

# **Fourth Nuclear Test and Reassessment of 3 No's and 3 Yes's**

**Siegfried S. Hecker**

**Center for International Security and Cooperation  
Stanford University**

**Korea Discussion Group Meeting  
April 11, 2016**

# North Korean nuclear test: #1 – Oct. 9, 2006

---

## Results:

- Predicted 4 kt yield; actual seismic ~ 4; yield < 1 kt
- Likely Pu; likely rudimentary (Nagasaki like)

## Motivation:

- Technical and military drivers
- Convince Kim Jong-il and military leaders
- Political - reinforce deterrence message to U.S.
- Response to sanctions

## Consequences:

- China's displeasure, UNSCR sanctions
- No major impact of sanctions
- Bush administration came to negotiating table
- 2007 & 2008 – Restraint, hedge and regroup

# North Korean nuclear test: #2 – May 25, 2009

---

## Results:

- Seismic ~ 4.5; yield 2 to 7 kt
- Likely Pu; likely rudimentary (Nagasaki like)

## Motivation:

- Strong technical drivers to improve on 2006 performance
- Convince Kim Jong-il, military leaders after 2006 attempt
- Convince U.S. and world
- Develop more credible deterrent (followed LR missile launch)

## Consequences:

- China's displeasure, UNSCR sanctions
- No major impact of sanctions
- Killed six-party talks
- Stopped Obama administration from negotiating
- Facilitated expansion of nuclear weapons program

# North Korean nuclear test: #3 – Feb. 12, 2013

---

## Results:

- Seismic ~ 4.9; yield 7 to 16 kt; No info on Pu vs. HEU
- Likely achieved some miniaturization (so claimed by DPRK)

## Motivation:

- Technical and military drivers for miniaturization
- Demonstrate more threatening nuclear weapon capability
- Preceded by successful LR missile launch
- Domestic - shore up Kim Jong-un's regime

## Consequences:

- China's strong displeasure; sanctions still had little impact
- DPRK threatened pre-emptive nuclear strike followed by offer to talk. Nuclear weapons part of constitution.
- Terminated Obama administration negotiation attempts
- Demonstrated expansion of nuclear weapons program

# North Korean nuclear test: #4 – Jan. 6, 2016

---

## Results:

- Seismic ~ 4.9; yield 7 to 16 kt; No info on Pu vs. HEU
- DPRK claimed hydrogen bomb – unlikely, but important because test must help in miniaturization process

## Motivation:

- Technical and military drivers for miniaturization
- Political - Possible offensive aspirations

## Consequences:

- China's strong displeasure; strongest UN sanctions to date
- Longer term - not clear







**North Korea nukes**



Presentation2



# Potential DPRK nuclear program by 2020

---

Nuclear Capability	December 2016 Estimates	2020
Plutonium	34 – 52 kg	Possibly 70 kg
HEU (Highly enriched U)	Possibly 450 kg	~150 kg/yr
Nuclear tests	4 or more	4 or more
Nuclear weapons	Possibly 8 Pu + 18 HEU ~ 25	~10 Pu + 42 HEU ~ 50
Long-range rockets	Unha-3 Possibly more tests	Musudan or KN-08 tests

# So, what to do now?

---

- **Stay the course on denuclearization, but limit threat**
  - **Long term defined by Sept. 19, 2005 Joint Statement**
- **For now - three no's and three yes's (or inverse)**
  - **No more bombs (no Pu or HEU)**
  - **No better bombs (no nuclear or missile tests)**
  - **No export**
- **Yes - address fundamentals of North Korea's insecurity to create conditions favorable to disarmament and provide energy and economic assistance**

**But, how to get started?**

# **Danny Russell – assessment - April 4, 2016**

---

## **What does Kim Jong-un have to show?**

- Nothing in terms of respect, security, economic support, or diplomatic resolution
- Only splashes in the ocean with missiles and detonated nuclear devices underground

# **Danny Russell – assessment - April 4, 2016**

---

## **What does Kim Jong-un have to show?**

- Nothing in terms of respect, security, economic support, or diplomatic resolution
- Only splashes in the ocean with missiles and detonated nuclear devices underground

## **He does not mention**

- A sizeable and growing nuclear arsenal
- A robust nuclear complex building program
- A robust missile complex

# Danny Russell – U.S. policy with DPRK

---

## **Diplomacy**

Credible negotiations that lead to:

**Freeze, roll back and permanently end nuclear program**

## **Pressure**

Enacted and enforced some of the toughest sanctions

Make leaders realize there is no viable alternative to negotiations

## **Defense**

Potential deployment of THAAD

## **Deterrence**

Modernize our security alliance and increase military drills

# **Danny Russell – U.S. not given up on diplomacy**

---

## **Diplomacy – first step: meeting international obligations**

Freeze all nuclear activities

Credible declaration of past activities

IAEA inspections of nuclear sites

## **Resume where six-party talks left off – Sept. 19, 2005 JS**

Deal with all concerns – as long as it will take steps towards full denuclearization

Willingness to provide assurances and assistance

With progress toward denuclearization – promote economic cooperation and build a permanent peace



# **Danny Russell – U.S. not given up on diplomacy**

---

## **Diplomacy – first step: meeting international obligations**

Freeze all nuclear activities

Credible declaration of past activities

IAEA inspections of nuclear sites

## **Resume where six-party talks left off – Sept. 19, 2005 JS**

Deal with all concerns – as long as it will take steps towards full denuclearization

Willingness to provide assurances and assistance

With progress toward denuclearization – promote economic cooperation and build a permanent peace

**Is Washington serious?**

# **Danny Russell – U.S. not given up on diplomacy**

---

## **Diplomacy – first step: meeting international obligations**

Freeze all nuclear activities

Credible declaration of past activities

IAEA inspections of nuclear sites

## **Resume where six-party talks left off – Sept. 19, 2005 JS**

Deal with all concerns – as long as it will take steps towards full denuclearization

Willingness to provide assurances and assistance

With progress toward denuclearization – promote economic cooperation and build a permanent peace

**Is Washington serious?  
Will Yongbyon believe it?**

# **Danny Russell – U.S. not given up on diplomacy**

---

## **Diplomacy – first step: meeting international obligations**

Freeze all nuclear activities

Credible declaration of past activities

IAEA inspections of nuclear sites

## **Resume where six-party talks left off – Sept. 19, 2005 JS**

Deal with all concerns – as long as it will take steps towards full denuclearization

Willingness to provide assurances and assistance

With progress toward denuclearization – promote economic cooperation and build a permanent peace

**Is Washington serious?  
Will Yongbyon believe it? Is it interested?**

# Possible steps to 3 No's – halt and roll back

Nuclear activity	Informal agreement	Potential next steps	Intermediate steps
Plutonium	Stop 5 MWe		
HEU	Open YB Centrifuge Facility - inspect		
Nuclear tests	Moratorium		
Missiles	Moratorium		
LWR	Declaration		

# Possible steps to 3 No's – halt and roll back

Nuclear activity	Informal agreement	Potential next steps	Intermediate steps
Plutonium	Stop 5 MWe	Unload fuel, reprocess, safeguard	
HEU	Open YB Centrifuge Facility - inspect	Open all other YB facilities. Declare all UE ops	
Nuclear tests	Moratorium	Destroy test tunnels	
Missiles	Moratorium	Declaration. Offer satellite launch services.	
LWR	Declaration	Safety inspection.	

## Possible steps to 3 No's – halt and roll back

Nuclear activity	Informal agreement	Potential next steps	Intermediate steps
Plutonium	Stop 5 MWe	Unload fuel, reprocess, safeguard	Terminate all plutonium operations. Dismantle.
HEU	Open YB Centrifuge Facility - inspect	Open all other YB facilities. Declare all UE ops	Close covert facilities. Negotiate on YB.
Nuclear tests	Moratorium	Destroy test tunnels	Cease all testing
Missiles	Moratorium	Declaration. Offer satellite launch services.	No long-range tests. Provide launch services.
LWR	Declaration	Safety inspection.	Decide on future of LWR.