



## **Aegis Ashore – Afloat (Again)?**

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**February 2021**

### **Executive Summary**

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After abolishing its original Aegis Ashore system as land-based main pillar of Ballistic Missile Defense (BMD) in June 2020, the government of Japan proposed a successor to the Aegis Ashore system where the effectors are sea-based while being controlled by an integrated command-and-control structure spanning all service branches of Japan's Self-Defense Forces (SDF). However, inter-services integration is a fairly new concept in Japan and apparently still in a fledgling state. Notwithstanding, at least theoretically the new BMD concept has the potential to form Japan's contribution to a future collective security arrangement with the USA and the Republic of Korea.

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## Analysis

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### Introduction

On June 15, 2020, then Minister of Defense Kōno Tarō announced that the deployment of the Aegis Ashore system, the proposed land-based component of Japan's defense against the upper tier of ballistic missiles complementing Japan's existing sea-based Aegis capabilities, had been halted the weekend before. On the same day, the Ministry of Defense published a formal statement to this effect.<sup>1</sup> The aborted Aegis Ashore deployment was officially explained with the controversy surrounding safety issues in the perimeter of the ground stations. It was notably in Yamaguchi that local citizens were afraid of rocket booster debris going down in densely populated areas; this objection to the system was cited as a major concern, together with fiscal constraints under the impact of the ongoing Covid-19 pandemic. It was said that the additional investment in hardware and software to fix the booster problem would require a multi-billion US-Dollar investment and up to 10 years to fix, without achieving a meaningful combat efficiency upgrade.

As an alternative to and replacement of Aegis Ashore, a sea-based missile launch platform was discussed in public by the incoming Minister of Defense, Nobuo Kishi, in a press conference<sup>2</sup> on September 25, 2020, and formalized by a National Security Council and Cabinet of Japan resolution<sup>3</sup> in December 2020. Two ships similar to existing units of Japan's Maritime Self-Defense Force are proposed for this purpose; the idea behind this proposal is to offer a degree of flexibility in an operating environment that is not compromised by the constraints of the original Aegis Ashore proposal. The resolution admits that the details of adding the launch capabilities, together with the necessary redesign, will require further discussion,<sup>4</sup> but falls short of touching fiscal aspects of this new proposal. While the resolution did not mention the reorganization of the command-and-control structure to the effect that all missile and air defense, including the Aegis system, will be operated in an integrated environment, this reorganization is indeed essential for increasing the efficiency and reliability of Japan's missile defense.

While this new concept offers a much higher degree of flexibility in comparison to the land-based Aegis Ashore system and eliminates all concerns which were cited to explain the end of Aegis Ashore, a sea-based solution has its very own challenges. Besides the personnel operating the missile defense system, the ships have considerable crew requirements which are aggravated by Japan's strictly volunteer professional service in the armed forces in the environment of an ageing society with one of the world's highest mean ages. In addition, the Aegis ships will require force protection. Finally, a critical aspect is the command-and-control structure necessary, which will have to span several of the SDF service branches: The ships are operated by the Maritime Self-Defense Force, the command-and-control structure lies in the hands of the Air Self-Defense Force, and all

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1 Bōeishō [MOD]: Ijis Ashoa no haibi ni tsuite [Regarding the deployment of Aegis Ashore]. June 15, Reiwa 2 [2020]. [https://www.mod.go.jp/i/approach/defense/bmd/pdf/20200615\\_a.pdf](https://www.mod.go.jp/i/approach/defense/bmd/pdf/20200615_a.pdf) (accessed January 14, 2021).

2 Bōei daijin kisha kaiken [Press conference by the Minister of Defense] <https://www.mod.go.jp/i/press/kisha/2020/0925a.html> (accessed January 28, 2021).

3 Kokka anzen hoshō kaigi kettei, kakugi kettei [National Security Council and Cabinet Resolution]: "Aratana misairu bōei sisutemu no sōbi tō oyobi sutando-ofu bōei nōryoku no kyōka ni tsuite" [For the acquisition of a new missile defense system and for strengthening the capabilities of stand-off defense] December 19, 2020. <https://www.kantei.go.jp/jp/content/000075220.pdf> (accessed January 27, 2021).

4 Original wording in the aforementioned resolution: "[...] 同艦に付加する機能及び設計上の工夫等を含む詳細については、引き続き検討を実施し、必要な措置を講ずる。"

communication systems have to be protected against threats in new domains: cyberspace, outer space and the electromagnetic spectrum which have a high impact on the traditional domains of warfare.

### Overall Concept of Japan’s Revised BMD Approach

After abolishing the Aegis Ashore approach and opting for a sea-based BMD solution, the overall system layout and the command-and-control structure were thoroughly redesigned (see figure 1 for an overview). The task of detecting and identifying incoming ballistic missiles (“upper tier”) lies with the Japanese-developed early warning and control radar J/FPS-5<sup>5</sup>, nicknamed Gamera<sup>6</sup> radar, which is a fixed 3D active phased array radar system operated by the Air Self-Defense Force and fielded in Okinawa, Shimo-Koshikijima (in Kagoshima Prefecture in the very south of Kyūshū), Sado (in Niigata Prefecture, facing westwards) and in the very north of Japan’s main island Honshū, in Ōminato in Aomori Prefecture. The lower tier of incoming missiles is monitored and tracked by the Patriot PAC-3 system. All air defense data, no matter whether relating to incoming missiles or other weapon systems such as high-speed cruise missiles, stealth aircraft etc., is processed by the interconnected Japan Aerospace Defense Ground Environment (JADGE). The Joint Task Force BMD under the command of the Commander of the Air Defense Command is responsible for the operation of JADGE and the proper execution of the BMD-related tasks. With regard to the upper tier of incoming ballistic missiles, there is no longer a land-based component involved as was the case with Aegis Ashore which was fielded on Ground Self-Defense Force sites. Notwithstanding, the Ground Self-Defense Force operates its own mid-range surface-to-air guided missiles.

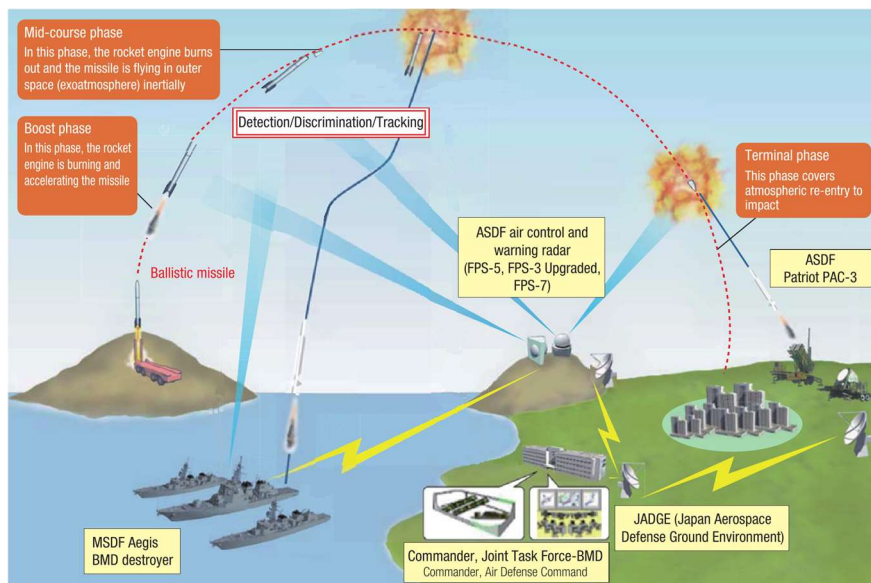


Figure 1: Japan's new BMD Concept as of January 8, 2021 (image rendered by the author based on a merger of illustrations in “Defense of Japan 2020”, p. 257 (old Aegis Ashore concept, English captions) and “Misairu bōei ni tsuite” [On Missile Defense], January 8, 2021, <https://www.mod.go.jp/j/approach/defense/bmd/> (new concept, Japanese captions).

5 Introduction to the Equipment of the Japan Self-Defense Forces. A Reference Guide to the Defense Industrial Base of Japan. p. 18. [https://www.mod.go.jp/j/approach/hyouka/yosan\\_shikko/2018/04.pdf](https://www.mod.go.jp/j/approach/hyouka/yosan_shikko/2018/04.pdf) (accessed January 27, 2021).

6 Gamera is a fictional monster in Japanese movies and popular culture.

The question in how far this new integrated system is still in the design, planning and acquisition phase rather than consisting of components and assets which are already being deployed cannot be answered with certainty. The paragraphs of the Defense of Japan 2020 White Paper explaining the command-and-control structure of missile defense use language which unequivocally points towards a future: “[...] and various postures for effective defense are to be taken under a unified command through JADGE.”<sup>7</sup> In addition, a recent (January 8, 2021) position paper<sup>8</sup> issued by the MOD clearly outlines that inter-services system integration is yet to be achieved (see figure 2). In the current state of affairs, every service branch is in charge for the air defense of its own domain, which creates the risk of either repetitive action or missing engagement due to disputed responsibilities and competencies. Even though there is an integrated command structure for missile defense in place, it omits crucial segments of air defense. In the future system, all assets by all service branches (ground, air, sea) are networked and operated under the aforementioned JADGE. In this network-centric approach, all sensor data of all service branches (including AWACS, E-2C/D and satellites) is shared, and the choice of the effector best suited for engaging the incoming missile is made automatically.

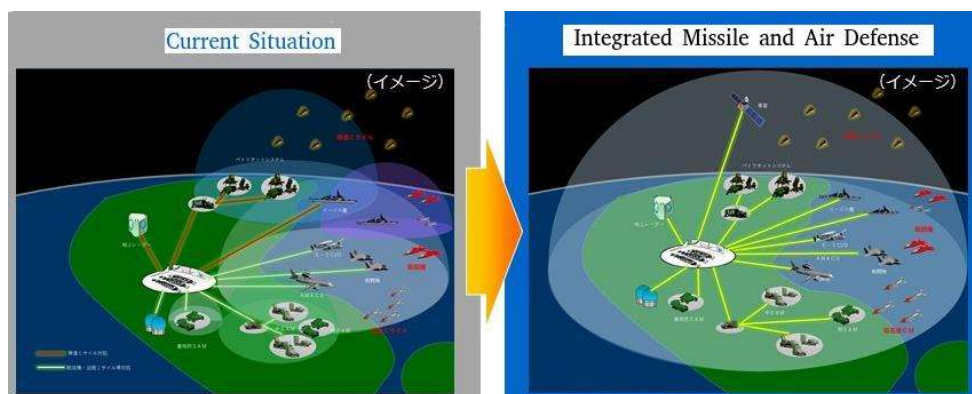


Figure 2: The future concept of Japan's integrated missile and air defense (*tōgō misairu bōkū*) (source: "Misairu bōei ni tsuite" [On Missile Defense], January 8, 2021, <https://www.mod.go.jp/j/approach/defense/bmd/>.)

### A Changing Threat Environment

The main threat which prompted the concept of the abolished Aegis Ashore system is North Korea and its ongoing development and testing program of a whole gamut of various missiles.<sup>9</sup> The latest additions to North Korea's arsenal include a 'monster' ICBM<sup>10</sup> first shown during a military parade in Pyongyang on October 10, 2020. This ICBM is transported on an 11-axle TEL, making it one of the largest road-mobile intercontinental ballistic missiles (ICBMs) in the world if it becomes operational. On January 14, 2021, the latest SLBM<sup>11</sup> dubbed Pukguksong-4 was shown at yet another military parade in Pyongyang. Though North Korea's efforts in the field of SLBM have been publicly known for several years – e.g., an earlier model of the Pukguksong series was tested

7 Defense of Japan 2020, p. 256.

8 MOD: "Misairu bōei ni tsuite" [On Missile Defense], January 8, 2021, <https://www.mod.go.jp/j/approach/defense/bmd/> (accessed January 20, 2021).

9 See Japan Ministry of Defense: "Recent Missile & Nuclear Development of North Korea", October 2020. [https://www.mod.go.jp/e/d\\_act/sec\\_env/pdf/dprk\\_d-act\\_e\\_201111.pdf](https://www.mod.go.jp/e/d_act/sec_env/pdf/dprk_d-act_e_201111.pdf) (accessed January 20, 2021).

10 Hyonhee Shin, Josh Smith: "North Korea unveils 'monster' new intercontinental ballistic missile at parade". Reuters, October 10, 2020. <https://www.reuters.com/article/us-northkorea-missiles-idUSKBN26V01K> (accessed January 23, 2021).

11 Josh Smith, Sangmi Cha: North Korea shows off new submarine-launched missiles after rare party congress. Reuters, January 15, 2021. <https://www.reuters.com/article/us-northkorea-politics-idUSKBN29J2YG> (accessed January 23, 2021).



on October 2, 2019 (Pukguksong-3<sup>12</sup>) – it is not immediately clear whether this SLBM will be fielded in the near future given that North Korea currently has only one conventionally-powered GORAE class SSB in its arsenal, with one ROMEO Class-derived SSB under construction.<sup>13</sup>

Besides developing large ICBM and SLBM models, North Korea also claims to opt for the development of tactical nuclear weapons<sup>14</sup> which are seen as primarily targeting the USA<sup>15</sup> (and US Forces in Korea) but which can equally cause harm to Japan.

China's progress in science and technology, boosted by its recent status as an economic superpower, has produced many new developments such as anti-ship missiles, hypersonic gliders, and "carrier killers".<sup>16</sup> The quoted MOD position paper on missile defense mentions the DF-17 with its hypersonic glide vehicle next to comparable developments by Russia, the Avangard hypersonic glider and the 3M22 Zircon, an anti-ship hypersonic cruise missile. The latter systems are a threat to Japan's emerging carrier capabilities as the Izumo-Class helicopter destroyers were approved by the Japanese Cabinet for modification into aircraft carriers in 2018 and the subsequent acquisition of the F-35B.

### Fiscal Constraints

Currently, the global Covid-19 pandemic affects major economies around the world in a hitherto unprecedented scale, and Japan is no exception. The national economy nose-dived in the second quarter of 2020, recording the worst negative growth in the post WWII era. The GDP shrank by 7.8% in comparison to the previous quarter.<sup>17</sup> At the same time, the public debt of Japan skyrocketed to a level of about 250% of the GDP, exceeding historical levels.<sup>18</sup> Japan has been maintaining a higher level of public debt than other industrialized countries; servicing this public debt results in a major burden on fiscal revenue and significantly impacts the negotiating space for defense spending.

Nonetheless, highlights of the budget for the fiscal year 2021<sup>19</sup> include, among others, the following items: For strengthening the combat efficiency of integrated missile and air defense, a capability enhancement of the JADGE is calculated as 22.1 billion Yen, or approximately 175 million Euro or 212 million USD; the acquisition of

12 Ankit Panda: "N. Korea's new submarine-launched ballistic missile: unpacking the Pukguksong-3", October 3, 2019. <https://www.nknews.org/pro/north-koreas-new-submarine-launched-ballistic-missile-unpacking-the-pukguksong-3/> (accessed January 21, 2021).

13 H. I. Sutton: "Unusual Submarine Likely To Increase Threat From North Korea", October 02, 2020. <https://www.navalnews.com/naval-news/2020/10/unusual-submarine-likely-to-increase-threat-from-north-korea/> (accessed January 27, 2021).

14 North Korean Ministry of Foreign Affairs, Jan. 9, 2021: "Great Programme for Struggle Leading Korean-style Socialist Construction to Fresh Victory. On Report Made by Supreme Leader Kim Jong Un at Eighth Congress of WPK" <https://kcnawatch.org/newstream/1610272851-580631610/great-programme-for-struggle-leading-korean-style-socialist-construction-to-fresh-victory-on-report-made-by-supreme-leader-kim-jong-un-at-eighth-congress-of-wpk/?t=1610568921077> (accessed January 21, 2021).

15 Ankit Panda: "What Biden Should Know About North Korea's New Nuclear Plans". January 15, 2021. <https://carnegieendowment.org/2021/01/15/what-biden-should-know-about-north-korea-s-new-nuclear-plans-pub-83638> (accessed January 21, 2021).

16 "The Implications of China's Conventional Missile Arsenal: A Conversation with Ankit Panda", December 8, 2020. <https://chinapower.csis.org/podcasts/the-implications-of-chinas-conventional-missile-arsenal/> (accessed January 21, 2021).

17 See Mitsubishi UFJ Research and Consulting: "The Japanese Economy in Fiscal 2020 and Fiscal 2021", 7 September 2020. <https://www.murc.jp/wp-content/uploads/2020/09/fc2009.pdf> (accessed January 18, 2021).

18 Japan Ministry of Finance: 主な国の債務残高 [Omona kuni no saimu zandaka (Public Debt of Major Nations)] <https://www.mof.go.jp/zaisei/current-situation/situation-comparison.html> (accessed January 18, 2021).

19 "Reiwa 3 nendo bōei kankei yosan no pointo" [Key figures of the 2021 defense budget] [https://www.mof.go.jp/budget/budger\\_workflow/budget/fy2021/seifuan2021/20.pdf](https://www.mof.go.jp/budget/budger_workflow/budget/fy2021/seifuan2021/20.pdf) (accessed January 27, 2021).





PAC-3MSE missiles (upgraded interceptor missiles for the existing missile defense) is calculated as 35.6 billion Yen, or approx. 282 million Euro / US 341 million; support for the technical modification of the Aegis carrier platform is calculated at 1.7 billion Yen, or approx. 13.47 million Euro / USD 16.29 million. These budget figures reflect just a small portion of the overall estimate for the price tag of an Aegis Ashore replacement, starting from 190 billion Yen (approx. 1.5 billion Euro / 1.8 billion USD) per unit<sup>20</sup> – bringing the total price to a magnitude of 400 billion Yen (3.17 billion Euro / 3.85 billion USD).

### Constitutional Considerations

Under Article 9 of Constitution of Japan, the “Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes”. The establishment of the Japan Self-Defense Forces already is a challenge to this constitutional provision, but so far, the SDF have always maintained a strict defense-only focus (jp. *senshu*) posture. Intercepting a ballistic missile proposes an interesting dilemma: it serves the purpose of homeland defense, but the particular engagement may happen well outside the territory of Japan, which, in principle violates the rules of engagement of the SDF. The problem has been subject to intense debate among politicians and in the armed forces.<sup>21</sup> So far, the consensus for the time being is that strikes against missile bases are not an option for Japan. Were a concrete missile threat to arise and a strike against the missile base the only feasible option, Japan could, under its current constitutional framework, only “outsource” the strike option to its military ally and protector, the USA.

### A Scenario of Collective Security

In the January 2019 issue of the *Japan Maritime Self-Defense Force Command and Staff College Review*, Jon Bradford, Narushige Michishita and Dan Fillon discuss the value of a possible trilateral security cooperation between Japan, the USA and South Korea.<sup>22</sup> They propose an area of cooperation which, in their view, has a low entry barrier, namely anti-mine warfare, and they do acknowledge the difficulties of such a proposal against the current background of regional relations. They recommend decoupling the political issues and the security issues while strengthening the military cooperation. The widely known political reservations between South

20 “Ashoa daitai, saitei 1900 oku en / mottomo kōka na yōjō sōbi ni” [The Aegis Ashore replacement will cost at least 190 billion Yen – towards the most expensive surface asset ever] Asahi Shinbun digital, November 24, 2020, <https://www.asahi.com/articles/ASNC552JNCSUTIL00S.html> (accessed January 27, 2021).

21 Takahashi Sugio: “Senshu bōeika no tekichi kōgeki nōryoku wo megutte – dandō misairu kyōi he no hitotsu no taiō” [Dealing with the Ballistic Missile Threat: Whether Japan Should Have a Strike Capability under its Exclusively Defense-Oriented Policy], NIDS Bulletin Vol. 8 No 1, October 2005 (Japanese original)

[http://www.nids.mod.go.jp/publication/kiyo/pdf/bulletin\\_j8\\_4.pdf](http://www.nids.mod.go.jp/publication/kiyo/pdf/bulletin_j8_4.pdf) (accessed January 21, 2021). (English translation)

[http://www.nids.mod.go.jp/english/publication/kiyo/pdf/bulletin\\_e2006\\_4\\_takahashi.pdf](http://www.nids.mod.go.jp/english/publication/kiyo/pdf/bulletin_e2006_4_takahashi.pdf) (accessed January 21, 2021).

See also Tokyo Web Editorial “Teki kichi kōgeki nōryoku – shin no yokushiryoku ni naranai” [Strike capability against enemy missile bases – not resulting in higher deterrence], August 5, 2020. <https://www.tokyo-np.co.jp/article/47112> (accessed January 2021)

On the exclusive defense-oriented nature of Japan’s missile defense see Kazuhito Kutsunugi, Ryō Tange: “Senshu bōeiryoku to kongo no waga kuni no bōei seisaku” [The Exclusive Defense-Oriented Policy and the future defense policy of Japan]. September 2018. [https://www.sangiin.go.jp/japanese/annai/chousa/rippou\\_chousa/backnumber/2018pdf/20180907044.pdf](https://www.sangiin.go.jp/japanese/annai/chousa/rippou_chousa/backnumber/2018pdf/20180907044.pdf) (accessed January 21, 2021)

22 John Bradford, Narushige Michishita and Dan Fillon: “Tai kirai sen: Nichi-Bei-Kan anzen hoshō kyōryoku no aratana ajenda”, in: *Japan Maritime Self-Defense Force Command and Staff College Review*, vol. 8, no. 2, January 2019, pp. 99–106. This article originally appeared in U.S. Naval Institute Proceedings, 2018, under the title: “Trilateral Security Cooperation: Act Now Against Sea Mines”, with new text contributed by Narushige Michishita who also was the translator.



Korea and Japan manifest themselves e.g. in the area of intelligence sharing (see the dispute around the GSOMIA agreement<sup>23</sup>).

Missile defense could be an area for trilateral security cooperation which does not need any further justification as South Korea, the USA and Japan all are subject to the same missile threats; the employed surface combatants involved should provide a high degree of interoperability due to their common design lineage. South Korea commissioned three Sejong the Great-Class destroyers in 2019<sup>24</sup> which are, in fact, modelled after the U.S. Arley Burke-Class destroyers and comparable to Japan's Atago-Class destroyers. Equally, the same Aegis Combat System (Baseline 7 Phase 1) was originally installed on all platforms. Yet as convincing the logic of collective security is, the author does not see such a scenario come true soon given the conflicting political interests of the parties involved.

### Summary

The shift from land-based Aegis Ashore to a sea-based concept is a bold step which requires far more than just fitting two surface combatants with missile launchers. The most important challenge of this new approach lies in the implementation of a truly joint, cross-service command-and-control structure which requires over-coming technological hurdles as much as it needs the active support of all personnel, no matter which uniform they wear. Despite the price tag attached, a sea-based missile defense could, at least in theory, form the nucleus of a future collective security arrangement which comprises not only Japan and the USA, but also the Republic of Korea.

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**Remarks:** Opinions expressed in this contribution are those of the author.

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23 Oliver Corff: "East Asia's Fragile Security Environment and the Propagation of Insecurity: A Negative Showcase", ISPSW Strategy Series: Focus on Defense and International Security, Issue No. 693, May 2020. [https://www.ispsw.com/wp-content/uploads/2020/06/693\\_Corff.pdf](https://www.ispsw.com/wp-content/uploads/2020/06/693_Corff.pdf) (accessed January 25, 2021).

24 "South Korea approves procurement of next batch of Aegis destroyers, subs", May 6, 2019, [navaltoday](https://www.navaltoday.com/2019/05/06/south-korea-approves-procurement-of-next-batch-of-aegis-destroyers-subs/). <https://www.navaltoday.com/2019/05/06/south-korea-approves-procurement-of-next-batch-of-aegis-destroyers-subs/> (accessed January 28, 2021).



## About the Author of this Issue

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