

North Korea's Nuclear Program

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Introduction

Timelines of North Korea's nuclear program often focus on the latter half of the program's history, starting in the 1980's when the DPRK signed on to the Nuclear Nonproliferation Treaty.

By starting in 1985, however, we miss important details of North Korea's nuclear history. To truly understand the rationale of nuclear weapons ambitions we must go back to the origins of the nuclear program.

Accordingly this timeline follows the North's nuclear program from its outset in the 1950's, traces its development over the years and highlights key points in the North's weaponization process-be it mere desires (seen through statements, communications and activity), or tangible technical advances.

This analysis shows that North Korea pursued, or at least appears to have had the intention of pursuing, nuclear weapons from a very early stage in its history. This ambition derives from a period when the North was still under the nuclear umbrella of the USSR and China, and was still relatively stronger than South Korea both economically and militarily.

This understanding of North Korea's nuclear ambitions differs from present day theories on the logic behind North Korea's actions, such as those focused on deterrence or coercive bargaining.

North Korea's geopolitical standing has changed from when it first sought to pursue nuclear weapons. The USSR has collapsed, South Korea has become far more powerful than the North, and the DPRK has been forced to contend with economic crisis and two power transitions. These new factors have come to weigh on the North's decision-making process.

However we must not overlook the length and origins of the North's nuclear program, and how it has expanded greatly since the 1950's.

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1950's

1956:

The Soviet Union begins training North Korean scientists and engineers,¹ enabling the DPRK to acquire the “basic knowledge”² to initiate a nuclear program.

1959:

North Korea and the **USSR sign a nuclear cooperation agreement**. Over the next 30 years Moscow provides the North with basic nuclear training and technology.

1950's:

The USSR conducts geological surveys in North Korea, mapping out large deposits of uranium ore and graphite which would later be mined by the DPRK.

1960's

1962:

The **Yongbyon Nuclear Research Centre** with the IRT-2000 research reactor is completed.

1962:

North Korean Foreign Minister Pak Song Chol writes to the USSR Ambassador, “who can impose such a [non proliferation] treaty **on countries that do not have nuclear weapons, but are perhaps successfully working in that direction.**”³

This would indicate that North Korea was already moving towards a nuclear weapons program by the early 1960's.

1965:

The Yongbyon reactor reaches a power rating of 2MW(th), and the North begins to successfully pursue fission experiments with materials purchased from the USSR in 1963.⁴



The Yongbyon Nuclear Research Centre with the IRT-2000 research reactor completed in 1962

1970's

December 1972:

Kim Il-Sung in a letter to the President of East Germany Erich Honecker states South Korea will soon fall on its own accord, without Northern intervention.⁵

This would imply that North Korea felt little to no threat from South Korea during the onset of its nuclear weapons program.

1974:

Yongbyon reactor reaches 4MW(th).

1970's:

Kim Il-sung's **requests for nuclear weapons assistance are rebuffed by both China and the USSR** throughout the 1970's.⁶

1970's:

The South refuses North Korea's offer to forge a joint, covert, nuclear program.⁷

1980's

Late 1970's/early 1980's:

North Korea begins mining operations at various locations near Sunchon and Pyongsan.

Mid 1980's:

North Korea reaches a "dangerous levels of nuclear capacity",⁸ with advancements **due to increased Soviet support for the nuclear program.**⁹

1980 through 1985:

North Korea builds a factory at Yongbyon to refine yellow cake and produce fuel for reactors.

1984-1986:

North Korea **completes construction of a 5MWe gas-cooled, graphite moderated nuclear reactor for plutonium production.**



If operating at full power for a majority of the year the reactor could produce 7.5 kg of weapons grade plutonium annually. There is still great disagreement as to just how much plutonium was produced.

1984-1986:

North Korea commences with the construction of a second 50MWe nuclear reactor.¹⁰ This reactor was not completed after the Agreed Framework was signed in 1994.

1984:

The DPRK **completes construction of a "Radiochemical laboratory"** - actually a reprocessing plant used to separate plutonium from spent nuclear fuel at the Yongbyon.

This allows North Korea to establish a full plutonium fuel cycle.

1985:

DPRK accedes to the NPT.

1987:

Yongbyon Reactor upgraded to 8MW(th).

1989:

The North's nuclear program is conclusively confirmed by U.S. satellite images,¹¹ leading to the first nuclear crisis between the U.S. and the DPRK.

1989-1994:

North Korea is forced to deal with the fall of the USSR, normalization of Sino-Soviet relations, death of Kim Il Sung, an economic downturn and food and energy shortages.

Meanwhile the South Korean economy expands rapidly. The South's GDP becomes 15-20 times greater than the North's.¹²

This begins the rebalancing of power within the North-South Korean dyad later noted as one of the systemic factors driving North Korea's nuclear program.

1990's

1991:

North Korea attempts to acquire Soviet scientists with knowledge of high energy physics,¹³ however the scientists are detained by Soviet officials.¹⁴

1992:

Agreement.

1993:

North Korea pulls out of the Agreement and in the same year tests the Nodong-1 missile.

1994:

Agreed Frameworks.

1997:

It is widely reported that North Korea provides Pakistan with the *No-dong* missile and production technology in exchange for gas centrifuge technology.¹⁵

August 1998:

Discovery of a suspected **underground nuclear facility in Kumchang-ri by U.S. spy satellite imagery.**¹⁶

This leads the U.S. Congress to halt \$35 million in heavy oil aid to North Korea, and demand for inspections of the new facility by June 1, 1999.¹⁷

August 31, 1998:

North Korea test fires Taepodong-1 missile over Japan.

1998:

U.S. aid is given in exchange for a halt to North Korea's missile program.

September 1999:

Berlin Agreement.¹⁸

2000's

2002:

The U.S. begins reporting on a **secret DPRK Highly Enriched Uranium (HEU) program.**

2002:

North Korea expels IAEA inspectors.

2003:

Resumption of activity in the Yongbyon reactor.

December 9, 2003:

George W. Bush turns down a proposition from the North to freeze its reactors in exchange for a list of concessions.¹⁹



Taepodong-1 missile-test fired over Japan in August 1998

2003-2005:

Six Party Talks fail to make substantial progress due to North Korean acts of aggression, such as missiles tests in February 2003, and May 2005.²⁰

September 19, 2005:

Joint Statement between the U.S. and North Korea, stating the latter would give up its entire nuclear program in exchange for a non-aggression pact with the U.S.

This statement was repealed the following day as the DPRK demands civilian reactors as a prerequisite to any deal, effectively ending the negotiations.

2006:

North Korea launches 7 missiles. While the short and medium range missiles (Nodong -2 and Scud) are successful, the Taepodong 2 ICBM fails.²¹

October 9, 2006:

North Korea conducts underground Nuclear Test. The nuclear device produces roughly a 0.2-1-kiloton explosion.

This is a very small device compared to the 15-kiloton yield of the U.S. bomb dropped on Hiroshima, a weak device itself compared to present day nuclear warheads.²²

December 18, 2006:

Six Party Talks commence again.

February 8, 2007:

Agreement signed.

November 2007:

A rotating team of U.S. and Russian officials oversee the dismantlement, though not the disposal, of more than half of Yongbyon's 8,000 spent fuel rods.²³

April 5, 2009:

North Korea tests the Unha-2 missile over Japan.

May 25, 2009:

North Korea **tests its second nuclear weapon**, and expels the IAEA.

2010:

North Korea **reveals a secret advanced uranium enrichment plant.**

April 12, 2012:

North Korea's test of the Kwangyongsong-3 satellite missile fails.



April 12, 2012 North Korea's test of the Kwangyongsong-3 satellite missile

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Endnotes

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2. Tetsuya Endo is the Vice Chair of Japan’s Atomic Energy Commission. See: Stone, “North Korea’s Nuclear Shell Game”
3. Hymans, “Building The Bomb is a Form Of National Self Expression”
4. Stone, “North Korea’s Nuclear Shell Game”
5. Victor Cha and David C. Kang, *Nuclear North Korea* (New York Columbia University Press, 2003), p. 29
6. Perry, “Proliferation on the Peninsula”
7. Hymans, “Jacques E.C. Hymans “Assessing North Korean Intentions And Capacities: A New Approach”, *Journal Of East Asian Studies* 8(2008), p. 259-292
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9. *ibid*
10. Stone, “North Korea’s Nuclear Shell Game”
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13. Stone, “North Korea’s Nuclear Shell Game”
14. *ibid*
15. IISS, <http://www.iiss.org/publications/strategic-dossiers/north-korean-dossier/north-koreas-weapons-programmes-a-net-asses/north-koreas-nuclear-weapons-programme/?locale=en>
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18. The U.S. had already been allowed to inspect the underground Kumchang-ri complex in March of 1999.
19. Stephan Haggard and Marcus Noland, “North Korea in 2007: Shuffling in from the Cold War”, *Asian Survey*, Vol. 48, No.1 (Jan.-Feb., 2008), pp.107-115 See Also: “Timeline: N. Korea Nuclear Standoff”, *BBC*, (Nov. 22, 2010) <http://www.bbc.co.uk/news/world-asia-pacific-11811861>
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21. Ilsoo David Cho and Meredith Jung-En Woo, “North Korea in 2006: The Year of Living Dangerously”, *Asian Survey*, Vol. 47, No. 1 (Jan.-Feb., 2007), pp. 68-73
22. Wade L. Huntley “U.S. Policy Toward North Korea in a Strategic Context: Tempting Goliath’s Fate”, *Asian Survey*, Vol. 47, No. 3 (May-June 2007), pp.455-480
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