U.S. Nuclear Modernization and the Nonproliferation Treaty

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14. ABSTRACT

The United States (U.S.) is at a crossroads with its nuclear weapons program. It has not developed a nuclear weapon in over thirty years. Its Minuteman III Intercontinental Ballistic Missile (ICBM) is fifty years old, and its newest stealth bombers and nuclear submarines are aging. Its adversaries are upgrading and modernizing their nuclear forces at astonishing rates. Hypersonic missiles, mobile ICBMs, nuclear torpedoes, stealth aircraft, and unstable regimes threaten U.S. security. U.S. nuclear deterrence is weakening, causing instability and vulnerabilities. The U.S. must modernize its nuclear force to thwart these threats and regain stability, but modernization could cause a domino effect of nuclear proliferation and the possible collapse of the Nonproliferation Treaty (NPT). The NPT strives to prevent proliferation, avoid the use of nuclear weapons, and elicit global disarmament. All NPT members have committed to eventual disarmament. Modernization might be viewed as breaking that commitment, causing members to lose faith in the organization. A failing NPT cannot prevent proliferation, and states will seek to acquire nuclear weapons to ensure their security. The U.S. can, and should, modernize while preserving the integrity of the NPT through its messaging. This message should emphasize the U.S.' commitment to the NPT and focus on the regimes that are creating instability. It should stress the U.S.' need to modernize to create stability, protect those under its nuclear umbrella, and deter nuclear war.

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INTRODUCTION

The United States (U.S.) is at a strategic crossroads in the arenas of nuclear arms control, stability, and deterrence. Any modernization of its current nuclear capabilities is invariably linked to each of these categories. While modernization is the logical pathway, it is fraught with political controversy. The U.S. is facing increased nuclear threats from China, Russia, and North Korea. China is expanding the size and capability of its nuclear force. It has developed hypersonic missiles, mobile Intercontinental Ballistic Missiles (ICBM), and could have one thousand nuclear warheads by 2030.[1] Russia has modernized its nuclear force to include hypersonic missiles, the RS-28 Sarmat missile, and the Poseidon Nuclear Torpedo. North Korea has developed a missile capable of reaching the U.S. mainland and is testing hypersonic missiles.[2] The U.S. has an aging nuclear force and a weakening deterrence against emerging threats. If the U.S. does not modernize its nuclear force, China and Russia will have a clear advantage which could prompt them to attack the U.S. before losing that advantage. Modernizing contradicts the Nonproliferation Treaty's (NPT) goal of disarmament. States will likely lose faith in the NPT and pursue nuclear arms to maintain security. It could also lead to an eventual collapse of the NPT. The political quandary is to deter Chinese, Russian, and North Korean threats while preserving the NPT.

It is time for the U.S. to modernize its nuclear force if it is to maintain credible deterrence, and it must tactfully communicate this essential modernization initiative during the 2022 NPT Review Conference to minimize the consequences. The message should focus on the

[1] John A. Tirpak, "China's Nuclear Development Outstrips Predictions; 1,000 Warheads by 2030," *Air Force Magazine*, November 2021, https://www.airforcemag.com/chinas-nuclear-development-outstrips-predictions-1000-warheads-by-2030/.
[2] "North Korea: What We Know About its Missile and Nuclear Programme," BBC News, accessed November 30, 2021, https://www.bbc.com/news/world-asia-41174689.

states that are destabilizing the nuclear environment with a stated objective of slowing their progress and preserving the NPT. First, the U.S. should modernize to create stability and maintain deterrence. Second, the U.S. should continue nuclear talks and negotiations with its adversaries. Finally, the U.S. should preserve the NPT through its messaging during the NPT Conference Review.

ARMS CONTROL

The theory of arms control was born during the early stages of the Cold War. The U.S. and Soviet Union feared devastating nuclear war, so they initiated talks and negotiations to stabilize the situation and eliminate exploitable disadvantages. Arms control strives for stability which creates deterrence and minimizes the threat of nuclear war. Preeminent arms control expert, Thomas Schelling, describes arms control as "all the forms of military cooperation among potential enemies that may reduce the risk of war."[3] To create stability, states may be required to decrease or limit their capabilities, or a weaker state allowed to increase capabilities to match its competitor. The goal is to minimize the advantages and disadvantages that can be exploited. This stability creates deterrence. It matters not how weak or strong one's nuclear force is, but that nuclear forces are of comparable capability among competitors. If the U.S. does not maintain stability with its competitors, it loses deterrence.

Successful arms control treaties can be derailed by verification. Verification is the only definitive way to ensure nuclear forces are comparable and adhering to treaties. University of Hamburg professors Kirchner and Oeter explain the purpose of verification "is to assure others

[3] Thomas C Schelling, "The Future of Arms Control," *Operations Research* 9, no. 5 (1961): 723, http://www.jstor.org/stable/166817.

that a state's declaration of nuclear material stocks is both correct and complete."[4] If one side is hiding numbers or capabilities, it harvests an advantage that creates instability. After World War One, Europe went through arms control measures to prevent future wars. Germany secretly built a military that allowed them to blitzkrieg through a much weaker Europe during World War Two.[5] Treaties and agreements are insufficient unless they include proper verification measures.

Successful arms control requires deterrence. Deterrence makes the consequences of an action outweigh the gains, causing a rational actor not to act. Herman Kahn from the RAND Corporation explains that any attack "will result in such a high probability of an unacceptable amount of damage being caused to some or all of the attacker's population, industry, or military forces, that our enemy must rule it out as a choice even if he is desperate or biased by wishful thinking."[6] The Soviet Union chose not to attack the U.S. with nuclear weapons during the Cold War because it feared U.S. retaliation. Deterrence requires capability, credibility, and communication.[7] Capability is the ability to strike back and inflict enough damage to outweigh the gains made by the adversary's initial attack. Credibility is the resolve and determination to counterattack if attacked. The attacker is not deterred if it does not believe its adversary is credible. Communication relays to the attacker "the capability and will to carry out the deterrent threat."[8] All three are required for deterrence to succeed.

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[4] Gerald Kirchner and Stefan Oeter, *Technical Limits of Verification and Their Implications for Treaty Design. In: Black-Branch J., Fleck D. (eds) Nuclear Non-Proliferation in International Law* (The Hague: T.M.C. Asser Press, 2016), 169.
[5] C. N. Trueman "Germany and Rearmament," *History Learning Site*, April 2015, https://www.historylearningsite.co.uk/world-war-two/causes-of-ww2/germany-and-rearmament.
[6] Herman Kahn, *Thinking About the Unthinkable in the 1980s* (New York: Simon and Schuster, 1984) 109.
[7] Robert P. Haffa Jr., "The Future of Conventional Deterrence: Strategies for Great Power Competition," *Strategic Studies Quarterly* 12, no. 4 (Winter 2018): 94-115, https://www.jstor.org/stable/26533617.
[8] Kirchner and Oeter, *Technical Limits of Verification*, 97.

Nuclear deterrence requires second-strike capability. This is the ability to withstand a nuclear attack and maintain the weapons, platforms, and control measures to strike back.[9] If a country's nuclear strike capability is destroyed in the initial attack, it does not possess a second-strike capability. ICBMs, the first leg of the U.S. nuclear triad, are fixed sites that can be destroyed in an initial attack. Submarines and bombers, the remaining legs of the nuclear triad, are second-strike capable as they cannot be located and destroyed during the initial attack.

NPT HISTORY

Cold War stability was threatened by the global spread of nuclear weapons. The NPT was the solution to containing proliferation. The NPT, formed in 1968, is a treaty signed by nuclear-weapon states (NWS) and non-nuclear-weapon states (NNWS). The Department of State explains, "The final treaty involved a number of provisions all aimed at limiting the spread of nuclear weapons technology."[10] Nuclear NPT members agreed to "inhibit the spread of nuclear weapons" and "commit to pursue general and complete disarmament."[11] NNWS agreed to "forgo developing or acquiring nuclear weapons."[12] The NPT allows all members to assist and develop peaceful uses of nuclear technology.

The NPT has experienced several failures. India, Pakistan, and Israel have developed nuclear weapon technology and are assumed to possess nuclear weapons.[13] This is not a direct failure of the NPT because those countries never signed the treaty, but the NPT failed to prevent

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[9] Joseph Siracusa, *Nuclear Weapons- A Very Short Introduction* (Oxford: Oxford University Press, 2008), 63.
[10] "The Nuclear Non-Proliferation Treaty (NPT), 1968," Office of the Historian, accessed January 14, 2022, https://history.state.gov/milestones/1961-1968/npt.
[11] "Timeline of the Nuclear Nonproliferation Treaty (NPT)," Arms Control Association, accessed January 3, 2022, https://www.armscontrol.org/factsheets/Timeline-of-the-Treaty-on-the-Non-Proliferation-of-Nuclear-Weapons-NPT.
[12] "Timeline of the Nuclear Nonproliferation Treaty."
[13] "Timeline of the Nuclear Nonproliferation Treaty."

this proliferation. The NPT added North Korea in the 1980s, but it withdrew in 2003.[14] North Korea has tested nuclear weapons and developed missiles capable of delivering them.[15] Iran is an NPT NNWS but has developed uranium fuel enrichment to sixty percent, much higher than the three to five percent required for commercial use.[16] Additionally, its stockpile is nearly ten times the agreed-upon limit, strongly suggesting Iran is developing nuclear weapons versus peaceful means.[17] Iraq joined the NPT in 1969 but was secretly developing nuclear weapons in the 1980s, discovered during the 1991 Gulf War.[18] These examples demonstrate the pitfalls of the NPT, and the U.S. should not sacrifice its security to sustain the NPT.

The NPT has also experienced successes. Taiwan gave up its secret nuclear weapon program in the 1980s.[19] In the 1980s there was fear of an arms race between Argentina and Brazil, but they both agreed to pursue only peaceful nuclear technology.[20] South Africa had developed nuclear weapons in the 1980s but chose to destroy them and join the NPT in 1993.[21] These states would have nuclear weapons without the NPT, and this reality could have resulted in future regional proliferation. The NPT enhances U.S. national security but does not guarantee it.

EMERGING THREATS

[14] "Timeline of the Nuclear Nonproliferation Treaty."
[15] Mary Beth D. Niktin, *North Korea's Nuclear Weapons and Missile Program*, CRS Report No. IF10472 (Washington, DC: Congressional Research Service, 2021), https://crsreports.congress.gov/product/pdf/IF/IF10472/21.
[16] Shivani Singh, "Will Iran Leave the NPT?," *Institute of Peace and Conflict Studies*, June 2021, http://www.ipcs.org/comm_select.php?articleNo=5771.
[17] "Iran Nuclear Deal: Why Do the Limits on Uranium Enrichment Matter?," BBC News, accessed November 30, 2021, https://www.bbc.com/news/world-middle-east-48776695.
[18] "Timeline of the Nuclear Nonproliferation Treaty (NPT)."
[19] "Iran Nuclear Deal."
[20] "Iran Nuclear Deal."
[21] Sakshi Tiwari, "Destroying Its Own Nuclear Arsenal — Meet the Only Country in the World That 'Built & Buried' Its Nukes," *The EurAsian Times*, January 2022, https://eurasiantimes.com/meet-country-in-the-world-that-built-demolished-nuclear-weapons/.

China, Russia, and North Korea and developing advanced nuclear weapon technology that the U.S. cannot ignore. Hypersonic Missiles are the newest and most survivable missiles being developed. They are faster than cruise missiles but slower than ICBMs. Hypersonic cruise missiles use jet propulsion to reach speeds over Mach-5.[22] Hypersonic glide vehicles (HGV) leave the atmosphere, and upon reentry, they ride supersonic shock waves to glide to the target at speeds above missile defense capabilities.[23] The low-gliding altitude does not allow enough time for current air defenses to identify, track, and intercept.[24] As opposed to an ICBM's set trajectory, an HGV's flight path is not predictable.[25] Its launch is detectable, but maneuverability allows it to change its flight path, complicating the ability to predict the target or intercept the missile. This inability to predict the target removes the ability to counter with ICBMs before they are destroyed. HGVs have created instability against U.S. ICBMs.

China's nuclear force is much smaller than the U.S.' force; however, it is advancing rapidly. The Pentagon suspects it has two hundred nuclear warheads and will exceed one thousand by 2030.[26] China tested an HGV that circled the globe in August 2021.[27] It is building hundreds of ICBM silos and moving to a launch-on-warning status and is increasing its nuclear submarine and H-8 bomber force.[28] The Pentagon reports China is developing a strategic, nuclear-capable stealth bomber.[29] These developments are commensurate with the People's

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[22] "Hypersonic Missiles: What Are They and Can They Be Stopped?," PartYard Military Division, May 2019, accessed January 3, 2022, https://partyardmilitary.com/hypersonic-missiles-what-are-they-and-can-they-be-stopped/.
[23] "Hypersonic Missiles."
[24] Blake Stilwell, "Why Russia's Hypersonic Missiles Can't Be Seen on Radar," *Military.com*, 2022, https://www.military.com/equipment/weapons/why-russias-hypersonic-missiles-cant-be-seen-radar.html.
[25] Kelley M. Sayler and Amy F. Woolf, *Defense Primer: Hypersonic Boost-Glide Weapons*, CRS Report No. IF11459 (Washington, DC: Congressional Research Service, 2021), https://sgp.fas.org/crs/natsec/IF11459.pdf.
[26] "China's Nuclear Development Outstrips Predictions."
[27] "China's Nuclear Development Outstrips Predictions."
[28] "China's Nuclear Development Outstrips Predictions."
[29] John A. Tirpak, "Report: New Stealth Aircraft and Capabilities in China's Air Arms Eroding U.S. Advantages," *Air Force Magazine*, November 2021, https://www.airforcemag.com/report-new-stealth-aircraft-and-capabilities-in-chinas-air-arms-eroding-u-s-advantages/.

Liberation Army's objective of becoming a world-class military by 2049.[30] Although the U.S. has the advantage in numbers, that advantage is diminishing, and the U.S. finds itself at a technological disadvantage.

Russia and the U.S. have comparable numbers, but Russia has a technological advantage. Russia is estimated to have 6,257 nuclear warheads and 1,458 strategically-deployed warheads.[31] They have developed a hypersonic missile capable of Mach-20.[32] Their nuclear-powered and nuclear-armed Poseidon Torpedo has unlimited range and, when detonated, creates tsunamis to destroy coastal cities. Russia's new RS-28 Sarmat ICBM carries ten large warheads, sixteen small warheads, twenty-four HGVs, and countermeasures capable of overwhelming air defenses.[33] Russia is capped by treaties, but its modernization has created instability.

North Korea is not an immediate threat to the U.S., but it is advancing its nuclear program. In 2017, North Korea tested an ICBM capable of reaching New York City.[34] It successfully tested a thermonuclear warhead and has conducted several hypersonic missile tests.[35] It revealed a submarine-launched ballistic missile in January 2021.[36] North Korea has not tested a warhead on a delivery system, but the U.S. should assume it is capable. China, Russia, and North Korea have all developed second-strike capable, road-mobile ICBMs.[37] These

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[30] Michael E. O'Hanlon, "What the Pentagon's New Report on China Means for US Strategy-Including on Taiwan," *Brookings*, September 2020, https://www.brookings.edu/blog/order-from-chaos/2020/09/04/what-the-pentagons-new-report-on-china-means-for-u-s-strategy-including-on-taiwan/.
[31] "Nuclear Weapons: Who Has What at a Glance," Arms Control Association, accessed January 10, 2022, https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.
[32] Alexander Bratersky, "Two Down, More to Go? With Hypersonic Weapons Already in the Field, Russia Looks to Improve Features," *Defense News*, March 2021, https://www.defensenews.com/global/europe/2021/03/15/two-down-more-to-go-with-hypersonic-weapons-already-in-the-field-russia-looks-to-improve-features/.
[33] Dave Mosher, "Putin Has Touted an 'Invincible' Nuclear Weapon That Really Exists-Here's How It Works and Why It Deeply Worries Experts," *Business Insider*, March 2018, https://www.businessinsider.com/how-satan-2-icbm-nuclear-weapon-works-2018-3.
[34] "North Korea: What We Know About its Missile and Nuclear Programme."
[35] "North Korea: What We Know About its Missile and Nuclear Programme."
[36] "North Korea: What We Know About its Missile and Nuclear Programme."
[37] Shaquille H. James, "Missile Woes: Why North Korea's New (Monster) ICBM May Signal Significant Shortcomings in North Korea's Nuclear Deterrent," *Air University*, August 2021,

developments provide clear advantages for U.S. adversaries, creating instability and weakening U.S. deterrence.

U.S. MODERNIZATION

The U.S.' nuclear force is aging and is no longer capable. It has not developed a new weapon since the Cold War. U.S. Strategic Command's top priorities are providing strategic deterrence and delivering a decisive response.[38] The U.S. requires modern capabilities to accomplish these priorities. It is already modernizing parts of its nuclear force. At the 2019 House Armed Services Subcommittee, then Commander U.S. Strategic Command, General Hyten, reported the U.S. is developing non-nuclear hypersonic weapons, Ground-Based Strategic Deterrent to replace the Minuteman III, low-yield nuclear warheads, the B-21 bomber, and Columbia Class submarine.[39] These upgrades help, but the U.S. should develop survivable weapons to maintain a capable deterrent.

Minuteman III ICBMs are the first weapon the U.S. should replace. Current U.S. ICBMs are not survivable against a nuclear attack, and the missiles can be intercepted. The U.S. first deployed the Minuteman III in 1970, and the seven-billion-dollar upgrade in 2015 will keep it in service until 2030.[40] ICBMs present the triad's timeliest response with crews sitting alert at every site. However, these fixed-site ICBMs present the opportunity for an adversary to locate and destroy. Another weakness is that ICBMs fly a fixed trajectory, making them vulnerable to

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https://www.airuniversity.af.edu/JIPA/Display/Article/2743541/missile-woes-why-north-koreas-new-monster-icbm-may-signal-significant-shortcomi/.

[38] "Mission," US Strategic Command, accessed January 21, 2022, https://www.stratcom.mil/About/Mission/.

[39] *The Fiscal Year 2021 Budget Request for Nuclear Forces and Atomic Energy Defense Activities*, House Armed Services Committee, 116th Cong., 2nd sess., March 3, 2020.

[40] "AFNWC Celebrates 50 Years of Minuteman III Grit in 2020," Air Force Nuclear Weapons Center, accessed January 14, 2022, https://www.afnwc.af.mil/About-Us/History/Minuteman-III-50th-Anniversary-Year/.

radar tracking and interception.[41] The Minuteman III is a sufficient first-strike weapon against weaker states, but it is not a second-strike weapon or deterrent against advanced NWS. The U.S. should develop mobile ICBMs and nuclear HGVs.

U.S. Air Force bombers, and their weapons, are aging and need to be modernized. The B-52 first flew in 1954 and is expected to be in service until 2050.[42] It carries a mix of nuclear cruise missiles and bombs. Bombs require the vulnerable B-52 to overfly the target, exposing it to lethal air defenses. Retired Air Force Colonel Gunzinger reports B-52s and current U.S. cruise missiles are not survivable against modern air defenses.[43] Cruise missiles allow stand-off capability, but its newest cruise missile, the AGM-129, is thirty-seven years old.[44] The B-2 is more survivable, but its twenty-five-year-old stealth technology is aging, and the Air Force has only twenty B-2s.[45] It carries a combination of nuclear bombs and the AGM-129 cruise missile.[46] The B-21 is the newest Air Force stealth bomber, projected to be in service by the mid-2020s and replace the B-2.[47] These bombers possess a second-strike capability, provided the aircraft or missile can evade air defenses. The U.S. should continue its progress on the B-21 but also develop nuclear hypersonic cruise missiles.

The U.S. also needs to address modernization of its sea-based leg of the triad. The Navy's fourteen Ohio Class submarines are least detectable U.S. nuclear platform but were

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[41] Richard L. Garwin, "Technical Aspects of Ballistic Missile Defense," *APS Forum on Physics and Society* 28, no.3 (July 1999), https://rlg.fas.org/garwin-aps.htm.
[42] "B-52H Stratofortress," Air Force Nuclear Weapons Center, accessed January 14, 2022, https://www.afnwc.af.mil/About-Us/Fact-Sheets/Article/2060293/b-52h-stratofortress/.
[43] Mark Gunzinger, "Range and Flexibility," *Air Force Magazine*, December 2020, https://www.airforcemag.com/article/range-and-flexibility/.
[44] "AGM-129A Advanced Cruise Missile," Air Force, accessed January 10, 2022, https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104543/agm-129a-advanced-cruise-missile/.
[45] "B-2 Spirit," Air Force, accessed January 10, 2022, https://www.af.mil/About-Us/Fact-Sheets/Display/Article/104482/b-2-spirit/.
[46] "B-2 Spirit Stealth Bomber," AirForce Technology, accessed January 14, 2022, https://www.airforce-technology.com/projects/b2/.
[47] Jeremiah Gertler, *Air Force B-21 Raider Long-Range Strike Bomber*, CRS Report No. R44463 (Washington, DC: Congressional Research Service, 2021), https://sgp.fas.org/crs/weapons/R44463.pdf.

developed in 1981.[48] One submarine can underwater-launch twenty-four Trident II missiles, at a range of seven thousand miles, with eight reentry vehicles per missile, for a total of 192 nuclear warheads.[49] Although highly devastating, the Trident II is 1990 technology.[50] The Navy will replace Ohio Class submarines with the Columbia Class in the 2030s.[51] The Navy has addressed the need to replace its second-strike submarines but has not addressed aging weapons. It should develop hypersonic submarine-based nuclear missiles.

The U.S. is developing new bombers and nuclear submarines, but these platforms require new weapons. Every weapon has weaknesses, and China and Russia have had 30 years to identify and exploit weaknesses of current U.S. weapons. If the U.S. is unwilling to modernize its nuclear force, it becomes obsolete and loses credibility and capability. In additional to new weapons, the U.S. must develop sophisticated early-warning detection and defense against stealth aircraft, stealth missiles, and HGVs. It must also ensure its command-and-control systems are secure and protected against cyber intrusion. The U.S. is modernizing delivery platforms and warheads, but it must overhaul the entire triad to keep pace with its adversaries. This will provide deterrence, maintain stability, and reduce the potential of nuclear war.

Concurrently, the U.S. should pursue talks and treaties with China, Russia, and North Korea. The U.S. already has a mature arms control relationship with Russia. In 2021, the U.S. and Russia extended the New START Treaty for five years.[52] However, China and North Korea

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[48] Sebastien Roblin, "Armed with Nuclear Missiles, the Ohio-Class Submarine is a Real Killer," *The National Interest*, May 2021, https://nationalinterest.org/blog/reboot/armed-nuclear-missiles-ohio-class-submarine-real-killer-184571.
[49] Roblin, "Armed with Nuclear Missiles."
[50] "Trident II D5 Fleet Ballistic Missile," Lockheed Martin, accessed January 14, 2022, https://www.lockheedmartin.com/en-us/products/trident-ii-d5-fleet-ballistic-missile.html.
[51] H. I. Sutton, "New Submarines Compared: Columbia Class, Dreadnought Class and SNLE-3G," *Naval News*, November 2021, https://www.navalnews.com/naval-news/2021/11/new-submarines-compared-columbia-class-dreadnought-class-and-snle-3g.
[52] Emma Farge, "U.S. Says China is Resisting Nuclear Arms Talks," *Reuters*, May 2021, https://www.reuters.com/world/china/us-says-china-is-resisting-bilateral-nuclear-talks-2021-05-18/.

do not have a robust arms control history with the U.S. Although officials have met, nuclear talks have not been productive. Politico surmises that U.S. and Chinese negotiations are not possible until China has achieved nuclear parity with the U.S. and Russia.[53] The U.S. and North Korea have engaged in many negotiations since North Korea's exit from the NPT, but little progress has been made. Nonetheless, the U.S. should continue talks with China and North Korea. Even unproductive talks build relationships and a culture of communication. The Soviets and Americans required forty-four years to agree on the START Treaty, and today's rivals may eventually compromise.

The U.S. should not delay its modernization while attempting to negotiate arms control measures. Simultaneously modernizing while negotiating may provide incentives for U.S. adversaries to compromise. In the 1980s, President Reagan aggressively pursued anti-ballistic missile systems, which the Soviets disapproved, while simultaneously negotiating the START Treaty. Harvard Law describes this as the best alternative to a negotiated agreement (BATNA). Negotiators, utilizing BATNA "will be well-positioned to stand firm when confronted with difficult counterparts and be willing to walk away from a subpar deal."[54] During negotiations, the U.S. must simultaneously pursue its best course of action in the event negotiations fail, and that course is modernization.

NPT CONFERENCE REVIEW

[53] Rose Gottemoeller, "Lessons from the Cold War on Preventing a U.S.-China Arms Race," *Politico*, November 2021, https://www.politico.com/news/magazine/2021/11/23/biden-xi-cold-war-nuclear-arms-race-523248.
[54] Katie Shonk, "Dealing with Difficult People? Negotiation Lessons from Ronald Reagan," *Harvard Law School*, January 2022, https://www.pon.harvard.edu/daily/conflict-resolution/dealing-with-difficult-people-lessons-from-ronald-reagan/.

The U.S. should make every possible effort to ease the modernization concerns of NPT members during the NPT Conference Review. This message should highlight the U.S. is not increasing its warhead stockpile but taking the minimum steps required to preserve stability and prevention of nuclear war. The U.S. message should focus on China, Russia, and North Korea. These states are defying the NPT. The U.S. should convey its support of NPT objectives, and desire for future disarmament, but these states are creating a threat to everyone's security. They are forcing the U.S. modernization efforts. The U.S. will continue pursuing arms control treaties, but it cannot allow instability during lengthy, decades-long, negotiations.

The U.S. has an obligation to protect its allies and ensure they do not seek nuclear weapons. The U.S. has thirty allies and partners under its nuclear umbrella and is responsible for providing their deterrence.[55] It should explain to all NPT members the importance of modernization for stability. Weak U.S. deterrence could force other countries to pursue their own deterrence. This creates more NWS, which threatens the existence and objectives of the NPT. If China, Russia, and North Korea continue strengthening their nuclear forces, U.S. modernization is in the NPT's best interest.

The U.S., and its allies under its nuclear umbrella, face a devastating nuclear threat if it does not maintain a capable and credible deterrent. The NPT failed to prevent North Korea, Iran, Iraq, Israel, North Korea, and Pakistan from pursuing nuclear weapons and did not prevent China and Russia from modernizing their weapons and delivery systems. The U.S. should not rely solely on the NPT for its nuclear national security, but the NPT enhances its security, and preserving the NPT is in the U.S.' best interest.

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[55] Patty-Jane Geller, "U.S. Nuclear Weapons Capability," *Heritage.org*, October 2021, https://www.heritage.org/military-strength/assessment-us-military-power/us-nuclear-weapons-capability.

COUNTERARGUMENT

Some argue that the U.S. nuclear force is sufficient because the Minuteman III missile lifetime can be extended, China's stockpile is smaller than the U.S.', and modernization is not a useful bargaining chip.[56] However, the Minuteman III is fifty-two years old and no longer has a stabilizing effect. Effective arms control measures call for the U.S. to upgrade its ICBMs or China and Russia to downgrade theirs to maintain stability. If China and Russia are unwilling to cease ICMB advancements, the U.S. must upgrade. China has a smaller nuclear stockpile, but they are increasing it to match or exceed U.S. and Russian stockpiles. China's nuclear weapon delivery capabilities currently outmatch the U.S.'. The purpose of modernization is not to gain a bargaining chip. Modernization creates stability and deters attacks. It is a bonus if an adversary is willing to negotiate after U.S. modernization. The current U.S. nuclear force has successfully deterred its adversaries for the last thirty years, but the environment and technology have significantly changed. The U.S. must update its capabilities to preserve its deterrent.

A second counterargument is U.S. modernization creates discontent among NPT members. The Congressional Budget Office estimates the cost of modernization at 551 billion dollars over ten years.[57] An NPT goal is the prevention of nuclear war and future disarmament. The U.S. pouring billions of dollars into its nuclear force can be interpreted as moving in the wrong direction. Hans Kristensen, Director of the Nuclear Information Project, states, "perpetual nuclear modernization appears to undercut the promises made by the five NPT nuclear-weapon

[56] "Responses to Common Criticisms of Adjusting U.S. Nuclear Modernization Plans," Arms Control Association, accessed January 21, 2022, https://www.armscontrol.org/issue-briefs/2021-05/responses-common-criticisms-adjusting-us-nuclear-modernization-plans#claim5.

[57] "Projected Costs of U.S. Nuclear Forces, 2021 to 2030," Congressional Budget Office, accessed January 21, 2022, https://www.cbo.gov/publication/57240#:~:text=CBO%20projects%20that%20about%20%24188,nuclear%20weapons%20and%20delivery%20systems.

states."[58] Discontent could push NNWS into pursuing nuclear weapons to ensure security as India, Pakistan, and Israel have. It could cause states to leave the NPT as North Korea has. The worst-case scenario is the dissolution of the NPT. Acheson and Pytlak of the European Leadership Network foresee NPT collapse due to NWS' failure to negotiate multilateral disarmament agreements and spending billions of dollars to modernize.[59] However, the U.S.' message during this year's NPT Conference Review should subdue concerns about modernization and preserve the NPT. If that fails, the alternative to modernization, destabilization with the elevated threat of nuclear war, is worse than the potential collapse of the NPT.

CONCLUSION

Arms Control measures created stability and successfully deterred U.S. and Soviet Union nuclear war. The NPT minimized the proliferation of nuclear weapons, although it was not entirely successful. After the Cold War, and the collapse of the Soviet Union, the U.S. no longer faced a credible or capable nuclear threat. It significantly decreased its arsenal and its focus on the nuclear mission. Aside from smaller states developing weapons for regional deterrence, the U.S. was comfortable with the status quo and has not developed a nuclear weapon or missile for over thirty years. The NPT has been largely successful during this time, except for North Korea. Recent actions by China and Russia have broken this status quo. These countries are developing highly advanced weaponry and delivery systems to evade U.S. defenses. This is creating

[58] Hans M. Kristensen, "Nuclear Weapons Modernization: A Threat to the NPT?," *Arms Control Association*, https://www.armscontrol.org/act/2014-05/nuclear-weapons-modernization-threat-npt.
[59] Ray Acheson and Allison Pytlak, "The Nuclear-Armed States Are Creating the Conditions for NPT Collapse," *European Leadership Network*, May 2018, https://www.europeanleadershipnetwork.org/commentary/the-nuclear-armed-states-are-creating-the-conditions-for-npt-collapse/.

dangerous instability for the U.S. and its allies. To preserve the NPT while modernizing, the U.S. should reaffirm its commitment to NPT objectives, pursue talks and negotiations with its rivals, and communicate U.S. modernization as the necessary arms control measure to reestablish stability. The U.S. should reiterate that it has not developed a new weapon in over thirty years, demonstrating its commitment to the NPT. This messaging should elucidate the hard requirement for U.S. modernization and circumvent political upheaval within the NPT. The U.S. and the NPT should collectively pressure China and Russia to cease the escalation of advanced nuclear weaponry. Theodore Roosevelt said, "Speak softly, and carry a big stick."[60]. The U.S. should continue diplomatic talks and negotiations to slow the advancement of nuclear weapons, but it needs a capable and credible nuclear force to deter attack if talks fail.

[60] "Sep 2, 1901 CE: Big Stick Diplomacy," National Geographic, accessed January 26, 2022, https://www.nationalgeographic.org/thisday/sep2/big-stick-diplomacy/.

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