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Samurai Shield: Japan's Air and Missile Defence

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Japan's missile defence was built to cope with a direct threat from North Korea (DPRK), but in the long-term it will be also ready for the growing threat from China's ballistic and cruise missiles. Japan is developing its missile defence capabilities in close military and industrial cooperation with the U.S. As Japan moves towards a more active security policy and changes its rules for arms exports, it will be an attractive partner for NATO and Australia, including in the area of missile defence.

Threats from the DPRK and China. During the Cold War, Japan, and the U.S. military bases there, were targets for the nuclear arsenals of the Soviet Union and China. Since 1993, subsequent missile tests by the DPRK have created a new and serious threat for Tokyo. North Korea's emergence as a nuclear power has only convinced Japan of the correctness of its decision in 2003 to build a national air and missile defence system, called JADGE (Japan Aerospace Defence Ground Environment) and costing $10 billion. Japan is concerned first and foremost with the advancement of the DPRK's medium and intermediate range ballistic missiles. Pyongyang currently has up to 50 launchers and 200 medium range Nodong missiles (with a range of 1,500 km), which could reach the majority of Japan's main cities. The entire Japanese archipelago could also be threatened by the untested Musudan intermediate range missiles (based on the Soviet R-27, with a range of up to 4,000 km). Although Japan will not be directly threatened by North Korea's intercontinental ballistic missiles, it is cautiously monitoring advances in tests on the Taepodong-2 space launch vehicle and the mobile Hwasong-13 intercontinental missiles.

The long-term challenge for Tokyo is the military modernisation and growing assertiveness of China in region. Japan, and the U.S. bases there, are also within range of Chinese medium range DF-21 ballistic missiles, with conventional and unconventional warheads (1,750-2,500 km), and in the next few years the newest DF-25 (with a range of up to 3,200 km) could also prove a threat. With the modernisation of China's naval nuclear deterrent forces (submarines armed with JL-2 missiles) the maritime dimension of the missile threat and defence in Asia is growing. Tokyo is particularly concerned by the special modification of the DF-21 ASBM missile (the so-called Carrier-Killer), which will provide China with precise strike option against enemy surface vessels within 1,750 km from its coast. Japan is also monitoring the growing arsenal and ranges of Chinese cruise missiles (for instance, DH-10 with a range of 1,500 km) carefully. Western ballistic missile defence technologies are more sophisticated, but there is still a lack of appropriate cruise missile defence. Future Chinese multi-role stealth aircraft may later prove to be equally challenging to Japan's defence planning. In official Japanese Ministry of Defence documents, there are no clear estimates about the potential missile threat from Russia. However, it seems that Tokyo could not ignore Moscow's ambitious plans for the rearmament of the Russian Far Eastern Military District by 2020.

Cooperation with the U.S. Relations between Japan and the U.S. are based on close cooperation between their military and defence industries, comparable to some extent with the United States' relationship with Israel. As America's most important ally in Asia, Japan, thanks to a treaty of 1960, benefits from U.S. security guarantees and nuclear deterrence. The Japanese Self Defence Forces are cooperating closely with the U.S. Armed Forces and defence industry companies, in the field of advanced ballistic missile defence technologies. Since 1986 Japan has participated in American projects, first supporting Ronald Regan's Star Wars programme, and, after 1991, backing the concept of Global Protection Against Limited Strikes (GPALS) to cope with "rogue states." The origins of this were

also connected to initiatives by Japanese and American defence industry companies. The American side stood to gain access to the unique miniaturisation capabilities of Japanese companies in of the manufacture of missile interceptor elements. For the U.S. to develop these technologies indigenously would have been much more expensive than doing so via bilateral cooperation. Between 1989 and 1993, both countries prepared special studies on research and development cooperation on missile defence in Asia. Then, between 1995 and 1999, Japan and the U.S. ordered a series of simulations of different options for missile defence. Finally, in 2005, both governments commissioned Mitsubishi and Raytheon to develop the SM-3 Block IIA interceptor against medium and intermediate range missiles. After decisions in 2014 to lift restrictions on arms export, Japanese industry might also gain a share in the valuable future market for such interceptors, which after 2018 might replace older versions of SM-3 on ships with Aegis missile defence system in many NATO and Asian navies. Moreover, in 2005, Japan and the U.S. also decided that, after the first deliveries of the American PAC-3, Japan might start to license production of these interceptors (which in fact began in 2009).

In 2006, Washington decided to deploy four batteries of the PAC-3 missile defence system in Japan. Since 2007 both countries have trained their missile defence units regularly, and their interoperability is guaranteed by the Joint Operations Coordination Centre in Yokota. Even with reductions of U.S. troop numbers in Japan, to 21,000 (in 1992 there were 56,000), Yokosuka port is still the main base for carriers and vessels of the United States VII Fleet in the Pacific area. Military air bases in Kadena, Yokota and Misawa are of equal strategic importance for the United States, and in 2006 Washington deployed destroyers equipped with Aegis systems to Amori port and separate, special AN/TPY-2 early warning radar there. Currently, the U.S. has five Aegis vessels in Japan, and there are plans for two more by 2017. In 2014 there should also be a second AN/TPY-2 American radar in Kyogamisaki, which (together with use of satellites) will strengthen both countries' capabilities to detect missile attacks. Tokyo is also supportive of the American concept of building a regional missile defence system, but this has been rejected by Seoul for historical and geopolitical reasons.[1]

Japanese Missile Defence. The JADGE system was built on the need for two-layer defence, with capabilities for interception in mid-course and terminal phases of missile trajectories, as well full interoperability with U.S. early warning and missile defence units in the region. JADGE uses a network of 28 early warning radar, including four advanced FPS-5s and seven modernised FPS-3s. The integrated air and missile defence of Japan is organised into four sectors and eight groups with 16 PAC-2/3 batteries and six Kongo and Atago-class destroyers with Aegis systems and SM-2 and SM-3 Block IA interceptors.

JADGE will be adapted to respond to anticipated threats, through increased production of PAC-3 and SM-3 interceptors, and two additional Kongo destroyers by 2016. Studies have also been carried out on the further development of JADGE, including the possibility of buying a THAAD system or Aegis Ashore system (the latter is more likely, due to the expected production of SM-3 Block IIA interceptors for it). JADGE is also ready to cope with other air attacks, as, since 2003, it has been equipped with around 180 mobile Chu-SAM Type-03 systems, similar to PAC-2 technology and able to intercept aircraft and cruise missiles within 50 km. Additionally, the Japanese Self Defence Forces have around 2,000 indigenously produced air defence missiles with 5-14 km ranges, Tan-SAM MANPADS, and mobile Kin-SAM systems.

A Changing Defence Concept. Since 2010 Japan has been moving away from a pacifist concept of defence and towards what it calls Dynamic Defence Forces, which should be capable of a much wider spectrum of missions in response to threats from the DPRK or China. These changes will be supported by building new military bases in the contested area of the Diaoyu/Senkaku Islands and close to the main sea lines of communication in this part of Asia. These steps are complemented by the latest loosening of the country's arms export rules. Previously Japan never sold hardware to countries engaged in conflict, which also included restrictions on exports to the U.S. or other partners. These changes, taken together with Tokyo's investments in additional Aegis destroyers, have aroused concerns in China. However, process perceived in Asia as the "remilitarisation" of Japan is de facto encouraged by the United States, which sees it as a key ally in the face of China's growing power. JADGE, even if purely defensive, is in this context of strategic importance for the region.

Conclusion. Japan built its missile defence on the basis of tight industrial, technological and military cooperation with the United States. Due to the prolonged and intensive nature of military cooperation, the technological dimension, and the special role of Japan in Asia, this is not a model that can be replicated easily by other U.S. allies. Bilateral cooperation between defence industries will cumulate in the success of the shared SM-3 Block IIA interceptor project, which might gain a wide market in the United States, and NATO and Asian countries. Moreover, Japan, similarly to other Asian states, will invest in air force and naval offensive capabilities in the near future. All this might be very attractive for NATO and Australia, be it in the dimension of regional security or of common air and missile defence training, as well in potential research and development projects.

[1] M.A. Piotrowski, "South Korea's Air and Missile Defence: Below the Threat Level," PISM Bulletin, no. 64 (659), 13 May 2014.