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Rationale and Requirements for U.S. Nuclear Forces and Arms Control

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Preface

This study departs from the variety of recent public proposals for nuclear "abolition" to examine instead the methodology necessary to assess U.S. nuclear force requirements and arms control positions. The study first contrasts the basic contours of official U.S. policy with public proposals for new nuclear disarmament treaties, and then focuses on the type of methodical analysis that must precede recommendations concerning the size and composition of U.S. nuclear forces. In the post-Cold War period the various complex technical, political, and operational factors that must be taken into account in advance of such recommendations are far from static. Even the most basic factors, such as the identity of potential opponents and the requirements for deterrence, are unclear at present, and wholly opaque for the future. Consequently, this study concludes that an important priority for the United States is to preserve its capability to adapt U.S. offensive and defensive forces to rapidly changing strategic conditions. Preserving the U.S. capability to adapt does not exclude the potential for U.S. nuclear force reductions, now or in the future. A proper nuclear posture review may determine that U.S. nuclear requirements can be met at lower force levels. Strategic adaptability does, however, weigh heavily against continuation of the traditional bipolar Cold War approach to strategic arms control. Rather than the past focus on rigid treaties designed to perpetuate U.S. and Russian capabilities for Mutual Assured Destruction (MAD), post-Cold War strategic arms control should focus on close consultation, coordination and transparency. Rather than "locking in" ceilings that may soon be excessive or inadequate, arms control should encourage "full disclosure" and predictability with regard to nuclear forces, and facilitate movement away from MAD, which now serves only to sustain unnecessarily a relationship based on mutual threat, suspicion, and animosity.

The participants endorse the study's general thrust and conclusions as presented in this *Executive Report*. Each participant may not, however, be in full agreement with every specific point and detail.

Dr. Keith B. Payne
Study Director

Table of Contents

Executive Point Summary

- Specific nuclear force posture recommendations should follow a comprehensive review of technical, operational, and political variables. This strategic review must consider factors such as current and potential threats, U.S. deterrence and wartime goals, nuclear targeting strategy and warhead options, enemy passive and active defenses, conventional strike capabilities, and Third Country use.
  - The 2001 Congressionally-mandated nuclear posture review must take these technical, political, and operational variables into account.
  - Force posture recommendations that do not take these variables into account are likely to be flawed (e.g. recent public proposals for nuclear "abolition" or deep force reductions).
  - Proper review may indicate that current U.S. nuclear requirements can be met with reduced nuclear forces.

- Current public proposals for codifying nuclear disarmament and/or deep nuclear reductions assume an international environment in which nuclear deterrence either is unnecessary or relatively easily accomplished; they also assume that this environment will prevail in the future.
  - The current post-Cold War period is one of great political and military dynamism. Even the most basic of the variables concerning U.S. nuclear force posture requirements (e.g., the identity of likely foes) may change rapidly, affecting U.S. nuclear requirements. The current relatively benign conditions cannot be predicted with any confidence to pertain in the future.
  - U.S. foreign policy goals and requirements, and the technical, political, and operational variables that must help shape U.S. nuclear force requirements, can change rapidly as the strategic environment changes.
  - It is not now possible to predict with confidence future deterrence requirements. The future may prove to be far more dangerous than benign: nuclear deterrence may become more important for the United States, and a robust nuclear capability may be essential to support U.S. deterrence objectives.

- Possible current/future deterrence and wartime roles for nuclear weapons may include:
  - Deterring weapons of mass destruction (WMD) use by regional powers.
  - Deterring WMD or massive conventional aggression by an emerging global competitor.
  - Preventing catastrophic losses in conventional war.
  - Providing unique targeting capabilities (deep underground/biological weapons targets).
  - Enhancing U.S. influence in crises.

- Because the international environment and operational considerations are dynamic, as is the context for deterrence, the ability to adjust the U.S. offensive and defensive force posture to a changing strategic environment is critical.

  - Adaptability requires the capacity to both *augment and reduce* U.S. defensive and offensive forces to fit a changing strategic environment and rapid possible shifts in technical, operational, and political variables.
  - Adaptability also requires a capacity to design and build new weapons.

- Cold War-style arms control, a process that has focused on specific limitations designed to codify "Mutual Assured Destruction"(MAD), now contributes to U.S.-Russian political enmity, and is incompatible with the basic U.S. strategic requirement for adaptability in a dynamic post-Cold War environment.
  - There is an inherent contradiction in attempting to improve U.S.-Russian political relations by remaining committed to the Cold War approach to arms control, an approach designed to perpetuate MAD. This contradiction is recognized by U.S. and Russian officials.
  - The codification of deep reductions now, according to the traditional Cold War approach to arms control, would preclude the U.S. *de jure* prerogative and *de facto* capability to adjust forces as necessary to fit a changing strategic environment. It would render the U.S. vulnerable to the highly questionable assumption that the international environment is and will continue to be relatively benign.
  - The U.S. is highly restricted politically in its capability to withdraw from or even modify established arms control agreements regardless of changes in the strategic environment (witness the ABM Treaty) or evidence of an opponent's non-compliance.
  - The traditional strategic arms control process does not affect many factors potentially relevant to U.S. strategic requirements, and thus cannot preclude the potential for disturbing changes in the strategic environment.
  - Further adjustment to the U.S. strategic forces must not be rendered practically or legally "irreversible" via codification in the traditional arms control process.

- The United States should move toward a new post-Cold War framework for arms control, and new forms of U.S.-Russian engagement and dialogue aimed at moving away from MAD, not its perpetuation.
  - If indicated by comprehensive strategic review, the U.S. should move unilaterally toward significant nuclear force reductions and other changes in the force posture, while retaining its prerogative and capability to reconstitute or further reduce its forces as made necessary or possible by future developments in the strategic environment.
  - Post-Cold War strategic arms control, including potential U.S. unilateral reductions, should focus on efforts to promote transparency and predictability in U.S. and Russian decision-making concerning active defenses and nuclear forces, including systematic discussions.
  - To advance movement away from MAD, the U.S. should initiate "Mutual Assurance Talks" with Russia, which should draw on the 1992 Ross-Mamedov Talks.
  - The strategic arms control process should be restructured to reflect this new, post-Cold War approach.

Executive Report

Introduction

U.S. national security policy during the first decade after the end of the Cold War has been characterized by a relative de-emphasis on the role of nuclear weapons. The 1994 Department of Defense Nuclear Posture Review (NPR) called for American efforts to "lead" the world towards reduced prominence for nuclear weapons. It endorsed the U.S. commitment in the Strategic Arms Reduction Treaty (START) II to reduce its deployed strategic nuclear warheads to 3,000-3,500, and indicated that the United States would be willing to consider further reductions once START II was in place and Russia proceeded with reductions as well. The United States acted upon this interest in further reductions at the 1997 Helsinki summit, where Washington and Moscow agreed to a START III framework that would reduce to 2,000-2,500 the aggregate number of accountable, deployed strategic nuclear warheads.[1]

Nevertheless, the NPR emphasized that American efforts to "lead" in this direction had to be accompanied by a "hedge," because the strategic environment might not evolve peacefully. The hedge aspect of the NPR identified the requirement for the ability to restore the U.S. strategic posture back to START I levels of 6,000 accountable strategic warheads if the threat to the United States did not decline as anticipated, or in the face of a re-emergent threat. The hedge also included direction to the Department of Energy to maintain a highly capable nuclear weapons design and production capability, even though no requirement for new nuclear weapons designs or production was foreseen. Consequently, Washington remains formally committed to retaining "a reliable and flexible nuclear deterrent—survivable against the most aggressive attack, under highly confident constitutional command and control, and assured in its safety against both accident and unauthorized use."[2]

Underlying the findings of the NPR was the belief that nuclear weapons should play a "less prominent" role in U.S. security than at any previous time in the nuclear age, and that a nuclear arsenal much smaller than that now deployed would be sufficient to meet the security needs of the United States.[3] However, as was noted above, the NPR did not favor U.S. nuclear disarmament, and the review acknowledged that the strategic environment could change for the worse; hence, the importance of maintaining a "hedge" against uncertainty: "the NPR stresses prudence in the face of potential risks while also identifying some new policy departures that reflect changes in the security environment."[4] The NPR essentially endorsed substantial reductions of the U.S. nuclear stockpile, but rejected more radical change.[5]

In the years since the conclusion of the NPR, the White House has not made a sharp break in policy direction.[6] The two most authoritative statements on current nuclear deterrence policy—the aforementioned 1994 Nuclear Posture Review, and a 1997 Presidential Decision Directive—stress both the continuity with the traditional U.S. approach towards nuclear weapons and also the need to adapt to changes in the international security environment.[7] The PDD reportedly concludes that "nuclear weapons now play a smaller role in our nuclear security strategy than at any point during the nuclear era." At the same time, "it would be a mistake to think that nuclear weapons no longer matter." It reportedly lists "rogue states" as possible targets in the event of regional conflicts. Nuclear weapons are still needed to deter "aggression and coercion" by threatening a response that "would be certain and overwhelming and devastating."[8] American planners will still provide the president with a range of nuclear attack options, from major strikes to much smaller attacks.

Public Proposals for Nuclear "Abolition" and Deep Reductions

In contrast to the Clinton Administration's "lead and hedge" policy are recent public proposals for nuclear "abolition" and deep force reductions. The most comprehensive of the recent statements in favor of nuclear disarmament, the Canberra Commission report, insisted that "immediate and determined efforts need to be made to rid the world of nuclear weapons and the threat they pose to it." According to this view, deterrence policies such as that adopted by the United States are built on the false assumption "that the world has traversed successfully the most dangerous phase of the nuclear era and is now on the path to modest, passively deployed nuclear forces that will deliver the asserted benefits of deterrence at much reduced risk, the so-called 'low-salience nuclear world.'" On the contrary, according to the Canberra Commission, security is to be found only in the elimination of nuclear weapons and assurance that they will never be produced again.[9]

According to this perspective, nuclear weapons greatly exacerbate the possibility of conflict and gravely increase the environmental and political damage that conflicts could cause. The U.S. nuclear policy of "lead and hedge" is mistaken because the "hedge" portion undermines the legitimacy and possibility of "leading."[10] Hedging—preparing for plausible risks while hoping for the best—only preserves the illusion of the continued value of nuclear weapons to all parties, jeopardizes the START process, and heightens the risk of miscalculation. Disarmament advocates argue that U.S. possession of nuclear weapons undermines efforts to control nuclear proliferation by giving credence and legitimacy to the possibility of nuclear-based security. The disarmament community also typically warns that until nuclear weapons are eliminated or "de-alerted," there is a substantial danger of a serious, even catastrophic, nuclear weapons accident.

Finally, from the perspective of nuclear opponents, a set of international norms regarding the legitimacy of nuclear weapons possession and use—a "nuclear taboo"—began to emerge during the Cold War. It is imperative that the nuclear taboo be acknowledged, and that the United States strengthen that norm by leading in concrete steps toward worldwide nuclear disarmament. Rather than "hedging," the United States should support an unambiguous "norms-based" policy, based on the need for the nuclear powers to reaffirm their commitments to global nuclear disarmament, and to develop a long-term strategy for the elimination of nuclear weapons.[11]

In addition to the various proposals for nuclear disarmament are a variety of recent and somewhat less dramatic recommendations for deep nuclear reductions. These proposals typically call for reductions "to levels far lower than currently envisioned under a START III treaty," and for the "de-alerting" of U.S. and Russian nuclear forces.[12] Such recommendations frequently specify a strategic nuclear warhead ceiling of 1,000 weapons,[13] with negotiations to "lock in" and make such reductions "maximally verifiable and irreversible."[14]

Recommendations for nuclear disarmament and deep reductions generally advance similar arguments in support of their proposals for the U.S. nuclear force posture. In each case, those arguments ultimately are predicated on the assumption that, with the proper direction in U.S. policy, nuclear weapons will be unnecessary in the future, or, that the United States will be able to meet its future deterrence or wartime goals with a relatively modest nuclear force posture.

This assumption about the future allows proponents of disarmament and deep reductions to set aside traditional deterrence and military requirements for nuclear weapons, and instead focus on other priorities and goals in making their recommendations concerning the U.S. nuclear force posture. As discussed above, these priorities and goals include, in particular, non-proliferation, advancing a domestic and international anti-nuclear "norm," and promoting operational safety. In each case, they believe that nuclear disarmament, or a much smaller and less alert force will promote their chosen priority and goal.

For example, when considering U.S. nuclear weapons, if the U.S. priority is to promote an international "anti-nuclear" norm, it is a relatively simple step to conclude that the United States should move sharply toward nuclear disarmament. Similarly, if the decisive U.S. priority is to promote non-proliferation, it is, again, a relatively simple (although arguable) step to conclude that the United States should move sharply away from nuclear weapons, particularly given its expressed commitment to nuclear disarmament at the recent five-year review of the nuclear Non-proliferation Treaty.[15]

This chain of logic leading to recommendations for nuclear disarmament or deep reductions, however attractive, is extremely fragile. Nuclear weapons must be assayed in relation to their utility to serve national goals, with full recognition of their special advantages and disadvantages. And, U.S. goals are not limited to non-proliferation, international norms, and operational safety. Deterrence and wartime goals also are planning priorities. Recommendations concerning the size and composition of U.S. nuclear forces must be informed by the broad requirements of U.S. foreign policy and strategy, including possible deterrence and wartime goals. These goals may or may not lead the United States toward nuclear disarmament and deep reductions, depending on how benign or threatening the security environment is.

As noted, the various recommendations for nuclear disarmament or deep reductions are based on the assumption about the present and future that U.S. nuclear weapons no longer serve a purpose or that a very modest capability is adequate for national security. Yet, any current assumption about the future security environment is highly speculative. It changes constantly, and the post-Cold War period appears to be particularly dynamic. It is not now obvious, for example, whether Russia, China, or some combination thereof will be politically benign or quite hostile even in the near future. Looking out over the coming decades, it is quite plausible that a variety of other regional aggressors armed with weapons of mass destruction (WMD) could arise to challenge the United States. The dizzying pace of change in the international system over the past two decades, from the rapid transition of Iran from ally to foe, to the significant shifts in U.S.-Russian and U.S.-Chinese relations since the 1980s, demonstrates that the future shape of the international security environment is anything but highly predictable. Similarly, the current pace of proliferation makes predictions about the future level of WMD threat to the United States highly speculative.

It is not now possible, for example, to anticipate with confidence the requirements for nuclear deterrence over the course of the coming two or three decades. Will challengers be easily deterred by U.S. conventional and/or nuclear threats, or highly motivated and insensitive to cost and risk? Will U.S. conventional and/or nuclear threats be judged credible by foes, and prove effective for deterrence? Or, will challengers judge the credibility of U.S. deterrence policies to be low?

There can be no confident answers to these questions, particularly in today's dynamic unfolding international environment. The future could prove to be relatively benign. It may also move in far more dangerous directions: nuclear deterrence may become even more important in the future than it has been in the past, and a robust nuclear capability may be essential to support future U.S. deterrence or wartime objectives. Any planning of U.S. nuclear force requirements must begin with recognition that more and less sanguine future conditions are plausible.

It is not useful to make proposals concerning the proper size and composition of the U.S. nuclear arsenal without prior, careful examination of U.S. foreign policy goals and the extent to which nuclear weapons may be necessary to support those goals, now and in the future.

None of the recent public proposals for nuclear "abolition," "de-alerting," and/or deep nuclear reductions appear to proceed from this necessary examination.[16] The priorities that constitute the focus for these proposals—nuclear non-proliferation, safe-handling practices, and "anti-nuclear" norms—are indeed worthy of consideration. But force posture recommendations based on these priorities alone, that do not also carefully consider current and potential future security requirements, are wholly inadequate

because those requirements may or may not permit nuclear "abolition," "de-alerting," and/or deep reductions.

U.S. Strategic Requirements: What Role for Nuclear Weapons?

It is necessary to reconnect recommendations regarding the U.S. nuclear force posture to the broad U.S. requirements that give or deny value to nuclear weapons—U.S. national security requirements and foreign policy goals. In this regard, nuclear weapons come with positive and negative attributes.

What are additional plausible priorities when considering how U.S. nuclear forces may support these goals in the context of a dynamic strategic environment? In particular, U.S. nuclear weapons may be necessary to:

- Deter escalation by regional powers to the use of WMD, while the United States is defeating those powers in the conduct of a conventional war in defense of U.S. allies and security partners.
- Deter regional powers or an emerging global power from WMD or massive conventional aggression against the United States or its allies.
- Prevent catastrophic U.S. and allied wartime losses in a conventional war.
- Provide unique targeting capabilities in support of possible U.S. deterrence and wartime goals.
- Enhance U.S. influence in crises.

The challenge of linking the U.S. nuclear force posture to current and potential requirements is demanding. Such a study, to have integrity, must take into account a significant number and variety of complex, dynamic factors. To address them adequately, in an effort to link strategy to force structure, requires access to some closely-held, classified, and specialized information, and the support of trained military professionals. In its assessment of U.S. nuclear requirements, the 2001 Nuclear Posture Review mandated by Congress must include a broad spectrum of dynamic factors, including those discussed below.[17] The most recent governmental attempt, the 1994 NPR, is now dated, and as reported publicly, was not the comprehensive review identified here as necessary to establish the parameters for assessing U.S. nuclear force posture requirements.[18]

As noted above, the basis on which recent proposals for nuclear disarmament or deep nuclear reductions reach their conclusions is to set aside traditional U.S. security requirements in favor of other priorities by simply assuming, intuitively, a future in which there is little or no requirement for nuclear weapons. Such an approach is wholly inadequate for addressing the question, "how much is enough?"

The following is a concise description of a select number of the factors that must be considered prior to any recommendation concerning the appropriate size and composition of the U.S. nuclear force.

Potential Adversaries and Their Strategies

The characteristics of adversaries determine, in part, the locations, types, and numbers of targets, which, in turn, influence the size of the U.S. nuclear arsenal. The only plausible hostile global powers in the 2000-2025 period are Russia and China, both of which possess large military establishments, industrial bases, and economic infrastructures spread over vast territories. Regional states of concern such as North Korea, Iran, and Iraq have smaller militaries and economies, but as a result of proliferation, still may present considerable threats.

Under certain circumstances, very severe nuclear threats may be needed to deter any of these potential adversaries—*if* they are highly motivated to challenge the United States and willing to accept high risk and costs in doing so. Significant numbers of nuclear weapons, particularly against a hostile China or Russia—or, worse yet, a Sino-Russian alliance—could be necessary for this task.[19] The U.S. arsenal also might need to be sufficiently survivable to withstand attacks by one nuclear-armed opponent and remain capable of deterring opportunistic blackmail attempts or actual attacks by others. The Clinton Administration identified the possibility of deterring or fighting multiple adversaries simultaneously as a rationale for maintaining a significant and secure nuclear reserve force.[20]

Targeting Strategy

The targeting strategy selected to serve U.S. political-military objectives will be a principal determinant of the required size and other characteristics of the U.S. nuclear arsenal. In essence, there are two types of targeting strategy: countervalue and counterforce. Countervalue attacks are conducted against societal targets of a hostile state—for example, its major industries, population centers, and elements of the governmental apparatus. A countervalue strategy aims at deterring or coercing an opponent through the threat of punishment.

Nuclear weapons can also be used in counterforce attacks that are intended to neutralize enemy military capabilities, especially nuclear and other WMD forces. The purpose of a counterforce strategy is to deter aggression, coerce compliance, and limit the damage that enemy forces can inflict.

A countervalue deterrent based on the ability to inflict a specified amount of urban-industrial damage might require the targeting of a relatively small number of enemy cities. In general, a counterforce strategy will entail more targets, including many that are harder to find and better protected than those implied by a countervalue strategy. As a consequence, a larger number of weapons, weapons with varied characteristics and greater accuracy, will be needed for a counterforce strategy.

Force Vulnerability

To hedge against the possibility of a nuclear first strike against the United States, particularly a preemptive attack during a crisis, prudent force planning requires that U.S. nuclear arms incorporate a measure of survivability. The danger of surprise attack cannot be dismissed; the historical record since World War II shows that an aggressor intent on achieving surprise almost certainly will succeed.[21] Multiple basing modes for U.S. nuclear forces help counter an opponent's surprise attack strategy by making a successful first strike more difficult. Some number of additional warheads and associated delivery vehicles would be needed to compensate for weapons destroyed by a first strike. Efforts to calculate the appropriate size of the nuclear arsenal also need to take into account possible attrition of nuclear-capable delivery vehicles in conventional operations prior to nuclear conflict.

Active and Passive Defenses

Enemy defensive measures may increase nuclear warhead requirements. Defenses generally are categorized as active or passive. Active defenses include capabilities for air and ballistic missile defense (BMD). Passive defenses are measures such as mobility, dispersal, redundancy, deception, concealment, and hardening.

Mobile WMD-armed ballistic missiles, for example, are the mobile targets with the greatest destructive potential. Over the next few decades, all potential adversaries will have mobile missile launchers. In Desert Storm, Coalition aircraft carried out almost 1,500 strikes against Scud-related targets over a six-week period, but few, if any, mobile launchers were destroyed, and Iraq succeeded in launching almost 90 missiles.[22] If the locations of dispersed mobile launchers cannot be determined with enough precision to permit pinpoint strikes, suspected deployment areas might be subjected to multiple nuclear strikes, driving up U.S. requirements.

Hardened facilities are designed to withstand conventional or nuclear weapons effects. Hardened targets built underground and deeply buried facilities are the most difficult to destroy and will influence the required number and characteristics of nuclear weapons. Tunnels and caverns, for example, can be hundreds of feet below the surface and well-protected by soil and rock.[23] Examples of hardened and buried targets include missile silos, launch control centers, concrete aircraft shelters, deeply buried command posts, tunnels for missile storage and assembly, storage bunkers, and underground facilities for weapons research and production.

Some hardened targets can be attacked without resort to nuclear weapons, as was demonstrated in Desert Storm, Allied Force (NATO operations against Serbia), and earlier air campaigns. Conventional weapons, however, might not be as effective or efficient in neutralizing hardened targets. For example, although conventional weapons could be used to attack the entrances, exits, or "umbilicals"—electrical power, air supply, and communications links—of a deeply buried facility, one or more nuclear weapons might be required to destroy the facility itself.[24]

Damage Expectancy

Damage expectancy is a measure of the likely effectiveness of one or more nuclear weapons and associated delivery vehicles in inflicting some level of destruction against a target, a target category, or a mixed target set such as forces and facilities targeted in a countermilitary attack option.[25] If policymakers and military planners seek the assurance of high damage expectancies, larger numbers of nuclear weapons are necessary. If lower damage expectancies are acceptable, fewer weapons are needed.

Force Improvements

For any given political-military context, measures that increase the prelaunch survivability, system reliability, penetration capability, or delivery accuracy of nuclear forces will decrease the number of bombs and missile warheads needed to meet U.S. targeting objectives. Increases in the reliability or lethality of nuclear weapons would have a similar effect. Bombs and warheads with weapons effects tailored for the neutralization of specific types of targets also could contribute to a smaller, more efficient arsenal.

Quality of Intelligence and Target Planning

More detailed intelligence about targets—their locations, status, vulnerabilities, and contributions to the enemy's war effort—combined with better plans for the application of forces against those targets, can reduce the number of nuclear weapons required, and in some cases may permit the use of nonnuclear munitions. With an improved ability to find and track mobile missile launchers, for example, a single nuclear, or even nonnuclear, warhead might be more effective than a nuclear barrage in destroying one of these targets. Also, better intelligence could make it easier to distinguish real from false targets, and thus avoid wasting weapons on decoys.

Despite the technological sophistication of U.S. systems for collecting intelligence, an enemy might be able to conceal forces or facilities that otherwise would be priority targets for U.S. attacks. If, on the brink of war or in the course of a conflict, new targets were discovered, a weapon arsenal sized strictly on the basis of prewar intelligence and target planning would be inadequate to meet wartime demands.

For example, during the 1980s Iraq took a series of steps that effectively concealed the full extent of its nuclear weapons program. As a consequence, only two targets associated with the program were on the Coalition's target list at the beginning of Desert Storm. The number of nuclear targets grew to eight by the end of the air campaign, while eight more targets were added shortly after the war; the latter targets were to be attacked if fighting resumed. Within a year of the war's end, U.N. inspectors had identified 21 nuclear weapons-related facilities, ten times the number on the initial target list.[26] In later efforts, inspection teams uncovered other elements of the Iraqi program, raising the total to more than 50 facilities.[27] The possibility, if not likelihood, of finding new targets indicates the prudence of maintaining weapons in reserve.

Nonnuclear Strike Capabilities

The ability to strike targets with nonnuclear weapons can reduce requirements for nuclear bombs and missile warheads. With delivery accuracies now measured in the tens of feet, and munitions tailored for particular tasks such as penetrating buried facilities or destroying tanks, precision-guided nonnuclear weapons are lethal against a wide range of targets. Moreover, targets can be neutralized with fewer precision weapons than with unguided high-explosive bombs. Precision-guided munitions (PGMs) cannot realistically substitute for nuclear weapons for threatening annihilation attacks against urban centers. However, today's nonnuclear bombs and missiles may substitute for nuclear weapons in many tactical, operational, and even strategic roles. Multiple strikes by highly accurate conventional weapons systems may be able to defeat targets heretofore considered vulnerable only to nuclear weapons.[28]

Conventional weapons, however, cannot entirely replace nuclear arms. Current nonnuclear strike capabilities have a number of limitations in this regard. For example, even slight perturbation in the precision guidance systems of conventional forces can render them ineffective against a variety of targets. In some cases, conventional weapons are less effective or ineffective in comparison with the destructive power of nuclear weapons. The deeply buried facilities discussed above are an example.

To ensure that enemy facilities or forces are knocked out and cannot be reconstituted, attacks with nuclear weapons may be necessary. Indeed, 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.

Nevertheless, even when nuclear weapons are more effective and efficient than conventional weapons in a narrow technical sense, broader political, military, and moral considerations may well favor conventional weapons in decisions about the use of forces for air and missile strikes. Nuclear weapons

are likely to be reserved for those occasions when the certain and prompt destruction of high priority targets is essential and beyond the promise of conventional weapons.

U.S. Defenses

The level of U.S. defenses, including BMD, also would influence the appropriate size and composition of U.S. nuclear forces. For example, to the extent that U.S. BMD could increase the survivability of ICBMs in silos, aircraft at airfields, and submarines in port, nuclear forces could, in principle, be smaller because fewer delivery vehicles would be vulnerable to enemy attack. In addition, reduced numbers of nuclear-armed missiles and aircraft may be possible if active defenses can shoulder some of the burden of a counterforce strategy and help counter challengers' coercive nuclear threats. As discussed earlier, offensive operations against a regional power's widely dispersed mobile missile launchers could consume large numbers of warheads in multiple strikes or search-and-destroy sorties. Intercepting boosters or warheads in flight might be a more efficient means of eliminating an enemy's mobile missiles.

War-Ready and Supporting Capabilities

Estimates of required numbers of nuclear weapons and delivery systems can be derived from detailed and integrated analysis of U.S. objectives, enemy targets, U.S. vulnerabilities, and enemy defenses. These numbers, however, will reflect only what is required for assumed wartime operations. To support this operational force, additional weapons, missiles, aircraft, and submarines must be maintained.

An adequate nuclear stockpile must consist of more than just the nuclear weapons carried by operational forces or stored at their bases. Along with an active stockpile, the U.S. nuclear arsenal includes an inactive stockpile of weapons. The inactive stockpile is used to replace both weapons destroyed in evaluative tests (Quality Assurance and Reliability Testing) and weapon types with reliability or safety problems. Weapons from the inactive stockpile also can be used for force augmentation, offering a hedge against the unexpected development of new requirements.[29]

Multiplicity of Nuclear Delivery Platforms

Accompanying the questions of how many, and what types of nuclear weapons the United States needs to maintain is the similarly important question of how many different types of delivery platforms are necessary. As the Cold War took shape and technology permitted, the United States developed and became comfortable with the "Triad" of bombers, ICBMs, and SLBMs. This level of multiplicity of force elements was justified in both strategic and operational terms.[30] The rationale for maintaining an arsenal employing multiple delivery platforms was to ensure sufficient redundancy to support execution of the nuclear war plan even if one entire class of delivery vehicles became inoperable because of systemic technical problems or an opponent's military action.

The reigning logic during the Cold War was that the U.S. nuclear force infrastructure should present such a large and complex targeting challenge to the Soviet Union that it would never be tempted to aggression by the vulnerability of U.S. forces.[31] Whether in the form of the traditional Triad, or dual-capable fighter-bomber aircraft, submarine-launched cruise missiles, or vehicles launched from surface combatants, the multiplicity of platforms contributes to the overall survivability of U.S. deterrent forces and serves as a hedge against unanticipated threat developments. This may become increasingly important,

even in a relatively benign strategic context, if the United States pursues deep reductions in its nuclear forces.

Theater Nuclear Forces

Differentiation in the Cold War between strategic and theater nuclear systems was shaped by the continental geography of U.S.-Soviet confrontation. It left dual-capable systems to serve almost exclusively in their theater-specific and conventional roles and then offered some of them up early to arms control elimination. Strategic geography has changed. Although theater systems are not capable of performing certain potential long-range missions—such as threatening targets deep in the Chinese and Russian interiors—with appropriate planning and training dual-capable systems could target much of the strategically relevant world. Thus the number and mix of dual-capable systems and theater nuclear forces the United States and opponents maintain is likely to affect U.S. "strategic" nuclear requirements. U.S. strategic weapons requirements could, for example, decrease if the U.S. possessed robust theater capabilities, just as Russia's robust theater nuclear forces almost certainly ease its strategic force requirements.

The Political-Psychological Importance of Nuclear Numbers

Maintaining a numerical edge may usefully signal a U.S. readiness to compete with aggressive rivals, raise an entry barrier to states aiming to become major nuclear powers, and thus possibly prevent such challenges in the first instance. The latter point is important, because potential opponents may prefer to compete with the United States in nuclear arms, where the technologies are a half-century old, rather than in the nonnuclear strike systems of the "revolution in military affairs," where advantage depends on exploiting ongoing advances in information technologies.

The United States is likely to desire the capability to deter authoritarian adversaries who are impressed by an opposing nuclear force with greater, rather than fewer weapons. As a study of the effects of perceptions on the behavior of political and military leaders concluded, "Authoritarian states and leaders seem to place special emphasis on large numbers, perhaps because … dictators find in large numbers a promise or manifestation of the unlimited force they want to exercise."[32]

In 1964 then-National Security Adviser McGeorge Bundy wrote, "The Presidents of the nuclear age…have all rejected the gamble of limiting our strategic strength in terms of any absolute concept of what is enough. They have measured our strength against that of the Soviet Union and have aimed at strategic superiority; that superiority has had different meanings at different stages, but seen from the White House its value for peace has never been small."[33] Given the post-Cold War diversity of potential opponents and crises Washington will want to deter, the value of "superiority" as described by Bundy may again be important.

The factors identified above represent just a few of those that must go into any serious consideration of U.S. nuclear requirements. Some of these factors increase the value of nuclear force size in plausible circumstances; others suggest the potential for reduced numbers. Recommendations regarding the size and composition of the U.S. nuclear arsenal must follow a net assessment of these and many additional technical, operational, and political factors. The U.S. nuclear force posture historically has been shaped by such a process. Looking to the future, we must also take into account the potential for new threats and for sharp changes in many of the most significant factors shaping force requirements. As noted above, the many recent public recommendations concerning the U.S. nuclear force structure, and even some government studies, offer little or no evidence of this necessary assessment.

Implications of a Dynamic Strategic Context

There is no method for identifying a single "correct" enduring nuclear force structure compatible with U.S. strategic requirements. At any given time, policymakers who take the above factors into account and apply their good judgment may settle on a prudent U.S. nuclear force size. However, as was noted above, the many critical factors discussed above *are constantly in flux*. Some, such as intelligence information, can change over the course of hours; the pertinent adversary can change over a period measured in months; and/or the comparative lethality of conventional and nuclear forces may change further over the course of years.

It is possible, in principle, to arrive at a momentarily satisfactory estimate of "how much is enough?" given a methodical analysis that takes these and other priorities into account. However, a particular force structure that may be reasonable now, could easily be grossly inadequate or excessive in even the near-future. Any current recommendation concerning the appropriate force ceiling clearly will be affected by change in numerous critical factors over the course of five or even fewer years. The likely force requirements over the course of two decades, the timeframe required to bring new delivery systems to operational capability, certainly cannot be anticipated with authority. As recent history demonstrates, the international political scene can shift rapidly in unanticipated ways. A fixed answer to the question "how much is enough?" cannot account for these changes.

For example, there simply is no basis for the frequently-repeated claim that 1,000 deployed strategic nuclear weapons can meet U.S. requirements now and in the future. Indeed, there can be no logical integrity in the confident assertion that any given force level, even if judged to be appropriate today, will continue to be so in the future, and therefore should be made "maximally verifiable and irreversible."[34]

The "irreversible" codification of deep nuclear reductions today involves an assumption for the present and a prediction of the future. Concerning the present, it assumes that U.S. strategic requirements can be met at relatively low strategic nuclear levels; concerning the future, it assumes that the factors lowering U.S. strategic requirements now will at least remain constant. Predicting the future in this manner can be based on little but wishful thinking, and policy derived from such an approach would be imprudent.

If the United States wishes to maintain an appropriately sized nuclear arsenal, it must be able to adapt that arsenal over time to dynamic strategic and foreign policy requirements. This adaptability in the post-Cold War period is absolutely critical because even the most basic of the factors driving U.S. requirements are subject to unprecedented change. Recent events in Serbia, for example, have demonstrated again that the political and strategic orientation of challengers can change dramatically in a matter of months.

Rather than focusing on the codification of a specific numeric goal expected to be valid over time, it would be wise for the United States to maintain the *de jure* prerogative to adjust its nuclear force structure to coincide with changes in strategic requirements. Legal flexibility alone, however, is of little value if the U.S. production infrastructure does not allow Washington to design and build new types of weapons as necessary and in a timely fashion.[35] Restarting production of a weapons system—let alone designing, testing, and building a system from scratch—after the production infrastructure has atrophied, is a complex endeavor that, if possible, would take many years.[36] If the international security environment were to deteriorate rapidly, the United States could face years of mismatch between need and capability. Maintaining the legal prerogative and *de facto* capability to match nuclear capabilities with need over the long term is vital, and the absence of either could endanger national security and international stability.[37]

This does not, of course, preclude the reduction of U.S. nuclear forces, now or in the future. Indeed, in the future, U.S. strategic defenses may take on a relatively more significant role in addressing emerging threats and the requirements of a dynamic strategic environment. Following the assessment of

offensive and defensive capabilities and requirements discussed above, U.S. leaders may well determine it prudent to reduce unilaterally the nuclear force posture below START II levels, or, in principle, below proposed START III numbers, and invite Russia to parallel reductions. Such a policy would be both prudent and practical to the extent that it permits the United States to meet its requirements and to maintain the *de jure* and *de facto* capability to adjust its future strategic force structure, offensive and defensive, in response to a highly dynamic strategic environment.

Adaptable Deterrence and Reassurance Against Failure

A review of U.S. deterrence theory and policy, particularly as applied to the new conditions of the post-Cold War environment, strongly reinforces the call for adaptability in the U.S. nuclear force structure. From early in the Cold War to the present, U.S. nuclear forces have been justified by, and organized around, deterrence requirements. During the Cold War U.S. nuclear deterrence policy focused on the Soviet Union and, to a lesser extent, China. This focus has broadened in the post-Cold War period to include so-called rogue states, or "states of concern."

The new features of the post-Cold War period greatly magnify the challenges of deterrence. The post-Cold War international environment holds out a much wider variety of potential opponents and contexts in which U.S. deterrence policies must operate. And, far less is known about several potential challengers, including North Korea for example, than was known about the Soviet Union. Consequently, the scope is much greater for potential challengers' unfamiliar or idiosyncratic factors to shape responses to U.S. deterrence policies in surprising directions.

This is *not* to suggest that deterrence will be more difficult in the post-Cold War period because so-called rogue states will be "irrational," whereas Soviet leaders were rational. It should not be assumed that rogue states' leaderships, for example, will be any more or less rational than were Soviet leaders. Their decision-making, nevertheless, may be very difficult to anticipate.

There is ample evidence that Washington is much less familiar with the variety of factors that could be significant in rogue leadership decision-making than it was with Soviet decision-making. This lack of familiarity will greatly challenge Washington's capacity to understand a rogue challenger's cost-benefit calculus, and thereby devise deterrence policies likely to succeed. Rogues, similarly unfamiliar with Washington, may easily misread U.S. intentions and actions, and thereby reduce the prospects for deterrence.

Washington will not have the advantage of mutual familiarity in its efforts to deter the variety of prospective challengers during the post-Cold War period. Assuming that the outcome of U.S. deterrence policies can be predicted reliably because the opponent will be "reasonable" according to Washington's frame of reference would be risky indeed. After decades of relative familiarity with the Soviet Union, this problem has reemerged with a vengeance today. The surprise failure of deterrence has become more likely. And, with the proliferation of WMD, a single surprise could easily lead to hundreds of thousands, even millions, of American casualties.

Confident generalizations about the effectiveness of deterrence should wane with greater recognition that diverse leadership characteristics and beliefs can move rational decision-makers in surprisingly unreasonable directions, and deterrence can fail as a result. Regardless of how well-informed U.S. deterrence policy may be, it is important to acknowledge that deterrence can fail for a variety of potential reasons: desperate leaders driven by an internal or external imperative may distort reality in a self-serving fashion, they may be inattentive, foolish, or simply so cost/risk tolerant in pursuit of a particular goal that U.S. deterrence policy is impracticable.[38]

This conclusion suggests that, to the extent feasible, the United States should prepare for deterrence failure even as it strives to deter. For deterrence, the types of U.S. threats and underlying capabilities that may be necessary over the next twenty-to-thirty years will be as varied as the challengers and contexts likely to confront Washington. Some foes in the future may be deterred by threats to their countervalue targets, requiring few if any U.S. nuclear weapons. Other foes, highly motivated and notably cost and risk tolerant, may be deterred only by severe threats to many types of targets, requiring significant U.S. nuclear capabilities.

Identifying any particular solution to the question "how much is enough?" for deterrence at this time, with the expectation that the answer will be appropriate in general for the long term, would represent gross overconfidence in our capability to predict the future. This is true whether that recommendation involves a very high or very low number of nuclear weapons, or no nuclear weapons whatsoever. Rather than fixing on particular numbers and types of weapons calculated to be necessary for stable deterrence, an approach reminiscent of Cold War discussions, it should be recognized that the U.S. capability to adapt its deterrence policies to a wide variety of challengers and contexts will be critical in this new century.

In addition, in the future, we will not know with confidence in advance of a crisis when deterrence will "work" as intended, when it will fail, or when it will be irrelevant. Consequently, being prepared for its failure or irrelevance will be critical: to the extent that the U.S. capability to deter attack is more uncertain, protection against attack becomes more important. Preparation for deterrence failure or irrelevance could involve a requirement for counterforce capabilities and the entire spectrum of active and passive defenses for U.S. expeditionary forces abroad and civilians at home. For example, given the potential fragility of deterrence, as the proliferation of WMD and missiles continues apace, U.S. counterforce capabilities against mobile ICBM launchers may become more important and the absence of any national missile defense will constitute an increasingly egregious vulnerability. Continuing the confident assertion that the United States does not need such defenses because deterrence will work reliably is a Cold War formula that is hollow and high-risk in the post-Cold War era.

Leaving Cold War Strategic Arms Control Behind

The variety of dynamic technical, operational, and political factors explored above, and the increasing uncertainty of U.S. deterrence policies, must be considered prior to any specific recommendations concerning the U.S. offensive and defensive strategic force posture. They are all important elements in the first-order question: "What are the goals of U.S. national security strategy and what is the role of the U.S. strategic force posture in supporting those goals?" The changing requirements of U.S. strategy and foreign policy must be a fundamental determinant in any proposal concerning the size and composition of U.S. strategic forces. It makes no sense to make recommendations regarding U.S. force numbers and characteristics without first giving careful consideration to these requirements and the potential for significant change.

Recommendations concerning the specific target for an arms control agreement with Russia–whether involving 1,000, 1,500, 2,500, or 3,500 warheads–represent an estimate of current requirements and a prediction of future requirements, with all the uncertainties that must attend the former and, in particular, the latter. To recommend, for example, that the United States negotiate very deep reductions in strategic nuclear warheads, and codify those reductions via treaty, is to predict that the conditions that may permit deep reductions today will also prevail in the future.

A fundamental problem for any such recommendation is the fact that the international environment and the operational and political factors that must be considered are far from static. The extent to which

the future can differ from current expectations is illustrated by recent history: barely more than a dozen years ago the USSR still existed, the Cold War was still alive, U.S.-Chinese relations were relatively cordial, there existed two politically hostile German states, and the U.S. was generally sympathetic to an Iraq that was at war with Iran. Just over twenty years ago, the Shah still ruled an Iran that was very friendly to the United States, and Ronald Reagan had yet to bid for victory in the Cold War. Very few people predicted rapid or dramatic change in any of these circumstances at the time.

There is no indication that the coming two decades will be any less politically and militarily dynamic than were the past. Indeed, they appear to hold the potential for significant and rapid change. The point here is that American decision-makers may misjudge the military means required to support foreign policy today, but they at least generally know the questions they have to answer. They cannot know with confidence what will be asked of U.S. strategic forces in 2010 or 2020.[39]

Consequently, a careful review of the dynamic operational and political considerations that contribute to U.S. strategic requirements may indicate that the United States can prudently embrace deep nuclear force reductions and other changes in the force structure, including lower alert rates. There can, however, be no confidence attached to a prediction that the relatively benign conditions that may permit such reductions and changes today will persist into the future. The dynamism of the strategic environment and the potential for dramatic change in U.S. strategic requirements does not preclude, *a priori*, recommendations for deep reductions. It does, however, weigh very heavily against the call to codify and "lock in" deep reductions and other changes.[40]

Arms control policy must now be held to account by the same dominant standard as is defense policy: specifically, how well can it adjust to changing conditions? Defense and arms control planners have to raise the identical question: what if our predictions of the future are wrong? Fortunately, *the* test for competence in policy is a pragmatic one. A primary requirement is to control the regret factor to the extent feasible by recognizing that change is constant in world politics, that dramatic changes in world politics are probable, and by reevaluating needs and adjusting forces accordingly.

Coping with uncertainty is the common difficulty for defense and arms control policy in a world political environment that is complex, non-linear, and surprising. The U.S. Cold War approach to strategic arms control–with its heavy focus on formal treaties, competitive negotiations, rigid, codified warhead and launcher ceilings, and eventually immense, detailed verification regimes—*in practice* cannot meet this basic requirement.

A key reason that this Cold War approach is incompatible with the U.S. requirement for adaptability is the historically demonstrated fact that liberal democracies in general, and the United States in particular, are hard pressed to withdraw from or revise established agreements as may be necessary to adjust their armed forces in a timely fashion as the threat context changes.[41] Arms control tends to be invested with normative value as evidence of goodwill and peaceful intent. Consequently, for Washington to modify or withdraw from, treaties that are overtaken by events becomes politically impossible, even if technically legal.[42]

This can be observed today in the political and technical contortions to which the U.S. has gone to comply with, and seek relief from, the ABM Treaty. The United States appears to be locked into the agreement by a domestic norm that views arms control commitments as sacrosanct and is highly resistant to redefinition, let alone rejection, as new security conditions arise. It is a legacy of the U.S. Cold War approach to arms control that a treaty negotiated thirty years ago in a completely different strategic context now constitutes a roadblock to the U.S. capability to respond prudently to proliferation. That it does so reflects the particular challenge to Washington of pursuing essentially fixed and codified arms control treaties in a dynamic strategic environment.

Even when a strategic treaty is not ratified—as in the case of SALT II, which the Carter Administration withdrew from Senate consideration, or the Comprehensive Test Ban Treaty (CTBT), which the Senate rejected—Washington typically chooses nevertheless to abide by its terms. America is

resistant to the suggestion that arms control agreements negotiated in good faith can become harmful to national security when they effectively preclude the U.S. capability to adapt to changing times.

This problem was emphasized by Senator Richard Lugar when he observed in 1999 that the CTBT, as negotiated, would restrict too severely the U.S. capability to respond prudently to a variety of possible future technical and political developments.[43] Clearly, the legal prerogative and actual capability to design and produce new weapons types could be a key to adapting U.S. forces to dramatic future shifts in strategic conditions and requirements.[44]

Washington cannot know today whether Russia, or for that matter China, will be neutral, friend, foe, or part of a hostile alliance in the future. It cannot therefore be sensible now to codify the character and quantity of U.S. strategic nuclear forces to some approximation of parity in U.S. and Russian strategic nuclear force structures. U.S. force reductions *per se* are not the problem here. As noted above, a comprehensive strategic review may well indicate that deep U.S. nuclear reductions are a prudent option for Washington today. The problem rather is in continuing to follow a Cold War approach to arms control that precludes the U.S. capability to adapt its nuclear force posture to the level compatible with emerging threats and foreign policy requirements.

Because policymakers do not, and cannot, know the political demands that foreign policy may have to make upon the nuclear forces over the decades ahead, Washington should restructure its approach to strategic arms control away from the legal rigidity and formality of Cold War style agreements. The full scale of flaws in the Cold War arms control process must be appreciated.

- An arms control treaty that codifies ceilings for force levels represents, in effect, an imprudent prediction of the future. If the United States were to negotiate and codify a START III ceiling, whether at 1,000 or 2,500 warheads, it would fix into law the prediction that today's negotiable ceiling will meet the national strategic requirements of foreign policy in, for example, 2010 or 2020. And, if past practice is precedent, that treaty will be near-impervious to significant modification regardless of how the future actually unfolds.

- U.S. policymakers today cannot know the strategic environment of 2005, let alone 2010 or 2020. There is no basis for expecting that the conditions that may permit deep nuclear reductions today will continue in the future. And, to risk understatement, negotiating a new Cold War style ceiling on nuclear arms with Russia cannot ensure the continuation of these conditions; some of the most significant potential drivers of future U.S. strategic requirements cannot be captured by START (e.g., future relations with China).

- The focus of the Cold War strategic arms control process, as reflected in the ABM Treaty and START, is on perpetuating mutual threats of, and capabilities for, mutual nuclear annihilation. Such a focus places a substantial (and artificial) barrier to stable improvement in U.S.-Russian political relations.

Similarly, the continued codification of parity hardly serves Russian purposes. If a new START treaty were to establish a new strategic warhead ceiling of 2,500,[45] for example, Moscow would strongly resist going below that ceiling, if only for reasons of status and honor. A new treaty along these lines could well prove to be a "life raft" for larger numbers of deployed strategic nuclear warheads than Russia would otherwise retain, because the Cold War approach to START requires the maintenance of near-symmetrical mutual threats and "parity" into the indefinite future. Ironically, this central focus of the old arms control process encourages artificial competition, artificially common force ceilings, and adversarial relations: Russia and the United States vie for advantage in negotiations and, regardless of actual national security requirements, continue to field forces that are sufficiently large that they not be perceived as substantially inferior to those of the other power. This "parity principle," an inescapable mandate of the Cold War process, now threatens to codify a force structure higher than Washington may

now need, than Moscow easily can afford, and would prohibit the flexibility necessary to adjust to changing times.

In addition, the notion that Moscow and Washington should threaten each other is implicit in the Cold War arms control process. That process is predicated on the now-irrelevant underlying assumption of two hostile states whose strategic requirements are determined by the need to maintain constant mutual threats of annihilation. To continue negotiations as if these characteristics of the Cold War continue to reflect reality would set the basis for future acrimony and needlessly limit the potential for improved U.S.-Russian political relations.

Arms control purportedly is the vehicle for improved political relations, predictability and openness; yet the ABM Treaty and Cold War strategic arms control in general have centered on codifying and perpetuating threats of "Mutual Assured Destruction" (MAD), a relationship characterized by deep political animosity and suspicion. This internal contradiction is inherent in the Cold War approach to arms control, and may have been unavoidable at that time; it should no longer govern our policy. Because the United States is rightfully interested in building a less adversarial relationship with Russia, the focus and orientation of the current arms control process must be altered dramatically. Wholly restructuring the U.S. approach to arms control is not simply one suggestion among many concerning the problems in U.S.-Russian relations: it is fundamental to the development of a better political relationship.

Strategic Arms Control: The Way Ahead

The transition to a new American presidential administration presents the opportunity to recognize that the Cold War approach to arms control and much of its product is outmoded, and move instead toward a new path. A new path does not mean that Washington must set aside strategic arms control or broader efforts to improve political relations with Moscow. Improvement in political relations is very important, and the United States can move beyond its Cold War mooring to an arms control approach more suited to the post-Cold War period.

That approach would focus much more on U.S.-Russian coordination and consultation with regard to their respective strategic force postures than on the codification of common warhead and launcher ceilings. The immediate goals in this new post-Cold War arms control process would be: to promote mutual consultation and coordination, while providing each side with the prerogative to adapt its strategic force posture according to its respective requirements in a dynamic strategic environment; to reduce the prospect for misunderstanding and surprise; and to improve the basis for confidence and mutual trust and thus reduce the MAD-inspired level of mutual animosity and suspicion. The longer-term goal in reestablishing arms control along these lines would be to facilitate more amicable U.S.-Russian political relations, and thus greater security for each. A new post-Cold War approach to arms control would permit Washington to pursue these goals without the Cold War anchor of a competitive and highly legalistic negotiating process keyed to MAD.

This approach to arms control would be intended to help reorient U.S.-Russian relations to the post-Cold War facts that: an adversarial relationship based on MAD is counterproductive, dangerous and more the reflection of historical baggage than objective and significant conflicting interests; U.S. and Russian nuclear reductions need neither be linked mechanistically nor codified; and, the two largest nuclear powers need not be engaged in a nuclear arms competition. Such talks could focus on establishing "full disclosure" of each side's nuclear and missile defense programs, intentions, goals and rationale, and strengthening the transparency and predictability in their respective programs. This new approach could draw on the considerable success made during the 1992 Ross-Mamedov Talks,[46] and from the two cooperative U.S.-Russian theater missile defense command post exercises (CPX) conducted at the Joint Nuclear Test Facility in Colorado Springs (1996) and in Russia (1998).

A restructured approach to arms control need not foreclose the prospect for parallel nuclear reductions, including deep reductions, if judged appropriate following a serious U.S. strategic review. Indeed, moving toward strategic arms control that emphasizes the coordination of reductions rather than their codification should facilitate prudent U.S. reductions by alleviating appropriate existing concerns that reductions that may be reasonable now could soon prove to be a mistake if rendered "irreversible."

Moscow clearly recognizes the contradiction of seeking better political relations while purposely perpetuating MAD.[47] By moving away from the Cold War arms control framework based on the perpetuation of MAD, Washington and Moscow should have an improved opportunity to establish a less competitive and hostile basis for their relations, more transparency and predictability, and to focus more congenially on additional areas of mutual security concern such as bilateral and multilateral efforts to counter transnational crime and proliferation.

Absent a relationship centered on MAD, for example, Russia could regard with some sympathy expressed U.S. concerns about possible lapses in the secure command and control of Russian nuclear weapons. The notion that U.S. concerns about Russian command and control could lead Moscow to "de-alert" its strategic nuclear forces—while the Kremlin continues to see itself as locked into a desperate competition to maintain its side of parity and the MAD equation—is far-fetched, as most Russian commentary on the subject illustrates. In the context of a political relationship and an arms control process that seeks to move away from mutual nuclear threats, the Kremlin would be less likely to interpret such U.S. initiatives as ploys to degrade Russian capabilities.

Consequently, the U.S. approach to strategic arms control should be restructured toward far greater efforts to promote "mutual assurance," including significant and coordinated reductions in deployed strategic nuclear forces if indicated, following a review of U.S. force requirements. *If* the United States maintains the capability, will, and right to adjust its nuclear force structure as strategic need dictates, then moving toward significantly lower levels of deployed nuclear forces in consultation with Moscow could indeed be prudent and practicable.

Whether Moscow will be willing to participate in a newly-structured arms control process on this basis, a process intended to rebuild the U.S.-Russian relationship on a less adversarial foundation, ultimately will be decided in the Kremlin. There is some recent indication from the most senior levels of the Russian government that Moscow is prepared for a major restructuring of the arms control process. For example, President Putin recently proposed that U.S. and Russian strategic nuclear forces be lowered "in parallel." This language was clarified by a senior member of the Russian Foreign Ministry as being a proposal for arms control reductions that would be, as recommended here, "coordinated" but less rigidly legalistic than Cold War arms control regimes.

In addition, the Russian Commander-in-Chief of the Strategic Missile Forces (SMF), Gen. Yakovlev, recently proposed an entirely new format for strategic arms control. He proposed integrating strategic offensive and defensive forces under a single ceiling and giving each side the "freedom to mix" their offensive and defensive forces as they individually may choose. Gen. Yakovlev specifically acknowledged that the ABM Treaty would not be an element of this new arms control framework.[48]

Moscow's response to a U.S. initiative to restructure the arms control process would be one factor, among many, that would shape the subsequent direction of the U.S. nuclear force structure. Restructuring the basis for arms control away from MAD and legal rigidity, if pursued in the context of diverse initiatives to improve political relations, could help Washington and Moscow move in tandem toward nuclear force reductions and away from a relationship based on mutual nuclear threats, a relationship that hinders steady and serious improvement in political relations in general, and introduces an enduring impediment to mutual cooperation on strategic force issues in particular.

Notes

[1] In a recent Senate hearing, GEN Henry Shelton, Chairman of the Joint Chiefs of Staff stated that the Department of Defense, the JCS, and the commander-in-chief of the U.S. Strategic Command were "fully consulted in connection with the agreement in Hensinki in 1997 on the 2,000 to 2,500 level. Any consideration of proposals for different levels would be subject to the same process." However, GEN Shelton also indicated that the JCS had not been asked to consider formally numbers below the level of 2,000 warheads. Under Secretary of Defense Slocombe, JCS, and ADM Richard Mies, testimony on U.S. strategic force requirements before the Senate Armed Services Committee, 23 May 2000, internet (Federal News Service Transcript).

[2] Testimony of Under Secretary of Defense for Policy Walter B. Slocombe in Senate Governmental Affairs Committee, Subcommittee on International Security, Proliferation and Federal Services, *The Future of Nuclear Deterrence*, 105th Cong., 1st sess. (Washington, D.C.: U.S. Government Printing Office, 1997), p. 9. Hereafter cited as Slocombe Testimony, 12 February 1997.

[3] William J. Perry, *Annual Report to the President and the Congress* (Washington, D.C.: U.S. Government Printing Office, February 1995), p. 83. Hereafter cited as *ADR 1995*. Also see Department of State, *The United States of America Meeting Its Commitment to Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons*, accessed Spring 2000 at <http://usinfo.state.gov/topien/pol/arms/stories/art4brch.pdf>, p. 7. Hereafter cited as *U.S. Meeting Its Commitment*.

[4] *ADR 1995*, p. 83.

[5] It should be noted, however, that some members of Congress and non-governmental analysts argue strongly that the Clinton White House deliberately neglected the U.S. nuclear posture and allowed the arsenal to "erode by design." See, for example, the report by the House National Security Committee, *The Clinton Administration and Nuclear Stockpile Stewardship: Erosion By Design*, 30 October 1996.

[6] As Admiral Mies, the commander-in-chief of the USSTRATCOM, recently stated, "Deterrence of aggression is a cornerstone of our national security strategy, and our strategic nuclear forces serve as the most visible and most important element of our commitment to this principle…[A]lthough the risk of massive nuclear attack has changed dramatically, deterrence of major military attack on the United States and its allies, particularly attacks involving weapons of mass destruction, still remains our highest defense priority." Hearing of the Senate Armed Services Committee, "U.S. Strategic Nuclear Force Requirements," 23 May 2000 (Federal News Service Transcript).

[7] This assessment of the 1997 PDD is based on R. Jeffrey Smith, "Clinton Directive Changes Strategy on Nuclear Arms," *New York Times*, 7 December 1997, pp. A1 and A8-10. The quoted information is from an interview that Smith held with Robert Bell. See also, "PDD/NSC 60: Nuclear Weapons Employment Policy Guidance, November 1997," Federation of American Scientists website accessed 6 December 2000 at <http://www.fas/org/irp/offdocs/pdd0.htm> and Eugene Carroll, "The NPT Review—Last Chance?" *The Defense Monitor* 29, accessed 6 December 2000 at <http://www.cdi.org/dm/2000/issue3/NPT.html>.

[8] Robert Bell, a senior staff official with the National Security Council stated that, "we direct our military forces to continue to posture themselves in such a way as to not rely on launch on warning—to be able to absorb a nuclear strike and still have enough force surviving to constitute credible deterrence." Craig Cerniello, "Clinton Issues New Guidelines on U.S. Nuclear Weapons Doctrine," *Arms Control Today* 27 (November/December 1997), p. 23.

[9] The Canberra Commission was created by the Australian government of Prime Minister Keating in November 1995 with the mandate to "develop ideas and proposals for a concrete and realistic program to achieve a world totally free of nuclear weapons" and to "address the related problem of maintaining stability and security during the transitional period and after the ultimate goal is accomplished." (Although Keating's government was defeated in elections before the commission report was released in August 1996, its successor agreed to transmit its findings to the United Nations and the Conference on Disarmament.) Because of the scope and prominence of the Canberra Commission, much of what is characterized herein as the disarmament community's position will be taken from its report: Canberra Commission on the Elimination of Nuclear Weapons, *Report of the Canberra Commission on the Elimination of Nuclear Weapons* (Canberra, Australia: Commonwealth of Australia, 1996), accessed Summer 2000 at <http://www.dfat.gov.au/cc/cchome.html>.

[10] See Ramesh Thakur, "Envisioning Nuclear Futures," *Security Dialogue* 31 (March 2000), pp. 27-28.

[11] Scott D. Sagan, "Why Do States Build Nuclear Weapons?" *International Security* 21 (Winter 1996/97), pp. 84-86. Robert Manning suggested such a norms-based strategy, which would involve a new nuclear bargain offered by the declared nuclear weapons states. This new bargain would include a commitment to achieve a nuclear-free world by 2045, the end of the first "nuclear century." After reaching START II levels, the United States and Russia should cut their nuclear forces by another 50 percent, and agree to still more cuts if the other declared nuclear powers begin multilateral arms-reduction talks to achieve proportionate cuts in their arsenals. The United States and Russia should also lead the U.N. Security Council in issuing a joint statement pledging no-first-use of nuclear weapons against any state abiding by the NPT norms. This should be accompanied by assurances that the Security Council will authorize the infliction of unacceptable damage on any state that uses or threatens to use nuclear weapons. Robert Manning, "Ending the Nuclear Century," *The New Democrat* (January/February 1995): 54-56. The bargain would also include a CTBT; the end to all commercial use of plutonium, with the IAEA serving as custodian of the world's entire supply; G-7 support of expanding the IAEA's mandate and resources and bringing new and emerging suppliers of nuclear and missile technology into the respective supplier groups; and U.S. acceleration of tactical ballistic missile defense programs as an insurance policy against nonproliferation failures.

[12] Committee on Nuclear Policy, *Jump-START: Retaking the Initiative to Reduce Post-Cold War Nuclear Dangers* (Washington, D.C.: The Henry Stimson Center, February 1999), p. 7. Hereafter cited as *Jump-START.*

[13] *Jump-START*, p. 11. See also, James Lindsay, "The Nuclear Agenda," *Brookings Review* 18 (Fall 2000), p. 10; and, Michael O'Hanlon, "Russian Offer On Warheads A Good Idea," *Baltimore Sun*, 30 November 2000.

[14] *Jump-START*, pp. 7, 11.

[15] During the recent five-year "review" of the NPT, the United States and the other four declared nuclear powers reiterated their commitment to the goals of nuclear and complete disarmament—but this announcement noticeably did not include a timetable: "We [the nuclear weapon states] reiterate our unequivocal commitment to the ultimate goals of a complete elimination of nuclear weapons and a treaty on general and complete disarmament under strict and effective international control. See, "Statement by NWS," *The Arms Control Reporter* 19, No. 6 (June 2000), p. 602.D.27.

A statement regarding nuclear disarmament made by Under Secretary of Defense for Policy Walter B. Slocombe in Senate Testimony is notable in this regard: "With respect to the general argument for abolition, I would summarize the case for retaining nuclear weapons for the foreseeable future as follows. First, whatever would be desirable, there is, in fact, no reasonable prospect that all the declared and de facto nuclear powers will agree in the near term to give up all their nuclear weapons. But as long as one such State refuses to do so, it will be necessary for us to retain a nuclear force of our own. Second, if the nuclear powers were somehow to agree to accept abolition, that acceptance would require Congress, the public—the U.S. Government would rightly demand—a verification regime of extraordinary rigor and intrusiveness." Slocombe Testimony, 12 February 1997. Also see the comments of Gen Eugene Habiger, then-commander-in-chief of the U.S. Strategic Command (USSTRATCOM), in "Exclusive Interview with General Eugene Habiger of STRATCOM," *Defense Daily Network*, 4 March 1998, online.

[16] In the absence of any apparent review of deterrence requirements or the various dynamic technical, operational and political factors that go into an assessment of potential U.S. force requirements, the Report of the Canberra Commission recommends the phased elimination of all nuclear weapons. Based on no apparent analysis of U.S. strategic requirements a report from the Stimson Center recommends 1,000 total nuclear weapons. See *Jump-START*, p. 11. Similarly, Brookings Institute senior fellow James Lindsay recommends that the United States, "seek over the long term to reduce its nuclear arsenal to below a thousand warheads." See, "The Nuclear Agenda," p. 10. Again, based on no apparent review of requirements, The Nuclear Age Peace Foundation recommends complete international nuclear disarmament in "A Twelve Step Program to End Nuclear Weapons Addiction," accessed 26 September 2000 at <www.napf.org/articles/krieger-12steps.html>.

[17] The 2001 defense authorization bill's conference report calls for a new and comprehensive nuclear posture review. See House of Representatives, *Enactment of Provisions of H.R. 5408, the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001*, Report to Accompany H.R. 4205, 106th Cong., 2d. Sess. (Washington, D.C.: U.S. Government Printing Office, 2000), p. 276.

[18] See the discussion in Janne E. Nolan, *An Elusive Consensus* (Washington, D.C.: Brookings Institution Press, 1999), pp. 50-62. In May 2000 the Senate Armed Services Committee called for a thorough review of U.S. nuclear force requirements, noting that such a review had not been conducted since FY1994. "Authorizers Call for Comprehensive Review of U.S. Nuclear Posture," *Inside the Pentagon*, 12 October 2000, p. 9.

[19] The possibility of a Sino-Russian "de facto political and military alliance in competition with the United States" is mentioned in John C. Gannon, Chairman, National Intelligence Council, "Intelligence Challenges Through 2015," remarks to the Columbus Council on World Affairs, 27 April 2000, accessed Spring 2000 at <http://odci.gov/cia/public_affairs/speeches/gannon_speech_05022000.html>. For a discussion of the future of the strategic partnership between Russia and China, see Gilbert Rozman, "Sino-Russian Relations: Mutual Assessments and Predictions," in Sherman W. Garnett, ed., *Rapprochement or Rivalry? Russia-China Relations in a Changing Asia* (Washington, D.C.: Carnegie Endowment for International Peace, 2000), pp. 147-174.

[20] See *ADR 1995*, p. 87.

[21] See Ephraim Kam, *Surprise Attack: The Victim's Perspective* (Cambridge, MA: Harvard University Press, 1988), pp. 14, 30, 212; Richard K. Betts, *Surprise Attack: Lessons for Defense Planning* (Washington, D.C.: Brookings Institution, 1982); and Patrick Morgan, "The Opportunity for a Strategic Surprise," in Klaus Knorr and Patrick Morgan, eds., *Strategic Military Surprise: Incentives and Opportunities* (New Brunswick, N.J.: Transaction Books, 1983), pp. 195-245.

[22] *Gulf War Air Power Survey (GWAPS), Vol. II, Pt. II* (Washington, D.C.: U.S. Government Printing Office, 1993), pp. 331-332, 337, 340.

[23] Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington, D.C.: Department of Defense, November 1997), p. 73; Joint Chiefs of Staff, *Concept for Future Joint Operations: Expanding Joint Vision 2010* (Washington, D.C.: Joint Chiefs of Staff, May 1997), p. 15; and Office of Naval Intelligence, *Challenges to Naval Expeditionary Warfare* (Washington, D.C.: Office of Naval Intelligence, March 1997), p. 24.

[24] *Proliferation: Threat and Response* (1997), p. 73; *Concept for Future Joint Operations: Expanding Joint Vision 2010*, p. 15; Office of Naval Intelligence, *DNI [Director of Naval Intelligence] Posture Statement* (Washington, D.C.: Office of Naval Intelligence, 1994); Senate Armed Services Committee, *National Defense Authorization Act for Fiscal Year 1995*, Report 103-282, Report to Accompany S. 2182, 103d Cong., 2d Sess. (Washington, D.C.: U.S. Government Printing Office, 1994), p. 101; Memo, Paul G. Kaminski, Under Secretary of Defense for Acquisition and Technology, to Chairman, Defense Science Board, subj: Terms of Reference—Defense Science Board Task Force on Underground Facilities, 2 December 1996; Maj Gen Gary L. Curtin, USAF,

Director, Defense Special Weapons Agency (DSWA) and George W. Ullrich, Deputy Director, DSWA, remarks to the Defense Writers Group, 16 July 1997 (partial transcript provided by Robert Dudney, *Air Force Magazine*).

[25] This discussion of damage expectancy is based on Capt George J. Seiler, USAF, *Strategic Nuclear Force Requirements and Issues*, Research Report No. AU-ARI-82-1 (revised edition) (Maxwell Air Force Base, AL: Air University Press, February 1983); and General Accounting Office, *Strategic Weapons: Nuclear Weapons Targeting Process*, GAO/NSIAD-91-319FS (Washington, D.C.: General Accounting Office, September 1991).

[26] *GWAPS, Vol. II, Pt. II*, pp. 314-317, 327-330, 343-345.

[27] Robert W. Chandler (with Ronald J. Trees), *Tomorrow's War, Today's Decisions: Iraqi Weapons of Mass Destruction and the Implications of WMD-Armed Adversaries for Future U.S. Military Strategy* (McLean, VA: AMCODA Press, 1996), pp. 57-59.

[28] See Andrew F. Krepinevich and Steven M. Kosiak, "Smarter Bombs, Fewer Nukes," *The Bulletin of the Atomic Scientists* 54 (November/December 1998): 26-32.

[29] For discussions of the U.S. nuclear stockpile, see Center for Counterproliferation Research—National Defense University and Center for Global Security Research—Lawrence Livermore National Laboratory, *U.S. Nuclear Policy in the 21st Century: A Fresh Look at National Strategy and Requirements*, Final Report (Washington, D.C.: U.S. Government Printing Office, 1998), pp. 5.1-5.53. Hereafter cited as *U.S. Nuclear Policy in the 21st Century*, Final Report. Also see, *Report of the Defense Science Board Task Force on Nuclear Deterrence*, pp. 41-53; and Robert S. Norris and William M. Arkin, "NRDC Nuclear Notebook: U.S. Nuclear Stockpile, July 1998," *The Bulletin of the Atomic Scientists* 54 (July-August 1998): 69-71.

[30] "The case for the Triad is not without merit. There is an obvious danger in putting all 'eggs in one basket'. If the deterrent depended solely on one type of delivery vehicle, then the adversary's defensive problem would be simplified. To mount an attack simultaneously on three completely different types of systems would be an awesome task; one system might be manageable." Lawrence Freedman, *The Evolution of Strategy* (New York: St. Martin's Press, 1981), p. 342.

[31] More recently, General Eugene Habiger highlighted the value of maintaining a multiplicity of delivery systems. He pointed out that, "If the intercontinental ballistic missile force is eliminated, we reduce the strategic target set from well over 500 locations to approximately 15 locations." He went on to emphasize that this state of affairs, "would allow a potential adversary to use a small number of weapons to accomplish the objective of decimating this nation's strategic infrastructure. Gen Eugene Habiger, in Senate Armed Services Committee, *Department of Defense Authorization for Appropriations for Fiscal year 1998 and the Future Years Defense Program, Part 1*, 105th Cong., 1st Sess. (Washington, D.C.: U.S. Government Printing Office, 1998), p. 727.

[32] Herbert Goldhamer (edited by Joan Goldhamer), *Reality and Belief in Military Affairs: A First Draft (June 1977)*, R-2448-NA (Santa Monica, CA: RAND Corp., February 1979), pp. 58-59.

[33] McGeorge Bundy, "The Presidency and Peace," *Foreign Affairs* 42 (April 1964), p. 355.

[34] *Jump-START*, p. 11.

[35] As a recent report on U.S. nuclear policy notes: "Nuclear deterrence cannot be sustained without an infrastructure that can keep current systems operational and that is capable of providing evolutionary improvements and next-generation systems when they are required." *U.S. Nuclear Policy in the 21st Century,* Final Report, p. 4.1.

[36] *U.S. Nuclear Policy in the 21st Century,* Final Report, chapter 5.

[37] The possibility that the United States may need to develop low-yield, precision-delivered warheads to meet its future nuclear weapons needs is explored in Stephen M. Younger, *Nuclear Weapons in the Twenty-First Century*, LAOR-00-2850 (Los Alamos, NM: Los Alamos National Laboratory, 27 June 2000).

[38] This discussion draws on the detailed analyses of post-Cold War deterrence in Keith Payne, *Deterrence in the Second Nuclear Age* (Lexington, KY: University Press of Kentucky, 1996); and, Keith Payne, *China and the Fallacies of Cold War Deterrence* (Lexington, KY: University Press of Kentucky, 2001, forthcoming).

[39] An historical example illustrates the problem. In Article 19 of the five-power Naval Arms Limitation Treaty of 1922, the signatories agreed not to arm or develop their island bases east of Singapore or west of Pearl Harbor. This "non-fortification" clause meant that the Royal Navy and the U.S. Navy could protect neither China, nor Western interests in China, against Japanese aggression. This article seemed reasonable at the time, but shortly thereafter proved disastrous.

[40] As recommended in, *Jump-START,* pp. 7.

[41] Again, history provides a relevant example. The Washington (and London, 1930) system of naval arms limitation was nested in a bundle of treaties concerning security in East Asia, and especially the independence of China, which were dead letters by the 1930s. Japan's war of conquest against China began in earnest in 1937. Following the termination of the Washington treaty system in 1936, which meant a legally effective termination in 1938, the United States was able to develop and legislate a major program of naval rearmament which was to overwhelm Imperial Japan *from 1943 onwards*. If anything, the prospect of the fairly abrupt generation of new U.S. naval power by the early 1940s spurred Japan on to war rather than added to stability. One of the problems with arms limitation treaties is that when they finally die under dramatically changed political conditions there is apt to be a rush to rearm which can be politically most unsettling. In 1940-41, Japan felt compelled to wage war because it could predict the certainty of naval inferiority and a fatal deficiency in oil for the fleet, by 1944. See, Williamson Murray and Allen R. Millett, *A War To Be Won: Fighting The Second World War, 1937-1945* (Cambridge, MA: Harvard University Press, 2000), ch. 7.

[42] As required by law, the Reagan, then Bush, Administrations, submitted reports to the Congress on Soviet non-compliance with arms control agreements in January 1984, February and December 1985, March and December 1987, March 1988 (restricted to Soviet action *vis à vis* the Threshold Test Ban Treaty), December 1988, February 1990, and February 1991 (by which time the Soviet Union had proceeded from crisis into meltdown). Those findings had no discernible impact upon U.S. willingness to negotiate new agreements with a defaulting USSR.

[43] Richard Lugar, *Lugar Opposes Comprehensive Test Ban Treaty*, 7 October 1999, accessed 3 November 2000 at <http://www.lugar.senate.gov/991007.htm>.

[44] As elaborated in *U.S. Nuclear Policy in the 21st Century*, Final Report, chapters 4 and 5.

[45] In the research for this report, nearly all the military professionals and other defense experts informally queried responded that a U.S. strategic arsenal of 2,500 weapons is necessary and adequate. When pressed, most acknowledged that the 2,500 figure is not an especially well supported *strategic* figure. It intuitively seems appropriate: high enough for most plausible needs over the next several decades, but noticeably lower than the START II zone of the 3,000-3,500. In addition, 2,500 reportedly would allow the preservation of the services' preferred force structure of 500 Minuteman III and 14 SSBNs, and the retention of bombers. Prior to the Clinton Administration Walter Slocombe offered the most explicit strategic rationale for a 2,500 warhead ceiling: "A reasonable goal should be to reduce to levels of approximately 2,000 to 3,000 highly survivable and flexible weapons so as to preserve a capability for a targeting doctrine that is not limited to attacks on cities and for enough diversity of forces to enhance their survivability. Forces on the order of 2,500 warheads–if made highly survivable, as they can be–would amply support a targeting policy with the flexibility to attack deployed Soviet conventional military power and the capability of the military, industrial, and communications system to conduct a war, as well as providing residual-reserve capacity to destroy the Soviet Union as an organized society and economy." See Walter B. Slocombe, "The Continued Need for Extended Deterrence," *The Washington Quarterly* 14, No. 4 (Autumn 1991), p. 168.

[46] For a discussion of these Talks see, Stephen Hadley, "Global Protection System: Concepts and Progress," *Comparative Strategy* 12 (January-March 1993), pp. 3-6.

[47] As one Russian observer, a retired general officer, puts it: "The entire logic of nuclear deterrence and especially mutual deterrence, is constructed figuring on the insanity of politicians. The entire process of the strategic nuclear arms race and of accompanying measures can be described as a chain reaction of mistrust and fear of mutual destruction. Having been set in motion at one time, it still continues to collect its heavy tribute from nuclear-weapon powers, and not just from them…. Preservation of a state of mutual nuclear deterrence between Russia and the United States is not simply an anachronism of Cold War times. It harbors a fully specific and real threat." Pavel Zolotarev, "How USA, Russia Might End Cycle of Mutual Nuclear Deterrence," FBIS Document ID: CEP200000927000394, 22 September 2000, *Nezavisimoye Voyennoye Obozreniye*. See also, Andrei Piontkovsky, "The New Spectrum of Nuclear Threats and the Evolution of Strategic Stability Concepts," *Prism: A Bi-Weekly on the Post-Soviet States*, Vol. 4, No. 24 (11 December 11 1998).

[48] National Institute for Public Policy, "Russia Attempts To Define Future Arms Control Agenda," *Russian Arms Control Digest*, No. 152 (November 21, 2000), p. 1; National Institute for Public Policy, "*Krasnaya Zvezda* Editorial on Putin Arms Control Statement," *Russian Arms Control Digest*, No. 153 (November 27, 2000), p. 1; and, National Institute for Public Policy, "Foreign Ministry Comments on Yakovlev, ABM Treaty," *Russian Arms Control Digest*, No. 155 (November 30, 2000), pp. 1-2.

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