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Sliding Towards the Brink: More Useable Nuclear Weapons and the Dangerous Illusions of High-Tech War

The United States is rushing towards a war with Iraq, and positioning military forces for what may become a second war with North Korea. In each case, the reason given is to prevent the development of weapons of mass destruction. At the same time, however, the United States is accelerating efforts to make its nuclear weapons more useable in warfare, improving their effectiveness against hard-to-destroy targets and studying ways to employ them with "acceptable" levels of death and destruction. The United States also is abandoning its own commitments, made in or in connection with the Non-proliferation Treaty, to negotiate the elimination of its nuclear arsenal, to reduce the military role of nuclear weapons, and to refrain from nuclear threat or use against non-nuclear weapons states. The result is likely to be a new and dangerous kind of brinksmanship, with countries that see themselves as targets of an increasingly aggressive United States racing to acquire armaments, including nuclear weapons, that they hope will deter an attack. The U.S. government apparently is willing to discard all international arms control efforts in favor of a nuclear free-for-all, confident that it will be able to intimidate or destroy all adversaries with its enormous and varied arsenal of increasingly sophisticated nuclear and conventional weapons.

Recent proposals to develop new types of nuclear weapons or to modify existing weapons to give them new capabilities have received the most public attention. But over a period of years, the U.S. has been conducting a range of research efforts on nuclear weapons and their effects, and has been upgrading its computers, software, and other equipment in ways that will make nuclear weapons easier to use in a variety of circumstances, against a broad range of targets.[1] These efforts focus on ways to destroy hardened and deeply buried targets like tunnels and bunkers, and on the types of effects necessary to destroy chemical and biological weapons in a way that minimizes the risk releasing them into the environment. U.S. weapons laboratories have been conducting a variety of experiments and simulations aimed at determining how dangerous facilities like nuclear reactors and enrichment facilities can be attacked with conventional weapons without releasing large quantities of radiation, and whether chemical and biological weapons can be completely incinerated or otherwise rendered harmless by nuclear explosions of various sizes and types. The software used by commanders in the field to select weapons to achieve desired effects has been upgraded to better integrate nuclear weapons use against a variety of targets, including nuclear, chemical, and biological weapons facilities, and further upgrades are in progress. All of these efforts strive to make the decision to use nuclear weapons more "rational," substituting the apparent certainty of expert-backed numbers and impressive, "user friendly" computer output for the moral, political, and ecological imponderables of crossing the nuclear threshold again.

Nuclear Weapons for New Missions: Likely to be Larger than Advertised

With the ascendance of the Bush administration, the push for nuclear weapons with new military capabilities has intensified. A 2001 report to Congress on defeat of hard and deeply buried targets, delivered in time for the first full budget cycle of the Bush administration, noted the "unique ability" of nuclear explosions to "destroy both agent containers and CBW [chemical and biological warfare] targets." It also stated that if a nuclear warhead was very accurate and had sufficient ability to penetrate deep into the ground, "it is possible to employ a much lower yield to achieve the needed neutralization," which "would reduce weapon produced collateral effects." Existing weapons possess "some limited capability and lower yield options," but were "not developed with this mission in mind."[2] The report noted that "[c]omprehensive reviews of feasibility and cost for suitable nuclear and conventional weapons and their associated operations concepts" for defeat of weapons of mass destruction and associated facilities already were underway.[3] The Bush Nuclear Posture Review, leaked to media in January 2002, added further support to the quest for new nuclear capabilities, stating that

> There are several nuclear weapon options that might provide important advantages for enhancing the nation's deterrence posture: possible modifications to existing weapons to provide additional yield flexibility in the stockpile; improved earth penetrating weapons (EPWs) to counter the increased use by potential adversaries of hardened and deeply buried facilities; and warheads that reduce collateral damage.[4]

The NPR also indicated that the U.S. was prepared to use nuclear weapons in a wide range of circumstances and against a number of countries, including Iraq and North Korea. Trying to dampen the public outcry that arose in the wake of the NPR revelations, administration officials portrayed the document as mere contingency planning. The NPR, however, reflected real activities going forward in the institutions that design and deploy nuclear weapons. The FY2003 Department of Energy budget request, submitted shortly after the NPR leaks became public, called for "advanced warhead concepts teams" at the nuclear weapons laboratories to study various new nuclear weapons ideas.[5] And the National Nuclear Security Agency requested funding in FY 2003 to begin study of a new or modified "Robust Nuclear Earth Penetrator"[6]

Additional nuclear planning documents leaked to the public in early 2003, together with the administration's recent Defense Department bid solicitations and FY2004 budget submissions, reveal that the Robust Nuclear Earth Penetrator is only one of a number of modified or new nuclear weapons under consideration. A January 2003 Pentagon meeting attended by high-ranking officials from the Defense Department and the Energy Department nuclear weapons programs set the agenda for further planning sessions that would evaluate "[r]equirements for low-yield weapons, EPWs, [earth penetrating weapons] enhanced radiation weapons, [and] agent defeat weapons"(weapons intended to destroy chemical or biological agents). Issues to be covered included "[e]ffects modeling capabilities to effectively plan for these weapons," "testing strategy for weapons more likely to be used in small strikes," and the "strategy for selecting first "'small builds.'"[7]

The Department of Energy (DOE) and Department of Defense (DoD) FY2004 budget requests, although not yet available in full to the public, manifest the ramping up of nuclear weapons design activities. The Robust Nuclear Earth Penetrator (RNEP) study is continuing, and currently is at the 6.2/6.2A phase ("Option Downselect, Design Definition, and Cost Studies.")[8] The DOE budget request states that in addition to the RNEP, "[t]he candidate for the other Feasibility and Cost Study, subject to approval after request by the Navy in early FY 2003, would be an associated W76 study."[9] The W76 is a submarine launched ballistic missile (SLBM) warhead; the language about a study "associated" with the RNEP raises the question whether an earth penetrator SLBM warhead is under consideration.[10] The FY2004 Air Force Nuclear Weapons Support budget request includes both RNEP work and initial studies on a new or modified nuclear cruise missile warhead, asking funds for "development of acquisition strategies/studies of traditional nuclear alternatives for new and/or expanded capabilities per the Nuclear Posture Review (NPR), DoD/DOE acquisition efforts include joint DoD/DOE Phase 6.1 - 6.2A activities (e.g., Robust Nuclear Earth Penetrator (RNEP), Enhanced Cruise Missile (ECM), advanced payloads, etc.)."[11] A sample task attachment to a Request for Proposals from the Air Force Nuclear Weapons and Counterproliferation Agency called for an analysis of alternatives "directed at the modification of an existing nuclear weapon to penetrate and destroy Hard and Deeply Buried Targets (HDBTs) not currently held at risk with existing conventional or nuclear weapons." This analysis is to "assess at least three (3) feasible alternatives."[12]

It is important to note that the U.S. likely can modify existing nuclear weapons to provide some types of new military capabilities without underground nuclear testing. National Nuclear Security Administration administrator John Gordon told a congressional Committee in 2002, for example, that the RNEP study "will evaluate modifications to existing nuclear weapons that do not require nuclear testing."[13] A nuclear bomb modified to provide some earth penetrating capabilities, the B61-11, was deployed in the late nineties without underground testing, using facilities at the Department of Energy research laboratories that allow various aspects of nuclear weapons function to be tested through combinations of physical experiments (such as exploding the non-nuclear high explosive that triggers the nuclear blast) and computer simulations. Billions of dollars are being spent on new nuclear weapons research facilities, and on new, more flexible production techniques that would allow the kind of 'small builds" envisioned by nuclear weapons planners (see box, "Stockpile Stewardship").

House Republicans and the Bush Administration are calling for the removal of constraints on nuclear weapons research, seeking to repeal restrictions on development of new low-yield nuclear weapons imposed by Congress in 1994.[14] But it is also important to note that the new weapons capabilities under consideration may not fall under the existing restrictions in any event, being "low yield" only in comparison to the enormous explosive power of typical modern strategic bombs and missile warheads, which typically have 7 to 25 or more times the yield of the bombs that destroyed Hiroshima.[15] A 2000 Lawrence Livermore National Laboratory study, for example, examined the use of "low yield" nuclear weapons on biological weapons agents stored in the open or in above ground bunkers or warehouses, to determine how effective they would be in destroying agents before they were

STOCKPILE STEWARDSHIP: Nuclear Weapons Research and Production for the 21st Century

...[A]n ability to innovate and produce small builds of special purpose weapons, characteristic of a smaller but still vital nuclear infrastructure, would act to convince an adversary that it could not expect to negate U.S. nuclear weapons capabilities. The development and subsequent modification of the B61-7 bomb—converting a few of them into B61-11 earth penetrator weapons—is a case in point. John A. Gordon, Administrator of the National Nuclear Security Administration (NNSA), Written Statement to the Committee on Armed Services, U.S. Senate, February 14, 2002.

The Nuclear Posture Review calls for "revitalized defense infrastructure that will provide new capabilities in a timely fashion to meet emerging threats." A significant part of this infrastructure is the Department of Energy (DOE)/NNSA nuclear weapons research, testing, and production facilities. To sustain this vast complex, the U.S. is spending almost six billion dollars a year on the "Stockpile Stewardship" program, including billions on new and more advanced nuclear weapons research and production facilities.

These include:

- The National Ignition Facility (NIF), now being built at the Livermore National Laboratory in California. The NIF is a laser driven fusion machine the size of a football stadium, designed to create very brief, contained thermonuclear explosions. It is slated to be used for a wide range of applications from training weapons designers in nuclear weapons science to nuclear weapons effects testing. NIF experiments, together with other fusion research being conducted at the nuclear weapons laboratories, could, in the long run, lead to the development of pure fusion weapons, not requiring plutonium or uranium.

- The Dual Axis Radiographic Hydrotest Facility (DARHT). This facility, near completion at the Los Alamos National Laboratory in New Mexico, will join several already existing facilities where mockups of primaries, the first stage of a thermonuclear weapon, are imploded while very fast photographic or x-ray images are generated, thus allowing scientists to "see" inside. DOE already is developing technology for an even more sophisticated "hydrodynamic testing" facility, the Advanced Hydrotest Facility.

- Pulsed power technologies: Further experiments exploring the extreme conditions created in a nuclear weapon explosion are studied using various types of "pulsed power," in which a large amount of energy is stored up and then released very quickly in a small space. The energy source can be chemical high explosives or stored electrical energy. Pulsed power facilities at both DOE and Department of Defense laboratories are used to explore nuclear weapons function and effects and directed energy weapons concepts, and could play a role in the development of a wide range of high technology weapons, including new types of nuclear weapons.

The data streams from these and other experimental facilities, along with that from "subcritical" tests which implode nuclear materials but have no measurable nuclear yield and the archived data from over 1000 past U.S. nuclear tests, will be integrated via the Accelerated Strategic Computing Initiative (ASCI). This multi-billion dollar supercomputing program reaches beyond the weapons laboratories, seeking to incorporate the nation's leading universities into an effort to attract and train yet another generation of nuclear weapons designers. Finally, smaller, modernized nuclear weapons production processes are being developed to allow flexible, small lot manufacturing, with planning underway for a new plutonium pit factory for large-scale production. New production of tritium also is planned.

For a more detailed overview of the Stockpile Stewardship Program, see *Faustian Bargain 2000: Why Stockpile Stewardship is Fundamentally Incompatible with the Process of Nuclear Disarmament,* Western States Legal Foundation 2000, available at http://www.wslfweb.org/doclib.htm

dispersed by the blast and thermal effects of the explosion.[16] The "low yield" used as a basis for these calculations was 10 kilotons, approximately two-thirds of the explosive power of the Hiroshima bomb, which obliterated a city killed over 200,000 people, tens of thousands in an instant and the rest slowly, in all the ways that nuclear weapons can kill: in days or weeks from blast, burns, and acute radiation sickness, over years and decades from the long-term effects of radiation. The Robust Nuclear Earth Penetrator now under consideration also appears not to be low-yield, with recent press reports indicating that the current concept calls for a nuclear weapon with five times the yield of the Hiroshima bomb.[17]

The Livermore Lab study found that"biological agents can be radiation-neutralized" by nuclear explosions of this magnitude "over areas that are sufficiently large to be useful for military strikes."[18] However, these strikes would require explosions close above the target to assure sufficient radiation reached the bottom layers of biological agent containers, with air bursts 10 to 50 meters above the ground providing a "neutralization area" for biological warfare agents "in typical surface storage configurations" with a radius of 40-50 meters, depending on whether a fusion or fission bomb was used and on the manner in which the biological agents were stored.[19]

Contrary to the image promulgated by advocates of new nuclear counterproliferation capabilities of "surgical" strikes with low "collateral damage," the blast and heat from a ten kiloton above ground nuclear explosion would devastate a considerable area. A nuclear explosion this close to the ground also could be expected to produce a significant amount of fallout, although the amount will vary depending on the type of nuclear weapon used. Similarly, a number of independent experts have concluded that the earth-penetrating nuclear weapons under consideration for destroying hard targets and underground facilities will vent large quantities of fission products and activated debris, also resulting in extensive fallout.[20] Low-tech countermeasures, such as earth cover over bunkers and dispersal of materials over a wider area, also can make it significantly difficult to destroy chemical or biological agents without danger of dispersing them.

Nuclear War 2.0: From Adaptive Planning to Laptop-Ready Weapons Choice Software

The Nuclear Posture Review also called for transformation of war planning and weapons targeting to allow more rapid, flexible nuclear weapons deployment and use:

> The current nuclear planning system, including target identification, weapons system assignment, and the nuclear command and control system requirements, is optimized to support large, deliberately planned nuclear strikes. In the future, as the nation moves beyond the concept of a large, Single Integrated Operational Plan (SIOP) and moves toward more flexibility, adaptive planning will play a much larger role....
>
> Deliberate planning creates executable war plans, prepared in advance, for anticipated contingencies. Adaptive planning is used to generate war plans quickly in time critical-situations. Deliberate planning provides the foundation for adaptive planning by identifying individual weapon/target combinations that could be executed in crises.[21]

In addition to exploring new types of nuclear warheads, the military is doing research,

conducting analysis, running simulations, and designing new computer software to improve its ability to plan and execute nuclear strikes. The resulting plans and software packages are intended to make it easier and faster for commanders to select weapons, estimate damage to targets, and model the effects of chemical, biological, and nuclear materials released. Here too, the Bush Administration is not breaking new ground, but stepping up efforts already underway in the 1990's.

New upgrades to the Strategic War Planning System are to "produce preplanned and adaptively planned options for Theater CINC-nominated Weapons of Mass Destruction (WMD) and Nuclear, Chemical and Biological (NBC) targets using nuclear and/or conventional weapons." The objective is to "automate the current manual processes, required to produce decision documents [Theater Nuclear Planning Document (TNPD) and Theater Planning Support Document (TPSD)] for the theater Commanders-in-Chief (CINCs)." One aspect of the project will be "Earth Penetration Weapon Targeting."[22] Another is a new version of the "National Desired Ground Zero List Integrated Development System (NIDS)," denominated "NIDS II."[23]

Theater commanders also will have new options for choosing and targeting particular weapons systems, and for integrating nuclear weapons options into the broader spectrum of weaponry. New equipment and software, for example, will give theater commanders the ability to plan nuclear cruise missile attacks more efficiently:

> The Theater Mission Planning Center (TMPC) project provides for the TMPC and theAfloat Planning System (APS), a shipboard version of TMPC. TMPC and APS provide mission planning and employment support information for both the nuclear (TMPC only) and conventional TLAM [Tomahawk Land Attack Missile]. The TMPC/ APS software development decreases mission planning time and increases the quality and accuracy of each mission.[24]

As part of a $1.26 billion "Weapons of Mass Destruction Defeat Technology" research and development program, the Defense Threat Reduction Agency (DTRA) is looking for proposals for an Advanced Concept Technology Demonstration for "Hard, Deeply-Buried, Target Defeat." This project is intended to "expand existing planning tools, represented by the IMEA (Integrated Munitions Effects Assessment), to include defeat analysis of targets that are subjected to nuclear weapons attack and to compare the results with corresponding conventional attacks."[25] Advanced Concept Technology Demonstrations are expected to provide a "residual, usable capability upon completion."[26] According to attachments to the request for proposals,

> STRATCOM [Strategic Command] needs to consider and evaluate the option of using nuclear weapons against its most difficult targets, and to compare whether such weapons provide an enhanced targeting posture or alternately provide the exclusive means to eliminate some particularly difficult targets. Because these strategic targets may themselves contain WMD, STRATCOM, as part of its assessment, needs to predict the extent and spread of chemical, biological or radiological contaminant released by virtue of the attack. In a post-attack environment, STRATCOM

> also needs to determine the effectiveness of the attack based on sampled physical and inferential variables produced by the attack.[27]

One goal of the project is to "develop or modify a fast running analysis tool that can 1) assess a target hardness situated below ground in a variety of geological features, 2) plan an attack using conventional or nuclear weapons, 3) optimize the attack strategy to maximize the probability of defeat, and 4) assist target planners in evaluating the probability of damage based on post-attack morphology."[28]

These programs continue ongoing work by Pentagon planners to increase understanding of nuclear weapons function in the new context where "[t]echnical challenges are presented by the rapidly developing need to hold evolving enemy targets at risk using the reduced stockpile, and recognizing greatly increasing political and environmental constraints."[29] Previous efforts during the 90's, for example, developed a prototype "Integrated Munitions Effects Assessment-(Nuclear) (IMEA-N) model to allow collateral consequence assessment of targeting weapons of mass destruction (WMD) materials," and "[d]eveloped concepts for demonstrating nuclear weapons effects on underground storage facilities, and other very hard and very deep targets."[30]

In addition to exploring new ways to use nuclear weapons to attack difficult to destroy targets like tunnels and chemical and biological warfare materials and to work within "greatly increasing political and environmental constraints" by improving estimates of the death and destruction such attacks might cause, the Defense Department is studying the effects of attacking nuclear facilities such as reactors and uranium enrichment plants with conventional weapons. The "Nuclear Facility Defeat Program," according to DTRA budget documents,

> will provide the National Command Authority (NCA) and combatant commands means to deny critical nuclear production, processing, fabrication and storage capability of an adversary, without the prohibitive political consequences of large radiation releases downwind of the target. Once the intelligence community determines the adversary's nuclear production cycle, critical facilities can be targeted to eliminate overall capability. NFD provides methods to functionally kill selected facilities, predict and minimize resulting collateral effects.[31]

Related DTRA programs aim to improve existing software used to model releases of chemical and biological warfare agents and of radioactive materials, to integrate "collateral effects" prediction into programs used to select and target weapons, and to make the resulting software packages available to the military in a form that can be used easily on a personal computer.[32]

From the Cold War to the Next War: Keeping Nukes Alive

Efforts to make nuclear weapons more useable against the kinds of threats envisioned by the military after the Cold War are not new. They extend back at least as far as the early 1990's, with nuclear weapons designers and military strategists planning for the next war against a regional adversary that might possess chemical or biological weapons. Along with these new missions came a push for new technology, for it was evident that the massive city and silo-busting nuclear warheads which

predominated in the long-range nuclear arsenal were unuseable in the regional expeditionary warfare considered likely by the U.S. military in coming decades:

> ...[T]he Gulf War focused attention on the need to attack very specific Third World sites (bunkers, nuclear laboratories) with massive but geographically confined force.
>
> The technology is now in hand to develop power projection weapons and very low yield nuclear weapons in earth penetrators with precision guidance to meet this need.
>
> All of these technologies merit immediate attention.[33]

A Navy strategic planning document from the same period emphasized the political obstacles to using existing nuclear warheads against many types of targets, and reiterated the call for smaller warheads and delivery methods with tailored effects:

> Nuclear warhead options are attractive against hard targets (e.g., hardened underground bunkers and storage sites) and area targets (e.g., airfields, troops/armored vehicles). While existing nuclear warhead technology is generally sufficient to fulfill these missions, advanced technology concepts are designed to minimize the political and economic factors associated with the maintenance and deployment of nuclear weapons. The most appealing concepts focus on nuclear weapons with very small yields and with design and delivery techniques that minimize fallout, residual radiation, and collateral damage.[34]

By the mid-nineties, the targeting policies underlying this vision were hardening into official doctrine. The Joint Chiefs of Staff *Doctrine for Joint Theater Nuclear Operations* stated that

> As nations continue to develop and obtain WMD and viable delivery systems, the potential for US operations in such a lethal environment increases. In addition to proliferation of WMD among rogue states, proliferation may also expand to include non-state actors as well.... [35]
>
> Enemy combat forces and facilities that may be likely targets for nuclear strikes include WMD and their delivery systems, ground combat units, air defense facilities, naval installations, combat vessels, nonstate actors, and underground facilities.[36]

The concept of nuclear weapons crafted for the "counterproliferation" mission, the new bottle into which the military was trying to pour the old wine of the immense Cold War arsenal, remained largely a vision during the 90's. The moratorium on nuclear weapons testing, together with flat budgets for nuclear weapons work and a Congress skeptical of the need for new nuclear weapons after the fall of the Soviet Union, thwarted the more ambitious plans of the weapons laboratories. Congress even passed restrictions on new low-yield nuclear weapons development,[37] although the weapons laboratories continued their weapons development program by carefully skirting the "new" and "low-yield" prohibitions. In the late 90's, the military deployed the B61-11, an earth penetrator nuclear bomb. The minimum yield is estimated by some analysts at 10 kilotons and by others to be as low as .3 kilotons.[38] The laboratories and the military claimed that the B61-11 was not a "new" weapon, because it was a modification of an existing design, and billed it as a "safety" improvement, intended

take the role in the arsenal of the B53, a mammoth nine megaton bomb with fewer modern safety features.[39]

As the 90's drew to a close, nuclear weapons advocates inside and outside government, chafing under Congressional limits on weapons research and looking to expand weapon laboratory budgets, argued for new roles for nuclear weapons, and for a nuclear arsenal modified and modernized to suit. The managers of the nuclear weapons laboratories did not play the role of passive technicians providing civilian leadership with information on request and technology on command. Instead, fully exploiting their roles as leaders of enormous institutions with billion dollar annual budgets and control over most of the relevant information, the lab managers played an active part in assuring that nuclear disarmament would remain a distant aspiration, developing new rationales for the nuclear arsenal and conjuring fears that the existing stock of thousands of thermonuclear warheads would become ineffective and obsolete. Paul Robinson, Director of the Sandia Laboratory and a member of the Advisory Council of Strategic Command, argued that "abolition of nuclear weapons"is "an impractical dream in any foreseeable future." Robinson also predicted that

> The US will undoubtedly require a new nuclear weapon, either for a different delivery mode or vehicle, or quite likely, because it is realized that the yields of the weapons left over from the Cold War are too high for addressing the deterrence requirements of a multipolar, widely proliferated world. Without rectifying that situation we would end up being self-deterred.[40]

Stephen Younger, Associate Director for Nuclear Weapons of the Los Alamos National Laboratory, also saw a world in which the United States would retain a large and varied nuclear arsenal for decades to come, and in which lower-yield nuclear weapons needed to be considered to avoid "self-deterrence:"

> ...[T]he current stockpile may not be credible against some set of potential adversaries. For example, if a national emergency were to develop that involved the imminent use of weapons of mass destruction against American interests, would an adversary consider our threat of a multiwarhead attack by the Peacekeeper ICBM or a Trident SLBM as overkill and hence not a realistic threat? Such a reliance on high-yield strategic weapons could lead to "self-deterrence," a limitation on strategic options, and consequently a lessening of the stabilizing effect of nuclear weapons.[41]

But contrary to the claims of the Bush Administration that more useable, and hence "credible," nuclear weapons would not blur the threshold between conventional and nuclear warfare, the goal of these nuclear strategists is to extend the specter of nuclear devastation to every confrontation, to instill the fear of annihilation in any who would challenge the U.S.. "For any real or emerging conflict in which the U.S. becomes engaged," Sandia Director Robinson told a National Defense University audience in 1999, "the fact of the U.S. powerful arsenal of nuclear weapons cannot be dismissed from the thinking of the potential adversary, nor in my mind should it ever be so."[42] Nuclear weapons, he asserted, should not be limited to deterring nuclear attack. Rather, said Robinson, "...[i]t will be important for the U.S. to examine the full range of possibilities available to us to deal effectively

with the lower rungs of conflict ladders, and to learn better how to integrate the full spectrum of our military strengths—from better use of conventional weaponry to deal with WMD targets to selectively being able to 'stretch downward' the shadow of our nuclear forces to deter aggressive acts at lower levels."[43]

At the same time, the Bush government-in-waiting, ensconced in well-funded Washington think-tanks was saying much the same thing. A study by the National Institute of Public Policy, published just as the Bush Administration was coming to office, claimed that "in the future the United States may need to field simple, low-yield, precision-guided nuclear weapons for possible use against select hardened targets such as underground biological weapons facilities."[44] Four study participants took defense policy positions in the Bush Administration.[45] C. Paul Robinson remains as director of the Sandia Laboratory and a member of the Strategic Command Strategic Advisory Group. Stephen Younger has been elevated to head of the Defense Threat Reduction Agency, overseeing Bush Administration technology and policy development for counterproliferation weapons and their use.

Sliding Towards the Brink

The combined effects of U.S. policies on nuclear weapons and other weapons of mass destruction is rapidly eroding what is left of the international legal arrangements the prevailed in the last half of the 20th century. The U.S. doctrine of preventive war against potential WMD threats, officially announced in the fall of 2002 in the National Security Strategy of the United States[46] and the National Strategy to Combat Weapons of Mass Destruction,[47] along with repeated U.S. statements that it will go to war to eliminate WMD threats without United Nations sanction, are undermining both the United Nations and the entire structure of post-World War Two international law. At the core of both the United Nations Charter and mainstream understanding of postwar international law is the outlawing of war in all circumstances other than self-defense, individual or collective. Although there is some debate about the exact limits of lawful self-defense in circumstances where a country or the international community is facing a threat that is imminent, unavoidable, and overwhelming, it is clear that preventive wars against unilaterally proclaimed threats do not qualify.[48]

At the same time, the failure of all the nuclear weapons states to make meaningful progress towards eliminating nuclear weapons, together with U.S. efforts to modernize its nuclear weapons infrastructure and to make its nuclear weapons more useable, and increasingly overt U.S. nuclear threats against non-nuclear weapons states, are pushing the Non-Proliferation Treaty towards irrelevance. It appears more and more that the United States sees the NPT mainly as a device to legitimize sanctions and war against countries it dislikes, while tolerating the nuclear arsenals of long-time strategic partners like Israel and allies of convenience like India and Pakistan outside the NPT framework. And the U.S. continues to rely on overwhelming force, backed by a diverse and constantly modernized nuclear arsenal, to achieve its own international goals. Faced with these emerging realities, it is easy to see why countries who see themselves as possible U.S. targets– particularly those the U.S. has openly declared to be so-- would place little value on the NPT.

Finally, U.S. doctrine and behavior manifests contempt for any grounds for legal order other than force, and a highly

instrumental attitude towards international legal principles generally. The same officials who now declare to be lawful a preventive war against a state that poses no provable threat despite months of inspections and years of intense surveillance, and who are on the brink of starting that war without United Nations sanction, also will make the determinations on behalf of the United States of how that war may be lawfully fought. They will decide how many thousands of deaths are justified as "necessary" and "proportionate" to achieve their self-defined military ends. The signs deeply disturbing. Secretary of Defense Donald Rumsfeld responded to reports of the killing of women and children by U.S. bombing in Afghanistan (on one of the rare occasions when he responded at all) by equating them with the "enemy," and thus justifying their deaths:

> We have assumed that where you find large numbers of al Qaeda and Taliban, that there may very well be non-combatants with them who are family members or supporters of some kind, who are there of their own free will, knowing who they're with and who they're supporting and who they're encouraging and who they're assisting.[49]

And from the starting point of an announced Iraq air campaign that will rain thousands of powerful explosives on densely populated cities, in the name of "liberating" their populations, it is frightening to contemplate the death and destruction U.S. leaders will be willing to inflict once U.S. troops are on the ground and at risk. It is more frightening still to imagine the killing they will order if the inhabitants of this or another target country prove more resistant to "liberation" than expected.

This is where the danger lies. It is extremely unlikely that the United States will, out of the blue, launch a preemptive nuclear strike against a perceived threat. Rather, the danger is the increased possibility of nuclear weapons use in the wars that the U.S. is rushing towards, driven by an administration that will go to war for a variety of reasons that change from one day to the next: to fight terrorism, to protect access to resources, to prevent the acquisition of chemical or biological weapons, even to "democratize" entire regions by means that remain unclear beyond the dropping of bombs, the firing of missiles, the killing of those who refuse to surrender. The danger is that one day, perhaps very soon, perhaps in the war after next, the forecasts of "shock and awe," of quick victories in which only large numbers of other people's children will have to die, invisible to American TV viewers as carefully "embedded" journalists are steered away from the worst of it, will prove wrong. There will be a disastrous hit on a U.S. troop ship, or a "terrorist" attack on a rear area, or an awful grinding battle in a big city, carnage imagined, but never really believed possible. Or perhaps some small country, unable to develop nuclear weapons of its own and believing that only chemical or biological weapons could deter the overwhelming conventional might of the United States, will succeed in the difficult task of killing several thousand troops with them on the battlefield. And because the dead and horribly dying are *our* children, not mere regrettable-but-necessary "collateral damage," it *will* be on TV: CNN, Fox, and MSNBC rolling the horrific images over and over twenty-four hours a day, their anchors and analysts baying for retribution.

At the White House or the Pentagon, those in power will gather, faced with choices they never believed they would have to make. This is the point in the contingency plans, in the war

games, where the nuclear options come out. Every time since Nagasaki that it has happened before, U.S. leaders have turned back from the threshold, daunted by terrible and intertwined questions, technical, moral and practical. But this time, it will be easier. The thinking already has been done for them, quantified, encoded, and packaged into software with a reassuring, professional look and feel, full of numbers and flashy graphics that, when they appear on the big situation room screen, convey the overwhelming impression that much is known. Simulations are run, experts in and out of uniform explain the analysis, yes, we can use this weapon, on that target, with "acceptable" collateral damage.

But perhaps the decision-makers may still be uncomfortable. So they reach out to more "experts" throughout the government, to those who are supposed to know the most about nuclear weapons. In this most ideologically homogeneous of administrations, they find only those who have been advocating for useable nuclear weapons for decades, for entire careers. Their moment will have finally come.

by Andrew M. Lichterman

Notes

1. For an overview of research during the 1990's aimed at making nuclear weapons more useable in warfare, see see *Looking for New Ways to Use Nuclear Weapons: U.S. Counterproliferation Programs, Weapons Effects Research, and "Mini-Nuke" Development,* WSLF Information Bulletin, Winter 2000, available at http://www.wslfweb.org/docs/mininuke.pdf

2. *Report to Congress on the Defeat of Hard and Deeply Buried Targets,* Submitted by the Secretary of Defense in Conjunction with the Secretary of Energy in response to Section 1044 of the Floyd D. Spence National Defense Authorization Act for the Year 2001, PL 106-398, July 2001, p.19. The unclassified content of the report can be found at http://www.nukewatch.org/nwd/HiRes_Report_to_Congress_on_the_Defeat.pdf

3. *Ibid* at p.6.

4. Nuclear Posture Review, pp. 34-35, provided in "Nuclear Posture Review Excerpts," Globalsecurity.org, at http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm (hereafter *Nuclear Posture Review*). For a more detailed analysis of the Nuclear Posture Review and current U.S. nuclear weapons policies and their relationship to other high-tech weapons programs, see Andrew Lichterman and Jacqueline Cabasso, *The Shape of Things to Come: The Nuclear Posture Review, Missile Defense, and the Dangers of a New Arms Race,* WSLF Special Report, April 2002, http://www.wslfweb.org/docs/shape.pdf For additional information from a variety of sources about the Nuclear Posture Review, see the WSLF NPR information page at http://www.wslfweb.org/nukes/npr.htm

5. *Nuclear Posture Review* pp.34-35

6. U.S. Department of Energy FY2003 Congressional Budget Request, National Nuclear Security Administration, Weapons Activities, Executive Summary p.10 (pdf file pagination)

7. "Stockpile Stewardship Conference Planning Meeting Minutes," 10 January 2003, Attachment 2, "Panels: Draft Topics Lists and Members." Obtained by the Los Alamos Study Group, www.lasg.org, full document available at http://www.lasg.org/StockpileStewardshipReview%5b1%5d.htm

8. U.S. Department of Energy, Fiscal Year 2004 Congressional Budget Request, "Weapons Activities, Directed Stockpile Work," pp.73-74.

9. *Ibid.* p.79

10. In this regard, it is worth noting that a 1997 National Research Council panel on future Navy weaponry made the following recommendations:

"The panel proposes the following recommendations for the Navy:

--Pursue penetrating weapons technology that consist of either

–a high-velocity precision penetrator containing high energy or other conventional lethal mechanisms, or
–high-velocity RV-delivered kinetic energy impact/penetrator or low-yield nuclear warhead penetrators.

–Conduct a study to determine nuclear munitions characteristics for optimum target effectiveness to include yield, accuracy versus depth and target hardness in various geological formations, target location error, and weapon impact velocity needed to destroy targets with no release of radioactivity.

–Consider the use of SSN or SSBN platforms to launch 1000-km or greater-range, highly accurate ballistic missiles with low-yield (10 tons to 1 kiloton) nuclear warheads that can penetrate and destroy or incapacitate hard and deeply buried enemy targets, functions that are beyond the capability of conventional weapons systems. This may be particularly important against weapons of mass destruction facilities.

–Conduct a comparative study of earth penetrators, kinetic energy penetrators, and low-yield, penetrating munitions."

Recommendations of the Panel on Weapons, National Research Council, Commission on Physical Sciences, Mathematics, and Applications, Naval Studies Board, Committee on Technology for Future Naval Forces, in *Technology for the United States Navy and Marine Corps, 2000-2035: Becoming a 21st Century Force*, Vol. 5, "Weapons," National Academy Press, Washington, D.C. (1997), pp.257-258.

11. U.S. Air Force, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2003, 0604222F, Nuclear Weapons Support Project 4807, Nuclear Weapons & CP Technologies.

12. "Mission Scenario Two FOR AF NWCA Analysis of Alternatives, Earth Penetrating Nuclear Weapon," accompanying "Statement of Work, Nuclear Weapons and Counterproliferation Support, AF Nuclear Weapons and Counterproliferation Agency (NWCA),25 November 2002.

13. Statement of John A Gordon, National Nuclear Security Administration, before the House Armed Services Committee Procurement Subcommittee June 12, 2002.

14. See Ian Hoffman, "Bush wants to Lift Ban on Mini-nukes," *The Oakland Tribune*, March 6, 2003, and House Policy Committee, Subcommittee on National Security and Foreign Affairs, *Differentiation and Defense: An Agenda for the Nuclear Weapons Program*, February 2003, p.8 http://wilson.house.gov/Media/Photos/NuclearReport.pdf

15. "Low yield" generally is referred to as below five kilotons. The Congressional restrictions on research leading to deployment of a "new" low-yield weapon, for example, refer to the five kiloton threshold. National Defense Authorization Act For Fiscal Year 1994, Sec. 3136, Prohibition on Research and Development of Low-yield Nuclear Weapons.

16. Hans Kruger, "Radiation-Neutralization of Stored Biological Warfare Agents with Low-Yield Nuclear Warheads," Lawrence Livermore National Laboratory, August 2000 UCRL-ID-140193

17. See Walter Pincus, "Pentagon Pursues Nuclear Earth Penetrator," *The Washington Post*, March 7, 2003, p.A25.

18.Kruger, *op.cit.*, p.1.

19. *Ibid.*, pp.7-8.

20. See Robert W. Nelson, "Low-Yield Earth-Penetrating Nuclear Weapons," *Federation of American Scientists Public Interest Report* January/February 2001 Volume 54, Number 1, http://www.fas.org/faspir/2001/v54n1/weapons.htm; Sidney Drell, Raymond Jeanloz, and Bob Peurifoy, "Bunkers, Bombs, Radiation," Commentary, Los Angeles Times, March 17, 2002; and Ian Hoffman, "Mini-nukes Are Too Risky, Experts Say," *Oakland Tribune*, March 5, 2003.

21. *Nuclear Posture Review*, p.29

22. U.S. Air Force, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2002, 0101313F, Project 5059, Strategic War Planning System.

23. Department of the Air Force, Major Investment Report, FY 2002 Amended Budget Estimates, Strategic War Planning System (SWPS), p.15 downloaded from 140.185.43.23/itmapp2/Intro/reports/ STRATEGICWARPLANNINGSYSTEM.pdf

24. U.S. Navy, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2002, 0204229N, Tomahawk and Theater Mission Planning Center.

25. " Statement of Objective For The Hard, Deeply Buried Target Defeat ACTD," 29 January 2003 Attachment 4 to RFP DTRA01-03-R-0005, January 29, 2003, p.1 http://www.eps.gov/EPSData/ODA/Synopses/7006/DTRA01-03-R-0005/Atch4HDBTSOO29JAN.doc

26. "Definitions," Attachment 2 to RFP DTRA01-03-R-0005 January 29, 2003, p.8

27. " Statement of Objective For The Hard, Deeply Buried Target Defeat ACTD," 29 January 2003 Attachment 4 to RFP DTRA01-03-R-0005, January 29, 2003, p.1

28. *Ibid.*, p.2.

29. U.S. Department of Defense, Deputy Under Secretary of Defense (Science and Technology), *Defense Technology Objectives for Defense Technology Area Plan*, (2000), "Nuclear Phenomenology," p. II-372, obtained by Western States Legal Foundation under the Freedom of Information Act. Available at http://www.wslfweb.org/docs/dstp2000/dtopdf/24-NT.pdf

30. Defense Threat Reduction Agency, RDT&E Budget Item Justification Sheet (R-2 Exhibit), February 1999, 0602715BR, WMD Related Technologies, Project AC, Weapons System Lethality, FY 1998 Accomplishments.

31. Defense Threat Reduction Agency, RDT&E Budget Item Justification Sheet (R-2 Exhibit), February 2000, 0602715BR, Nuclear Sustainment & Counterproliferation Technologies.

32. "The potential for release of Nuclear, Biological, Chemical, and Radiological (NBCR) materials poses an increasing threat to military forces around the world. The HPAC[Hazard Prediction Assessment Capability] software has been developed as a tool for the commander in the field to use as a deliberate planning tool as well as a means by which the hazard from such releases can be evaluated and minimized. The HPAC software is being developed by DTRA and currently exists as a theater-deployable capability on a personal computer (PC) and as a decision aid for the intelligence/targeting community on a Unix platform.....

The HPAC software is designed to integrate with other software to provide greater integrated capabilities. HPAC currently works with the Munitions Effectiveness Assessment (MEA) software to provide collateral effects analysis

for modeling attacks on more complex targets. HPAC is also a part of a larger integrated capability known as the Integrated Target Planning Tool Set (ITPTS)."
Statement of Objective For Consequence Assessment Project Software And Technical Integration, 9 January 2003 Attachment 3 to RFP DTRA01-03-R-0005p.1
http://www.eps.gov/EPSData/ODA/Synopses/7006/DTRA01-03-R-0005/Atch3HPAC%5FCATS%5FJACE%5FSOO.doc

33. "The Role of Nuclear Weapons in the New World Order," Briefing by Thomas C. Reed, Chairman of the Joint Strategic Target Planning Staff Strategic Advisory Group Deterrence Study Group, October 10, 1991, p.8.

34. Department of the Navy, Office of the Deputy Chief of Naval Operations for Plans, Policy and Operations, *Stratplan 2010 Phase II, Final Report* (June 1992), V.I, pp.92-93. Obtained through the Freedom of Information Act by the Greenpeace Nuclear Free Seas program, 1994.

35. United States Joint Chiefs of Staff, *Doctrine for Joint Theater Nuclear Operations*, Joint Pub 3-12.1 (February 1996), p.I-3.

36. Id., p. viii.

37. National Defense Authorization Act For Fiscal Year 1994, Sec. 3136, Prohibition on Research and Development of Low-yield Nuclear Weapons.

38. See Greg Mello, "The Birth of a New Bomb," *The Washington Post*, June 1, 1997, p. C1 (.3 kilotons), Natural Resources Defense Council, Table of US Nuclear Weapons Stockpile, 2002 (10 to 350 kilotons variable yield) http://www.nrdc.org/nuclear/nudb/datab12.asp.

A 2001 joint Energy and Defense Department report on hard target defeat noted that the current nuclear arsenal "possesses some ground penetration capability and lower yield options (not yet certified), suggesting that perhaps the lower B61-11 yields are technically achievable but not been certified by the weapons laboratories, perhaps to avoid running afoul of Congressional restrictions on low-yield nuclear weapons development. *2001 Report to Congress on the Defeat of Hard and Deeply Buried Targets*, Submitted by the Secretary of Defense in Conjunction with the Secretary of Energy in response to Section 1044 of the Floyd D. Spence National Defense Authorization Act for the Year 2001, PL 106-398, July 2001, p.19 (Hereafter *HDBT Report*). The unclassified content of the report can be found at http://www.nukewatch.org/nwd/HiRes_Report_to_Congress_on_the_Defeat.pdf

39. "This modified B61 will provide surety features enhanced in comparison to the B53 warhead." U.S. Department of Energy, *Stockpile Stewardship and Management Plan* ("Green Book"), February 1996, p. IV-11 (obtained under the Freedom of Information Act by the Natural Resources Defense Council). See also "Hagengruber: B61-11 a modification, not a new weapon," *Sandia Lab News*, August 1, 1997.

40. C. Paul Robinson, "Maintaining a Viable Nuclear Weapons Program in a Test Ban Environment: A Strong Technical Foundation in the Laboratories," presented at the Nuclear Security Decisionmakers Forum, Albuquerque, NM March 28, 2000.

41. *Ibid.*, p.13

42. C. Paul Robinson, "How Does One Size the Deterrent?" 1999 Joint Operations Seminar, National Defense University/Institute for National Strategic Studies, Ft. McNair, Washington, D.C., September 21-22, 1999.

43. *Id.*

44. National Institute for Public Policy, *Rationale and Requirements for U.S. Nuclear Forces and Arms Control*, Volume I, "Executive Report," February 2001 p.7.

45. William D. Hartung, with Jonathan Reingold, *About Face: The Role of the Arms Lobby In the Bush Administration's Radical Reversal of Two Decades of U.S. Nuclear Policy*, World Policy Institute, May 2002, http://www.worldpolicy.org/projects/arms/reports/reportaboutface.html This report provides an excellent overview of the many think tank analysts and arms industry executives who lobbied for nuclear weapons and their modernization during the nineties and then joined the Bush Administration in 2001 and after.

46. Office of the President of the United States, *National Security Strategy of the United States of America,* September, 2002.

47. Office of the President of the United States, *National Strategy to Combat Weapons of Mass Destruction,* December 2002.

48. For a more extensive discussion of this point, see Andrew Lichterman and John Burroughs, *War Is Not the Path to Peace: The United States, Iraq, and the Need for Stronger International Legal Standards to Prevent War,* Lawyers' Committee on Nuclear Policy and Western States Legal Foundation, October, 2002, http://www.wslfweb.org/docs/iraqlaw2.htm

49. U.S. Department of Defense News Transcript, Presenter: Secretary of Defense Donald H. Rumsfeld, Monday, March 4, 2002.

WEB RESOURCES

U.S. Nuclear Weapons Policies

For more information on U.S. nuclear weapons programs, see ***The Shape of Things to Come: The Nuclear Posture Review, Missile Defense, and the Dangers of a New Arms Race,*** WSLF Special Report, April, 2002, http://www.wslfweb.org/docs/shape.pdf

For more publications on U.S. nuclear weapons programs and policies, see the Western States Legal Foundation on-line documents library at http://www.wslfweb.org/doclib.htm

For links to a wide range of government and non-government resources on nuclear weapons, see the **Western States Legal Foundation web resource guide** at http://www.wslfweb.org/links.htm

Worldwide Nuclear Arsenals: Basic Information

Center for Defense Information, Current World Nuclear Arsenals
http://www.cdi.org/issues/nukef&f/database/nukearsenals.cfm

Organizing for the Abolition of Nuclear Weapons

Abolition 2000 Global Network for the Elimination of Nuclear Weapons
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