against seven countries, including at least four that are non-nuclear weapons states. It is also declared US policy to use nuclear weapons against chemical or biological weapon stores or in retaliation for the use of these weapons.

With its doctrine of preventive war, the US administration is undermining the system of international law set in place after the Second World War “to save succeeding generations from the scourge of war.” It has chosen a path of unilaterism and “coalitions of the willing” over multilateral approaches in accord with international law. The US government is further undermining international law by its failure to support many existing treaties and by its active opposition to the creation of an International Criminal Court (ICC) to hold leaders account-


Daryl G. Kimball is the Executive Director of the Arms Control Association in Washington, D.C.; www.armscontrol.org.
able for the most egregious crimes under international law.

The Role of the NPT

The NPT was established primarily to prevent the proliferation of nuclear weapons to states other than the first five nuclear weapon states. The treaty was the brainchild of the US, UK, and Russia, who believed that the world would be a safer place if they, along with France and China, controlled the world’s store of nuclear weapons. It was largely a self-serving proposition, not one that offered much inducement for other countries to sign off on nuclear weapons. The NPT bargain contained two elements that presumably benefited the countries that agreed to give up their right to develop or otherwise acquire nuclear weapons. First, the treaty promised them assistance in developing the “peaceful” uses of nuclear energy, going so far as to describe nuclear power as an “inalienable right.” Second, the treaty had provisions that the nuclear weapons states would engage in “good faith” negotiations for nuclear disarmament and called for a cessation of the nuclear arms race at an early date.

The NPT was put forward in 1968 and entered into force in 1970. The non-nuclear weapons states are undoubtedly wondering when the “good faith” negotiations by the nuclear weapons states will begin and why the United States in particular still seems intent on developing new nuclear weapons, such as mini-nukes and “bunker busters.”

At the 2000 NPT Review Conference the parties to the treaty adopted by consensus a Final Document that contained 13 Practical Steps for Nuclear Disarmament. These steps included the ratification of a Comprehensive Test Ban Treaty, negotiations on a Fissile Material Cutoff Treaty, the preservation and strengthening of the Anti-Ballistic Missile Treaty, and called for the nuclear weapons states to take unilaterally as well as multilateral steps to achieve nuclear disarmament. It also called for greater transparency with regard to nuclear arsenals and for making irreversibility a principle of nuclear weapons reductions. On virtually every one of these commitments, the US, under the Bush administration, has shown bad faith. It is demonstrating that US commitments are not likely to be honored and that the most powerful country in the world finds nuclear weapons useful and is attempting to make them more usable.

Iraq, Iran, and North Korea

In his 2001 State of the Union Address, President Bush described Israel, Iran and North Korea as an Axis of Evil. In 2002 he began mobilizing US troops in the Middle East and threatening Iraq. In March 2003, he initiated a preventive war against Iraq, which his administration justified on the grounds that Iraq had weapons of mass destruction that posed an imminent threat to the US. In the aftermath of the initial combat phase in Iraq, despite extensive searching, no weapons of mass destruction have been located in Iraq.

Observing the US threats and attacks against Iraq might well have led Iran and North Korea to pursue nuclear weapons programs aimed at deterring US aggression. At this point, North Korea has withdrawn from the NPT, as is its legal right, and Iran is co-operating with inspectors of the International Atomic Energy Agency (IAEA).

Six nation talks (US, North Korea, South Korea, Japan, China, and Russia) have been going on to try to resolve the impasse over North Korea’s withdrawal from the NPT and its declared intention to develop a nuclear arsenal. The CIA estimates that North Korea may currently have one or two nuclear weapons and the materials to make another six or so weapons in the short-term. North Korea is asking for the US to provide it with a non-aggression pact as the price for giving up its nuclear ambitions. It is a small price. The US has vacillated on whether to do this, but recently has indicated its willingness to give informal assurances. It remains unclear whether such assurances will be sufficient to bring North Korea back into the NPT as a non-nuclear weapon state.

Current Problems with the NPT

In addition to North Korea’s withdrawal from the treaty, there are other problems. First, its promotion of nuclear energy and nuclear research creates the ever-present possibility of countries using the nuclear materials to develop clandestine nuclear weapons programs. Second, it lacks universality and the countries that have refused to join (India, Pakistan, and Israel) have all developed nuclear arsenals and have thus, in a sense, been “rewarded” for not joining. Third, there are many unfulfilled commitments, particularly the nuclear disarmament commitments by the nuclear weapons states, which give the appearance that these countries are just making empty promises that they have no intention of keeping.

There has been virtually no progress on any of the 13 Practical Steps for Nuclear Disarmament agreed to at the 2000 NPT Review Conference. It is difficult for the non-nuclear weapon states to view this in any way other than as a sign of bad faith on the part of the nuclear weapons states.

The Role of NGOs

Given the state of the world and the current problems with the NPT, it seems appropriate for non-governmental organizations (NGOs) in the disarmament area to question the value of the treaty. What good is a treaty in which the most powerful states do not fulfill their obligations or keep their promises? There is no doubt that the behavior of the nuclear weapon states, and particularly the US, have undermined the value of the NPT and raised serious questions about it in the minds of many observers.

The New Agenda Coalition (NAC) states have made a diligent effort to get the NPT back on track with their resolutions in the United Nations, but they have been stonewalled by the US and most of its allies. The Middle Powers Initiative, a coalition of eight international non-governmental organizations, has attempted to support and promote the positions of the NAC throughout the world. Through these efforts, they achieved a slight crack in the stone
First, it is long past time for the nations of nuclear weapons. Since the end of the Cold War, there has been no substantial progress toward the elimination of nuclear weapons. The ongoing failure of the nuclear weapon states to meet their obligations or even show minimal good faith. In the years since the NPT was extended indefinitely in 1995 and despite the end of the Cold War, there has been no substantial progress toward the elimination of nuclear weapons.

NGOs must choose the points of greatest importance and leverage and stress these in their activities.

- First, it is long past time for the nuclear weapon states to provide legally binding security assurances to the non-nuclear weapon states.
- Second, there should be no reversion on the moratorium on nuclear testing.
- Third, there should be far tighter controls of nuclear materials in all states, including the nuclear weapon states.

In a November 3, 2003, statement to the UN General Assembly, Mohamed ElBaradei, Director General of the IAEA, called for “limiting the processing of weapon-usable material (separated plutonium and high enriched uranium) in civilian nuclear programmes as well as the production of new material through reprocessing and enrichment — by agreeing to restrict these operations exclusively to facilities under international control.” In light of the increasing dangers of proliferation, it is amazing that such a proposal was not implemented long ago. It is a minimum acceptable standard for what must take place immediately if proliferation to both other states and terrorists is to be prevented. NGOs should certainly support this proposal.

NGOs should also press for nuclear weapon free zones in the Middle East, Northeast Asia, and South Asia. These are dangerous hotspots where the development of nuclear weapons has threatened regional stability and security. To achieve these goals will require concessions by the nuclear weapons states and faster movement toward fulfilling their disarmament obligations under the NPT. A primary activity of NGOs should be to expose the hypocrisy of the nuclear weapon states and try to develop stronger anti-nuclear sentiments among the populations of these countries and translate such sentiments into political power.

At the moment there are not many hopeful signs, but one that stands out is 2020 Vision: An Emergency Campaign to Ban Nuclear Weapons by the Mayors for Peace. This innovative campaign, spearheaded by the mayors of Hiroshima and Nagasaki, calls for the 2005 NPT Review Conference to launch “a negotiating process committed to adopting a comprehensive program for progressive and systematic elimination of nuclear weapons by the next NPT Review Conference in 2010,” and then actually eliminating these weapons over the following decade. It is a time-bound program that picks up the baton from Abolition 2000.

I would encourage NGOs to help promote the effort of the Mayors for Peace. NGOs must not give up because, in effect, this would be giving up on humanity’s future. That is what is at stake and that is why our work to support the NPT promise of the total elimination of nuclear weapons is so essential.

This speech was given on November 23, 2003 at the 2nd Nagasaki Global Citizens’ Assembly for the Elimination of Nuclear Weapons.

David Krieger is the President of the Nuclear Age Peace Foundation and the Deputy Director of the International Network of Scientists and Engineers for Global Responsibility (INES); www.waginpeace.org.

U.S.-Nuclear Withdrawal from Europe?

Berlin, April 15, 2004

U.S. nuclear weapons stored on European soil might become fewer or even entirely eliminated, sources indicate. While NATO’s Supreme Commander, General James Jones, surprisingly announced “significant reductions” to these weapons, when talking to Belgian Senators in early March, a prominent group of Pentagon advisors has meanwhile taken an even more radical approach.

In a study outlining the requirements for U.S. “Future Strategic Strike Force,” the Defense Science Board (DSB) recommended, that the Pentagon “should consider eliminating the nuclear role for Tomahawk cruise missiles and for forward-based tactical, dual-capable aircraft. There is no obvious need for these systems, and eliminating the nuclear role would free resources that could be used to fund strategic strike programs of higher priority.” Indeed, the 150 B-61 Mod.10 nuclear bombs estimated to be still deployed on eight European airbases in six countries do no longer have any major military purpose. They lack both, the precision and the small yield, that could make them weapons that could be really used in limited conflicts.

However, “their continuation is a policy decision,” as the DSB notes correctly. Some of these bombs are stored in Europe to enable European non-nuclear NATO allies to employ nuclear weapons during times of war if the weapons are released on the command of the U.S. President. This arrangement is dubbed “nuclear sharing” and its legality under Articles I and II of the Non-Proliferation Treaty (NPT) has been questioned by the majority of the NPT member states since a couple of years.

Otfried Nassauer is Director of the Berlin Information-center for Transatlantic Security (BITS); www.bits.de.
Some Questions of Orientation

Where are the dragons that the old mapmakers drew on sailing maps at the beginning of the European Age of Exploration and Colonization? They live in the “unknowne” lands, unknown because no one has yet been there to survey the area and report back. We can view those “unknowne” lands as the various futures we may be facing. Many people have put themselves forward as captains of our vessels – primarily the political leaders of the developed world, and more specifically, the leaders of the nuclear weapons states. (Let us hope they are not the Admiral Clowdisley Shovells of our day).¹ But who are our navigators? More importantly, who are the mapmakers? Last but not least, who or what are our dragons?

We don’t have to invoke the image of dragons to inspire fear in people these days. There’s plenty of that to go around in the world we know. Some people would say that today’s “dragons” are terrorists, or religious fundamentalists, or even nuclear weapons themselves. But like many symbols, dragons can be interpreted and understood in various ways. Classically in the West, we have feared dragons and tried to slay them. The Western tradition tells variations on the story of St. George rushing off to kill the dragon; thus liberating the treasure hoards the dragon guards deep in the hearts of mountains.² In the traditions of the East, however, dragons are creatures of transformation, literally embodying all the elements of earth, air, fire and water. In the only known map on the planet³ that spells out the legendary phrase, the dragons appear on the East Coast of Asia. So perhaps it is a different species of dragon that we seek. But whether we envision them as threatening or magnificent or something else altogether, we still need courage to face the dragons of our world, and to set forth for the “unknowne landes.”

Facing Our Current Reality: Its Nuclear Underpinnings

We definitely need courage to face the nuclear reality of our world. Fifty-eight years into the Nuclear Age, we are still discovering the consequences of opening the atom and unleashing the nuclear fire. Do we really need to be reminded of nuclear weapons’ genocidal monstrosity?⁴ If the answer is yes, then all we have to do is look at the Trident fleets of the US and UK. They hold the ability to destroy billions of lives with their 22 submarines⁵ carrying the equivalent of 21,670 Hiroshima bombs. Ten of these submarines prowl the world’s oceans 24 hours a day, 365 days a year armed and ready to fire... Yet, in the past year, the people of the world have been asked to contemplate the horror of only one country, Iraq, and it’s development of “weapons of mass destruction.” We have been rushed into war over weapons that UN inspectors and the US military occupation of Iraq have failed to locate. Even the term “weapons of mass destruction” blurs the terrible distinctions between deadly chemical and biological weapons and the most terrible weapons of all: nuclear weapons. The hypocrisy of the Blair and Bush governments over weapons of mass destruction, which countries have them, and what they are prepared to do about it, epitomizes the depths to which we have sunk in our political discourse.

Why Should We Care About the Nuclear Non-Proliferation Treaty? A Primer

For the past year, the nuclear Non-Proliferation Treaty (NPT), though largely unmentioned, has provided the context for the debate and action about Iraq’s weapons of mass destruction. The people of the world have watched as the drama of impending war played out on a daily basis in the Security Council of the United Nations. Just what have we been watching? We have been watching nuclear politics writ large on the world stage. Why “nuclear politics writ large?” For one, the permanent members of the Security Council of the UN – the ones with veto power – are none other than the five nuclear weapons powers named in the NPT: China, France, Russia, the United Kingdom and the


Here There Be Dragons – Nuclear Politics Writ Large in the Unknowne Waters of the Post 9/11 World – Includes Course Corrections for a Nuclear-Free World

Janet Bloomfield and Pamela S. Meidell

United Nations Day
October 24, 2003

In the early days of European exploration and colonization, nautical maps often bore the image of a sea serpent, or the words “Here There Be Dragons,” over those sections that remained unknown to the mapmaker. We have invoked this image for our report this year because day by day we seem to be travelling deeper and deeper into the unknown. Even Hungarian Ambassador to the UN, Laszlo Molnar, speaking to NGOs in Geneva in May as the chair of the Non-Proliferation Treaty Preparatory Committee meeting, characterized this year’s proceedings by announcing, “we are entering uncharted waters.”
United States. The Non-Proliferation Treaty is one of the few international treaties that the US dearly wants to maintain. Although this treaty has barely received the coverage of the Kyoto Protocol, or the Anti Ballistic Missile Treaty, or the International Criminal Court, the NPT governs the policies related to Iraq and all the nuclear activities that have been scrutinized by the world community for the last year. Because Iraq has signed the treaty, it is required to admit inspectors into the country. The Non-Proliferation Treaty, so successfully obscured from public view, and signed now by more countries than any other treaty (188), also sets the terms for the current debates about Iran and North Korea.

The entire world should be concerned about all countries, including Iraq, Iran or North Korea, constructing nuclear weapons. However, the country that is complaining the loudest (the US) would do well to remember its own promises under the terms of the Non-Proliferation Treaty. What are those terms? To disarm and get rid of its own promises under the terms of the Non-Proliferation Treaty. What are those terms? To disarm and get rid of its nuclear weapons? The original, central agreement of the treaty was brokered between countries that had nuclear weapons (the “nuclear nations”) at the time the treaty was negotiated – the US, the UK, Russia, and later France and China) and the countries that did not have nuclear weapons (the “non-nuclear nations”). In the late 1960s, the fear that nuclear weapons would spread beyond the five countries that then had them loomed large in the mind of the world’s people. The world’s governments wanted to limit and eliminate humanity’s capacity for the unimaginable destruction of nuclear holocaust. Therefore, the nuclear nations promised to get rid of their nuclear weapons in exchange for the non-nuclear nations (most of the rest of the world) agreeing not to acquire nuclear weapons. In forsaking nuclear weapons, the majority of the world’s countries also received the guarantee of access to so-called “peaceful uses” of nuclear technology. Thus were born the three “pillars” of the NPT: 1. disarmament: getting rid of nuclear weapons, i.e. abolishing them, 2. non-proliferation: making sure that countries that did not then have nuclear weapons would not get them, and 3. peaceful use: assuring access to nuclear technology for energy purposes. Most of the debate we have all witnessed this past year has concerned non-proliferation and peaceful use. But what about disarmament? Have the nuclear weapons states kept their promises? No, they have not. They have not disarmed. At the end of 2002, the US still retained over 10,000 nuclear weapons; Russia over 8,000, France nearly 350, the UK 200, and China nearly 400.

Every five years since the NPT became law in 1970, countries gather to assess whether or not the treaty obligations are being upheld, the very substance of the issues that have appeared this past year on the front pages of the world’s newspapers. The next review of the treaty will take place in 2005. Earlier this spring [2003], 106 (of the 188) signatory countries, and 37 citizen groups, met in Geneva to prepare for this 2005 meeting. Given the importance of these issues with respect to Iraq, why didn’t we hear more about it? If the world, and the press, had been watching and listening, what would they have seen and heard?

For one thing, they would have heard US Assistant Secretary of State John S. Wolf declare, “...statements must be backed up with political resolve to confront those who undermine nuclear non-proliferation and to take direct action to strengthen the barriers against possible future offenders. There must be serious consequences for those who violate their NPT commitments.” None there doubted that Mr. Wolf was talking about Iran. That the US has pursued this line of thinking and acting can be seen daily in the world’s newspapers.

Meanwhile, Malaysia, speaking for the 116 non-aligned nations who have signed the treaty, argued that Iran is complying with its treaty obligations: it is opening its facilities to inspections by the International Atomic Energy Agency (IAEA), the body charged under the treaty to conduct them. In fact, under the treaty, Iran is required to admit inspectors every year, and so it has. While Iran may be violating the terms of the treaty, at least the world can witness the debate and support the call for more transparency. (Three of the world’s nuclear weapons states – Israel, India, and Pakistan – have not signed the NPT, and therefore no IAEA inspectors will darken the doors of any of their nuclear facilities in the near future). The recent meeting in Geneva put on the table an “additional protocol,” which would require countries without nuclear weapons to submit to more intrusive and frequent inspections of their facilities, known as challenge inspections, at the request of the IAEA. All the while, the nuclear weapons countries need not open any of their facilities for any inspections. And why is that? Because their part of the bargain was to abolish their nuclear weapons.

Are they fulfilling their part? The US says that it is. At the 2000 NPT Review meeting, the US even mounted an elaborate exhibit in the halls of the United Nations to demonstrate to the assembled delegates and citizens how it was complying with Article VI, the nuclear disarmament obligations of the treaty. What was the response? A blizzard of post-it notes by the assembled international community, with mocking rebuttals of US arguments, had to be removed at the end of each day lest the exhibit be completely covered over by the meeting’s end.

So when Mr. Bush says, “the US and its allies will not tolerate the construction of a nuclear weapon in Iran,” it would behoove him to remember the US treaty obligations that require the US to get rid of its nuclear weapons. Instead of taking its NPT obligations seriously, the US has implemented an aggressive new foreign and nuclear policy. Under the Bush administration, the US has adopted an updated Nuclear Posture Review articulating a new policy of pre-emptive first use, is developing a new class of nuclear weapons, and is building a new facility to increase by ten times its production of plutonium pits (the heart of a nuclear weapon). This treaty
is also in grave danger from the withdrawal of countries like North Korea, and the actions of countries like Iran. Since the meeting in Geneva in May, a number of initiatives and statements have taken place that indicate that the US and the UK have decided that this treaty no longer serves their current purposes and goals. The following developments all show that counter-proliferation and pre-emption are now the operating policies of most of the long-established nuclear weapons states:

1. In June, at the G811 Summit in Evian, Switzerland, the Bush administration proposed changing international law to allow the interdiction of armaments at sea.12

2. Writing about the current impasse on disarmament issues in The New York Times on June 15, 2003, Paul E. Sanger states: “One starting point is a frank acknowledgment that the Non-Proliferation Treaty is no longer adequate in its present form. The treaty does not ban enriching uranium or reprocessing plutonium, the two basic methods of making nuclear bomb fuel. It relies on the good faith of governments. It has no clear enforcement mechanisms... The Non-Proliferation Treaty itself needs strengthening. The more intrusive inspection arrangements13 drafted after the Iraq experience should be accepted by all signers. And the loophole14 that lets countries manufacture bomb fuel under the guise of civilian power programs must be closed. Countries that do not agree to both changes should be cut off from all civilian nuclear co-operation and diplomatically ostracized in other ways as well. Those that do could be offered economic incentives and security assurances.”

3. Iran threatened to withdraw from the NPT if Israel attacks its Natanz nuclear facility.15

4. In his speech to the US Congress on July 17, 2003, Prime Minister Tony Blair said; “We need a new international regime on the non-proliferation of weapons of mass destruction.”

5. In his speech to the United Nations on September 23, 2003, President Bush praised the Proliferation Security Initiative, which lays the groundwork for the US getting what it wants (going after nuclear proliferators) without having to give up its own nuclear weapons.

The “unequivocal undertaking” to get rid of their nuclear stockpiles, promised by the nuclear weapons states at the 2000 NPT Review Conference, and their assent to the agreements articulated in the 13 Points,16 ring more hollow with every passing day.

The War on Terrorism and the Need to Be Safe

How can we illuminate the obscured relationship of nuclear weapons to today’s pervasive realities? More precisely, how are nuclear weapons and policies related to the Bush Administration’s War on Terrorism? In the days of the Cold War, the world lived in the shadow of two nuclear giants, the United States and the Soviet Union. Ordinary people were expendable and held hostage to nuclear terror. Governments used violence and the imagery of violence to act on people’s imaginations, using people’s worst fears to create a climate of fear to control the political discourse of the world. Today, the terrorists and the Bush administration, fear-mongers both, do the same. The Project for the New American Century, and its supporters, and al-Qaida, and its affiliates, mirror each other in their callous lack of compassion. Terrorists have continued to use the most brutal and cruel means to gain attention and foment violence: car bombs, rocket launchers and – most horrible of all – suicide bombers, now being called homicide bombers because of the civilian death tolls they create. Yet by responding with more violence, the abuse of civil liberties, and the marginalization of dissent, the governments who claim to be fighting a “war on terror” on behalf of their peoples are not addressing the root of the problem: peoples’ need and longing to be safe.

Sadly, two years after the terrorist attacks of September 11, we do not feel more safe. Terrorists and governments, with the collusion of the media, continue to use fear to oppress and repress people. Was it a coincidence that the head of MI5 (British Intelligence Service) made a rare public speech about the threat of a “dirty bomb” in London at the same time that former UK Cabinet Ministers, Robin Cook and Clare Short, were giving evidence to the Select Committee investigating the veracity of the UK government’s claims over Iraqi weapons of mass destruction? Why were tanks parked outside Heathrow Airport because of an unspecified terrorist threat just before the February 15 demonstration against the war? In the United States, just what events will activate the terrorist alerts “Code Red, Orange, and Yellow” keeping people in a state of constant anxiety? In both the US and the UK, investigations are underway regarding the government’s use of intelligence in the prelude to the war. The emerging common theme is the false or exaggerated nature of the intelligence, often stemming from dubious sources. Uranium from Niger, the ability of the Saddam Hussein regime to unleash weapons of mass destruction in 45 minutes, the links between Iraq and al-Qaida all have one thing in common: they were used to frighten a reluctant public into supporting a war they didn’t want.

As Madeleine Albright wrote in the latest issue of Foreign Affairs (September/October 2003): “Defeating al-Qaida would not end the problem of proliferation, because al-Qaida is deadly even without nuclear, chemical, and biological arms. But, meanwhile, the nuclear programs of North Korea and Iran are driven by nationalism, not terrorism, and must be dealt with primarily on that basis. September 11, the administration’s ‘eureka’ moment, caused it to lump together terrorists and rogue regimes and to come up with a prescription for fighting them – namely, pre-emption – that frightens and divides the world at precisely the moment US security depends on bringing people together.”

Recapturing the Imaginations of the People

What will bring people together? The “unknowne” lands surround us, giv-
ing glimpses into our alternative futures. What visions beckon us? Everywhere we turn life seems surreal and out of control. We are overwhelmed with information, much of it peripheral to our concerns. Or so it seems. Michael Moore, in accepting an academy award for his documentary, Bowling for Columbine, said that the world seems more like fiction every day.

To return to reality, we need only remember what thrust us into uncharted waters in the first place: the act of releasing nuclear power and using nuclear weapons. If we face the reality of the destruction, we will remember that holding this vision in front of us is what gave birth to the Non-Proliferation Treaty. We wanted to limit and eliminate humanity’s capability for unimaginable destruction. That sober assessment, and the collective action that we took together as a world community, is now in danger of being unraveled by the pre-emptive policies of the Bush administration. The American Heritage Dictionary defines terror as “A policy of violence aiming to achieve or maintain supremacy.” Unbelievably, this administration is using the fear of nuclear terrorist attack to keep its own nuclear weapons and to create new ones.

The undeclared War on Terrorism has planted seeds of fear and destruction around the world and given rise to draconian laws that give the US the right to act with impunity. This “war” unveils an unending and naked struggle for power; but hidden in its ferocity lies the seeds of its antidote. Images of terror show us cascading scenes of destruction and fragmentation, a reality that we experience in our daily lives in less intense ways. How can we recapture our imaginations from this awful nightmare? How can we draw deep from our collective wisdom and the best of ourselves to chart our path? If we have no maps, how do we find our way? What tools of navigation do we use? We know that without vision the people perish. Without navigators, people perish as well (witness Sir Clowdsley Shovell...). In these uncharted waters, our navigators may be the visionaries and dreamers of our world.

Mayors for Peace: “Never Again!”

As we go to press [Oct. 2003], the Mayor of Hiroshima, Tadatoshi Akiba, is in New Delhi, calling on President Pervez Musharref of Pakistan and Prime Minister Atal Bihari Vajpayee of India to meet on the “neutral” ground of Hiroshima to see for themselves the consequences of nuclear weapons use. He is making good on his call to action, issued in April in Geneva, and again in Hiroshima on August 6, to the leaders of all nuclear weapons states to come to Hiroshima to confront the reality of nuclear war. His call is an invitation to all – citizens, institutions, and governments – to take action to make real the cry of the hibakusha: “Never again!” His statement to the assembled crowds in August remains imperative:

“This year again, summer’s heat reminds us of the blazing hell fire that swept over this very spot fifty-eight years ago. The world without nuclear weapons and beyond war that our hibakusha have sought for so long appears to be slipping deeper into a thick cover of dark clouds that they fear at any minute could become mushroom clouds spilling black rain.

The nuclear Non-Proliferation Treaty, the central international agreement guiding the elimination of nuclear weapons, is on the verge of collapse. The chief cause is U.S. nuclear policy that, by openly declaring the possibility of a pre-emptive nuclear first strike and calling for resumed research into mini-nukes and other so-called “useable nuclear weapons,” appears to worship nuclear weapons as God.

... The aging hibakusha are calling for U.S. President George Bush to visit Hiroshima. We all support that call and hereby demand that President Bush, Chairman Kim Jong Il of North Korea, and the leaders of all nuclear-weapon states come to Hiroshima and confront the reality of nuclear war.

At the same time, Hiroshima calls on politicians, religious professionals, academics, writers, journalists, teachers, artists, athletes, and other leaders with influence. We must establish a climate that immediately confronts even casual comments that appear to approve of nuclear weapons or war. To prevent war and to abolish the absolute evil of nuclear weapons, we must pray, speak, and act to that effect in our daily lives.”

Walking Away from Nuclear Weapons

Another courageous visionary, Sir Joseph Rotblat, turned his back on nuclear weapons at the very beginning of the Nuclear Age, the only scientist to walk away from the Manhattan Project. When he spoke to diplomats and citizens in Geneva during the NPT Preparatory Committee meeting, he laid out a different way of looking at fear and our desire to be safe. He reminded us that we are all “primarily human beings anxious to provide security for our near and dear ones.” He said he felt sorry for all of us attending the NPT meeting – “You have a Herculean task,” he said, “but you must do it. We can’t afford a polarized world.” He also expressed his hope that a force will arise within the US itself to reject the policies of a highjacked administration. He reminded us that a rich and powerful nation can be compassionate instead of greedy, generous instead of jealous, can use persuasion rather than force, and equity rather than oppression. He expressed his belief that the American people would not accept a “fundamentally immoral nuclear policy.” When a member of the official US delegation agreed with Sir Rotblat, Rotblat replied, “You are now going in the opposite direction.” Fifty-eight years ago, Joseph Rotblat changed his direction. He had the conscience and intelligence and heart to make a radical course correction, and walk away from nuclear arms.

Construction Not Destruction

The poison fires breathed by the dragons of nuclear devastation still burn in our world. Inside of us lie the dragons of self-destruction, while across the planet, dragons of nuclear destruction roam the landscape. How can we, like Joseph Rotblat, walk away? How do we re-orient
our resources toward positive and creative construction, instead of destruction? To take a current example, just look at Iraq. Images of car bombs and smoke fill our news broadcasts daily. But looking further back from today’s headlines, even further back than the Gulf War and the regime of Saddam Hussein, we find images of beauty and imagination, literal images of construction, not destruction. In 1957, the great architect Frank Lloyd Wright, then in his early 90s, went to Baghdad at the invitation of King Faisal to design a new civic center. What he created may be a navigation tool for the uncharted waters of our post-9/11 world. Since childhood, Wright had been beguiled by the stories of the Arabian Nights, and he allowed them to shape his designs. He drew, too, on the splendor and historical greatness of the renowned Baghdad built in the 8th century by Caliph Abbassid al-Mansur. Once in Baghdad, Wright did not limit himself to the civic center: he was so inspired that he completed a plan for rebuilding the regime of Saddam Hussein, we expect that they show such profound respect for the very cultural heritage to which the West is supposed to be hostile…

Wright’s drawings, though never built, remain a powerful vision. According to Mina Marefat, Rockefeller Fellow in Islamic Studies at the Library of Congress’s Kluge Center: “The significance of the Frank Lloyd Wright drawings is that they show such profound respect for the very cultural heritage to which the West is supposed to be hostile… The prospect of a Baghdad rebuilt to mirror that greatness could be a profoundly inspiring and healing vision.” In the mire of violence, suspicion, and chaos that is today’s Iraq, Frank Lloyd Wright’s vision is a clarion call to chart another path.

In our efforts to abolish nuclear weapons, we are drawing new designs, new maps for the world we want to inhabit. Not even our visionary navigators know what lies beyond those places marked: Here There Be Dragons. Guided by Frank Lloyd Wright’s drawings to unleash our own imaginations, allying ourselves with Joseph Rotblat’s hope that a force will arise within the US to reject the policies of a highjacked administration, we can take up the actions proclaimed by Hiroshima Mayor Tadatoshi Akiba wherever we are. Discovering and illuminating these unknown lands and waters together, we will bring about the nuclear-free world that we all long for, a world of hope, not fear, for future generations.

“…the proper path for human civilization is illumined by the spirit of reconciliation born of the hibakusha’s determination that ‘no one else should ever suffer as we did.’”

from Mayor of Hiroshima, Tadatoshi Akiba’s August 6 [2003] speech

“And your young men shall see visions, and your old men shall dream dreams.”

Acts 2:17

“In dreams begin responsibilities.”

William Butler Yeats

“… a rich and powerful nation can be compassionate instead of greedy, generous instead of jealous, can use persuasion rather than force, and equity rather than oppression.”

Sir Joseph Rotblat, 1995 Nobel Peace Laureate, giving the Linus Pauling Memorial lecture in May 2003, United Nations, Geneva, Switzerland

Course Corrections for a Nuclear-Free World

“In multilateral [forums] there is no discussion, let alone negotiations, on nuclear weapons. They are present on many bilateral agendas. Just open a newspaper. There one finds articles on the potential threat of Saddam Hussein’s nuclear program … of a decade ago; on North Korea’s nuclear aspirations; on Iran as a possible nuclear threat. But there is next to nothing on the real, existing arsenals of the eight nuclear weapons states.”

Former Mexican Ambassador to the UN Miguel Marin Bosch, speaking at the 53rd Pugwash Conference in Halifax, Nova Scotia, in July 2003, noting the lack of progress in all areas of arms control and disarmament

We agree with Señor Miguel Marin Bosch. The nuclear weapons states themselves are the big problem. As expressed in the original Abolition 2000 statement, “A world free of nuclear weapons is a shared aspiration of humanity. This goal cannot be achieved in a non-proliferation regime that authorizes the possession of nuclear weapons by a small group of states.” Yet, in 2003, this nuclear apartheid is more abiding than ever.

How close are we to a nuclear-free world? In the year 2003, not very. Yet, every October on United Nations Day, we persist in reviewing the year and producing a report that tries to answer just that question. From 1996 to 2001, we used the criteria set out in the Abolition 2000 Founding Statement and its accompanying Moorea Declaration. In 2002, we recognized that the world’s governments had taken up much of this agenda with the 13 points agreed at the nuclear Non-Proliferation Treaty Review Conference of 2000. But they left out some important parameters. As in 2002, so as not to lose these helpful measurements, we identify the six missing points and offer an assessment relating to them for 2003.

“Immediately make an unconditional pledge not to use or threaten to use nuclear weapons.”

#2 of the Abolition 2000 Statement

Sadly, more overt and covert threats to use nuclear weapons have been delivered in the last twelve months than at any time since the beginning of the Nuclear Age in 1945. As the Bush administration deepens its aggressive nuclear posture, the UK and NATO are expected to follow suit. British Secretary of State for Defense Geoff Hoon (MP) has already indicated that, like the US, the UK reserves “the right to use appropriate proportionate responses which might… in extreme circumstances include the use of nuclear weapons.”
**Recommendation:** Bring the pre-emptive, first-use doctrine of the new US nuclear policy to the International Court of Justice under the terms of its landmark 1996 Advisory Opinion on the threat or use of nuclear weapons.25

“Subject all weapons-usable radioactive materials and nuclear facilities in all states to international accounting, monitoring, and safeguards, and establish a public international registry of all weapons-usable radioactive materials.”

**#6 of the Abolition 2000 Statement**

World concerns and controversy about weapons of mass destruction in Iraq could have given birth to a widespread recognition that essential to everyone’s security is full and equal transparency by all states with respect to their nuclear materials and facilities. Unfortunately, the endemic secrecy of the nuclear weapons states still prevents something as simple as a comprehensive international inventory of nuclear materials. The double standard between the established nuclear weapons states and those aspiring to become nuclear weapons states becomes more and more glaring.

**Recommendations:** Begin immediate work on, and complete, an international inventory of nuclear materials, possibly under the auspices of the IAEA, or other international body with a mandate for such work. Increase the budgets of the IAEA and other bodies charged with monitoring and reporting on the activities of states with nuclear facilities in line with the increased tasks being placed upon them. We call on all states to sign the additional protocols to the NPT, most especially the five nuclear weapons states as defined in the treaty, sometimes known as the P5.26

“Create additional Nuclear Weapons Free Zones (NWFZ) such as those established by the treaties of Tlatelolco and Rarotonga.”

**#8 of the Abolition 2000 Statement**

Progress has been slow on the finalization of the Central Asian Nuclear-Weapon-Free Zone (CANWFZ) covering the countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. This zone will cover the crucial area of Central Asia that has played such a pivotal part in the “Great Game” of imperial and superpower ambitions for centuries. We welcome and support the efforts of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean27 for the convening of an International Conference of the Parties to Nuclear Weapons Free Zones.

**Recommendations:** Central Asian states urgently finalize the CANWFZ treaty and the nuclear weapons states then sign the protocols. In addition, all nuclear weapons states sign the protocols for the existing NWFZ treaties; all relevant states sign and ratify the NWFZ pertaining to their region. Continue the efforts, led by Brazil and New Zealand, for a Southern Hemisphere Nuclear Weapons Free Zone, linking most of the current zones and extending them to include the marine environment. Create new NWFZs in the Middle East, South Asia, Northeast Asia, and Central Europe as well as Central Asia.

“Establish an international energy agency to promote and support the development of sustainable and environmentally safe energy sources.”

**#10 of the Abolition 2000 Statement**

The French nuclear industry was at risk during this summer’s record heat in Europe, ironically from that same heat source the nuclear-dependent states28 refuse to invest in: the sun. Sadly, US imperial policies continue to support resource-prospecting and resource-extracting expeditions in the geographies of limited fossil fuels and natural gas such as Iraq, parts of Africa, Central Asia, the Alaskan National Wildlife Refuge, the California coastline, and other areas of the American West.

**Recommendations:** Immediately make renewable energy a top priority and increase investment in renewable energy across the board. Government investment at international, regional, national and local levels, tax breaks for users, and more assertive marketing would all help to reach the “tipping point” where renewables become the energy source of choice. Nuclear power is still being promoted as an answer to global warming. Its huge cost, plus its proliferation and environmental risks, far outweigh any benefits. It should be phased out.

The wisdom of such a choice, and the folly of continuing to choose nuclear energy, became starkly apparent in August when British Nuclear Fuels announced that Sellafield’s Thorp reprocessing operation will be closed by 2010. Paul Brown reported in *The Guardian* on August 26, 2003, that, “the £1.8bn works, which opened only nine years ago, and once hailed as the savior (sic) of the British nuclear industry with its promise of producing limitless electricity throughout the 21st century,” will become a nuclear waste disposal company. “The days of reprocessing spent fuel to produce plutonium and uranium for potential reuse are numbered.”

This is the most significant announcement of the year for those who wish to see an end to nuclear weapons and nuclear power. Reality has bitten the heart of the nuclear enterprise with the recognition that the production of plutonium and uranium is a literal dead end.

“Create mechanisms to ensure the participation of citizens and NGOs in planning and monitoring the process of nuclear weapons abolition.”

**#11 of the Abolition 2000 Statement**

On February 15, 2003, the world witnessed the most extraordinary manifestation of people power in history. Showing active citizenship at its most dramatic, over 10 million people demonstrated worldwide for peace. The impulse that led to this outbreak shows a deep desire for democratic participation that cannot be contained by our current systems of governance. Open accountable dialogue between citizens and decision-makers is essential for the health of our body politic.

**Recommendations:** Increase citizen involvement in the nuclear decision-making process by requiring all states to include NGO representatives in their delegations to future NPT
Preparatory Committee Meetings and Review Conferences. Bring the issue of nuclear abolition to other regional and international arenas, including bilateral talks between the nuclear weapons states. Continue to develop mechanisms to make the nuclear weapons states more accountable to their treaty obligations and to their citizens. Encourage basic nuclear knowledge and awareness, plus deeper understanding of the nuclear issue and its connections to other global concerns by supporting disarmament and non-proliferation education for every age group.

“Colonized and indigenous peoples have, in the large part, borne the brunt of ... nuclear devastation. ... [Therefore], indigenous and colonized peoples must be central... in decisions relating to the nuclear weapons cycle and especially in the abolition of nuclear weapons in all aspects. The inalienable right to self-determination, sovereignty and independence is crucial in allowing all peoples of the world to join in the common struggle to rid the planet forever of nuclear weapons.”

Excerpt from The Moorea Declaration of 1997

In using the term “decolonization” here, we remember the admonition of Gabriel Tetiarahi, our Maohi colleague in French-occupied Polynesia, to “Decolonize your minds!” We assert that the planet has been colonized by the nuclear enterprise and those responsible for it, since nuclear activities were undertaken in secret and therefore without consultation and the consent of the people. Since the beginning of the Nuclear Age, the nuclear weapons states have tested their weapons on indigenous and colonized land. Although Russia, China, and France have closed their test sites, they have not provided for the restoration of the land or its peoples. The US and Britain still retain use of the US nuclear test site in Nevada. The traditional guardians of that land, the Western Shoshone, have recently filed suit to confirm title in over 60 million acres of land and to determine royalties from use of the land, estimated to exceed $100 billion.29

Recommendations: Nuclear abolitionists must continue to deepen their understanding of the structures at work in the nuclear enterprise, as articulated by our indigenous partners. These partners are our teachers in decolonizing our minds. Their intimate experience has kept them awake to colonization and its implications for centuries, and to nuclear colonization since the dawn of the Nuclear Age. With them, we agree that decolonization and denuclearization must go hand in hand.

We recommend the following specific measures: Return French-occupied Polynesia to the United Nations decolonization list. Add New Mexico to the decolonization list. Hold the nuclear weapons states, and other responsible parties, legally accountable for the human and environmental consequences of usurping land and resources for nuclear enterprises. Honor the sovereignty of indigenous peoples, and uphold treaties made with them. Support the efforts of local, affected, and indigenous peoples to restore the natural balance of their environments, and to preserve knowledge about nuclear materials for future generations. Decolonize our own minds and hearts.

A Matter of Time

Unless a breakthrough takes place soon in disarmament, we will face an acceleration of aggressive nuclear postures and an increase in the number of states acquiring nuclear weapons. The consequences will be disastrous for all of us. What can be done to concentrate minds and generate political will? Setting a deadline helped to create the momentum for a successful conclusion to the Comprehensive Test Ban Treaty negotiations in 1996. Time is not on our side with regard to the development and spread of nuclear weapons. By setting deadlines for the implementation of the 13 Points30 agreed at the 2000 NPT Review Conference, time could become our ally.

“Now a last surge of grief at the fear of the unknown... Let’s write our names on running water And see who can disappear first.”

Glenn Kangan Webb

Acknowledgements

With this 2003 edition of our annual report, Here There Be Dragons, we set sail into uncharted waters. The world is moving so quickly that our maps go out of date before they’re printed (even on the world wide web), our navigational tools are highly honed and technical but cannot prevent human error, and thus we seek navigators with lightning skills and creative flexibility. We dedicate this report to those navigators who have revealed themselves: all those who acted to prevent war in Iraq, the women of Code Pink, and the Poets Against the War, all of whom used imagination, creativity, and wit to resist the use of unilateral and preemptive violence. We have historical guides, too, who have particularly inspired us this year: the visionaries of the Polynesian Voyaging Society, who reclaimed and brought into the modern era, time-honored but nearly lost human skills for navigating the vast unknown waters of the Pacific. No slaves to longitude or time, they used the stars, their keen senses of observation, and the very hulls of their canoes to voyage through thousands of miles of moving territory to their island destinations. We look to them as literal and figurative guides for our current challenges.

Great thanks to many colleagues who journeyed with us through the many versions of this report, helping us to clarify our thoughts and our direction: Cathy Ludden and Eric Rothenberg, Laszlo Molnar, John Burroughs, Robin and Richard Bloomfield, Carol Naughton, Rabbi Lynn Gottlieb, Carmen Ramirez, and the Poets Against the War, all of whom used imagination, creativity, and wit to resist the use of unilateral and preemptive violence. We have historical guides, too, who have particularly inspired us this year: the visionaries of the Polynesian Voyaging Society, who reclaimed and brought into the modern era, time-honored but nearly lost human skills for navigating the vast unknown waters of the Pacific. No slaves to longitude or time, they used the stars, their keen senses of observation, and the very hulls of their canoes to voyage through thousands of miles of moving territory to their island destinations. We look to them as literal and figurative guides for our current challenges.

Production of Here There Be Dragons was made possible with financial support from the EarthWays Foundation, the Threshold Foundation, and the Ted Dunn Fund of the Institute for Law and Peace. Thank you! Previous report cards for 1996-
1 On October 22, 1707, Admiral Clowdisley Sounder foundered on the Scilly Isles off the English Coast, losing four of his five ships and 2,000 men, all for lack of longitude. The night before the disaster he hung for mutiny the only man on the ship who knew their true whereabouts. His crime: engaging in "subversive navigation," as a common sailor, keeping his own reckoning of the fleet’s movements (from Longitude by Dava Sobel, Fourth Estate Ltd., London, 1995).

2 Not to belabor the point, but to our current St. George, the dragon is Saddam Hussein, and the treasure hoards lie deep in the heart of the deserts of the Middle East in the form of oil.

3 The Lenox Globe (ca. 1503-07), copper, 13 cm in diameter (in the collection of the New York Public Library): "HC SVNT DRA-CONES" (i.e. "hic sunt dracones), Latin for "here are dragons") appears on the eastern coast of Asia.

4 Each nuclear weapon in the arsenals of the nuclear weapons countries today average a destructive force equal to 7-40 times the power of the atomic weapons that destroyed Hiroshima and Nagasaki. Some nuclear weapons have even greater destructive force. An average-sized nuclear weapon (around eight times the size of the Hiroshima bomb) would immediately kill everything within a radius of several square miles. The radiation exposure would continue to injure and kill people over a longer period of time and over a greater geographic area. The area of radiation exposure would depend upon prevailing winds, and could spread across and beyond continents.

5 No less an authority than former CIA Director, John Deutch has proclaimed: "We live in a Trident world." The US has 18 Trident submarines, ten in the Pacific, eight in the Atlantic. The UK has four Trident submarines. How lethal is a Trident nuclear submarine? Each one can carry 128 nuclear warheads (16 missiles with eight warheads each). Each warhead has an explosive power of 100 kilotons, or seven and a half times the power of the first atomic bomb dropped on Hiroshima in 1945 (13 kilotons). Ten Trident submarines (one British and nine US) are continuously on submerged patrol, in both the Atlantic and the Pacific Oceans, carrying the equivalent of approximately 10,000 Hiroshimas.

6 The US wants to prevent countries from acquiring nuclear weapons, one of the goals of the NPT.

7 Article VI states: "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control."


9 US Statement to NPT Preparatory Committee Meeting, April 28, 2003.

10 The US Department of Energy held hearings on the Modern Pit Facility, concluding on July 16, 2003, in Washington DC.

11 The G8 countries are: the US, UK, France, Russia, Germany, Canada, Italy, Japan. The first four are nuclear weapon states.

12 The Los Angeles Times, June 12, 2003: "...the Bush administration is talking closely with officials from Japan and Australia on how the countries might 'change' international law to allow the countries to interdict arms transfers, particularly missiles, fissile materials and other weapons coming from North Korea. It is unclear how such a "change" could be undertaken given that China and Russia are unlikely to agree to a Security Council resolution on such a discriminatory policy and given that the Bush administration has shown no interest in creating nondiscriminatory prohibition through a multilateral treaty...."

13 The Additional Protocol mentioned above.

14 Article IV states: "(1) Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty. (2) All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world."

15 Nucleonics Week, July 3, 2003, reported that the Israeli Ministry of Foreign Affairs threatened to attack Iran’s Natanz nuclear facility if Iran completes its gas centrifuge facilities and begins enriching uranium there. In response a representative of Iran’s Supreme National Security Council announced that if their nuclear facilities are attacked, Iran will become the second country (after DPRK) to withdraw from the nuclear Non-Proliferation Treaty.


17 The USA PATRIOT Act contains provisions that define an act of terrorism against the US as threatening the very survival of the state. Under such circumstances, the US is within its legal rights under the UN Charter to retaliate with a war and/or counter-measures.

18 Mayor Akiba, together with Mayor Icho Itoh of Nagasaki, is the head of Mayors for Peace, a network of 554 cities in 107 countries calling for the abolition of nuclear weapons. See wwwpcf.city.hiroshima.jp/mayors/english/index.html.

19 Survivors of the atomic bombings of Hiroshima and Nagasaki, a unique and terrible status.


26 These five states (China, France, Russia, UK, US) or “Permanent 5,” are the five permanent members of the United Nations Security Council, each with veto power over any decision of the Security Council.

27 The depository body of the Treaty of Tlatelolco, the first NWFZ treaty. See www.opanal.org.

28 Those countries with nuclear weapons and nuclear power.


Janet Bloomfield

Janet Bloomfield is the British Coordinator of the Atomic Mirror; janet@atomicmirror.org.

Pamela S. Meidell is the Director of the Atomic Mirror; pamela@atomicmirror.org.
China’s Non-Proliferation Policy and Practices

Zhenqiang Pan

On December 3, 2003, China issued a White Paper entitled China’s Non-Proliferation Policy and Measures,1 outlining its non-proliferation position and consistent efforts it has made both internationally and domestically to prevent weapons of mass destruction (WMD) falling into wrong hands. This is the first ever official document that China has released to explain its policy and practices in this field.

China’s Basic Position on Non-Proliferation And Its Practices

The White Paper reiterated China’s basic stand on non-proliferation. The main points are as follows:

- China stands for the complete prohibition and thorough destruction of all kinds of WMD, including nuclear, biological, and chemical weapons, and opposes the proliferation of such weapons and their means of delivery. China itself does not support, encourage, or assist any country to develop WMD and their means of delivery.

- China maintains that the fundamental purpose of non-proliferation is to safeguard and promote international and regional peace and security. All measures should be conducive to attaining this goal. On the other hand, to pursue the universal improvement of international relations, to promote the democratization of such relations, and to accelerate fair and rational settlement of the security issues of regions concerned will help international non-proliferation efforts to proceed in a smooth manner. Based on this understanding, China stands for the attainment of the non-proliferation goal through peaceful means.

- China holds that universal participation of the international community is essential for progress in non-proliferation. It is highly important to ensure a fair, rational, and non-discriminatory non-proliferation regime.

- China stresses that unilateral and double standards must be abandoned.

- China hopes that great importance should be attached and full play given to the role of the United Nations.

- China also believes that given the dual-use nature of many of the materials, equipment and technologies involved in the nuclear, biological, chemical, and aerospace fields, it is important that all countries, in the course of implementing their non-proliferation policies, strike a proper balance between non-proliferation and international co-operation for the peaceful use of the relevant high technologies. Thus while it is necessary to guarantee the rights of all countries, especially the developing nations, to utilize and share dual-use scientific and technological achievements and products for peaceful purposes subject to full compliance with the non-proliferation goal, it is also necessary to prevent any country from engaging in proliferation under the pretext of peaceful utilization.

The White Paper points out that in accordance with the above basic stance on non-proliferation, China has been over the years actively participating in international non-proliferation efforts, particularly focusing on the construction and development of the multilateral non-proliferation regime. China has now signed all international treaties related to non-proliferation, and joined most of the relevant international organizations.

In the nuclear field, China joined the international Atomic Energy Agency (IAEA) in 1984, voluntarily placing its civilian nuclear facilities under its safeguards, and has since become a faithful partner in the work of IAEA. In 1998, China signed the Protocol Additional to the Agreement Between China and IAEA for the Application of Safeguards in China. China formally completed the domestic legal procedures necessary for the entry into force of the Additional Protocol, thus becoming the first nuclear weapon state to complete the relevant procedures. It supported the IAEA contribution to the prevention of potential nuclear terrorist activities.

China took an active part in the negotiations of the Comprehensive Nuclear Test Ban Treaty (CTBT) at the conference on Disarmament in Geneva and made important contributions to the conclusion of the treaty. It was also among the first countries to sign CTBT in 1996. In 1997, China became a member of the Zanger Committee on exports of nuclear technology.

China has energetically backed up countries concerned in their efforts to establish nuclear weapon free zones. It has signed and ratified the protocols to such treaties in Latin America and the Caribbean (Treaty of Tlatelo), South Pacific (Treaty of Rarotonga), and Africa (Treaty of Pelindaba). It has also expressedly committed itself to signing the protocol to the Southeast Asia Nuclear Weapon Free Zone Treaty (Treaty of Bangkok), and supported the initiative for the establishment of a Central Asian nuclear weapon free region.

In the biological field, China has strictly observed its obligation under the Biological Weapons Convention (BWC) since its accession in 1984. As from 1988, it has, on an annual basis, submitted to the UN the declaration data of the confidence-building measures for the BWC in accordance with the decision of its Review Conference. China has also enthusiastically contributed to the international efforts aimed at enhancing the BWC effectiveness, and actively participated in the negotiations on the verification protocol to the BWC and in international affairs related to the BWC.

In the chemical field, China made a positive contribution to the negotiation and conclusion of the Chemical Weapons Convention (CWC). It signed the Convention in 1993 and deposited its instrument of ratification in 1997. Since the CWC came into force, China has stood firmly by the Organization for the Prohi-
bition of Chemical Weapons (OPCW) in carrying out its work, and earnestly ful-
filled its obligations under the CWC.

In the missile field, China supports the international community in its efforts to prevent the proliferation of missiles and related technologies and materials, and adopts a positive and open attitude toward all international proposals for strengthening the missile non-proliferation mechanism. It has constructively participated in the work of the UN Group of Governmental Experts on Missiles, as well as the international discussions on the draft of the International Code of Conduct Against Ballistic Missile Proliferation and the proposal of a Global Control System.

In the meantime, China is well aware that effective control of materials, equipment and technologies that could be used in the development and production of WMD and their means of delivery is an important aspect in a country’s implementation of its international non-proliferation obligation. Thus China has adopted rigorous measures both for the domestic control of sensitive items and technologies and for their export control, and has kept making improvements in light of the changing situation.

The highlight of China’s effort in this regard is the change of its non-proliferation export control pattern from an planned economy, whereby the state relied mainly on administrative measures for import and export control. This proved to be effective for implementing the non-proliferation policy under the then-prevailing historical conditions. But with the deepening of China’s reform and opening-up, and especially following the country’s entry into the World Trade Organization (WTO), tremendous changes have taken place in the environment of China’s domestic economy and foreign trade. The old method of relying on the administrative authority to exercise control of illegal exports has become increasingly insufficient. It is against this backdrop that the Chinese Government has in recent years made great efforts to strengthen the work of building the legal system to bolster non-proliferation on the principle of rule of law to ensure the effective enforcement of its non-proliferation policy. It has now formulated and enforced a number of laws and regulations, which form a complete system for the export control of nuclear, biological, chemical, missile, and other sensitive items and technologies, and all military products, and provide a full legal basis and mechanism guarantee for the better attainment of the non-proliferation goal. This export control regime embraces many practices including establishing the export registration system, licensing system, end-user and end-use certification, list control method, the principle of non-proliferation-oriented examination and approval, and the principle of “catch-all” in issuing export license, strict penalty measures, etc.

The steady improvement and development of its laws and regulations on non-proliferation provided a solid legal basis and strong guarantee for the Chinese Government to exercise effective control of exports of all the items that may be used for proliferation of WMD. At the same time, China is aware that while it should spare no efforts to continue to implement the non-proliferation policy, these efforts should proceed in a systematic way and advance step by step. China pledges to continue to keep in touch and hold consultations with other countries on non-proliferation issues, and is willing to strengthen its exchange and cooperation with all sides in the fields related to non-proliferation export control in order to keep improving their respective non-proliferation export control systems.

**Motivations Behind China’s Non-Proliferation Efforts**

Many Western media and specialists greeted China’s White Paper with a speculation that as it had come up just days before its Premier Wen Jiabao’s visit to Washington, Beijing might want to use the document to “defuse the expected U.S. criticism” on its non-proliferation policy. As one American specialist put it: “China’s record on nuclear transfers, although it has improved, continues to worry the United States in several areas including links to Iran. The White Paper is a pre-emptive strike against U.S. criticism that China is not doing enough to control nuclear exports.”

This assessment makes certain sense as China evidently also regards non-proliferation as one of the areas in which the two countries have both common ground and differences. It is understandable that Beijing wanted to offer greater transparency and hoped to achieve a better understanding on this issue before Wen’s talks with his American counterparts.

But it would be short-sighted to view China’s effort merely defensive, aiming only to cater to the American concerns. In the perspective of many Chinese specialists, the significance of the White Paper lies first of all in a clear signal China wishes to send out to the world that non-proliferation is going to be an integral part of China’s overall foreign policy. As the White Paper stressed: “The purpose of China’s foreign policy is to help safeguard world peace and promote common development. A developing China needs both an international and a peripheral environment of long term peace and stability. The proliferation of WMD and their means of delivery benefits neither world peace and stability nor China’s security.”

China’s effort to prevent the proliferation of WMD and their means of delivery is not aimed at doing anyone a favor. It is conducive to China’s own security interests. This new focus will impact the future behavior of China in the international arena, that is, more open-minded, greater transparency, and stronger interest in integrating itself into the international community.

The White Paper is also a clear indication that China wishes to be more proactive in promoting the strengthening of the world and regional non-proliferation regimes by advocating China’s approach to the issue. It not only outlines detailed measures in its efforts to honor its responsibility on non-proliferation. More importantly, China evidently makes great effort in the White Paper to highlight its philosophical doctrine which underscore China’s non-proliferation policy and practices. The White Paper concludes with a meaningful paragraph to summarize its attitude towards the non-proliferation issue:

“Confronted with the complicated and changeable international security situation, China stands for the fostering of a new security concept of seeking security through cooperation,
dialogue, mutual trust and development. Non-proliferation is an important link in the preservation of international and regional peace and security in the new century. China will join the members of the international community who love peace and stability in making contributions to accelerating the development and improvement of the international non-proliferation mechanism and to promoting would peace, stability and development through unremitting international efforts and cooperation and by persisting in setting the issue of proliferation of WMD and their means of delivery through peaceful means.4

China’s determination to contribute more actively to the world effort to non-proliferation in such a spirit found its expression particularly in its recent critical role in the defining of peaceful solution of the nuclear crisis in North Korea, although the White Paper said little on the issue. The crisis erupted against a background of deep-rooted suspicion and long-accumulated hostility between the United States and the Democratic Peoples Republic of Korea (DPRK) in October 2002. Pyongyang acquiesced that it had carried out a clandestine nuclear program and indeed declared that it had acquired nuclear bombs and would keep such an option unless the United States dropped its hostile policy and provided security assurance to it while Washington declared it may use whatever means to force the DPRK to reverse its policies. In other words, the success or failure of the six-party talks should continue to be decided through diplomatic channels as soon as possible.5

Obviously, the above principles are precisely those principles embraced by China in its White Paper. As long as the parties concerned persist in seeking a resolution in a peaceful manner based on mutual compromise and equality, there is a ray of hope of its eventual success.

China’s Non-Proliferation Policy and the Sino-U.S. Relations

China’s White Paper has been globally welcomed as a positive contribution to the world non-proliferation efforts. However, as non-proliferation has become the primary focus of U.S. policy and the Bush administration likes to use the position on this issue by various countries as the main criterion to gauge its friends and foes, non-proliferation has become one of the central factors in the future China-U.S. constructive partnership. In other words, the success or failure in the co-ordination and co-operation in this field could have significant bearing on the evolution of the overall relations between the two countries as well as the strength of the world non-proliferation regime. Likewise, China’s future non-proliferation policy and practices will also largely be affected by its ability to coordinate with the United States.

The good news is that both countries are increasingly aware of an overlapping interest in ensuring the strengthening of the international non-proliferation efforts. The two capitals have virtually no quarrel on their objectives and each values the role of the other side in this common endeavor. Indeed, as China looks into the future, it sees a number of elements like the rise of international terrorism, easy access to the technologies, expertise and material, and the persistent regional turbulences as elements that are all making proliferation of WMD a more practical and urgent threat that requires the common effort of the international community to seek a more effective approach to address this security issue. And in this regard, how China and the United States are able to support each other in their policies is an essential part of an overall picture. This constitutes the solid basis for future cooperation between the two countries.

On the other hand, serious differences remain. They are often more involving approaches than objectives. While China shares the grave concerns of the U.S. over the increasing threat of the spread of WMD, it does not believe that the threat could be contained, let alone eliminated, by a unilateral approach. Nor does China believe that the issue could be solved by primarily using force. As one Chinese official stressed: “… the unstable international environment deepens the sense of insecurity of some countries. The tendency to resolve problems with force and preempt nuclear non-proliferation by military means may well turn out to produce just the opposite effect. When the war against weapons of mass destruction is in fact a war to change the regime of a country, self-protection by possessing nuclear weapons may possibly become a rather attractive option.”6 Iraq and North Korea are the cases in point.

China is also disturbed by the double standards of the U.S. in its policy
on non-proliferation. As a matter of fact, non-proliferation is not the means with which to perpetuate the division between the nuclear haves and the nuclear have-nots. In China’s perspective, the Bush administration nuclear policy, which is still based on the value of nuclear weapons and which is even more enthusiastic in producing new ones and listing other countries as targets of nuclear strikes, will not be conducive to the strengthening of the international non-proliferation regime.

What worries China further is the increasing military transfer from the U.S. to Taiwan, including possibly lurking the island to join the ballistic missile defense project, which is not only violating the obligations Washington undertook under its agreement with Beijing, but also is itself an act of proliferation of WMD. The breach has offended the feelings of the Chinese people and concerned the Chinese Government as it has to keep explaining to the indignant domestic public why China should continue to co-operate with these “perfidious bad guys” who do not seem to care a bit about Chinese interests.

As to the United States, it too appears to have a number of complaints on China’s behavior. That explains the current wait-and-see attitude of Washington towards China’s White Paper. While it welcomed China’s new effort and acknowledged that China had enacted good legislation on this issue, the U.S. stressed that it would not “sugarcoat” its differences with China on weapons proliferation, saying “the focus is on implementation and enforcement.”

Of the many major differences, first and foremost is perhaps the alleged continuing export of material from China to countries supposed to be hostile to the U.S. like North Korea and Iran or to unstable countries like Pakistan. The Bush administration has made many cases of this kind, pointing finger to the Chinese Government as breaching its non-proliferation commitment. As punishment, it “imposed sanctions on Chinese individuals and companies seven times over the past two and half year, compared to a total of two during the Clinton administration’s entire eight years.”

To be fair, the Bush administration’s criticism is not entirely unfounded. As discussed above, with China’s transformation from planned economy to market economy, the ability of the central government to monitor and control the activities of Chinese exports by local companies or even individuals has been reduced, resulting in commercial activities in the past that were in violation of the non-proliferation laws or regulations without. In fact, China’s effort in the recent decade to strengthen the implementation of laws and regulations on non-proliferation export control aims precisely for blocking the loopholes and to meet the concerns of the international community. But in spite of China’s emerging stringent control system one cannot guarantee that there will be no more such breach in the future – just like in many other Western countries including the United States. The point is when the violations happened and are uncovered (on both sides), the two governments should get together to address them in a friendly and constructive way.

However, more often than not, the issue becomes more complicated because of one more intractable element involving non-proliferation, namely, the lack of a clear line of demarcation in technologies, equipment, and material entirely for military or for peaceful purposes. Many of these items are of dual uses. Preoccupied with preventing any possibilities of acquiring WMD by undesired countries, Washington seems now to opt for prohibiting transfer of anything sensitive even if it is entirely for peaceful usage. That has created problems not only for China but for the whole international community.

There is another issue that might also be a troublesome element in China-U.S. relations. The Bush administration seems still intent on a confrontational approach to the nuclear issue with the DPRK despite its professed interest in seeking a peaceful solution. Under its leadership, a Proliferation Security Initiative (PSI) was launched, an effort aimed at thwarting Pyongyang’s possible exports of nuclear or other WMD-related material by interdicting its cargo shipments on the open seas. So far, 15 nations, most of whom are U.S. allies, have claimed to participate in the initiative. But in Beijing’s view, the PSI is as much illegitimate as inefficient. Worse, it may even give rise to military conflict. Thus, the Chinese Government has expressed its serious reservation: “...the Chinese side understands the concerns of the PSI participating countries about the proliferation of WMD and their vehicles of delivery. However the international community also has some concerns about the legitimacy, effectiveness and possible consequences of the interception measures of PSI. The PSI participating countries should give it a serious consideration. China has always maintained that the proliferation issue should be handled through diplomatic and political methods within the framework of international laws, and all anti-proliferation measures should contribute to the international and regional peace, security and stability.”

Obviously, there is still a big gap in the views on the issue. But fortunately, both countries recognize the importance of solving their problems through consultation as “between friends.” And as long as they perceive the other side as friends, there is high hope of better coordination and cooperation between them.
Risk Management for Verification-Related Field Missions

Experience Gained From a Simulated CTBT Inspection

Gregor Malich

Arms control agreements and disarmament arrangements continue to play a key role in international efforts to reducing the dangers of weapons of mass destruction. Yet, they depend on the effectiveness of specifically devised and incorporated verification regimes. A common feature of many such efforts is their reliance on field missions, in one form or another, stand-alone or in combination with other means, in order to monitor compliance with the relevant provisions. The success of such field missions is therefore crucial and so is, in turn, their safe conduct, being the ultimate prerequisite to achieving the stated mission objective. Accordingly, risk management tailored to the relevant field mission must be the functional process to address all pertinent administrative, technical, organizational, and personnel issues. It ought to be driven by a commitment manifesting the philosophy of health and safety and should provide adequate mechanisms to eliminate hazards or to reduce the severity and/or likelihood of an undesired consequence that may result from exposure of a subject to a hazard.

Comprehensive Nuclear-Test-Ban Treaty

The Comprehensive Nuclear Test Ban Treaty (CTBT) bans nuclear weapon test explosions anywhere in order to constrain the development and qualitative improvement of nuclear weapons and the development of advanced new types of these weapons. Preparations for the effective implementation of the Treaty are carried out by the Preparatory Commission for the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO) in Vienna. After the Treaty enters into force, compliance with the CTBT will be monitored by a global verification regime.

This global verification regime is currently being established and mainly comprises an International Monitoring System (IMS), an International Data Centre (IDC), and on-site inspection (OSI) capabilities. The IMS monitors the Earth for evidence of nuclear explosions and will eventually comprise 321 seismic, hydroacoustic, infrasound, and radionuclide stations as well as 16 radionuclide laboratories. Data generated at these stations are being transmitted to the IDC in Vienna, where they are processed, reviewed, and transmitted to the States Signatories. In the event that a suspected nuclear explosion is detected after the Treaty enters into force either by one of the stations of the IMS or by national technical means, any State Party can request an OSI.

An OSI would be regarded as a final verification measure. It may be launched by the CTBTO upon the request of any State Party and subsequent approval by the Executive Council. Once an OSI is approved, up to 40 inspectors and inspection assistants would deploy to the field and utilize approved inspection equipment in an inspection area of up to 1000 km², abiding by a very short time schedule with a launching period of just six days. The purpose of an OSI would be to clarify whether a nuclear explosion has been carried out in violation of the Treaty and to gather any information which might assist in identifying the potential violator.

Challenges to Risk Management for Field Missions

Risk management is a systematic decision-making process to develop, analyze and compare options and ultimately select optimal responses for safety from a hazard. While generic approaches for risk management in the context of human health and safety exist, field missions represent a particular challenge to risk management processes as they pose a variety of health and safety concerns which are not only consequences of tasks being performed by the team but also a function of the dynamic nature of the mission. For instance, unique conditions of sites where CTBT OSIs are likely to be conducted are associated with phenomena of an ambiguous event that might or might not be a nuclear explosion and are therefore of considerable concern for the health and safety of the team. These conditions relate, inter alia, to the potential for ionizing radiation, radioactive debris, explosive ordnance, tectonic activity, and caving-in, and reflect unique features of a CTBT OSI if compared with other verification-related field missions. Additional challenges relate to those hazards that are associated with the possible conduct of a field mission at a remote site, in a foreign environment and under unidentified site conditions:

(a) Remote sites imply hazards due to poor logistics and infrastructures that are to be expected. Aspects such as aviation and road safety, travel, transportation, site accessibility and site control, communication, amenities and personal hygiene, emergency medical support, evacuation, and food and water supply therefore need to be addressed.

(b) Foreign environments, if not adapted to, might result in severe adverse consequences for members of field missions. For instance, heat stress or exposure to cold might be induced by the local climate, the local flora and wildlife may cause contagious diseases, poisoning or injury, and endemic diseases can be lethal.
(c) Unidentified site conditions of various characteristics may impede the safety of the team. For instance, geographical features such as uneven terrain, steep grades or holes present a multitude of hazards. Also, potential consequences of past or present land use such as site contamination with unidentified chemical or biological substances are possible site-specific hazards. Finally, challenges to risk management processes also relate to the security at the site of a field mission since the level of security often can not be verified in advance. In this context, it is important for team members to respect local societal settings in order to avoid resentments against the mission and the team.

Health and safety programmes for field missions must ensure that, at any time during a field mission and whatever the location of the mission may be,

- the team is able to perform its activities in a manner that will not expose its personnel or any other person to hazards that constitute a level of risk beyond acceptable limits;
- in the case of an illness, accident, or incident adversely affecting any member of the team, appropriate resources and arrangements are readily available for timely treatment and/or corrective action.

Risk management should be the hallmark of health and safety programmes for field missions, even more so if these missions must adhere to tight timelines and/or are called for on short notice.

2002 OSI Field Experiment

Currently, the achievement of operational readiness for the efficient conduct of inspections is one of the priorities of the CTBTO Preparatory Commission. For this, the Commission arranged in 2002 for a field experiment (FE02) to simulate most aspects of the initial phase of a CTBT OSI. Within its overall objective, FE02 included an examination of specific health and safety provisions that had been drawn up in view of the various concerns referred to above.

FE02 was designed to simulate in realistic field conditions a 50% scale of the initial phase of an OSI, including its launch, conduct, and support. After the Republic of Kazakhstan had offered the use of the territory of the National Nuclear Center, the former Semipalatinsk test site, for the field phase of FE02, an area of approximately 550 km² was identified as surrogate inspection area. A miner’s camp about 20 km from this area served as a Base Camp for the 27 members of the surrogate inspection team. The FE02 scenario saw a 12.5 ton chemical explosion in a borehole within the inspection area, initiated 50 seconds after a 4 ton industrial explosion at the Kara Zhirai coal mine, as the triggering event for an inspection request. The experiment was conducted between 14 September and 13 October 2002, including a 12-day stay at the former nuclear test site.

FE02 Health and Safety Guidelines

In view of the complex health and safety concerns posed by an OSI, Health and Safety Guidelines (Guidelines) were prepared specifically for FE02 to ensure its safe conduct. Addressing virtually all aspects of OSI health and safety in form of precautionary and protective measures, the Guidelines were used on an experimental basis. They were given to all FE02 participants in advance. However, for the inspection team to adopt a precautionary attitude that is realistic for an OSI regardless of the real scenario during the field experiment, details of the location and other information on the inspection area were not made available to team members beforehand. This restriction was an integral strategy of the experiment.


Any individual participating at a field mission must take all reasonable steps to ensure his/her own health and safety in the field. He/she must be constantly aware of his/her personal environment and be alert to the activities of others in the immediate area. Despite this, the team leader is responsible for the health and safety of the team during the field mission. It is therefore recommended that any team deploying to the field comprises health and safety experts to advise the team leader and all other team members on safety related issues.

This approach was adopted for FE02 where a health and safety sub-team was formed consisting of an experienced risk assessor who was involved in the preparation of the Guidelines and a medical doctor. Upon deployment of the team, the risk assessor reviewed and monitored site conditions and recommended adjustments to requirements set out in the Guidelines, as needed. For instance, during the initial phase of FE02, team members were required to use filtering half masks during the emplacement of seismometers in order to prevent the inhalation of potentially contaminated dust. After radiation surveys during such activities indicated that risks for airborne contaminants were negligible, however, this requirement was trimmed down. Similarly, the risk assessor reviewed local health and safety regulations with a view to advising the team on how best to accommodate them. He also was given the authority to stop field activities if any operation was to threaten human health or safety beyond acceptable limits and to coordinate emergency response. This authority, however, did not need to be put into effect during FE02. The medical doctor supported the risk assessor by focusing on medical issues, hygiene, decontamination and personal protective equipment. By unobtrusive observation, he looked for indicators of non-fitness of team members for fieldwork and monitored them for signs of stress, such as cold exposure, heat stress, or fatigue. Other measures such as the provision of en route health and safety training as well as maintenance/stockpiling of safety equipment for daily field missions also contributed to the Guidelines being implemented and adhered to during FE02.

Illustrative Findings from FE02

FE02 presented a realistic setting for CTBT OSIs so that the experience gained helps shaping a health and safety programme that will prepare the team for the challenges to risk management for field missions. Illustrative examples of key findings are listed below.

Guidelines and training: The Guidelines, which aimed at preventing
undesired consequences from hazards to which FE02 participants might be exposed, were successfully implemented. To increase the effectiveness of implementation efforts, however, refresh briefings during field missions should emphasize those risks that are specific to the nature of the field mission. In the context of CTBT OSI, this would mean to focus on radiation hazards, contamination monitoring, decontamination, etc.

Health and safety sub-team: The risk assessor and the medical doctor complemented each other effectively to comprehensively cover both safety and health issues. A professional medical specialist proved to be important during FE02, not only because of the confidence that his presence instilled in the team but also as a trusted counselor to team members. In view of this and given the OSI specifics with regard to the size of a team and the scope and duration of its activities in the field, at least one medical specialist should be part of a team to ensure availability of at least trusted emergency medical treatment. If possible, such capabilities should be supplemented by arranging for additional local medical support.

Local health and safety regulations: Field missions that might occur where there are local hazards (e.g., military sites, chemical plants, former test sites, etc.) are likely to be subject to local safety regulations or laws which the local authorities may want to see respected by the deployed team. However, the team may perceive the implications of those regulations and laws as being too restrictive for achieving the stated mission objectives. For instance, because local safety regulations limited the maximum duration of stay within potentially contaminated sites at the former Semipalatinsk test site to 6.5 hours per day – with a view to protect individuals who regularly work in those areas – FE02 team members felt that their operations were hindered or delayed. Then again, scenarios are conceivable where the team may perceive local safety regulations as being not sufficient in view of remaining levels of risk. It should be considered that local regulations are most likely aimed at a different audience than members of field missions, or may even have been promulgated for local concerns about legal liability. Therefore, members of field missions should be allowed to operate in the field according to their own agreed standards and procedures provided that they do not compromise the safety of locals or infringe the right of a State to protect national or site confidentiality. This approach would facilitate reaching an agreement between the team and a State on how to perform field activities.

Self-support: Teams deployed to the field ought to be as self-sufficient as possible with regard to essentially all logistical aspects since reliance on support by locals may result in compromise solutions that may pose unwarranted risks. For instance, both the Guidelines and local safety regulations required that FE02 participants have a decontamination facility ready for use at the Base Camp before field activities began at the former Semipalatinsk test site. However, the deployed equipment for FE02 did not include decontamination capabilities and since the team did not request local support in time it had to devise a make-shift facility.

Radiation protection regime: Dosimetry during FE02 at the former Semipalatinsk test site has shown that team members were not exposed to ionizing radiation beyond typical background levels. However, a potential for exposure to ionizing radiation is specific for CTBT OSIs if compared to other inspection regimes such as those according to conventional arms control treaties. Accordingly, a radiation protection regime is needed for OSIs that allows the team to operate within potentially contaminated areas. Based on recommendations of the International Commission on Radiological Protection, for example, national and widely accepted international standards usually distinguish between normal practices, such as the use of radioactive substances for medical purposes, and intervention situations, such as emergencies. Also, those standards often refer to different categories of exposed individuals, namely the general public, workers, and intervention personnel. It should be taken into account that the exposure situation during field missions is not known in advance as various site contamination scenarios are conceivable. Similarities to emergency response operations are evident and should therefore be considered in enumerating health and safety standards for exposure levels to ionizing radiation. Of course, in addition to having standards for exposure levels, it is important that medical surveillance and training programmes be available, as well as defined procedures for monitoring and emergency response in a potentially radiological environment.

Conclusions

The conduct of FE02 at the former Semipalatinsk test site presented a realistic setting for field missions in general and for CTBT OSIs in particular: the inspection area was located in a remote place, with challenging, but not extreme, environmental conditions, and with site conditions unknown to the team in advance which in fact put considerable psychological stress on many team members. Leading to a number of findings illustrated above, this realism of FE02 confirmed that comprehensive health and safety provisions must be available during any field mission without delay as time is a critical factor for the success of the mission. The framework for such provisions should be a set of standards and procedures specific to the type of the mission, centered around the systematic process of risk management which will enable a team to quickly react to any occurrences in the field.

The Guidelines designed for FE02 were judged to be a good basis for further development of an overall OSI health and safety programme but might also present the groundwork for a comprehensive health and safety handbook that addresses many scenarios conceivable for verification related field missions. Details of the Guidelines and the operational experiences gained from FE02 can be obtained from the author.

Gregor Malich is a Safety Engineer and Risk Assessor with the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation, Vienna, Austria; gregor.malich@cftbto.org.
Resolution on Non-Proliferation and Response

Draft UN Security Council Resolution

The Security Council,

Affirming that proliferation of nuclear, chemical and biological weapons, as well as their means of delivery, constitutes a threat to international peace and security,

Reaffirming, in this context, the Statement of its President adopted at the Council’s meeting at the level of Heads of State and Government on 31 January 1992 (S/23500), including that all disputes between States should be peacefully resolved in accordance with the provisions of the Charter,

Affirming its support for the multilateral treaties whose aim is to prevent the proliferation or illicit acquisition of nuclear, chemical or biological weapons and the importance for all states to adopt and fully implement them in order to promote international stability,

Welcoming efforts in this context by multilateral arrangements which contribute to non-proliferation,

Affirming that prevention of proliferation of nuclear, chemical and biological weapons should not hamper international cooperation in materials equipment and technology for peaceful purposes while goals of peaceful utilization should not be used as a cover for proliferation,

Gravely concerned by the threat of the nexus between international terrorism and efforts to acquire, traffic in or use nuclear, chemical or biological weapons and by the involvement in such actions of non-state actors such as those identified in the UN list established and maintained by the Committee established under Security Council Resolution 1267 and those to whom Resolution 1373 applies,

Gravely concerned by the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials, which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security,

Recognizing the need to enhance coordination of efforts on national, sub-regional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security,

Recognizing that most states have undertaken binding legal obligations aimed at preventing the proliferation of nuclear, chemical or biological weapons, and have taken effective measures to account for, secure and physically protect sensitive materials, such as those required by the Convention on the Physical Protection of Nuclear Materials and those recommended by the IAEA Code of Conduct on the Safety and Security of Radioactive Sources,

Recognizing further the urgent need for all States to take additional effective measures to prevent the proliferation of nuclear, chemical or biological weapons and their means of delivery,

Reaffirming the need to combat by all means, in accordance with the Charter of the United Nations, threats to international peace and security caused by terrorist acts,

Determined to facilitate an effective response to global threats in the area of non-proliferation,

Acting under Chapter VII of the Charter of the United Nations,

1. Calls upon all States to refrain from providing any form of support to non-state actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery;

2. Decides that all States shall adopt and enforce appropriate effective laws which prohibit any non-state actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them;

3. Decides also that all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over related materials and to this end shall:

(a) develop and maintain appropriate effective measures to account for and secure such items or in production, use, storage and transport;

(b) develop and maintain appropriate effective physical protection measures;

(c) develop and maintain appropriate effective border controls and law enforcement efforts to detect, deter, prevent and combat, including through international cooperation when necessary, the illicit trafficking and brokering in such items in accordance with their national legal authorities and legislation and consistent with international law;

(d) establish, develop, review and maintain appropriate effective national export and transshipment controls over such items, including appropriate laws and regulations to control export, transit, transshipment and re-export and controls on providing funds and services related to such export and transshipment such as financing, and transporting that would contribute to proliferation, as well as establishing end-user controls; and establishing and enforcing appropriate criminal or civil penalties for violations of such export control laws and regulations;

4. Recognizes the utility in implementing this resolution of effective national control lists and calls upon all Member States, when necessary, to pursue at the earliest opportunity the development of such lists;

5. Recognizes that some States may require assistance in implementing the provisions of this resolution within their territories and invites States in a position to do so to offer assistance as appropriate in response to specific requests to the States lacking the legal and regulatory infrastructure, implementation experience and/or resources for fulfilling the above provisions;

6. Calls upon all States:

(a) to promote the universal adoption, full implementation and, where necessary, strengthening of multilateral treaties whose aim is to prevent the proliferation of nuclear, biological or chemical weapons;

(b) to adopt national rules and regulations, where it has not yet been done, to

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Letter from Abolition 2000 Global Council to UN Security Council

Dear members of the Security Council and other interested states,

On behalf of the Global Council of the Abolition 2000 Global Network to Eliminate Nuclear Weapons, we write to express our opposition to the current form of the proposed resolution on “non-proliferation” released to the elected members of the Security Council on March 24, 2004 by the United States on behalf of the permanent five members. Abolition 2000 was founded in 1995 at the Nuclear Non-Proliferation Treaty (NPT) Review and Extension Conference and the nuclear weapons hearings before the International Court of Justice and now comprises more than 2000 civil society groups and municipalities in 95 countries.

The draft resolution mandates that all states bolster efforts to prevent terrorist and other non-state actor trafficking in and acquisition of nuclear, biological, and chemical (NBC) weapons, related materials, and missiles and other unmanned systems of delivery. We affirm the need for collective action to eliminate all NBC weapons and weapons programs including measures to prevent their spread. However, we believe the resolution is deeply flawed due to the failure to address the disarmament of existing arsenals and programs. We also oppose the assumption of a political or legal basis for the Security Council to act as a global legislature. We additionally are concerned about the potential for abuse of cooperation in prevention of NBC weapon-related trafficking recommended by the resolution. We urge that the Security Council engage in comprehensive consultations with all interested states and with civil society concerning the resolution, notably by holding an open session at which all member states can speak and by holding an informal session for a briefing by civil society representatives. The resolution must not be fast tracked; the issues are too complex and important.

Disarmament

While the proposed resolution affirms support for multilateral treaties on NBC weapons, it refers only to prevention of proliferation, and is silent, rhetorically or substantively, on ending deployment of existing weapons and on the imperative of disarmament – the aim of the NPT, Chemical Weapons Convention (CWC), and the Biological and Toxin Weapons Convention (BWC). The resolution thus ignores that the problem of the spread of NBC weapons, and their potential acquisition by terrorists, will never be effectively addressed absent effective compliance with disarmament obligations.

It will not suffice simply to add a reference to disarmament in the preamble. Measures the resolution calls for, e.g., to account for and physically secure NBC weapons and related materials, should be identified as implementing disarmament as well as non-proliferation obligations. Beyond that, the resolution should make clear that states should prohibit both non-state and state actors from acquiring and trafficking in NBC weapons, related materials, and means of delivery. The resolution should also make clear that nuclear-armed states, both within and without the NPT, should take effective measures including the 2000 NPT 13 steps – to comply with the general obligation, unanimously set forth by the In-
The proposed resolution purports to require states to prohibit non-state actors from acquiring NBC weapons and their means of delivery and to take measures to account for, secure, and prevent unlawful trafficking in the weapons, related materials, and means of delivery. If adopted, this would represent a far-reaching assumption of authority by the Security Council to enact global legislation requiring each state to modify its national legal system and policies. Such legislation is usually the subject of painstakingly negotiated multilateral treaties, like the NPT, CWC, and BWC. There is nothing in the UN Charter that confers such authority on the Security Council. Rather the Charter contemplates multilateral agreements entered into by states as the primary mode of global lawmaking, with the General Assembly promoting this process by making recommendations (Art. 13).

It is true that Security Council resolution 1373 requires all states to take measures to suppress terrorism. But it was adopted in the special circumstance of responding to the September 11 attacks, and deals with simpler and less controversial topics than the present resolution, which strongly impinges upon state to state relations and issues of security. For example, the resolution would impose obligations upon states with regard to NBC-weapon “related materials,” missiles and other unmanned systems of delivery, and non-state actors, yet provides no full and precise definition of those terms. In this and other respects, a rational and legitimate lawmaking process would require in-depth negotiation with the participation of affected states.

A resolution also requires political acceptance if it is to be effectively implemented. The highly unrepresentative Security Council, dominated by the nuclear-armed P5, is not the best institution to elicit such acceptance, especially with respect to NBC-measures as to which hypocrisy and double standards will rightly be charged.

The proposed resolution does address real dangers, illustrated by the recent public revelations regarding the Pakistan-based nuclear proliferation network. Moreover, negotiation of multilateral agreements is inevitably difficult and time-consuming and does not reach (in the near term) non-participating states.

Rather than a Chapter VII mandatory resolution, the best approach would be for the Security Council to adopt a resolution that sets forth guidelines and requests. That would lay the foundation for later Security Council mandatory action as needed with respect to particular acts or practices involving particular states. It could also spur the negotiation of needed additional multilateral agreements, which the resolution should recommend. It further, importantly, would remove the basis for any claim of enforcement not explicitly approved by the Security Council of the kind made by the United States and Britain with respect to the invasion of Iraq. In Security Council deliberations, any open session, and consultations, states should make absolutely clear that the resolution does not in any way support enforcement not explicitly approved by the Security Council.

Other steps that would contribute to more acceptable Security Council intervention would be 1) full consultation with all interested states, and with civil society, including through an open session and an informal (Arria formula) civil society briefing; and 2) establishment of an implementation body that involves the Secretary-General, the Department for Disarmament Affairs, IAEA, OPCW, UNMOVIC, representatives of the governing bodies of the NPT, CWC, and BWC, and civil society, to ensure among other things a common and sound understanding of what states should do to implement the resolution. States reports on implementation should go to the Secretary-General and the implementation body.

By contrast, the present draft makes a mockery of follow-up. It establishes a Security Council committee on implementation to last only six months, while requiring states to adopt complex national legislation and measures that will clearly take longer than six months fully to put in place. It is crucial to avoid leaving follow-up on the resolution to individual states, above all the United States. However, that is the course President Bush signaled the United States intends, stating in his February 11, 2004 speech that after the resolution is adopted, the United States “stands ready to help other governments to draft and enforce the new laws that will help us deal with proliferation.”

Prevention of trafficking

The proposed resolution calls upon states, consistent with international law, to cooperate in the prevention of illicit trafficking in NBC weapons, means of delivery, and related materials (para. 8). Especially given the extremely elastic understanding of international law displayed by the United States and Britain with respect to the invasion of Iraq, as well as the national intelligence failures/deceptions regarding NBC-weapon programs in Iraq, the mere invocation of international law is not enough. Clarity and international consensus needs to be developed on the types of shipments prohibited and the nature of interdictions permissible under international law. There should be provision for Security Council or other multilateral, treaty-based decision-making and dispute resolution (as by the International Law of the Sea Tribunal) as to interdiction of specific shipments that otherwise would appear to be protected by the customary freedom of navigation on the high seas, the right of innocent passage, and other existing international law. Alternatively, the provision should be dropped.

Please do not hesitate to contact us. We have suggestions for alternative language, as well as more in-depth analysis of the issues outlined above. We also would assist with an Arria formula meeting. We aim to promote global civil society participation in decision-making about the resolution as well as media coverage. The resolution will affect all of our futures, not only regarding the dangers posed by NBC weapons, but also the shape of international law and institutions.

Sincerely,
John Burroughs, Executive Director,
Lawyers’ Committee on Nuclear Policy;
Susi Snyder, Director, UN Office and Rhianna Tyson, Project Associate, Reaching Critical Will, Women’s International League for Peace and Freedom.

(other signatures omitted)

March 25, 2000
War No More

By Robert Hinde and Joseph Rotblat

This book is a service to humanity. It makes the case that war is no longer a viable way of resolving conflicts and that the institution of war must be abolished. Both of the authors are scientists who have given considerable thought to the role that science and technology have played in increasing the dangers of war and bringing humanity to the brink of annihilation. The authors bring broad experience and wisdom to their task of finding a way out of the culture of war.

Joseph Rotblat was a Manhattan Project scientist during World War II. He left the project in its latter stages when he understood that the Germans would not succeed in developing an atomic bomb and, therefore, that a US atomic bomb would not be necessary to deter them from using one. Under the circumstances of World War II, he was willing to help create an atomic weapon to deter the Nazis, but he was not willing to contribute to the creation of such a weapon for any other purpose. He was the only scientist to leave the project as a matter of conscience.

After walking away from the US project to create an atomic weapon, Rotblat has spent more than 50 years working against nuclear weapons and against war. In 1955, he was one of the original eleven signers of the Russell-Einstein Manifesto that tried to warn the world about the extreme dangers of continuing the nuclear arms race. Shortly after this, he was instrumental in forming the Pugwash Conferences on Science and World Affairs, an international organization of scientists that has worked diligently to bring to the public scientific perspectives on the dangers of the nuclear arms race and other manifestations of militarism. In 1995, Rotblat and Pugwash were awarded the Nobel Peace Prize.

On his 90th birthday, Professor Rotblat announced that his short-term goal was to abolish nuclear weapons and that his long-term goal was to abolish war. You have to admire this vision and determination in someone entering his tenth decade of life.

Robert Hinde, who served as a Royal Air Force pilot in World War II, is a distinguished professor at Cambridge University and long-time participant in the Pugwash movement. He is noted for his work in biology and psychology.

War No More grew from a Pugwash Conference at Cambridge in the year 2000 on “Eliminating the Causes of War.” The authors describe the book as an attempt to disseminate the message of the conference more widely. It is also, of course, a concrete step in attempting to realize Professor Rotblat’s long-term goal of a world without war.

The authors believe that to bring the institution of war to an end, it is necessary to understand it better. They pose the questions: “What are the factors that contribute to the outbreak of war? Why are people willing to go to war? What can be done to prevent war?” The book then provides important facts, figures, charts, and perspectives in an attempt to answer these questions. In the first major section of the book the authors deal with nuclear and other weapons of mass destruction, making it abundantly clear why 21st century wars jeopardize the future of civilization and humanity itself.

In the second major section of the book, the authors explore the factors that make war more likely. In doing so, they look at the role of political systems and political leaders, culture and tradition, resources, economic factors and human nature. The authors find that none of the traditional explanations are sufficient in and of themselves to an understanding of why wars occur. They suggest that insights may be found in the complex interrelationships between nations, political and economic systems, and the personalities of political leaders. One of their conclusions is: “Every war depends on multiple, interacting causes, but one factor is essential – the availability of weapons.”

In the third major section of the book, the authors examine what should be done to eliminate war. In this section they delve into possible solutions to ending war, including factors that stop countries from going to war, arms control, peace education, organizations (from the United Nations to civil society groups), and intervention and means of conflict resolution. This section offers a fascinating overview of the direction in which humanity must move if it is to succeed in ending “the scourge of war.”

In the final chapter in the book, an epilogue on “Eliminating Conflict in the Nuclear Age,” the authors offer a sense of how far we are from realizing the noble and necessary goals they seek. “At the time of writing, in the book, the authors explore the factors that contribute to the outbreak of war. Why are people willing to go to war? What can be done to prevent war?” The book then provides important facts, figures, charts, and perspectives in an attempt to answer these questions. In the first major section of the book the authors deal with nuclear and other weapons of mass destruction, making it abundantly clear why 21st century wars jeopardize the future of civilization and humanity itself.

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In the final chapter in the book, an epilogue on “Eliminating Conflict in the Nuclear Age,” the authors offer a sense of how far we are from realizing the noble and necessary goals they seek. “At the time of writing, in 2003,” they state, “the general world situation is far from being a happy one; indeed, as far as the nuclear peril is concerned it is much worse than would have been expected 14 years after the end of the nuclear arms race. To a large extent this is a result of the policies of the only remaining superpower, the United States of America, particularly the George W. Bush administration.” The authors express concern that the Iraq War, “threatening the guidelines of … morality in the conduct of world affairs and adherence to the rules of international law,” may be “a portent of the shape of things to come.”

The authors plead that this must not be allowed to happen: “We cannot allow the products of billions of years of evolution to come to an end. We are beholden to our ancestors, to all the previous generations, for bequeathing to us the enormous cultural riches that we enjoy. It is our sacred duty to pass them on to future generations. The continuation of the human species must be ensured. We owe an allegiance to humanity.” They recognize that it is in the competing allegiances, to the nation and to humanity, that a solution to the immense problem of war may be found. They argue that “a process of education will be required at all levels: education for peace, education for world citizenship.” This is undoubtedly the greatest challenge of our time: how can we educate the people of the world to give their loyalty to humanity and withdraw their consent from war?

I have only two concerns regarding the book. First, I think the subtitle, “Eliminating Conflict in the
New Publications

**Star Wars, Tools of US Space Supremacy**
*By Loring Wirbel*

Loring Wirbel's *Star Wars: US Tools of Space Supremacy* is a “must read” for activists who wish to be informed about the nature of modern war and the politicians in and out of uniform who promote it. The book does us a great favor by pointing out that the many space-based tools of warfare make Star Wars a program in progress, not merely a development yet to come. It is true that an even more advanced use of space for earthly wars, with both conventional and nuclear weapons, is still around the corner, but in a real sense it is already here in the blitzkrieg campaigns that initiated the yet unfinished wars in Afghanistan and Iraq. What is yet to come is ominous however, and the author addresses that fully.

A historical approach is used to set the context for the policies and actions of today’s U.S. Space Command. As the author points out, space control, space domination, and space force have been the goals from the beginning. Several times in my reading of the book a quote from Jack Manno’s *Arming the Heavens* (1983) came to mind. Air Force General Bernard Schriever, who is referred to often in Wirbel’s book and whose spirit lives on in the Colorado Air Force Base named after him issued a comment on his perspective of the Outer Space Treaty: “Space for peaceful purposes – what a bunch of goddamned bullshit that was.” That mentality has underpinned the U.S. military space program from its earliest days as it incorporated the Nazi space scientists alongside General Schriever and others in U.S. missile and satellite development.

There is a lot of technical detail in the text and the reader will find the glossary of acronyms and abbreviations most helpful in keeping up with the narrative. The book does flow with the aid of the author’s writing style. The vital role of secret information systems in bringing real time intelligence to the war fighter and thus increasing the killing and destructive power of modern killing devices is explained in detail. Subjective judgments are inserted in the text throughout. The sources for the information provided are there to be checked out. One theme pursued by the author is the unfortunate bipartisan acceptance of the notion of the U.S. as dominator of the world. “In the final analysis, both major U.S. parties perceived global management of all nations by the surviving superpower as right and proper, because the US was seen by all in the Washington power elite as the only nation qualified to own the rule books” (p. 81).

Even those who do not share the author’s viewpoint will find plenty of food for thought in this book. It is true that this work will make a lot more sense to one who has read some of the material in the extensive bibliography but it will be enlightening to those with limited background as well. The book digs deep into the secret information channel that is so often referred to in today’s world as “intelligence.” That is the material that we dumb citizens are supposed to accept at face value after it is presented to us in its “spin” version. This book challenges us all to probe behind the press releases and propaganda speeches of our current crop of politicians. We all need to know more about spying, the black budget, secret memos, weapons research, etc. etc. Only then will we be up to the task outlined in the last chapter: “Reclaiming Multilateralism and Peace in Space.” As the author puts it:

“The unilateralists in the Bush administration have made clear their plans for conducting war around the globe using the medium of space. It is high time the anti-nuclear, global justice, civil liberties, anti-BMD and anti-war communities catch up with these plans by uniting their own efforts at exposing and opposing space domination.”

*Bill Sulzman*


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David Krieger

INESAP is the International Network of Engineers and Scientists Against Proliferation and was founded in 1993. It is a non-profit, non-governmental network organization with participants from all over the world. INESAP is part of the activities of the International Network of Engineers and Scientists for Global Responsibility (INES), which currently comprises more than 60 organizations from 25 countries. INES is a UN accredited NGO. Although those active in the network can and do work independently with each other, the office plays an essential organizational role in most INESAP activities. It is hosted by the Interdisciplinary Research Group in Science Technology and Security (IANUS) at Darmstadt University of Technology. The INESAP Coordinator (Regina Hagen) cooperates closely with the international Coordinating Committee.

If you want to support the work of INESAP with a contribution, you can send a cheque to the office or pay money directly into the following bank account:

Bank: Nassauische Sparkasse, Liebfrauenstr. 2, 61440 Oberursel, Germany
Account number: 258 131 002
Bank ID: 510 500 15
IBAN: DE40 5105 0015 0258 1310 02
SWIFT-BIC: NASSDE55XXX

In February 2003, a group of students from nine schools in Heidelberg, Germany, started the initiative "DENK-mal-VÖLKERRECHT" (which has a double meaning in German: “Think! International Law” and “Monument for International Law”) in protest against military violence. So far they have found 16,913 supporters – each represented by a brick – and continue to build what they call a “protective wall for international law.” The wooden brick wall continues to grow. Ten of the students plan to travel to New York in late April 2004 to bring their monument to the United Nations and to participate in the Preparatory Committee Meeting of the Non-Proliferation Treaty. Check details out at www.aktion-voelkerrecht.de.