

North Korea Hinge Points: Bad Decisions Led to Bad Consequences

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My estimates of North Korean nukes

- 2000: End of Clinton administration – no nukes in DPRK
- 2008: End of Bush administration – 4 to 6 nukes* (one test)
- 2016: End of Obama administration – ~ 25 nukes* (four more tests)
- 2020: End of Trump administration – ~45 nukes* (one likely H-bomb test)

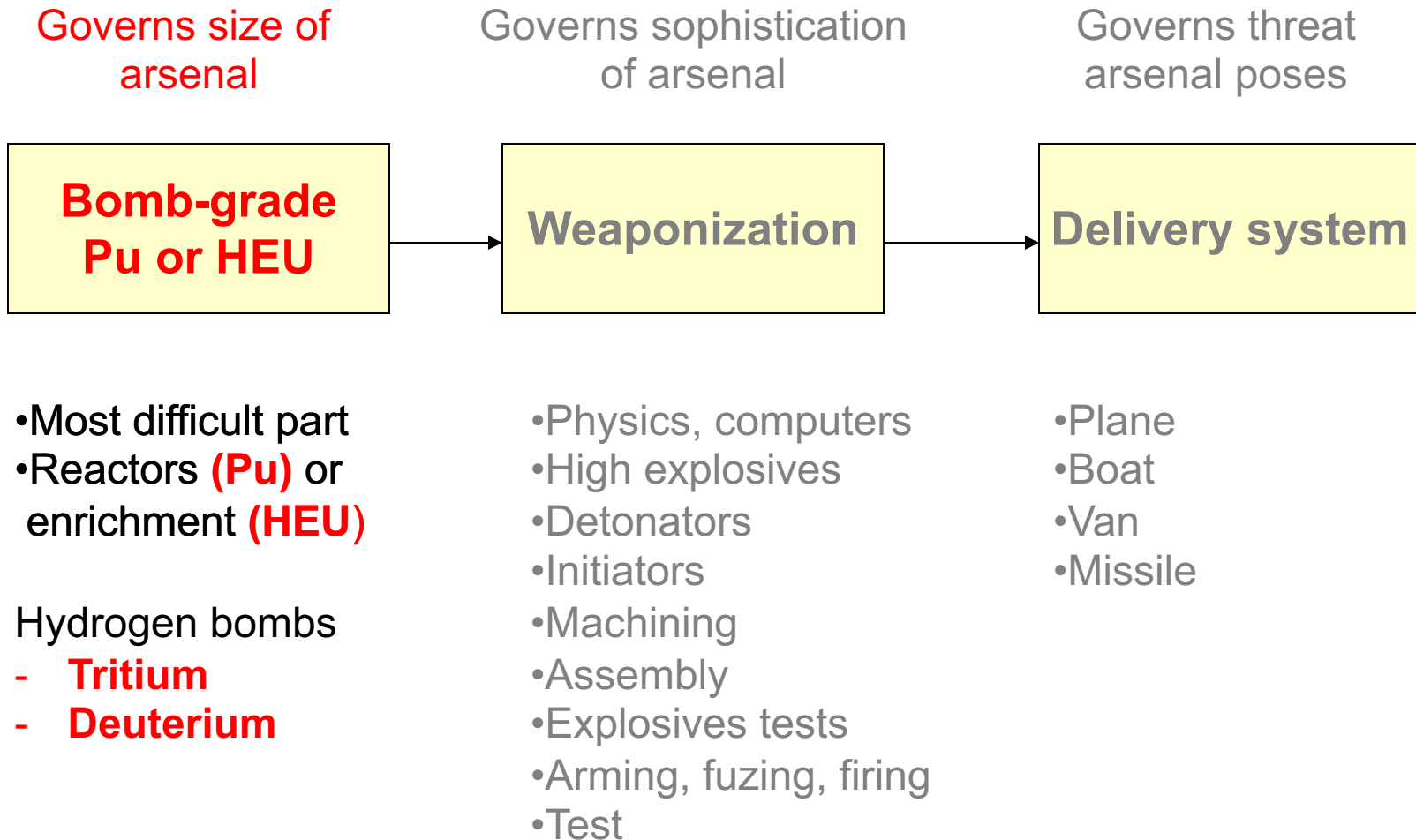
* Sufficient fissile materials for that number of bombs. All estimates have high uncertainties.

Today - estimated current nuclear capabilities (S.S. Hecker)

Nuclear Capability	December 2020 (Rough estimates)
Plutonium	25 – 48 kg
HEU (highly uncertain)	~650 – 900 kg
Tritium	Very limited
Nuclear devices (sufficient material)	~45 (20 to 60)* (Very few hydrogen bombs)
Nuclear device deliverable by SCUD & Nodong missiles	Yes
Nuclear device deliverable by IRBMs & ICBMs	Hwasong-12, 14, 15, 16? Not yet militarily useful.

* Numbers based on amount of bomb fuel available – may not all be weaponized

North Korea nuclear program



Estimates – how do we know? What is confidence level?

26 SEP 2010

Commercial overhead imagery

Source: DigitalGlobe

4 NOV 2010

Source: DigitalGlobe

28 MAY 2011

Source: GeoEye

4 NOV 2011

Source: DigitalGlobe, 38 North

26 JAN 2012

Source: DigitalGlobe

20 MAR 2012

Source: DigitalGlobe

24 JUN 2012

Source: GeoEye

6 AUG 2012

Source: GeoEye

12 DEC 2013

Source: DigitalGlobe/ Google Earth

Looking from the inside

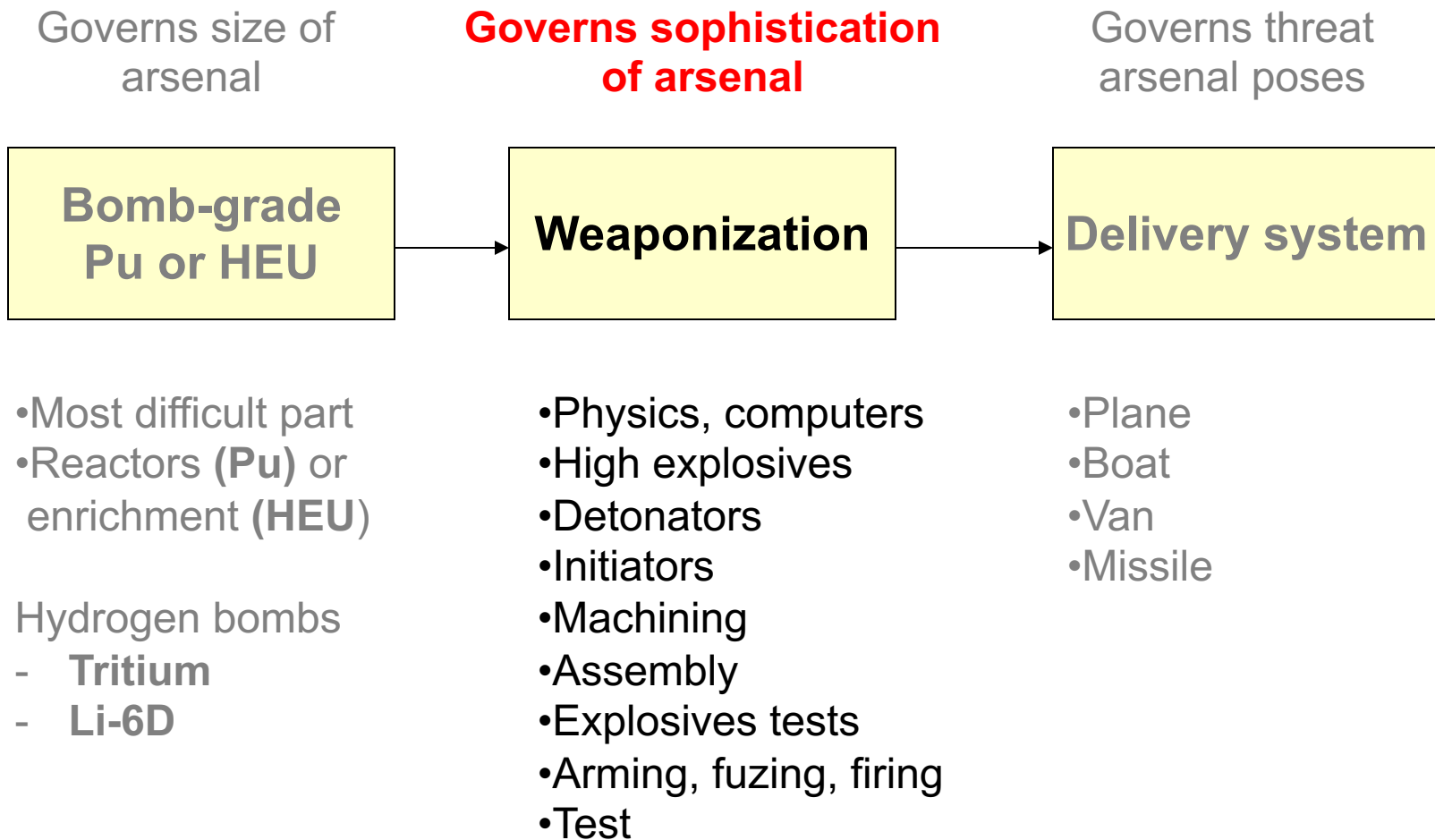


Hecker

KCNA Publicity – what they show us



Weaponization

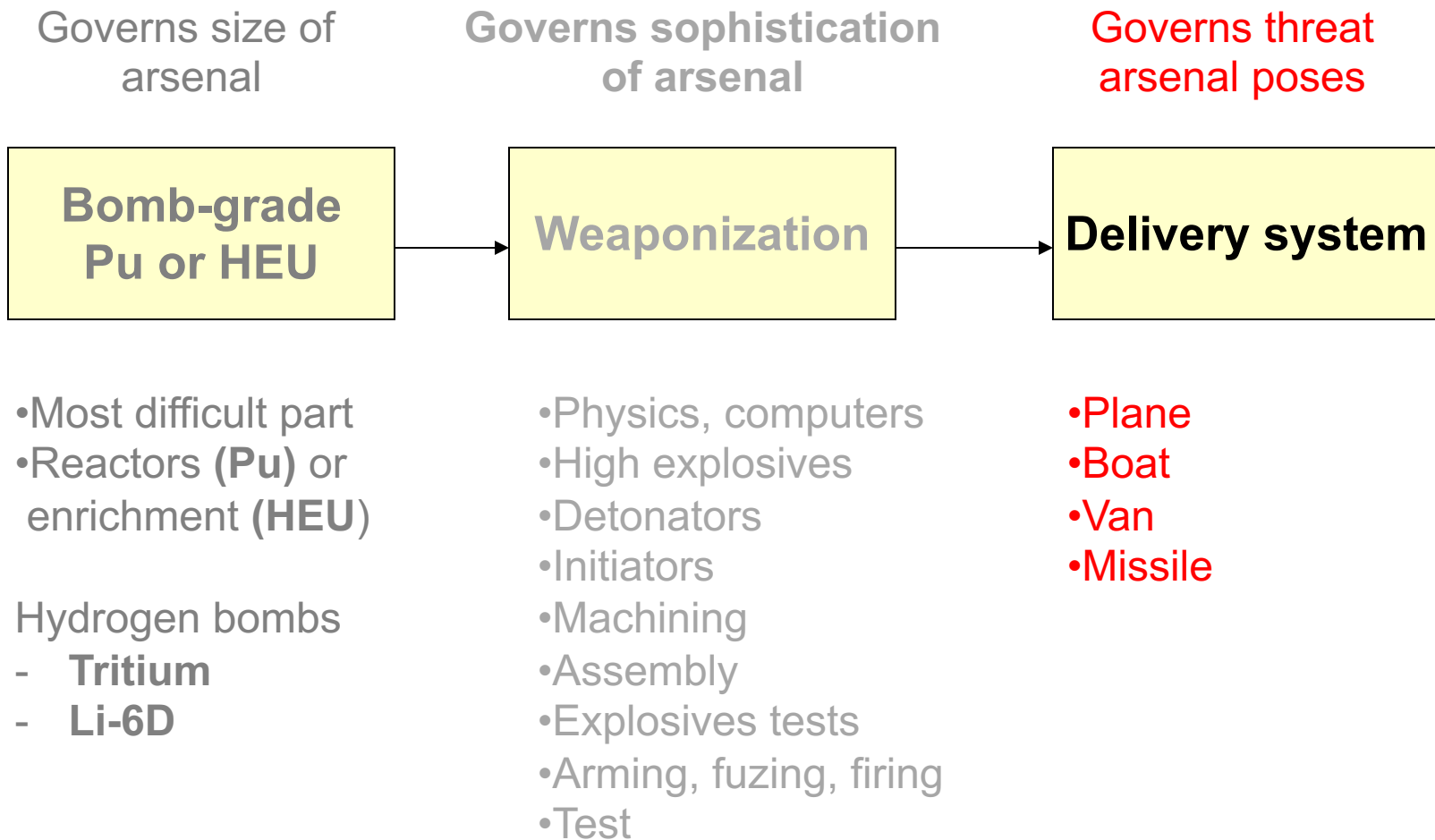


**We have few details, but –
Bottom line is they conducted 6 nuclear tests**

Nuclear tests critical to sophistication

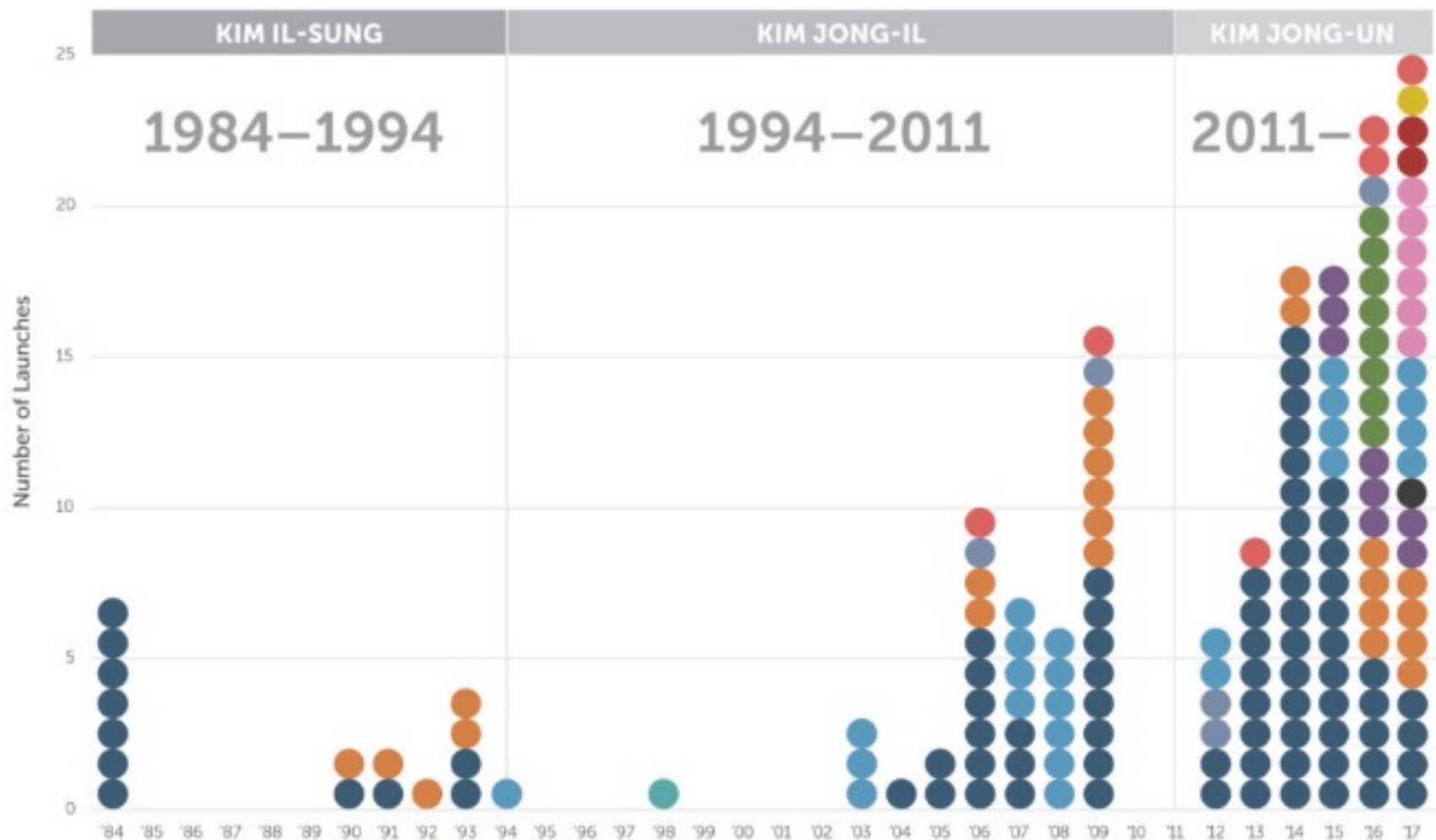
- Oct. 9, 2006: Close to 1 kiloton
 - Likely Pu
- May 25, 2009: ~ 2 to 7 kilotons
 - Likely Pu
- Feb. 12, 2013: ~ 7 to 14 kilotons
 - Either Pu or HEU
- Jan. 6, 2016 – deeper than others, ~ 7 to 14 kilotons
 - Claim of H bomb not likely. Possible proof of principle H-bomb?
- Sept. 9, 2016 – ~ 15 to 25 kilotons
 - Likely made progress in miniaturization
- Sept. 3, 2017 – **200 to 250 kilotons**
 - Two-stage thermonuclear possible

Weaponization



Missile launches detected by satellite imagery

NORTH KOREAN MISSILE LAUNCHES



- Hwasong-15 (13,000 km)
- Hwasong-14 (10,000 km+)
- Hwasong-12 (4,500 km)
- BM-25 Musudan (2,500–4,000 km)

- Cruise Missile (KH-35, KN-01, 150–260 km)
- KN-11 SLBM / KN-15 (900–2,000 km)
- MRBM – Medium-range ballistic missile (Scud-ER, No Dong, 1,000–1,500 km)
- Nuclear Test

- SRBM – Short-range ballistic missile (Scud variants, KN-02, 150–1,000 km)
- Taepodong-1 (2,000–5,000 km)
- Taepodong-2/Unha-3 (4,000–15,000 km)
- Unknown

Accounts for full flight tests only. Does not include partial tests of missile subsystems such as static engine firings or cold-launch ejection tests, tests of air defense systems, or short-range rockets and artillery firings. Updated September 20, 2017.

DPRK nuclear arsenal – how did this happen?

- **2000: End of Clinton administration – no nukes in DPRK**
 - No plutonium production
 - Missile test moratorium (after 1998 satellite launch)
 - Covert, nascent uranium enrichment program
- **2008: End of Bush administration – 4 to 6 nukes (one nuclear test)***
 - Restart plutonium production (likely also tritium)
 - Resumed missile testing
 - Accelerated uranium centrifuge program
- **2016: End of Obama administration – ~ 25 nukes (four more tests)**
 - Stopped and resumed plutonium production (also tritium)
 - Revealed and greatly scaled up uranium centrifuge program (HEU)
 - Greatly accelerated missile testing
- **2020: End of Trump administration – ~45 nukes (likely H-bomb test)**
 - Continued plutonium (and tritium) production – halted in 2018
 - Continued uranium centrifuge program (HEU)
 - Major missile advances – including ICBMs

* Refers to estimates of sufficient fissile materials for that number of nuclear bombs.

Conventional US wisdom on North Korea

- No serious interest in diplomacy. Will not give up nuclear weapons
- Diplomacy used to buy time
- Diplomacy for cycles of “provocation, extortion and reward”
- North Korea has repeatedly violated every diplomatic agreement
 - In other words, it has cheated on every agreement made

North Korea has cheated on every agreement made

- 1992 Joint South/North denuclearization statement
 - During G.H.W. Bush administration
- 1994 Agreed Framework
 - Clinton administration
- 2005 September 19 Six-party Joint Statement
 - George W. Bush administration
- 2007 Disablement and dismantlement Six-party agreements
 - George W. Bush administration
- 2012 Leap Day Deal
 - Obama administration

Cheating on everything accusation is neither true nor helpful.
With it the U.S. tries to take the high moral ground.
It is too convenient for U.S. – lets it off the hook too easily.

My take on DPRK nuclear program

- Pyongyang has followed a dual-track strategy
 - Diplomacy plus Nuclearization
 - Normalization with US plus building nuclear deterrent
- Whether Diplomacy or Nuclear was higher priority at a given time depended on:
 - External factors (mostly US) and domestic factors
 - Technical development schedules
 - At times, both had equal priority, but nuclear program was never abandoned
- US has had a singular focus on denuclearization
 - It has been nuclear or diplomacy

DPRK genuine interest in diplomacy? Yes.

Kim Il-sung

- At end of Cold War, he decided to explore a long-term strategic relationship with the US.
- Accommodation with Washington was in his view the best path to survival given the dramatic geopolitical upheavals at the end of the Cold War, a time when North Korea felt abandoned by both Russia and China.
- However, he insisted such accommodation be based on the projection of strength, not weakness.

Kim Jong-il

- Continued Kim Il-sung's diplomacy with US in AF – 2000 Joint Comm.
- After Bush administration's "axis of evil" treatment, tried again with Obama administration with President Clinton's visit in August 2009.
- In 2011, tries again with Obama to smooth transition to Kim Jong-un

Kim Jong-un

- Concludes his father's diplomacy with Leap Day Deal
- Following Trump's "fire and fury" with Singapore and diplomacy
- Trump's embrace kindles serious diplomatic overtures – then dashed.

Analysis of 30-year history of DPRK nuclear program

- Nuclear and missile technologies require time and resources
- Diplomacy can change reality as it progresses
 - What's impossible today, often becomes conceivable tomorrow.
 - It's a question of perceptions, calculation, and decisions.
 - Even if the Kims believed they won't abandon their weapons at any given moment, it is possible to imagine and work toward circumstances in which they may view it in their best interest.
 - Saying they will never give up nuclear weapons is counterproductive.
- Expect steady drum beat of technical development by the North while it explores diplomatic options
- What are called “provocations” are in fact deliberate steps taken to advance its nuclear program, rather than being aimed to anger US or elicit a particular response

Washington's response at hinge points

- US has failed to deal with the North's dual-track strategy.
- It has misinterpreted some of the North's actions as provocations instead of its dual-track strategy and missed key opportunities.
- At such “hinge points” Washington made bad decisions that had bad consequences for U.S. national security.
- US has failed to incorporate technical analysis at these hinge points. **It has not made technically-informed risk/benefit tradeoffs during the past 20 years.**
- Decisions were based on ideology and/or limited understanding of North Korea and northeast Asia.
- The result has led to a state of nearly continuing crisis for past 20 years.

Missed opportunities to limit, halt DPRK program

- 1990s – diplomacy had lead role
 - Agreed Framework and Perry Process came close, but Bush administration killed AF.
- 2007-2008. Late Bush administration diplomacy
 - Some progress, but US hardliners moved goalposts on verification. Kim Jong-il's stroke put DPRK's diplomacy on back burner.
- 2012 – Leap-day deal
 - US responded to DPRK satellite launch attempt with sanctions. Walked away from being able to get back to Yongbyon. Instead opened door to more nuclear and missile tests.
- 2015 – Missed opportunity to explore DPRK proposal for moratorium on nuclear testing. DPRK responded with three more nuclear tests.
- 2018-19 – Summit diplomacy crashes in Hanoi.
 - Missed opportunity to take DPRK offer to shut down and allow US personnel into Yongbyon.

1994 Crisis and the Agreed Framework



- Replace graphite-moderated reactors with light water reactors for 2000 MWe
- DPRK will **freeze its GMR and related facilities**, allow IAEA inspection and dismantle as progress is made on LWRs. Two sides move toward **full normalization of economic and political relations**
- DPRK will consistently take steps to implement the 1992 S/N Declaration
- Both sides will work toward peace and security of a nuclear-free peninsula
- Take steps toward full economic and diplomatic normalization

Almost there with diplomacy in Oct. 2000



- 2000 US-DPRK Joint Communiqué** pledges fundamental improvement in bilateral relations.
- to “fundamentally improve their bilateral relations” and “build a relationship free from past enmity.”
 - Missile issue is important



Vice Marshal Jo Myong-rok and President Bill Clinton at the White House



Kim Jong-il and Secretary of State Madeleine Albright in Pyongyang.

Diplomacy during Agreed Framework

- North Korea benefits
 - Energy assistance and promise of LWR (KEDO)
 - Move away from confrontation during domestic crises
 - Buy time to overcome economic crisis
 - Explore potential of long-term normalization with US
- US benefits
 - Dramatic reduction in plutonium threat
 - Increase breakout time
 - Access to Yongbyon for US tech teams and IAEA
 - Explore potential of long-term normalization with DPRK

Plutonium production scaled back dramatically during AF



5 MWe reactor
Operations halted.
(~6 kg/yr Pu potential)
- not operated 1995 to 2003)



50 MWe reactor
Construction halted – never
Completed.
(Pu forfeit ~ 56 kg/yr)



200 MWe reactor Taechon
Construction never completed.
(Pu forfeit ~ 220 kg/yr)

Dual-track activities during Agreed Framework

- Yongbyon
 - Spent fuel stored, not eliminated (25-30 kg Pu)
 - Facilities in standby, not eliminated (5 MWe reactor & Reprocessing Facility)
 - Fresh fuel stored, not eliminated
- Outside Yongbyon – covert
 - Nuclear weapons R&D (design, Pu metallurgy, etc.)
 - Nuclear test site maintenance and preparation
 - Possible receipt of HEU implosion design from Khan
 - Uranium mining operations continued
- Uranium enrichment
 - AQ Khan rekindled interest in centrifuge work
 - Provided P1 and P2 centrifuge starter kits
 - Covert global procurements of centrifuge materials

Dual-track activities during Agreed Framework

- Missiles
 - Large-scale Russian assistance in early 1990s
 - Continued Scud and Nodong deployments
 - Massive export of missiles and technologies to Middle East, North Africa, and South Asia
 - Attempted satellite launch in August 1998
- Nuclear exports – most egregious
 - Uranium hexafluoride to Libya (at turn of century)
 - Building Pu production reactor in Syria

Clinton administration AF strategy

- The AF provisions left technical risks, but it's all that Amb. Bob Gallucci could get.
- Reducing the Pu risk was highest priority.
- The rest of the risks were believed to be manageable.
- The long-term potential of two big LWRs producing much-needed electricity with the US controlling operations and fuel supply was the potential game changer.

US shortfalls during Agreed Framework

- Slow on LWR construction – would never reach 2003 target.
- Promised steps toward normalization, such as reducing trade barriers, setting up liaison offices and upgrading bilateral relations to the ambassadorial level, never occurred.
- Little progress made toward building economic relations.

The Agreed Framework falls apart in 2002

JANUARY 29 2002 - PRESIDENT BUSH OUTLINES THE 'AXIS OF EVIL'



IRAQ



IRAN

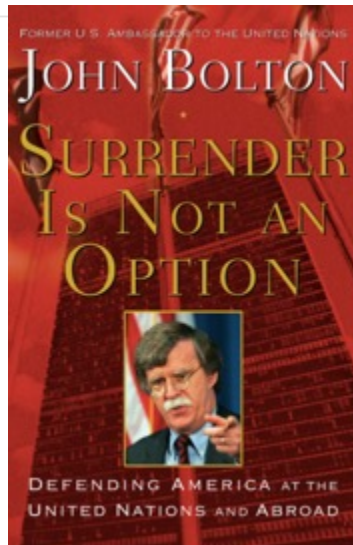


NORTH
KOREA



U.S. TO WITHDRAW FROM ARMS ACCORD WITH NORTH KOREA

By DAVID E. SANGER OCT. 20, 2002



The US-DPRK relationship continues to deteriorate, culminating in a decisive October meeting in Pyongyang.



U.S. Assistant Secretary of State James Kelly arrives at a Beijing hotel on October 17 after visiting North Korea.

Bolton's hammer shatters the Agreed Framework

- Hinge point – Oct. 2002. US kills AF, accuses DPRK of cheating with uranium enrichment.
- DPRK expels inspectors, withdraws from NPT, restarts Yongbyon operations.
- Declares it “is making a switchover in the use” of its reprocessing facilities to produce a nuclear deterrent.
- Likely builds the bomb in less than a year – it's dual-track strategy had it prepared.

None of this should have been a surprise to the Bush administration.
Bad decisions have bad consequences.

DPRK builds and tests the bomb

- 2003 Restart all Yongbyon operations
 - Extracts Pu, builds the bomb and makes more Pu.
- By 2004 – explores diplomacy to get respect and buy time
 - Three-party talks followed by Six-party talks.
 - Lewis-Hecker visit in January.

John Lewis Stanford delegation visit to Yongbyon, Jan. 2004

Reactor control room



5 MWe Reactor was operating.



Spent fuel pool



Radiochemical Laboratory

**8000 spent fuel rods reprocessed.
Contained ~25 – 30 kg plutonium.**

My bottom line: They can build the bomb

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- By 2005 – DPRK lobbies hard for provision of LWR.
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 - Sept. 19, 2005 Joint Statement – serious diplomacy.
 - DPRK walks when US reneges with unilateral statement and BDA sanctions.

Sept. 19, 2005 Six-Party Joint Statement

- DPRK agreed to abandon all nuclear weapons and existing nuclear programs
- Normalization of US-DPRK relations
- Promoting economic relations and energy assistance – and permanent peace regime
- Consideration of LWR at an appropriate time
- Could have opened door to return of IAEA.

- **Agreement derailed by US Unilateral Statement – walks back LWR, KEDO and others.**
- **US Treasury BDA sanctions.**



The fourth round of the Six-Party Talks in Beijing.



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 - Sept. 19, 2005 Joint Statement – serious diplomacy.
 - DPRK walks when US reneges with unilateral statement and BDA sanctions.
- 2006 – Preparation for first nuclear test.
 - Oct. 9 test only partially successful (~ 1 kt).
 - Reaction from US – a modicum of respect.
- 2003 – 2006 – Expedited push for uranium enrichment.

Back to diplomacy in 2007-2008:

Feb. & Oct. 2007 disablement agreements

IAEA inspectors & US technical team back in Yongbyon

- 5 MWe reactor stopped – no plutonium being produced.
- Disablement efforts are verified but are reversible.
- Likely increase in clandestine effort to build uranium enrichment facility.



Dual-track strategy in 2007 and 2008

- 2007 agreements and actions into 2008 appear to be serious diplomacy plus nuclearization.
- Pyongyang appeared to follow both tracks concurrently.
- Allowed IAEA and US back to Yongbyon.
 - Took surprisingly big disablement steps at key facilities.
 - In June 2008, blew up the cooling tower.
 - Handed over 18,000 copied pages of YB records.
 - Allowed US access to suspected aluminum rotor material.

Parallel nuclear track in 2007 and 2008

- Uranium centrifuge program was in high gear outside YB.
 - Likely pilot-plant operation with a few cascades
 - Activated supporting uranium chemical facilities
- Blowing up cooling tower likely part of strategy to use direct river cooling system if reactor is restarted (like one designed for Syria)
- Gutting YB Bldg. 4 (uranium metal production) was likely to prepare it for eventual home of new centrifuge facility
- No missile tests, but development certainly continued

Diplomacy falters in summer 2008

- Amb. Chris Hill determined drive for a deal runs afoul of administration hardliners who move verification goalposts.
- Hill manages to get a few concessions from Washington, such as removing DPRK from terror list, but it's too late.
- Kim Jong-il suffers life-threatening stroke in August 2008, opening the need for succession planning.
- Concern that outsiders would try to take advantage of the North at such a vulnerable period apparently triggered a decision that the moment for reconciliation had passed and that they must now proceed full speed with its nuclear program.
- On top of the list must have been a second nuclear test.

Pyongyang heads into 2009 determined to enhance nuclear program



Time runs out for Amb. Chris Hill - 2008



Feb. 24 – 28, 2009 visit

- In Feb. 2009 visit, Stanford delegation is told DPRK will stop disablement and of an upcoming space launch.
- Amb. Ri Gun told delegation – and you have no idea of how bad it's going to get.
- April 5 – failed space launch – followed by UNSC condemnation.
Inspectors expelled, Yongbyon restarted.
- May 25 – Second nuclear test – successful at 4 to 7 kilotons.

Obama administration fell into DPRK trap

- Failed space launch did little to enhance military program.
- US reaction was excuse DPRK needed to conduct its second nuclear test and expel US and IAEA.
- In US it was viewed as a provocation to test the new president - but it wasn't. It was a deliberate move to fix the problems found in the first test.
- Obama reaction was understandable, but unfortunate.
- US got nothing, while DPRK got nuclear test and proceeded unencumbered with nuclear program – Pu and HEU.

Dual-track strategy in 2009 and 2010

- Full speed nuclear development
- Pu reprocessed (5 MWe reactor not restarted – technical difficulties with cooling system)
- Announced intention to build its own LWR and uranium enrichment program
- Sept. 2009 – announced enrichment success. Kim Jong-il publicity photos with centrifuge equipment
- 2010 – two military confrontations with South, but unrelated to nuclear issues (Cheonan and Yeonpyeong Island)
- November – DPRK reveals ELWR and centrifuge facility

Yongbyon visit by Stanford team on Nov. 12, 2010

“We will convert our center to an LWR and pilot enrichment facility”



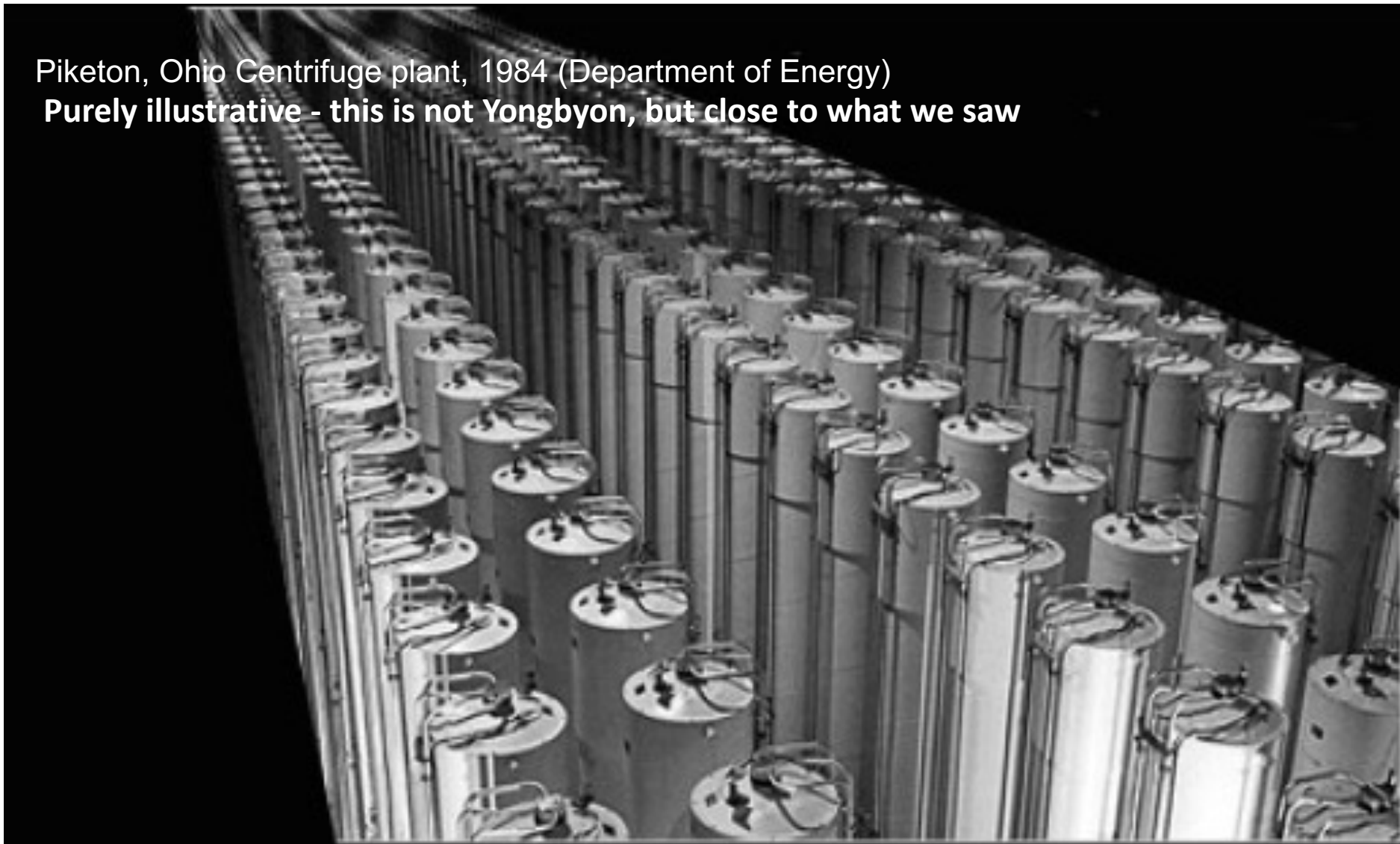
“No one believed us when we announced this in 2009 - including you, Dr. Hecker,” Ri Yong-ho (VM MFA)

Pyongyang reveals modern uranium centrifuge facility to Lewis/Hecker/Carlin in Nov. 2010

DPRK demonstrates second path to the bomb – makes assessment difficult

Piketon, Ohio Centrifuge plant, 1984 (Department of Energy)

Purely illustrative - this is not Yongbyon, but close to what we saw



No outsiders have been in Yongbyon since Nov. 2010

2012 Leap Day Agreement – classic case of different views and opportunity missed



US Special Representative for North Korean Affairs Glyn Davies briefs reporters after a meeting with Kim Kye Gwan in February.

2011: Pyongyang re-engages.

Serious diplomacy likely pursued to smooth the succession to Kim Jong-un

Leap Day Deal - opportunity for:

- Missile and nuclear test moratorium
- Solve uranium enrichment issue
- Freeze nuclear work and allow inspectors back in Yongbyon

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- No joint statement or agreement – each side makes its own announcement
- U.S. claims moratorium for long-range missiles
- DPRK – only ban long-range missiles, not space launches (claims priority of Space Treaty over UNSC)

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As a result of April 13 satellite launch, US walks away from deal and North Korea nuclear buildup continues unabated

Leap Day Deal Hinge Point

Consequences of US walking away in March 2012:

- Did not regain access to Yongbyon – a major loss
- Yongbyon facilities expanded – renovation and construction, including ELWR
- Restarted 5 MWe reactor in August 2013 – more Pu and more tritium
- Centrifuge facility likely doubled in size – centrifuges spinning (LEU and HEU)
- Covert centrifuge facility – run in tandem with Yongbyon
- Conducted third nuclear test in Feb. 2013 – likely HEU
- Continued missile development and satellite launch

An example of how uncoupled US political process was from technical assessments and risk/benefit analysis

Kim Jong Un diplomatic overture in 2015

- Kim turns focus to economy in March 2013 with “byungjin” strategy (simultaneous military and economy)
- Obama administration back to strategic patience, resort to more sanctions and pressuring China to help
- January 2015: Kim proposes nuclear test suspension for U.S.-South Korea joint military exercises suspension
- White House immediately rejects offer as not serious
- Again – no technical risk/benefit analysis

Another missed opportunity – three more nuclear tests follow along with dozens of missile tests during the decade.

Contrast with Iran negotiations was striking



**Comprehensive Plan of Action
DOE Secretary Ernie Moniz
with Ali Akbar Salehi, Head, IAEA**

Two more nuclear tests in 2016

21 missile launches

- Oct. 9, 2006: Close to 1 kiloton (Pu)
- May 25, 2009: ~ 2 to 7 kilotons. (Pu)
- Feb. 12, 2013: ~ 7 to 14 kilotons (HEU?)
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 - Claim of H bomb not likely.
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- Sept. 9, 2016: ~ 15 to 25 kilotons (HEU?)
 - Likely made progress in miniaturization

?

Nov. 2016: Obama tells Trump North Korea is biggest national security problem.



2017: A very dangerous year for Korean Peninsula
Trump threatens North Korea with “fire and fury”



Nuclear tests history


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 - **Two-stage thermonuclear possible**

?




**UN General Assembly
September 19, 2017**

The making of a nuclear crisis

A photograph of Donald Trump speaking at a podium during a UN General Assembly session. He is wearing a dark suit, a white shirt, and a blue tie. His mouth is open as if he is speaking, and his right hand is raised with fingers spread. The background is a green marble wall.

“...we will have no choice but to totally destroy North Korea. Rocket man is on a suicide mission”

**Kim's Reply
Sept. 22, 2017**

A photograph of Kim Jong-un sitting at a desk in a formal setting. He is wearing a grey Mao suit and glasses. He is looking directly at the camera with a serious expression. Behind him are bookshelves filled with books. On the desk in front of him are microphones and some papers.

“I will ...tame the mentally deranged U. S. dotard with fire”

Nov. 29, 2017 Hwasong-15 ICBM-capable



Launch date and time—Nov 29, at 2:47a.m.
(North Korean) local time.

Range and altitude---950km and 4,475km
on a 'lofted' trajectory.

On a standard trajectory it could cover the
entire US, (over 13,000km).

Launch site---Pyongsong.

Flight time---53min 49sec.





A moment of hope at PyeongChang Winter Olympics





EAST ASIA

March 9, 2018

Trump accepts invitation to meet North Korea's Kim Jong-un, will do so by May, Seoul's envoy announces

South Korean security chief Chung Eui-yong praises Trump for his 'maximum pressure' strategy as he makes stunning announcement outside White House, adding that Kim had agreed to halt nuclear and missile testing

Reuters, Associated Press



EAST ASIA

Jeffrey Feltman of UN had delivered a secret message to Kim Jong-un in early December 2017 that Trump was prepared to meet with him.

Not made public until February 2021 when Feltman told BBC of the offer.



June 12, 2018 Singapore Summit



Singapore Summit Joint Statement – June 12, 2018

- Commit to establish **new U.S.-DPRK relations** in accordance with the desire of the peoples of the two countries for peace and prosperity
- Join their efforts to build a **lasting and stable peace regime** on the Korean Peninsula.
- Reaffirming the April 27, 2018 Panmunjom Declaration, the DPRK commits to work toward complete **denuclearization** of the Korean Peninsula.
- Commit to recovering POW/MIA remains, including the immediate repatriation of those already identified.

Normalization and denuclearization

Kim love letters to Trump – August & September

- August – Kim laments lack of progress post Singapore. Suggests another meeting (which John Bolton rejects – send Pompeo instead).
- Sept. 4: Trump-Moon phone call. Trump complains of lack of progress. Moon suggests another meeting.
- Sept. 10: Bolton, Pompeo and Kelly show Trump Kim's September 6 letter. Bolton – “Dictator of a rat-shit little country doesn't deserve another meeting.” Send Pompeo first.
- Pompeo visits in October – they agree to restart working-level discussions (which Bolton did not want).

Kim's blockbuster offer in Sept. 6 letter

- *“We are willing to take meaningful steps one at a time in a phased manner, such as the **complete shutdown** of the Nuclear Weapons Institute or the Satellite Launch District and the **irreversible closure** of the nuclear materials production facility.”*
Kim's letter in Bob Woodward's "Rage"

- If the Nuclear Weapons Institute is like the Los Alamos and Lawrence Livermore labs – that means shutting down the entire nuclear weapons program.
- Irreversible closure of nuclear materials production facility is likewise a huge step.
- Surprised that Kim offered up the satellite launch site.

In *“The Room,”* Bolton only mentions what he calls Kim's oleaginous passages to appeal to Trump's ego.

Pyongyang Kim – Moon summit: Sept. 18-20, 2018



- Kim – Moon signed military agreement
- Kim said he will denuclearize and concentrate fully on the economy
- Frustrated with continued skepticism in US
- Offered space launch site as concession – looked to cooperation with the South
- Only give up weapons at the end when peace treaty is signed

January 1, 2019



- Neither make or test nuclear weapons any longer.
- Not use or proliferate them.
- With President Moon, turn the Korean Peninsula into a land of peace free of nuclear weapons and nuclear threats.

Biegun lays out sensible path in January 2019

Special Representative Stephen Biegun
Stanford University, Jan. 31, 2019

- Trump deeply and personally committed to peace in Korea.
- Trump and Kim taken top-down approach to fundamentally transform relations between two countries.
- Kim has promised dismantlement and destruction of North Korea's plutonium and uranium enrichment facilities and more.
- Need a roadmap of working-level negotiations that will be essential.
- U.S. is now prepared for or is committed to parallel and simultaneous action with the North Koreans.





Hanoi Summit
Feb. 27 & 28, 2019

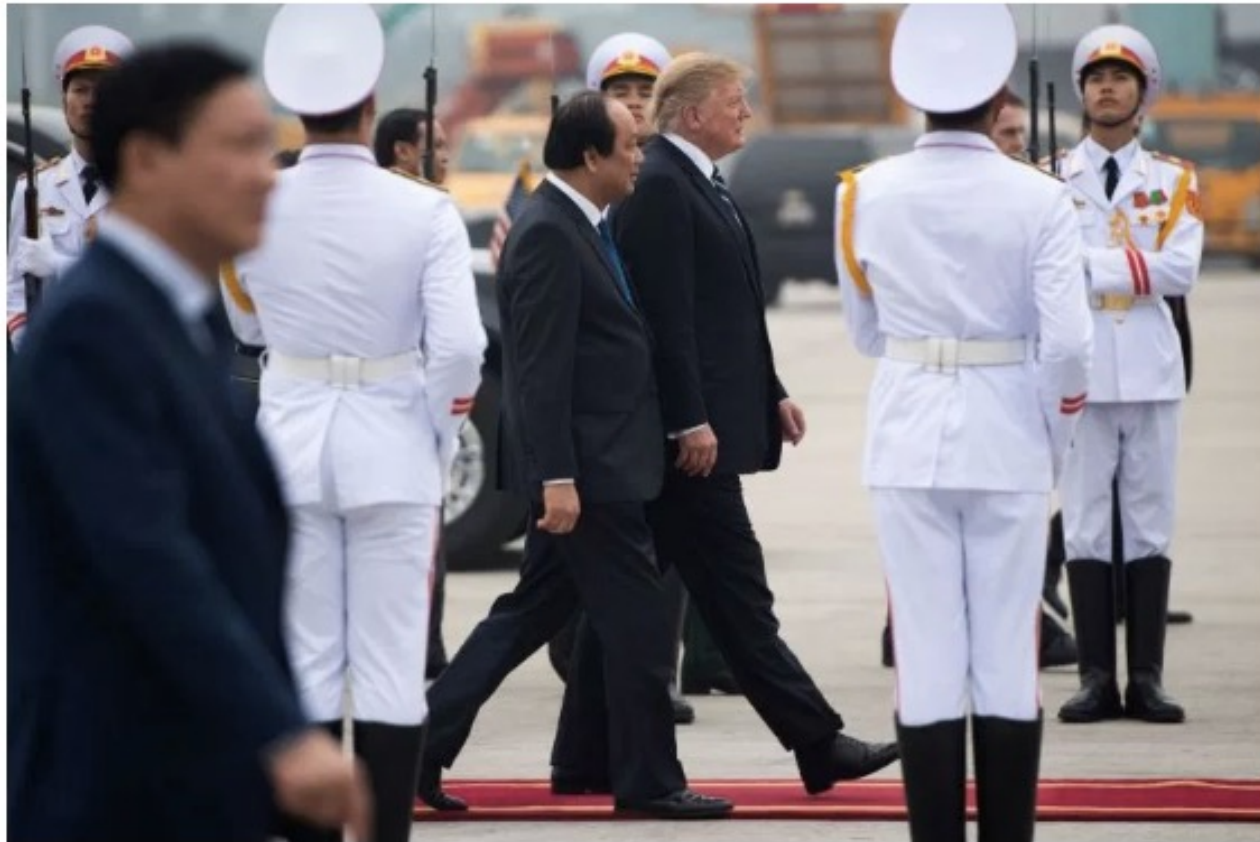


ELEPHANTS IN THE ROOM

Trump Was Right to Walk Away

In resisting the temptation to make a bad deal, he avoided failure at the Hanoi summit.

BY PETER FEAVER | FEBRUARY 28, 2019, 6:46 PM



U.S. President Donald Trump departs his summit with North Korean leader Kim Jong Un in Hanoi on Feb. 28. (Saul Loeb/AFP/Getty Images)

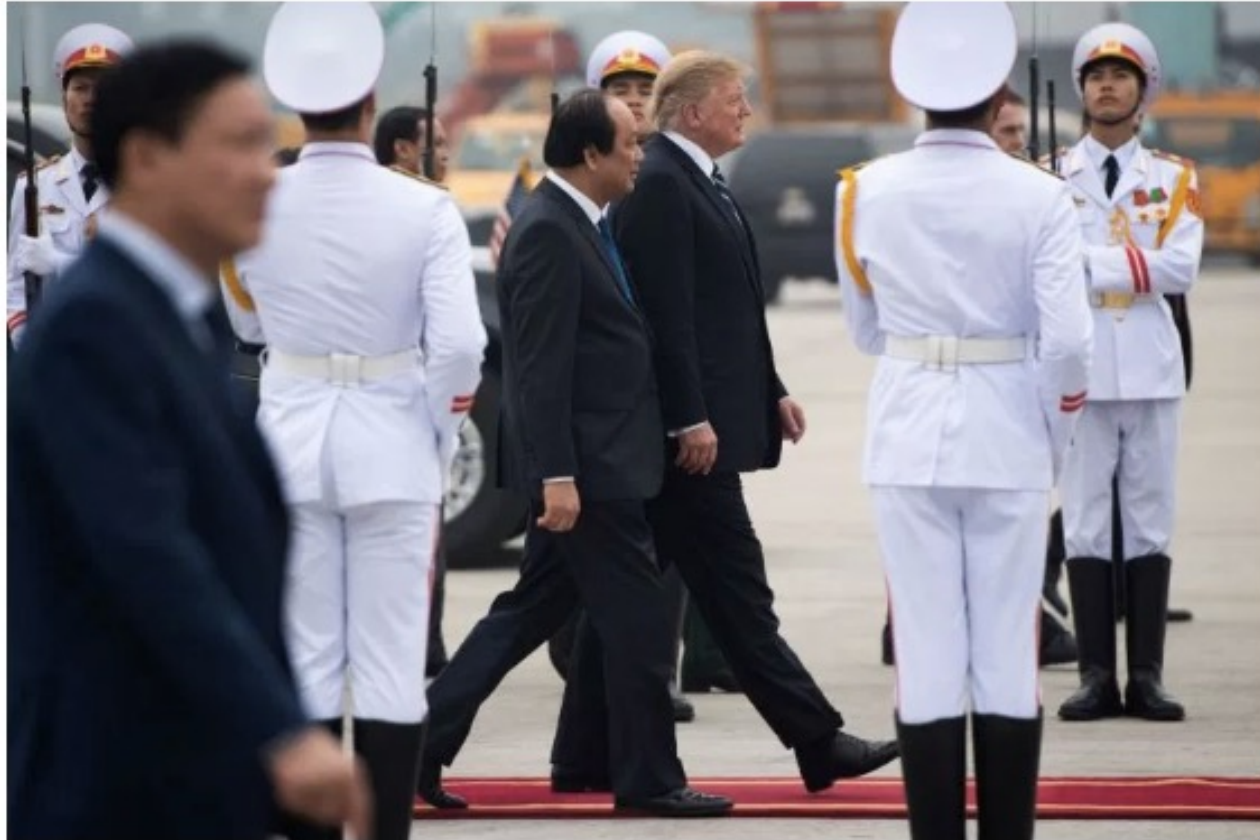
Hanoi was seen as partial denuclearization for full sanctions relief

ELEPHANTS IN THE ROOM

Trump Was Right to Walk Away

In resisting the temptation to make a bad deal, he avoided failure at the Hanoi summit.

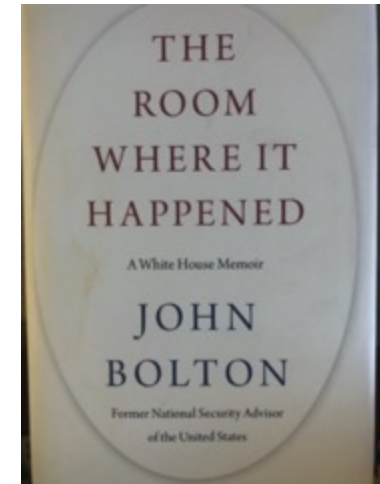
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U.S. President Donald Trump departs his summit with North Korean leader Kim Jong Un in Hanoi on Feb. 28. (Saul Loeb/AFP/Getty Images)

But was he, really? Hanoi was another hinge point

Hanoi Summit Feb. 27 & 28, 2019



Choe and Ri had a very different take. This chance may never come again.



Hanoi was another hinge point

- Kim's letter to Trump. Kim's actions on nuclear test and long-range missile moratorium. The commitments at the Pyongyang Summit had him confident he could strike a deal.
- Kim erred in not having his working team negotiate details with Biegun and team before summit.
- Shutting down Yongbyon and getting inspectors back in would have huge benefits.
- Trump team never explored the shutting down of the Nuclear Weapons Institute.
- The sanctions relief request should have been probed.

Yongbyon was not only nuke facility, but not old and obsolete

Hanoi could have been big step

Governs size of
arsenal

**Bomb-grade
Pu or HEU**

- Reactors (**Pu**)
- Enrichment (**HEU**)

Hydrogen bombs

- Tritium
- Deuterium
- Li-6D

Uranium mining
Yongbyon
Covert centrifuges

Yongbyon as first step

Governs sophistication
of arsenal

Weaponization

- Physics, computers
- High explosives
- Detonators
- Initiators
- Machining
- Assembly
- Explosives tests
- Arming, fuzing, firing
- Nuclear testing

Nuclear weapons institute
Manufacturing & assembly
Weapon storage sites
Punggye-ri test site

No nuclear testing

Governs threat
arsenal poses

Delivery system

- Plane
- Boat
- Van
- Missiles

Missile factories
Missile bases

No long-range missile testing

Trump and Kim at DMZ – friends, but no progress.

June 30, 2019



Sanctions and relying on China

- Sanctions have made life more difficult for the Kim regime and much more difficult for ordinary North Koreans.
- They have not been able to stop the nuclear program nor bring the regime to its knees
- For sanctions you need China.
- To rely on China to solve our North Korea problem is not realistic