

When Did WMD Deals between Pyongyang and Islamabad Begin?

(Continued from Part 1: [“Collapse of the Agreed Framework”](#))

By Daniel A. Pinkston¹

According to press reports, the North Korean-Pakistani trade of missiles for highly enriched uranium (HEU) technology occurred around 1997,² which would coincide with Pyongyang’s shipment of Nodong missiles to Pakistan. The *Washington Post* quoted “Washington sources” as having said that the first signs of Pyongyang’s HEU program emerged in 2000, but that “the ‘dots weren’t connected’ by intelligence analysts until the summer of that year.”³ Such reports have led many to speculate that the “missiles for HEU equipment” deal occurred years after North Korea signed the Agreed Framework in 1994, but we cannot be certain this is the case. Nuclear development programs have long time horizons because of their complexity and technical difficulty. Political decisions must precede the engineering work; and in the case of a “missiles for HEU equipment” transaction, the negotiations and agreement over the complex contractual details would have to precede the transaction.



North Korea’s Academy of Sciences in Pyongyang

If we consider the historical context, the potential for mutual gains from such a trade are apparent. North Korea’s initial decision to develop a nuclear bomb came from a Kim Il Sung directive, probably in the 1960s.⁴ North Korea established its nuclear complex in Yŏngbyŏn-kun in 1964, and by the 1980s was expanding its nuclear facilities, which included a large reprocessing plant known as the “Radiochemistry Laboratory (放射化學實驗室).”⁵ By the time Pyongyang announced its intention to withdraw from the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in March 1993, North Korea’s intention to develop a nuclear bomb was clear.⁶

At the same time, Pakistan was determined to keep up with India following New Delhi’s nuclear test in 1974; by 1984, Pakistan had a uranium enrichment plant in operation at Kahuta.⁷ While Pakistan, a relatively poor developing country, poured its resources into building a bomb, it would also need a delivery system. However, indigenous development of aircraft and/or missile systems was out of the question. Furthermore, this problem was compounded by Pakistan’s financial position, which suffered a blow in October 1990 when the United States suspended over \$500 million in aid.⁸

In the early 1990s, Pakistan acquired 34 M-11 missiles from China, and the deal strained relations between Washington and Beijing.⁹ The United States even responded with a ban on the sale of U.S. satellite components and advanced computers to China.¹⁰ While the United States

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was pressuring China to abide by the rules and norms of the Missile Technology Control Regime (MTCR), Pakistan began to look for an alternative missile supplier. In 1992, Pakistani officials visited North Korea to view a Nodong prototype, and Pakistani observers were present for the Nodong flight test at Musudan-ri in May 1993.¹¹ Prime Minister Benazir Bhutto visited Pyongyang for one day in December 1993 to discuss “economic relations, including North Korean assistance in building small hydroelectric dams in Pakistan,” but most analysts believe the agenda included missile sales.¹²

It’s uncertain whether the two countries concluded a missile for HEU equipment swap in the early 1990s—before the Agreed Framework, but according to at least one recent report, they did.¹³ The timing makes sense. At that time both sides were seeking what the other could provide—the basic ingredients for any trade. And once missile deliveries to Pakistan began in 1997, Islamabad’s ability to pay for the missiles with foreign exchange was dubious.¹⁴



There is evidence that North Korea’s HEU program began in the 1980s, and Pakistan or East Germany could have been sources of hardware and technology for the effort. According to German intelligence, North Korea obtained “an array of nuclear-related dual-use furnace equipment” in the 1980s, including a small annealing furnace from the German firm Leybold AG in 1987. In November 1991, “one western government” concluded that uranium enrichment technology “allegedly diverted to Pakistan via Switzerland may have been exported to Iraq, Iran, and North Korea.” The report added that uranium melting technology may have also been shipped to North Korea. U.S. and German intelligence officials also believe that Leybold personnel were in North Korea in 1989 and 1990.¹⁵

In February 1986, Swiss customs officials seized autoclaves, special steel containers, and desublimers before they were to be shipped to Pakistan.¹⁶ Autoclaves are used to turn uranium hexafluoride into a gaseous form before being injected into the centrifuge. After the uranium is enriched in the centrifuge, desublimers convert the gaseous form back into a solid for further processing. It’s unclear whether North Korea received the same equipment intercepted by Swiss officials in 1986, but the annealing furnace that Pyongyang obtained in 1987 could be used to treat maraging steel rotors in centrifuges, which operate at high speeds and require tremendous strength to separate uranium isotopes.¹⁷

Now we can only speculate about the progress North Korea has made in its efforts to produce HEU. However, the effort to acquire this capability is not new. Pyongyang could have built a pilot-plant with Pakistani assistance, or Islamabad could have simply provided blueprints or supplier contacts. North Korea could not have established a plant to produce HEU without foreign assistance, so some of the “pieces” could still be missing. On the other hand, it’s possible that North Korea could have enough HEU for a number of bombs. The uncertainty behind the North Korean HEU program is important for more than just historical reasons; clarifying this ambiguity could have broad implications for future diplomacy.

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¹ I would like to thank Jack Boureston, Eric Croddy, Sarah Diehl, Jody Daniel, Charles Ferguson, Stephan Haggard, Gaurav Kampani, Timothy McCarthy, Clay Moltz, Amy Sands, Phillip Saunders, Lawrence Scheinman, and Leonard Spector for their comments and assistance.

² David E. Sanger and James Dao, "U.S. Says Pakistan Gave Technology to North Korea," *New York Times*, 18 October 2002, <<http://www.nytimes.com>>; *The Daily Yomiuri*, 22 October 2002, in "Japan: US Report Says P'yongyang Lacks Parts Necessary for Uranium Enrichment," FBIS Document ID: JPP20021023000028; "북부 품부족 인해 원심분리기 미가동," Yonhap News Agency, 23 October 2002, <<http://www.yonhapnews.co.kr>>.

³ Doug Struck and Glenn Kessler, "Hints on N. Korea Surfaced in 2000," *Washington Post*, 19 October 2002, p. A19, <<http://www.washingtonpost.com>>.

⁴ Interview with North Korean defector by Daniel A. Pinkston, 1 November 2001, Seoul.

⁵ For a description of North Korea's nuclear facilities, see "North Korean WMD Facilities and Chronologies," on the Nuclear Threat Initiative website, <http://www.nti.org/e_research/e1_nkorea_profile.html>.

⁶ North Korea's intended use of nuclear weapons is uncertain. Some argue that a weapon would only be used for deterrence, while others suggest a bomb could be sold or used for coercive diplomacy. When analyzing the transaction, it only matters that North Korea desired to acquire a bomb—not how it would use a bomb. For a review of North Korea's nuclear program and the crisis in the early 1990s, see Michael J. Mazaar, *North Korea and the Bomb* (New York: St. Martin's Press, 1995); Leon V. Sigal, *Disarming Strangers: Nuclear Diplomacy with North Korea* (Princeton, NJ: Princeton University Press, 1998).

⁷ Joseph S. Nye, Jr., "A Cat-and-Mouse Game by U.S. and Pakistan over the Atomic Bomb," *Toronto Star*, 16 November 1986, pg. D4, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Hedrick Smith, "A Bomb Ticks in Pakistan," *New York Times*, 6 March 1988, in Lexis-Nexis, <<http://web.lexis-nexis.com>>.

⁸ Aid was suspended because President George Bush refused to certify that Pakistan was not trying to acquire nuclear weapons. See Norman Kempster, "U.S. Freezes Pakistan Aid over Nuclear Issue," *Los Angeles Times*, 11 October 1990, p. A4, in Lexis-Nexis, <<http://web.lexis-nexis.com>>. For a review of the current status of U.S. sanctions against Pakistan, see Leonard S. Spector, "Status of U.S. Sanctions Imposed on India and Pakistan," in CNS Special Section: Terrorist Attacks on America, 11 August 2001, <<http://cns.miis.edu/research/wtc01/pakind.htm>>.

⁹ Testimony of Dr. Gordon Oehler, Hearing on the Proliferation of Chinese Missiles, Senate Foreign Relations Committee, U.S. Senate, 11 June 1998; R. Jeffrey Smith, "Chinese Missile Launchers Sighted in Pakistan," *Washington Post*, 6 April 1991, p. A17, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Bill Gertz, "China Can't Say No to Arms Buyers," *Washington Times*, 28 May 1991, p. A1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; David Hoffman, "Selling Missile Technology Would Risk U.S. Wrath, Baker Tells China," *Washington Post*, 13 June 1991, p. A36, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Don Oberdorfer and Lena H. Sun, "Chinese Warn U.S. About Trade Status," *Washington Post*, 16 June 1991, p. A18, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; David R. Schweisberg, "China Acknowledges Missile Sale, Claims Short-Range," United Press International, 20 June 1991, in Lexis-Nexis, <<http://web.lexis-nexis.com>>.

¹⁰ Jim Mann, "U.S. to Lift Ban on High-Tech Sales to China," *Los Angeles Times*, 20 December 1991, p. A1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>.

¹¹ Bill Gertz, "Iran-Bound Mystery Freighter Carried Parts for Missiles," *Washington Times*, 16 July 1992, p. A3, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Joseph S. Bermudez, Jr., "A History of Ballistic Missile Development in the DPRK," Occasional Paper No. 2, Center for Nonproliferation Studies, November 1999, pp. 17, 21; Joseph S. Bermudez, Jr., "An Analysis of North Korean Ballistic Missile Testing," *Jane's Intelligence Review*, April 1995, pp. 186-189.

¹² Sheila Tefft, "China, Pakistan Band Together In Opposition to US Sanctions," *Christian Science Monitor*, 30 December 1993, p. 1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Radio Pakistan Network, 26 December 1993, in "Denies Possible Talks on Missiles," FBIS-NES-93-246, 27 December 1993, p. 57; Radio Pakistan Network, 27 December 1993, in "Departs for China," FBIS-NES-93-246, 27 December 1993, p. 57.

¹³ *Ha'aretz*, 21 October 2002, in "Israel: N. Korea Produces Enriched Uranium, Tests Missiles in Iran," FBIS Document ID: GMP20021021000045.

¹⁴ In general, Pakistan's foreign exchange reserves were depleted during this period. For information on Pakistan's foreign exchange reserves and balance of payments, see the International Monetary Fund, *Balance of Payments Statistics Yearbook*, 2001.

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¹⁵ Mark Hibbs, "Agencies Trace Some Iraqi URENCO Know-How to Pakistan Re-Export," *Nucleonics Week*, 28 November 1991, Vol. 32, No. 48, p. 1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; Mark Hibbs, "Components for Pakistan Were Intended for High-Enriched U, German Confirms," *Nuclear Fuel*, Vol. 12, No. 10, 18 May 1987, p. 1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>; "Illegal Uranium (sic) Plant Exports," *FT Energy Newsletters – European Energy*, 7 August 1987, p. 3, in Lexis-Nexis, <<http://web.lexis-nexis.com>>.

¹⁶ Mark Hibbs, "Components for Pakistan Were Intended for High-Enriched U, German Confirms," *Nuclear Fuel*, Vol. 12, No. 10, 18 May 1987, p. 1, in Lexis-Nexis, <<http://web.lexis-nexis.com>>.

¹⁷ P. D. Wilson, *The Nuclear Fuel Cycle: From Ore to Waste* (Oxford: Oxford University Press, 1996).

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