If It Wanted to, South Korea Could Build Its Own Bomb

SEOUL, SOUTH KOREA

South Korea has one of the world’s largest atomic energy industries and an immediate and growing existential threat on its border in the form of North Korea’s nuclear arsenal. That Seoul thus far has chosen not to develop a nuclear weapon owes almost entirely to the nuclear deterrence guarantees made by the United States. But South Korean confidence in the U.S. nuclear umbrella is waning, at least among the country’s conservatives. If Seoul decides to build its own nuclear weapons, the result could be a warhead within a matter of months.

SECRET EXPERIMENTS

South Korea’s own history of conducting illicit nuclear bomb experiments makes nonproliferation advocates leery. Seoul has disclosed the nature of the previous research, but the reason for why it was conducted is still unclear.

President Richard Nixon’s 1970 decision to withdraw a U.S. Army division from South Korea helped spur the country’s nuclear weapons research for the South Korean government. “The biggest missing component is why did they do it? What caused them to make this decision?” says Lawless, who went on to serve as a deputy undersecretary of Defense for Asian and Pacific Security in the George W. Bush administration.

The South Korean government has committed itself to peaceful nuclear energy uses, but questions remain about not only the motives of the Park Chung-hee administration, but also later independent experiments conducted by the Korea Atomic Energy Research Institute. Today, KAERI is leading the pyro-processing research for the South Korean government.

Hwang estimates that 90 percent of his KAERI co-workers “hate” the current liberal Moon Jae-in government because of its anti-nuclear energy policies.

A PATH TO BREAKOUT

Hwang estimates it would take two to three years for South Korea to produce a nuclear bomb, including building some necessary infrastructure. But for a comprehensive nuclear weapons program, the country doesn’t have the personnel needed to build and run the back-end fuel cycle technologies required to produce the plutonium for a warhead. However, South Korea could stop short of developing and testing a working warhead, which would bring with it retaliatory international sanctions, diplomatic backlash and military consequences from North Korea and China.

Seoul could walk to the edge — as Iran essentially did before the 2015 multinational deal on its nuclear program — by producing the fissile material that would allow them to build a warhead within a matter of months.

A reprocessing program — even a pyro-processing program — would help South Korea obtain that so-called breakout capability, which could be used as an implicit deterrent to its neighbors rather than the explicit threat of a nuclear arsenal.

Hwang B-soon, a nuclear engineering professor at Seoul National University who supports his country having a pyro-processing capability, says South Korea would need a new reprocessing plant to produce weapons-grade plutonium.

With that new plant, the country would need just one year to produce enough weapons-grade plutonium to fuel roughly 20 warheads, he says. But should it go along with a weapons program, the South Korean atomic energy industry would jeopardize its licenses from the United States, Canada and elsewhere, which so much of the country’s domestic reactors and export market rely on to operate, he says.

Yim Mun-sung, a nuclear engineering professor at the Korea Advanced Institute of Science and Technology, estimates South Korea has a two-year technical time frame for developing a nuclear weapons program. Political infighting, however, would slow down the process.

Unlike during Gen. Park’s day, South Korea is now a democracy and acquiring a nuclear weapon would have to be done in the constitutional realm. Even if the pro-nuclear side were to obtain sufficient public support to move forward, there would be great legal fights at the local level on such divisive issues as whether the nuclear testing would take place.

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