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Nuclear Deterrence and Arms Control Agreements between three Peer Adversaries

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NUCLEAR DETERRENCE AND ARMS CONTROL

AGREEMENTS BETWEEN THREE PEER ADVERSARIES

by

Matthew R Crook

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This study is about nuclear deterrence between three peer adversaries. Students at the Naval Postgraduate School in the Space Nuclear Command, Control, and Communications (SNC3) certificate studied this problem as part of their curriculum. They each submitted final papers for the course using their experience, education from the certificate, and research. Their papers are found in the Appendices of this technical paper. An executive summary and poster also accompany this technical paper.

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I. NUCLEAR DETERRENCE AND THE IMPACT OF CHINESE PARITY

For nearly seven decades, the foundation of the United States' (U.S.) nuclear deterrence posture has been the belief that the Soviet Union, now the Russian Federation, is the primary nation of concern. This was plainly evident throughout the Cold War and made tangible by both nations' nuclear arsenals. The Cold War lasted five decades, and despite the Soviet Union's collapse in the early 1990s, the U.S.'s deterrent focus has primarily remained fixed on the Russian Federation. During, and especially after, the Cold War timeframe, China acquired nuclear weapons, modernized and expanded its conventional military forces, and experienced sustained population growth providing an abundance of human capital, but they were never elevated to the same level of concern as the Soviet Union. Given the relative changes in Russia and China's economic, industrial, and military capacities in the past twenty years, it is now time to consider China a peer threat conventionally and if current trends continue, a nuclear peer threat as well. How does this impact the deterrence dynamics at play for all three nations? Do the extant Arms Control treaties and agreements provide a vehicle to constrain China's growth? Finally, do Chinese ambitions fundamentally alter the state of nuclear deterrence?

A. CHINA AS A MILITARY AND ECONOMIC PEER

China's conventional peer status is easily demonstrated. The Composite Index of National Capabilities (CINC), produced by the Correlates of War project, provides a widely acknowledged and accepted benchmark to compare nations against one another, show a change in relative strength over time, or both. China's current nuclear status is also relatively easy to discern; however, given the nature of classification employed by most nations concerning nuclear weapons, the analysis uses a considerable degree of estimation.

Figure 1 provides a comparative analysis of the relative CINC values between these three nations from 1941 to 2016 (University of North Texas: Department of Political Science, 2021) A significant change in relative power distribution has transpired over the past two decades. China's CINC index score has shown steady improvement, while both the United States and Russia are declining, or at best, stable state. Most notably, the fall of the Soviet Union did not correspond with a significant U.S. increase but rather seemed to clear the way for China's rise. In addition to the CINC score, China's conventional military power has grown substantially, which is substantiated by many non-classified sources available to the public. Chief among these sources are official U.S. Military unclassified intelligence

summaries, one of which is the Annual Report to Congress concerning Military and Security Developments involving China, which notes the following in its preface (Office of the Secretary of Defense, 2020):

- The People's Republic of China (PRC) has the largest navy in the world, with an overall battle force of approximately 350 (297 US) ships and submarines, including 134 (103 US) major surface combatants
- China possesses an inventory of more than 1,250 (0) Ground Launched Ballistic Missiles (GLBMs), and Ground Launched Cruise Missiles (GLCMs) with ranges of between 500 and 5,500 kilometers.

In 2000, the first annual report concluded that China's military, through sizable, was archaic and ill-suited to achieving China's strategic goals (United States Department of State, 2021) The current version of this report assesses that "the PRC has marshaled the resources, technology, and political will over the past two decades to strengthen and modernize the PLA in nearly every respect" (Ibid). The report further suggests that the past twenty years are a precursor for the next thirty years and provides several dire predictions for Chinese capabilities in the 2050 timeframe.

B. CHINA'S EXANDING NUCLEAR ARSENAL

Examining China's nuclear aspirations and history in depth is equally problematic. China's current nuclear arsenal of approximately 350 weapons is minuscule compared to the United States or Russia, which possess well over five thousand weapons (Federation Of American Scientists, 2021). While that observation is accurate at the macro level, it fails to capture details at the micro level indicating a slow but steady change in China's nuclear stockpile. From 1980 to 2000, China's nuclear arsenal grew by 13%, while the United States and Russia's shrank by 60% and 56%, respectively (Kristensen & Korda, United States Nuclear Weapons, 2021). From 2000 to 2020, this trend accelerated with China's stockpile growing by 51% while both the United States and Russia experienced another 65% reduction (Ibid). Though the overall growth is minimal compared to Cold War norms (less than 200 weapons), it is still growing. The 2020 annual report to congress on China assessed that their stockpile will "at least double in size" over the next decade (Office of the Secretary of Defense, 2020). The recently released 2021 version of the same report now assesses that China will have up to "700 deliverable warheads by 2027 and may have up to 1,000 warheads by 2030" (Ibid). China's warhead count is moving in a different direction from that of the U.S., Russian Federation, or any other nuclear state.

Understanding the danger posed by an expanded Chinese nuclear arsenal is best understood in context. Matthew Kroening's book The Logic of American Nuclear Strategy provides a recent analysis of this change by way of a simulated nuclear first strike on the U.S. using China's 2006 and 2015 nuclear stockpile numbers. The 2006 simulated attack destroyed 20 U.S. cities and 33,937,790 casualties from a mere 20 detonations (Kroenig, 2018). By 2015, the Chinese arsenal capable of striking the U.S. had increased to 65 warheads, which would destroy 45 U.S. cities and 47,640,704 casualties (Ibid). What would these numbers look like with 700 or 1,000 warheads as the Chinese are predicted to acquire? While Kroening's book pre-dates the recent future estimates of China's stockpile, he did provide an analysis of a Russian attack assuming a profound reduction in their arsenal resulting in "just" 469 available for use in a first strike scenario. These weapons would destroy approximately 211 cities and cause 81,891,754 casualties (Ibid). While not tailored to China's stockpile estimates, this surrogate analysis paints a rather dire picture for American defense planners.

China's stockpile growth has been coupled with a nuclear modernization program, which has produced more capable systems and established a limited nuclear triad (Kristensen & Korda, Chinese Nuclear Forces, 2020). The modernization efforts are creating newer systems with solid fuel designs, multiple warheads, and longer ranges comparable to similar Russian systems (Ibid). The most significant result of these efforts is a steady increase in warheads capable of striking the U.S. homeland. In addition, China is also fielding systems such as the DF-26, which is capable of "rapidly swapping conventional and nuclear warheads" and possesses greater accuracy and mobility than any previous generation of GLBM, and can create uncertainty concerning the status of these systems, especially in times of crisis (Office of the Secretary of Defense, 2020, p. 56)

C. TYPES OF NUCLEAR WEAPONS IN CHINA'S ARSENAL

The last element which deserves consideration is the presence of a small number of warheads with yields larger than a megaton. In general, Chinese warheads are roughly equitable in terms of yield compared with the U.S. or Russian warheads. Of China's twelve land-based systems in use or production, two possess yields in the range of several megatons (Kristensen & Korda, Chinese Nuclear Forces, 2020, 2020, p. 444). In contrast, the United States employs two ballistic missile systems, neither of which possesses a nuclear yield greater than a megaton (Kristensen & Korda, Chinese Nuclear Forces, 2020, 2020, p. 44). Given that the destruction of Hiroshima and Nagasaki were accomplished with weapon yields of approximately 20 kilotons, megaton range weapons are vastly more

dangerous, and any indications of launch preparation of these weapons in a crisis would be highly destabilizing.

The brief review above clearly demonstrates that China is a conventional peer and full-fledged nuclear club member. At present, its nuclear warfighting capacity is an order of magnitude less capable than either the U.S. or Russia. From a deterrence perspective, however, its stockpile is more than sufficient to present a credible threat to either the U.S. or Russia, thus constraining the actions of either nuclear power. Given China's abilities to participate in nuclear brinksmanship and compete on the conventional front, it's now time to assess what capability if any; the extant arms control regime provides to peacefully constrain China's nuclear aspirations and the impact of a third nuclear peer.

II. CURRENT NUCLEAR ARMS AGREEMENTS

To date, every arms control treaty dealing with nuclear weapons throughout the Cold War has been a bi-lateral treaty between the U.S. and the Soviet Union or its successor state, the Russian Federation. The significant treaties which fall under this umbrella include The Strategic Arms Limitation Talks I & II, The Interim Agreement on Offensive Arms, The Strategic Arms Limitation Treaty (SALT III), The Anti-Ballistic Missile Treaty, The Intermediate-Range Nuclear Forces Treaty (INF), The Strategic Arms Reduction Treaty (START), The Strategic Offensive Reductions Treaty (SORT), and finally New START (Woolf, Kerr, & Nikitin, Arms Control and Nonproliferation: A Catalog of Treaties and Agreements, 2021, pp. 4-22) These treaties generally focused on setting nuclear weapon increase limits, then parity in terms of capability, and finally stockpile reductions. Other nuclear nation states' stockpile size has been constrained primarily by their ability to access enough raw material to maintain a nuclear weapons program.

A. STRATEGIC VS NON-STRATEGIC NUCLEAR WEAPONS

Of the treaties mentioned above, all but one focused exclusively on Strategic Nuclear Weapons (SNWs), with the sole exception being the INF treaty, which addressed Non-Strategic Nuclear Weapons (NSNWs). SNWs are those weapons capable of achieving higher yields and longer ranges, enabling them to strike the homelands of the major nuclear power states. In contrast, NSNWs are generally weapons with shorter ranges and lower yields, though the definition isn't iron clad. This distinction is relevant because while SNWs have been brought into rough parity via diplomatic means between the U.S. and Russia, NSNWs have been mainly ignored during treaty negotiations. However, NSNW stockpile reductions did occur throughout the Cold War.

NSNWs stockpile reductions were largely the result of U.S. and NATO unilateral disarmament decisions encompassing a general drawdown of NSNWs starting in the late 1960s and continuing through the early 2000s (Woolf, Nonstrategic Nuclear Weapons, 2021, p. 11). Unfortunately, Russia has elected not to voluntarily reduce its NSNW stockpile to the same degree as the U.S. As a result, it enjoys a significant advantage in this category of weapons. The dichotomy in addressing SNWs and NSNWs between the U.S. and Russia may provide a window of opportunity for the Chinese to exploit the difference in weapon types to their advantage. In particular, a significant portion of China's stockpile falls within the definition of NSNWs based on range. China could ostensibly participate in

an arms control process centered on their SNWs, while continuing to expand elements of their NSNW stockpile based on the difference in classification.

Collectively the treaties and unilateral actions mentioned above resulted in shrinking the global nuclear stockpile from a Cold War high point of over 70,000 weapons to approximately 13,150 warheads today (Federation Of American Scientists 2021). Regardless of weapon type or inclusion in a treaty, all the actions above were conducted solely between the dominant nuclear powers. Unfortunately, this approach did not leave an effective mechanism for the international community to address the changing size and character of the Chinese stockpile.

B. NEW START TREATY

Though New START is not applicable to China, it's a helpful starting point to consider possible limitations. It allows both the U.S. and Russian Federation to maintain no more than 800 deployed and non-deployed Inter-Continental Ballistic Missiles (ICBMs), Sea-Launched Ballistic Missiles (SLBMs), and nuclear capable heavy bombers, no more than 700 deployed assets of the same categories, and finally 1,550 deployed warheads (Woolf, Kerr, & Nikitin, Arms Control and Nonproliferation: A Catalog of Treaties and Agreements, 2021, p. 19). The most liberal count of China's nuclear forces provides between 312 and 372 launchers and 272 to 350 total warheads (Kristensen and Korda, Chinese Nuclear Forces, 2020, 444). In contrast, the most current official New START verification data are in Table 1 below (United States Department of State 2021).

Treaty Category	United States of America	Russian Federation
Deployed ICBMs, SLBMs, and Heavy Bombers	665	527
Non Deployed ICBMs, SLBMs, and Heavy Bombers	800	742
Deployed Warheads	1389	1458

Table 1 - New START Treaty Verification Data, September 28 2021

Unfortunately, the "official" numbers in Table 1 do not provide an accurate accounting of the actual stockpile size of either nation due to New START's counting rules. A full accounting of physical warheads provides a different number for each country. Table

2 provides the estimated warhead count from the Federation of American Scientists (FAS) (Kristensen, Korda, & Norris, Status of World Nuclear Forces, 2021). These numbers are generally corroborated by the Stockholm International Peace Research Institute, which lists U.S. and Russia's total warhead count at 5,500 and 6,225, respectively (Stockholm International Peace Research Institute 2021).

Regardless of which source is used, Chinese nuclear warheads and delivery platforms are inferior in number to either the United States or Russia. The practical implications of the current stockpile size imbalance are straightforward. If China were to voluntarily become a party of New START, with no changes to the Treaty provisions, they could continue to grow their stockpile for years before reaching the treaty limitations, while their actual stockpile size could potentially grow to approximate the numbers listed in Table 2.

Warhead Type	United States of America	Russian Federation
Deployed on ICBMs, SLBMs, and stored at bomber bases	1,650 (1,800)	1,600 (1,625)
Deployed NSNW	100	0
Reserve / Non-Deployed	1,950	2,897
Military Stockpile	3,700	4,497
Total	5,600 (5,500)	6,257 (6,225)

Table 2 - FAS Status of World Nuclear Forces 2021

The size of the U.S. and Russia's nuclear arsenal poses a problem when attempting to address the growth of the Chinese stockpile from a diplomatic perspective. In particular, why is it an accepted norm for such large arsenals to exist between two nations but not for a third? Can either nation present a logical, moral, or valid national security argument against China's growing arsenal from its position of advantage? Does China's eventual attainment of nuclear parity fundamentally alter the deterrence dynamics at play? Finally, what leverage, if any, could be applied to entice China into voluntarily limiting the growth of its nuclear stockpile? This final question is especially relevant given the failure of the U.S., and the broader international community, to impact North Korea's successful

nuclear ambitions, despite overwhelming conventional force superiority and massive economic sanctions directed at the third-world nation.

The discussion above sets the stage for the central question: How does an enlarged Chinese nuclear arsenal impact the deterrence equilibrium for all three nations? The impact of an enlarged Chinese stockpile depends on how China views nuclear weapons, their mid to long term national goals, and the degree to which outside forces infringe on China's actual, or perceived sovereignty. In short, it will complicate the stability of nuclear deterrence for various reasons, though it will likely not upset the apple cart.

C. CHINA'S DETERRENCE STRATEGY & MINIMUM DETERRENCE

China's declared nuclear weapon policy is one of minimum deterrence and has been since its first nuclear weapon test in 1964 (Kristensen and Korda, Chinese Nuclear Forces, 2020, 446).

1. Weapons numbers

This approach to nuclear weapons is premised on the core belief that a small number of nuclear weapons will constrain aggressor nations' actions below a certain threshold. The U.S. understands the realities behind a minimum deterrent strategy based on our collective concern over North Korea's entry into the nuclear club and Iran's nascent nuclear weapon ambitions (Forsyth Jr., Saltzman, & Schaub Jr., 2010). The requisite targeting strategy associated with a minimum deterrent policy/stockpile reinforces would-be aggressor caution. In theory, larger reserves enable a counterforce strategy, which seeks to target military and leadership elements as opposed to population centers, on the idea that this approach minimizes civilian casualties and is more in line with "jus in bello" concepts or the proper conduct in war. In contrast, smaller stockpiles force planners to employ a counter value strategy focused on applying maximum devastation to an adversary, achieved by targeting civilian populations and infrastructure.

2. No First Use Policy

In addition to its minimum deterrent arsenal size, China has a No First Use (NFU) policy (Office of the Secretary of Defense, 2020, p. 85). As the name implies, this policy is a commitment to not being the first nation in a conflict to use a nuclear weapon. China's decision to adopt a "low alert level" with most warheads located at a central storage facility reinforces its NFU policy. It ensures any move to mate warheads to delivery vehicles is a visible escalatory step (Kristensen, Korda, & Norris, Status of World Nuclear Forces, 2021, p. 446). However, there are reports of warheads stored at regional facilities and some warheads being permanently mated to missiles to increase their alert level (Ibid). As China's

modernization programs near completion and succeeds in extending the range and capability of their missiles, there is concern amongst U.S. defense officials over the continuation of China's NFU policy and matching alert status (Office of the Secretary of Defense, 2020, p. 86). Changes to either policy or alert status could alter the stable nuclear deterrence paradigm China has cultivated for the past several decades.

D. CHINA'S TERRITORIAL CLAIMS

In addition to the concerns above, China is increasingly bellicose when asserting territorial claims in several regions and has expanded its area of influence under its "One Belt, One Road" (OBOR) and corresponding "Digital Silk Road" programs. These increases signal a long-term trend towards a more expansionist role in China's international relations, likely resulting in additional confrontations across various fronts. These disagreements have been mainly grey zone challenges to the existing world order and global security regimes. The South China Sea, East China Sea, India border areas along the Line of Control, and simmering issues with Taiwan are all areas of concern within this realm (Office of the Secretary of Defense, 2020, p. 15)

China has also been involved in numerous incidents including nuclear threats or the presence of a nuclear-armed state player. A partial list of these events includes the Korean War, China-India border incident 1 & 2, and the Taiwan Straits incidents 1 thru 5 (Brecher, et al. 2021). Notably, several of these incidents featured China participating, or even provoking, a crisis involving either the U.S. or Soviet Union, from a position of nuclear inferiority. While it is impossible to predict Chinese actions assuming they achieve nuclear parity, it is reasonable to assume they would be more willing to challenge the international world order when their nuclear deterrent capacity more closely approximates that of either the U.S. or Russia. Considering the history of Chinese border disputes, which encompasses only two direct armed conflicts between nuclear-armed powers since 1945, these issues must be handled carefully, consistently, and cooperatively to ensure the right precedent is set and maintained.

E. CHINA'S TECHNOLOGICAL ADVANCEMENTS

Another element to consider is the degree to which technological advances may invalidate some, or even all, of the Cold War era-derived systems meant to increase stability. China's apparent successes in the field of hypersonic technology could upend the stability of nuclear deterrence by reintroducing first strike fears, which were largely eliminated due to massive investments in Space Based Infrared (SBIR) Satellites and Ballistic Missile Early Warning (BMEW) stations designed to work in tandem to identify,

characterize, and notify key nuclear command and control nodes of an impending attack. These early warning systems could observe the ballistic trajectory of an ICBM or SLBM payload and determine whether it posed a threat to the United States. Hypersonic missiles upend this early warning paradigm since it can be much more difficult for nations to know whether a launch is a genuine threat, merely a test, or some other non-threatening action. China's August 2021 test of a hypersonic system that successfully circled the globe before approaching its general target area represents astounding progress in this field, despite missing the actual target by several miles (Sevastopulo & Hille, 2021). Though likely not ready for front-line use in the next few years, this technology presents a credible threat that must be considered in future deterrence calculations.

The final element to discuss when looking at China's rising nuclear capacity is the degree to which the international community has pushed back on China's expansive view of its sovereignty and associated Chinese reactions. An excellent case illustrating Chinese behavior when confronted is the ongoing tensions in the South China Sea. Chinese territorial claims in the area date back to 1947 when the Kuomintang party marked its territory with an eleven-dash line, later shortened to a nine-dash line, which is still used in official diplomatic exchanges today (Council on Foreign Relations 2021). A significant oil discovery in 1976, rich fisheries, numerous high tide islands, and strategic location all combine to make the area valuable and contested. Chinese tactics over the years have resulted in multiple accidents involving the loss of ships and lives and several conflicts, including the exchange of gunfire, the building of numerous man-made islands, and later equipping those islands with offensive and defensive weaponry (Ibid). These actions transpired despite stiff international pressure, formal protests, United Nations investigations, and an International Tribunal ruling against Chinese claims in the region (Ibid). China has no qualms about challenging international norms from a disadvantageous position. It seems likely that the rate, scale, and scope of challenges will only increase if China attains nuclear parity.

III. DETERENCE WITH THREE NUCLEAR PEERS

What does all the above mean for deterrence and the nuclear balance? First, there are no formal structures, or readily available leverage from a diplomatic arms control approach, to prevent China from acquiring a more extensive arsenal at or near parity. Militarily, the presence of a secure second strike on China's part, as evidenced by their small submarine force and a smattering of ICBMs with mated warheads, removes the possibility of a first strike. Additionally, a nuclear first strike is not in line with U.S. historical norms or publicly stated policy. A Russian first strike is somewhat more plausible, given their stated policy. Still, their proximity to China and exposure to the full inventory of China's nuclear weapons make this approach unlikely. In addition to pure military considerations, China's massive presence in the global economy removes the possibility of an economic approach like that employed by the Clinton administration with North Korea. Simply stated, if China sets a national goal of acquiring nuclear parity, there is little the U.S. or Russia can do to stop their progress.

Second, China will likely continue to pursue a strategy of enhancing its national security and achieving national objectives under its military and economic capacity. This will probably bring them into grey zone conflict with western nations. Though intentional open warfare is unlikely, the possibility of inadvertent escalation remains. However, this is nothing new, and growing collaboration amongst countries in the region will serve as a counterbalance to Chinese expansionist tendencies and slow, divert, or halt their progress. Establishing a NATO-like organization in the Indo-Pacific region would likely provide a valuable tool to constrain Chinese ambitions.

Third, unless Chinese weapons impact the assured second-strike capability of either the U.S. or Russia, the underlying deterrent value of nuclear weapons has not changed. While Chinese advances in hypersonic weapons are concerning as they enhance first-strike capabilities, at present, they do not negate the current second-strike capabilities of either nation. If China were to introduce technology that enhanced its first strike readiness and impacted the U.S. or Russia's second strike capabilities, stable deterrence paradigms would be severely challenged.

Fortunately, the history of nuclear deterrence strongly suggests norms will expand to encompass a new paradigm based on tri-party parity, assuming second-strike capability remains assured for all parties. The reality of large-scale nuclear employment remains unchanged. It would result in tremendous loss of life and destruction, regardless of the

targeting strategy utilized, the accuracy of the weapons, fall-out free detonation altitudes employed, or who the aggressor nation is in a conflict. Small-scale or limited nuclear war cannot be executed without the fear of inadvertent escalation leading to larger-scale nuclear exchanges. A demonstration or limited nuclear strike looks very different from the target's perspective vs. the aggressor. It would be foolhardy to assume the victim would correctly perceive the aggressor's intent in a highly volatile situation and react accordingly, as has been demonstrated repeatedly in various war games. As such, nuclear weapons will remain narrowly focused on deterring existential threats.

This analysis suggests that China's stockpile will continue to grow, as long as it's a national priority, until it reaches a point of diminishing returns, much like U.S.'s and Soviet Union's did in the 1970s. Additional weapons will eventually add little or no value to China's capacity or national prestige while disproportionally increasing cost and complexity. Winston Churchill once said, "If you go on with this nuclear arms race, all you are going to do is make the rubble bounce." Chinese nuclear ambitions are readily apparent, and the international community has little to no leverage to halt China's progress. Fortunately, the reality of nuclear warfare will limit China's impact on existing deterrence paradigms. The world survived the turbulence of the Cold War and its outsized-sized nuclear arsenals. The emergence of a nuclear triad instead of a dyad, while alarming at first blush, is unlikely to herald the end of civilization.

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IV. SUMMARY

A. CONCLUSIONS

The US and Russia still maintain far larger nuclear arsenals, about 20 times larger than China's, but China is increasing the size of its nuclear arsenal. China summarily rejected the Trump administration's efforts to include China in the New Start Treaty in 2019 and released a statement stating that the US and Russia must first reduce the number of nuclear weapons in each nation before participating in multi-lateral nuclear arms agreements.

The New Start Treaty, extended until Feb 6, 2026, is currently the only nuclear arms control agreement between Russia and the US that constrains the number of nuclear arms and launch platforms in each nation. This treaty also provides on-site inspections, required notifications between countries, bilateral meetings, and data exchanges, which generally offer robust compliance verification. Meanwhile, China has begun expanding its nuclear arsenal, and it's expected to reach 700 warheads by 2027 and 1000 warheads by 2030. (Arms Control Association, 2021)

Ideally, the US and Russia would continue to make arms control progress and further reduce arms bilaterally. Of course, at the time of this writing, Russia's unprovoked invasion of Ukraine, threats to use its nuclear weapons, and Vladimir Putin's general unwillingness to continue to reduce nuclear weapons (even before the war), this is a challenging task indeed. The outcome for Ukraine, Russia, and the world due to this war is uncertain, but the US should remain ready to engage with Russia (and China) at any time. Further reduction in nuclear arms bilaterally with Russia may not be feasible in the short term. Still, the US should remain ready to continue reducing nuclear arms along with Russia as soon as Russia is again amiable to such a course of action.

It might seem that the US has few options to pressure China or offer incentives to keep the number of nuclear arms small relative to the US and Russia. After all, at first glance, it may seem hypocritical for the US to ask this of China, while the number of weapons in the US arsenal is much larger. However, there may be incentives that might still persuade China. The US can offer diplomatic or economic incentives. The US has not declared a policy of "no first use"; however, it could take this policy, but only towards nations with a nuclear arsenal much smaller than the US, such as 25% or fewer warheads. Additionally, if China acquires a much larger nuclear arsenal, it might become more difficult to persuade Russia to reduce the size of its arsenal. The US should work to find

common ground with China (in nuclear deterrence) with open dialog and find methods to mutually pressure Moscow to reduce the size of its nuclear weapons cache. It should be clear to China that the US is wholly interested in reducing the role of nuclear weapons.

B. RECOMMENDATIONS FOR FURTHER RESEARCH

Recommendations given here are before the outcome of Russia's war in Ukraine is known. These recommendations may need to be adjusted based on the world situation in the near future.

With the three nuclear rivals in a period of modernization, there is potential to spiral into the next nuclear arms race. The US must continue pursuing nuclear stability with Russia and China through regular dialogue. The US should continue to understand China's nuclear ambitions and what motivates its leadership to expand its arsenal at this time while it has remained small for many decades. To this end, future research should aim to understand how the Chinese leadership perceives nuclear deterrence and how they view the US nuclear posture.

The US Naval War College (USNWC) Wargaming Department already conducts an annual nuclear deterrence wargame on behalf of the US Strategic Command (USSTRATCOM). USSTRATCOM or other appropriate government agencies should commission a wargame or series of wargames to consider the problems of three peer nuclear-armed adversaries, emphasizing the most effective strategies to deter the use of nuclear weapons and deter expanding nuclear arsenals. The USNWC may be the most experienced in strategic nuclear deterrence wargames at a classified level.

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APPENDIX A

The Implications of Two Peer Nuclear-Armed Adversaries on U.S. Deterrence Strategy and the Future of Arms Control Agreements

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This paper assesses the implications of China becoming a peer nuclear-armed adversary to existing dynamics in deterrence, arms control agreements, and strategic behavior. It is essential to identify that while assessments referencing historical data are helpful, much of the outcome will be influenced by a healthy combination of personal and societal psychology. With this backdrop set, we can begin to break down this complex question and distill out general assessments on the future of U.S. deterrence strategy, arms control, and strategic behavior in a world in which the U.S. has two peer nuclear-armed adversaries (TPNA2).

It is no surprise that China's aggressive rise on the world stage and the expansion of its authoritarian values has shocked and caught many economists, governments, and world leaders off guard. While it was no secret that engrained within Chinese culture is the desire to become global leaders (assessed to even desire global primacy [*2*]), no one assessed this as a near-term problem until President Xi Jinping's meteoric rise in 2013. With his arrival to power, Xi aggressively pursued the "One China" policy by centralizing and expanding authoritarian rule across the Nation and engaging in global influence and predatory economic operations [3]. It was these moves that catapulted China to the forefront of the 2018 U.S. National Defense strategy stating:

Figure 1: President Xi Jingping [1]

China is leveraging military modernization, influence operations, and predatory economics to coerce neighboring countries to reorder the Indo-Pacific region to their advantage. As China continues its economic and military ascendance, asserting power through an all-of-nation long-term strategy, it will continue to pursue a military modernization program that seeks Indo-Pacific regional hegemony in the near-term and displacement of the United States to achieve global preeminence in the future. – 2018 NDS [4]

Further compounding the problem is that President Xi is at the helm of the world's second most robust economy, which continues to outpace the U.S. in the growth of gross domestic product (GDP) since 2008, as highlighted in figure one provided courtesy of the World Bank. Xi's economic power makes China a formidable adversary and has further weaponized his economy against the global order. Through predatory economics, rare-earth resource
monopolization, and agreements made in a lack of good faith, China continues to destabilize the international rules-based order. In parallel, China made significant investments into its technology and military-industrial complex, stating the PLA's objective is to become a "world-class" military by the end of 2049—a goal first announced by General Secretary Xi Jinping in 2017 [6]. While this goal involves the creation of fifth (and eventually sixth)
generation fighters, aircraft carriers, missile defense, and an integrated whole-of-government/defense network, a cornerstone of this modernization will include a nuclear arsenal designed to surpass that of the U.S. and Russia.

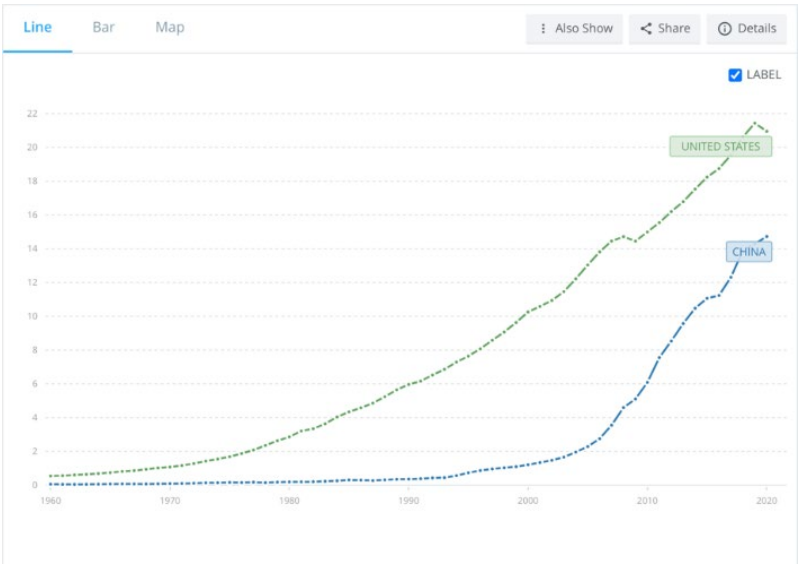


Figure 2: World Bank - U.S. vs China GDP by Year [5]

With the introduction of China as a peer-armed adversary, all previously and currently held assumptions and norms must be re-evaluated. All nuclear deterrence, arms control, and

Figure 3: The Balance [3]

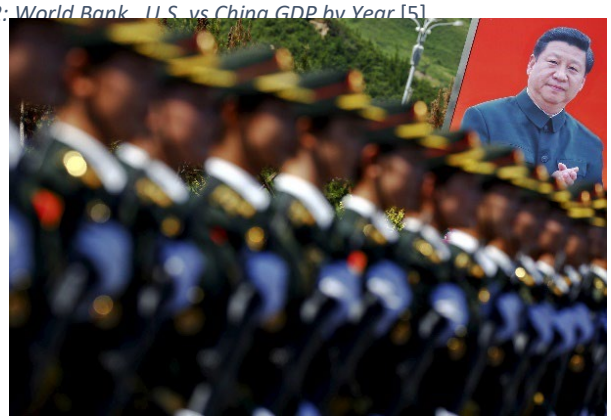


Figure 4: President Xi Honored at Military Parade [7]

strategic behavior theory have been formulated between the U.S. and Russia based on the historical precedents from the 1950s to the 1980s

when both powers evolved *together* and were generally evenly matched throughout development. China presents an entirely new challenge and dynamic not readily relatable to our current architecture. This paper will explore these dynamics by seeking to provide insight into this unique and unknown situation. Utilizing the below questions as our framework to inform, we can better assess both adversary and U.S. reactions to make a more informed assessment of the impacts of U.S. nuclear policy in a TPNA2 world:

1. How Does a Nation's Strategic Behavior Change as a New Peer Enters Equal Status?
    a. How does the current peer adversary's behavior change as a third peer actor moves into the deterrence framework?
    b. How does the new peer adversary's behavior change as they move status within the nuclear deterrence framework?
    c. How does the U.S. behavior change as a third peer actor moves into the deterrence framework?

2. How Will the U.S. Respond to Peer Nuclear Powers in a TPNA2 world?
    a. How do U.S. nuclear deterrence dynamics change in a TPNA2 world?
    b. How do U.S. nuclear arms control dynamics change in a TPNA2 world?
    c. How will U.S. national leadership nuclear decision-making dynamics change in a TPNA2 world?

3. What if one Nation Decides to Disregard Accepted Norms or Agreements?
    a. How might the current deterrence and/or arms control framework change if only two of the three actors participate?

Question 1: How Does a Nation's Strategic Behavior Change as a New Peer Enters Equal Status?

History is ripe with examples of emerging powers clashing with long-standing historical governments. Unfortunately, most of these examples are accompanied with a heavy dose of violence, destruction, and death. Such nations seeking to realign the world order generally have a healthy disregard for the established world order, and in many cases, resent the order as it sits. As a result, emerging powers are more apt to be bullish, disregard established norms, and push forward in the way *they* see fit – the equivalent of a nation with a "chip on

its shoulder." China is the modern rendition of this story – a modern power seeking to change the world order toward their needs, on their terms, and in their own manner.

With the above assumption established, we can now devote our analysis toward understanding and predicting how each Nation will react during this transitory phase of a third party entering and creating a TPNA2. For this discussion, we will make assessments from the perspective of the established powers; the U.S. and Russia. This section will conclude with a short summary on an overall assessment of how each Nation's behavior will likely change during this transitory period into an established three-party construct.

How does the current peer adversary's behavior change as a third peer actor moves into the deterrence framework?

Russia is in a difficult position. On one hand, they can pair with another nation that could assist in their global effort to diminish U.S. influence. On the other hand, in doing so they could inadvertently catapult China to replace the U.S. as the preeminent global influence. Succinctly put, Russia will have to weigh the short-term gains of Chinese partnership with the long-term risks of China becoming the world's leading force.

The most likely outcome is that Russia will support and potentially partner with short-term Chinese nuclear ambitions to the extent in which it supports Russian goals of destabilizing the U.S.'s global influence… but no more. Lindsay Maizland, a reporter for the Council on Foreign Relations (CFR) stated as much in one such article that "China and Russia have expanded trade and defense ties over the past decade. But they are not formal allies, and some experts question the strength of the relationship [8]." Some academics and Department of Defense analysts have even termed the relationship between the two nations as a "partnership of convenience."

Figure 5: President Putin and Xi Jinping [8]

As far as what the partnership will likely manifest itself into, we could expect to see non-sensitive technology sharing and potentially the formulation of a loose nuclear treaty

between the two nations that will likely expand both Nation's nuclear coverage to their partner nations – a public counter to U.S. deterrence and positive assurance worldwide. To further compound strategic problems for the U.S., both will likely share an expanded global deployment of nuclear assets to threaten and strain U.S. obligations abroad.

How does the new peer adversary's behavior change as they move status within the nuclear deterrence framework?

Figure 6: President Xi at a Chinese Military Parade [9]

Predicting China's behavior as they transition into a peer status within the nuclear deterrence framework will be difficult but not entirely impossible. There are plenty of historical examples from which to reference nations in a similar position. As detailed previously, emergent powers generally push forward with little to no regard for established norms. Ironically, their continued success generally further emboldens the national leadership, reinforcing and encouraging bullish or disruptive behavior.

China's status as a mature peer authoritarian actor coupled with a robust economy gives China significant latitude to move into and adjust the global landscape, and nuclear peer constructs as they see fit. If we need proof of this, we can just observe China's invalid claims to the entirety of the South China Sea as shown in Figure 6. In the near-term we can likely expect the continued development of nuclear capabilities to attain medium-term goals of establishing the Peoples Republic of China (PRC) as the pre-eminent force in the Indonesian-Pacific region. It is important to note that while China will be aggressive, they will likely not be reckless – an attribute generally associated with the Russians. China's approach and behavior will evolve as they establish themselves within the framework, aggressive at first but then transitioning to a less disruptive approach once established. The

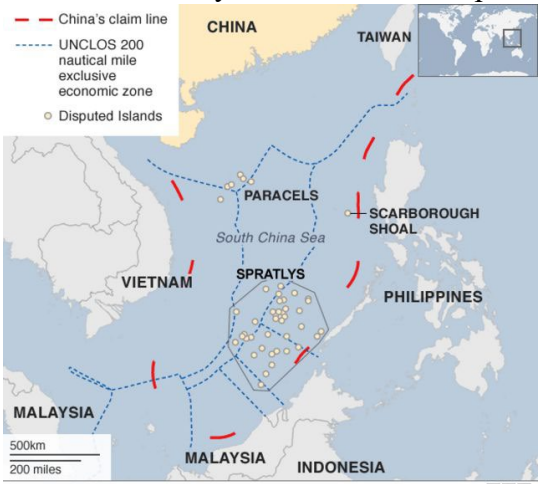


Figure 7: China's Claims to the South China Sea [10]

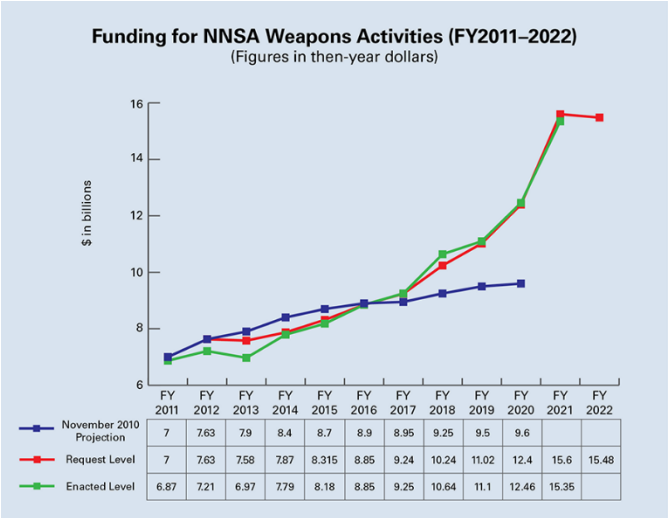
most significant uncertainty during this period will be in how the U.S. chooses to respond to Chinese expansion and if *in-turn*, whether China chooses to escalate or de-escalate. This period will be critical in that if the U.S. is unable to appropriately manage its influence against the Chinese, both nations could find themselves in an arms race and an even colder cold war.

How does U.S. strategic behavior change as a third peer actor moves into the deterrence framework?

Through this transitory period the U.S. will face its most difficult challenges since the cold war. The U.S. will be confronted with an aggressive Chinese government that will bristle at any attempts to slow Chinese nuclear establishment. Concurrently, they will have to contend with a Russian government that will *publicly* support Chinese ambitions using this situation to undermine U.S. global influence.

Going forward, the U.S. must be prepared, and is, to globally field more systems to ensure the Nation can respond just as effectively when Russia was the only peer competitor. What this will mean is the creation of more weapon systems and new delivery methods. This will be an inconvenient truth if we are to match the level of preparedness and responsiveness for our Nation and allies that we have maintained for the past 40 years. The U.S. can expect to be on the receiving end of much criticism, both internationally and domestically. Through this period the U.S. can maintain the advantage by doing what we have always done: seek peace and maintain ourselves as the steady, deliberate, moral, and righteous player on the world stage.

Predicting Chinese, Russian, and U.S. behavior during the establishment of China as a third nuclear peer is exceedingly difficult but not impossible. We can expect China to aggressively expand their nuclear capability as they see fit with little regard to outside influence. Russia will publicly encourage Chinese efforts and likely seek a loose partnership to stress U.S. deterrence capability and further malign U.S. influence (however this relationship will be characterized with a deep mistrust between the two powers). The U.S. will take a two-pronged approach. First, we will, and are, aggressively funding a modernization and hardening of the nuclear deterrence architecture – specifically the triad and nuclear command and control system as reflected in figure 7. Secondly, the U.S. will pursue the inclusion of China into existing arms control treaties but, after it is likely shown that China will not follow them, the U.S. will be forced to begin further weapons production to counter the additional global threats now provided by China (while also covering down on Russia responsibilities).



	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
November 2010 Projection	7	7.63	7.9	8.4	8.7	8.9	8.95	9.25	9.5	9.6		
Request Level	7	7.63	7.58	7.87	8.315	8.85	9.24	10.24	11.02	12.4	15.6	15.48
Enacted Level	6.87	7.21	6.97	7.79	8.18	8.85	9.25	10.64	11.1	12.46	15.35	

Figure 8: Congressional Funding for Nuclear Weapons Activities [11]

Question 2: How Will the U.S. Respond to Peer Nuclear Powers in a TPNA2 World?

This question is enormously complex and unfortunately there are no clean historical examples from which to base a foundational assessment from – only examples that can tangentially relate to specific aspects. For this first question, we will focus on the U.S.'s response from a deterrence, nuclear arms control, and strategic behavioral dynamic. A focus into these three subjects amid the backdrop of a 3-party nuclear dynamic invites constructive questions to precipitate reasonably informed and likely responses of how the U.S. will likely respond. It is important to reiterate that the questions within this section are answered from a U.S. perspective; adversarial perspectives are considered in the other sections of this work to help round out our assessment. Using the answers provided in the

below questions, this section will conclude with an overall appraisal to answer the baseline question of how the U.S. will respond to peer nuclear powers in a TPNA2 world?

How do U.S. nuclear deterrence dynamics change in a TPNA2 world?

Nuclear deterrence dynamics are adjusting with the gradual introduction of another peer nuclear adversary. While U.S. deterrence hardware and policy have remained largely unchanged since the mid-1990s, global dynamics have changed considerably presenting newer and more lethal threats, more demands on U.S. national strategic defense, and the introduction of more uncertainty into the global landscape. Russia continues to develop additional nuclear capable technologies and delivery methods while China has aggressively pursued modernization and expansion across every aspect of their military with significant investments into a comprehensive nuclear strike capability. Figure 5 provided by the 2018 Nuclear Posture Review (NPR) outlines the significant U.S. disparity between development and fielding of new nuclear delivery systems since 2010 when compared to Russia and China. Succinctly stated, he inclusion of China into the TPNA2 construct stresses a complex U.S. deterrence model that hasn't truly needed to undergo transformational evolution since the 1980's.

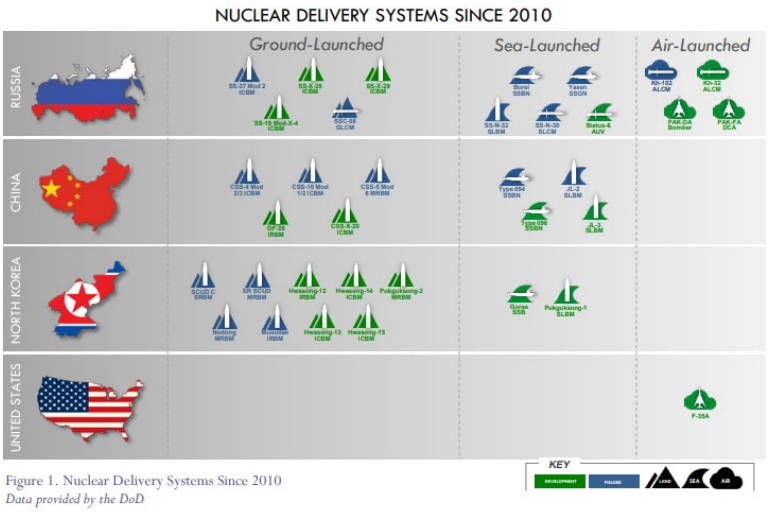


Figure 9: Fielded Nuclear Delivery Systems Since 2010 [12]

Deterrence in this new construct will present significant challenges. From the U.S. perspective, there are more attack vectors, threats, and uncertainty. To further compound the problem, all these aforementioned items then also contribute to significantly greater chances for confusion and/or miscalculation. Moving forward, deterrence will now have to be modeled off two adversaries – one of which offers no historical backdrop to understand or predict their actions, predispositions, or biases. Concurrently, we will have to be cognizant that our historical adversary will *also* make changes to their own processes which

we will then also model off – essentially potentially risking the creation of a never-ending nuclear deterrence feedback loop. The recipe for miscalculation or missteps in this construct cannot be overstated.

The impact of a TPNA2 will also place stress upon our international partnerships; specifically with nations with whom we provide nuclear protection. With the introduction of China as a nuclear peer, we can expect to see a rapid rise in the sheer number of global weapons systems which means the U.S. deterrence envelope will need to be expanded to credibly respond. Due to our obligations it is likely that the U.S. will have to produce and field more systems globally to counter these threats and provide a realistic deterrent against our adversaries.

In closing, while we have highlighted that the dynamics are changing, it is important to note that the current deterrence policy *works* – i.e. our approach to favoring treaties and our use of the nuclear triad. These two tools have been our best ally and with 70 years under them, we have yet to have engaged in nuclear-on-nuclear war with an adversary. Moving forward, we will see the landscape change with more threats and simply *more* to deter. As such, our approach will have to continue to be mature and deliberate with a renewed emphasis on *strength-through-treaties* and a reinvestment on modernizing, bolstering, and hardening our existing nuclear triad.

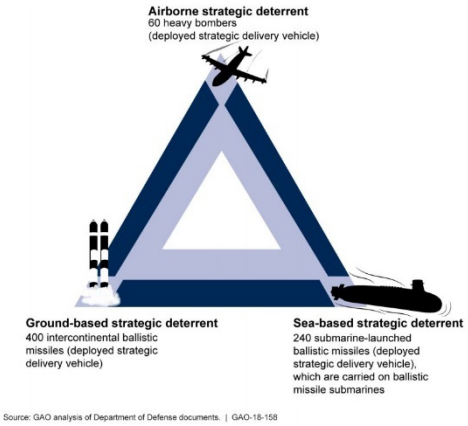


Figure 10: U.S. Nuclear Triad [13]

How do U.S. nuclear arms control dynamics change in a TPNA2 world?

U.S. nuclear arms control dynamics will rapidly change with the introduction of a new member into the TPNA2 system. This is especially true in this instance when the newest member has consistently demonstrated little regard for the existing international rules-based system. The Arms Control Association (ACA), a national nonpartisan organization dedicated to promoting public understanding of and support for effective arms control policies, was quoted as saying "China is accelerating its development of strategic nuclear warheads in an effort to amass 700 by 2027 and 1,000 by 2030, more than doubling last

year's estimate, according to the U.S. Defense Department's 2021 China military power report" [14].

Figure 11: INF Treaty Signature [15]

The implications of this report are apparent, and it is a near certainty that existing arms control treaties with Russia will be in jeopardy if the U.S. hopes to appropriately match the nuclear strength of Russia *and* China. As a result, the U.S. should expect to step into new arms control negotiations and highly encourage China's membership to adequately provide the nuclear protection for the homeland and partner nations that are guaranteed under the nuclear non-proliferation and other treaties.

How will U.S. national leadership nuclear decision-making dynamics change in a TPNA2 world?

The Cuban Missile crisis is arguably the closest the U.S. ever approached nuclear war with the Soviet Union. For 13 days in October of 1962, all of U.S. national intelligence horsepower was dedicated to determining two things: 1.) What are the Soviets going to do next and 2.) How should the U.S. respond? A closer analysis of this episode highlights the competing intelligence assessments, uncertainty, and extremely heighted tensions that made this such a critical moment in history. Now imagine if there had been another nuclear power waiting and watching on the sidelines… one likely to try and take advantage of the situation, whatever the outcome? Unfortunately, this will be a reality in the not-so-distant future; two adversarial nuclear powers seeking to turn any situation to their favor – both aligned in diminishing U.S. global influence.

As a result of this, U.S. leadership is now faced with the dilemma of how to respond to one nuclear peer nation while also having to consider how this response will be received and potentially acted upon in the eyes of a 3rd nation. U.S. policy makers now have significantly more considerations when working through their decision calculus. With so many competing perspectives, interests, and considerations,

Figure 12: Cuban Missile Crisis Brief to the U.N, 1962 [16]

national decision making will have to be more *informed* and more *deliberate*. In this context, *informed* means more analysis will be required to understand the first, second, and third order effects of potential decision while *deliberate* means the U.S. must maintain consistency and maturity since they can expect a lack of such out of their peers. This is critical because in a TPNA2 system where two players lack consistency or maturity, the stability of the world and potentially the future of the planet demands a mature player be present.

In Summary

The U.S. will likely respond with a mix of approaches in a TPNA2 world. As outlined, our nuclear deterrence strategy will remain intact – i.e. reliance on treaties and the triad. We will however see the U.S. undergo a renaissance of the existing nuclear deterrence architecture. Arms control will be different. We will likely see the U.S. maintain a noble adherence to our agreements, until which time our numbers are outmatched and outpaced, and then we will (correctly) scrap these agreements and begin production until we can reasonably provide positive assurance and deterrence for both the homeland and our international partners and strategic interests abroad. This period will be marked by uncertainty and a modernization of how strategic leadership assess threats and intelligence to respond accordingly. There will be varying voices that desire a cold war approach; some will want an aggressive approach while others will desire a more passive stance. All will be both wrong and right to varying degrees. It is incumbent on our leaders to face this dilemma and leverage the right mixture of these approaches at the right time and place to ensure the long-term stability and livelihood of not only the U.S. but also the world.

Question 3: What if one Nation Decides to Disregard Accepted Norms or Agreements?

How might the current deterrence or arms control framework change if only two of the three actors participate?

As detailed before, coordination and agreements between China and Russia will likely be extremely weak and marked with mutual distrust with the exception being on efforts aimed to malign U.S. influence abroad. Therefore, for the purposes of this discussion, we will focus on if the U.S. was in partnership with Russia or China.

Under this construct, the deterrence framework can largely remain intact so long as both parties largely adhere to their agreements. The partnership of the two nations will be ideally suited to manage the actions of a rouge actor serving to keep erratic behavior in check. It is important to consider that while Russia has historically been considered the "wild card," that construct is not suited when there is another "wild card" in the group. Such a scenario is a no-win for all parties but the most apt to survive would be the consistently deliberate actor (i.e. the U.S.). For example, a U.S. and Russian alliance to put in check aggressive global expansion of Chinese influence would be a powerful actor and severely hinder Chinese efforts.

Figure 13: President Biden and Putin [17]

It is also important to highlight that a partnership represents a unique opportunity to build national relationships and share in the burden of dealing with a rogue actor. Should the U.S. enter in a strong binding agreement with another peer nation, it will serve in both nations best interest. Their combined effort and strength can help to maintain order in balance across the globe against a reckless peer nuclear nation.

Conclusion

The U.S. (and Russia) face difficult, uncertain, and dynamic times ahead. Many of the lessons learned from the cold war were predicated on a very different adversary with very different strengths and weaknesses. The PRC government learned from all the failures of the Soviet system and have created a new authoritarian construct that (as of now) appears to work and is capable of wielding significant global economic power. As a result, we will observe numerous implications across our deterrence and arms control framework.

From the deterrence perspective, we will likely see the creation of more weapons systems to ensure U.S. deterrence power remains capable of managing a TPNA2 defense strategy. Not everything will change but as several aspects of deterrence strategy will likely remain consistent. This will include continued reliance on the nuclear triad and our missile defense

systems as well as the way we approach nuclear decision making; thoughtful, mature, and deliberately.

Arms control is where we will see the most change. We can expect an increase in the number of weapon systems and delivery methods. The U.S. and Russia created these agreements bespoke to their situation and the addition of a third player changes everything. It will be both the U.S. and Russia's hope that they can bring China into these agreements and prevent another arms race. If they are successful, the respective governments of all three nations will save trillions of dollars and together help maintain a global world peace, free from the threat of a mutually assured destruction.

There is much uncertainty going forward and it will be impossible for the U.S. to tailor a response to every contingency. Instead, it is the recommendation of this author that the U.S. do what it has always done best; be a consistent, mature, and moral global leader – an ever-present force for good. By setting the example, nations will naturally seek to partner with the U.S. and avoid destabilizing actors. The U.S. will accomplish these goals by leveraging the collective strength of its alliances and the technical and innovative ability of its citizens, all of which are built on the fundamental belief of liberty and justice for all.

Figure 14: SSBN Heading Out on Patrol [18]

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APPENDIX B

Nuclear Powers

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Introduction

The world is rapidly evolving, with one of the most evidentiary depictions being in the theater of warfare. While WWI and WWII are considered two of the most significant military conflicts in global history, there has been a looming conflict—the nuclear proliferation conflict. Immediately following World War II, the United States of America and the Soviet Union engaged in a Cold War. The resulting period was filled with high suspicion, propaganda, and diplomatic wrangles between the two superpowers. The Cold War impasse quickly trickled down to the two nations' allies. The conflict entailed opinions, thoughts, and conceptualizations that the two involved powers' continued clash would explode into yet another World War. And this was would wreck more devastation than all the previous wars combined. World War III thankfully did not occur.

The United States and the USSR did proceed with the increased development of nuclear weapons, also referred to as weapons of mass destruction. These weapons possess the ability to destroy wholesale aspects of modern-day civilization, as they comprise millions of times worth of power greater than the weapons used in the first and second world wars. Several additional nations obtained the ability to develop nuclear weapons, leading to diplomacy and international requests for nations to disarm. South Africa is recorded as the only nation that eradicated its atomic arsenal. At the same time, other great powers, such as Russia, which has succeeded the USSR, and the US, remain reluctant to disarm as they've proposed many nuclear deterrence concepts. Nuclear deterrence entails the preference by a nation to develop and improve nuclear weapons, related deployment systems, and resources with the hope that aggressive nations will alienate themselves from attacking the base nation due to fear of reprisal. This fear of mutual destruction has kept the World from sprialing into a nuclear holocaust. The United States and Russia have

been the greatest champions in the nuclear deterrence campaigns. However, the entrant of a third power—China—has changed how the two nations conduct themselves relative to nuclear weaponry treatment. China, a contending superpower that has arguably surpassed the US and Russia in certain areas, has gained influence in the international scene and has forced modifications to nuclear deterrence principles and concepts. A Chinese presence on the World stage of nuclear powers, viewed as on par with and in the same class/league as the United States and Russia, has become a critical area of concern.

How nuclear deterrence dynamics change when there are three near-peer players

When there are three near-peer players, there are some dynamics that will shift, which will affect how nations with nuclear capabilities conduct themselves. One of the deterrence dynamics is premised on continued stability up to provocation (Peters, Anderson & Menke, 2018). As such, nations promise to safely and responsibly maintain their nuclear war resources unless struck by an adversary. However, some governments have been accused of spearheading diplomatic quarrels and instigating attacks to provoke others to start nuclear wars. The framework has been in application since the lapse of the Cold War. However, China's entry could compromise the policy, as Heginbotham et al. (2017) discussed.

One of the effects of their entry as a nuclear power is increased war tension, transitioning to a Cold-War like era involving the three nations. As concurrent with Michel and Pesu's (2019) inferences, weakened deterrence aspects are likely to emerge. The current deterrence policies are founded on the assumption that nations will bar themselves from attacking nuclear-armed countries. However, the heightened competition for regional power weakens nuclear deterrence further. For instance, any of the three nations discussed in this paper could launch mild and weak attacks on another power or the other two powers to gauge others' military might. This provocation could essentially malign further deterrence

contexts and affiliations. Past relations have demonstrated US-Russia competition. The entrant of a third near-peer player will see the US fight against one more immense power, which, in this case, would be an alliance between China and Russia. A Moscow-Beijing collaborative approach to nuclear deterrence could see the United States of America silently provoked to wage war on the coalition.

Further, Russia and China are also likely to bolster their military powers and capabilities. In doing so, they will have modernized and expanded capabilities to wage a nuclear war that could sideline the US. Arbatov (2021) pointed out that the US could, in turn, be offensive and essentially degrade its nuclear deterrence framework. It is worth mentioning that devaluing a nation's deterrence framework exposes it to military conflict. For instance, if the United States launched attacks on either China or Russia to counter their influence in global dominance, the two nations could be obliged to strike at the United States in defense. While the initial motive could be beneficial to global security, nations' justifications of international attacks to safeguard their sovereignty could contribute to the deterioration of deterrence framework with all parties justifying their preference for military action against the other powers. And there might be no deterrence factor to limit non-peer nations from engaging in a nuclear conflict. France, the UK, India, Pakistan and North Korea all have nuclear capabilities.

As Mastro (2019) observed, its quest for global dominance could influence China's nuclear deterrence behavior. China has, in the past, proved to be a strong US competitor and is likely to show its military might not by reacting to provocations but by launching offensive campaigns, particularly against the United States, which is its main competitor in global dominance. Miller (2020) observed that China could use its nuclear power as a tool for an increased agitation for responsibility in developing and using nuclear weapons, such as in the United Nations Security Council. However, China's position could not be easily

swayed in the Security Council, as it holds veto power. In that regard, China could start a nuclear war with the United States with little regard for the consequences of the conflict. Besides, with Russia being seen as an ally to China, the US is likely to recreate Cold War tendencies, weakening each nation's nuclear deterrence capabilities significantly. Russia and China's deterrence policies are likely to erode as they seek to protect their power and regional hegemony. Nuclear wars and conflicts are more likely to be fielded in the nuclear powers' allies' territories. Therefore, China is expected to take a central role in future nuclear arms' conflicts. Even so, Gorenburg (2019) signaled the probability of a collaboration between all three powers, as they could be determined to protect their influence collectively. The three powers are contextually likely to be influenced by common interests and fear of the others' nuclear resources.

How the new near-peer adversaries' behavior might change as they move status within the nuclear deterrence framework

With the moving status within the nuclear deterrence framework, the near-peer adversaries' behavior could change across multiple realms. This shifting could result in new global aspirations, associations, and affiliations while omitting recent conflicts between nations. Gorenburg (2019) pointed that one of the most probable outcomes is Russia's collaboration with China. The United States' relations with China have considerably deteriorated in the past, and the two powers are improbable to draw up a cordial alliance. However, the three powers could enter into a unified pact, which would be founded on the parties recognizing a common threat.

With Russia's potential collaboration with China, each party would individually entice more nations to align with them. Beijing and Moscow are likely to use these nations as secondary or auxiliary bases, an essential step in developing themselves into a worldwide threat. Multiple locations for continued nuclear weapons advancement, testing, and

launching prepositioned strikes if a need emerged. Similarly, the United States of America would also be expected to attract more allies and reinforce existing partnerships and associations with nations, such as those in the North Atlantic Treaty Organization (NATO). With each power drawing in more supporters, the new near adversaries could either be susceptible to opposing powers or strengthened.

It is worth mentioning that China and Russia perceive the nuclear threat as a two-power contest, while the US perceives it as a three-power contest. It follows that Russia has cordial relations with China, but both oppose the United States. To this end, the United States has a higher number of opponents and is more susceptible to attacks by the Russians and the Chinese. Lippert, Perthes, and und Politik-SWP-Deutsches (2020) pointed out that all three nations are likely to adopt strategic rivalry behaviors and tendencies. Strategic rivalry, in this case, refers to each country seeking to assume certain positions and behaviors in respective regions. Strategic rivalry is primarily noted in how the powers relate with allies and how they reach out to traditionally hostile nations. For instance, China, Russia, and the United States could adopt measures that either abandon, relinquish, or even establish new relationships with other powers. To compound strategic rivalry, nations are likely to redefine their national security threats and subsequently trickle to regional security. As discussed, the nuclear arms war is now highly profound in the regional realms since the near-peers are highly likely to destabilize regions instead of striking nuclear powers independently. For instance, China and Russia are likely to attack North Atlantic Treaty Organization nations to destabilize the United States of America as opposed to launching attacks on the United States directly. The countries are also likely to organize and orient defenses while also forming and reinforcing alliances. However, the rise of strategic rivalry could lead to increased political-diplomatic standoffs, which could either force the other

nations to certain accountability behaviors on nuclear resources treatment or act as provocation measures.

How current near-peer adversary behavior could change as a third near-peer actor changes the deterrence framework

The current near-peer adversary behavior could change as a third near-peer actor changes the deterrence framework. MacDonald (2017) observed that the entry of China into the nuclear superpowers' race could significantly lead to more collaboration between the three nations or the two base adversaries, each courting the third entrant. The researcher observed that in the first instance, the three powers would recognize each other's capabilities and the threat they pose to each other (McDonald, 2017). As such, the US, Russia, and China will recognize that the other powers are equally powerful, and therefore rolling offensive nuclear campaigns could see individual nations record significant catastrophes. Such cooperation could essentially be considered as a high-level deterrence framework whereby all the three powers alienate themselves from offensive nuclear weaponry campaigns for fear of the losses that they could record. Egeland and Pelopidas (2021) posited that the development of nuclear weapons is often a highly guarded secret in nations. For that reason, there are fears that the weapons admitted by the three nations are not truthful records. Or, as in the case of Iraq, we learned this country did not have nuclear capabilities even though such capability was broadcast by the leadership of that country at the time.

The second approach, as indicated above, is the two base powers—Russia and the United States—seek to collaborate with China so that the nuclear deterrence framework transitions into one power against two forces. However, the United States' probability of developing a cordial deterrence framework is slim compared to Russia's, given that the

latter enjoys highly cordial relations with China diplomatically. And economically, China does not view Russia as a competitor, but does consider the US it's main competition.

Nian (2018) observed that tri-force cooperation, which entails all the three powers collaborating, is unlikely to be implemented. This is supported by the fact that Russia and China have common adversaries; as a result, their energy is focused on working against the US. Russia's conflict with the United States dates back to the 20th-century Cold War era. On the other hand, China's conflict with the United States is more recent, mainly growing in the last two decades, since the former has expanded diplomatic, economic, political, and military power. While the United States has held the superpower badge for a while, China's influence is on a rising trajectory due to its leadership across diverse fields, hence the unlikelihood of it cooperating with the United States.

It is also crucial that a one-sided weakening of deterrence framework is likely to emerge, which is expected to affect the United States only. The probable cooperation between Russia and China will likely lead to furthered multipolar deterioration of critical agreements and international cooperation pacts. Primarily the ones regarding nuclear weaponry and the development of arms. This notion is supported by Russia, China, and the US having veto power in crucial global security venues, such as the United Nations Security Council. The three authorities, therefore, can overturn majoritarian decisions made which pertain to world security. The complication herein dictates that any two powers holding veto power in international outfits on global security could have a more considerable influence than a single opposing power.

As Talmadge (2019) discussed, the entry of China into the nuclear armament race is likely to influence nations' behaviors as it relates to hegemony. The researcher observed that nuclear deterrence could transition from the national level to the regional level (Talmadge, 2019). The inferences above concur with the ones made by Trenin (2018), who

further noted that the nuclear threat, propaganda, and actual wars are likely to be fought on allies' soil. With every nation having specific regional and international partners, deterrence efforts are leveled in such allies' security frameworks. For instance, the United States is allied to countries that are signatories to the North Atlantic Treaty Organization, which are likely to be nuclear targets to instigate the United States.

Similarly, the United States is likely to launch nuclear offensive campaigns on Russia and China's allies, such as North Korea.. The shift from national preferences to regional protection and deterrence will likely redefine how the world interacts with nuclear weapons. As pointed out by Ross (2017), one of the consequences of changing preferences is the expansion of nuclear armament. For instance, if any nation alongside the three base nuclear powers is attacked, it could be obligated to match its military capabilities to nuclear capacity. Assuming that attacked nations are allies to either of the three nations discussed, the veto power allies could use their prowess in the global security bodies to justify the offended nations' expanded military aspects to nuclear-leveled power.

New concepts of deterrence are also likely to come up with the entry of China into the nuclear deterrence campaign. The United States has in the past concentrated on conventional warfighting, cybercrime, and diplomatic wars in formulating its international peace policies. However, the US will likely adopt a comprehensive deterrence framework shifting preferences in nuclear deterrence and ultimately building its defense on multi-realms. The Cold War saw the United States establish a mutually assured destruction (MAD) policy, which has changed to "mutually assured stability." On the other hand, Russia's standpoints have historically been defensive upon its strike or any of its allies being hit, retaliation upon attacks, and leveraged efforts to counter national catastrophes caused by war. However, with the entry of China, the two base adversaries are likely to adopt newer concepts based on the three-power agreements and contextual factors. And the

wild card is third party actors, like terrorists, who attempt to obtain nuclear weaponry. No diplomacy, or deterrence, could prevent an attack.

Conclusion

Having delved into the implications of two peer nuclear-armed adversaries on the US, deterrence strategy, and the future of arms control agreements related to China's entry into the nuclear weapons race, a few features are worth restating. First, the role of China in the 21st century cannot be assumed. The power has risen to command substantial economic, political, and now military power. The United States has had one historical military competitor—that is, Russia. The two nations have been in silent conflict since the end of the Second World War, signaling the start of the Cold War. And while Russia has been no match for the US economic might, they have been able to match the US clear military advantage, at least to the extent to deter any aggressive moves.

While the two powers have never been involved in military conflict, they have also been continuously alert. Therefore, the term military deterrence, which entails a power using its military might to discourage others from launching attacks, would be countered by the other nation's capabilities. The US and Russia have maintained nuclear deterrence policies for decades. Even so, the entry of China has complicated how the two nations treat their deterrence. With Russia being an ally to China, the two nations are likely to unite against their distrustof the United States. Their unification would immediately affect the United States' deterrence stability. Could it lead to pressure to make a first strike? Would the US be better served to take this approach to establish or even showcase its nuclear power. All three nations have veto power in the United Nations security council, and this ability is a means to circumvent global peace and security policies. But a breach of nuclear deterrence potentially leads to a worldwide nuclear war.

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APPENDIX C

BY: PHILLIP A. BUSH

United States Nuclear Posture with China as a Near-Peer Nuclear Power

I. Introduction

The deterrence of nuclear aggression has been fundamental in preserving peace amongst nuclear-armed states. Since the United States dropped nuclear weapons on Hiroshima and Nagasaki at the conclusion of World War II (WWII), the world has not experienced a large-scale conflict among advanced military nations. Approximately 1.75 percent of the world population (80 to 100 million people) perished during WWI and WWII, resulting in the most significant deaths of any wars in history. The nuclear arms era coincides with a drastic reduction in lives lost during military conflicts. The US nuclear capabilities and assured deterrence strategies protect the US and our allies against nuclear and non-nuclear aggression from adversaries.

The US has spent decades jockeying for nuclear superiority against the Union of Soviet Socialist Republics (USSR) and now Russia. The USSR and Russia has occupied the role as the only true nuclear-peer nation, and fundamentally influenced all aspects of the US's nuclear force and posturing. Since the conclusion of the Cold War, the US has experienced dramatic mutual nuclear arms reductions with Russia. Without the heightened alert of imminent nuclear attack from either side, the US and Russia could usher a period of nuclear stability on the bounds of bilateral nuclear arms treaties. Currently, Russia is modernizing its nuclear forces and appears to be adopting new strategies and capabilities that could lead to nuclear escalation. Despite this change in Russia's nuclear outlook, the rise of the People's Public of China (PRC) as a peer/near-peer nuclear power presents the most significant impact on the US nuclear posture moving forward. The PRC is modernizing and expanding its nuclear forces considerably to challenge traditional US military superiority in the Western Pacific. The PRC's nuclear ambition is a vital component of its military outlook. It seeks to reshape the global order to align with its objective of "the great rejuvenation of the Chinese nation" by 2049.

The introduction of the PRC as near-peer to the US and Russia will alter the nuclear landscape on a global scale. The rapid expansion in the PRC's nuclear arms capabilities has given the US and its allies concerns about the PRC's intention. Since the PRC first came into possession of nuclear weapons, the country has openly maintained a nuclear posture on the principles of a "no use first" doctrine. However, the lack of transparency and unwillingness for open dialogue on its modernization efforts will force the US to hedge against an uncertain future. The bilateral arms agreements that have been pivotal in fostering nuclear stability between the US and Russia due not apply the PRC's nuclear modernization programs. Despite the PRC's unwillingness to negotiate on the terms of nuclear arms control, mutual arms agreements can serve the interest of all parties through transparency, understanding, and predictability of nuclear postures. For this to be accomplished, the US and the PRC must overcome a strained relation driven by vastly different ideologies on the matters of human rights, economy, and regional influences. The US must also be cognitive of a PRC- Russia coalition forming at the negotiating table producing unfavorable terms for the US.

The US nuclear triad and US national missile defense remain the strongest nuclear deterrence. However, the PRC is actively developing attack capabilities in the space and cyberspace domains to equalize the US forces. These asymmetric attacks present a vastly different threat environment than when the triad was created. The US must undertake its own nuclear modernization initiative to combat future threats and replace aging systems to remain the benchmark of nuclear power. Many predict a new period of nuclear arms race is on the cusp as tensions between the US and the PRC arise. The presence of the US military in the Asia-Pacific region presents viable scenarios for a direct military confrontation with the PRC. The odds of those confrontation resulting in nuclear escalation should be higher than either side is amenable to.

II. Early History of PRC's Nuclear Weapons

PRC tested its first nuclear fission bomb in 1964 and its first thermonuclear in 1967. The three-year span was a remarkable achievement. It was the shortest period between a first fission nuclear detonation and a thermonuclear detonation than any other nuclear-armed nation. The weapons' technology and materials were primarily the results of a Chinese-USSR agreement stroke in the late 1950s for the Soviets to assist with the PRC's nuclear bomb manufacturing. For a brief period, Chinese and Soviet nuclear scientists and engineers interchanged nuclear secrets to construct a nuclear bomb until a rift between the two nations severed the relation in 1959. The PRC continue the development of a nuclear weapon with the knowledge gained. The PRC need for a nuclear weapon was primarily driven by the nuclear threat of the US Pacific Fleet. At the highest of military and civilian leadership, the US government engaged in empty rhetoric about using nuclear weapons against the PRC in response to their support of North Korea against South Korea, Chinese support of the Viet Kong, and the US defense of Taiwanese sovereignty. Lacking the technological advancement or military sophistication of the USSR or the US, the PRC elected ballistic missiles as the primary delivery system of nuclear warheads. In 1966, the PRC launched a medium-range ballistic missile (MRBM), Dong Feng-2, carrying a 12-kiloton nuclear warhead. The PRC government viewed these demonstrations as breaking the "nuclear monopoly" and providing a "lean" nuclear posture against the US and newfound rival, the USSR. The PRC was the first nuclear-armed nation to declare a "no-strike first" posture. A "lean" nuclear posture meant China would have sufficient nuclear weapons to guarantee a retaliation strike. It is estimated that China possessed 75-90 nuclear warheads during the late-1960s to early-1970s and grew to no more than 180 by the 1980s. Despite this limited quantity of nuclear weapons, China showcased a limited ability to afflict mass destruction to rival nations.

China's "lean" nuclear posture remained stagnant until a reoccurrence of nuclear modernization started to take place in the 1980s. Many experts believe the persistence in a small nuclear deterrence posture results from the political restraints of former Chinese President Mao Zedong regime. President Mao thought that nuclear weapons were not the

ultimate means for military power. After the death of Mao in 1976, the PRC's nuclear arsenal grew and modernized at a low rate of growth until the mid-1990s. During the period, China demonstrates a change in their nuclear testing from high-yield/ rapid testing to a more low-yield testing model. The difference in test methods signified an advancement in the PRC's understanding of modern nuclear warhead designs and technology improvements. China conducted a series of tests from 1992 through 1996, resulting in smaller form fit and lighter weight nuclear warheads paving the way for a more accurate and diverse nuclear arsenal with ballistic missiles, submarine-launched missiles, and ICBMs. By 1997, the PRC had a deployable nuclear arsenal of 300 strategic and 150 tactical weapons. By the 1990s, China had fully accepted the idea of nuclear deterrence as a military capability but remained missile-focused for delivery systems. The PRC's nuclear strategy was still centered around a "no-strike force" policy with a focus on the ability to carry out a retaliation strike campaign in terms of their nuclear infrastructure's "survivability" and "unacceptable damage." The PRC staged its missiles primarily in the central mountainous regions of China with the expectation that the location and terrain would provide protection and camouflage in the event of an adversary attack. However, the greatest vulnerability to China's ability to carry out a retaliation strike was its nuclear forces' lack of sufficient command and control policies. They lacked the command-and-control organizational structure to withstand a debilitating first strike, as well as clearly defined definitions and directions to be acted upon at any level in the chain. This left the PRC vulnerable to misinterpretation both internally and from an adversary. From 1977 until the mid-1990s, China assembled a larger and more capable nuclear force. Still, the deficiencies in its nuclear command and control network significantly diminished the creditability of the PRC as a nuclear rival to that of the US or Russia.

III. The PRC's Nuclear Modernization Efforts

The PRC's ongoing nuclear arms modernizations effort has dramatically improved its arsenal's nuclear stockpile numbers, readiness, and diversity. The PCR is expanding the number and capability of land, sea, and air-based delivery systems and developing the nuclear infrastructure required to support the growing force. The PRC's nuclear force modernization is paced primarily by the Chinese perception of the US missile defense capabilities. The PRC's strategic planners realized that the US defenses could overcome a limited (up to two dozen nuclear warheads) retaliation with relative certainty. The US

national missile defense and theater defense are viewed as the fundamental threat to their strategic deterrence.

Since the turn of the millennium, the PRC has acquired new generations of land and sea-based missiles. The PRC deploys a growing inventory of intermediate-range ballistic missiles (IRBMs) capable of carrying out land base nuclear attacks. The IRBMs provide China with regional nuclear deterrence capability against Asian US allies such as Taiwan, Japan, and South Korea. The current PRC arsenal of intercontinental ballistic missiles (ICBM) is approximately 100, including fixed and mobile launchers. The PRC is currently developing upgraded ICBMs to drastically improve its strategic nuclear missiles capability with multiple independently targetable reentry vehicles (MIRV) to increase weapon survivability. The PRC has committed to the necessity of equipping their strategic missiles with MIRV warheads to maintain an effective deterrence despite the US national missile defense. In the next five years, the PRC's ICBMs will have approximately 200 nuclear warheads capable of reaching the US and its allies.

Despite many resources going to the land-based system, the PRC's investment in its sea and air-based nuclear forces indicates the value of a nuclear triad in their current doctrine. The PRC's development and fielding of its nuclear-powered ballistic missile submarines (SSBNs) provide the strongest indication of a significant change from a defensive minimal deterrence posture to a much more capable offensive nuclear posture. China currently deploys six 094 Type SSBNs with MIRV submarine launch ballistic missile capability. By 2030 the SSBN number is expected to grow to eight with the upgraded 096 Type SSBN coming into operational service. The PRC expects the eight SSBN will provide sufficient strategic force projection and redundancy against the most powerful anti-submarine force in the world, the US Navy. Many experts believe the deployment of the 094 Type SSNBs holds historical significance being China's first true retaliatory nuclear strike capability that is a creditable threat to the US missile defense. In 2019, China obtained another milestone with the return of the air-based leg of its nuclear triad with the operational fielding of the H-6N long-range bomber capable of carrying a nuclear warhead air-launched ballistic missile. Although the return of the air component holds significance for the nascent triad, H-6N equipped units will have to develop and prove tactics before actual operational viability can be assessed. However, a nuclear bombardment from the H-6N would be suspected to have little to no success against US missile defenses. Both delivery platform and missile offer no

meaningful stealth, and single-warhead missiles are suspectable to US missile defense. Ultimately, the PRC's air component will be defined by the development of its medium and long-range stealth bombers. The ability to conduct covert nuclear attacks is paramount for the effectiveness of the airborne leg of the triad.

The PRC's modernization and expansion of its nuclear force also drive a significant requirement increase in nuclear stockpile. In support, China is accelerating its nuclear stockpile capacity. The latest DoD reports projects 700 warheads will be available by 2027 and will likely grow to 1,000 warheads by 2030. These numbers are believed to be supportable based on the amount of plutonium that can be produced from reactors currently under construction. The 1,000 nuclear warhead requirement meets the suggested milestone by Chinese officials and media outlets for the PRC to fully transition from a limited assured retaliation posture to possessing a mutually assured destruction capability. The PRC has also expressed its need for low-yield nuclear weapons if a low-yield nuke is used against Chinese forces during a Taiwan invasion. In 2017, the PRC announced the development of the low-yield nuke for use against tactical targets. Little is known publicly about this low-yield weapon's exact quantity or capabilities. The consideration of limited nuclear employment on a battlefield suggests the PRC could be reconsidering their nuclear doctrine as their capabilities grow.

The PRC has released publications indicating implementing a launch-on-warning (LOW) posture. A LOW posture is a counterstrike initiated by the early warning detection of incoming missiles. The retaliatory strikes are launched before the first strike can detonate, assuring a response. This posture is very similar to that of both the US and Russian LOW postures. The PRC believes its LOW posture is consistent with its longstanding no-first-use policy. The irony is that the PRC has long been an opponent of LOW postures because early warning sources can cause accidental nuclear escalation. These inconsistencies in nuclear posture and doctrine are often intentional ambiguities used as tactics by the PRC. The deliberate opaqueness in strategy is used to build uncertainty on the part of the PRC's adversary to gain a tactical advantage. However, this is more likely to increase the risk of miscalculation that can have dire consequences for either side.

IV. US Nuclear Force against the PRC

The US nuclear triad is the most capable nuclear force in the world. Decades of jockeying for nuclear superiority with the USSR, and now Russia, has developed the US nuclear force that outclasses the PRC in every aspect. Each leg of the US nuclear triad presents an element that can afflict assured destruction and, as a result, the ultimate deterrence. However, the true success of nuclear deterrence strategy is measured by the number of nuclear conflicts it has avoided. If the Cold War is used as evidence, the US strategic deterrence has been widely successful. The technology of the US nuclear triad has evolved since the days of the Cold War. However, the framework and principles of the US triad remain prevalent for deterring Russia's nuclear aggression and a modernized PRC nuclear force. The US nuclear deterrence is not "one size fits all." A nuclear posture must be tailored to an adversary to effectively communicate that nuclear escalation will fail to achieve the adversaries objectives. A tailored nuclear deterrence increases the need for diversity and flexibility in the triad and nuclear command, control, and communication systems (NC3). The current threat environment and future uncertainties of modernized Russian and Chinese nuclear force necessitate a renewed US commitment to maintain modern nuclear force and supporting infrastructure. This commitment by the US will consist of a series of programs for sustaining nuclear stockpiles and systems and replacing nuclear capabilities before the end of their service life. All three legs of the US nuclear triad have current modernization programs underway.

The ICBM Minuteman III missiles will begin to be replaced in 2029 as part of the Ground-Based Strategic Deterrent (GBSD). The OHIO-class SSBNs have an associated sustain program to extend their service life but will be eventually be phased out by the upgraded COLUMBIA-class SSBN. The airborne component of the US triad will experience modernization and replacements in its stealth strategic bombers, dual-capable aircraft (DCA), and air-launched weapons. The B-2A stealth bombers will begin to be replaced with the B- 21 stealth bomber once they become operational. The F-35A can carry a low-yield nuke as a replacement for the aging F-15E DCA. The air-launched cruise missile (ALCM), predominately carried by the B-52H, is 25 years past its design life and will be replaced as part of the Long-Range Stand-Off (LRSO) cruise missile replacement program. These modernization programs as essential to combating the rise in the PCR's nuclear forces and providing the most creditable deterrence.

The PRC's pursuit of regional dominance in Asia combined with the challenges the US poses through the protection of its regional allies could lead to conventional military conflicts to nuclear escalation. Military experts warn of scenarios where the PRC would use low-yield nuclear weapons as an equalizer to conventional US military forces. The PRC's fields intermediate ballistic missiles capable of both conventional and nuclear warheads. This type of munition was explicitly developed to carry out precision strikes in a regional conflict like a Taiwanese invasion. The Chinese often intermingle their conventional and nuclear forces. This colocation of arsenals also applies to the PRC's SSBN support network of escorts and communication nodes. In the attempt to neutralize the conventional weapons system, the US may fall victim to attacks on the nuclear arsenal resulting in a nuclear retaliation from the PRC. This would have a high potential to cascade to an all-out nuclear war. The US must consider the ramification of the US's intervention in Taiwan both politically and tactically. The US holds obligations to aid in the event of unpeaceful acts by a foreign entity attempting to influence Taiwan's future per the Taiwan Relations Act. The US could elect to take a passive military stance minimizing Taiwanese damage from incoming forces and not letting the PRC gain a foothold country. A more aggressive offensive stance would most likely intentionally or unintentionally put the PRC's nuclear force in harm's way. There is no way to know with certainty how the PRC will respond. The PRC could elect to respond asymmetrically in the space and cyberspace domains.

The PRC has continued to increase its capabilities to disrupt, disable, and destroy US NC3 space systems through kinematic weapons, electromagnetic attacks, and cyber-attacks. An attack on the US NC3 infrastructure could provoke a nuclear response from the US. Since the time of the Cold War, the US had definitions and policies in the event of an attack on early warning or nuclear communication systems, even if a conventional attack would warrant a nuclear response. For instance, in 1961, the US Strategic Air Command lost communication with the Thule radar site and feared its loss was due to a first strike. In response, a retaliatory strike by the US was imminent. Ultimately, the communication loss with Thule was a false alarm but it illustrated a justifiable reaction to the loss of critical infrastructure. An attack on the current US NC3 may not be as blatant as the Thule false alarm appeared. A large portion of the NC3 space systems are multi-role systems to have tactical value in a conventional war. An attack by the PRC on a dual-hatted NC3 system in response to a conventional conflict may not warrant a nuclear response. The US must "draw

a line in the sand" on what NC3 assets cannot be operationally degraded by an adversary on any terms and build its retaliation posture around those critical systems. However, this "line in the sand" may not be transparent to the PRC or any adversary due to the clandestine nature of these assets. A lack of transparency can lead to miscalculation and misinterpretation of the adversary's part. The US response to an asymmetrical attack on its NC3 systems must be diverse and flexible to include non-nuclear counters. The ability of the US to counter the PRC nuclear forces with a "zero-day" cyberattack or electromagnetic pulse (EMP) is beyond the scope of this paper. Still, it must be considered from an offensive and defensive perspective at the highest-level strategic planning. Worst case scenario, the US must maintain its SSBN leg of the triad to carry out an assured destruction retaliatory response and retain the US national missile defense capability at all times.

For the sake of this forum, the US missile defense posture and capabilities cannot be adequately assessed. The US national missile defense is formidable and was designed to combat a more capable nuclear force than the PRC currently fields. However, there are future uncertainties associated with PRC's modernization efforts. The PRC has recently conducted testing of hypersonic reentry glide vehicles that are expected to be nuclear-capable. Hypersonic glide vehicles present a challenge to current US missile defense due to the nature of a glide vehicle not following a predictable flight path as is the case with ballistic trajectories. A hypersonic glide vehicle is still vulnerable during the boost phase of flight. It is susceptible to an engagement by a Standard Missile 6 (SM-6) equipped Aegis as part of the multi-layered missile defense. However, the Missile Defense Agency (MDA) has selected defense contractors to compete in developing a new Glide Phase Interceptor as a direct response to the emerging Chinese threat.

V. US Diplomatic Strategies

The United States must continue to pursue nuclear stability with PRC through regular dialogue. The intent of open dialog with the PRC is to birth mutual nuclear policies and treaties that foster understanding, transparency, and predictability between nuclear rivals. However, discussions of nuclear arms control between the US and PRC should be met with skepticism due to a long existence of mistrust between the two nations. Both countries have profoundly different ideologies on fundamental human rights, governance of their citizens, and a state's role in controlling commerce while also attempting to influence beyond their

sovereignty. This tense geopolitical climate between the PRC and the US does not lend to a conducive environment for negotiation. In many ways, the current relationship between the US and the PRC presents more perils in arms negations going awry than that of the U.S.-Russian relationship. The US and Russia relationship is more mature. For decades both sides were forced into military and diplomatic dialogue to advert nuclear escalation. The PRC-US relationship is more nuanced because both countries' economies rely heavily on commerce between the two. The countries' economies are interconnected, and either side can become vulnerable if trade is interrupted based on rhetoric in nuclear arms negotiation.

The sensitivity of the economies to diplomatic actions were observed during the trade wars of the President Trump's administration. Both sides levied tariffs and counter-tariffs, and an economic pullback was experienced. This economic interdependency makes nuclear arms negotiation a "slippery slope." Both sides call for more economic independence, but US tech and big business companies' handholds in the PRC and vice versa realistically pose economic ramifications for the foreseeable future. The likelihood is that the current climate of U.S.-PRC relations does not support formal arms control negotiations resembling the bilateral arms treaties with Russia and the USSR before that. At the 2021 virtual summit between President Biden and Chinese President Xi Jinping, an agreement was made to support dialogue between the US military and the People's Liberation Army (PLA) top officials. While not a breakthrough in the US and China's military relations, it does provide an opportunity to lay the foundation for future arms treaties. The US must seize the opportunity to define a strategy to address nuclear weapons, space, and the cyber domains and their implications to nuclear escalation.

Many US officials and world leaders feel the PRC has an obligation to come to the negotiation table with the US and Russia as a prominent nuclear power. However, the PRC claims the significant disparity in their nuclear arsenal compared to that of the US and Russian stockpiles would only put them at a disadvantage in trilateral arms agreements. With a current estimated nuclear stockpile one-tenth that of the US or Russia, would either nation be willing to reduce their arsenal to a quantity more analogous to the PRC? An argument can be made that reducing the US stockpile to lower than current levels would be less advantageous for the US as a nuclear deterrence when considering the global nuclear landscape. Both China and Russia have not been openly forthcoming about their actual stockpile numbers, and indications point towards both sides increasing and diversifying their nuclear arsenal. Even at the most optimistic nuclear stockpile growth rate estimations,

the PRC will not have a comparable warhead quantity for decades. The US must also consider the impacts of North Korea as an additional creditable nuclear threat in Asia, Pakistan as a nuclear-armed state, and Iran's nuclear aspirations when assessing its nuclear stockpile. The US should be willing to negotiate further stockpile drawdown only at the expense of excessive nuclear expenditures. The US's overwhelming quantity of nuclear warheads provides the ability to maintain assured destruction as the PRC expands its nuclear forces in size, capability, and location. Multi-party nuclear arms negotiations present levels of complexity more than the bilateral agreements between Russia and the US. The disparity in the PRC's stockpile exacerbates those complexities.

China acceded to the Non-Proliferation Treaty 1992, although it has claimed in principle it recognized the treaty since its inception. The NPT has been paramount in preventing additional nuclear-armed states, but many experts question the actual effectiveness of the treaty for controlling nuclear stockpiles on nuclear- armed states. The treaty obligates the five original nuclear-bearing states (US, USSR now Russia, United Kingdom, France, and China) to make "good faith" attempts to reduce their nuclear stockpile for the ultimate purpose of nuclear weapon elimination. The U.S. and USSR became signatories to the treaty at its inception in 1968. However, neither side experienced significant nuclear stockpile or arms reductions until a series of bilateral agreements were put into place. The New START and Intermediate-Range Nuclear Force (IFN) bilateral agreements remain the most important treaties in stabilization US and Russian nuclear arms ambitions. New START limits strategic intercontinental-range nuclear arms for both parties. Although the PRC is not bounded by New START, its nuclear arsenal does not exceed the limits stipulated in the treaty at current numbers. However, the PRC's nuclear ambitions must be checked through diplomacy as their arsenal grows. The INF treaty places a vital ban on ground-based nuclear and conventional missiles with 500-1,000 kilometers (km) engagement ranges for the US and Russia. The PRC currently fields intermediate ground-launch nuclear-capable ballistic missiles that would in violation of the INF treaty if the PRC was partied. The US and world leaders must prioritize prescribing a diplomatic solution to eliminate the PRC intermediate ballistic missiles from the battlefield. The PRC's intermediate nuclear ballistic missile capability holds vital importance in a Taiwan invasion and presents a viable path to nuclear escalation if limited low-yield nukes are employed. The US should be willing to take a "hard stance" against the complete elimination of intermediate nuclear ballistic missiles. Ground-launch intermediate nuclear missiles hold

little strategic value as a mutual deterrence now that the PRC possess suitable ICBMs and SLBMs.

Outside of the traditional nuclear arms treaties, the US must aggressively approach agreements on the protection of NC3 systems in the space and cyberspace domain. A disruptive incident (intentional or unintentional) to NC3 infrastructure can become the source of nuclear escalation. The Outer Space Treaty should be modified for policies against any disruption of a state's critical NC3 space systems. This will require transparency amongst parties to divulge which system or act is considered critical. In the event of an incident, procedures should be put into place amongst nuclear powers to establish mechanisms for risk reductions for escalation. Nuclear power states lack mature and open crisis management and conflict de-escalation processes in the space and cyberspace domain. A sense of urgency must be placed amongst the nuclear powers as they all have a shared interest and responsibilities to hedge against unintentional nuclear escalation.

VI. Conclusion

When considering the current geopolitical climate amongst the nuclear power states, a mutual nuclear deterrence would provide stability amongst the nuclear powers. A nuclear posture where no side is comfortable launching a first strike out of fear of an assured destruction retaliation is the realistic best-case scenario. However, the truth is that the PRC is not truly a nuclear peer to the US or Russia in the traditional sense. The PRC currently lacks the stockpile numbers and strong nuclear doctrine to overcome the US forces on the US's terms of engagement. The US triad and missile defense remain the most formidable globally and considerably outpaces the PRC. However, this may not always be the case as the PRC modernizes and expands its nuclear forces. The PRC's investment in the space and cyberspace domains to counter the US's military forces could prove to be the great equalizer in nuclear conflict. The US must leverage its head start, continuing to modernize and diversify its nuclear forces to remain the benchmark of nuclear power. Flexibility in the response options will be essential if confronted with the potential nuclear conflict with the PRC due to the ambiguity in their nuclear doctrine. The US must also not lose sight of Russia's modernization efforts and nuclear strategy changes. With the three nuclear rivals in a period of modernization, there is potential to spiral into the next nuclear arms race. The

US must continue pursuing nuclear stability with Russia and the PRC through regular dialogue. The U.S.-PRC relation will need to be nurtured, primarily on the matters of commerce, before meaningful arms agreements can be reached. The nuclear threshold remains status quo for all nuclear-armed adversaries. The use of tactical low-yield nuclear weapons provides the stepping blocks to full-scale nuclear war. The US should be willing to eliminate low-yield for all battlefields even at the expense of its own. The US's posture of assured destruction against any nation committed to first use of nuclear weapons on any scale should serve as the ultimate deterrence. The US nuclear force must maintain an assure destruction capability above all else.

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APPENDIX D

NUCLEAR DETERRENCE DYNAMICS IN A CHANGING NUCLEAR NEAR PEER ENVIRONMENT

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Abstract— The United States (U.S.) has long been the leader in both nuclear armament and deterrence strategy. However, with the focus of nuclear and non-nuclear armament of the People's Republic of China (PRC), there is a changing dynamic in how the

U.S. may continue its nuclear deterrence strategy. The defensive strategy of the PRC should not affect the strategy of the Russian Federation, but may lead to strategic joint involvement in future exercises. The U.S. will therefore be pressured into focusing on revamping the current triad system with a focus on a nuclear posture aimed at near peer adversaries as opposed to a focus on terrorist cells, different from its previous nuclear posture. Although incredibly difficult to extrapolate future response to escalation, recent events such as Iran's IAEA failures and Russian rhetoric during the Ukraine conflict show U.S. response to a changing nuclear environment and the possibility of strategic partnerships between near peer adversaries.

1. INTRODUCTION

The United States has consistently assured that the purpose of its nuclear arsenal has, and will continue to be, an assurance for allies against deterring any nuclear — and in some cases non- nuclear — attacks from adversaries. However, the way in which the U.S. performs these objectives has varied throughout the years. Current policy allows the possible use of a nuclear response in the event of a event that is highly detrimental to U.S. persons or allies. The exact threshold is not publicly discussed as a method of creating uncertainty in the events that may not lead to nuclear escalation. The only way in

which the U.S. government reflects their posture externally is through the Nuclear Posture Review (NPR), which has been released by each administration since 1994. From the end of the Cold War, nuclear weapons have been a topic of continuous discussion, albeit often overlooked by the public unless near-peer aggression brings it to current view. This is evident as seen in the Google search trends presented in Figure [1]. Also noting the fact that March 27th of 2022 was the day Russian Federation President Vladimir Putin placed nuclear forces on high alert as reported on several news media outlets [2]. The high-profile mentioning of nuclear conflict will gather interest from the United States and allies. However, response to the threats has been mixed and it is unclear if Moscow's objectives have been met by its nuclear threats. The events can therefore be created to model future potential responses to similar threats.

The Nuclear Posture Review (NPR) has reached the conclusion that the United States is adamant that the purpose of the United States nuclear forces is to deter against nuclear attacks and maintain the right to defend against non-nuclear

attacks with a nuclear response in extreme circumstances [2]. The ability to respond to non-nuclear threats with nuclear forces creates risks for adversaries looking to affect national security interests of the United States. There is also a promise to ensure other entities are abiding with non-proliferation obligations [2]. The National Nuclear Security Agency (NNSA) is thus tasked with the development of the scientific instruments necessary to ensure compliance. The U.S. continues to recognize the threat of near peer weapon systems from China and Russia. In response, the current budget for the Nuclear Triad will need to be an increased portion of the DoD budget to sustain its reliability and necessary modernization [4]. Modernization programs across the Department of Energy (DOE) and DoD will continue to be an important part of America's nuclear posture, regardless of near peer weapon advancements.

The Russian Federation and the Peoples Republic of China (PRC) have both been steadfast in the development of weapons that could pose a risk in escalation between high-tension disputes. Recent joint statements between the Russian Federation and PRC express mutual distaste of the trilateral security agreement between Australia, the US and UK while claiming to want to reduce the role of nuclear weapons in their respective national security policies [5]. Although this rhetoric is not new from Moscow, it may

present a shift in traditional thinking from the People's Liberation Army (PLA). The mutual treaty comes at a time when both Russia and the PRC continue weapons development while condemning the U.S. for any weapons development, such as the W76-2. The Strategic Forces Posture Hearing of FY 2022 highlights that anti-US weapons development rhetoric is used by Russia to deter public support of weapons development [6]. Although pressure is placed on near peers for nuclear disarmament, it seems unlikely that any nuclear armed state is looking at nuclear disarmament as a long-term strategic goal. The lack of incentive to not continue proliferation then becomes an incentive for continued weapons development. The Kremlin and PLA nuclear development may affect future administrations nuclear posture. Both current and future events have already begun affecting current geopolitical dynamics. The PLA having increased its approximate stored warheads by 30 in 2021 signifies China's goal of being an active participant in the nuclear playground [7]. The increase in warheads will be a continuous point of discussion as nuclear escalation becomes an increasingly common tactic of Russia. Although China is less publicly vocal on its nuclear rhetoric, there is documentation on the PLA's doctrine with regards to its nuclear posture.

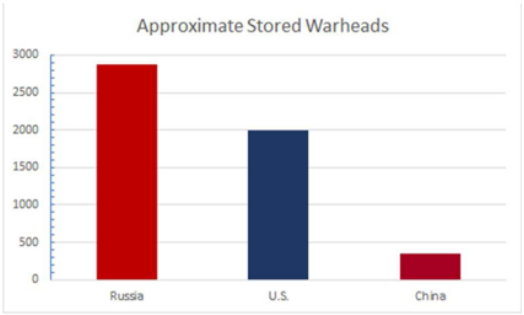

Figure 2. Approximate Stored Warheads of the U.S., China, and Russia as seen in the SIPRI 2021 World Nuclear Forces report [7].

The relationship between the Russian Federation and PRC has also grown. There have been technological exchanges and China had bought Moscow's nuclear-capable Su-57 in an effort to modernize its fleet [9]. These technological exchanges provide at the very least signs of mutual relationships. The increased partnerships have also led to an increase in the number of joint exercises and will affect future escalation techniques. These joint exercises must be closely analyzed for future intelligence on any joint operation planning between the near peer nations.

Advancements across industries such as autonomous guidance and control, big data, cyber warfare, and non-kinetic capabilities has also affected the role of a nuclear force in an environment with multiple adversaries as described by Deputy Secretary of Defense Bob Work in 2015 [8]. As non-kinetic responses become more common from

adversaries, there is a growing discussion on what constitutes appropriate responses from any nation when looking at nuclear options. Although there has been no significant threat of nuclear response coming from the current United States administration.

2. CURRENT NUCLEAR POSTURE OF RUSSIA

As the U.S. continues its efforts in stockpile stewardship and modernization, the Russian Federation also suffers issues regarding aging weapons systems. Moscow's nuclear stockpile has been characterized and their nuclear posture can be realized by growing interactions with the recent Ukraine-Russia conflict. The conflict highlights use of possible nuclear escalation as a way of coercion and deterring direct involvement from NATO. However, officials from Moscow, such as Russian Foreign Minister Sergei Lavrov has said that nuclear escalation cannot be underestimated due to the involvement of NATO in what has effectively been a proxy war over Ukraine [15]. The threat of nuclear escalation is therefore never zero, which is done on purpose by Moscow to increase the risk of outside intervention. The uncertainty surrounding nuclear escalation is what has created a successful bargaining chip for Russia, and may create similar opportunities for the Chinese government when expecting conflict or deescalating outside involvement.

The theme of uncertainty in nuclear armament is not new and is also used strategically across most nuclear armed states. The development of dual-capable missile deployment systems adds to the efficiency of nuclear weapons in a tactical theater while adding yet another element of uncertainty [10]. The development of dual-capable warheads to be used in a tactical theater is an effective nuclear deterrent for avoiding escalation during most minor conflicts, as the cost of crossing that nuclear threshold becomes increasingly costly for all participating parties. There are concerns that one party in a warzone may mischaracterize missiles, whether a dual-capable missile is conventional or nuclear, and thus argue the point that it increases the chance of accidental retaliatory strikes. However, it is also noted that the United States has not had a conventional cruise missile strike characterized as nuclear despite the fact it has launched more than 350 of them since 1987 across different scenarios [4]. Therefore, an argument can be made that there is a mutual understanding, at least at the strategic level, to not expect a nuclear response when the threshold of such response is relatively high. Even

continued territorial conflicts may not be enough to accidentally mischaracterize forward deployed forces.

The Russian Federation has also increased its nuclear rhetoric. Moscow has said that it will put its nuclear forces in high alert [19]. However, for the U.S. and Russia, the increase of alert in a nuclear system must be accompanied by likely procedures, logistical movement, and other factors. There is no evidence from news media that the rhetoric has led to noticeable changes of Moscow's nuclear forces. Which is not to say that nuclear rhetoric goes unnoticed. Increased use of threatening language may have an adverse effect if no action is taken and simply decreases the credibility of such rhetoric.

3. CURRENT NUCLEAR POSTURE OF CHINA

Although China's current arsenal of nuclear forces are close to an order of magnitude less when compared to the U.S. and Russia, there is growing concern in the trend in weapon research and development. Similar to other nuclear armed states, the Chinese Government has declared that it will only keep the minimum level of nuclear forces required for safeguarding its national security objectives [7]. One could argue that the PRC views the growing threat of other nations as reason enough to build an operational Triad system like that of the U.S. Table 1 looks at the year which Chinese nuclear forces were first introduced into operation along with the number of warheads. The response of China, if placed in a territorial dispute with Taiwan, may differ from the response of the Kremlin has had with Ukraine. The majority of its nuclear forces now were first deployed within the last two decades as seen in Table 1. There are also proposed nuclear forces going well into the early 2020's shows that China values the strategic value of its weapon systems. Any nuclear deterrence strategy will be deemed less effective without continuous modernization. The strategic value a nuclear arsenal has is dependent on its proposed use. The PLA has continued showing a consistent nuclear posture focused on

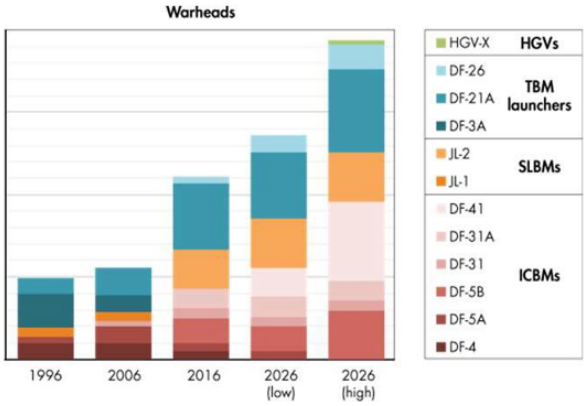

Figure 3. The PLA continues to develop nuclear warheads for its stockpile as it perceives elevated risks from their adversaries [18]

restraint. China continues to remain committed to a "no first use" policy of nuclear weapons in an effort to reduce risk in a war situation [17]. Such policy is politically aligned with maintaining a nuclear stockpile, but the ideology seems detached from increased proliferation of such nuclear forces. Figure 3 shows the trend in the increase China's nuclear warheads in its stockpile and shows that the Chinese government must believe in the value of nuclear deterrence. The PLA also continues to claim that nuclear warheads will be separated from missiles during a peacetime scenario [17]. These actions do seem aligned with its policy and in conjunction with a delayed retaliation show a level of restraint that is not seen from the Kremlin.

Chinese Nuclear Forces		
Delivery Vehicle	**Year First Deployed**	**Warheads**
H-6K	2009	20
DF-4	1980	6
DF-5A	1981	10
DF-5B	2015	50
DF-21A/E	1996/2017	40
DF-26	2016	20
DF-31	2006	6
DF-31A/AG	2007/2018	72
JL-2	2016	48
Total 272		

Table 1 - Chinese Nuclear Forces (Chinese Designation) showing year first deployed and number of warheads within the last two decades [7]

4. CHANGES TO US NUCLEAR POSTURE

There are several documents, such as the NPR, and agencies that create the overall nuclear posture of the nation. One of which is the National Nuclear Security Administration (NNSA). The NNSA has a strategic vision that also gives insight into the coming goals relating to nuclear energy, nuclear deterrence, and future nuclear posture. Specifica lly, the 2022 NNSA Strategi c Vision explicitly highlights the role of the Nuclear Security Enterprise (NSE) and its goals for mitigating national security risks with regards to nuclear security solutions. The priority of the NNSA mission has always been to design and deliver the nation's nuclear stockpile through modernization programs and looking at ways to increase the efficiencies of in future weapons development that may lead to a decrease in non-deployed weapons [13]. The rhetoric on decreasing the stockpile is mostly consistent with the previous NPRs of other administrations, but increased tensions between near peer adversaries will likely create difficulties in creating any hope of disarmament. There are accomplishments such as a decrease of over 90

percent of the non-strategic nuclear weapon decommissioning that highlight overall progress in nuclear disarmament [14]. The possibility of future disarmament of the stockpile has been a highlight of the U.S. posture, but similar political gestures have not materialized by other nuclear armed nations. It is also useful to again note that the United States and Russia's stockpile make up the majority of the global supply.

It is important to understand that the U.S. posture in responding to nuclear aggression is incredibly variable. It is also useful to note recent events to give the best overall impression of future responses, as opposed to looking at Cold War events to extrapolate events several decades after the fact.

The lack of mutual objectives relating to nuclear weapons development will continue to create tension between nuclear- capable nations and even cause tension with other countries, such as recent discussion based on Iran's International Atomic Energy Agency (IAEA) violations [11]. The Islamic Republic of Iran's undeclared sites with enriched uranium led to a senate hearing with regards to the Joint Comprehensive Plan of Action (JCPOA) and heavily discussed the threat of Iran becoming a nuclear armed state in an unclassified setting. The senate expressed different avenues to deal with the IAEA violations including military response, while also including non-kinetic response such as sanctions [12]. This response from the senate could then be extrapolated to create a potential model for U.S. response to near peers. The senate had repeatedly expressed the use of sanctions a tool to deter future actions. However, there is concern of the effectiveness of sanctions on Iran and the effectiveness it has had during Russia's territory dispute with Ukraine. The true value of economic sanctions simply encompasses multiple variables that make such responses unclear on determining its success in decreasing nuclear tensions. As sanctions increasingly become the normal response or anticipated there are concerns that it may also lose its value as a competitive tool as opposed to military response.

5. NUCLEAR DIPLOMACY TRENDS

There has been increased rhetoric surrounding nuclear forces due to various recent events. Some of which include the IAEA violations of Iran, the war in Ukraine, and the overall increased

interest of growing nuclear stockpile as a means of national security from near peer adversaries. Although there are organizations dedicated to tracking nuclear forces and educating the public on arms control, such as the Arms Control Association, increased nuclear misinformation has also continuously reached the mainstream media.

There are legitimate concerns that the post-cold war decline in global nuclear forces is on a reverse trend upwards due to modernization of nuclear stockpile as reported by the Stockholm International Peace Research Institute (SIPRI) [16]. Official media from the nine nuclear-armed states has long term goals of modernizing their stockpile. If the long term projections are correct, it could mean increased nuclear forces in the next decade. It is also unclear on whether current or future treaties will actually affect these numbers. Therefore, the reduction in nuclear forces rhetoric coming from near peer adversaries seems to create mixed signals when looking at weapons research and projections. These mixed signals may create an environment where the focus on nuclear diplomacy may not focus on minimizing overall nuclear stockpiles and may lead to increased proliferation.

6. CONCLUSION

The change in the current nuclear environment must be understood to extrapolate future effects of the nuclear environment. Russia will likely continue to use threats of its nuclear stockpile as deterrence against western powers interfering in geopolitical disputes. The conflict in Ukraine and constant rhetoric threating nuclear escalation coming out of Moscow is clearly a strategic tactic that will continue. Therefore, maintaining its nuclear stockpile and ensuring its modernization will be a key objective for Moscow's long-term goals towards increasing its geopolitical power. The success of its rhetoric is difficult to measure if the success of its nuclear-heavy rhetoric tactic is measured by the lack of a response from U.S. and allies direct intervention. The Russian Federation will most likely not change its nuclear posture. Increased exercises with China will only reinforce the credibility of threats from the Kremlin and are also not expected to decrease.

Different from Russia, the Chinese government has been rather silent in public media when it comes to imminent use of nuclear force. Official military doctrine continues to refer to its nuclear forces as a necessary force multiplier to deal with what

China perceives as increased threats from the U.S. government and allies against its economic prosperity. China has been successful in creating a restrained nuclear posture that defines a truly strategic force. It is also clear that the PLA is focused on having a Triad system comparable to the U.S. and continued proliferation is expected for the foreseeable future. It is unclear as to what the PRC sees as an adequate nuclear force. China has also not been publicly supportive of Moscow's nuclear threats, a signal that may point to the relationship being strategic in nature. Therefore, it is unclear as to how geopolitical events may drive relationships away from U.S. allies while driving the relationship between the PRC and the Russian Federation closer.

A trilateral near-peer nuclear environment creates a delicate balance between the nations that has the potential to be used as a tension multiplier. The possibility of an imbalance in the event of near peer adversaries increased relationships seem likely. Although the long term benefit of such a relationship is still unclear. The U.S. continues modernizing its nuclear stockpile and increasing spending across the Department of Energy complex. Increased spending in stockpile stewardship and weapons development are both clear indicators of a proactive approach in the movement to a trilateral nuclear environment. There is little evidence to suggest that anything short of war between a near peer adversary will change current momentum of the nuclear environment of tomorrow.

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