

# GREAT DECISIONS – WEEK 8 – NUCLEAR SECURITY

## Acronyms, abbreviations and such

**IAEA**—International Atomic Energy Agency

**ICBM**—Intercontinental Ballistic Missile

**NPT**—Non-Proliferation of Nuclear Weapons Treaty (Lyndon Johnson was President)

**SLBM**—Submarine-Launched Ballistic Missile

**Ayatollah Khamenei:** Supreme leader of Iran since 1989, with control over the executive, legislative and judicial branches of government, the media and the military.

**Benjamin Netanyahu:** Prime minister of Israel since 2009, and previously from 1996–99.

**Incirlik Air Base:** Airbase located in Adana, Turkey, used by coalition forces to launch airstrikes against ISIS in Iraq and Syria.

**Joint Comprehensive Plan of Action (JCPOA)** (a.k.a. Iran nuclear deal): The nuclear agreement reached between Iran, the EU, U.S., Russia, France, China, Britain and Germany, in 2015 and implemented in 2016. Iran agreed to limitations and international inspections of its nuclear program. In exchange, the EU, U.S. and UN would lift economic sanctions on the country.

**Kim Jong Un:** Supreme nuclear leader of North Korea. He inherited the position upon his father's death in 2011.

**Mahmoud Ahmadinejad:** President of Iran (2005–13). Ahmadinejad's presidency was partly characterized by a hardline stance on Iran's nuclear program, and negative rhetoric against the U.S. and Israel, claimed the Holocaust never happened..

**New START (Strategic Arms Reduction Treaty):** An agreement between the U.S. and Russia to reduce nuclear arms, ratified in 2011. It succeeded the Treaty of Moscow (SORT), a similar agreement that would have expired in 2012.

**Treaty on the Nonproliferation of Nuclear Weapons (NPT):** An international treaty intended to prevent nuclear proliferation. It came into effect in 1970, and today has 191 signatories. **Non-signatories include India, Israel, Pakistan and North Korea.**

**Tsar Bomba:** Refers to a nuclear bomb tested by the Soviet Union in 1961. Tsar Bomba, officially, RDS-220—is the most powerful nuclear weapon ever detonated.

# HIGHLIGHTS OF THE CHAPTER

In 2015, the US, Iran and five other world powers reached a deal, known as the JCPOA, to prevent Iran from acquiring nuclear weapons. John Kerry said it would “make our citizens and our allies safer,” while President Trump called it “a disastrous deal” and that dismantling would be his “number one priority.”

In 1963, President Kennedy called the spread of nuclear weapons “one of the greatest hazards which man faces.” Since then, every US president has made nuclear non-proliferation a chief foreign policy objective.

How nuclear bombs work: splitting the nucleus of one atom, from which energy splits neighboring atoms, resulting in a chain reaction in the form of a nuclear explosion. The Hiroshima bomb had an energy equivalent of 15,000 tons of TNT. The biggest test has been a Russian bomb equivalent to 50 million tons of TNT, or roughly 3,300 times the size of Hiroshima. The largest bomb in the U.S. arsenal is equivalent to 1.2 million tons of TNT, or about 1/50<sup>th</sup> the size of Russia's. (NOTE: My suspicion is that we have a hydrogen bomb that is almost 100 million tons of TNT, or double the size of Russia's.)

How nuclear bombs are made: constructing the bomb is relatively simple, but obtaining the material required for the fission reaction is difficult. The two main components are plutonium 239 and uranium 235. Plutonium 239 needs to be extracted from spent uranium fuel rods used in nuclear reactors. Uranium 235 exists on its own but has to be separated from natural uranium in a process known as “enrichment.” Uranium 235 is the primary fuel source for nuclear reactors. A country that can enrich fuel for a reactor can obtain uranium 235.

There are 9 countries with nuclear weapons: **U.S., Britain, France, Israel, Pakistan, India, China, Russia, N. Korea.** Iran is getting close \*. There are 8 countries with *plutonium reprocessing capabilities*: **Britain, France, India, Pakistan, Russia, China, N. Korea and Japan.** (NOTE: It would be safe to assume that both the U.S. and Israel have similar facilities though they aren't indicated in the chapter.)

\* There has been speculation that Iran is close to having nuclear weapons since 1974. In 2006, Ahmadinejad announced that they had successfully enriched uranium. In 2013, Netanyahu declared that Iran was merely weeks away from nuclear weapons capability.

By 2015, Iran's centrifuge inventory was around 19,000. Centrifuges are a central part of the enrichment process. (NOTE: If you want to see what this process is all about, go to <http://science.howstuffworks.com/uranium-centrifuge.htm>.)

The 5 key commitments under the **JCPOA** signed in 2015 are: (1) Limit on # of centrifuges to about 5,000; and are restricted to only one location in Natanz. (2) Limit enrichment purity level for 15 years to 3.67%, good enough for power plants. (3) Limit uranium stockpile to 300 kilograms from the 10,000 kilograms they had in 2015. (4) Constrain plutonium production – no reprocessing allowed. (5) Allow inspections & monitoring. The U.S. trade embargo with Iran remains in place.

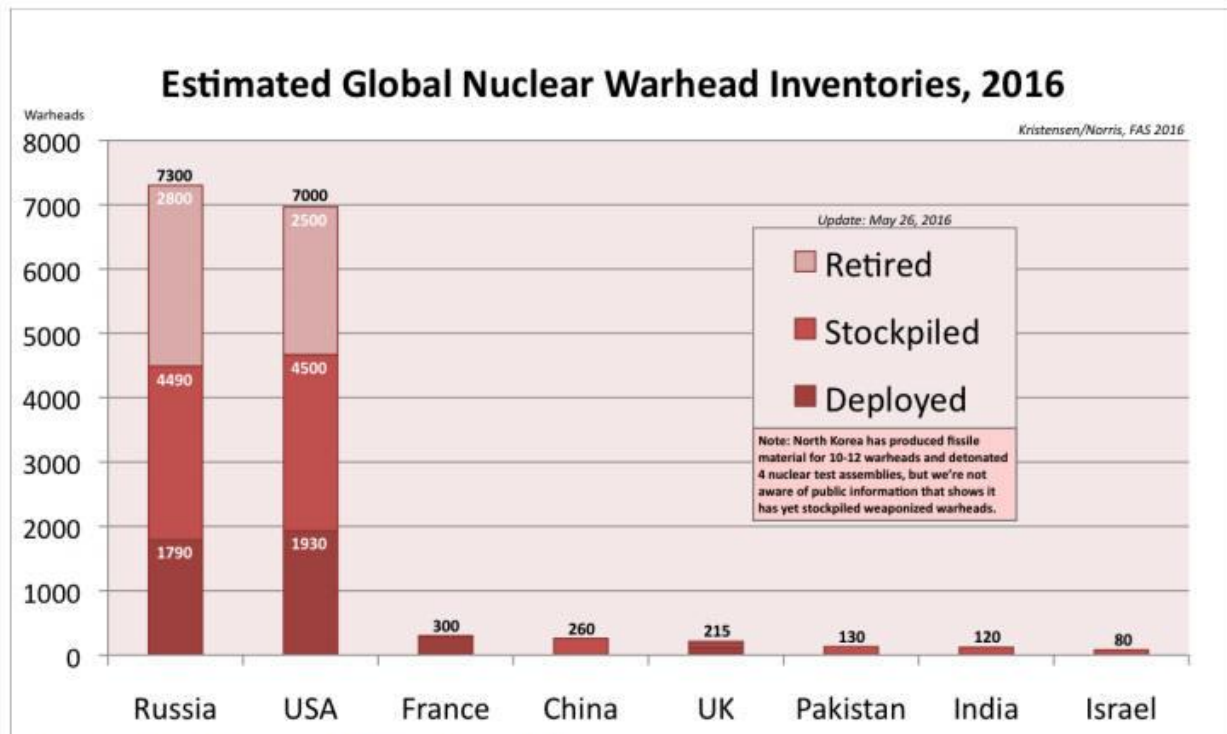
Objections to the JCPOA is that Iran may already have a secret nuclear facility not included in the deal. Another is the 15 year limit instead of making it permanent. Another is returning \$100 billion in assets gives Iran the economic wherewithal to augment its program in the future. And another is that the deal sends a signal of weakness on the part of the U.S. John Bolton, U.S. Ambassador to the UN, called the deal “the worst act of appeasement in American history.” Trump said, “They are going to have nuclear weapons. They are going to take over parts of the world that you wouldn't believe. And I think it's going to lead to nuclear holocaust.” Netanyahu called the deal “a stunning, historic mistake.” Trump also said he wants to renegotiate the deal and the new CIA director, Mike Pompeo, said he looks “forward to rolling back this disastrous deal with the world's largest state sponsor of terrorism.”

North Korea has gone in the opposite direction of Iran by continually provoking the world with its nuclear tests with 2 in 2016 and at least 1 or more in 2017. The UN as well as the U.S., the EU and a number of other countries have imposed all sorts of sanctions on N. Korea. A director of the US-Korea Institute at Johns Hopkins said “no amount of sanctions will stop N. Korea. Nuclear weapons are their sole survival strategy.” China is not so interested in the economic sanctions and has recently opened a high-speed rail line to N. Korea and new shipping routes to boost its import of N. Korean coal. How can the Trump administration cope with Kim Jung Un? First, decide what level of nuclear development is unacceptable. **Kim will laugh at this.** Next, what technological milestones it is unwilling to let N. Korea reach. **As if Kim cares what the administration determines in unacceptable.** Next, military force is an option. This could spell disaster for S. Korea which would suffer devastating attacks. If China or Russia were willing to come to the aid of a U.S. preemptive strike, Kim might back down.

Like the Afghanistan situation, there are a few alternatives for Trump's administration: (1) accept N. Korea's nuclear status and rely on deterrence to contain the threat, the status quo option. (2) focus on reinforcing U.S. commitments to defend its allies in Northeast Asia. (3)

Trump’s suggestion that the U.S. withdraw from both S. Korea and Japan and leave the two countries to develop their own nuclear weapons “to protect themselves or they are going to have to pay us” which prompted furious reactions from both countries’ leaders. None of these options seems very likely to work given Kim’s frame of mind.

Nuclear weapons at home and abroad:





Source: Kristensen/Norris, Federation of American Scientists

What is the nuclear triad? The three delivery platforms are 450 ICBMs built in 1977, SLBMs, and strategic bombers, mainly the 76 B-52H’s that were built in the 1960s. Average age of a U.S. nuclear warhead is 30 years old. We cannot assess their reliability because of a moratorium on nuclear testing. The Obama administration cost to modernize this arsenal was more than \$1 trillion over the next 30 years. John McCain said “it’s very, very, very expensive.” A nuclear expert at the Monterey Institute of International Studies said simply “there isn’t enough money” to fund the entire effort. Also modernizing was in conflict with nuclear arms reductions. The new START agreement was reached with Russia in 2010. **However,** deteriorating relations with Russia convinced Obama to maintain a high priority on nuclear weapons.

Nuclear weapons abroad: In the 1970s, the number of U.S. nuclear weapons abroad was around 7,000. The US says that it spends about \$100 million annually to maintain nuclear

weapons in Europe, not counting the cost of the estimated 3,000 people directly involved in security, maintenance, and command and control. While an exact count won't be released, there are U.S. weapons stored in at least 5 countries as part of a "nuclear sharing" policy. The B61 is a 340 kiloton gravity bomb (equal to 340,000 tons of TNT or 20x the Hiroshima bomb). (NOTE: The newest B61 gravity bomb (a bomb that falls by gravity rather than a guidance system) has been tested at Nellis AFB in April 2017 but not with a nuclear warhead inside, only the non-nuclear components, such as the arming and fire control system, radar altimeter, rocket motors and weapons control computer, as well as the aircraft's capability to deliver the weapon were reviewed.)

**Weapons provided for nuclear sharing (2015)**

Country ↕	Base ↕	Estimated ↕	Bombs ↕
 Belgium	Kleine Brogel	10~20	B61
 Germany	Büchel	>=20 <sup>[2]</sup>	B61
 Italy	Aviano	50	B61
 Italy	Ghedi	20~40	B61
 Netherlands	Volkel	10~20	B61
 Turkey	Incirlik	50~90	B61
<b>5 nations</b>	<b>6 bases</b>	<b>160~240</b>	<b>B61</b>

**POINTS TO PONDER:**

1. Is the JCPOA with Iran a good deal, a bad deal, or the best we can do with Iran? Are you worried that the Iranians will simply ignore the deal and do what they want anyway?
2. What should our policy be toward North Korea? Take out Kim Jung Un, nuke 'em, let them build their defense system, try to get China to defuse the situation?
3. Should we be worried about terrorists getting their hands on nuclear weapons? Why or why not?
4. Does putting our nuclear weapons in NATO countries serve as a deterrent or as a liability to those countries?
5. How concerned are you about a nuclear holocaust in the rest of your lifetime? Where would it start and how will it end?