

Nuclear Latency (NL) Dataset
Country Coding Sheets

DPRK (NORTH KOREA)
COW COUNTRY CODE: 731

List of Country's Enrichment and Reprocessing (ENR) Facilities

1. Radio Chemical Laboratory (Yongbyon)
2. Isotope Production Laboratory
3. Yongbyon Enrichment Facility

Note: It is possible (and in our judgment likely) that North Korea has additional facilities about which we have little verifiable information. According to the Nuclear Threat Initiative, the enrichment and/or reprocessing activities may have occurred at the following sites (see <http://www.nti.org/country-profiles/north-korea/facilities/>):

- Bakcheon Underground Nuclear Facility
- Cheonmasan Uranium Enrichment Facility
- Hagap Underground Nuclear Facility
- Taecheon Underground Nuclear Facility
- Yeongjeo-ri Suspected Uranium Enrichment Facility
- Taecheon Underground Suspected Nuclear Facility

Detailed Facility-Specific Information and Sources

1. Radio Chemical Laboratory (Yongbyon)

- a. ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).*

Spent fuel reprocessing.

- b. Facility size (laboratory, pilot, commercial).*

Commercial.¹ The name of the facility is misleading. Far from being a “lab,” former weapons inspector Hans Blix described this as an industrial-scale plant (see Reiss 1995, 242).

- c. Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.*

The construction start date could not be identified. The facility likely began operation in 1983, although there is considerable uncertainty about the precise start date.² Zentner et al. (2005) state that test runs were also conducted in 1990. The facility was

¹ Zentner et al. (2005, 101) state that US experts who have visited the site stated it could produce 100 kg of plutonium annually.

² Albright and Brannan (2007) list 1983 as the start date; it is 1993 according to the IAEA NFCIS database.

frozen between 1993 and 2003 per the terms of the Agreed Framework (Albright and Brannan 2007). It restarted around 2003 and ceased operating again in 2009. Hecker notes that the plutonium program seemed frozen in 2010.

d. *Was the facility developed covertly? If so, identify years that facility was covert.*

Yes.

e. *Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.*

The facility was under safeguards beginning in 1993, after the DPRK ratified the INFCIRC/153 agreement.³ The DPRK announced its withdrawal from the NPT in 2003. The facility was unsafeguarded as of 2005.

f. *Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.*

No.

g. *Did the facility have a military purpose?*

Yes, the facility was designed to separate plutonium for nuclear weapons.

h. *Was the facility multinational? If so, identify the other countries that were involved.*

No.

i. *Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.*

The USSR provided North Korea with significant nuclear assistance, including hot cells (see facility #2 below). It appears, however, that this plant was built largely indigenously with little foreign help (see Heinonen 2011).

j. *Sources:*

“North Korea May Be Restarting Fuel Reprocessing Plant to Make Weapons-Grade Plutonium: U.S. Watchers,” *Japan Times*, November 20, 2014.
<http://www.japantimes.co.jp/news/2014/11/20/asia-pacific/north-korea-may-restarting-fuel-reprocessing-plant-make-weapons-grade-plutonium-u-s-watchers/#.VnCX6tCe3RA>.

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³ The INFCIRC/66 agreement signed in 1978 only covered the IRT-2000 reactor and assembly from the Soviet Union.

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2. Isotope Production Laboratory

- a. *ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).*

Spent fuel reprocessing (hot cell).

- b. *Facility size (laboratory, pilot, commercial).*

Laboratory.

- c. *Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.*

It is unclear when construction of this plant began, but it was reportedly operational by 1975. In that year North Korea separated grams of plutonium at the plant. This plant was not shut down per the Agreed Framework in the 1990s.

- d. *Was the facility developed covertly? If so, identify years that facility was covert.*

Yes. The plant was discovered during an on-site inspection in 1992.

- e. *Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.*

The facility was reportedly never under safeguards.

- f. *Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.*

No.

- g. *Did the facility have a military purpose?*

This plant almost certainly played a role in North Korea's nuclear weapons program. Pyongyang denies this, however, and asserts that the laboratory produces medical isotopes.

- h. *Was the facility multinational? If so, identify the other countries that were involved.*

No.

- i. *Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.*

Yes. The Soviet Union supplied the hot cells for the lab.

- j. *Sources:*

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3. Yongbyon Enrichment Facility

a. *ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).*

Enrichment, centrifuge.

b. *Facility size (laboratory, pilot, commercial).*

Commercial. It is often described in the literature as a “small industrial-scale” plant. Note, however, that there is considerable disagreement about the size of this plant.⁴

- c. *Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.*

According to North Korea, the facility was constructed from 2009-2010. It would be surprising if it were able to build such a sophisticated nuclear facility in just one year. One possibility is that the plant was initially built elsewhere and moved to Yongbyon in 2009. The country’s interest in uranium enrichment dates back to the late-1990s (and perhaps earlier), when it received assistance from Pakistan. The North Koreans indicated that the plant was operational in 2010.

- d. *Was the facility developed covertly? If so, identify years that facility was covert.*

Yes.

- e. *Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.*

No.

- f. *Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.*

No.

- g. *Did the facility have a military purpose?*

Yes, the facility is purported to supply HEU for North Korean weapons. North Korea claims that the plant is meant exclusively for civil purposes, however.

- h. *Was the facility multinational? If so, identify the other countries that were involved.*

No.

- i. *Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.*

Yes. Pakistan provided significant enrichment-related assistance through the A.Q. Khan network. The network supplied about 20 P-1 centrifuges, 4 P-2 centrifuges, measuring equipment, and component parts. In 2006 the former President of Pakistan Musharraf acknowledged that Khan had provided both P-1 and P-2 centrifuges to the DPRK in 2000. While North Korean officials have attempted to claim the technology as indigenous, saying the centrifuges were indigenously produced based off Dutch

⁴ References for the size of purported facility range from laboratory to commercial. The tube dimensions are consistent with Urenco centrifuges.

and Japanese designs, David Albright has said it is likely that the A.Q. Khan network provided at least sample centrifuges, designs, and supplier lists.

j. Sources:

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<http://www.nti.org/facilities/745/>. Accessed 11/10/2015/

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