



US Nuclear Policy Review Project

January 25, 2008
Washington, DC

This brief summarizes the primary findings of the conference as interpreted by the project organizers. Participants neither reviewed nor approved this brief. Therefore, it should not be assumed that every participant subscribes to all of its recommendations, observations, and conclusions.

US Nuclear Weapons, Force Posture, and Infrastructure

Summary/Recommendations

- There is widespread agreement that change is needed in the US nuclear weapons stockpile, yet with no consensus between the executive and legislative branches on the contours of that change, the current nuclear stockpile and production complex remains strikingly similar to that which existed prior to the last nuclear posture review.
- The Bush administration mapped out its vision of revitalizing the nuclear weapons complex while arguing that it was simultaneously de-emphasizing nuclear weapons by redefining the strategic triad so that nuclear forces constituted only one component of the strategic force, which would now also include conventional strike capabilities, active and passive defenses, and a responsive infrastructure. This approach has met with significant bipartisan skepticism.
- Misgivings that the development of new nuclear weapons for a wider range of missions would undermine US efforts to prevent other states from acquiring such arms helped fuel congressional opposition to several of the administration's nuclear posture initiatives.
- Most conference participants agreed that the status quo nuclear posture was untenable for various, and sometimes conflicting, reasons. For example, some argued that concerns over the possible corrosive effects of aging on existing weapons and infrastructure required efforts to resuscitate the nuclear complex. By contrast, others insisted that the United States should renew its efforts at nuclear disarmament, a goal that has drawn increasing support from experts, including senior US statesmen who had previously been contemptuous of the concept.
- A majority of conference participants believed that downsizing US nuclear forces and reducing their salience in US security policy would yield positive dividends by improving the climate for arms control and nonproliferation.

In 2001 the United States conducted a new Nuclear Posture Review (NPR)—an official evaluation of US nuclear policies, doctrines, and capabilities—and concluded that the country needed a more “flexible” approach to its atomic arsenal. Such flexibility, according to the NPR's authors, would give the United States the ability to target more countries (including nonnuclear weapon states) and to build new warheads through a reinvigorated production infrastructure.

Subsequent to this review—which had been carried out in a narrow, isolated fashion within the Defense Department, without significant attempt to build consensus—the administration sought to implement these changes but quickly ran into strong opposition.

In addition to concern from many outside the US government, including American experts and international leaders, a bipartisan bloc of congressional leaders blocked a series of initiatives put forward by the administration, including the Robust Nuclear Earth Penetrator, the Advanced Concepts Program, and the Reliable Replacement Warhead (RRW), a program that would eliminate the need to refurbish aging warheads in the stockpile by replacing them with a new generation of weapons. Lawmakers maintained that there should be agreement about the role of nuclear weapons in US security policy before they funded new warheads and infrastructure.

With widespread agreement that change is needed yet with no consensus between the executive and legislative branches on the contours of that change, the current nuclear stockpile and production complex remains strikingly similar to when the Bush administration took office. On January 25 a group of nuclear experts met to discuss US nuclear force posture and infrastructure, using the RRW debate as a way to explore broader disagreements.

The US Nuclear Weapons Enterprise in Suspension

Today the US nuclear stockpile is smaller—approximately 5,400 warheads according to one conference participant—than it was when President Dwight Eisenhower occupied the White House in the 1950s. Yet, excepting some maintenance and modernization work—carried out under the Stockpile Stewardship and Life Extension Programs to increase accuracy and to enhance the safety, security, and reliability of the stockpile—the warheads, delivery systems, and operating doctrines of today would be very familiar to the missileers and other nuclear weapons personnel at the end of the Cold War. For example, Minuteman III intercontinental ballistic missiles (ICBMs) scattered across Montana, North Dakota, and Wyoming remain ready to be fired in minutes to prevent them from being destroyed on the ground by a surprise first strike even though Russia, the only country that could carry out such an attack, is no longer considered a threat. The continued deployment of

land-based ICBMs (and a congressional caucus that defends them) is a perfect example of how US nuclear forces have been nearly impervious to geopolitical developments over the past decade. Likewise, the current administration's plan for a 2012 deployed force of 14 Trident strategic ballistic missile submarines, 450 Minuteman III ICBMs, and 76 total heavy bombers (20 B-2s and 56 B-52Hs) is remarkably similar to the force structure postulated in the 1994 NPR, when the United States was hedging against a potentially resurgent and hostile Russia: 14 Trident strategic ballistic missile submarine, 500 Minuteman III ICBMs, and 86 heavy bombers (20 B-2s and 66 B-52Hs).

Conference participants discussed the bottom-up and top-down drivers behind the US nuclear posture, from intense rivalry among the military services, which compete for resources and stature, to an effort to match actual and imagined Russian forces. (Suggesting that US nuclear policy had been allowed to drift, one participant asserted that the stockpile had grown and changed arbitrarily.) During the Cold War, the action-reaction cycle generated by Moscow and Washington's efforts to match each other's capabilities peaked in the mid-1980s, when the two sides combined had nearly 70,000 nuclear weapons. Despite each side's attempts to target the other's nuclear forces—so that it could theoretically limit damage to itself in the event of a nuclear war—the situation was widely recognized to be one of mutual assured destruction, or MAD.

Today, the current nuclear force posture is stated to be structured to meet four goals: assuring allies that the US stockpile is robust enough to protect them, dissuading potential adversaries from trying to compete with the United States, deterring aggression, and defeating foes in the event of armed conflict. Nevertheless, the 1,700-2,200 operationally deployed warhead level set by the 2002 Strategic Offensive Reductions Treaty is essentially the same as the warhead level the United States suggested for a prospective Strategic Arms Reduction Treaty III agreement in 1997, when strategic policy and targeting was still guided by the 1994 NPR.

Where the Bush Administration Had Hoped to Go
With its classified 2001 NPR—portions of which leaked to the press—the Bush administration mapped out its vision for revitalizing the nuclear weapons complex to design, develop, manufacture, and certify new nuclear warheads as needed, argu-

ing that risks (for example, that new adversaries might emerge or that there could be a catastrophic technical failure in existing US weapons) necessitated such action. Moreover, the NPR speculated that so-called rogue regimes and nonstate actors might not be deterred by the Cold War-legacy arsenal, calculating that US political leaders would not risk worldwide condemnation by using weapons designed for annihilating the Soviet Union against smaller, weaker opponents. Less powerful bombs intended to minimize physical and political fallout, the review reasoned, might give those contemplating mischief greater pause out of fear that the United States might more readily pull the trigger. Finally, administration officials further asserted that existing warheads were inadequate for certain circumstances, such as reaching targets buried deeply underground.

Although intent on overhauling the production complex to manufacture more “credible” or “usable” warheads that would more persuasively dissuade competitors, the administration also argued that it was deemphasizing nuclear weapons by redefining the strategic triad so that nuclear forces constituted only one leg, rather than all three. The second leg, comprised of more capable nonnuclear strike weapons and antimissile systems, would provide additional options beyond the threat or use of nuclear weapons, diminishing their role in deterrence policy. The third leg would consist of a “flexible” infrastructure that would be robust enough to generate quickly whatever mixture of nuclear and nonnuclear capabilities could be called for in any given strategic environment. However, seven years later, critics argue that the United States has yet to field a conventional prompt global strike system (i.e., a conventional system with the speed and target capability of strategic nuclear weapons, so that options beyond nuclear would become possible) or proven through operationally realistic testing the capability of its rudimentary long-range ballistic missile defense system, despite spending billions of dollars on the project each year.

Many independent analysts have disputed the assertion that the latest NPR has lowered the prominence of nuclear weapons in US security policy, contending instead that it has done exactly the opposite. Rather than eliminating nuclear missions, the review recommended developing an array of additional weapons tailored for particular purposes, such as striking mobile targets and destroying

chemical or biological weapons agents. It also called for weapons with smaller yields that might reduce collateral damage, leading to charges that it was blurring the line between conventional and nuclear weapons and lowering the threshold for nuclear weapons use. In surveying which countries could be targets of a US nuclear attack, the NPR identified Iraq, Iran, Libya, North Korea, and Syria in addition to the Cold War standbys, China and Russia. Guidance for the use of nuclear weapons in such conflicts was then incorporated into a new implementation framework: Operations Plan 8044, which replaced the Single Integrated Operational Plan of the Cold War.

Consequences of, and Responses to, Bush Administration Policies

The contrasting views about whether the Bush administration had lessened or amplified the salience of nuclear weapons in US security strategy were reflected in the workshop discussion. Some participants attributed the differing perspectives to the administration’s poor job of communicating and explaining its policies, while others insisted that they were criticizing the substance of the administration’s policies, not merely the way they were presented.

With misgivings that the development of new nuclear weapons for a wider range of missions would in fact undermine US efforts to prevent other states from acquiring such arms, Congress, over the past several years, has consistently denied support for administration initiatives stemming from the NPR. Congress rejected proposed research into the Robust Nuclear Earth Penetrator, a modified weapon to destroy targets deep in the earth, and blocked exploration of warheads with lower or specialized explosive yields. Congress also blocked key administration attempts to rejuvenate the nuclear complex, including its proposal to shorten by six months (from 24 to 18 months) the length of time needed to resume nuclear testing. Congress also compelled the administration to shelve its planned Modern Pit Facility, whose purpose was to produce annually as many as 450 plutonium pits (the core triggers of modern warheads) in favor of a more modest initiative to increase production capabilities gradually to 50-80 pits per year. Even that downscaled initiative still awaits congressional approval. In the meantime and in another setback to administration plans, in December 2007 Congress denied funding to continue research on the RRW program pending the

completion both of a congressionally-mandated bipartisan study on strategic posture as well as a new NPR by the next administration.

The bipartisan Strategic Posture Commission, headed up by former Secretaries of Defense William Perry and James Schlesinger, has been tasked with making recommendations for an appropriate future posture, including how many nuclear warheads are enough and the necessary nuclear infrastructure to support that posture.

The Reliable Replacement Warhead Program: Back to the Future?

Most conference participants agreed that the status quo nuclear posture was untenable for various, and sometimes conflicting, reasons. For example, some argued that concerns over the possible corrosive effects of aging on existing weapons and infrastructure required resuscitation of the nuclear complex. In contrast, others insisted that the United States should renew its efforts at nuclear disarmament, a goal that has increasing support from experts, including senior US statesmen who had previously been contemptuous of the concept. The debate over the RRW, which has been controversial since it was proposed in 2004, embodies many of these dueling rationales and foreshadows the issues that the next administration will face when making decisions about the future direction of the US nuclear weapons enterprise.

During the first four decades of the nuclear era, the US government assured itself of the health of its nuclear weapons by regularly conducting nuclear test explosions—1,030 to be exact. However, after ceasing new warhead production in 1990 and instituting a nuclear testing moratorium in 1992 (reflecting long-standing nonproliferation goals of the United States, as well as the global community), the United States established the Stockpile Stewardship Program to verify and sustain the viability of its warheads as they aged. That program employs advanced computing, engineering, and simulation tools to anticipate, detect, and diagnose any problems in existing warheads that might undermine their safety and reliability. The program also involves measures to extend the lives of existing warheads by replacing individual nonnuclear components that have degraded over time. By all accounts, the program has been successful, and by some measures, more successful than originally predicted—so much so that nuclear complex officials say more is known now about the internal

workings of a warhead and warhead performance than during the testing era. Since the program's inception, the nuclear stockpile has annually been certified as safe and reliable. The question is whether this will be the case indefinitely.

The Case for RRW

Some conference participants warned that past successes do not guarantee similar future results. Proponents of the RRW say that accumulated changes to warheads from life extension activities gradually distance a warhead from its original design, magnifying risks that at some point, it will not perform as intended. Such dangers are particularly serious, say proponents, because US Cold War weapon designers sought to maximize explosive power in minimal space—to enable individual missiles to carry multiple warheads. Those compact warheads are said to be designed close to “performance cliffs” that leave little margin for error. Thus, some believe that as warheads circulate through the stockpile, it will become increasingly difficult to certify them as safe and reliable, eroding confidence and potentially prompting calls to renew nuclear testing.

As an alternative to indefinitely refurbishing the warheads in the stockpile (the average age of which is estimated to be some 20 years), the current official preference is to build a new generation of warheads via the RRW program. Theoretically, these proposed warheads would be based on more relaxed designs that would be less susceptible to malfunction. More modern and less hazardous components would be incorporated into the systems to ease manufacturing and maintenance and to increase longevity. Another potential advantage, according to proponents, is the opportunity to incorporate advanced surety features into RRW models to minimize the chance of unauthorized use. Retrofitting more modern surety mechanisms, such as Permissive Action Links, onto older warheads poses a greater challenge. (Weapons officials are quick to add that existing weapons are safe, but that, given heightened post-September 11 homeland security measures, maximizing stockpile security is paramount.)

An additional proclaimed advantage of RRW development is that it makes a return to nuclear testing less likely. Not designed so close to “performance cliffs” and incorporating more durable or easily replaceable components, the RRW in theory would be less sensitive to aging concerns, thus

increasing confidence in its capabilities. RRW supporters note that the inaugural RRW model is rooted in a previously tested design, albeit one that was never built for the stockpile, so it could be confidently introduced into the arsenal without any criticality proof tests.

Another asserted benefit of the RRW program is that it would be part and parcel of a revitalization of the nuclear warhead production complex. Last year, the United States reestablished a modest production capability after a nearly two-decade lull, but RRW proponents envision a grander, more “responsive” infrastructure that would be able to produce out new warheads on an as-needed basis. The utility of such a capability, its advocates say, is that it would empower the United States to respond quickly to the emergence of new threats or technical failures in existing warheads by producing new ones. They further argue that a more robust production capacity could facilitate deeper cuts in the overall stockpile. The assumption is that US political leaders could more easily eliminate excess weapons knowing that they could rebuild the arsenal in an emergency. Some conference participants asserted that a responsive warhead production capability would help the United States make greater progress on its Nuclear Non-Proliferation Treaty (NPT) Article VI commitment to work toward nuclear disarmament because it would allow the United States to dispose of more warheads. In other words, future US deterrence policy would shift from relying entirely on actual warheads to relying on actual warheads plus a rejuvenated capacity to make more if needed.

Advocates of RRW maintain that the program would not only enhance the US nuclear infrastructure but would also improve its workforce by transferring skills from the past generation of nuclear designers and engineers to the generation of the future. One conference participant said that there is no time to waste because nearly all of the weapons specialists from the days of nuclear testing will be retired or dead within five years. Another participant said that the nuclear laboratories would face increasing difficulties in attracting talented candidates to the complex if they did not have challenging work, such as inventing and engineering, as opposed to simple caretaking.

A final argument made in favor of the RRW and a responsive infrastructure is that they could save money in the long term by reducing warhead main-

tenance and life-extension expenses and cutting storage and security costs by enabling the elimination of excess warheads. For example, one conference participant said that as confidence grows in the stockpile, the United States could move from seven warhead types down to four. The lack of a responsive infrastructure necessitates diversity of warhead types to hedge against the possibility that technical problems in one or two types could disable a substantial portion of the stockpile. National Nuclear Security Administration (NNSA) officials say that is why the initial RRW model is slated to replace the W76, which outfits submarine launched ballistic missiles. There are more W76s than any other type of warhead in the arsenal.

Still, it is generally acknowledged that the RRW program would increase costs in the near term because life-extension activities on existing warheads would continue in parallel for many years until there was sufficient confidence in RRWs—if there ever was—to allow the elimination of legacy warheads. NNSA officials project that the first RRW could be introduced into the arsenal before 2015, but that full-scale production would likely begin around 2025.

The Case Against RRW

Conference participants who were skeptical of or opposed to the RRW program questioned the arguments advanced by its supporters. In general, opponents see the arguments advanced by the national laboratories and administration officials as based on dubious assertions about the existing stockpile and debatable conclusions about the positive effects of RRW. They see the entire effort as motivated largely by the parochial desire of the nuclear complex and its laboratories to maintain or expand their annual funding above the \$6 billion to \$7 billion they have received annually in recent years.

A primary objection to the RRW program is that it is unnecessary because the existing stewardship effort is working and the stockpile is healthy. No technical problems that could render any warheads inoperable have been discovered since testing was stopped. Indeed, in 2006 the highly-esteemed JASON Group found that the effects of plutonium aging were not as severe as previously thought, bolstering confidence in the longevity of existing warheads. In its study, JASON validated research by the national laboratories that concluded that most plutonium pits have a minimum life span of 85 years.

Absent any current or foreseeable technical problems with the existing stockpile, RRW opponents see no justification for what they call “new warheads.” (RRW supporters assiduously avoid using that term, presumably because opponents of the Robust Nuclear Earth Penetrator and low-yield weapons blocked those projects by criticizing them as “new warheads.”) RRW supporters point out that the RRW is by law intended only to replicate, not expand, the military capabilities of the warheads it replaces. That said, documentation by the NNSA, which manages the nuclear complex, has stated that an advantage of a responsive infrastructure is that it would be able to produce warheads with specialized or enhanced military capabilities if necessary.

Some conference participants said that the RRW would increase, not decrease, the likelihood of renewed nuclear testing. The proposition of substituting untested warheads for those whose designs previously have been tested struck many as fanciful. They asserted that US military and political leaders will insist at some point that future RRW types be tested before swapping proven types out of the stockpile. RRW opponents point out that many advanced weapon systems have historically had so-called “birth defects” or bugs that have had to be worked out before they were brought into service.

Even if the RRW did not lead to the resumption of US nuclear testing, critics fear the program could seriously undermine the international treaty against testing and the broader nonproliferation regime. Although in 1999 the US Senate rejected the Comprehensive Test Ban Treaty (CTBT), nearly 180 states have ratified the accord and many in the United States hope that a future administration will make another attempt to ratify the treaty. A principal allure of the testing ban is that it is seen as a way to cap the nuclear arms race and prevent nuclear-armed states from adding more advanced weapons to their arsenals. Several foreign commentators and officials reportedly have suggested that if the United States produced a new class of warhead through the RRW program—even without testing—the United States would be perceived as circumventing a key objective of the CTBT, undercutting its value to other states and causing them to reevaluate their own arms control and nonproliferation commitments. Moreover, it is generally argued that a major US program to develop new weapons would hinder US diplomatic efforts to

convince other states to restrict their own or their neighbors’ nuclear programs, either for energy or weapons. A major complaint of many nonnuclear weapon states is that they are consistently pressed to forgo or forswear certain capabilities and technologies even though the nuclear-armed states do little to get rid of their weapons, in contravention to the spirit if not the letter of the obligations imposed on them by Article VI of the NPT.

The US Posture and the Nonproliferation Regime

Conference participants extensively discussed the degree to which the US nuclear posture matters to or influences the behavior of other states. Some held that what the United States does with its arsenal has negligible international ramifications; other participants asserted that foreign governments do care and act upon those concerns, sometimes to the detriment of US interests. Those of the latter opinion conceded that it can be difficult to draw direct correlations between US actions and those of other states, but that US policy broadly affects other countries’ willingness to follow the US lead or cooperate with the United States on nonproliferation.

One participant contended that nongovernmental groups complain more about US behavior than foreign governments do, particularly at the regular review conferences of the NPT held every five years. Others objected, noting that it was governments—like those of Malaysia and South Africa—which repeatedly rebuke the United States for not doing enough to meet its Article VI commitments. That dissatisfaction, in turn, sours the atmosphere and goodwill of the conference participants and impedes efforts to win broader support for US initiatives or measures intended to strengthen the treaty, as well as efforts to agree on a final consensus document at the end of each conference.

Other negative effects could be even less measurable, according to some participants. They noted that countries unhappy with US policies might simply elect not to join US-backed efforts to control proliferation, such as the voluntary Proliferation Security Initiative, which aims to interdict unconventional weapons or related materials and goods in transit. That initiative currently involves approximately 90 countries, less than half the membership of the NPT.

Although discussions about how the US posture affects other states usually focus on whether its

large stockpile size complicates nonproliferation, one participant suggested that if the United States reduces its stockpile too drastically, other countries, foes and friends alike, might be tempted to acquire or add nuclear weapons. Adversaries might see an opportunity to level the playing field with the United States, while allies might worry that a smaller US nuclear umbrella may no longer cover them, requiring them to seek their own protection.

Still, a majority of conference participants believed that downsizing US nuclear forces and reducing their salience in US security policy would yield positive dividends by improving the climate for arms control and nonproliferation. Some suggested the next president should adopt an agenda similar to that proposed by former US senior statesmen George Shultz, Henry Kissinger, William Perry, and Sam Nunn to reaffirm nuclear disarmament as a US goal. Specific measures that could be implemented include declaring that the sole purpose of US nuclear weapons is to deter or respond to nuclear attacks by others, increasing the amount of time needed to launch weapons, discarding preset targeting plans, unilaterally cutting US nuclear forces, eliminating battlefield weapons, and scrapping plans—such as the RRW—to explore new nuclear weapons.

Whether or how such US actions would sway the activities of other nuclear weapon possessors is uncertain and a subject of ongoing debate as the discussion outlined above reflects. Many of those states are working to modernize their arsenals, even as they trim their size. Russia's forces continue to decline in number, but at the same time Russia is adding several new Topol-M ICBMs every year and exploring the option of arming them with multiple warheads. The Kremlin also is developing a new strategic ballistic missile submarine model and a new class of missile for it to carry. Similarly, the United Kingdom has decided in principle to develop a new generation ballistic missile submarine, potentially extending its possession of a nuclear force for another 20 years, even while agreeing to cut its operational and reserve nuclear warhead holdings by 20 percent. France has pledged to cut its total nuclear stockpile to fewer than 300 warheads, but it is replenishing its forces with a new class of ballistic missiles. Meanwhile, China, India, and Pakistan continue to upgrade and strengthen their nuclear forces, while Israel's activities remain a secret.

Conclusion

The next US president will have major decisions to make about the future direction of the US nuclear posture, which largely has been stagnant since the end of the Cold War. There is a general agreement that US stockpile numbers should continue downward and that the salience of nuclear weapons in US security policy should be reduced. That sense has been reinforced by growing calls by senior US statesmen to work toward abolishing nuclear weapons. Yet, disputes exist over how the United States can safely and confidently change its nuclear posture without jeopardizing its security. Some suggest that revamping the nuclear stockpile and infrastructure is a necessary precondition, while others worry that such an approach will undermine global nonproliferation efforts and, thereby, US security. Alternatively, it is suggested that the United States takes more ambitious steps in reducing its nuclear weapons and diminishing the prospects that they will ever be used. Whatever path the president chooses will require the support of Congress; the current administration discovered this the hard way when Congress blocked several of its nuclear initiatives. Winning congressional support, however, depends on the emergence of broad consensus within the national security community about the role nuclear weapons should play in US security policy—consensus that has been elusive since the demise of the Soviet Union.

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