



NUCLEAR NOTES

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NUCLEAR POLICY IN A CHANGED WORLD

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The ending of the Cold War has led to some major changes in the balance of power that was previously dominated by the Soviet Union and the Western alliance. Unfortunately policymakers have not yet adapted quickly enough to these changing conditions.

The growing complexity caused by the proliferation of offensive capabilities enabling comparatively minor powers to threaten the security, and even the survival of more distant countries, necessitates a major rethink of security policies. In this much more complex environment, it is no longer acceptable to continue to consider specific aspects of policy individually, even though the temptation to do so is understandable. Unfortunately, too few leaders have the experience or the ability to develop the essential overarching concept into which the multiple components of a new policy have to fit.

For example, most of our military weapon systems, either offensive or defensive, were designed for a very different environment to the one we are now experiencing. The civilian and military staffs that develop, maintain, and operate these complex systems are keen to move forward to the next generation that might be more effective in this new environment. However, without an overarching policy for dealing with these very different and developing threats, it is premature to invest in individual components without first assessing how and where they will integrate into a new national security policy. A more open policy is required that will have to take into account innovative threats that have not been seen yet. This calls for a level of original thought well beyond what has been utilized until now.

The pressure to upgrade and modify individual systems becomes hard to resist, resulting in a bottom-up approach in which developments proceed in an uncoordinated manner. The result of delegating responsibility to individual program managers is that the products that finally become available may not meet the new national requirements.

The relevance of this to nuclear weapons lies in the fact that all our concepts of operations, and the warheads themselves were conceived during the Cold War. Now the genie is out of the bottle, and with more nations acquiring nuclear capabilities our policies have to adapt to this increased complexity. President Chirac was roundly criticized for suggesting we may have to live with a nuclear capable Iran, but for once he may have been correct. It is time to acknowledge that individual countries inevitably work to satisfy their own interests. Regional and international stability may not rank as highly as the desire to build up national pride by the acquisition of atomic weapons. This does not mean that compromises cannot be made to accommodate the needs of friends and allies, but at the end of the day national interests remain paramount.

These truths should have been clear from the outset, but the pious hope that diplomacy, treaties and agreements could restrain proliferation of weapon systems still has popular appeal. As a result, there has been little effort to formulate a new overarching policy of the role nuclear weapons might play in future security policy, and how they might contribute to deterrence, to pre-emption and even response to an attack on us. It is only after such complex issues have been evaluated fully that attention can be paid to the issue of whether new warheads should be introduced into the arsenal.

The theories of deterrence that were evolved during the Cold War have little applicability today. Deterrence relied heavily on each side's perceptions of the other, and with that understanding, efforts were made to enhance transparency. With the growth of potential adversaries, most of whom go to considerable lengths to maintain secrecy, the uncertainties multiply.

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PROJECT ON NUCLEAR ISSUES NEWS

PONI is pleased to announce the launch of a new initiative to foster an exchange on nuclear issues with our counterparts in India. In May, PONI Director Clark Murdock and PONI Coordinator Matt Squeri will lead a delegation of PONI members who will make presentations on nuclear issues to members of the Delhi Policy Group. If you would like to be considered for a spot as one of the three presenters in this delegation, please contact Matt Squeri at (202) 775-3286 or msqueri@csis.org.

We currently have no clear understanding of how to wield an effective threat to reduce the hostility of radical Islam, whether of national or terrorist origin. Warnings, we have made, that further steps along the path to acquisition of nuclear capabilities have been ignored. Because we currently have no plan to enforce such threats, we lose face merely by making them.

For several decades nuclear weapons were viewed as the ultimate deterrent to avoid open warfare between major nations. Now that such systems are no longer the preserve of the permanent members of the Security Council, the whole question of deterrence is thrown open. It now seems that the possession of one or more nuclear warheads by a minor nation provides them with disproportionate power. If indeed they become immune to attack by such acquisitions, many others are likely to try to follow their example.

An unpalatable response to such a postulate would be the threat or actual use of such warheads to stop further proliferation. But, this would have to be undertaken in the new environment in which western populations have become far more sensitive to civilian deaths during conflicts. A situation that is certain to be exploited by terrorist organizations and even governments willing to use human shields to dissuade against an attack of any sort.

If our nuclear warheads are no longer effective in a deterrent mode and are not likely to be used in a pre-emptive mode, their only use would be in retaliation for an attack on us. A dismal hypothesis, but illustrative of the need to reconsider all our policy options before decisions are made on whether we invest in new nuclear warheads, and what specific capabilities the new ones should possess.

At this point a further word of caution may be added. The existence of the Test Ban Treaty adds a further complication. Too often these days reliance is placed during R&D on the increasingly sophisticated capabilities of computer simulations. It cannot be denied that such simulations have their use, but they cannot replace the confidence that is derived from the final validation of a genuine test. Are we going to renounce the Treaty? Or do we change our policy to rely on unproven weapons?

A number of fundamental questions have been raised in this article in an attempt to stimulate discussion of these complex issues. We believe that the current attitude of radical Islam has rendered nuclear deterrence as we have practiced it obsolete. If this hypothesis is correct, clearly more emphasis will have to be placed on defensive measures to prevent nuclear offensive systems reaching our shores. We also have to decide what replaces deterrence and what role nuclear weapons will play in our future security policy.

POLICY ANALYSIS FOR DUMMIES – A SHORT GUIDE FOR THE REST OF US

It is easy to feel like a fish out of water when working in the policy arena. PONI members have an interest in nuclear policy, but most don't work in the field. Many work in the nuclear business as scientists, technologists and managers. And for those PONI members that don't have a degree in political science or international relations and have not spent years working in policy think tanks or government, it can take a while to acclimatize to PONI. It is all too easy to lapse into academic research habits. But policy analysis and advocacy is different from most university scholarship.

Richard Kugler observes that the best policy analysis – both an art and a science – is conducted by experts steeped in the substantive issues by practicing policy analysis tradecraft, rather than “hired guns” [1]. He contrasts it with academic inquiry, which he describes as empirical and detached, it being prescriptive and requiring engagement. They both share its objectivity, but policy analysis seeks to help government conduct its policy effectively rather than solely to describe and explain phenomena. Policy analysis is to scholarly research what engineering is to pure science. Therefore PONI members are well placed to contribute to nuclear policy thinking.

There are many approaches within the policy analysis and advocacy toolbox. These range from agenda setting, track-two conferences, to policy seminars, workshops and conferences. Policy development in government adds diplomacy and politics to these. All share the need for underpinning analysis that is required for written or presented material to inform the decision makers and their advisers. The following questions will need to be answered at some stage when developing or considering policy options[2]:

What goals does a particular policy seek to achieve, and why?

What activities will this policy carry out, what resources will it need, and what will they cost?

What are the reasons for believing that the policy's proposed actions will attain its goals?

What are the potential consequences of this policy, intended or otherwise?

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To what degree is the policy likely to be effective?

What will be its cost-effectiveness – the balance between resources expended and goals achieved?

What is the risk that the policy will fail or make the situation worse?

What are the risks that, even if it achieves its own aims, the policy will damage other goals in the arena, and perhaps do more harm than good?

All things considered, will this policy yield satisfactory achievement of its goals at an acceptable price?

How does it compare to other policy options that seek the same goals with different activities?

Would another policy be equally effective and cost less, or cost the same and achieve more?

If no clear winner emerges among several options, how can the tradeoffs be assessed?

On balance, which options make best sense?

ADVICE FROM PONI MEMBERS

We also asked some previous PONI STRATCOM presenters for their guidance for new PONI members considering submitting papers for future conferences. Here is a selection of their advice:

“For presentations, practice, practice, practice”

“Try out your ideas on colleagues and collaborate”

“Work on a subject new to you”

“Have a crisp thesis statement”

“Make clear how one's analysis is unique”

“Be clear about the organization and point of the paper or presentation”

“Be original/unique in your point of view and your object of analysis”

“Frame the problem or issue simply, up front, and in universal language and don't underestimate the importance of a "thesis" - even in a short talk or paper”

“Remember your audience - Don't overdo the jargon, acronyms, or "insider-speak”

“Capitalize on peer review”

“Say something with which Clark will heartily agree or disagree”

[1] Richard L. Kugler, *Policy Analysis in International Security Affairs* (Washington, DC: Center for Technology and National Security Policy, National Defense University, 2006)

[2] Ibid.

THE RELIABLE REPLACEMENT WARHEAD: RECENT DEVELOPMENTS

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On March 2, 2007, the National Nuclear Security Administration (NNSA) announced that the Nuclear Weapons Council (NWC) approved a design for a joint NNSA and U.S. Navy program to provide a replacement warhead for a portion of the nation's sea-based nuclear weapons. The design teams from NNSA's Lawrence Livermore and Sandia National Laboratories were selected to develop the Reliable Replacement Warhead (RRW) after it was determined that their design can be certified without requiring underground nuclear testing [1]. But, this announcement comes at a time of growing debate regarding the future direction of the RRW program.

Since its inception, the RRW program has made considerable progress. Congress first funded the RRW program in 2005, to "improve the reliability, longevity, and certifiability of existing weapons and their components" [2]. In the FY2008 Department of Energy budget for the RRW program, the NNSA requested \$88 million to move forward with preparations for a detailed design, conduct technical feasibility assessments, and develop an estimate of cost and schedule for the RRW. Today, the RRW program has become the principal mechanism for designing new warheads to replace the existing ones within existing weapons.

The NNSA expects the RRW program to meet the following goals: 1) Increase warhead security and reliability; 2) Develop replacement components that can be manufactured more easily; 3) Use materials that are more readily available and more environmentally benign; 4) Develop replacement components that provide high confidence in warhead safety and reliability; 5) Develop these components on a schedule that would reduce the need to conduct a nuclear test to address a reliability problem; 6) Reduce the cost and increase the responsiveness of the infrastructure; and 7) Increase confidence in the stockpile enough to permit reductions in non-deployed warheads [3]. Moreover, the RRW program is linked to transforming the nuclear weapons complex into a more responsive infrastructure as outlined by the Nuclear Posture Review and the NNSA's Complex 2030 plan [4].

In May 2005, the NWC authorized an 18-month design competition on the RRW. The two design teams – Los Alamos and Sandia New Mexico, and Lawrence Livermore and Sandia California – completed their preliminary designs in March 2006. In November 2006, the NWC announced that the RRW "is feasible as a strategy for sustaining the nation's nuclear weapons stockpile for the long-term without underground nuclear testing" [5].

The NNSA has now initiated a conceptual study for a second RRW design [6]. It is seen as essential to facilitate the handover of the stewardship of the U.S. stockpile to the post-testing era generation. It is also argued that modernization through the RRW program would enhance deterrence that has otherwise been eroded by a decade or more of benign neglect.

About the same time as the NWC announcement on the feasibility of the RRW concept, the results of two government studies by Lawrence Livermore and Los Alamos National Laboratories on plutonium aging were released. The studies determined that the majority of plutonium pits for most nuclear weapons have minimum lifetimes of at least 85 years. But, plutonium aging is only one of several variables that can affect overall system reliability. Other variables include the aging of high explosives and other organic components in the design, corrosion of uranium or plutonium components, or discovery of defects uncovered in surveillance programs [7].

The NNSA subsequently concluded that "the aging of plutonium in U.S. nuclear weapons will not affect reliability over the next several decades" [8]. The studies were peer reviewed by the JASON panel, an independent scientific panel, which released similar findings as that of the national laboratories – most plutonium pits types have minimum life spans of at least 100 years.

Critics of the RRW program contend that the plutonium-aging findings of these studies provide a credible rationale to slow or halt further development of the RRW. Indeed, RRW opponents maintain that the work of the Life Extension Program and the Stockpile Stewardship Program is sufficient to maintain the viability and reliability of the current stockpile. In addition, RRW critics have expressed concern that new warhead designs could lead to a resumption of nuclear testing. The U.S. has adhered to a nuclear testing moratorium since 1992, and although it is a signatory to the 1996 Comprehensive Test Ban Treaty (CTBT), the U.S. Senate rejected ratification of the treaty in 1999 and is generally considered unlikely to ratify the treaty in the foreseeable future.

Recent developments on the RRW program have certainly intensified the ongoing debate regarding U.S. nuclear modernization and the direction of U.S. nuclear weapons policy. In fact, a bipartisan proposal by former secretaries of state Henry A. Kissinger and George P. Shultz, former defense secretary William Perry, and former senator Sam Nunn recently called for U.S. leadership to further reduce its reliance on nuclear weapons, and work toward a world free of nuclear weapons.

Embracing this vision would involve a set of key steps, with which the U.S. is largely already engaged, including: reducing the global size of nuclear forces; halting the production of weapons-grade fissile material; eliminating forward-deployed short-range nuclear weapons; and securing U.S. ratification of the CTBT. Additionally, some Democrats in Congress are considering linking further support for the RRW with possible ratification of the CTBT. More realistically, at least one senior lawmaker has indicated that a firm re-commitment to the test moratorium would be sufficient for such a linkage.

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Calls to de-emphasize the role of nuclear weapons temper potential reactions to the growing salience of nuclear weapons resulting from the increasing threat of new nuclear-armed states. In October 2006, North Korea tested a nuclear device, and Iran seems determined to move in the same direction. Certainly, in a world of growing nuclear proliferation, the U.S. added emphasis to re-evaluating its nuclear weapons policy and the viability of the nuclear weapons complex.

The RRW program is a key enabler for the future of the U.S. nuclear stockpile and complex. Whether the United States will pursue a path towards full nuclear modernization is uncertain, but what remains certain is the emergence of new nuclear dangers that pose an increasing threat to U.S. national security and international stability.

[1] National Nuclear Security Administration, *Design Selected for Reliable Replacement Warhead*, March 2, 2007. http://www.nnsa.doe.gov/docs/newsreleases/2007/PR_2007-03-02_NA-07-06.htm.

[2] Jonathan Medalia, *Nuclear Weapons: The Reliable Replacement Warhead Program*, Congressional Research Service Report, December 14, 2006, p. 1.

[3] *Ibid.* p. 2.

[4] "Statement of Thomas P. D'Agostino, Deputy Administrator for Defense Programs, National Nuclear Security Administration, Before the House Armed Services Committee, Subcommittee on Strategic Forces," April 5, 2006.

[5] National Nuclear Security Administration, *Nuclear Weapons Officials Agree to Pursue RRW Strategy*, December 1, 2006. http://www.nnsa.doe.gov/docs/newsreleases/2006/PR_2006-12-01_NA-06-47.htm.

[6] George Lobsenz, "NNSA Pursuing Second RRW Design 'Concept,'" *Defense Daily*, February 12, 2007.

[7] National Nuclear Security Administration, *Studies Show Plutonium Degradation in U.S. Nuclear Weapons Will Not Affect Reliability Soon*, November 29, 2006. http://www.nnsa.doe.gov/docs/newsreleases/2006/PR_2006-11-29_NA-06-46.htm.

[8] *Ibid.*

LINKS OF INTEREST

Jonathan Medalia, "Nuclear Weapons: The Reliable Replacement Warhead Program," *CRS Reports for Congress*, (February 8, 2007). <http://www.fas.org/sqp/crs/nuke/RL32929.pdf>

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