

Comments on the 16 June 2005 Policy Paper
by the Senate Republican Policy Committee:
Maintaining Nuclear Deterrence in the 21st Century.

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June 2005

The United States Senate Republican Policy Committee recently published a Position Paper, *Maintaining Nuclear Deterrence in the 21st Century*.

[<http://rpc.senate.gov/files/Jun16NuclearMG.pdf>] The Federation of American Scientists (FAS) has written a five page response pointing out what we believe are some errors in logic, points of fact, and strategy. The main points of the response are:

- The position paper assumes nuclear weapons are the answer and then looks for the right question to ask. If the question is, “How should we best use nuclear weapons to deter aggression?” then the answer will, obviously, always include nuclear weapons. If we ask, “How should we best deter aggression?” the answer will almost never include nuclear weapons.
- The paper exaggerates the problems of warhead aging. Test indicate that the nuclear components of weapons (except tritium) are not changing in any significant way with age and the non-nuclear parts can be, and many are being, replaced. Research is continuing on the aging process so our understanding of aging is growing faster than the weapons age. Tritium reserves are adequate for decades.
- The paper exaggerates the need to destroy deep targets for deterrence. If deterrence depends on the “power to hurt” why should we allow the enemy to define their deep targets as the only way to hurt them? Deep targets are sometimes militarily important but even huge nuclear weapons cannot destroy them; we have no choice but to attack the entrances, which conventional weapons can do.
- The paper argues that we need a more *credible* deterrent. The credibility of a nuclear response to a nuclear attack is so high as to be near certain. It can’t get any more credible. In other cases, the logic is inescapable: we cannot make the use of nuclear weapon more credible unless we make the use of nuclear weapon more likely.
- The paper does not deal in specifics so it defaults to assuming extreme requirements to make certain that any *conceivable* mission is covered. For

example, the paper states, without saying why, that we need *increased* confidence in our nuclear weapons when confidence is already extremely high.

- While the Reliable Replace Warhead (RRW) program is not perfectly well defined, FAS agrees with the points made about the RRW.

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The United States Senate Republican Policy Committee recently released a position paper, *Maintaining Nuclear Deterrence in the 21st Century*¹ (hereafter referred to as *Maintaining*). The paper addresses the importance of maintaining a nuclear deterrent and suggests how this ought to be best accomplished. While the Committee makes several interesting and important points, it more often perpetuates mistakes and misconceptions about the role of nuclear weapons in general and the nature of nuclear deterrence specifically.

Deterrence

The paper's problems begin with the title. Because no one wants to be seen planning for the *actual* use of nuclear weapons, almost all discussion of nuclear weapons has to be couched in euphemistic terms of "deterrence." Nuclear weapons that are specifically designed for a surprise, preemptive first strike against enemy central nuclear forces are sold as enhancing "deterrence." (The 1980's Congressional debate on the MX missile is illustrative.) The paper is really about maintaining a nuclear strike capability, which could have multiple goals, including deterrence, which is perhaps the easiest to accomplish. But deterrence is not the only outcome of possessing nuclear weapons and it does not come about automatically.

The Committee cites the DoD dictionary's definition of deterrence as "the prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction."

This is a good definition but needs some elaboration. *Maintaining*—and, in fact, most discussions of nuclear deterrence—treats deterrence as some protective security currency that we can create, collect, and put in the bank. In fact, deterrence is the prevention of some *specific* action; admittedly, perhaps a wide range of possible specific actions, but specific actions nonetheless. As a general rule, we would make all nuclear policy and strategy discussions clearer if we required any talk about nuclear deterrence to state explicitly what, exactly, we are deterring. No one thinks nuclear weapons will deter every small aggression. At the opposite extreme, no one doubts that a nuclear attack on the United States would most likely be met with a nuclear response and such attacks are, thereby, effectively deterred. What are the intermediate cases of concern? Without at least sketching them out, it is difficult to have any focused debate on goals or determinants of nuclear deterrence.²

John Foster Dulles used a somewhat clearer description of deterrence: “The heart of the problem is how to deter attack. This, we believe, requires that a potential aggressor be left in no doubt that he would be certain to suffer damage *outweighing any possible gains from aggression.*”³ (Emphasis added.) This was written during the Cold War when the United States and the Soviet Union were wrestling for the steering wheel of world history. The potential gains from aggression were immense and we had to threaten immense damage to make seizing the wheel seem like a bad deal. Today, the stakes involved still determine the size of the deterrent needed but, as we face nuclear weapons states like China and Russia, the stakes are much smaller than they were during the Cold War. Indeed, deterring nuclear attack is relatively easy in these cases because almost no imaginable conflict would warrant the vast destruction of nuclear weapons. Deterrence might not be straightforward against states like North Korea. But few *nuclear* weapons are needed to deter the aggression of smaller nations because of America’s overwhelming conventional superiority. If we talk about specific actions that are to be deterred, it quickly becomes apparent that deterrence is indeed important but *nuclear* deterrence is relevant only in a tiny number of cases.

New Requirements for Nuclear Weapons

Maintaining posits three scenarios that could endanger deterrence and might, it argues, create a need for new nuclear weapons or some new capability:

1. **“U.S. nuclear deterrence will fade if the nuclear stockpile becomes unreliable due to weapons’ age or old design constraints.”** While this “if-then” statement is partly true, there is no sign that current American nuclear weapons have become or will become unacceptably unreliable. In fact, we can now meet reasonable standards for reliability. Constant inspection of our nuclear weapons gives us high confidence that they will perform as expected. The aging process of nuclear warheads is well understood after 60 years of experience and, most importantly, continuing research is increasing our understanding faster than the weapons are aging.

When most people think of reliability of a machine, they think simply about whether it will work or not. In a nuclear context, reliability refers not simply to whether the weapon will explode but whether it will explode with the expected force. The executive summary of *Maintaining* states that current and emerging threats require “increased confidence that nuclear weapons will work as designed.” (Why confidence must be increased, when it is already extremely high, is not clear. This is an effect of being vague about nuclear missions. Without specifics, we default to assuming extreme requirements to make certain that any *conceivable* mission is covered.) Far from needing increased confidence, we could even accept some lowered confidence. If the essence of deterrence is to prevent action by fear of the consequences, must we really be so precise about the consequences? If a weapon is designed for a yield of 450 kilotons, does anyone really believe that it becomes a less effective deterrent if it *might* produce a yield of only 400 kilotons? At the very least, the advocates of nuclear weapons have to make a case about where to draw the line and why. If we really set the goal that nuclear weapons must “perform *exactly* as designed,” (emphasis added) then no amount of effort or testing will be adequate. Perfection is both a pointless and a hopeless goal.

2. **“U.S. nuclear deterrence will fade if adversaries develop counters and defenses to static Cold War systems.”** The only counter or defense specifically mentioned by *Maintaining* is deep and hard targets. We must, apparently, be able to destroy these to deter. But the same paragraph says that deterrence depends on the “power to hurt,” quoting Schelling. What is not clear is how burying some assets out of reach of existing conventional weapons denies us the “power to hurt.” Why do we let the enemy decide what we must destroy to impose pain? No enemy can put all his power plants, oil refineries, industry, agriculture, population, communications centers, transportation hubs, and military forces underground. There will always be many things—even excluding innocent civilians—that we can destroy that can impose pain. It may be important to destroy some underground targets for war-fighting purposes but there are always a multitude of targets above ground that provide opportunities to exercise the “power to hurt” if the goal is to deter attack by threatening to impose costs.

Moreover, if we set ourselves the goal of being able to destroy every underground facility, we are doomed to fail. Later, the paper quotes Secretary Rumsfeld saying “new technology enables anyone in the world to buy dual-use technology and dig underground in rock twice the height of a basketball net and the full length of a basketball court every day.” This is true and, what’s more, any country that can dig under a hundred meters of hard rock can dig under a *kilometer* of hard rock. The technology is identical. And at those depths even nuclear earth penetrators with yields exceeding a megaton, that is seventy times the power of the Hiroshima bomb, cannot crush tunnels.⁴ There is also the problem of even knowing where the tunnels are once they have penetrated deep into the side of a mountain. Again, *Maintaining* sets an impossible goal.

3. **“U.S. nuclear deterrence will fade if adversaries know use of certain weapons is off the table.”** This argument is presented as a rationale for having a range of nuclear weapons to make the threat of nuclear weapons more credible, thereby increasing their deterrent value. No argument about nuclear weapons is more often advanced nor is more wrong. This is what I call the “more is less” argument. This is the logic:

1. By making nuclear weapons smaller and more versatile,
2. we make them more “usable,”
3. which increases the credibility of their use,
4. which increases their deterrent value,
5. which reduces the likelihood of aggressive action in the first place,
6. thereby actually *reducing* the overall likelihood of nuclear use.

Or so the argument goes. The argument seems counterintuitive and illogical because it is.

No one doubts that, if the United States were attacked with nuclear weapons, it would respond with nuclear weapons. Credibility is high and insensitive to the details of what types of nuclear weapons we have. If we are engaged in a minor, or even a major, conventional conflict such as in Afghanistan or Iraq, few can conceive of circumstances under which we would use nuclear weapons regardless of the types of nuclear weapons we have. Credibility is low and still insensitive to the details of what types of nuclear weapons we have. There might be, but is not necessarily, an intermediate level of crisis where nuclear use would be plausible only if we had certain types of weapons and new nuclear weapons might help deter that level of aggression. (History suggests otherwise.

At a time when we had weapons from multi-megaton monsters down to nuclear artillery, the United States encountered much conflict.)

To say that a nuclear weapon is more “usable” or “credible” can only mean that it is more likely to be used in a crisis, or at least everyone believes it is more likely to be used in a crisis. (Nuclear advocates who reject this assertion are welcome to try to devise some other definition that makes sense.) The reason nuclear weapons are an effective and credible deterrent against nuclear attack is that almost everyone believes that nuclear retaliation would be very likely in that case. The only way to increase the credibility of nuclear use in other situations is to increase the likelihood that they will be *used* in those situations. Simply having nuclear weapons that are available for use in midlevel crises—but in fact never actually using them in midlevel crises—does not increase the credibility of their use in midlevel crises.

For the “more is less” argument to hold, we have to believe that the greater deterrent effect reduces the likelihood of getting into a crisis more than enough to make up for the increase in the likelihood of using the weapon once in the crisis. A simple analysis⁵ shows that this is flatly implausible for several reasons. The primary reason is that more often than not crises occur not because of careful calculation of costs and benefits but because of miscalculation, misjudgment, blunder, incorrect information, and other human error. Thus, crises can occur regardless of deterrence. And once in the crisis, the greater “usability” of nuclear weapons can only mean a greater likelihood of using them. There is no special convoluted, upside-down “nuclear” logic that allows us to escape the connection between credibility of use and the likelihood of use.

Proponents of “usable” nuclear weapons would have us believe that we have not used nuclear weapons for sixty years but our enemies might be deterred from some military adventure because we might use them if they are small and “usable.” But success is self-defeating. If deterrence works—and especially if it does not work, and we know that it often will not—and we do not use nuclear weapons for sixty years, or a hundred years, is their use still plausible? Two hundred? Eventually people stop believing the bluff. There are only two ways to make the use of nuclear weapons plausible: The first is to threaten the highly unusual, unprecedented, nearly implausible use of nuclear weapons in response to a highly unusual, unprecedented, nearly implausible (that is to say, nuclear) attack. The second is to occasionally use them.

The Robust Nuclear Earth Penetrator

Maintaining rightly points out that the RNEP is not an entirely new nuclear weapon but a modification of existing weapons. It fails to point out, however, that the weapons being modified are huge bombs. The B-61 has a yield of 360 kilotons and the B-83 has a yield of 1.2 megatons, being the most powerful bomb left in the inventory. The B-83 will blow out a crater almost a thousand feet across, knock down buildings a mile away, raise a mushroom cloud tens of thousands of feet into the air, and spread deadly radioactive fallout hundreds of miles downwind.⁶

It is true that many targets around the world are out of reach of conventional bunker busters but this is exactly the situation we would expect to see. Nations around the world began digging underground in response to technical developments in precision-guided conventional weapons that made virtually every fixed target on the surface vulnerable. But digging costs some money and takes some time. So when would

someone stop digging? When they are out of reach of conventional weapons, plus a safety margin. Thus we see the situation we see today: an array of targets that are just barely out of reach of conventional weapons but that would be within reach of more powerful nuclear weapons. But to turn to nuclear weapons as a solution to this problem is just the fallacy of the last move. Just as digging was a response to precision conventional weapons, digging deeper will be the response to nuclear weapons. And the digger wins. It is easy to dig under a kilometer of hard rock like granite and at those depths even enormous megaton bombs will not create shock waves strong enough to reach down to the tunnels. Whether we like it or not, we are forced to go back to attacking the entrances to the tunnels, sealing them off, and that can be done more efficiently with conventional weapons.⁷

Conclusions

The policy paper *Maintaining* also discusses the Reliable Replacement Warhead and makes several good points. The discussion of deterrence, however, confuses deterrence and nuclear war-fighting. Latent nuclear war-fighting capability is one way to use nuclear weapons to deter but not the only way and virtually all war-fighting tasks are better carried out by conventional weapons.

Moreover, the entire paper *presupposes* the importance of nuclear weapons. Note that each of the scenarios above begins with “U.S. nuclear deterrence will fade if ...” Not that *deterrence* will fade, but that *nuclear* deterrence will fade. Nuclear deterrence has already faded dramatically in importance since the end of the Cold War, much to the benefit of the security of the United States. The United States has great interest in strengthening deterrence, but it has no interest in increasing, or even maintaining, its dependence on nuclear weapons for deterrence. Deterrence is the goal; nuclear weapons are just a tool and no longer the tool of choice. Our forward leaning conventional military posture depends on a world-wide de-emphasis of nuclear weapons.

During the height of the Cold War, we had nuclear-armed depth charges, air-to-air rockets, and a multitude of other weapons. We are at the end of a long process of de-nuclearizing these military missions. Not because of moral repugnance, nor because of political opposition, nor international pressure, but because precision conventional munitions offer militarily superior alternatives. If we start with the premise that we have nuclear weapons and we need to find a role for them, then we shall always find a role for them. But if we look at the military missions we need to perform, including deterrence and neutralizing tunnels, we will only rarely if ever fall upon nuclear weapons as the optimal solution.

¹ <http://rpc.senate.gov/files/Jun16NuclearMG.pdf>

² For a broader discussion of nuclear missions, see *Missions for Nuclear Weapons after the Cold War* at <http://www.fas.org/main/content.jsp?formAction=297&contentId=389>

³ John Foster Dulles, “Policy for Security and Peace,” *Foreign Affairs*, 32(3), 1954.

⁴ See the FAS report, *Earth Penetrating Weapons against Deep Targets* by following the link at <http://www.fas.org/main/content.jsp?formAction=297&contentId=399>

⁵ See the appendix of *Missions*, cited in footnote 2.

⁶ See the FAS bomb blast calculator at <http://www.fas.org/main/content.jsp?formAction=297&contentId=367> and the FAS fallout calculator at <http://www.fas.org/main/content.jsp?formAction=297&contentId=409>

⁷ FAS has prepared a video of the use of a nuclear bunker buster, available at <http://www.fas.org/main/content.jsp?formAction=297&contentId=401>. QuickTime is required to view the video but the QuickTime download is free and takes just 3-5 minutes with a fast connection.