

NONPROLIFERATION

North Korea Conundrum Overshadows Nuclear Summit

SEOUL—On a visit to the Yongbyon nuclear complex in November 2010, Siegfried Hecker, a plutonium expert at Stanford University, wasn't expecting a big surprise. It was his seventh time there at North Korea's invitation to bear witness to its nuclear prowess. When Hecker visited in January 2004, his hosts handed him a glass jar with plutonium metal harvested from the spent fuel of a Yongbyon nuclear reactor. This confirmed that North Korea had the raw material for a bomb before the isolated nation conducted nuclear tests in 2006 and 2009. No subsequent visit rivaled that experience—until 2010, when Yongbyon managers ushered Hecker into a building as long as a football field.

From a second-floor observation platform, Hecker gazed down on a technological marvel: around 2000 neatly plumbed uranium enrichment centrifuges. The “astonishingly modern” computer controls and clean-room feel were a world apart from the other ramshackle Soviet-era facilities at Yongbyon. “It was nothing like I'd seen before in North Korea,” Hecker says.

Revelations about North Korea's nuclear program and its latest saber rattling have lent urgency to an international effort to keep nuclear materials out of the hands of terrorists or rogue states. At the Nuclear Security Summit here earlier this week, top officials from 53 nations lauded an initiative begun 2 years ago to secure highly enriched uranium and other fissile material. But the talks were overshadowed by Iran's continued defiance over its uranium enrichment program and North Korea's plans to launch a rocket that the United States and others assert would be a long-range ballistic missile test in violation of U.N. sanctions.

From the south side of the demilitarized zone, the menace looms large. U.S. President Barack Obama and other leaders held bilateral talks here on the summit's sidelines about how to curb the North's nuclear ambitions. Obama declared that the rocket launch would jeopardize a 29 February agreement with the United States in which North Korea promised to freeze activities at Yongbyon and abstain from nuclear and ballistic missile tests in exchange for 240,000 tons of food aid. North Korea has denied that it will conduct a missile test; it says the launch is to put an Earth-

observation satellite in orbit.

Veteran analysts are mystified over North Korea's decision. “It's an unambiguous, deliberate renege,” Leon Sigal, a security expert at the Social Science Research Council in New York City, said at a meeting here last week to mark the 40th anniversary of Kyungnam University's Institute for Far Eastern Studies. After months of efforts to restart stalled denuclearization talks, he predicts, “a rocket launch would be confidence destroying. Fruitful dialogue will come to an end.”



Perceived threats. Siegfried Hecker examines equipment at the now-defunct Yongbyon nuclear fuel facility; a controversial 2009 North Korea rocket launch (left).



Insights into North Korea's nuclear program and the intentions of its new leader, Kim Jong Un, are critical to the global effort to safeguard nuclear materials. One major worry is North Korea's track record in exporting nuclear secrets. It allegedly helped Syria build a clandestine nuclear reactor destroyed by an Israeli air strike in 2007; earlier that decade, the International Atomic Energy Agency concluded, it “very likely” supplied Libya with tons of uranium hexafluoride gas, the feedstock for enriching uranium in centrifuges.

In 2002, U.S. diplomats confronted North Korean officials over intelligence reports that Korean entities were acquiring aluminum alloys, frequency converters, and other equipment necessary to build high-precision centrifuges. North Korea strenuously denied the existence of an enrichment program. Nuclear experts were unsure of the evidence until Hecker's tour in 2010, which confirmed

the intelligence reports. Hecker suspects that North Korea began experimenting with enrichment as early as the 1970s, around the time its nuclear scientists “went solo” after early Soviet help. In the 1980s, they built a gas graphite reactor capable of generating a bomb's worth of plutonium a year and a reprocessing facility to extract the material from the spent fuel. Western nations, Hecker says, have underestimated North Korea's young nuclear scientists, who he was told run Yongbyon's uranium enrichment workshop.

Hecker's minders insisted in 2010 that the facility is meant to produce low-enriched uranium for a light water reactor under construction at Yongbyon. “It's a great cover story,” Hecker says. “To run a modern light water reactor, you need 60,000 centrifuges. For a nuclear weapons program, 2000 or 3000 can get you a bomb or two per year.” But why would North Korea pursue uranium if it already has enough plutonium for several bombs? “They may think they can miniaturize [a uranium warhead] quicker than plutonium,” Hecker says. If they succeed at that task, they would need a delivery vehicle. “For a deterrent to be effective,” he notes, “you have to be able to threaten someone.”

That's why tensions are high over next month's rocket launch. Another worry is a mobile medium-range missile launcher that North Korea unveiled at a military parade in October 2010. The movable “Musudan” launcher could be hidden easily, says Hecker, who notes that the system hasn't been tested and, therefore, is not a threat “for the foreseeable future.” Some experts wonder if it ever will be. Taik-young Hamm, a political scientist here at the University of North Korean Studies, doubts whether North Korea has the finances or know-how to accrue a “sizable” nuclear arsenal.

Others insist that North Korea has the wherewithal to expand its arsenal through uranium enrichment. The biggest unknown may be what it will take to induce the North to relinquish its nukes—if it has a price. “Signs indicate that North Korean leaders are becoming less willing to give up nuclear weapons,” says Jae Kyu Park, president of Kyungnam University in Changwon. Sigal agrees. “Denuclearization is not for sale,” he says. But patience could pay off, says Hecker, who sees North Korea as “an island of instability” in a sea of stability and prosperity: “We have to convince them that their nuclear weapons are a liability.”

—RICHARD STONE