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A Faustian Bargain:

Why Stockpile Stewardship is incompatible with the process of nuclear disarmament

■ Andrew Lichterman and Jacqueline Cabasso

While many U.S. arms control groups are pressing hard for ratification of the Comprehensive Test Ban Treaty (CTBT), few are willing to analyze the „stockpile stewardship“ bargain that is the central element of the Clinton Administration strategy for achieving it. At the same time, arms controllers are putting forward increasingly detailed visions of paths to the elimination of nuclear weapons. Yet there has been little systematic consideration of the relationship between the CTBT and envisioned phases of nuclear disarmament, and the announced U.S. intention to retain „all historical capabilities of the weapons laboratories, industrial plants, and [the Nevada Test Site]“ right down to zero.

Conclusion of CTBT negotiations by 1996 was the most solid commitment the United States and other nuclear weapon states made in exchange for the acquiescence of non-nuclear weapon states in 1995 to the indefinite extension of the Nuclear Non-Proliferation Treaty (NPT). It is generally agreed that observance of the ban on underground test explosions is a necessary (though not sufficient) condition for the long-term viability of the non-proliferation regime. In the U.S. the nuclear weapons laboratories and the Department of Energy (DOE) have presented expanded laboratory capabilities as a sine qua non for ratification of the CTBT.

The highly debatable proposition that rebuilding a huge nuclear weapons research, development, testing and production complex and planning to maintain it for decades to come is somehow essential if the U.S. is to ratify the CTBT and thus to meet its nonproliferation objectives has been asserted as an unquestionable axiom in every official American public discussion on the future of nuclear weapons. What is behind this seemingly incongruous idea is a Faustian bargain. The nuclear weapons laboratories and their allies

in the military and Congress, it is hoped, will accept a ban on full-scale underground nuclear explosions (which on the surface appears to mark the beginning of the end for nuclear weapons) in exchange for a nuclear weapons research and testing program of Cold War proportions that will keep nuclear weapons in the arsenal, in the budget, and in the career paths of scientists well into the next century. This upgraded nuclear weapons infrastructure, lavishly funded as the „Stockpile Stewardship and Management“ (SS&M) program, will provide design capabilities greater than those available during the Cold War, and will encompass a test site capable of rapid resumption of full scale underground testing and a substantial nuclear warhead production capacity intended to allow rapid, flexible warhead prototyping and production, computer-integrated with a new suite of state-of-the-art experimental facilities at the weapons laboratories. In addition to maintaining the existing arsenal, it is officially, and explicitly, intended to maintain the capability to design and develop new weapons.

What goes unanalyzed is the incompatibility of these plans with the intent of the CTBT to prevent further vertical and horizontal proliferation and even, in certain respects, the letter of the CTBT prohibition of „any other nuclear explosion.“ Moreover, in disarmament proposals such as those advanced by National Academy of Sciences and the Stimson Center, little or no attention is paid to the compatibility of SS&M, both technically and politically, with central elements of proposed paths to disarmament including rapid, deep cuts in nuclear arsenals; strict accounting for warheads and weapons-useable nuclear materials; a verification regime likely to require intrusive on-site inspections of nuclear weapons facilities; and a greater commitment by the world's leading nuclear power.

The American President has promised his nuclear weapons establishment \$4.5 billion a year for SS&M, in constant dollars an amount well above the annual Cold War spending average for directly comparable activities: research, development, testing, production and disassembly. As now proposed, the SS&M program conflicts with many of the disarmament agendas which have been recently put forward - and at virtually every step along the way.

1. The SS&M program violates the spirit, the intent, and possibly, in certain respects, the letter of the CTBT, and jeopardizes prospects for its entry-into-force.

Entry-into-force of the CTBT is widely seen as a key marker of progress towards a stable nonproliferation regime, and thus towards further disarmament. However, U.S. refusal to make timebound commitments towards the elimination of nuclear weapons, combined with an ambitious new program intended to systematize and accelerate the accumulation of nuclear weapons-relevant knowledge, and capable of designing, producing, and deploying nuclear weapons with improved military capabilities, has provided arguments for nations reluctant to join the CTBT. They assert that the CTBT is intended to perpetuate a two-tier international system in which the technological advantages of the declared nuclear weapon states are permanently institutionalized.

Though the actual motives of particular states in refusing to accede to the CTBT are complex, and include both internal political and regional security concerns, U.S. behavior as the most powerful nuclear weapons state continues to legitimize nuclear weapons as instruments of sovereign national power, and reinforces the position of factions within threshold states who favor acquisition of nuclear weapons.

Beyond the impact of SS&M as a whole, the decision to conduct so-called "subcritical" tests sends a signal that the CTBT is viewed by the U.S. as an agreement intended primarily to prevent horizontal proliferation, which the U.S. plans to interpret in a narrow, technical way, minimizing limitations on the weapons programs of the nuclear weapon states. The subcritical tests also demonstrate U.S. resolve to keep its nuclear weapons test site in a state of readiness.

Many SS&M experiments involve explosive technologies and radioactive materials. What exactly did the nuclear weapon states have in mind when they agreed among themselves to accept a „zero-yield“ CTBT? Genuine questions can be raised about whether the CTBT prohibits „laboratory-scale“ explosions, and if so, which ones.

Combined with a stated willingness to break out of the test ban upon a unilateral determination that U.S. nuclear weapons no longer meet acceptable standards of "safety"

and "reliability," SS&M appears to manifest a U.S. view of the CTBT as a means to enhance its strategic advantages, rather than as a collective step towards a world without nuclear weapons.

2. The SS&M program anticipates the design and deployment of nuclear weapons with new military capabilities, calling into question the sincerity of the U.S. commitment under the NPT to negotiate in good faith cessation of the nuclear arms race and the elimination of nuclear weapons.

Existing and proposed nuclear weapons facilities allow the U.S. to continue to develop its nuclear arsenal, adding new military capabilities to nuclear forces already far in excess of what is conceivably needed to deter nuclear attack. And to the extent that refinements in weapons and associated delivery systems appear to have roles beyond deterrence of nuclear attack - e.g. deterrence of chemical and biological weapons use - they further legitimize the role of nuclear weapons in the post-Cold War world.

DOE's existing "stockpile stewardship" facilities already have been used to produce and deploy the first U.S. nuclear weapon with improved military capabilities since 1989. The B61-11 is an earth penetrating gravity bomb with a variable yield ranging from 300 tons to over 300 kilotons TNT. DOE has denied that the B61-11 is a "new" weapon, choosing instead to define "new" as requiring a redesigned physics package, rather than as a weapon having new or improved military capabilities.

The B61-11 appears to be aimed at "new" threats, and at states portrayed as potential possessors of chemical and biological weapons. Such an inference is unavoidable given U.S. refusal to renounce first use of nuclear weapons, its extensive counterproliferation program aimed broadly at weapons of mass destruction, and its hints of possible nuclear weapons use against Iraq and Libya if either employed chemical or biological weapons.

When the NPT was negotiated, the underlying bargain struck to induce the non-nuclear weapon states to forswear nuclear weapons was two-fold. First, in an unfortunate commitment that promoted the very proliferation the NPT was designed to prevent, the nuclear weapon states promised to assist the non-nuclear weapon states with the development of nuclear power (Article IV). Second, the nuclear weapon states promised to negotiate the cessation of the nuclear arms race and the elimination of their nuclear arsenals (Article VI). This bargain was reaffirmed in the 1995 decision to extend indefinitely the duration of the treaty. With regard to Article VI, the nuclear weapon states agreed to conclude a CTBT by 1996 and to pursue the reduction of their arsenals, with the ultimate goal of elimination.

These commitments were reinforced and expanded by the historic 1996 advisory

opinion of the International Court of Justice (ICJ). In what is now the authoritative interpretation of Article VI, the Court held unambiguously that "[t]here exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control."

During the Cold War, the NPT was largely ignored by the nuclear weapon states. Now, in the logic of "counterproliferation," military establishments have turned the treaty's original logic on its head. While not ignoring potential conflicts among nuclear weapon states, the possibility of proliferation of nuclear weapons and other weapons of mass destruction has become a principal rationale for the nuclear weapon states to maintain and upgrade their own nuclear arsenals.

Linking nuclear weapons strategies to counterproliferation scenarios represents an expansion, rather than a reduction, of the role of nuclear weapons. And, adding to the possible list of nuclear targets contradicts the U.S. commitment to fulfill its NPT Article VI obligation.

When President Clinton submitted the CTBT to the U.S. Senate on September 22, 1997, his transmittal letter made clear that his endorsement of the treaty was conditioned on Senate support for the SS&M program as a central requirement of „[U.S.] national security strategy."

DOE's recently declassified 1996 "Green Book," the master plan for the SS&M program, describes in detail how SS&M will facilitate new weapons designs and modifications. A May 1997 Department of Defense (DoD) report discloses the existence of a "collaborative Navy/DOE effort to maintain the capability to jointly develop replacement nuclear warheads for the W76/Mk4 and W88/Mk5 should new warheads be needed in the future." These are sea-launched ballistic missile warheads carried on Trident submarines. In its discussion of candidate replacement systems for the Mk5 delivery system, the Green Book explains that the "refurbishment" of the nuclear stockpile in response to the discovery of defects due to aging or "updated military requirements" may "require the design of modified or new components."

It was this kind of "upgrading" of nuclear forces that raised fears of a "first strike" during the Cold War and was a driving force in the arms race. And it appears that the U.S. military has sufficient confidence in its near-term "stockpile stewardship" capabilities to seriously consider developing and deploying these improved nuclear weapons designs without underground testing, while simultaneously proclaiming that the CTBT will severely constrain the further development of nuclear weapons by the nuclear weapons states. According to the Green Book, "The laboratories are currently working on programs to provide

new or modified designs that will address current stockpile issues and will exercise a broad range of design skills.”

It may be difficult to recognize our real markers for progress towards nuclear disarmament if warhead numbers remain in the thousands for decades, during which the nuclear weapon states both expand their above-ground component testing and simulation capabilities and deploy refined and modernized warheads and delivery systems. Even after considerable stockpile reductions have taken place, an arsenal consisting of a variety of modernized warheads, including many of low to moderate yield, fitted to an array of faster, stealthier, longer range delivery platforms with sophisticated electronics, fully integrated into a 21st century battlefield dominated by satellite surveillance, remotely deployed sensor arrays, and precision weaponry, looks very different from the generally held public image of our nuclear weapons during the course of arms reduction – a residual strategic nuclear force, maintained with little change, to allow adequate minimal deterrence as we fulfill our international legal obligations to end the nuclear arms race and pursue the elimination of nuclear weapons.

3. The SS&M program may complicate verification measures critical to achieving significant stockpile reductions.

The difficulties of operating numerous complex, limited-access industrial facilities, while adhering to arms control measures which require international verification of arms reduction agreements, may be substantial. Accounting for the number of warheads and warhead components (particularly plutonium pits) will become increasingly critical as reductions in stockpile sizes are negotiated. This will probably require verification measures far more intrusive than those that have been used in arms control agreements to this point (hence the counting of delivery systems rather than warheads). Attempting to verify numbers of warheads and pits may be complicated considerably by the simultaneous operation of extensive weapons testing and production activities. Intrusive remanufacturing of plutonium pits, for example, may make it more difficult to account for pits and for total quantities of plutonium.

These difficulties may be soluble to some degree through technical verification schemes, but such mechanisms would require a level of intrusiveness that it is difficult to imagine the weapons establishments in the nuclear weapons states accepting in the near term. Such issues do not even rate a mention in official discussions of the SS&M program and its purported aim of “furthering U.S. nonproliferation objectives in seeking a ‘zero-yield’ CTBT.” Given the likelihood that accounting for warhead numbers and fissile materials quantities would be more accurate and would achieve a greater level of international confidence the sooner it started, a vigorous program of warhead testing, replacement,

and remanufacturing may from its inception complicate long-term arms control verification.

4. The SS&M program has the potential to ignite a new arms race as a result of the close interconnections between research, design, and testing of thermonuclear weapons and other forms of advanced weapons research.

There is already controversy over possible long-term application of laboratory nuclear weapons testing capabilities to the development of “pure fusion” weapons. Any program pursuing new types of nuclear weapons has the potential to ignite a new arms race. This is particularly likely of the new weapons types that hold promise for new military applications – in the case of pure fusion weapons, for example, small nuclear explosives and neutron bombs. Such research programs, moreover, may make it difficult to achieve an adequately transparent verification regime, as they are likely to involve continuing secret experiments employing a wide range of “stockpile stewardship” facilities: inertial confinement fusion; high-explosive-driven pulsed power; hydrodynamic testing; and high performance computing. A constantly-expanding capability to conduct such research may, in and of itself, be provocative to other states.

In addition, certain types of stockpile stewardship facilities and associated technologies have potential weapons applications beyond nuclear warhead testing. Pulsed power experiments to study possible microwave and other directed energy weapons applications are underway at both DOE and DoD laboratories. In this area and others, the computing necessary to convert the data streams from sophisticated testing technologies into usable forms, and to employ such data in simulation and modeling, has a broad range of military applications.

The use of facilities whose core mission purportedly is to maintain the “safety and reliability” of the nuclear arsenal for a broad range of weapons research is likely to complicate the path to nuclear disarmament. The perceived value for other military initiatives of facilities with extensive nuclear weapons research capabilities will add a further element to transparency problems, as there will be incentives to maintain a high level of secrecy at particular facilities and for larger numbers of particular programs and experiments. Even where a facility or program has potentially provocative nuclear weapons research capabilities or presents verification problems sufficient to compel its closure if nuclear arms control were the sole policy concern, its potential for other military applications may tip the balance, providing a rationale – and a constituency – for its continuation.

“Stockpile Stewardship” represents just one manifestation – albeit possibly the leading edge – of a broader initiative aimed at reinvigorating research with military applica-

tions in both universities and private industry. The U.S. military is now attempting a qualitative leap in the role high technology weapons will play, and in the approach to weapons research and development. This effort seeks to focus research more systematically on weapons-relevant knowledge, to speed the transition from experimental results to applicable weapons concepts, and to further subsidize and encourage private industry and university research which is considered likely to yield militarily useful technologies.

The U.S. government publicly suggests that the rest of the world will view with equanimity a “peacetime” program by the most powerful industrial nation on earth to devote tens of billions of dollars to an ambitious effort to explore both the basic sciences and the production engineering needed to release and control as weapons the most powerful energies known to humankind. Yet many in the arms control community seem to believe that such programs, even if sustained for decades, will have no significant effect on the international security context in which disarmament will or will not go forward.

5. The SS&M program is premised on a strategy of “lead and hedge,” which will make permanent arms reductions more difficult to achieve.

The strategy of “lead and hedge,” in which the U.S. retains large warhead and plutonium pit reserves throughout the earlier stages of disarmament, and retains a nuclear weapons complex sufficient to rapidly reconstitute large nuclear forces right down to zero, may make permanent arms reductions more difficult to achieve. This is a fundamental planning assumption of SS&M.

These difficulties are exacerbated by the intertwining of nuclear weapons activities with other advanced weapons research. It will be difficult enough to achieve adequate transparency of the armaments industries of the nuclear weapons states without providing yet another rationale – “capability based deterrence” – for the construction and retention of additional multiple use high technology weapons research and production facilities.

6. The SS&M program will increase the political power of the nuclear weapons labs and their control over weapons-related information, and may thus help to preserve nuclear weapons programs even where they impede arms control efforts.

The political power of the U.S. nuclear weapons laboratories, and their virtually exclusive control over nuclear weapons information, limits meaningful debate on nuclear weapons policy. The weapons labs constitute a politically well connected, multi-billion dollar industry, which is promoting intensely – and successfully – the continuation of its lucrative government contracts. Moreover, their power

is amplified by the mystique surrounding nuclear weapons, the secrecy of much of the relevant information, the lack of recognized nuclear weapons expertise independent of the weapons establishment, and their virtual monopoly on access to the Congress and other decision-makers.

The link between control over nuclear weapons-relevant information and influence over nuclear weapons policy has been formally institutionalized by the "certification" process, in which the weapons laboratories annually "certify" the safety and reliability of the nuclear arsenal. The determination is essentially a judgment call by the labs. If it is determined "that a high level of confidence in the safety or reliability of a nuclear weapon type...critical to our nuclear deterrent could no longer be certified," the "safeguards" which are part of the Clinton Administration's CTBT package provide that "*the President, in consultation with the Congress, would be prepared to withdraw from the CTBT under the standard 'supreme national interests' clause in order to conduct whatever testing might be required.*" These "safeguards" provide an opportunity for the weapons laboratories to threaten an administration with termination of the CTBT regime if they are not given what they consider adequate resources to "certify" the reliability of the stockpile — a temptation which may grow in appeal if arms reduction efforts are successful and nuclear weapons begin to lose their central place in U.S. national security dogma.

Monitoring and verification technologies also employ a facilities and skills base centered largely at the weapons labs. The difficulties of sorting out what is truly needed for monitoring and verification of the nuclear disarmament process alone from attempts to continue weapons development, are substantial. Combined with an extensive counterproliferation program and an ambitious nuclear weapons "stewardship" program, they may be insurmountable.

7. The SS&M program may lead to the diffusion of nuclear weapons-relevant information from U.S. programs to the rest of the world, thus heightening proliferation concerns.

Although the level of secrecy and control of information maintained by the American weapons establishment may be adequate to assure dominance in the political debate at home, it may not be sufficient to prevent diffusion of nuclear weapons-relevant information from U.S. weapons programs to the rest of the world. Nations which have inertial confinement fusion programs, extensive nuclear power systems, and large supplies of fissile material might achieve the capability to develop thermonuclear weapons relatively quickly, to the point where they would have to "break out" of a CTBT regime only for fi-

nal proof-testing of designs which were fairly well understood.

The U.S. "Atoms for Peace" program spread around the world the deadly knowledge and materials necessary to build atomic weapons. In the decades to come, the similarly misnamed "Stockpile Stewardship" program may facilitate the dissemination of new technologies that could spark an arms race of unprecedented complexity. Although the path of technology development cannot be predicted with any certainty, we might anticipate, for example, multilateral competition to develop and deploy compact, extremely powerful explosives more useable than existing thermonuclear weapons. We might also eventually see directed energy weapons employing engineering achievements and physics concepts developed through extensive experimentation with pulsed power technologies, and a range of weapons which will employ various types of tailored energy releases to degrade or destroy electronic sensing, communications, and computing devices upon which modern militaries (and societies) increasingly rely. An arms race encompassing these technologies could make future confrontations between technologically sophisticated states even more unstable than the late Cold War world.

Conclusions

The end of the Cold War brought an historic "window of opportunity." People the world over breathed a collective sigh of relief, believing that the nuclear nightmare was over. The NPT was extended indefinitely, START I and II were ratified by the U.S. Senate, and the CTBT - perhaps the longest-sought "prize" of the nuclear age - was signed. Yet fundamentally little has changed with respect to nuclear weapons policies and practices. In the U.S., DOE Defense Programs continue to manifest the characteristics of Cold War military institutions: secretive, arrogant, secure in their belief that they are above public accountability. These attitudes clearly are visible to the international community, and do not bode well for the future of an arms control regime based on trust and transparency.

Conditioning the CTBT on the establishment of a massive "Stockpile Stewardship" program to "compensate" for the loss of underground testing demonstrates a profound U.S. disregard for global and historical expectations for the CTBT, and may eventually contribute to unraveling of the nonproliferation regime. By attempting to limit the range of public debate to a narrow discussion of how to get the Senate to ratify the treaty in the short term, many in the arms control community are failing to recognize the centrally important long term issue - the future of nuclear weapons.

It is time to begin a real debate over U.S. nuclear weapons policy - a debate which has thus far been evaded by taking as given political deals which should be thoroughly justified

rather than assumed, or paid lip service and then ignored in the rush to find ways to sustain the flow of defense dollars uninterrupted.

Disarmament groups are attempting to address these difficult issues head on by articulating a vision for a world without nuclear weapons, and by promoting a means to get there. The Abolition 2000 Global Network to Eliminate Nuclear Weapons, with more than 1000 NGO partners around the world, is calling for immediate commencement of negotiations on a treaty to eliminate nuclear weapons within a timebound framework. The goal is to conclude the treaty by the year 2000 and to enter the next millenium with a plan for the elimination of nuclear weapons. In contrast to many arms control groups, Abolition 2000 challenges Stockpile Stewardship directly. The Abolition 2000 Statement links calls for a "truly comprehensive test ban treaty" with a prohibition on "nuclear weapons research, design, development, and testing through laboratory experiments including but not limited to non-nuclear hydrodynamic explosions and computer simulations," and insists that all nuclear weapons laboratories be subject to international monitoring, while all nuclear test sites are closed.

The SS&M program may represent the biggest scientific-technical push related to weaponry since the Manhattan Project. The decision to go forward with "Stockpile Stewardship" is too important to be "left to the generals." It is also too important to be left entirely to a coterie of scientists who have spoken only to the generals for the last half-century. If the CTBT/SS&M "deal" does not generate serious and searching public debate - and soon, discussion of "nuclear arms control" may well be reduced to a sterile academic exercise, an empty prefiguration of a history that may never be written.

This is a drastically shortened version of a much longer paper prepared for the International Network of Engineers and Scientists Against Proliferation. Copies of the complete paper (60 pages total, including extensive references and quotations from U.S. government documents, with 109 endnotes and two appendices) are available from: Western States Legal Foundation, 1440 Broadway, Suite 500, Oakland, California, USA 94612; phone: + (510) 839-5877; fax: + (510) 839-5397; e-mail: wslf@igc.org

Andrew Lichterman and Jacqueline Cabasso are both working with Western States Legal Foundation (WSLF), a non-profit public interest organization, founded in 1982, that investigates and challenges nuclear weapons programs at the U.S. National Laboratories (Lawrence Livermore, Los Alamos, and Sandia) and the Nevada Test Site. J. Cabasso is the Executive Director of WSLF.