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Is Japan Considering Joining the Nuclear Arms Race?

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EXECUTIVE SUMMARY: In 2017, Pyongyang's nuclear threat turned real, and the countries of East Asia – mainly Japan – and the US could be targets. Japan now faces a dilemma over how to deal with the threat: should it count on the US nuclear umbrella, or should it build up an independent military nuclear capability of its own? Japan's civilian nuclear infrastructure could serve as a springboard for developing nuclear weapons within a year, but the Japanese public – which remembers Hiroshima and Nagasaki as well as the devastating accident at the Fukushima reactor – is unenthusiastic about further nuclear development in either its civilian or military aspects.

Henry Kissinger, the legendary American statesman who served as National Security Adviser and Secretary of State during the Ford and Nixon administrations of the last century, warned on January 25, 2018, in testimony to the Senate Armed Services Committee: "[I]f North Korea still possesses a military nuclear capability in some finite time, the impact on the proliferation of nuclear weapons might be fundamental." He meant that countries in East Asia, particularly Japan and South Korea, might join the nuclear arms race. This, as he said in an October 2017 interview with *The New York Times*, would be against the backdrop of North Korea's intercontinental missile and nuclear tests.

It is doubtful whether South Korea, which recently began a rapprochement with the North, currently aims to advance efforts to develop nuclear weapons against Pyongyang. Japan, however, sees itself (as does the US, and rightly) as a potential target of North Korean nuclear missiles. Pyongyang recently signaled its willingness to make that threat explicit by twice launching a medium-range ballistic missile (the Hwasong-12) above Japan: on August 28, 2017 and September 15, 2017.

The hostility of Pyongyang towards Washington started with the Korean War (1950-53), when the US military joined the collapsing South Korean army and routed the North Korean army. At the war's start, North Korea had succeeded in capturing most of the South, including Seoul. Pyongyang also harbors a deep hatred for Japan that began with Japan's takeover of the Korean peninsula in 1910 and continued with the brutal suppression of the Korean rebellion in 1919.

Japanese control of Korea ended in 1945 with the surrender of Japan to the US at the end of World War II, at which time the Korean Peninsula was divided into northern and southern countries along the 38th parallel. However, in contrast to South Korea's normalization of relations with Japan in 1965, the hostility between North Korea and Japan has remained undimmed. The most prominent symbol of this is Pyongyang's Triumphal Arch, which represents the Korean resistance to the Japanese occupation.

As a result of its defeat in 1945, Japan underwent a process of demilitarization and became a pacifist state. This was partly voluntary, in view of its colossal war losses, including the consequences of the nuclear bombings of Hiroshima and Nagasaki; and partly forced, as at the end of the war it was left with no military reserves. Japan and the US signed a security treaty in 1952 stipulating that US forces would be responsible for protecting Japan against external threats, including the granting of a nuclear defense umbrella, while Japanese forces would be responsible for protecting the country against internal threats. Japan also declared three Non-Nuclear Principles – it ruled out the production, possession, and introduction of nuclear weapons – and ratified the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1976.

Japan's exclusive adherence to the civilian use of nuclear power can also be attributed to its desire to atone for the fact that it conducted a nuclear weaponry project during WWII. Robert Jungk addressed this in his book *Brighter Than a Thousand Suns* (1956), which addressed the personal history of the first atomic scientists (there was no clear distinction at the time between the terms "atomic" and "nuclear") and the development of the American atomic bomb during WWII as part of the Manhattan Project. According to Jungk, on August 10, 1945, three days after the dropping of the atomic bomb on Hiroshima, members of the disaster investigation committee, including atomic scientist Dr. Yoshio Nishina, met in one of the few buildings that was still standing. After briefly outlining the development of atomic research, Nishina sadly stated, "I too participated in this."

Nishina, a contemporary of Albert Einstein and student and colleague of physicist Niels Bohr, was a leading figure in Japanese nuclear research. After spending eight years at European universities, he returned to his country in 1929 and established a laboratory for the study of modern physics at the RIKEN

Institute. He invited top physicists from around the world to train Japanese students. In 1939, he discerned the military significance of nuclear fission and began to fear that the US might use it against Japan. In 1942, the Committee on Research in the Application of Nuclear Physics was established, headed by Nishina, who at the time also served as director of the RIKEN Institute.

Following a report prepared by the Nishina Committee, the army initiated an experimental project within the framework of RIKEN called Ni-GO that focused on enriching uranium using thermal diffusion. In March 1945, before the project had reached any significant milestones, the building housing the project was destroyed in the bombing of Tokyo by the US Air Force. At the same time, the Japanese army and navy were conducting searches for uranium ore prospects in Korea, China, and Burma. According to Jungk, a few hours after the bomb was dropped on Hiroshima, Nishina was summoned by the deputy chief of staff and asked whether Japan could produce an atomic bomb within six months. Nishina replied, "Under present conditions, even six years would not suffice, and besides, we lack uranium."

Meanwhile, in 1943, the Japanese navy had begun a nuclear project at Kyoto Imperial University called F-GO. This project was headed by Dr. Bunsaku Arakatsu, Japan's most senior physicist after Nishina. Towards the end of the war, a gas centrifuge for uranium enrichment was designed jointly with the Tokyo Keiki company, with production completion scheduled for August 19, 1945 – four days after the surrender of Japan.

At some stage during this project, a process was initiated to produce heavy water in the amount of twenty grams per month, probably with the intention of eventually constructing a heavy water reactor for the production of plutonium. Though the F-GO project was exposed after the war, in 2006 an American archive with hitherto unexamined Japanese wartime documents uncovered Arakatsu's notebooks, which shed additional light on the project. According to Robert Wilcox, an expert on Japan's nuclear history, "These drawings [from the notebooks, which were published in the *Los Angeles Times* on August 5, 2015] are more confirmation of the Japanese atomic bomb effort, something many in Japan do not want to admit... They knew the physics needed for creating the bomb and the engineering needed to build it... It was lack of element resources like uranium that was the real problem for them."

Following the war, Japan's constitution established that nuclear energy would be used for civilian purposes only. The first reactor to produce electricity was a prototype of a light water reactor of the Boiling Water Reactor (BWR) model. It was first operated in 1963 and provided Japanese engineers with much know-how on the planning and operation of future reactors.

Tokai-1, Japan's first commercial reactor, with a capacity of 160 megawatts (MWe), was purchased from the UK and put into operation in 1966. It was a gas-cooled/graphite-moderated Magnox type reactor of the kind used in the UK for the production of weapons-grade plutonium in addition to the production of electricity.

In the years to come, Japan built dozens of BWR power generators and PWRs (Pressurized Water Reactors) with Hitachi, Toshiba, and Mitsubishi. By March 2011, prior to the events of earthquake, tsunami, and severe malfunction at the Fukushima-1 reactor, Japan was operating 54 reactors for electricity production. At that time, 30% of its total electricity was generated by nuclear power.

Due to the large number of nuclear reactors, Japan had to build an extensive infrastructure for the production of fuel for those reactors, including uranium enrichment, as well as for the reprocessing of the reactors' spent fuel. The level of uranium enrichment in the Japanese centrifuge uranium enrichment plant at the Rokkasho nuclear center is limited to 5%, the maximum fuel requirement for light water reactors.

Hypothetically, however, Japan could use that plant to produce highly enriched uranium (HEU) for nuclear weapons. Moreover, as of 2014, Japan possessed between 1,200 and 1,400 kgs of high-level enriched uranium purchased from the US and the UK for its research reactors. This is enough to produce about 100 nuclear bombs. As for plutonium, the Rokkasho site also operates a spent nuclear fuel reprocessing plant that recycles uranium, which is the main spent fuel content. (It separates it from plutonium and radioactive waste, by-products that are generated during fuel burnup in the reactor core.)

As of 2012, Japan possessed eight tons of plutonium and was storing an additional 35 tons in Europe. While the plutonium was "reactor-grade" quality and therefore unusable for nuclear weapons, Japan has examined the possibility of using plutonium produced as reactor fuel to produce a fast-breeder electricity production reactor that could produce more fissile material than it consumes.

The reactor has not yet justified the efforts invested in its development and has not matured from a commercial aspect. But in principle, Japan has the ability to produce weapons-grade plutonium. It can thus be stated that Japan is a nuclear power, at least on the civilian level, but also a threshold country from a military standpoint. It has the technology, materials, and funding needed to produce nuclear weapons. It is estimated that if necessary, it would be capable of producing nuclear weapons within one year.

It should be noted that as early as 1965, about a year after China's first nuclear test, at the meeting between Japanese Prime Minister Eisaku Satō and US President Lyndon Johnson, Satō claimed that if the Chinese had nuclear weapons, Japan should have them too. In the face of the astonishment expressed by the US administration at this statement, Satō explained that while Japanese public opinion would not permit it at that time, he believed the public – especially the younger generation – could be “educated.”

It seems that Japan has indeed been conducting a kind of "bomb in the basement" or "nuclear latency" program. As Shigeru Ishiba, then-Japanese Minister of Defense, said in 2011, "I don't think Japan needs to possess nuclear weapons, but it's important to maintain our commercial reactors because it would allow us to produce a nuclear warhead in a short amount of time ... It's a tacit nuclear deterrent."

Japan faces a dilemma over the nuclear issue. On the one hand, the Japanese public has memories of the distant past – the atomic bombs that destroyed Hiroshima and Nagasaki – and the more recent memory of the devastating nuclear accident at the Fukushima-1 nuclear power plant. On the other hand, in one of Donald Trump's appearances during his presidential campaign in Iowa, he threatened to terminate the treaty with Japan: "You know we have a treaty with Japan, where if Japan is attacked, we have to use the full force and might of the United States...If we're attacked, Japan doesn't have to do anything. They can sit home and watch Sony television." Trump also complained about the non-participation of Japan and other countries that the US is obliged to protect in the financing of their defense.

After Trump's election to the presidency, the two countries appeared to smooth over their differences. Japanese Prime Minister Shinzo Abe was the first foreign leader to come to the US to meet Trump after his victory. Also, their common position on North Korea's nuclear threat has contributed to the strengthening of military ties between the countries. Still, Trump's remarks during the campaign clarified to the Japanese that the American nuclear umbrella is not to be taken for granted and they must ultimately rely mainly on themselves.

As for PM Abe, he is a proponent of a nuclear Japan, both on a civilian and a military level. On March 10, 2016, he declared that Japan "cannot do without" nuclear power for generating electricity. In April 2016, his government stated that there is nothing in the nation's constitution that explicitly forbids Japan's possessing or using nuclear weapons.

North Korea and Iran pose a threat to world peace. North Korea is threatening the use of nuclear weapons against the US, Japan, and South Korea, and could

trigger a war in East Asia. Iran is trying, both directly and through proxies such as Hezbollah, to take control of the Middle East. Tehran and Pyongyang serve as foci for the proliferation of WMD technologies around the world, and may indirectly increase the nuclearization efforts of their neighbors in East Asia and the Middle East.

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