

Japan: Priorities for Missile Defense Development and U.S. Partnership

By Riki Ellison & Ian Williams

Over the past two decades, missile threats to Japan have steadily increased, punctuated by North Korea's launch of a medium-range ballistic missile over Japan in 1998. With constitutional constraints on its defense budget and no nuclear deterrent of its own, Japan must look to the United States for extended deterrence and greater integration, along with modernization of the BMD systems to maintain deterrence and self-defense to answer growing and evolving threats.



A HISTORY OF COOPERATION

Japan is the United States' closest ally in the Pacific Region. U.S. security commitments to Japan's sovereignty have been in place since the end of World War II. Since the end of those hostilities, the U.S.-Japan relationship has evolved to one of the world's strongest alliances. Cooperation on air defense specifically dates back to the 1960's with the first deployments of the Homing All The Way (H.A.W.K) air defense system by the U.S. Army and the Japanese Ground Self Defense Forces (JGSDF). During this period, the U.S. also deployed conventionally-armed Nike-Hercules air defense missiles to Japan, and Japan began

producing its own variant, the Nike-J.

In 1985, Japan acquired a license to produce the Patriot Advanced Capability-2 (PAC-2), which it first fielded in 1989. Since 1964, U.S. and Japanese air defense forces have conducted joint training on the H.A.W.K and subsequently Patriot Systems at McGregor Range, New Mexico. In 2007, Japan deployed its first Patriot Advanced Capability-3 (PAC-3) system to Iruma Air Base near Tokyo. This was Japan's first "hit-to-kill" interceptor system.

Japan and the United States have worked closely on developing Japan's sea-based Aegis

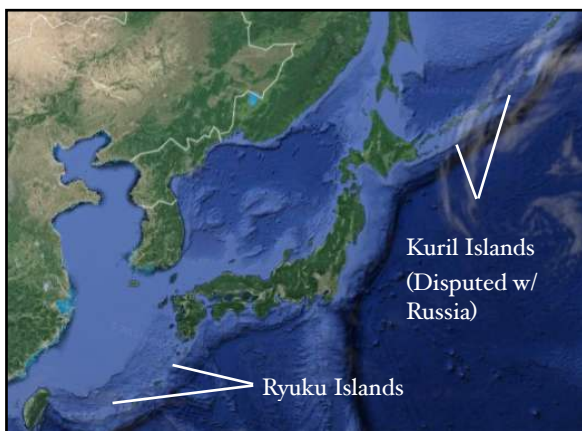
BMD capability. The Japanese Maritime Self Defense Forces (JMSDF) have conducted four live intercept tests in coordination with the U.S. Missile Defense Agency at the Pacific Missile Range Facility in Hawaii. These tests were conducted annually from 2007-2010, and saw three successful intercepts by Japanese Aegis BMD ships. In 2006, the United States and Japan embarked on a cooperative effort to develop the SM-3 IIA interceptor for Aegis BMD systems, which is expected to see its first flight test in 2015.



MG John Rossi speaks at the 50th Anniversary ceremony of joint U.S. Army-JGSDF air defense training at McGregor Range, NM, November 7, 2014. (Photo by Adam Holguin)

JAPANESE BMD: A THREAT DRIVEN IMPERATIVE

Japan is faced with two main threats to its security: North Korea and China. The North Korean threat comes from its arsenal of ballistic missiles, a fact underlined by North Korea's launch of a No Dong medium ranged ballistic missile over Japan, directly through its airspace in 1998. Since then, North Korea has test fired hundreds of short to medium ranged missiles towards Japanese territory, falling into the sea. According to open source U.S. intelligence reports, North Korea has around 100 ballistic missiles capable of hitting Japanese territory.



North Korea has tested three nuclear devices since 2006, each time showing signs of increasing sophistication. Experts believe that North Korea possesses around 10-16 nuclear weapons, with the possibility of increasing that to as many as 100 by 2020. As recently as last month, North Korea claims to have the capability to miniaturize nuclear warheads to mount on missiles. With an antiquated air force and navy, ballistic missiles remain North Korea's primary means of projecting military power. More than 70 years after the end of the Japanese occupation of Korea, North Korean propaganda continues to vilify Japan as one of its top enemies, behind only the United States itself.

Japan and China have a history of tension and conflict stretching back centuries. Most recently, disputed claims over resource rich islands in the Pacific have heightened tensions, as has China's aggressive military build up. A vocal contingent of prominent Chinese military

leaders have also been pressing for China to extend its claims to Okinawa Island and others in the Ryukyu island chain, claiming centuries-old historic ties.

The Chinese military poses a multi-faceted threat to Japan - on sea, land and air. China possesses hundreds of the ballistic missiles capable of hitting Japan, with an advancing cruise missile and submarine launched capabilities. Many of these missiles are nuclear tipped, and China's nuclear warhead inventory numbers at least 250. Other estimates have put this number significantly higher.

China has the third largest air force in the world, and the second largest in terms of combat aircraft. In fighters, China outnumbers Japan nearly five to one. Together, China has intruded on Japanese airspace over 500 documented times in recent years, according to the Japanese military. This number could be higher assuming that many intrusions may not be detected.

Japan also faces a secondary threat from Russia. Japan and Russia have had a long-standing dispute over the Kuril island chain north of Hokkaido. Russian planes have also increasingly intruded on Japanese airspace in recent years. The Japanese Air Force has been forced to scramble fighter jets over 1000 times to intercept Russian aircraft since 2013, an issue exacerbated by Japan's realignment of its military forces to its southern islands in response to China. In addition to its large ground-launched ballistic and cruise missile arsenal, Russia has 14 submarines in its Pacific fleet armed with cruise and ballistic missiles, most of which are nuclear tipped.



North Korean No-Dong 1 Medium Ranged Ballistic Missiles (1250 km range)

CURRENT BMD CAPABILITIES

Today, the United States and Japan have a layered missile defense system in place in the region deter and defend against these threats. The United States has two forward-mode TPY-2 radars stationed on the west and north Japanese mainland to provide early warning and tracking of missiles launched by North Korea. Five U.S. Aegis BMD ships are forward deployed with the U.S. 7th Fleet at Yokosuka Naval Base. Four of these ships are equipped with the older Aegis 3.6 software while the remaining two possess the newer, but still aging 4.0.1 software. These ships are armed with both SM-3 IA and IB interceptors. The U.S. Army has a

Patriot Battalion, the 1-1 "Snake Eyes" with four firing batteries using PAC-3 and JEMT interceptors deployed to defend Okinawa.

Japan now has four Kongo-class Aegis BMD Destroyers, equipped with the Aegis 3.6.1 software and armed with SM-3 IA interceptors. It also has an impressive six Patriot Battalions (for comparison, the U.S. Army has 15 battalions deployed across 11 countries worldwide). These six battalions are comprised of 24 Patriot firing units stationed throughout Japan protecting Tokyo and other key assets. Japan's PAC-3 deployments represent the backbone of its BMD forces.



Above: JDS Kirishima (DDG-174) and USS Stetham (DDG-63) during bilateral exercise "Keen Sword." Keen Sword has taken place annually since 1986.

Left: JGSDF Patriot PAC-3 firing unit deployed in downtown Tokyo, April 2013.

Right: U.S. TPY-2 Radar Deployed in Kyogamisaki, Japan



Missile Defense Forces in Japan

Aegis BMD Ships

JDS Kongo (DDG-173)

JDS Kirishima (DDG-174)

JDS Myoko (DDG-175)

JDS Chokai (DDG-176)

System: Aegis 3.6.1

Interceptor: SM-3 IA

USS Stetham (DDG-63)

USS John S. McCain (DDG-56)

USS Fitzgerald (DDG-62)

System: Aegis 3.6.1

Interceptor: SM-3 IB

USS Curtis Wilbur (DDG-54)

USS Shiloh (CG-67)

System: Aegis 4.0

Interceptor: SM-3 IB

Patriot

Japan:

6 PAC-3 Battalions

United States:

1 PAC-3 Battalion (Okinawa)

Radars

2 TPY-2 X-Band Radars

MISSILE DEFENSE NEEDS

Top priorities for Japan to make the most of its ballistic missile defense capability is greater integration and cooperation between its three services and with the United States. Modernization of its current BMD systems and acquiring additional new missile defense capabilities to stay ahead of the threat is also paramount. This modernization would include upgrading its Aegis interceptor inventory to SM-3 IB, and eventually to SM-3 IIA, currently being cooperatively developed by the United States and Japan. Upgrading its Aegis ships processors and baselines comparable to the United States baseline 9 with the most modern software is crucial.

These enhancements will allow the Japanese Navy to handle larger salvo raids of multiple ballistic missiles, a tactic its adversaries would likely use to attempt to overwhelm Japan's defenses in a conflict. Japan also has two new Atago-class Aegis BMD cruisers in construction, which will be equipped with SM-3 IIA interceptors.

Japan is also looking to enhance its land-based missile defense architecture. Although Japan's Patriots represent a great deal of concentrated missile defense firepower, their relatively small coverage areas leaves many parts of Japan vulnerable. Japan should look to upgrade all its Patriot

battalions' radars to accommodate the latest Mission Segment Enhancement (MSE) interceptors.

Japan is currently weighing two options for enhanced area coverage to provide more surveillance area and battle space to give multiple "look, shoot, look, shoot" options. An Aegis Ashore installation, such as the system in Hawaii and under construction in Romania is being considered as well as the acquisition of a Terminal High Altitude Area Defense (THAAD) Battery.

Japan is considering the JLENS aerostat surveillance and sensor capability for both tracking and fire control in its quest to defend its air space and island territory that is being constantly challenged by China and Russia.



Left: Terminal High Altitude Area Defense (THAAD) Firing Unit
Right: Aegis Ashore Installation



Japan's Atago Class Cruiser



Patriot Missile Segment Enhancement (MSE) Interceptor



Joint Land Attack Area Netted Sensor (JLENS)

FUTURE

The strength of Japan's air and missile defense capability will be dependent on an increased partnership capacity in inventory and systems. This partnership is dependent on equal information sharing between the United States and Japan to enable the missile defense systems from both countries to be interoperable and integrated. Both co-production and dual production of missile defense interceptors between the two countries would benefit both nation's capabilities.

About MDAA

MDAA's mission is to make the world safer by advocating for the development and deployment of missile defense systems to defend the United States, its armed forces and its allies against missile threats. We are a non-partisan membership-based and membership-funded organization that does not advocate on behalf of any specific system, technology, architecture or entity.



Riki Ellison (left) with JMSDF Vice Admiral Masao Kawamura (right), MDAA's *U.S. 7th Fleet and JMSDF Aegis BMD Recognition Event, Feb. 23, 2015*



MDAA's 2013 *Okinawa Missile Defender of the Year Awards*



Riki Ellison (left) with JASDF Lt Gen Yoshiyuki Sugiyama (right), MDAA's 2014 *Okinawa Defender of the Year awards*

Related Links from MDAA:

[Japan BMD Profile](#)

[North Korea Ballistic Missile Overview](#)

[China Ballistic and Cruise Missile Overview](#)

[BMSDs Intercept Test Record](#)

Recent MDAA Articles and Press Releases on Japan:

[Event Recognizing USS Shiloh and JS Kirishima Shows Depth of US-Japan Unity](#)

[Our Salute to Service in Okinawa, Japan - Snake Eyes-](#)

[Not Lost in Translation -MDAA event in Yokosuka, Japan\)](#)

[Ahead of the Curve - deployment of second AN/TPY-2 radar to Japan.](#)

[Stacking Up-](#) Tokyo authorizes JMOD to shoot down any DPRK missile debris

[Snake Eyes-](#) MDAA's visit to 1-1 ADA Battalion in Okinawa.

[Making Waves-](#) Joint naval exercises with the U.S., Japan

[Where East Meets West-](#) Okinawa's strategic significance

[Five in the Sky-](#) Missile defense test with Aegis BMD and Japan Patriots

About the Authors

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Recent MDAA Events in Japan

Okinawa Defender of the Year, 2013, 2014

Reception of Champions w/ JDS Kirishima and USS Port Royal, June 2014

U.S. 7th Fleet and JMSDF Aegis BMD Recognition Event, Yokosuka, Feb., 2015

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