How did North Korea get the bomb and will it give it up?

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April 16, 2009

At the Yongbyon nuclear facilities

Feb. 2008

April 5, 2009 rocket lift-off

Musadan-ri, DPRK

Kim Jong il on site for April 5, 2009 rocket launch

South Korea protest

UN Security Council condemns April 5, 2009 launch
Considered in contravention of UNSCR 1718

Calls for tightening 1718 sanctions
Demands DPRK conduct no further launches
Calls for early resumption of Six-Party talks
Expresses desire for peaceful and diplomatic solution

April 14, 2009 New York

KCNA Pyongyang, 9 hours later **(April 14, 2009)**

1. **Denounce and reject UNSC statement – we will continue to use space**
2. **Six-Party Talks are no longer necessary**
   - **No longer participate and not bound by previous agreements**
   - **We will actively examine construction of LWR of our own**
3. **We will strengthen our self-defensive nuclear deterrent**
   - **Restore normal operation of nuclear plant**
   - **Reprocess spent fuel rods**

The North Korean crisis in perspective

- Soviet "Atoms for Peace" – 1950s & 1960s
- Going solo, but under civilian cover – 1970s to 1992

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2003 breakout and bomb production

- October 2002 altercation with Bush Administration
- U.S. accused DPRK of covert uranium program
- North Korea walked out
  - Expelled IAEA inspectors
  - Withdrew from NPT
  - Refueled and restarted 5 MWe reactor
  - Claimed it strengthened its deterrent
- U.S. did very little in return
- 2004 began Six-party negotiations

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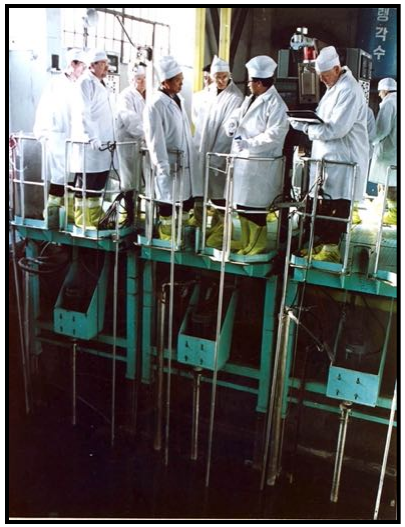
North Korean bomb – 50 years in the making
North Korea has played a weak hand masterfully

Today, North Korea has the raw material, facilities, and people for power and bombs

Yongbyon Nuclear Complex

How do we know what North Korea has?



Jan. 2004 Yongbyon

Aug. 2005 Pyongyang

Nov. 2006 Pyongyang

August 9, 2007, Yongbyon

Feb. 14, 2008, Yongbyon

They allowed us in to make a good assessment

North Korea went to great length to convince us they had a "deterrent" (Jan. 8, 2004)

Facility in which plutonium was reprocessed in 2003

Reactor control room

When I expressed skepticism about reprocessing, they asked:
"Would you like to see our product?"

What is the DPRK nuclear program?

Yongbyon nuclear complex

- Fuel fabrication facility – uranium metal fuel
- 5 MWe reactor – Magnox (gas – graphite)
- Reprocessing facility – plutonium extraction (PUREX)
- 50 MWe and 200 MWe reactors – dormant
- IRT-2000 research reactor – medical isotopes

What is the DPRK nuclear program?

Likely outside Yongbyon

- Weaponization facilities – plutonium casting, machining, other components, and assembly
- Nuclear weapons – bombs and delivery vehicles
- Uranium enrichment effort –highly enriched uranium

North Korea has mastered the full plutonium fuel cycle

Front end of fuel cycle (reactor fuel)
- Mining to fabrication of natural uranium fuel
- No new fuel produced since 1994
- Almost finished refurbishing facility in 2007

Fuel fabrication

Reactors (produce Pu, electricity & heat)
- 5 MWe Restarted in Feb. 2003
  - Produced ~ 6 kg Pu/year (one bomb's worth)
- 50 MWe construction halted in 1994
  - Capacity of ~ 60 kg Pu per year
  - Problems recovering 1994 status
- 200 MWe construction doubtful

DPRK 5 MWe reactor

Back end of fuel cycle (extract Pu, manage waste)
- Reprocessing facility operating again since 2003
- Plutonium extracted in 2003 and 2005 campaigns

Reprocessing Facility

Status of DPRK nuclear reactors (Aug. 2007)

5 MWe reactor
Shut down. Capable of 6 kg Pu per year.

50 MWe reactor
Construction site. Not salvageable

200 MWe reactor Taechon
Construction site. Not salvageable

Six-party diplomatic agreements

Agreement	DPRK	U.S. & Others
9/19/05 Joint Statement	- Verifiable denuclearization - Abandon all nuc. weapons & nuclear programs	- Normalization, peace regime, sovereignty - Economic cooperation
2/13/07 Initial actions	- Shut down & seal for eventual abandonment - Discuss declaration list	- Begin process of removing from terror list and TWEA - 50,000 tons HFO
10/13/07 Second phase	- Disable all existing nuc facilities - Complete and correct declaration - No transfer of nuc. materials, technology or know-how	- Removal from terror list and TWEA – actions depend on DPRK - 1 mil tons HFO equivalent - Ministerial meeting

A painfully slow process toward denuclearization

Understanding the terminology

Disablement

Making it more difficult – but not impossible - to restart the facilities

Declaration

Complete and correct declaration of all nuclear programs

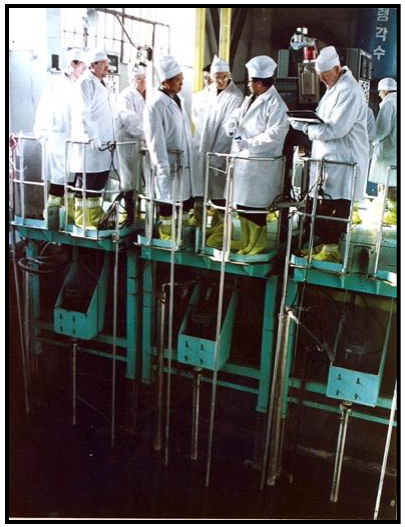
Dismantlement

Taking apart the facilities – necessitating starting over

Abandonment

Eliminating the nuclear program

They had a specific message for each visit



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Track II diplomacy

The Yongbyon plutonium labs – small and primitive

August 9, 2007

Empty pits that housed uranium dissolver tanks

(Building 1: Fuel fabrication facility) Feb. 14, 2008

Uranium metal conversion furnaces removed

(Fuel fabrication facility)

Refractory bricks and mortar removed from furnaces

(Fuel fabrication facility)

Empty machine shop and stored lathes

(Fuel fabrication facility)

Symbolic destruction of 5 MWe cooling tower

June 27,2008 (one day after declaration delivered to six party talks)

Six-party steps to denuclearization

- **Disable facilities – dragging it out**
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Feb. 2009 visit assessment:
Six-party process was stuck in disablement phase

DPRK nuclear program status (4/14/09)

- **Weapons-grade plutonium**
  - Estimated at 40 to 50 kilograms (6 or 8 bomb's worth)
  - DPRK declared 26 kg "weaponized"
- **Nuclear weapons**

Nuclear weapons

- 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

The nuclear test was a technical failure, but a political success. It changed the diplomatic dynamics.

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- **Nuclear technology export**
  - Syria – yes
  - Iran and others – possible
- **Long-range missiles**
  - April 5 launch is third attempt in 12 years

Why does North Korea want nuclear weapons?
A Russian perspective

- Use them as a diplomatic card to bring U.S. to bargaining table
  - Gain concessions – desire to negotiate a compromise based on mutual concessions, equality, and reciprocity
- Most powerful and cheapest deterrent against aggression
- Domestic consumption – increase tensions in area and distract people's attention from daily grievances. Make people more scared and more submissive
- International statement - Demonstrate that DPRK won't bend under pressure and defy all forms of control
- Raise international status – demonstrate technological achievement

Natalia Bazhanova in
Moltz and Mansourov (2000)

What are the perceived nuclear threats?

- **United States**
  - Nuclear export
  - DPRK miscalculation and use
  - Nuclear blackmail
  - Dominoes – Japan and ROK
  - Nuclear proliferation precedent
  - Nuclear accident
  - Missile attack on U.S. or its interests

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- **China**
  - U.S. military intervention
  - U.S.-caused instability
  - Nuclear dominoes – Japan, ROK, Taiwan
  - Nuclear accident
  - Nuclear export

What are the strategic priorities?

- **United States**
  - Denuclearization
  - Northeast Asia stability
  - Human rights
  - Regime change

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- **United States**
  - Denuclearization
  - Northeast Asia stability
  - Human rights
  - Regime change
- **China**
  - Peace and stability
  - Keep U.S. out of DPRK
  - Keep bomb away from Japan, ROK and Taiwan
  - Transform regime, don't change it

U.S., China and South Korea need to agree on strategic priorities and rally around the export threat

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

Fuel fabrication

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

DPRK 5 MWe reactor

Back end of fuel cycle (plutonium extraction)

- Reprocessing facility operating since 2003
- Throughput enhancements made in 2004
- Extracted plutonium in 2003 and 2005 campaigns

Reprocessing Facility

Iran is the most likely customer or partner

Syrian reactor site at Al Kibar bombed by Israel on Sept. 6, 2007

Before bombing

After bombing

Satellite Photos Show Cleansing of Syrian Site

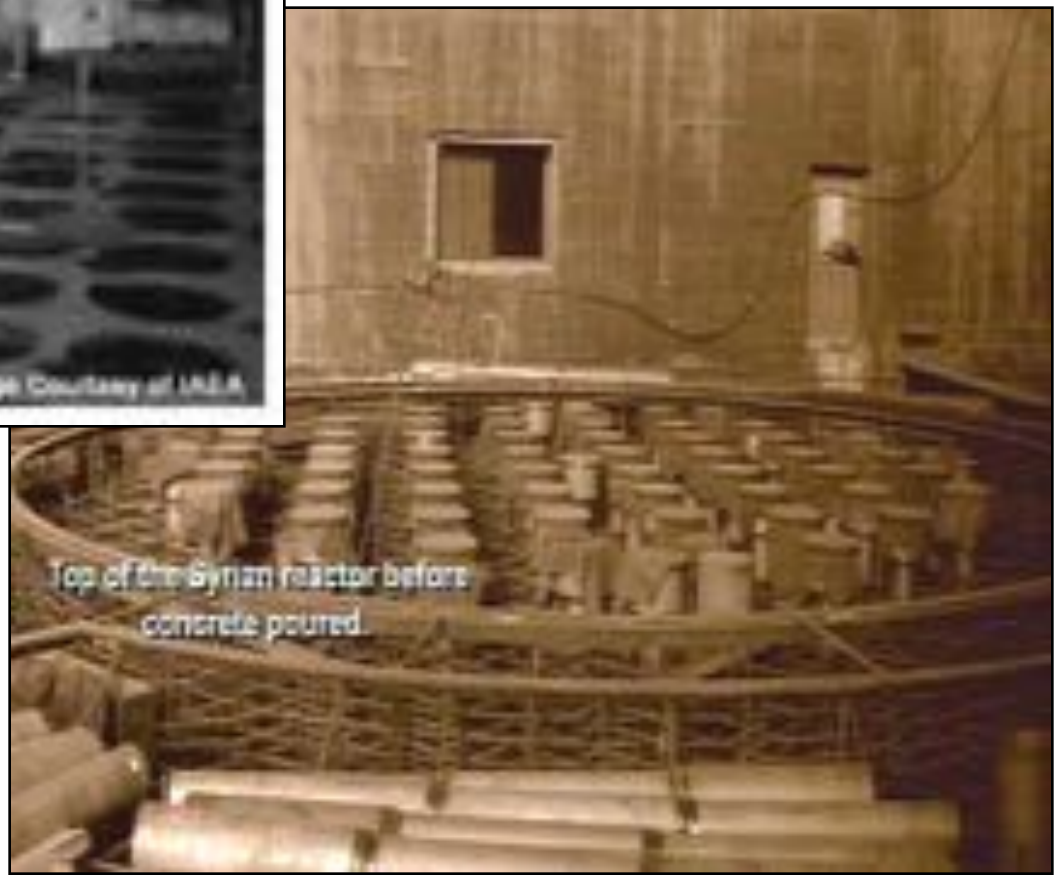
By WILLIAM J. BROAD and MARK MAZZETTI
Published: October 26, 2007, New York Times

Suspected reactor site in Dayr az Zawr region bombed by Israel on September 6, 2007

Same site in Dayr az Zawr region in October after Syrian cleanup

Syrian gas-graphite reactor at Al Kibar

Yongbyon 5 MWe reactor



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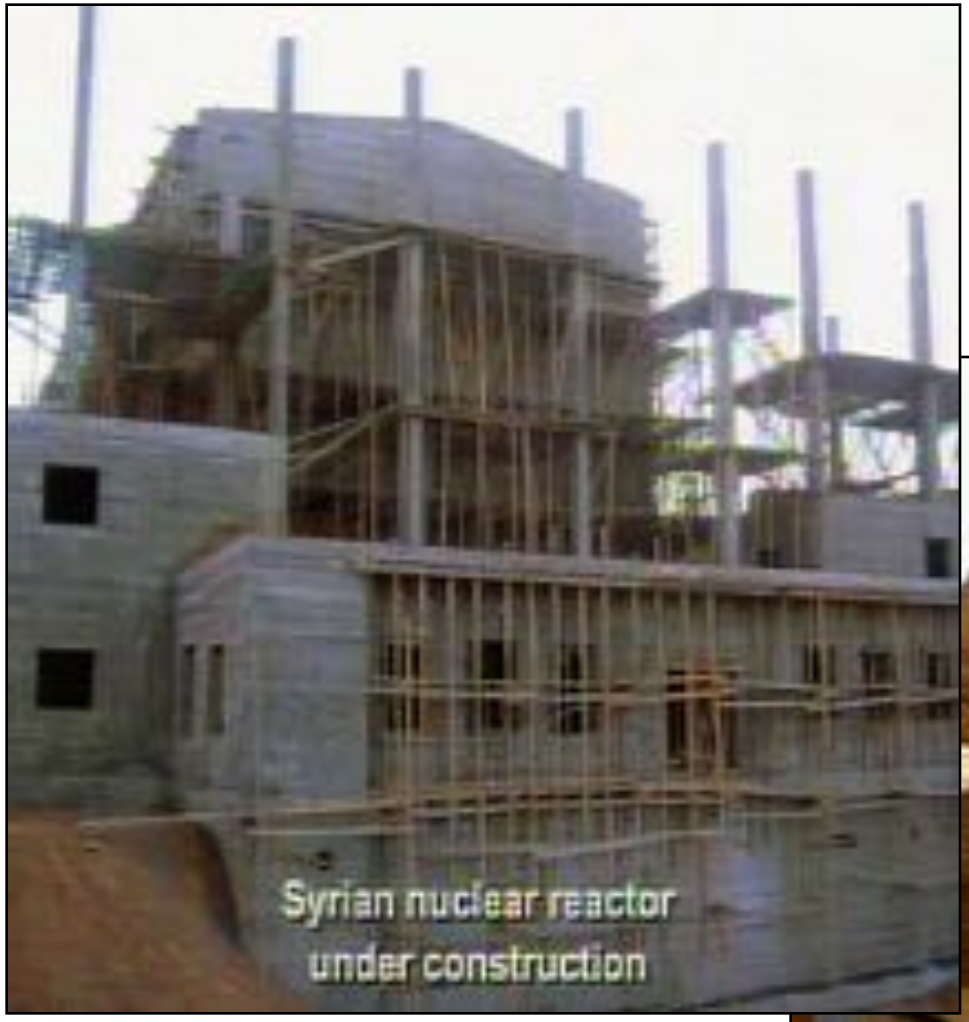
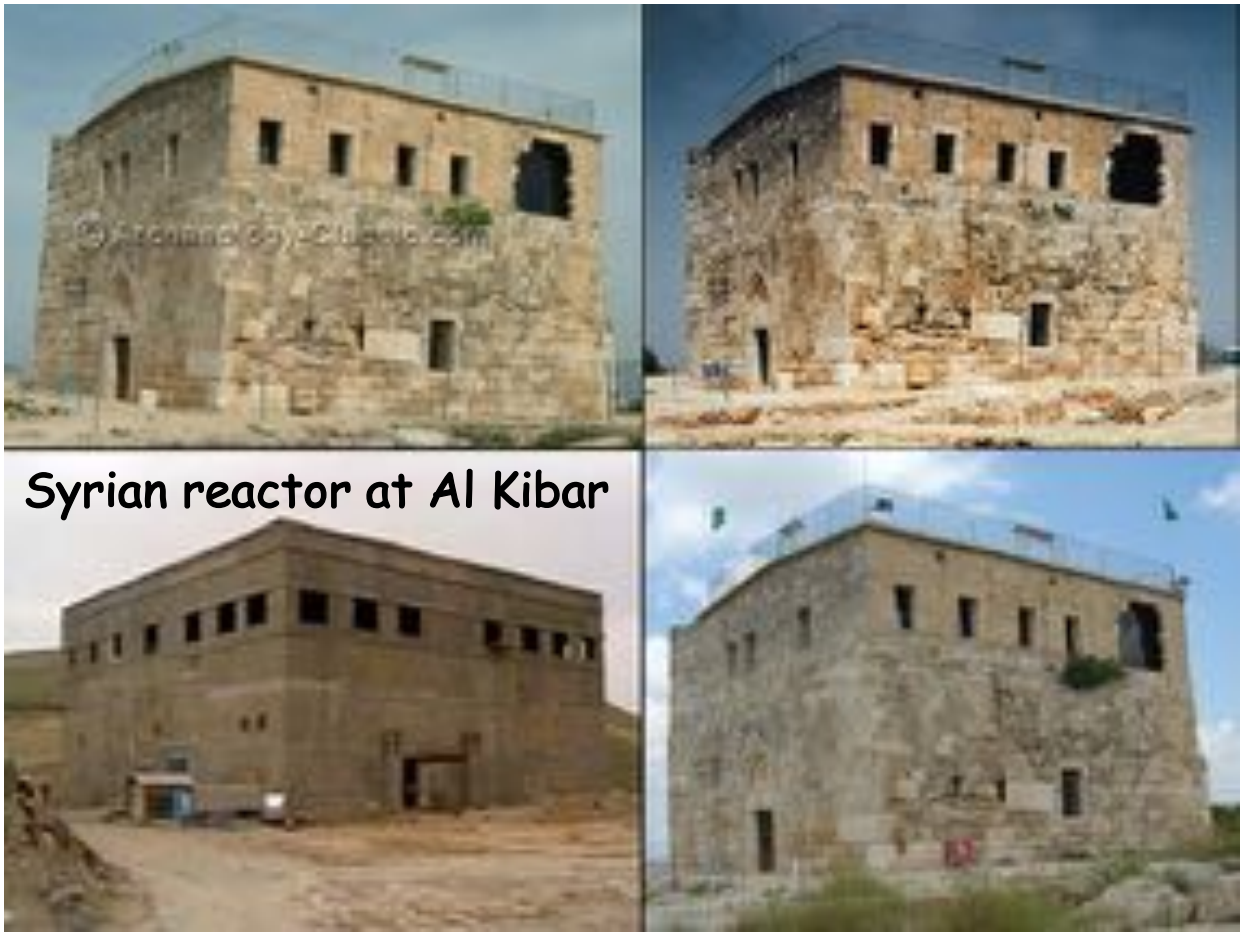


A masterful job of deception in Syria

Byzantine fortress in Zippori (Sepphoris) National Park, Israel



There are also Byzantine/Crusader-age fortress ruins in the immediate vicinity on the Euphrates River, at Halabiya and Zennobia

April 14, 2009 status

Possible next steps

- Restart
  - Make more plutonium (reprocess ~ 8 kg)
  - Restart reactor
    - Cooling tower, prepare fuel for 6 kg Pu/year
- Rebuild bigger reactors
- Build a modern LWR
- Reactivate uranium enrichment program
- More missile tests
- Test a second nuclear device
- Resume/accelerate nuclear exports

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Look for increased cooperation with Iran

DPRK is playing a weak hand

- One third of its people fed from outside
- Can't provide basic services consistently
- Failing economy: North – South asymmetry
- Frightened by its own economic reforms
- No capacity to deal with disasters
- Has only limited exports
- Fighting to control influx of info and goods
- Atrocious human rights record

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Unfortunately, we've helped DPRK play it well

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Regime may be on life support,
but it could last a long time

What to do now?

Survival of the regime depends on:

- Economic and food assistance (China, ROK)
- Complete control of information
- Existence of external threat
- Maintain cult of personalities
- Gradual improvement in peoples' lives

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We need:

- Common objectives with key neighbors
- Offer a life saver while containing threat
- Be prepared to cut off the oxygen

For now, DPRK appears in control in spite of a weak hand

Kim Jong Il still in power

Confidence is increasing

Slow-down was working

They walked out again

Lots of action at the food kiosks

Kiosks everywhere

Dressed quite well and warm

The winds of change are on our side

Pyongyang subway – Nov. 2006

Where there is swoosh, there is hope