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Research on the Suitability of Nuclear Sharing Strategy of South Korea through the Nuclear Strategy of U.S. NPR

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Abstract The subject of this research is what is the most effective strategy of the nuclear sharing strategy of South Korea through the nuclear strategy that the U.S. is pursuing now. The U.S. Nuclear Strategy-related change can be found in a Nuclear Posture Review (NPR) report released by the U.S. The first NPR was announced in 1994 and after that, the U.S. has additionally announced a total of four NPRs along with administration changes. The change in the U.S. nuclear strategy and nuclear power are considered both deterrence and offset strategies. It can be summarized in two ways. First, by maintaining overwhelming nuclear power against the enemy, the U.S. is to lead nuclear advantage that is the core of the U.S. nuclear strategy. Second, the U.S. is to limit the competition of nuclear power with nations seeking to challenge the U.S. nuclear power advantage. Additionally, the U.S. is to actively sign an agreement with nations on the reduction and restriction of nuclear weapons. Through the NPR of the U.S., South Korea should know its unclear power and strategy and have an effective nuclear strategy of South Korea. Therefore, this research is to deal with the suitability of the nuclear sharing strategy with the U.S., which is one of the various nuclear strategies of South Korea.

Key words: NPR (Nuclear Posture Review), Nuclear power, Nuclear sharing strategy

1. INTRODUCTION

1.1. The purpose and focus of the research

Since the attack of nuclear weapons by the U.S. on Japan in 1945, the status of nuclear weapons as a means of war has overwhelmed other weapons systems and has been the strongest security deterrence strategy. Major nations that have witnessed the actual destructive power of nuclear weapons have recognized it as a key element of their security strategy. They have also recognized that the possession of nuclear weapons is the prerequisite to complete the deterrence strategy as the National Security Strategy (NSS). Among them, the U.S. has especially played a pioneering role in establishing and implementing nuclear strategies. The U.S. nuclear strategy-related movements can be identified through the Nuclear Posture Review (NPR) that the U.S. releases irregularly. The first NPR that was released in 1994 showed a nuclear strategy of the U.S. that reflected a completely different security environment compared to the Cold War era. After that, the U.S. has additionally released four NPRs according to the changes of their administration. Based on this nuclear strategy developed by the U.S., the deterrence strategy of securing overwhelmingly superior nuclear power against the enemy nations has perfectly been successful. However, at the time from the Obama administration to the Trump administration, the U.S. has prepared for nuclear threats not only from Russia but also from China and North Korea. The U.S. faces a security environment

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that requires a completely new approach to the nuclear weapons issue. The new situation led to a change in the U.S. nuclear strategy as well as a revolutionary shift in nuclear power holdings and operations [1]. The purpose of this research is to study what are the nuclear threats that the U.S. has experienced and the response strategy through NPR faced by the present administration in 2023. After that, this research aims to study the suitability of the nuclear sharing strategy of South Korea for the deterrence strategy against North Korea.

1.2. The scope of this research

The scope of this research is analyzed thoroughly the concept change of the NPR in the U.S. each administration, the nuclear strategy features of the U.S., the nuclear response strategy, and the sharing strategy of South Korea.

The research is organized as follows;

Chapter 1 presents an introduction that consists of the purpose, the scope, and the key questions related to the purpose of this research.

Chapter 2 reviews of related literature.

Chapter 3 presents the NPR of the U.S. administration and the nuclear strategy features of the U.S. through NPR.

Chapter 4 presents the nuclear response strategy and the feasibility of the nuclear sharing strategy of South Korea against North Korea.

Chapter 5 presents the conclusion.

2. REVIEWS OF RELATED LITERATURE

Fischer and Georges (1971) analyzed that the non-proliferation of nuclear weapons. Egeland and Kjolv (2020) analyzed that how NATO became a nuclear alliance. Henrik Stalhane Hiim, M. Taylor Fravel and Magnus Langset Troan (2023) analyzed that the China's changing nuclear posture. Seong-whun Cheon (2023) analyzed that the case for theater nuclear deterrence in South Korea. Manseok Lee and Sangmin Lee (2021) analyzed that North Korea's choice of a nuclear strategy. Giles David Arceneaux (2023) analyzed that the nuclear command, control and strategic stability. Toby Dalton and Jina Kim (2023) analyzed that rethinking arms control with a nuclear North Korea. Jina Kim (2020) analyzed that the dilemma of nuclear disarmament of North Korea. Hongyu Zhang and Kevin Wang (2019) analyzed that the nuclear-armed North Korea without ICBMs and the best achievable objective. Robert S. Ross (2021) analyzed that China looks at the Korean peninsula with two transitions. Tim Guldimann (2008) analyzed that the Iranian nuclear impasse and tension between Tehran and Arab neighbours. Stefanie von Hlatky and Michel Fortmann (2023) analyzed that NATO enlargement and the failure of the cooperative security mindset.

3. THE NPR OF U.S. ADMINISTRATION

3.1. The NPR of the Clinton administration

The collapse of the Soviet Union led to a fundamental change in the international security order facing the U.S.. The U.S. had to redefine the basic direction and goals of its national security strategy from a new perspective. The U.S. has placed as a national security strategy priority the continuation of the strategic arms reduction talks with Russia which inherited the Soviet nuclear weapons [2]. The U.S. had also to establish an overall security system including identifying North Korea's nuclear weapons development signals in 1993 and preventing the possession of emerging nations' nuclear weapons. One of the most important considerations of the Clinton administration was North Korea's withdrawal from the NPT in 1993, and the Geneva agreement in 1994. Therefore, the U.S. could not abandon its nuclear superiority strategy. There were four major parts in NPR of the Clinton administration. First of all, it is the new role of nuclear deterrence in U.S. national security. Second, it is the role of U.S. nuclear forces in assuring our allies. Third, it is the relationship of U.S. nuclear force structure and doctrine to arms control negotiations. Finally, it is the fiscal status of the U.S. nuclear strategy. It was shown that the U.S. has identified international organizations such as terrorist groups, North Korea, and Iraq with potential threats to post-Cold War and the U.S. has focused on preventing these countries of groups from having nuclear weapons and the spread of WMDs.

3.2. The NPR of the George W. Bush administration

The U.S. which experienced the September 11, 2001 terrorist attacks, chose the war on terrorism as the most important national strategy. In the NSS announced by the Bush administration in 2003, the U.S. established the goal of the major national security strategy as a response strat-

egy against the possibility of extremist forces threatening the international security order with nuclear weapons and WMDs. The U.S. had evaluated the decrease of the direct military threats such as Russia and China. After that, the Bush administration focused on a global war on terrorism and also took an active step toward the complete block of WMD through the Iraq war. The U.S. has still evaluated the key point for national defense to have nuclear capability and the most important thing for the accomplishment of the strategic and political purpose. There were four major parts in NPR of the George W. Bush administration. First of all, the U.S. nuclear strategy has changed to a nuclear capabilities-based strategy for aggressive preemptive use. Second, the U.S. strongly warned against aggressive preemptive use against terrorists and countries that support terrorism by abandoning the "no first use" policy. Third, the U.S. emphasized the establishment of a US-led nuclear order through a firm nuclear superiority against Russia and China. Finally, the U.S. selected seven countries concerned about the spread of nuclear weapons, including North Korea, Iraq, Iran, Syria, Libya, Russia, and China and potentially to launch a preemptive strike. The U.S.'s new nuclear strategy in this administration is to accomplish deterrence through a 'new nuclear three-triad system' with advanced non-nuclear attack capabilities, MD, C4ISR, and the construction of response military infrastructure.

3.3. The NPR of the Obama administration

By 2010, the level of U.S.-led response to nuclear terrorism had reached a stable level, and the U.S. kept an eye on the rapid economic growth and military build-up of China which is a new challenger. The U.S. is concerned about China's challenge to the status of the U.S. in the international community and its response strategy to China. At that time, Russia was still a nuclear power for the United States, but China was recognized as a country with the potential to exceed US concerns in terms of all levels of military power, including nuclear power. The U.S. has recognized that the threat of retaliation and punishment using nuclear weapons may no longer be able to deter enemy nuclear attacks in a new security environment in the 21st century. The Obama administration focused on showing that the direction of its diplomatic and security strategies was completely different from the previous Bush administration. The response ways of international security order issues, which had been unilaterally led by the U.S., was changed to a cooperative approach based on multilateralism. The Obama administration has also stopped developing new nuclear weapons for the world without nuclear weapons [3]. There were four major parts in NPR of the Obama administration. First of all, The U.S. has prevented the proliferation of nuclear weapons and nuclear terrorism. Second, they have reduced the role of nuclear weapons in U.S. national security strategy. Third, they have maintained strategic deterrence and stability while keeping the low nuclear power levels. Finally, they have Strengthened regional deterrence and provide extended deterrence for the U.S. allies and friends. In other words, it ultimately emphasizes providing a reliable nuclear umbrella to them.

3.4. The NPR of the Trump administration

The U.S. has evaluated a different threat from the past, considering nuclear threats from Russia and China as well as North Korea and Iran. Accordingly, the U.S. realized the need to establish a tailored strategy to respond to each type of nuclear threat. There were three major parts in NPR of the Trump administration. First of all, the U.S. has believed that nuclear weapons can essentially contribute not only to nuclear attacks but also to suppressing non-nuclear attacks. Nuclear weapons can also be used to protect the vital interests of the U.S., its allies, and friends in extreme circumstances. In other words, unlike the previous administration which regarded nuclear weapons as unusable weapons, the Trump administration recognized nuclear weapons as usable weapons if necessary. Second, the U.S. has recognized China as a major threat to challenge Russia and evaluated individual threats of North Korea and Iran in detail. By responding to each threat with a tailored strategy, the U.S. has proposed expanded deterrence and tailored assurance for allies in Europe and Asia. Finally, the U.S. has presented detailed plans for the modernization of the nuclear triad system and the development of low-power nuclear weapons [4]. They have strengthened the capability of low-power nuclear weapons which are more likely to be used than existing nuclear weapons. The U.S. has responded with nuclear weapons to the security threats of its allies by conventional weapons.

3.5. The NPR of the Biden administration

The U.S. considers China and Russia as the two most major threats. The U.S. considers China to be the only major threat against the U.S.. The U.S. has evaluated Russia

as an immediate and ongoing threat to international peace and stability. The U.S. which witnessed Russia's invasion of Ukraine considers that it would not allow Russia to use its nuclear weapons or to accomplish its goals through the threat of using nuclear weapons, and make a plan to modernize the U.S. nuclear weapons against nuclear threats. Under the concept of integrated deterrence, the U.S. emphasizes accomplishing national security through military power including nuclear weapons, diplomacy, and economic power as well as cooperation with allies and friends. There were three major parts in NPR of the Biden administration. First of all, the U.S. has been to ensure that its strategic deterrence remains secure from existential threats. The U.S. is particularly wary of China's military buildup and the Biden administration also maintains aggressive steps to deter China's military expansion. Second, the U.S.-led strategic deterrence is effectively maintained and the U.S. extended deterrence is especially strong and credible to allies and friends. In other words, the U.S. is pursuing to modernize the nuclear triad system which is a means of linking nuclear weapons through the so-called NC3 which is the command, control, and communication. Finally, the U.S. has found strategic stability through meaningful talks with Russia but is wary of the nuclear power increase of China. Recently, the U.S. has been responding more sensitively to China's challenging moves than Russia. In other words, the U.S. has strategically chosen to focus on China's nuclear power competition. The U.S. predicts that China will possess about 1,000 nuclear weapons by 2030. During just one year, the U.S. assessment of the threat to China's nuclear power development has changed dramatically. This is why the direction of the US nuclear strategy is going toward China. There is a summary of the features of the U.S. administration NPR. in Table 1 [5].

4. THE SUITABILITY OF NUCLEAR SHARING STRATEGY OF THE SOUTH KOREA

The U.S. deployed continuously nuclear weapons for 33 years in South Korea meanwhile the Cold War. The nuclear weapon deployed approximately 950 warheads in 1967. Since the last nuclear weapons were withdrawn from South Korea in 1991, South Korea has been protected from submarines or nuclear bombers of the U.S. under a "nuclear umbrella". South Korea called for redeploying tactical nuclear weapons to the U.S. in Seoul and Washington in 2017 [6]. But, the U.S. doesn't consider it because the redeployment would have several implications for broader regional issues in Russia and China as undermining their security. After that, the U.S. and South Korea agreed on several measures to increase the effectiveness of the extended deterrence, rather than deploying the U.S. tactical nuclear weapons on the Korean peninsula or developing its nuclear weapons at the Washington Summit in 2023. Therefore, the strategy of "U.S.-ROK nuclear sharing" has been difficult [7].

Despite these international situation changes, South Korea needs to establish a nuclear sharing strategy to find realistic and effective response strategies against North Korea's nuclear threats in the future [8]. The nuclear sharing strategy must be preceded by the three principles and standards. First of all, the credibility of the extended deterrence should be strengthened through the establishment of a nuclear sharing strategy, and South Korea should recognize and

Table 1. The features of the U.S. administration NPR

Administration	Major threats	Nuclear strategy	NPR period
Clinton	Russia, North Korea, Iran etc.	Missile defense	1994
George W. Bush	Russia, North Korea, Iran, terrorist organization etc.	Pre-emptive strike	2002
Obama	Russia, China, North Korea, Iran, terrorist organization (Taliban) etc.	Nuclear-free strategy	2010
Trump	Russia, China, North Korea, Iran, terrorist organization (IS) etc.	Traditional nuclear deterrence	2018
Biden	Russia, China, North Korea etc.	Strategic nuclear deterrence	2022

Table 2. The suitability of the strong and soft nuclear sharing strategy

Division	The strong nuclear sharing strategy	The soft nuclear sharing strategy
Availability	Deployment of nuclear weapons Providing nuclear warheads	No providing nuclear warheads
Type	Basing, Loaning	Giving
Consensuality	Nonconsideration	Consideration
Feature	Directive, Aggressive	Indirective, Persistent, Permanent
Suitability	△	○

feel its power. Second, the nuclear sharing strategy of South Korea is not a strong nuclear sharing such as a base type that deploys the US nuclear weapons on Korean territory or a rental type that is mounted on Korean transportation means, but rather a soft nuclear sharing strategy that supports and enhances the potential nuclear capability of South Korea. Finally, the establishment of a nuclear sharing strategy should not simply remain dependent on the nuclear security of the U.S., but should be developed to strengthen the security autonomy and defense power of South Korea. In other words, although it is difficult to establish a soft nuclear sharing strategy with the U.S., South Korea should actively respond to the situation and strengthen the credibility of the extended deterrence against North Korea's nuclear weapons through the establishment of a soft nuclear sharing strategy [9].

5. CONCLUSION

The U.S. Nuclear Strategy-related change can be found in a Nuclear Posture Review (NPR) report released by the U.S. The change in the U.S. nuclear strategy and nuclear power are considered both deterrence and offset strategies. It can be summarized in two ways. First, by maintaining overwhelming nuclear power against the enemy, the U.S. is to lead nuclear advantage that is the core of the U.S. nuclear strategy. Second, the U.S. is to limit the competition of nuclear power with nations seeking to challenge the U.S. nuclear power advantage. Additionally, the U.S. is to actively sign an agreement with nations on the reduction and restriction of nuclear weapons. Through the NPR of the U.S., South Korea should know what its effective unclear strategy is. The U.S. deployed continuously nuclear weapons for 33 years in South Korea meanwhile the Cold War. Since the last nuclear weapons were withdrawn from South Korea in 1991, South Korea has been protected from submarines or nuclear bombers of the U.S. under a "nuclear umbrella".

However, South Korea felt the need for nuclear weapons again and called for redeploying tactical nuclear weapons to the U.S. in Seoul and Washington in 2017. But, the U.S. doesn't consider it because the redeployment would have several implications for broader regional issues in Russia and China. After that, the U.S. and South Korea agreed on several measures to increase the effectiveness of the extended deterrence, rather than deploying the U.S. tactical nuclear weapons on the Korean peninsula or developing its nuclear weapons in 2023 [10]. However, despite these international situation changes, South Korea needs to establish a nuclear sharing strategy to find realistic and effective response strategies against North Korea's nuclear threats for permanent peace. The nuclear sharing strategy must be established the strength of the credibility of the extended deterrence, a soft nuclear sharing strategy that supports and enhances the potential nuclear capability of South Korea, and the strength of the security autonomy and defense power of South Korea. In other words, although it is difficult to establish a soft nuclear sharing strategy with the U.S., South Korea should actively respond to the situation and strengthen the credibility of the extended deterrence against North Korea's nuclear weapons through the establishment of a soft nuclear sharing strategy.

REFERENCES

1. Nayan R. 2023. American Nuclear Posture in the Changing Strategic Environment. *Strateg. Anal.* 1-5. https://doi.org/10.1080/09700161.2023.2247769.
2. Yost DS. 2004. The US Nuclear Posture Review and the NATO allies. *Int. Aff.* **80**(4):705-729. https://doi.org/10.1111/j.1468-2346.2004.00412.x.

3. Sagan SD and Vaynman J. 2011. Arms, Disarmament & influence; International Responses to the 2010 Nuclear Posture Review. The Nonproliferation Review. 17-37. https://doi.org/10.1080/10736700.2011.549169.
4. Peczeli A. 2018. The Trump Administration's Nuclear Posture Review; Back to Great Power Competition. *J. Peace Nucl. Disarm.* **1**(18):238-255. https://doi.org/10.1080/25751654.2018.1530741.
5. Zeb R. 2023. Biden Administration's Nuclear Posture Review and American Nuclear Policy; A Critical Overview. *Margalla Papers* **27**(1):53-66. https://doi.org/10.54690/margallapapers.27.1.151.
6. Kristensen HM and Norris RS. 2017. A History of US Nuclear Weapons in South Korea. *Bull. At. Sci.* **73**:349-357. https://doi.org/10.1080/00963402.2017.1388656.
7. Mount A. 2023. The US and South Korea: The Trouble with Nuclear Assurance. *Survival* **65**(2):123-140. https://doi.org/10.1080/00396338.2023.2193104.
8. Park H-r. 2021. North Korea's Nuclear Armament Strategy and Deception. *Def. Stud.* **23**(1):126-147. https://doi.org/10.1080/14702436.2022.2103407.
9. Kristensen HM, Korda M, Johns E and Knight M. 2023. Nuclear weapons sharing, 2023. *Bull. At. Sci.* **79**(6):393-406. https://doi.org/10.1080/00963402.2023.2266944.
10. Saqib A and Ali S. 2023. Nuclear Deterrence and National Security in the Twenty-First Century. CISS Insight Journal. 22-37. http://www.journal.ciss.org.pk/index.php/ciss-insight/article/view/246.