

AIR WAR COLLEGE

AIR UNIVERSITY

NUCLEAR REIGN:
PROVIDING A NUCLEAR UMBRELLA TO UNITED STATES
PACIFIC PARTNERS

by

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A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

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06 April 2017

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Biography

Lieutenant Colonel Philip J. Cooper entered the Air Force in 1996 as a graduate of the Embry-Riddle Aeronautical University (Prescott, AZ Campus) Air Force Reserve Officer Training Corps program. He is a Command Pilot with over 3,200 (344 Combat) flying hours. He began his career flying UH-1Ns for the Air Force Survival School at Fairchild Air Force Base, Washington then transitioned to Special Operations where he flew MH-53 Pave Lows conducting four tours in Iraq. Following three assignments in Special Operations, which included time as an operational test and evaluation director and executive officer for the 23d Air Force Commander, he attended intermediate developmental education at Air Command and Staff College. He then returned to the UH-1N at F. E. Warren Air Force Base, Wyoming where he was the Director of Operations and Commander of the 37th Helicopter Squadron, the Chief of Helicopter Operations for 20th Air Force and the Deputy Group Commander of the 582d Helicopter Group, which he helped build. His next assignment was at the Pentagon as a Deputy Director in Headquarters Air Force A10, which is responsible for Strategic Deterrence and Nuclear Integration. He is currently a student at the Air War College at Maxwell Air Force Base, Alabama.

Abstract

China and North Korea greatly increased their threat postures toward U.S. allies and interests in the Pacific in 2016 and both continue to do so today. The new administration must make the U.S. Nuclear Posture Review a top priority in 2017. Specifically, President Trump and his administration must consider both the U.S. nuclear deterrence posture worldwide as well as extended deterrence to U.S. Pacific allies under the nuclear umbrella. This paper examines the growing threat in the Pacific from China and North Korea, proposes how the U.S. might best provide extended deterrence in the region, and concludes that maintaining the status quo will not be sufficient going forward. In proposing a way forward, this paper focuses on what steps are crucial and why, in order to maintain extended deterrence in the Pacific. It proposes the role modernization of the triad will play, as well as the key strategic steps needed to deter and assure in the face of multiple opponents and allies. Due to the length restrictions of this paper, assurance issues will not be discussed in detail, but will be mentioned as they directly relate to deterrence.

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Introduction

In November of 2016, the American people elected a new President of the United States. This new administration must now determine the future of our nuclear posture. This paper examines the growing threat of China and North Korea and proposes steps the U.S. must take to provide extended deterrence to Pacific allies under the U.S. nuclear umbrella. These Pacific allies under the U.S. nuclear umbrella are the Republic of Korea (ROK), Japan, and Australia. China and North Korea are becoming increasingly threatening to U.S. Pacific allies and interests. China poses an increased economic and military threat, specifically nuclear. North Korea is a wildcard and one who is determined to become so as a nuclear power.

The complex nature of the Pacific with an expanding China, a nuclear ambitious and provocative North Korea, and strong U.S. allies under the U.S. nuclear umbrella pose a significant challenge to U.S. policy makers in creating grand strategy. Specifically, with the U.S. facing modernization needs in each leg of the triad, U.S. policy makers must decide how best to posture the future nuclear arsenal.

Both China and North Korea, throughout 2016, have increased their threat postures significantly and, therefore, must be a top concern to the new administration, which just took office 20 January 2017. With a new administration that has said it will focus attention on building up the military, the significance of properly modernizing U.S. nuclear power is great. With all three legs of the triad in need of modernization at the same time, prioritization is important to ensure the U.S. enjoys the deterrent effects its nuclear arsenal has brought to bear for the last 60+ years.¹ An overly aggressive posture could negatively affect important relations with China, while too weak of a posture could cause Asia-Pacific allied trust to wane and U.S. Pacific interests to suffer.

Thesis

The best way to extend deterrence to U.S. Pacific allies, vis-à-vis Chinese and North Korean nuclear threats, is to modernize the Nuclear Enterprise [especially B-21 and long-range stand-off nuclear cruise missiles], ensure U.S. continual bomber presence in the Pacific, consider nuclear fighter aircraft roles in future escalation strategies, and provide limited-strike ballistic missile defense in the region.

Findings and Analysis

The Threat from China

Over the next two decades, there will be a significant evolution in long-range strike weapons capable of ranging the U.S. homeland....China's recent industrial and economic growth combined with its desire to once again be a regional hegemon and global power may result in new nuclear doctrine emphasizing first use and a counter force approach, versus its current counter value doctrine and capabilities. Future delivery mechanisms might include hypersonic missiles, long-range cruise missiles, and ballistic missiles with maneuverable warheads, all designed to penetrate U.S. defensive systems.

Joint Operating Environment 2035

U.S. – Chinese relations over the last year has grown increasingly tenuous. China's expansionism in the Asia-Pacific region has given the U.S. and its Pacific allies reason to evaluate security concerns and question deterrence measures needed to protect interests in the region. According to Jeffery Bader, a senior fellow on foreign policy, "A stable and generally constructive relationship between the United States and China has been a central underpinning of peace and stability in the Asia-Pacific region since President Nixon visited Beijing in 1972, and a principal pillar of foreign policy beneficial to vital U.S. interests. But there is no room for complacency about the future of the relationship, or about the stability of the Asia-Pacific region."² Stability has been key to U.S.–China relations and, fortunately, the U.S. has been successful in keeping nuclear weapons in the background of its political relationship with China.³ As China continues to modernize its People's Liberation Army (PLA) force, especially

its anti-access/area denial (A2/AD) capability, and grow its political and economic influence over U.S. allies such as Japan and the Republic of Korea (ROK), U.S. ability or willingness to provide extended deterrence to these allies could diminish for fear of major regional or escalation to nuclear war.⁴

So why is the Pacific region so vital to U.S. interests and why is extended deterrence in the region important to protecting these vital interests? With the president of the new administration being a businessperson, it should not be hard to grasp the vast U.S. economic wealth this region provides. For instance, according to The Office of the United States Trade Representative website, in 2013, “U.S. goods and services trade with Asia-Pacific Economic Cooperation countries totaled \$2.9 trillion...and, U.S. goods and services exports supported an estimated 5.9 million jobs.”⁵ One has only to reflect on how the March 2011 earthquake in Japan affected supply chains worldwide to see the importance of the region.⁶ Therefore, the U.S. must ensure that our partners in the region, who also provide the U.S. a prominent foothold in the region, continue to receive security protection and that neither the U.S. nor its allies suffer economic loss from China’s hegemonic expansive intrusion.

To avoid economic loss, the U.S. must provide extended deterrence to its Pacific Allies, though it must do so in a way in which nuclear weapons can continue to be used in the background of politics with China. However, according to Brad Roberts, this may not be possible, especially with the modernization efforts underway by China, particularly in placing “multiple warheads atop its long-range delivery systems.”⁷ Rather, Roberts suggests a “new type major power” relationship, allowing both the U.S. and China to modernize without involving an arms race like the one that occurred between the U.S. and Russia during the Cold War.⁸ The question then is will the avoidance of a nuclear arms race be possible with the

actions the world has witnessed from China recently? Recent actions may speak louder than words. China is not as transparent as the U.S. would like. In their 2015 white paper, China states:

China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against nonnuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country. China has always kept its nuclear capabilities at the minimum level required for maintaining its national security.⁹

Official statements like this may seem to suggest that keeping nuclear weapons in the background and not racing in nuclear competition could continue. However, China's actions belie such statements.

In addition to placing multiple warheads on long-range ballistic missiles, China has begun researching new military articles such as submarines, aircraft carriers, anti-satellite missiles, and, in September 2016, announced the development of a new long-range bomber.¹⁰ Additionally, China has flown numerous shows of force with bombers and fighters over the South China Sea and made "claims to sovereignty over virtually all of the South China Sea," a claim which an international tribunal dismissed, since China was a signature of the 1982 U.N. Convention on the Law of the Sea.¹¹ However, the most serious threat to U.S. ability to provide extended deterrence in the future may be China's development of a robust A2/AD capability.

As the Department of Defense's 2016 Annual Report to Congress states:

As China modernizes the PLA and prepares for various contingencies, it continues to develop capabilities that serve to dissuade, deter, or if ordered, defeat possible third-party intervention during a large-scale, theater campaign such as a Taiwan contingency. U.S. defense planners often refer to these collective PLA capabilities as A2/AD, though China does not use this term. China's military modernization plan includes the development of capabilities to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains.¹²

This multi-domain threat posed by China's A2/AD capabilities reduces China's vulnerability to nuclear deterrence, a vulnerability which China says is vital in their nuclear relationship with the U.S., and something they reiterate when the topic of ballistic missile defense for Japan and the ROK is raised, discussed in detail later in this paper.¹³

China's A2/AD capabilities coupled with its expansion and claims in the South and East China Seas are top concerns for U.S. Pacific Command boss Adm Harry Harris. Adm Harris told Air Force Magazine in October of 2016, "In a little over two years, China has constructed more than 3,000 acres of artificial land," creating "a strategic frontline in [China's] quest to dominate East Asia," and warned, "These events threaten the region's peace and prosperity."¹⁴ These island expansion efforts project Chinese power, as they now host military airstrips, radar facilities, and naval harbors.¹⁵ Adm Harris' solution to China's A2/AD threat is the ability to execute joint operations across multiple domains where no one service dominates a single domain and no domain exists as a fixed boundary.¹⁶ The new Air Force Chief of Staff, Gen Goldfein, shares this view. He believes that the services know the basics, but must take multi-domain integration to the next level.¹⁷ If the U.S. fails to counter China's A2/AD deterrence effort successfully and China continues on its current modernization glide path, extended deterrence in the Pacific may lose its credibility within the next decade.

The Threat from North Korea

North Korea presents a unique national security menace to East Asia and to the United States. ... It is developing a nuclear weapons arsenal, with a current stockpile estimated at 10 to 20 warheads and growing. It is working hard to lengthen the range of its ballistic missiles so as to enable it to strike the United States with a nuclear weapon. Its ideology and rhetoric are rabidly hostile to the United States and our allies, South Korea, and Japan.

Jeffrey A. Bader

While the U.S. can draw on lessons in deterrence from the Cold War in proceeding with China, North Korea poses a different nuclear challenge. North Korea has the greatest potential

of all of the U.S.'s adversaries to escalate to total war if provoked and has stated so multiple times. In 2003, according to Han Ho Suk, Director, Center for Korean Affairs, "North Korea has not only the military power but also the political will to wage total war against the United States. North Korea has made it clear that it will strike all U.S. targets with all means, if the U.S. mounted military attacks on North Korea."¹⁸ In 2015, Yonhap News Agency, a South Korean news outlet, reported a North Korean statement that, "Our military and people are prepared to risk an all-out war not just to simply respond or retaliate, but to defend the system our people choose."¹⁹ In March of 2016, North Korea threatened a "preemptive and offensive nuclear strike" over U.S. – ROK exercises.²⁰ As recent as August 2016, in response to more U.S. and ROK exercises, North Korea threatened to attack South Korea and make it a "heap of ashes through a Korean-style pre-emptive nuclear strike," if the U.S. or the ROK were to demonstrate "the slightest sign of aggression."²¹ North Korea continued to show its credible will in nuclear deterrence throughout 2016 in its efforts to secure a capable nuclear arsenal. Two nuclear tests, one in January and one in September, were reported by North Korea.²² Additionally, North Korea conducted multiple missile tests in 2016, mostly unsuccessful.²³ All of these actions by North Korea have prompted the U.S. Department of Defense to prepare a classified plan on how to deal with a nuclear North Korea, which will be one of five annexes in the next National Military Strategy.²⁴

So what do North Korean nuclear provocations mean to extended deterrence in the Pacific? Dr. Patrick Cronin and Seongwon Lee at the Center for a New American Security offer three undermining factors. First, if North Korea is successful in miniaturizing an operationally significant nuclear warhead with an operationally effective ballistic missile and produce an effective nuclear-armed intermediate-range or intercontinental ballistic missile, that would

weaken extended deterrence. Second, a successful combining of threats such as cyber, unconventional warfare, and conventional munitions pointed at Seoul, in conjunction with a nuclear threat could weaken the U.S. nuclear umbrella over the ROK. Third, external factors throughout the world, say with Russia or the Middle East or internal factors at home, could distract the U.S. from its extended deterrence in the Pacific causing Pacific allies to question their assurance in U.S. extended deterrence credibility.²⁵

While there is not much the U.S. can do regarding the third undermining factor, the U.S. may be able to lessen the effects of the first two factors while simultaneously strengthening relations with China through low-end escalatory means. China is responsible for approximately 90 percent of economic trade with the hermit nation of North Korea and, therefore, for effective sanctions to take place against North Korea, China will need to be a willing partner.²⁶ Implementing sanctions without China's help will result in futile efforts. In October 2016, a civilian plane built in New Zealand with American parts showed up at a North Korean airshow with a North Korean flag on its tail after the plane was sold to a Chinese company in Beijing.²⁷ This came just one month after a Chinese company sold North Korea materials used for nuclear bomb development.²⁸

A second and more tenuous way to keep extended deterrence intact and assure U.S. Pacific partners is through greater allied cooperation.²⁹ Any sort of trilateral or multilateral efforts between the U.S. and its Pacific allies would certainly strengthen extended deterrence efforts, but would be tenuous in two distinct ways. First, China would see this as destabilizing and a NATO-like threat to their sovereignty.³⁰ China can certainly appreciate the role that U.S. extended deterrence plays in keeping Pacific Allies such as Japan, the ROK, and Australia nuclear-free states.³¹ However, China worries about the emboldening effects extended

deterrence have, allowing U.S. Pacific allies to “contest Chinese interests.”³² Second, the ROK and Japan have not had a history of good relations and may find it hard to cooperate if sensitive military information is involved.³³ The U.S. is hopeful, however, that multilateral efforts might grow. In March of 2016, President Obama stated, after meeting with the President of the ROK and the Prime Minister of Japan:

“It’s not surprising that one of the topics most on our minds is the issue of North Korea. And we are united in our efforts to deter and defend against North Korean provocations. We recognize that our security is linked, that we have to work together to meet this challenge. And we also recognize that it is important to the entire international community to vigilantly enforce the strong U.N. security measures that were passed in light of some of the ballistic missile and nuclear activity that Pyongyang has been engaging in.”³⁴

Following this trilateral meeting, in June of 2016, Japan, the U.S. and the ROK conducted a joint missile-defense exercise, each providing an Aegis-equipped ship to track a notional North Korean launched missile.³⁵ Exercises like this one grew out of a December 2014 framework by which the three countries signed a “trilateral information sharing arrangement concerning nuclear and missile threats posed by North Korea.”³⁶

Growth in multilateral cooperation will provide the U.S. a foundation to strengthen its extended deterrence efforts further in the Asia-Pacific region. As the next sections of this paper will cover, triad modernization and ballistic missile defense, along with the ability to integrate these capabilities with U.S. Pacific allies, will be essential to providing sound extended deterrence measures in the decades to come.

Essential Nuclear Enterprise Modernization in Extended Deterrence

Expressed in this way deterrence can only work if the threat of military retaliation is credible, and if there are no doubts about the political intention to use it.

R.J. Overy

Extending an umbrella of deterrence to U.S. allies requires the opponent to believe the U.S. will actually be willing to launch a nuclear weapon on behalf of one or more U.S. allies

should it be necessary to do so. It is also essential that the allies under the U.S. umbrella be assured of this willingness. Two large factors, capability and political will, play important roles in establishing extended deterrence credibility. It may be easy to believe, given the capability, that the U.S. will have the political will to use nuclear weapons if attacked by another country with a nuclear weapon. However, the question opponents and allies ask themselves is will the U.S. have the political will to launch on behalf of an ally who is attacked and possibly risk retaliatory attacks on U.S. homeland? Proper capability is a vital consideration in this extended deterrence pondering. First, the U.S. must ensure that it has a strong homeland nuclear deterrent through the land and sea-based legs of the triad to deter from initial and retaliatory attacks, or extended deterrence is not credible. Second, arguably the most effective leg for extended deterrence is the air leg. Allies are hard pressed to believe that U.S. ICBMs or SLBMs will be launched on their behalf, because they do not believe the U.S. would risk the retaliation that would come with such a launch.³⁷ Additionally, if the U.S. were to launch an ICBM or SLBM, at North Korea for instance, the U.S. would have less than 40 minutes to convince China and Russia that the incoming missile(s) is/are not headed toward them.³⁸ The air leg of the triad provides either a gravity or a standoff delivery of a nuclear weapon without ambiguity for whom the weapon is intended, and provides delivery from outside U.S. territory, thus increasing the probability of political will in using it.

Since the air leg of the triad provides such an important capability and allows the political will to use it in extended deterrence, it is important to examine its current role and what future requirements are needed in light of the Chinese and North Korean threats previously discussed. Currently, U.S. bombers provide visible proof of U.S. will and capability through presence missions in the Asia-Pacific region. A continuous bomber presence by both nuclear

and conventional bombers on Guam, strategic fly-bys with China and North Korea, and airshow participation in the region all provide for such proof.³⁹ Following a 9 September 2016 nuclear test by North Korea, U.S. B-1Bs from Guam conducted operations with both Japanese and ROK fighter aircraft in an act of solidarity and show of resolve.⁴⁰ However, with China's expansion, their increased power projection, and their advancement of A2/AD capabilities, U.S. extended deterrence credibility could diminish without air leg modernization.

The Air Force is already planning to replace its entire bomber fleet (B-2, B-52, B-1) with the B-21. However, a significant overlap of B-52 and B-21 operations will exist. The B-21 may see initial operational capability by the mid-2020s, but, according to Nuclear Enterprise expert, in a statement made in January 2017, "The last father of the last B-52 pilot has yet to be born."⁴¹ This means that a standoff nuclear capability such as LRSO is essential to allow both stealth and non-stealth bombers the ability to deliver credible nuclear deterrence. Additionally, if future A2/AD capabilities negate the advantage of stealth, even the B-2 and future B-21 may be unable to guarantee successful penetration of A2/AD and the threat to such low-density/high-cost assets may give the U.S. pause regarding their use in extended deterrence. It is critical then that the U.S. invest in modernizing its LRSO for both nuclear and conventional strikes as its current nuclear and conventional air-launched cruise missiles are growing obsolete and are both several decades past their initial intended life expectancies.⁴² LRSO coupled with B-21 and B-52 operations will provide a future vital capability needed to continue to extended deterrence to U.S. Pacific allies. The U.S., therefore, must invest in LRSO or risk weakening extended deterrence and possibly causing U.S. allies to seek nuclear weapons of their own.

An additional capability apart from bomber delivered nuclear weapons suggested by the 2010 Nuclear Posture Review (NPR) is the possible use of fighter dual-capable aircraft (DCA),

a capability used in the European theater now for decades.⁴³ There are two significant problems with this option in the Pacific theater as opposed to the European one. First, there is a geographic problem. Unlike bombers, which can travel thousands of miles unrefueled, fighters can only travel short distances before needing more fuel. Second, unlike Europe, where the U.S. has several locations with nuclear capable weapons storage security systems (WS3), the Pacific theater has no place currently to store nuclear weapons. Additionally, placing WS3s in Japan or the ROK could exacerbate tensions with China, closing the door to open dialog with them, and risk bringing nuclear weapons front and center in political debates. The U.S. may however, want to consider the possibility of building empty WS3 capable facilities in Japan and/or South Korea to allow for escalatory steps if a future conflict might require fighter DCA to be put on alert on one of these two countries. Several drawbacks to this may still exist. One, the cost to build these facilities if the U.S. had to foot the bill would pile on to cost to modernize the Nuclear Enterprise. Two, keeping an empty WS3 maintained and ready would cost money and man-hours to sustain. Three, even empty, there could still be political fallout from such a maneuver. However, this would allow U.S. fighter DCA the ability to go on alert from Japan or South Korea if a situation arose in the future where this would provide a strategic advantage in providing necessary deterrence. Perhaps, it may even provide a future capability for Japan or the ROK fighters to deliver U.S. nuclear weapons in the same way NATO allies can today, assuming both Japan and the ROK purchase F-35A aircraft and these aircraft are rendered capable of conducting DCA roles.

The future A2/AD environment in the Pacific in concert with the nuclear aspirations of a growing China and an unpredictable North Korea make modernizing U.S. nuclear capability to provide continued extended deterrence to its Pacific partners absolutely critical. As noted in the

2010 NPR, prior to the decision to build the B-21, the need to “retain the capability to forward-deploy U.S. nuclear weapons on tactical fighter-bombers and heavy bombers” needs to be a key initiative in strengthening regional deterrence and reassuring U.S. allies and partners.⁴⁴

Providing options for both gravity and standoff delivery of air-launched nuclear weapons for stealth and non-stealth bombers while considering the future utility of fighter DCA in the Pacific will ensure a capable and credible nuclear force to both deter these hostile threats as well as assure U.S. Pacific allies.

The Importance of Ballistic Missile Defense in Extended Deterrence

As threats have advanced and technical solutions have matured, it has become increasingly important to think strategically about the deployment of low-density, high-demand missile defense assets in a regional context. Such deployments must be tailored to the unique deterrence and defense requirements of each region, which vary considerably in their geography, the character of the threat, and the military-to-military relationships on which to build cooperative missile defenses.

Ballistic Missile Defense Review Report 2010

In the 2010 NPR, one of the key initiatives in strengthening regional deterrence and assuring U.S. allies and partners is the need to pursue a “Phased Adaptive Approach” in “deploying effective missile defenses” in the Asia-Pacific region as detailed in the 2010 Ballistic Missile Defense Review Report (BMDR).⁴⁵ Of the three allies under the U.S. nuclear umbrella, Japan has made the most progress in BMD bilateral cooperation and advancement. According to the 2010 BMDR, “Japan has acquired a layered integrated missile defense system that includes Aegis BMD ships with Standard Missile 3 [SM-3] interceptors, Patriot Advanced Capability 3 (PAC-3) fire units, early warning radars, and a command and control system.”⁴⁶ Japan regularly conducts BMD exercises with the U.S. and has worked to co-develop a next-gen, block IIA SM-3 interceptor. According to the 2010 BMDR “The U.S.-Japan partnership is an outstanding example of the kind of cooperation the United States seeks in order to tailor a

phased adaptive approach to the unique threats and capabilities in a region,”⁴⁷ a key initiative in the 2010 NPR.

Since the 2010 NPR and BMDR release, the U.S. has made tremendous strides in bilateral partnership with the ROK in order to field effective BMD, specifically with the Terminal High Altitude Area Defense (THAAD) missile system, a system Nuclear Enterprise expert, calls “the best way to assure South Korea.”⁴⁸ The North Korean missile threat to the ROK national interests and U.S. forces stationed there continues to grow. In March 2015, in response to U.S. and the ROK exercises in the region, North Korea launched two short-range missiles into the East Sea. North Korea followed the launches with an announcement on its Korean Central News Agency that, “Key Resolve and Foal Eagle are an undisguised encroachment upon the sovereignty and dignity of the DPRK [Democratic People’s Republic of Korea] and an unpardonable war hysteria of dishonest hostile forces.”⁴⁹ Additionally, the North Korean army general staff call the exercises, “dangerous nuclear war drills for invading.”⁵⁰ Several times in 2016, North Korea launched both short- and medium-range missiles in the region with one medium-range launch in August of 2016 into Japan’s economic zone, a direct response to the U.S. plan to deploy THAAD in the ROK.⁵¹ This year is not showing hopes of de-escalation with North Korea launching four ballistic missiles within 190 miles of Japan on 6 March.⁵² In January 2017, North Korea’s leader Kim Jong-un made a New Year’s statement that North Korea was “close to testing an ICBM capable of delivering a nuclear weapon to the U.S. mainland.”⁵³ Later, North Korea's foreign minister stated that the U.S. is the reason for North Korea’s missile program development.⁵⁴ North Korea followed this threat with softer language on 19 March 2017, when North Korea reported a successful test of a multiple-stage rocket that it said, “Will help North Korea achieve world-class satellite-launch capability.”⁵⁵

Obviously, if this test was truly successful, a multiple-stage rocket could allow both space and intercontinental launches.

With the growing hostility of North Korea and the ineffective sanctions due to porous Chinese borders as mentioned in the previous section above on North Korea the U.S. must consider BMD in the Asia-Pacific region as a crucial part of extended deterrence as well as a vital enhancement to the third offset strategy. BMD should be a key part of the third offset strategy to advance U.S. innovation efforts in order to address the negative effects caused by long-range, precision-strike systems.⁵⁶ When then Secretary of Defense Chuck Hagel introduced his Third Offset innovation initiative in 2014, he stated, “If we make the right investments in our partnerships around the world, in innovation, and in our defense enterprise, we will continue to keep our nation’s military and our nation’s global leadership on a strong and sustainable path for the 21st century.”⁵⁷ BMD in extended deterrence and as a piece of the Third Offset provides an asymmetric advantage, as our partners will not require the ability to defeat every missile North Korea or China can throw at them.⁵⁸ Just like on the U.S. mainland, it is not necessary to build a robust BMD that can defeat large numbers of missiles launched simultaneously. Rather, it is important to be able to have a limited strike defense capability, the ability to defeat a small number of missiles, which causes the enemy to have to escalate past the point they are willing to go.⁵⁹ In other words, launching multiple nuclear weapons will garner much higher retaliatory measures than a single weapon might. The 2010 BMDR is instructive here,

Our forces must be able to protect what we and our partners value. These include the political and economic targets, including population centers, that an enemy may want to put at risk, as well as military capabilities essential for prevailing in a conflict. The ability to protect these assets helps reinforce deterrence and greatly magnifies the challenges for a leader contemplating aggression against some U.S. interest.⁶⁰

BMD in extended deterrence creates this protection needed to U.S. troops and allied interests in the area and certainly complicates the decision of a determined North Korea to launch a nuclear strike by elevating the required nuclear attack capability past the acceptable threshold in order to ensure success.⁶¹

A buildup of BMD for the ROK does not come without consequences though. Building BMD on South Korean soil will threaten China in two ways. First, because of large U.S. forces present in South Korea. It may appear defensive in nature for U.S. forces, allowing for an invulnerable U.S. attack of China in disguise of a defense of the ROK. Second, and probably most threatening, is the monitoring capability associated with THAAD in its x-band AN/TPY-2 radar. While THAAD is only able to intercept incoming missiles, albeit at endo- and exospheric altitudes, it cannot, from South Korea or Japan, intercept ICBMs from China bound for the U.S.⁶² As Rod Lyon of the National Interest reveals, what it can do, via its AN/TPY-2 radar, is “offer early tracking data to other parts of the U.S. ballistic missile defense system—in particular to the Ground Based Interceptors responsible for defending the U.S. homeland—thus degrading China’s ability to target the United States.”⁶³ In December 2014 a second AN/TPY-2 radar was deployed in Japan and now with the ROK getting THAAD and the associated AN/TPY-2 radar, China is concerned about the enhanced U.S. surveillance capability this offers. Indeed, as the extended deterrence posture grows in the Asia-Pacific region, because of the increase in threats from multiple nuclear expanding countries in the region, the threat extended deterrence poses on both China and North Korea will magnify. According to Roberts, “China’s experts cannot accept that the United States would adapt its strategic posture as it has merely for the purpose of dealing with a minor irritant like North Korea; instead, they believe the United States is using North Korea as an excuse to do what it would do anyway to adapt its

posture to make it more effective against China.”⁶⁴ Indeed, numerous Chinese officials from both Chinese State and Military departments expressed concern over THAAD in the region to the Air War College Regional Cultural Studies group. Additionally, several news articles in the China Daily have expressed Chinese concern over THAAD recently. One particular article on 1 March 2017 expressed how Lotte, a large foreign company in Asia, is “hurting the feelings of Chinese” by providing land in the ROK for THAAD.⁶⁵ While China’s Foreign Ministry spokesman, Geng Shuang, stated that China would not seek punitive actions against Lotte, he also stated that the Chinese consumer will determine the successfulness of the business (obviously, a veiled economic threat levied against Lotte).⁶⁶ In a more hawkish report given the same day in the Global Times, Shuang was reported as saying, “China is firm in its resolve to oppose the deployment of THAAD in South Korea and will resolutely take necessary actions to safeguard its own security interests.”⁶⁷ The resolute action taken, according to Song Zhongping, a military expert in China, will be to place THAAD deployment areas in the ROK on the People’s Liberation Army (PLA) missile-system target list.⁶⁸ To avoid a race with China, BMD, along with the rest of extended deterrence posture in the Pacific region, must not exceed that which is reasonable to protect against a limited ballistic missile strike.

Conclusion

With the growing existential and access denial threats coming from China and North Korea against both the U.S. and its allies in the Pacific, it is critical that the U.S. consider its ability to deter both at home and abroad. Then President Elect Trump, on 19 December 2016 tweeted, “The United States must greatly strengthen and expand its nuclear capability until such time as the world comes to its senses regarding nukes.”⁶⁹ This paper has offered how the U.S. must go about this in its extended deterrence role in support of its Pacific allies. China’s

modernization efforts with both its PLA and A2/AD capabilities and especially its nuclear growth and modernization efforts must cause the U.S. and its allies to consider how to deter when a “no first use” policy today, becomes an “assured second strike” capability tomorrow. North Korea’s growing capability beyond mere saber rattling should cause the U.S. to take this threat very serious and must not allow U.S. nuclear deterrence in the region do diminish which would result in Pacific allies questioning the credibility of U.S. extended deterrence in the region.

The modernization of the entire U.S. nuclear triad for strategic nuclear deterrence at home and abroad is critical in light of world developments in increased nuclear threats by multiple actors. The U.S. ability to project power and extend deterrence and assurance is highly dependent on an effective nuclear posture that is both capable and credible. The air-launched leg of the triad is the key piece to providing both capability and credibility. To continue to provide a visible deterrent capability through Continuous Bomber Presence, shows of force, and air shows, the U.S. must continue to invest in B-21 procurement as well as LRSO development.

Finally, the U.S. must consider BMD as a vital part of its extended deterrence as well as a key component of its Third Offset strategy. While BMD provides important protection of vital U.S. and ally interests in the Pacific region, it also increases the escalatory threshold for nuclear attack by adversaries, thus making it vital to extended deterrence and assurance in the region. As the U.S. breaks from its status quo nuclear posture in the Asia-Pacific region as it goes forward with triad modernization, possible adjustments in fighter DCA, and BMD growth, open political dialog between China and the U.S. is essential in order to avoid an arms race.

Notes

¹ Gen C. Robert Kehler et al., “The U.S. Nuclear Triad Needs an Upgrade,” 11 January 2017. An open letter written by eight 4-star officers.

² Jeffrey A. Bader, “U.S.-China challenges: Time for China to step up,” 12 January 2017.

³ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 141.

⁴ Dr. Patrick M. Cronin and Seongwon Lee, “The U.S.-ROK Alliance and the Third Offset Strategy,” 13.

⁵ Asia-Pacific Economic Cooperation. *U.S.–Asia Trade Facts*.

⁶ The Heritage Foundation, “2017 Index of Military Strength Assessment Global Asia,” 129. See also, Kimberly Amadeo, “Japan's 2011 Earthquake: Tsunami and Nuclear Disaster.” “The quake and tsunami damaged or closed down key ports, and some airports shut briefly. This disrupted the global supply chain of semiconductor equipment and materials. Japan manufactures 20% of the world's semiconductor products, including NAND flash, an indispensable electronic part of Apple's iPad. Japan also supplies the wings, landing gears and other major parts of Boeing's 787 Dreamliner. Automakers Toyota, Nissan, Honda, Mitsubishi and Suzuki temporarily suspended production. Nissan may move one production line to the U.S. A total of 22 plants, including Sony, were shut in the area.”

⁷ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 159.

⁸ *Ibid.*, 160.

⁹ Li Keqiang, *Report of the Work of the Government (2015)*, 109.

¹⁰ World News, “China says developing new type of long-range bomber,” 1 Septemeber 2016.

¹¹ Otto Kreisher, “International Court Rejects China’s South China Sea Claims,” 13 September 2016.

¹² Department of Defense, *ANNUAL REPORT TO CONGRESS*, 59.

¹³ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 153. See also Ankit Panda “What Is THAAD, What Does It Do, and Why Is China Mad About It?,” 25 February 2016. “from the Chinese perspective, a THAAD deployment could shift the strategic stability needle ever so slightly away from its status quo equilibrium and advantage the United States, giving Washington better early warning and tracking of Chinese ICBMs.”

¹⁴ Wilson Brissett, “Mischief in the South China Sea,” October 2016.

¹⁵ *Ibid.*

¹⁶ Will Skowronski, “Overcoming Institutional Inertia,” 5 October 2016.

¹⁷ *Ibid.*

¹⁸ Han Ho Suk, “N Korea Military Tactics In A War With US: A Strategy Of Massive Retaliations Against US Attacks,” 24 April 2003.

¹⁹ Yonhap News Agency, “N. Korea syas it is ready to go to ‘all-out war’,” 22 August 2015.

²⁰ Dana Ford, “North Korea threatens nuclear strike over U.S.–South Korean exercises,” 7 March 2016.

²¹ Amy McCullough, “North Korea Threatens Nuclear Strike,” 23 August 2016.

²² BBC News, “North Korea’s nuclear programme: How advanced is it?,” 9 September 2016.

²³ Air Force Magazine Daily Report, “North Korean Missile Launch Fails, Again,” 18 October 2016.

²⁴ Brian Everstine, “The Classified Plan to Address North Korea, Iran,” 6 December 2016.

²⁵ Dr. Patrick M. Cronin and Seongwon Lee, “The U.S. – ROK Alliance and the Third Offset Strategy,” 13.

²⁶ Adm James G. Stavridis, “Incoming: The Most Dangerous Country in the World,” 01 February 2015.

²⁷ Anna Fifield, “How did North Korea get its hands on a New Zealand plane made with American parts?,” 03 October 2016.

²⁸ Joe McDonald, “Chinese company 'sold North Korea nuclear bomb materials',” 21 September 2016.

²⁹ Adm James G. Stavridis, “Incoming: The Most Dangerous Country in the World,” 01 February 2015.

³⁰ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 158.

³¹ Ibid.

³² Ibid.

³³ K.J. Kwon and Dugald McConnell, “South Korea, Japan to join U.S. for missile-defense exercise,” 17 May 2016.

³⁴ President Barak Obama, President Park Geun-Hye of the Republic of Korea, and Prime Minister Shinzo Abe of Japan (Speech, 31 March 2016).

³⁵ K.J. Kwon and Dugald McConnell, “South Korea, Japan to join U.S. for missile-defense exercise,” 17 May 2016.

³⁶ Department of Defense, “Signing of Trilateral Information Sharing Arrangement Concerning the Nuclear and Missile Threats Posed by North Korea,” 28 December 2014.

³⁷ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 178. From the inception of nuclear weapons, allies feared the U.S. would not be willing to “trade Chicago for Berlin.” As Roberts states here, “Some allies feared that the vulnerability of the United States would result in a strategic decoupling of the United States from their defense in time of crises and war. See also Dr. Mira Rapp-Hooper, “North Korea’s Missiles: A Precision-Guided Problem for Extended Deterrence,” 80, for a detailed explanation on decoupling fears in the Asian-Pacific region as A2/AD and precision guided munitions employed by North Korea and China expand.

³⁸ Amy Woolf, “Conventional Prompt Global Strike and Long-Range Ballistic Missiles,” 32. This is a report to congress on why launching conventional weapons onboard ICBMs/SLBMs are tenuous. This argument that the trajectory takes these missiles over other nuclear-armed countries and the need to assure them that the weapons is not for them in a matter of minutes is the identical argument made here that launching nuclear ICBMs and SLBMs pose. Amy Wolf reveals that critics claim that these nations may not be convinced that the weapon is not for them and the ambiguousness of whether the missile is conventional or nuclear may leave them to conclude, “They have no other option than to respond with their own nuclear weapons.”

³⁹ Interview with general officer from Air Force Global Strike Command, 15 September 2016.

⁴⁰ Pacific Air Forces, “U.S. B-1 bombers conduct sequence flights with South Korea, Japan in response to nuclear test,” 12 September 2016.

⁴¹ Air War College Speaker (lecture, 6 January 2017).

⁴² Jeremiah Gertler, “U.S. Air Force Bomber Sustainment and Modernization: Background and Issues for Congress,” 31.

⁴³ Department of Defense, *2010 Nuclear Posture Review*, 34.

⁴⁴ Ibid.

⁴⁵ Department of Defense, *2010 Nuclear Posture Review*, 34.

⁴⁶ Department of Defense, *2010 Ballistic Missile Review Report*, 32-33.

⁴⁷ Ibid. 33.

⁴⁸ Air War College Speaker (lecture, 12 January 2017).

⁴⁹ Oh Seok-min, “N. Korea fires 2 short-range missiles into East Sea,” 02 March 2015.

⁵⁰ Marc V. Schanz, “North Korea Fires Scuds in Protest,” 03 March 2015.

⁵¹ Hyung-Jin Kim, “N. Korea fires mid-range missile toward waters near Japan,” 2 August 2016.

⁵² Ju-min Park and Kaori Kaneko, “North Korea fires four missiles toward Japan, angering Tokyo and South Korea,” 6 March 2017. There was also another failed missile launch on 22 March 2017 and each day that passes presents the need to update this paper.

⁵³ James Griffiths, “North Korea sends message to Trump amid threat to fire missile 'at any time',” 11 January 2017.

⁵⁴ Ibid.

⁵⁵ Ju-min Park, “North Korea engine test may be prelude to partial ICBM flight,” 20 March 2017.

⁵⁶ Dr. Patrick M. Cronin and Seongwon Lee, “The U.S.-ROK Alliance and the Third Offset Strategy,” 10.

⁵⁷ Secretary of Defense Chuck Hagel (Speech, 15 November 2014).

⁵⁸ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 88

⁵⁹ Ibid.

⁶⁰ Department of Defense, *2010 Ballistic Missile Review Report*, 27.

⁶¹ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 88-89. Brad Roberts details sixteen strategic values of BMD to the U.S. and its allies. See also, Dr. Patrick M. Cronin and Seongwon Lee, “The U.S.-ROK Alliance and the Third Offset Strategy,” 17.

⁶² Ankit Panda, “What Is THAAD, What Does It Do, and Why Is China Mad About It?,” 25 February 2016.

⁶³ Rod Lyon, “The Hard Truth About THAAD, South Korea and China,” 23 February 2016.

⁶⁴ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 155.

⁶⁵ Mo Jingxi, “ROK draws new protests on THAAD,” 1 March 2017.

⁶⁶ Ibid.

⁶⁷ Yang Sheng, “China can ‘blind’ THAAD,” 1 March 2017.

⁶⁸ Ibid.

⁶⁹ President Elect Donald J. Trump, Twitter, 19 December 2016.

Appendix A

Literature Review

In 2016, Dr. Brad Roberts, authored *The Case for U.S. Nuclear Weapons in the 21st Century*. He is currently the director of the Center for Global Security Research, and from April 2009 to March 2013, he served as Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy. In his book, he purposes to show that nuclear weapons are not merely Cold War relics. He lays out the regional nuclear threats in Europe and Asia-Pacific and offers insights into extended deterrence in these regions. Roberts shows that the nuclear arsenal reduction changes over the last four presidential administrations following the Cold War are significant.¹ He also acknowledges that those changes have not come with the modernization needed to maintain the nuclear triad and that this will come with a significant price tag.²

The need for modernization, however, is only increasing as Roberts reveals the two-decades long change in the security environment in Northeast Asia.³ Allies continue to look to the U.S. to evaluate U.S. commitment to extended deterrence as China and North Korea become more threatening without any signs of decline in nuclear aspirations.⁴ Besides modernization, Roberts acknowledges the strong strategic role of ballistic missile defense (BMD) and offers sixteen strategic values BMD offers the U.S. and its allies.⁵ Roberts' book provides expert analysis from which recent Asia-Pacific events may be examined. His book provides a solid framework for this paper.

Current Department of Defense (DoD) documents such as the 2010 Ballistic Missile Defense Review Report (BMDR), the 2010 Nuclear Posture Review Report (NPR), the Joint Operating Environment 2035, and the Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016 all provide foundational information and insight on U.S. nuclear and Asia-Pacific security issues. The 2010 BMDR is

seven years old now and in desperate need of updating with this new administration. The security environment issues in the Asia-Pacific region, such as a nuclear growing North Korea with sights on intercontinental ballistic missiles (ICBMs), that the BMDR predicted is now a reality.⁶ The bilateral agreement aspirations for terminal high altitude area defense (THAAD) with the Republic of Korea (ROK) are also now a reality.⁷ Likewise, the seven-year old 2010 NPR expresses an optimistic view of the Obama administration to reduce nuclear force levels as well as the role and of nuclear weapons, while “strengthening regional deterrence and reassuring U.S. allies and partners.”⁸ It is in woeful neglect of the modernization needs of the triad outside that of infrastructure, human capital, and nuclear command, control, and communications (NC3) while simultaneously acknowledging the modernization efforts of Russia and China. Given the current environment in the Asia-Pacific region, this 2010 NPR offered holes in U.S. deterrence and extended deterrence capability needing to be addressed by the new administration.

The Joint Operating Environment 2035, published in July of 2016 provides a less optimistic view of the security environment of the Asia-Pacific region and acknowledges the need to defend the homeland and assure allies by forward deploying military capabilities as far forward as possible while also “establishing credible nuclear deterrence capabilities to dissuade attacks.”⁹ It offers a more clear-eyed view on Chinese and North Korean aspirations than the 2010 NPR, but is still just as lacking in the need to modernize the triad.¹⁰ Finally, the Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016 provides a current expert assessment of the anti-access/area denial (A2/AD) threat in the Asia-Pacific region and backstops why modernization efforts are needed to keep the air-launched leg of the nuclear triad effective.¹¹ All of these DoD documents together, provide a

broad view of current doctrine, was informative on how the Asia-Pacific region has changed, and why nuclear modernization is in need of strong consideration from the next administration.

In addition to DoD studies, independent studies conducted by The Heritage Foundation, the Center for a New American Security, and the Center for Strategic and International Studies each provided current 2016 information on the Asia-Pacific region and threats therein. First, in the fall of 2016, The Heritage Foundation produced the “2017 Index of Military Strength” which gives the foundation’s assessment of U.S. power, regional threats to U.S. vital interests, and regional operating environments. Additionally, it provides an excellent assessment of Chinese and North Korean power and its insights greatly inform this paper on the Chinese A2/AD threat. It describes China’s hegemonic growth and its threat to the global commons since 2010 and paints a picture of why this matters to U.S. and Pacific allies’ interests.¹²

In November 2016, Dr. Patrick M Cronin, from the Center for a New American Security, edited *Breakthrough on the Peninsula: Third Offset Strategies and the Future Defense of Korea*. Eight authors in all, from the U.S. and South Korea, contributed to this work and each provided analysis on how the U.S. and the ROK can rebalance priorities in the region. This publication offers rationale for BMD integration into the U.S. Third Offset strategy.¹³ It also provides a caution on how the A2/AD of China and the North Korean precision guided missile program threaten to decouple Pacific allies’ reliance on U.S. deterrence credibility.¹⁴

Finally, Anthony H. Cordesman and Joseph Kendall, from the Center for Strategic and International Studies, authored *Chinese Strategy and Military Modernization in 2016: A Comparative Analysis* in December 2016. This extremely detailed report on the Chinese military and nuclear strength was most useful to this paper in offering translated Chinese white papers regarding China’s stated nuclear posture as current as 2015. China reiterates their

reliance on nuclear weapons as a deterrence measure while still holding to a no first-use policy.¹⁵

The major body of literature providing information regarding current events came from a wide array of news articles from major news agencies such as Yonhap News Agency, Independent, Air Force Magazine, CNN, and others throughout 2016. These articles allowed synthesized analysis regarding actions and responses within the Asia-Pacific region from all parties (U.S. and its allies, as well as China and North Korea). This analysis together with interviews and lectures from Nuclear Enterprise top brass informed recommendations and conclusions in this paper.

Conducting this literature review greatly informed current issues concerning the two independent variables, China and North Korea, and helped derive the direction U.S. policy makers must look in addressing the dependent variable, U.S. nuclear posture within the Asia-Pacific region. This paper offers an argument for modernizing the triad, the vitality of air-launched strategic deterrence, and incorporating BMD into extended deterrence based on the findings found in this review.

Research Methodology/Framework

Our nuclear deterrent is the ultimate protection against a nuclear attack on the United States, and through extended deterrence, it also serves to reassure our distant allies of their security against regional aggression. It also serves to support our ability to project power by communicating to potential nuclear-armed adversaries that they cannot escalate their way out of failed conventional aggression.

Air Force Doctrine Volume 3, Annex 3-72, Nuclear Operations

Extended deterrence is the ability to deter on behalf of another. It is important in protecting allies and vital interests and keeps nuclear weapons from proliferating to those under the U.S. extended deterrence umbrella. Extended deterrence is difficult, however, in maintaining credibility, as opponents and allies alike must believe in the willingness of the U.S.

to use nuclear weapons in an ally's behalf. The framework of this paper is built on the importance of modernization of the Nuclear Enterprise to provide a credible homeland deterrent and specifically the importance of the air-launched leg of the triad in extended deterrence. It also argues that ballistic missile defense for U.S. allies should be a key part of extended deterrence as it expands extended deterrence beyond simply a nuke for nuke exchange. In going forward with Nuclear Enterprise modernization and its importance to extended deterrence, it is important to consider responses by other nuclear power states; in the Asian-Pacific region, China is the main U.S. concern. Brad Roberts posits three pathways the U.S. and China may take in the future. The first possible pathway is keeping things status quo (not likely given China's nuclear modernization). His second suggested pathway is "intensification of strategic military competition" with both China and the U.S. looking toward the likelihood of strategic conflict. Robert's third pathway is a "new type major power" with an open political dialog between China and the U.S. that allows both countries to modernize without "racing" or "sprinting."¹⁶ This third pathway is the method for modernization suggested in this paper in order to continue deterrence vis-à-vis China and North Korea. Therefore, China and North Korea will be independent variables with U.S. nuclear posture being the dependent variable that must provide deterrence in the Asian-Pacific region.

While a robust Intercontinental Ballistic Missile (ICBM) and Sea-Launched Ballistic Missile (SLBM) capability will hold China vulnerable, a capable air-launched threat via B-21 and long-range stand-off (LRSO) nuclear cruise missiles will provide proof of capability in extended deterrence to U.S. allies as this is vital to operation within the robust Chinese anti-access/area denial (A2/AD) threat. The Continuous Bomber Presence coupled with exercises, air shows, and strategic flight profiles in the Pacific will provide the credible action needed for extended

deterrence. Thought toward nuclear fighter roles in the future are important if escalatory strategy beyond current capability are required in the future. Additionally, Ballistic Missile Defense (BMD) systems such as Terminal High Altitude Area Defense (THAAD) are essential in providing U.S. Pacific allies the needed protection that will deter China and North Korea in assuming easy targets.

While China is certainly developing a stronger nuclear capability, its main threat, according to Brad Roberts, is what Japan refers to as “creeping international expansionism.”¹⁷ North Korea on the other hand is more provocative in its nuclear aspirations. This presents a complex challenge to the U.S. and its allies. Building up deterrent options, be they conventional or nuclear, against a North Korean attack raises the threat to China due to geographic proximity. Still, the U.S. must provide extended deterrence against both a nuclear wildcard North Korea and an expanding China, making an air-launched nuclear capability and BMD vital in Asian-Pacific region.

¹ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 47-48.

² *Ibid.*, 43-44.

³ *Ibid.*, 212.

⁴ *Ibid.*, 212-213.

⁵ *Ibid.*, 88-89.

⁶ Department of Defense, *2010 Ballistic Missile Review Report*, iii.

⁷ *Ibid.*, 28.

⁸ Department of Defense, *2010 Nuclear Posture Review*, iii.

⁹ Joint Operating Environment (JOE) 2035. *The Joint Force in a Contested and Disordered World*, 25.

¹⁰ *Ibid.*, 28.

¹¹ Department of Defense, *ANNUAL REPORT TO CONGRESS*, 59.

¹² The Heritage Foundation, “2017 Index of Military Strength Assessment Global Asia,” 192.

¹³ Dr. Patrick M. and Seongwon Lee Cronin, “The U.S.-ROK Alliance and the Third Offset Strategy,” 17.

¹⁴ Dr. Mira Rapp-Hooper, “North Korea’s Missiles: A Precision-Guided Problem for Extended Deterrence,” 80.

¹⁵ Li Keqiang, *Report of the Work of the Government (2015)*, 109.

¹⁶ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 159-160.

¹⁷ *Ibid.*, 199.

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