The Nuclear Weapons Program of the United States and its Strategic Value in the Twenty-First Century

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Abstract

The United States' nuclear stockpile has been a contentious issue with regards to its size and active deployment since the end of the Cold War. However, nuclear deterrence is still necessary and a crucial factor in safeguarding the security of the United States from foreign threats and preventing nuclear proliferation in other states. The extension of the United States' nuclear umbrella to its allies also strengthens their allegiance and discourages rivals from committing acts of aggression. Aside from nuclear weapons deployment, the United States should modernize its nuclear stockpile and upgrade its delivery systems and retrofit them with new advanced technology – improving reliability and accuracy. These measures should be taken to fulfil national security priorities of the United States and its allies in the twenty-first century.

Since the end of the Cold War, there have been increasing calls to denuclearize the United States by anti-nuclear groups, such as Physicians for Social Responsibility and Greenpeace. Proponents of denuclearization suggest nuclear weapons increase the risk of international conflict, claiming the size of the United States' nuclear arsenal hinders non-proliferation efforts in foreign countries. However, recent nuclear tests in North Korea and the existence of unstable regimes, such as Iran and Pakistan, can undermine international peace and threaten regional or global nuclear war if they have access to nuclear weapons. These realities preserve the relevance of maintaining a nuclear arsenal for the United States to contain the threat of nuclear proliferation and the outbreak of international conflicts across the globe. During the Cold War, the presence of a large nuclear arsenal between the United States and the Soviet Union along with the extension of the United States' nuclear umbrella successfully prevented World War III. While the presence of nuclear weapons created extreme tension between the two superpowers, the fear of a global nuclear war pressured both sides to solve their differences through diplomacy. Thus, nuclear weapons are vital in protecting national security interests of the United States and maintaining global peace through nuclear deterrence and non-proliferation due to their strategic capabilities and the absence of alternatives.

Current US Nuclear Stockpile and Modernization Efforts

Currently, the United States still maintains one of the largest nuclear arsenals in the world with a total of 6,185 warheads, 1,750 of which are deployed and 2,050 warheads in storage as of 2019 (Kristensen & Norris, 2019). The United States also operates 400 Minuteman III Inter-Continental Ballistic Missiles (ICBM), Trident II Submarine-Launched Ballistic Missiles (SLBM), 44 operational B-52H Stratofortress, and 16 B-2A Spirit bombers to deliver nuclear warheads in the case of war (Kristensen & Norris, 2019). Under the New START (New Strategic Arms Reduction Treaty), which began in 2011, the United States and Russia are obligated to report their nuclear launchers inventory every six months with the end goal of reducing both parties' nuclear missile launchers by half in 2021, translating to 700 launchers for both parties. The Treaty also requires participants to limit deployed warheads to a maximum of 1,550. With these reductions, the Department of Defense (DoD) plans to close down 104 empty ICBM silos, mostly in Montana and Wyoming (Kristensen & Norris, 2015).

Aside from reducing the current stockpile to adhere to New START, the United States is planning to spend a trillion dollars over thirty years to maintain and modernize its nuclear arsenal and launchers to increase combat readiness and strategic capabilities (Doyle, 2016). This plan includes designing a new class of nuclear-powered ballistic submarine (SSBN), the Columbia-class, a nuclear-capable long-range bomber, the B-21 Raider, and Air Launched Cruise Missile (ALCM), which is currently designated as Long-Range Stand-off Weapon (LRSO). An LRSO is designed to be a cruise missile capable of being armed with the W88 nuclear warhead. The proposed design for the Columbia-class submarine will contain sixteen launch tubes, instead of the current twenty-four in Ohio-class submarines. This is done as part of a cost-saving effort and compliance with New START. As a stop-gap measure, the B-21 Raider will be equipped with the current B61-12 guided nuclear bomb before the new LRSO missile begins production (Doyle, 2016).

The DoD is also upgrading all of the fuses for submarine launched W76-1/Mk4A warheads with a "super-fuse", increasing its accuracy and lethality by roughly a factor of three. The main advantage provided by the new fuse allows the warheads to detonate on a flexible height above its target, instead of a fixed height on the older fuse, within the lethal volume of the target (Kristensen et all., 2017). With better accuracy, the US could reduce the number of warheads required to destroy a single target, improving overall offensive capabilities while adhering to the New START Treaty.

Another aspect of the modernization program is extending the service life for the current Minuteman III nuclear ICBM and designing a new ICBM. Under the DoD Ground-based Strategic Deterrent Program (GBSD), the United States allocated 62.3 billion dollars over a thirty-year period to replace the aging components of current Minuteman III ICBMs while also designing a new ICBM which uses the current infrastructure of Minuteman III but improves its design to enable it for both fixed-silo and mobile-missile launcher deployment. While the design improvement increases the cost of the program, the Pentagon believes it will save money in the long-term due to the adaptability of the new launchers and by avoiding expensive Life-Extension Programs (LEP) on its current nuclear launchers and warheads (Doyle, 2016).

Nuclear Weapons' Strategic Value on Global Politics and Non-Proliferation

One of the main points for maintaining a sizable nuclear arsenal is the strategic value it provides the United States to preserve its status as a superpower and maintain global peace. The United States' extension of its nuclear umbrella to its allies has successfully deterred potential adversaries without needing to deploy a significant number of conventional weapons and troops on foreign soil to safeguard its allies, as demonstrated during the Cold War (Fruhling & O'Neal, 2017). Security guarantees by the United States to Taiwan, Japan, and South Korea also successfully limited the scope of recent Chinese assertiveness in the South China Sea (Fruhling and O'Neal, 2017). This scenario shows an effective application of security guarantees backed by the threat of nuclear force, allowing the United States to deter foreign aggression without needing to place large numbers of its troops on foreign soil, thus respecting foreign countries' sovereignty and avoiding political repercussions.

The relative peace in the Cold War compared to previous centuries is an evidence that international crises and wars were minimized due to the large presence of nuclear arsenal between two global superpowers since the end of World War II (Jervis, 1988). In "The Political Effects of Nuclear Weapons: A Comment" (1988), Jervis argues that high-profile incidents, such as the Cuban Missile Crisis, are evidence of compromise between superpowers due to Mutually Assured Destruction (MAD) doctrine instead of resorting to war to achieve their goals, as witnessed in World War I and World War II. This phenomenon is most evident in the Cold War, where both the United States and the Soviet Union were deterred from absorbing one another's sphere of influence due to the risk of an all-out nuclear war if one side attacked the other (Jervis, 1988). The Cuban Missile Crisis is an example where nuclear weapons act as an equalizer between two opposing states, persuading the United States and the Soviet Union to address their security concerns through diplomacy. The resultant talks concluded with the United States and the Soviet Union removing short-range missiles from Turkey and Cuba respectively, addressing security concerns between the two countries. Without nuclear weapons, the two superpowers may not have had enough bargaining power to pressure

each other to peace talks, since both countries would be relatively immune to one another's offensive capabilities.

Aside from the destructive potential of nuclear weapons, their use would trigger costly political repercussions for both parties of a conflict, making diplomacy more attractive. For example, in World War II, many European countries decided fighting Nazi Germany was a better option than outright surrender since the cost of the war was considered acceptable and a chance to preserve their independence. However, in a hypothetical nuclear war, Jervis (1988) argues both parties will suffer "unacceptable casualties and destruction" and cause the extermination of human civilization. Hence, the presence of nuclear weapons increases the cost of war to unacceptable levels for nuclear-armed countries and their respective allies.

Alternatively, in cases where leaders are willing to risk war at all cost to achieve their goals, such as Adolf Hitler, nuclear weapons might not be enough to act as a deterrent. However, the possibility of such a scenario occurring is small in the era of nuclear weapons due to domestic pressure and the lingering possibility of nuclear annihilation for the aggressor itself (Mueller, 1988). In the modern era, Kim Jong Un's nuclear ambitions have been repeatedly challenged by the United States' nuclear arsenal, restraining even one of the most brazen leaders in the twenty-first century.

The extension of the United States' nuclear umbrella to its allies, namely NATO countries, prevented nuclear proliferation for both allied countries and adversaries. Allied countries are not incentivized to manufacture their own nuclear weapons due to the security assurance guaranteed by the United States, thus minimizing nuclear proliferation and possibilities of nuclear theft in these countries. Similarly, non-nuclear armed adversaries of the United States are less likely to pursue nuclear weapons due to their unwillingness to risk a nuclear war or conflict with the United States. One of the most noticeable cases is Iran's nuclear weapons program, where Iran agreed to temporarily suspend its program in 2003 in response to international pressure and fear of a United States invasion (Kroenig, 2016).

Nuclear Weapons Advantages Compared to its Alternatives

Critics of nuclear weapons point out improvements in accuracy and reliability of conventional weapons are sufficient in neutralizing targets threatening the United States. In Lieber & Press (2013), the authors argue that a large conventional explosive – or example, the GBU-57, have a destructive power of approximately 3-5 tons of TNT, while the least explosive nuclear weapons in the United States' inventory have an explosive power of 300 tons of TNT. Also, conventional weapons must score a direct hit or land "close enough" to destroy its targets while nuclear weapons provide a higher margin of error to successfully destroy their targets due to their higher destructive capability. The accuracy of conventional weapons can also be undermined by many factors, such as bad weather or the presence of jammers that erode the accuracy of guidance systems, resulting in a lower chance of direct hit. Despite this problem affecting both weapon systems, nuclear weapons' larger yield allows for greater margin of error, negating the chance of missing a target due to inaccuracies produced by faulty guidance systems. While conventional weapons are always an integral component of United States' national defense, their limitations necessitate the deployment of nuclear weapons.

Anti-nuclear critics claim US stockpiles of nuclear weapons undermine arms control objectives, risking international wars. However, this critique is flawed since wars

that happened in the Cold War until the present are mostly police actions aimed against unstable regional aggressors and civil wars, which are not between two states (Lieber & Press, 2013). Nuclear armed countries such as North Korea, Pakistan, and Israel check their larger adversaries' perceived aggression, such as the United States, India, and Iran respectively. If the United States abandons its nuclear arsenal and relies on conventional weapons and diplomacy while the opposing party has nuclear weapons, the balance of power would be disrupted, resulting in a national security dilemma for the United States and its allies in their responses to acts of aggression (Lieber & Press, 2013).

Nuclear weapons can also be used as an offensive weapon aimed at deterring a superior enemy from engaging in warfare or aggression for a relatively low cost. According to the Congressional Budget Office (CBO, 2019a), the cost of maintaining and upgrading current nuclear weapons amounts to 50 billion dollars per year from 2019-2028, including procurement of submarines, aircrafts, and missile defense. In contrast, the total cost of defense in fiscal year 2020 is 700 billion dollars and projected to increase by one percent every year till 2034 (CBO, 2019b). Nuclear-armed small countries have also demonstrated the cost-effectiveness of nuclear weapons. For example, the threat of Israel's "Samson Option", a last resort massive retaliation aimed to destroy countries participating in aggression against Israel, deterred neighboring adversaries, such as Iran, from annihilating it. At the beginning of the 1973 Yom Kippur War, Hersh (1991) claimed Israeli Prime Minister, Golda Meir, ordered eight nuclear armed F-4 jet fighters on 24-hour alert as a precaution if Israeli defenses collapsed. The news signaled by Soviet intelligence led to warnings to Syria and Egypt to limit the scope of their offensives. In Israel's case, due to its hostile neighbors, nuclear weapons have become a necessary deterrent to preserve its existence as a sovereign nation. In another case, North Korea's nuclear weapons deterred South Korea and the United States from deposing the ruling elite by promising nuclear retaliation on both should they attack. During the Cold War, the promise of all out nuclear war between NATO and the Warsaw Pact nullified the latter's larger conventional military personnel and hardware in Eastern Europe, successfully deterring war in Europe (Lieber & Press, 2013).

Conclusion

Despite the fall of the Soviet Union, nuclear weapons are still relevant in the twenty-first century to protect the United States from nuclear threat and maintain global peace. The deterrence provided by nuclear weapons has prevented large-scale wars between conflicting states and limited the scope of conflicts that do emerge. Because of this, the United States should adapt its strategy in tackling foreign threats using nuclear weapons to reduce the threat of foreign aggression through a bellicose stance on a second strike. With nuclear weapons being the primary tool to ensure national security, the United States should maintain its nuclear arsenal and improve its quality to maintain global peace, ensure national security, and halt nuclear proliferation across the globe.

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