



North Korea's A2AD Threats and Implications on Transforming ROK Naval Force Strategy

북한의 A2AD 위협 평가와 한국 해상전력발전에 미치는 함의

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키워드

북한의 반접근 및 거부전략, 반접근 기술확산, 전력투사, 북한의 핵정책, 한미동맹

초록

이 글은 북한의 반접근 및 지역거부(A2AD) 능력과 위협을 평가하고 이에 대응하기 위한 한국군 해상 전력 발전 방향을 제시하는데 그 목적이 있다. A2AD는 합동전장영역에서 적의 기동의 자유를 거부하는 군사작전능력이다. A2AD에 대한 기존 연구는 중국과 러시아에 집중되어 있으며 상대적으로 북한의 A2AD 능력에 대한 평가와 분석에 관한 연구는 찾기 어렵다. 북한은 한국전쟁을 교훈삼아 꾸준히 북한판 A2AD 능력을 발전시켜왔으며 중국과 러시아로부터 핵심 기술을 이전 받아 그 능력을 배양시키고 있다. A2AD 관련 핵심기술은 고도화된 항공기, 해상 전투함, 탄도 및 순항 미사일 기술이 포함된다. 북한의 A2AD 전략은 개전 초 동맹국의 한반도 증원전력을 차단하고 공세 이전 시 한미연합상륙작전 등 공세행동을 좌절시키는 데 있다. 이 글에서는 북한이 A2AD 전략 증강에 힘쓰는 전략적 배경과 의도를 살피고 현재 보유하고 있는 능력에 대한 평가를 통해 한국 해군이 미래 합동전장영역에서 북한의 A2AD 능력에 대응하기 위한 무엇을 준비해야 하는지 방향을 제시하였다. 또한 한미 동맹이 북한의 A2AD에 대한 대응 능력을 강화하기 위해서는 첫째, 한미가 합동전장요구능력에 기초한 공동된 전략, 교리, 실행계획을 공유하여야 하고 둘째, 한국 해군과 해병대가 이를 실행하기 위한 플랫폼을 확보하여 합동전장영역작전(JADO)을 뒷받침하여야 하며 셋째, 한국 국방부는 미래의 연합 합동전장영역작전(JADO) 수행능력을 확보하기 위하여 현재의 군사력 건설 방향과 목표를 합참과 다시 살펴야한다. 그리고 마지막으로 미국이 주도하는 소다자주의 안보협력체에 적극 참여해서 미국을 비롯한 일본, 호주, 뉴질랜드 등 아태지역 동맹국가간 연합작전능력을 배양해야 한다.

Keywords

North Korea A2AD, Proliferation of A2 Technology, Power Projection, NK's Nuclear Strategy, ROK-US Alliance

Abstract

This paper is to assess North Korea's anti access and area denial (A2AD) threat and capability to provide insights on how they would affect the transformation for ROK naval force projection. A2AD is an attempt to deny an enemy's freedom of maneuver on the battlefield. When thinking of the operational concept of A2AD, we think of regional powers like Russia and China that have modern technology to uphold A2AD. This modern technology includes advanced aircraft, warships and specialized ballistic and cruise missiles. Considering the close military ties that North Korea has with Russia and China, this modern technology must have been proliferated to enhance the A2AD capability of North Korea. The reason North Korea develops A2AD capability has to do with its wartime strategy. To destroy the U.S.'s force flow from the mainland of the U.S., it is essential for North Korea to strengthen A2AD capability. To ensure force-projection against North Korea's A2AD strategy, the following considerations should be made. First, the ROK-U.S. alliance has to share common future strategies, doctrines and action plans for Joint All Domain Operations (JADO). Second, as the U.S. Navy and Marine Corps transform their strategy to contribute to the joint operation, the ROK Navy and Marine Corps have to rethink their future strategy so that they can perform new combined operations responding to the A2AD strategy of North Korea. Third, the Ministry of National Defense (MND) should revise its military reform plans to meet the JADO requirement. Finally, the ROK government should consider participating in unilateralism led by the U.S.

논문 정보

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I. INTRODUCTION

As China and United States military forces intensify their battles over the South China Sea, North Korea launched three projectiles into the East Sea from Kittaeryong in Gangwon Province on 26th August 2017. The launches took place during the ROK-US Ulchi Freedom Guardian Exercise. Immediately following the launch, the U.S., ROK and Japan didn't seem to agree on what North Korea had launched. Looking at the flight altitude alone, some observed that the projectiles were similar to the new 300mm MRLs (Multiple Rocket Launcher). There also was an argument that they were a new type of short-range projectiles based on the fact that they flew 50km more than the maximum range of 300mm MRLs.¹⁾ Lieutenant General Shin Won-sik, Vice Chairman of ROK Joint Chiefs of Staff confirmed that the unknown missiles launched on 26th August were likely to be short-ranged surface to ship missiles developed to strengthen North Korea's anti-access and area denial (A2AD) capabilities. He estimated that North Korea had established a strategy that cuts off reinforcements of ROK-U.S. combined forces at sea with a North Korean version of A2AD. Also, U.S. Pacific Command (PACOM) stated at an update brief that the unknown missiles were estimated to be short-range ballistic missiles.²⁾

When thinking of the traditional concept of A2AD, we first think of regional powers such as Russia and China. A2AD aims to limit an adversary's freedom of maneuver on multi-domain battlefields. Anti-access – of enemy's military maneuver into an area of operations – utilizes attack aircraft, warships, and ballistic and cruise missiles designed to strike core value targets. Area denial – denial of enemy's freedom of action in areas under friendly control – employs more defensive means such as air and sea defense systems.³⁾ The problem is that the first island chain established by China for A2AD strategy targets islands that are not Chinese territory. In addition, the concept of the island chain advocated by Liu Huaqing⁴⁾ is still not clear. Because there is even

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- 1) Ankit Panda, "What Kind of Missiles Did North Korea Launch on August 26: The United States, South Korea, and Japan didn't seem to agree on what North Korea launched", *The Diplomat*, August 28, 2017
 - 2) Yeonhap News, "북, 26일 쏜 발사체 비행 고도 50여km. 신형 발사체 가능성(종합)", August 27, 2017
 - 3) Krepinevich, Andrew, Barry Watts and Robert Work. *Meeting the Anti-access and Area-denial Challenge*(Washington, DC: Center for Strategic and Budgetary Assessments, 2003).
 - 4) Liu Huaqing was an admiral of the People's Liberation Navy who served as the third Commander-in-Chief

a controversy that it is a Chinese-style territorial sea setting line. In particular, suspicions from neighboring countries are continuing due to China's dispute over the Spratly Islands in the South China Sea, the Ieodo issues, and the dispute over sovereignty over the Senkaku Islands with Japan.⁵⁾ When we see the first island chain, it ranges from the Kuril Islands to Japan, China, the Philippines, and the Strait of Malacca. The purpose of the first island chain is to secure a buffer zone in the surrounding area. Moreover, the Korean Peninsula is located within the first chain islands. China has proliferated its missile technology to Algeria, Armenia, Azerbaijan, Bangladesh, Bahrain, Belarus, Hamas, Pakistan, Sudan, Tanzania, Thailand, Turkey and North Korea to strengthen its A2AD capability. North Korea has imported China's 302mm WS-1B and modified it into KN-09.⁶⁾

In September 2014, U.S. Secretary of Defense Chuck Hagel said that the U.S. had to maintain capability to project forces globally, to deter potential adversaries and to reassure allies and friends despite the emergence of A2AD threats. A2AD impedes U.S. ability to project power, thus presenting a significant vulnerability. It is time to apply A2AD thinking beyond China and Russia. Military experts, policy makers, and risk managers who are involved in making up the ROK-US alliance must begin thinking about North Korea's A2AD capability because it is getting stronger. The reason North Korea develops A2AD capability has to do with its nuclear strategy. To ensure the first and second nuclear strike capabilities, it is essential for North Korea to strengthen its A2AD capability.

II. EXISTING LITERATURE REVIEW

A2AD is a military tactic that relies on the idea that "the best way of defeating a distant enemy, especially if it is superior in armed forces, is to prevent it from deploying its forces into the theater of conflict in the first place." Throughout history, militaries

of the Navy from 1982 through 1988. He outlined the concept of island chain to impede force projection of potential adversary.

5) Song Ki-yong, "오키나와는 중국 땅" 중 진심인가?. *Money Today*, May 15, 2013.

6) Hua Di, "China's Case: Ballistic Missile Proliferation," *The International Missile Bazaar: The New Suppliers' Network*, ed. William C. Potter and Harlan W. Jencks (Boulder, CO: Westview Press, 1994), p.164.

have utilized this tactic, with its characteristics imprinted on conflicts from Ancient Greece to the present-day “warm war” in the South China Sea.⁷⁾ The shorthand A2AD however is a relatively-new catchphrase in the military community, and is one that has been chastised by military leaders as oversimplifying the more nuanced problems faced by the United States against states such as China.⁸⁾ However, this criticism has not been adopted by scholars of international relations since prominent journals are awash with articles discussing A2AD challenges at the state level. This discussion of current campaigns involving China and Russia is one of three main categories found on A2AD literature, along with analyses of past conflicts and projections of the use of A2AD in future conflicts. It will be possible to gain an understanding of where A2AD research stands today and what gaps in the literature need to be addressed.

The emergence of anti-access/area denial as a term in policy circles in recent years does not mean the topic is brand new. Although the concept itself remained unnamed at the time, conflict dating back to the fifth century BCE clash between Athens and Syracuse may have contributed to the study of anti-access/area denial.⁹⁾ It should be noted that the texts cited here represent only a sample of A2AD's use in conflict history. There are two groups of campaigns selected: 1) most are from the Cold War period and beyond, since it is impossible to build a theory incorporating the successful tactics of the Ancient Greeks in a world with long-range nuclear weapons; and 2) identified by modern-day historians as conflicts that display clear evidence of A2AD involvement. The literature investigation could be more robust if each conflict from the Cold War to the present was individually analyzed to identify more A2AD use. Nevertheless, recent military history provides us with valuable comparisons of both sea-based and land-based A2AD campaigns, which can assist us in identifying the strengths and weaknesses of A2AD as a strategy, and in understanding when and how states can utilize its tactics efficiently.¹⁰⁾

7) Stephan Frühling & Guillaume Lasconjarias, “NATO, A2AD and the Kaliningrad Challenge,” *Survival*, Vol. 58, No. 2(March 18, 2016), p.97. <https://doi.org/10.1080/00396338.2016.1161906>

8) Hope Hodge Seck, “Here’s Why the Navy Won’t Talk about ‘A2AD’ Anymore,” *Military.com*, October 4, 2016, <https://www.military.com/daily-news/2016/10/04/heres-why-the-navy-wont-talk-about-a2ad-anymore.html>(retrieved January 17, 2022).

9) James R. Holmes, “Flashy Name, Old Idea: Anti-access Strategy,” *The Diplomat*, October 28, 2012, <https://thediplomat.com/2012/10/flashy-name-old-idea-anti-access-strategy/?allpages=yes&print=yes> (Retrieved 25 March 2022)

10) Nick Imson, “The Next Warm War: How History’s Anti-access Denial Campaigns Inform the Future of War,” *The Journal of Small Wars*, January 14, 2020.

Luis Simon¹¹⁾ notes that the term 'A2AD' originated within the China-watcher community and has since been applied to Russia. With its modernization program, China is currently trying to do something very similar. Apparently, it is building artificial islands, developing advanced sea mines, deploying underwater sensors, and investing heavily in improved anti-submarine warfare capabilities as a bastion for its growing fleet of ballistic missile submarines (SSBNs). The country is also developing a variety of long-range anti-ship ballistic missiles (ASBMs) and anti-ship cruise missiles (ASCMs) to threaten U.S. forces in the Pacific and limit access to its littoral zone.¹²⁾

A continental land power operating in a different geographic area, with a different tradition of military thought from China's.¹³⁾ This concept is certainly useful when considering a maritime theater involving Russia or China. There are some similarities between America's two global power adversaries. However, the term does more to confuse than to reveal because Russia is nothing like China and Europe is nothing like the Pacific. Due to the lack of a Russian term for A2AD, this is just a ham-fisted translation of the Western term. Russian military thinking does not use this concept, nor do they have a strategy with this name.

The Australian Strategic Policy Institute's Christopher Cowan said the concept of A2AD isn't as novel as we think. There has been much discussion regarding the threats the A2AD weapons system poses to the United States Military, particularly its aircraft carriers. However, these threats are nothing new. Moreover, they aren't even novel threats to American aircraft carriers, which faced a similar threat from the Soviet Navy during the Cold War.¹⁴⁾

Former chief of U.S. naval operations admiral John Richardson said that *"To some,*

11) Research Professor at the Institute for European Studies, Vrije University in Brussel

12) Christopher Cowan, "Anti-access/area Denial: Not as New as You Might Think," *The Strategist, ASPI*, September 13, 2016.

13) Luis Simon, "Demystifying the A2AD Buzz," *War on the Rocks*, January 4, 2017 <https://warontherocks.com/2017/01/demystifying-the-a2ad-buzz/> (Retrieved January 15, 2022).

14) So prevalent are scary A2AD narratives that deflationary reports have started to come out, such as a recent publication by colleagues at Sweden's Defence Research Agency titled *Bursting the Bubble*. These are welcome corrections to inflationary think tank reports and media hype, though the reports focus on the technical performance limitations of these systems, which is still a tactical conversation on whether Russian sticks are 4-feet long or 12-feet long and if they are as pointy as they look or somewhat blunter. Debunking the myths is politically important: As some analysts have suggested, these misperceptions could have political consequences in a crisis and "prevent NATO from trying at all." (<https://www.aspistrategist.org.au/anti-accessarea-denial-not-new-might-think/> Retrieved January 16, 2022)

A2AD is a code-word, suggesting an impenetrable 'keep-out zone' that forces can enter only at extreme peril to themselves. To others, A2AD refers to a family of technologies. To still others, a strategy. In sum, A2AD is a term bandied about freely, with no precise definition, that sends a variety of vague or conflicting signals, depending on the context in which it is either transmitted or received."

Regarding the A2AD, no definitions have been agreed upon and the A2AD concept is not brand new. I can declare that It is not unreasonable to say that A2AD is the concept for all military strategies taken by historically weak continental powers to block powerful maritime powers.

III. NORTH KOREA'S A2AD STRATEGY AND CAPABILITIES

Kim Jung-un, like the leaders in China, Iran and other coastal states, hopes to erect a buffer zone against sea powers operating off the North Korean shores. Unlike these countries, North Korea lacks significant political and geographical advantages that help it offset the advantages commanded by the ROK-U.S., combined naval forces. The Korean People's Army (KPA) Naval Force, for instance, fields a modest submarine force and a sizable Styx patrol boats are equipped with anti-ship missiles. However, its warships only cover the nation's east and west coasts, operating within about a 50km offshore belt. Considering tactical and operational difficulties confronting North Korean commanders, Pyongyang has to disperse its finite resources and hardware between multiple, equally important seas. Its navy confronts a bicoastal anti-access problem against ROK-U.S. combined naval forces. The 1950 amphibious landing at Incheon on the west coast and Wonsan to the east demonstrated the North's vulnerability to coastal raids or full-blown invasions from the sea. Furthermore, UN forces rained gunfire and bombs on the peninsula from the sea throughout the conflict. In short, North Korea has no choice but to prioritize denial of access due to the lack of strategic depth between China and Iran.¹⁵⁾

After possessing nuclear weapons, North Korea strengthens A2AD capabilities with following reasons. First, if war broke out in the Korean Peninsula, the Kim Jung-un

15) James R. Holmes, "Anti-access on the Korean Peninsula: North Korea Confronts Probably the Hardest Anti-access Challenge of Any Coastal Defender," *The Diplomat*, October 3, 2012.

regime would focus on cutting off the reinforcements of U.S. forces. Because the U.S. way of war requires projecting sustained power into North Korea just like the gulf war against Saddam Hussein, Kim Jung-un would not allow the U.S. to mobilize a large number of forces in a staging area outside the Korean Peninsula in preparation for an invasion. If North Korea detected a large-scale U.S. force flow, it would launch a first strike to minimize or prevent it. Second, North Korean special operation forces, for decades, had planned to sabotage ROK bases and ports at the outset of a conflict specifically to prevent the alliance from projecting force into North Korea. The difference today is that North Korea now has 1,000 missiles – capable of destroying ports and bases – do the job that its special forces were once expected to do.¹⁶⁾

At the inauguration of President Donald Trump, the U.S. intelligence community informed the new administration that although North Korea had developed nuclear weapons, it would take at least four years for it to develop delivery systems capable of striking the American mainland. U.S. policy was based on the belief that it had several years to slow or stop the development of the Korean deterrence program before the Asian state attained basic nuclear parity. By targeting only the ROK and Japanese population centers, North Korea lacked an effective deterrent against an attack from the United States. Mutual vulnerability is an essential component of deterrence, so as long as the North Korean mainland was in range of U.S. strikes and the U.S. mainland was not vulnerable to retaliation, US military action remained at least somewhat feasible. Based on intelligence reports, the window for action would remain open until 2020 at the very worst, with the majority of experts estimating Pyongyang will achieve nuclear parity by 2022.

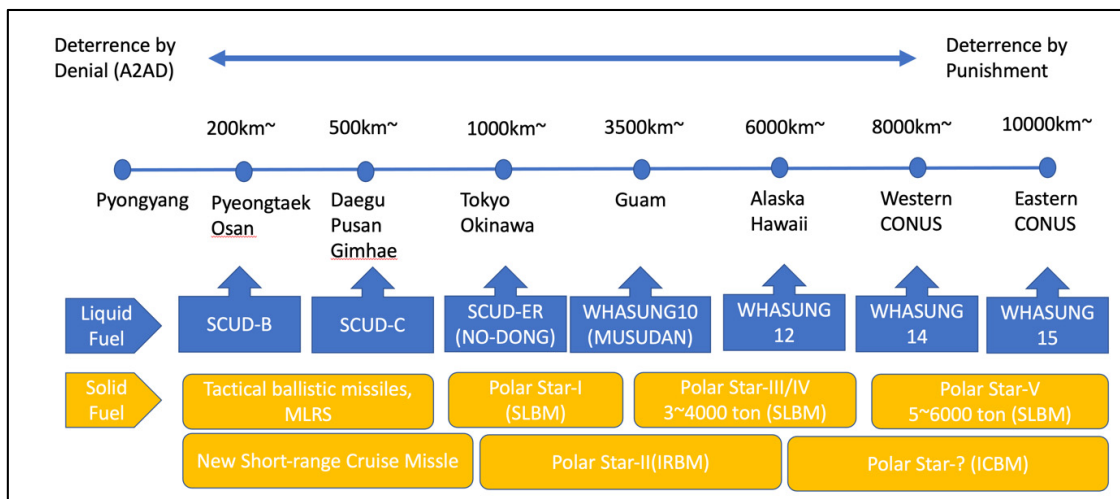
U.S. intelligence estimates showed that North Korea didn't have enough time to act, so President Trump has publicly assured his supporters that North Korea's nuclear parity acquisition "will not happen." North Korea's actions in 2017 did the same thing that North Korea has been doing since the 1990s, proving that Western analysts' understanding of North Korea is completely wrong and surpasses all expectations. In 2017, the pace of technological development—the three key elements of national defense—the A2AD system, the ballistic missile system, and the nuclear bomb—had completely stunned the United States and the entire Western bloc. Earlier in the year North Korea tested the KN-19 and KN-06 anti access area denial (A2AD) systems,

16) James R. Holmes, "North Korea: The Other Anti-access Threat?" *The Diplomat*, June 17, 2015.

weapons which served not to deter U.S. attacks through retaliatory strikes on its cities - but rather to deny U.S. aircraft and warships access to its airspace and territorial waters by deploying highly sophisticated asymmetric warfare systems. The KN-19 is a long-range anti-ship cruise missile system on a tracked mobile launcher - which if fielded in large numbers and operating on the move from the country's rough terrain could effectively deny U.S. surface vessels access to Korean waters. The KN-06 is a long-range surface to air missile system closely resembling the Russian S-400. The weapon is critical to its ability to deny U.S. aircraft, and potentially cruise missiles as well, from operating in the North Korean airspace - enhancing the country's already formidable air defense network. It was put into mass production in mid-2017 - and further complicated prospects for a U.S. attack on the country.¹⁷⁾

As you can see “<Figure 1>”, North Korea has various means of delivery. These can cover from 200km to over 10,000km. It means North Korea completed its deterrence capability for denial and punishment with nuclear and conventional weapons system.

<Figure 1> North Korea's A2AD Capabilities



Source: Kim dong-yup, “KIMS dialogue on the Assessment of NK’s A2AD Capability” (2020. 9. 19)

17) Military Watch, “The Transformation and Rapid Modernization of North Korea’s Defense in 2017: How U.S intelligence Underestimated Pyongyang’s Military Industrial Capabilities.” January 23, 2018. (<https://militarywatchmagazine.com/article/the-transformation-and-rapid-modernisation-of-north-korea-s-defences-in-2017-how-u-s-intelligence-underestimated-pyongyang-s-military-industrial-capabilities-part-one>, Retrieved August 2, 2021)

IV. U.S. NAVY TRANSFORMATION PLAN

Exploiting Assured Access

Recent Navy and Marine Corps transformation plans clearly demonstrate the operational and tactical ramifications of DoN's response to the A2AD challenge. Despite "Sea Power 21" being undoubtedly the primary concept driving the ROK Navy's transformation roadmap, three key concepts are identified in it that will drive the transformation effort:

- *Sea Basing* "projects the sovereignty of the United States globally while providing Joint Force Commanders with vital command and control, fire support, and logistics from the sea, thereby minimizing vulnerable assets ashore." *Global access can be achieved through sea basing.*
- *Sea Shield* "develops naval capabilities related to homeland defense, sea control, assured access, and projecting defense overland." *Thus, Sea Shield includes both the capabilities needed to protect and maintain access to the sea as well as those that protect the homeland and joint forces.*
- *Sea Strike* is "a broadened concept for naval power projection that leverages enhanced C4ISR, precision, stealth, and endurance to increase operational tempo, reach, and effectiveness."

These three fundamental concepts are enabled by a fourth, called FORCENet, "the operational construct and architectural framework for naval warfare in the information age, integrating warriors, sensors, command and control, platforms, and weapons into a networked, distributed combat force." Deconstructing the transformation plans that devolve from these concepts, five general objectives and goals emerge for DoN transformation efforts. The implied priority of these goals helps to illuminate the DoN's concerns over both A2 and AD threats.¹⁸⁾

18) Robert Work, "The Department of the Navy and Assured Access: A Critical Risk Assessment," *Meeting the Anti-access and Area-denial Challenge*, Center for Strategic and Budgetary Assessments, 2003, p.29.

Distributed Maritime Operations (DMO): MDO in the US Navy

The MDO concept was first developed by the U.S. Army and Air Force. Since then, under guidance of the Department of Defense, each branch of the military has implemented its own variation of MDO integration into their services.

In 2015 the US Navy committed to the development of the Distributed Maritime Operations (DMO) concept. The Marine Corps supports this effort through its related Littoral Operations in a Contested Environment (LOCE) concept and the subordinate Expeditionary Advance Base Operations (EABO) concept. Instead of relying heavily on carrier strike groups, which are becoming scarce and expensive, the goal is to link together all assets at the fleet level in a common network, using all the new tools offered by recent development in new technologies. Dispersed Surface Action Groups, with enhanced offensive and defensive capabilities such as ship mounted lasers, hypervelocity projectiles, and large UVs, will be linked together in the same tactical grid, implementing the idea of “distributed lethality” to increase the ability of the Navy to overcome the A2AD capabilities of peer competitors.

For years the Navy has been developing a more distributed fleet that relies on smaller ships that would cost less to sustain and operate. Furthermore, to reduce the risk created by the development of long-range anti-ship missiles on manned ships, and to perform sensitive mission, the use of large unmanned surface combatants to supplement the current fleet is a key element of the DMO architecture. Since 2017 the Navy has been planning to build a “ghost fleet” of large UVs, displacing about 2,000 tons and up to 300 feet in length, fitted with Vertical Launch Systems capable of delivering all sorts of weapons. As acting Chief of Naval Operations (CNO) Adm. Mike Gilday mentioned recently: “Unmanned platforms – that’s the future, right? And so, a hybrid fleet is where we’re going, make no mistake about it”. DMO will soon be tested for the first time in a live exercise. The large-scale exercise 2021, planned by US Navy and Marines Corps, will involve multiple strike groups and multiple numbered fleets. It will also include small tactical cyber teams and information warfare cells, with a special focus on unmanned systems.

V. FUTURE STRATEGY FOR ROK NAVAL FORCES

The ROK Navy continued shipbuilding programs to upgrade its fleet with local shipbuilders. In order to replace the aging Pohang-class corvettes and Ulsan-class frigates, and to take over multi-role operations such as coast patrol and anti-submarine warfare, the ROK Navy commissioned six 2,300-ton Incheon-class frigates between 2013 and 2016, and the lead ship (FFG 818) of the 2,800-ton Daegu-class frigates in March 2018. Tongyeong-class salvage and rescue ships replaced two Edenton-class salvage ships built by the US Navy between 2014 and 2016. The Navy commissioned a 3,000-ton minelayer, ROKS Nampo (MLS 570), in June 2017. The lead ship of the PKX-B fast rocket craft, ROKS Chamsuri 211 (PKMR 211), was commissioned in November 2017 to relieve the aging fleet of Chamsuri-class patrol craft.

The ROK Navy commissioned four 4,500-ton Cheonwangbong-class dock landing ships between 2014 and 2018. In May 2018, the Navy launched the Marado (LPH 6112), which was the second ship of the Dokdo-class amphibious transport dock. In June 2018, the Navy launched a 4,500-ton training ship, the Hansando (ATH 81), which was also designed as a casualty receiving and treatment ship (CRTS). In 2019, the ROK navy updated its strategic vision for the 100th anniversary of the ROK Navy as “Navy Vision 2045” As part of the vision, Admiral Sim Seung-seob, the Chief of Naval Operations proposed to build an ICT-Based, System-driven “Smart Navy”.¹⁹⁾

The ROK government is increasing its naval capabilities. In line with the ROK government's “Five-year defense plan,” the ROK Navy (ROKN) is expected to undergo some major changes in the near future. According to the plan, a light aircraft carrier of roughly 30,000 tons will be constructed, roughly the same size as Japan's “JS Izumo” that is capable of operating F-35B Joint Strike Fighters, as well as an array of helicopters and hopefully drones. A large amount of North Korea's artillery and conventional ballistic missiles can cause significant threats to stationary airfields across the south.

19) Ministry of National Defense, “Republic of Korea Navy International Fleet Review 2018,” Republic of Korea Navy(Archived from the original on September 23, 2018. Retrieved August 23, 2021).

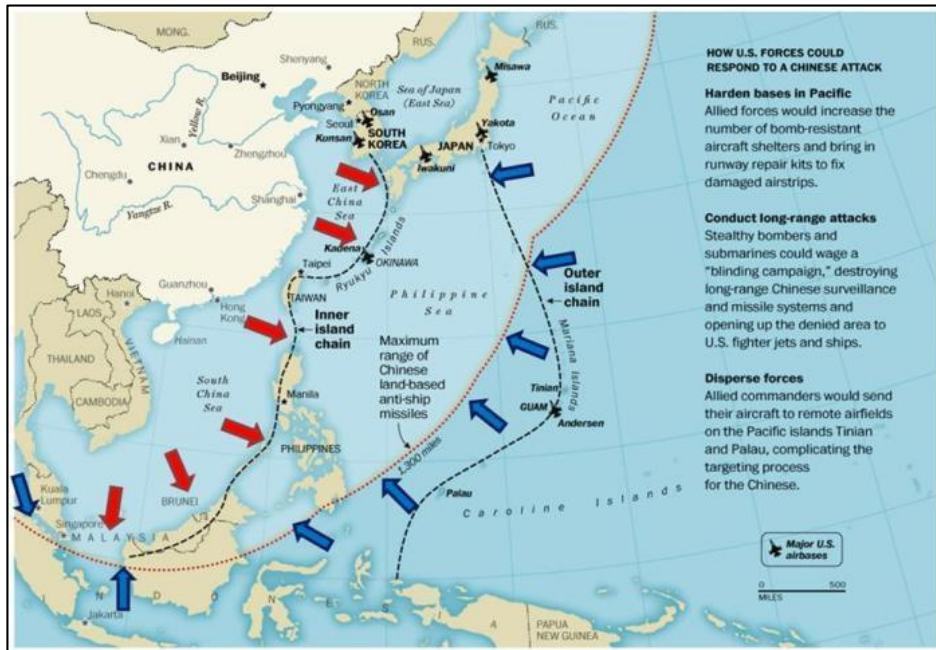
The ROK government has pledged to build a large-scale navy that can respond to the tactical problems posed by North Korea while acting as a respectable blue water force. The plan includes a nuclear submarine and KDX III Batch II destroyers, which will have formidable defensive and offensive weapons. It is not clear from Seoul's construction plans that it expects an increase in tensions with either China or Japan, but it certainly gives the Koreans options for responding to either situation.

The ROK Naval forces have extended its area of operation from green water to blue water. However, it is high time to rethink its future maritime strategy to meet the changing operational environment. Despite all the uncertainties the ROK Navy must confront in preparing for future challenges. The proliferation of A2AD technology of China and rapid progression of North Korea's A2AD capabilities may increase the threats to the ROK-US combined forces. Therefore, the strategic direction must be aligned with both ROK and US navy. Of course, the roles and responsibilities of the ROK and the US Navy are different, but in case war time, to conduct a combined operation, the ROK Navy must match the US Navy's fighting methods, doctrine, and interoperability.

Fundamentally, there are two main options for countering A2AD. These are the Inside-Out and the Outside-In approach (see the <figure 2>)²⁰. Inside-Out is based on a technological advantage which strives for a short, high-intensity conflict, hitting the A2AD system's center of gravity with the factor of surprise and thus breaking the obstacle hindering the advance of friendly forces. In contrast, Outside-In chooses the potentially lengthy approach of dismantling the adversary's capabilities layer by layer. Considering the above two options, ROK Naval forces require the following new capabilities.

20) Mike Piedtrucha, "Strategic Architectures," *Leading Edge Air Power in Theory and Practice*, August 4, 2015.

〈Figure 2〉 Simultaneous Application of A2AD Keeps US Out, China In



Source: Mike Piedtrucha, "Strategic Architectures", Leading Edge Air Power in Theory and Practice

- *Stand-off strike capabilities with the range to engage from outside, or from the edge of, A2AD zone in combination with A2AD-resistant ISR means*
- *Technology that can successfully penetrate an A2AD zone and create a desired effect*
- *New operation concepts for Marine's role and responsibility using platform*
- *Unmanned reconnaissance and strike system.*
- *Unrefueled range of at least 1000NM*
- *Broad-band, very low observability*
- *Providing self-defense and surveillance capabilities on board to enable independent operations against fixed and mobile targets in compromised C4ISR environments.*

Stand-off strikes capabilities including sea-based ballistic missiles are essential to destroy enemy's A2AD assets such as air-defense artillery and MLRS located alongside the seashore and these capabilities must have technology to avoid detection from enemy's ISR means throughout enemy's entire A2AD zone. Also, the new role of the marine corps must be reviewed. Its first focus area is to reintegrate with the Navy to

refamiliarize itself with maritime operations rather than the shore-based operations. The marine corps now focuses on accessing littorals in contested environments through exercises while integrating the traditional air, land, and maritime domains along with the inclusion of space, information, and the electromagnetic spectrum (EMS). These exercises also introduce new technologies for experimentation in an attempt to further develop new approaches to combat peer adversaries.²¹⁾

In addition, the Navy's maritime maneuver range should be extended over 4000NM to conduct combined operations with US navy and Broad-band communication technology ensuring low observability should be an embedded naval platform. On-board surveillance and self-defense capabilities are needed to enable independent operation against fixed and mobile targets in degraded C4ISR environments. Joint Chiefs of Staffs of the ROK Navy must revise their future acquisition plan to include the above capabilities.

VI. CONCLUSION

When it comes to A2AD we usually think of China first. Traditionally, A2AD is China's mainland defense policy invented by Admiral Liu Huaqing. However, China intentionally has proliferated its A2AD technology to south east Asia countries and North Korea alongside with the first islands chain.

There are two reasons why North Korea focuses on developing A2AD capabilities continuously. First, Pyongyang does not want to repeat history. During the Korean War, Incheon and Wonsan landing operations were a nightmare for Kim Il-sung due to the failure of A2AD operations. Second, If the war began, North Korea would stop the reinforcements of the U.S force with nuclear weapons. North Korea's A2AD capabilities are not known in detail. But we can estimate through recent rocket experiments at seashore. North Korea has fired more than 80 missile projectiles on 47 occasions since 1998. Under the Moon Jae-in administration, the number reached 18 times, the highest in history.

Responding to North Korea's A2AD threats, ROK Naval forces must enhance

21) Grant J. Smith, "Multi-domain Operations: Everyone's Doing It, Just Not Together," *Over the Horizon: Multi-domain Operations & Strategy*, January 24, 2019.

countering A2AD capabilities. ROK naval forces have expanded operational capabilities from green water to blue water. According to the ROK government's "5-year defense plan", ROK Navy will acquire light aircraft carriers and nuclear submarines. However, the direction of future strategy of naval forces should be reconsidered to meet the JADO requirement under Joint mission capability to conduct ROK-US combined Operation.

Finally, in order to ensure force-projection against North Korea's A2AD strategy, the following considerations should be made. First, the ROK-U.S. alliance has to share common future strategies, doctrines and action plans for Joint All Domain Operations (JADO). Second, as the U.S. Navy and Marine Corps transform their strategy to contribute to the joint operation, the ROK Navy and Marine Corps have to rethink their future strategy so that they can perform new combined operations responding to the A2AD strategy of North Korea. Third, the ROK government should consider participating in minilateralism led by the U.S. in order to strengthen integrated deterrence in response to North Korea-China- Russia military cooperation.

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