

# Two Perspectives on the North Korean Nuclear Problem

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# Periodic Crises?

- 1994: the first nuclear crisis  
/Agreed Framework of Oct. 1994
- 1998: the first missile crisis  
/US-DPRK Joint Communiqué of Oct. 2000
- 2002: the second nuclear crisis  
/the Six Party Talks and the Joint Statement of Sept. 2005
- 2006: the combined nuclear/missile crisis  
/UNSC Resolutions in Oct. 2006, and Joint Agreement in Feb. 2007

# Crisis again?

Very possible:

- The Feb. 13 Agreement opens more pending questions than it has addressed;
- The external financial situation for North Korea is even worse, AFTER the solution of the frozen US\$ 25 million.

# What China wants

- Permanent peace and stability
- Denuclearization of the Korean Peninsula

# What US wants?

- Denuclearizing the North Korea
- Lasting non-proliferation of WMD

# What North Korea wants?

- Guarantee of their security by commanding “nuclear deterrence”
- Engage with the US for setting up “strategic” relations with the US

# Common interests and different approaches between China and the US on North Korean nuclear issue

- Shared Strategic interests:
  - *Denuclearization of the Korean Peninsula*
- Differences on how to deal with the nuclear crisis:
  - *Diplomacy for sanctions or sanctions for diplomacy*
  - *Single option or all options*
  - *policy change or regime change*

# Where we are going to?

- Launching the first steps toward ultimate goal: denuclearization/normalization
- Working out further agreement for an irreversible process of denuclearization, especially for measures beyond the first steps



# Challenges on the way

- Mutual distrust reduction
  - Among all actions that should be taken, what action from one party could/should be matched by an action from the other?
  - Sequencing issues: question of hen and egg
- Political and technical compromises:
  - LWR disputes
  - the goal of irreversible, complete denuclearization and “two stage strategy”
  - UEP disputes and the scope of the declaration by the North

# Analysis based on DPRK visits

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Prof. John Lewis led delegation

**Vic Minister  
Kim Kye Gwan visit  
March 2007**

## Visits to DPRK

- January 2004
- August 2005
- November 2006



# Nuclear bomb fuel

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## • Plutonium

- < 1994 (IRT & 5 MWe) ~ 8.4 kg (1+ weapons worth)
- 2003 (5 MWe) ~ 25 kg (4-6 weapons worth)
- 2005 (5 MWe) ~10-14 kg (~ 2 weapons worth)
- 6/2007 ~10-12 kg in reactor now (not separated)

• June 2007. Highly likely to have 40 to 50 kg of separated plutonium (sufficient for 6 to 8 bombs)

- Current 5 MWe capacity ~ 5-7 kg/yr (~ 1 weapon worth/yr)
- Future of 50 MWe reactor ~ 60 kg/yr (~ 10 weapons worth/yr)  
(Status: No visible construction on site. Difficulties with components for finishing construction )

## • Highly enriched uranium

- Most likely have a program, but not likely scaled up for weapons

# Nuclear weapons

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- Oct. 9, 2006 nuclear test - partial success
  - Aimed for 4 kilotons, got less than 1 kiloton
  - Significantly less than other nation's first test
- Likely to have small nuclear arsenal, but of limited utility
- Unlikely to have experience and confidence to mount on missile
- Additional test(s) could enhance weapon sophistication
- 50 MWe reactor operation would lead to dramatic increase in numbers

Use of weapons is deterred by certain military retaliation, except in an act of desperation or miscalculation

# All parts of the fuel cycle & plutonium are export threats

## Front end of fuel cycle (fuel or feedstock)

- Mining to fabrication of natural uranium fuel
- No new fuel produced since 1994
- Expect to refurbish facility in 2007

## Reactors (plutonium production)

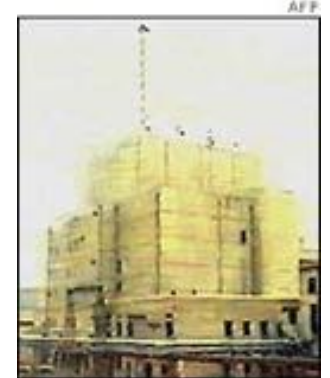
- 5 MWe operating again since Feb. 2003
  - Makes ~ 6 kg Pu/year (one bomb's worth)
- 50 MWe construction halted since 1994
  - Capacity of 10 bombs worth
  - Problems recovering 1994 status
- 200 MWe construction doubtful

## Back end of fuel cycle (plutonium extraction)

- Reprocessing facility operating since 2003
- Throughput enhancements made in 2004
- Extracted roughly 25 kg + 12 kg plutonium in 2003 and 2005 campaigns



Fuel fabrication



DPRK 5 MWe reactor



Reprocessing Facility

**Iran is the most likely customer or partner**

**Will North Korea give up the bomb?**

**Prospects for resolution:**

**Framework exists.**

**Sept. 19, 2005 Joint Statement**

**Feb. 13, 2007 Initial Actions Agreement**

# Sept. 19, 2005 Six-Party Joint Statement

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- Verifiable denuclearization of **Korean Peninsula**
- Abandon all nuclear weapons and existing nuclear programs, return to NPT and IAEA
- U.S. will not attack or invade DPRK
- Observe 1992 Joint Declaration of denuclearization of Korean Peninsula
- Discuss light water reactor (LWR) at appropriate time
- DPRK and U.S. to normalize relations
- Promote economic cooperation

# Feb. 13, 2007 Six-Party Initial Actions

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DPRK: Shut down, seal Yongbyon nuclear facilities

- Invite back IAEA
- Discuss list of all nuclear programs

U.S.: Hold bilateral talks to move toward full diplomatic relations.

- Deal with state-sponsor of terrorism listing
- Deal with Trading with the Enemy Act

Parties: Economic, energy and humanitarian assistance. Begin with 50,000 tons of HFO.

**Initial 60-day deadline missed because of complications resolving BDA sanctions**



# Why does DPRK appear to be willing to deal now?

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No one knows for sure, but here are some ideas:

- The U.S. is willing to deal now (Hill and Kim in Berlin)
  - Expressed readiness to lift financial sanctions
  - Problem was much more complicated than anticipated
- Carlin and Lewis are correct: DPRK wants a strategic relationship with the U.S.
- China and ROK are right: Kim Jong Il realizes that the country's real problem is the economy, not U.S.
- DPRK needs access to international financial system
- The nuclear program is having technical difficulties

# Path forward

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- Near term: Feb. 13 Initial Actions - positive step.
  - Will prevent transfer of nuclear material (and most likely also of nuclear technology)
  - Will limit size and sophistication of arsenal
  - **But resolving financial issues remains difficult**
- Mid term: Live with a nuclear North Korea
- Long term: denuclearization will require a grand bargain
  - Normalization (transformation) of U.S. - DPRK relations
  - Most likely will require an LWR
  - The LWR with appropriate safeguards may provide a significant boost for the nonproliferation regime

**Mid term is not very attractive and could be very long,  
but there are few good alternatives**

## Key issues remain in the near term for shut-down

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- What to do with the spent fuel
- Sequencing the shut-down of facilities
- Abandonment of facilities is too simplistic a view
- 50 MWe reactor should receive high priority
- How much infrastructure should remain for a civilian program (IRT reactor and future LWR)?
- Declaration of nuclear facilities and programs requires a level of trust that does not exist

## DPRK has been remarkably restrained, while Iran is defiant

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Ahmadinejad: "Today, the Iranian nation fully possesses the nuclear fuel cycle. If all of you gather and also invite your ancestors from hell, you will not be able to stop the Iranian nation."

Kim: "The NPT is brittle; it's under stress. It was not the intent of the DPRK to undermine the NPT. It is not too late for the NPT regime."



Hill and Kim in Berlin

# Signs of market activity: Pyongyang 2006



# Getting around in Pyongyang - 2006



# Instructions, discipline and friendship in Middle School #1



# Pyongyang subway - artistic and functional





# The winds of change

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Where there is "swoosh" there hope