



Nuclear Weapons: Behind the President's Greatest Power

Michael Greig

Professor, Department of Political Science

Senior Fellow, Castleberry Peace Institute

University of North Texas

Nuclear Stakes



A SIMULATION

**Nuclear war between
the US and Russia**

Could It Happen?

- 8:50am: NORAD, Strategic Air Command command post at Offut Air Force Base (NE), National Military Command Center, and Raven Rock Military Complex each **detect a large number of ballistic missiles from Russia with a trajectory toward the United States**
 - National Security Advisor is informed that 250 ballistic missiles are headed to the U.S.
 - Retaliation decision required in 3-7 minutes
 - NORAD updates incoming missile count to 2200
- What happens next?



November 9, 1979

- Computer errors caused U.S. military command to believe that a Soviet attack was in progress
- U.S. strategic bombers prepared for takeoff
- President's National Emergency Airborne Command Post
- No contact with Soviets
- NORAD contacted PAVE PAWS early warning radar, no sign of missiles
- Soviet leader Leonid Brezhnev: “fraught with a tremendous danger” “I think you will agree with me that there should be no errors in such matters.”



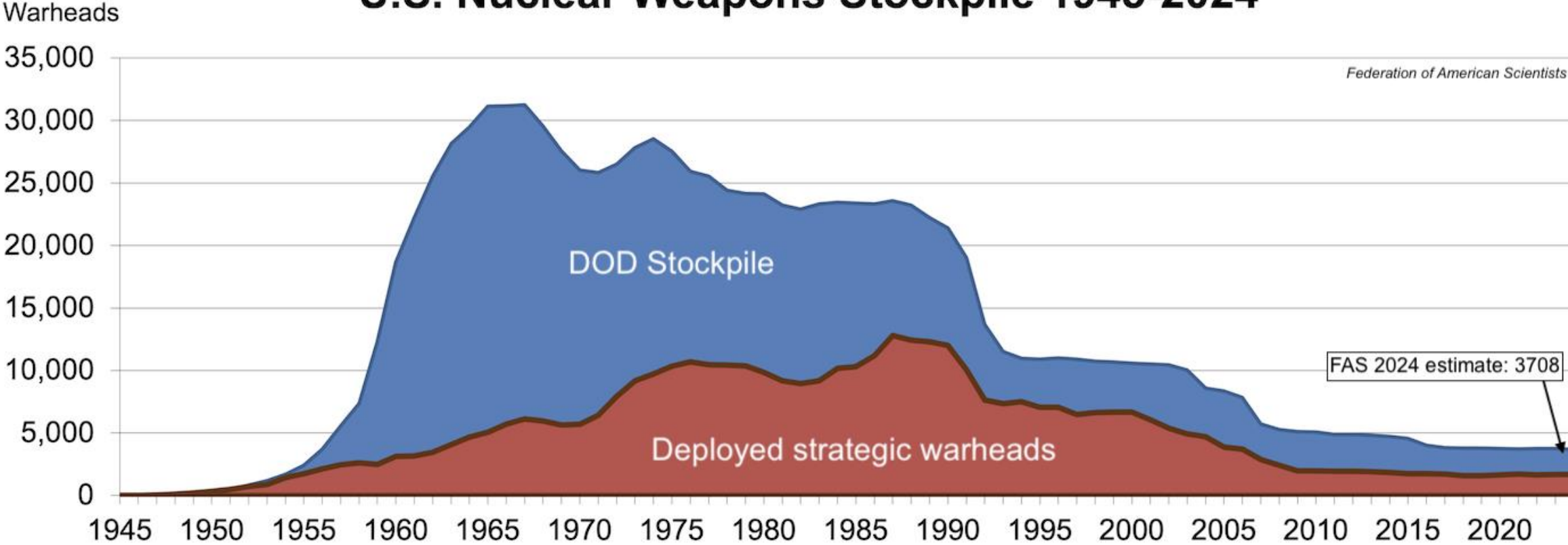
Norwegian Rocket Incident

– January 25, 1995

- Team of American and Norwegian scientists launch a Black Brant XII rocket from the NW coast of Norway to study the aurora borealis
- Russian Olenegorsk early warning radar station detects rocket and believes that it is a U.S. submarine-launched Trident missile
- Russia fears EMP attack
- Russia goes on full alert



U.S. Nuclear Weapons Stockpile 1945-2024



Federation of American Scientists

FAS 2024 estimate: 3708

Sources: U.S. Department of Defense, Federation of American Scientists, Natural Resources Defense Council

Table 1. United States nuclear forces, 2024.

Type/Designation	No. of launchers	Year deployed	Warheads x yield (kilotons)	Warheads (total available) ^a
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1–3 W78 × 335 (MIRV)	600 ^b
Mk-21/SERV	200	2006 ^c	1 W87 × 300	200 ^d
Total	400^e			800^f
SLBMs				
UGM-133A Trident II D5/LE 14/280 ^g				
Mk-4A		2008 ^h	1–8 W76–1 × 90 (MIRV)	1,511 ⁱ
Mk-4A		2019	1–2 W76–2 × 8 (MIRV) ^j	25 ^k
Mk-5		1990	1–8 W88 × 455 (MIRV)	384
Total	14/280			1,920^l
Bombers				
B-52H Stratofortress	76/46 ^m	1961	ALCM/W80–1 × 5–150	500
B-2A Spirit	20/20	1994	B61–7 × 10–360/-11 × 400/-12 × 50 B83–1 × low-1,200	288
Total	96/66ⁿ			788^o
Total strategic forces				
3,508				
Nonstrategic forces				
F-15E, F-16C/D, F-35A	n/a	1979	1–5 B61–3/-4/-12 bombs x 0.3–170 ^p	200
Total				200^q
Total stockpile				
3,708				
Deployed				1,770 ^r
Reserve (hedge and spares)				1,938
Retired, awaiting dismantlement				1,336
Total Inventory				
5,044				

Table 1. United States nuclear forces, 2024.

Type/Designation	No. of launchers	Year deployed	Warheads x yield (kilotons)	Warheads (total available) ^a
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1–3 W78 × 335 (MIRV)	600 ^b
Mk-21/SERV	200	2006 ^c	1 W87 × 300	200 ^d
Total	400^e			800^f
SLBMs				
UGM-133A Trident II D5/LE 14/280 ^g				
Mk-4A		2008 ^h	1–8 W76–1 × 90 (MIRV)	1,511 ⁱ
Mk-4A		2019	1–2 W76–2 × 8 (MIRV) ^j	25 ^k
Mk-5		1990	1–8 W88 × 455 (MIRV)	384
Total	14/280			1,920^l
Bombers				
B-52H Stratofortress	76/46 ^m	1961	ALCM/W80–1 × 5–150	500
B-2A Spirit	20/20	1994	B61–7 × 10–360/-11 × 400/-12 × 50 B83–1 × low-1,200	288
Total	96/66ⁿ			788^o
Total strategic forces				
				3,508
Nonstrategic forces				
F-15E, F-16C/D, F-35A	n/a	1979	1–5 B61–3/-4/-12 bombs x 0.3–170 ^p	200
Total				200^q
Total stockpile				
Deployed				1,770 ^r
Reserve (hedge and spares)				1,938
Retired, awaiting dismantlement				1,336
Total Inventory				5,044

Table 1. United States nuclear forces, 2024.

Type/Designation	No. of launchers	Year deployed	Warheads x yield (kilotons)	Warheads (total available) ^a
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1–3 W78 × 335 (MIRV)	600 ^b
Mk-21/SERV	200	2006 ^c	1 W87 × 300	200 ^d
Total	400^e			800^f
SLBMs				
UGM-133A Trident II D5/LE 14/280 ^g				
Mk-4A		2008 ^h	1–8 W76–1 × 90 (MIRV)	1,511 ⁱ
Mk-4A		2019	1–2 W76–2 × 8 (MIRV) ^j	25 ^k
Mk-5		1990	1–8 W88 × 455 (MIRV)	384
Total	14/280			1,920^l
Bombers				
B-52H Stratofortress	76/46 ^m	1961	ALCM/W80–1 × 5–150	500
B-2A Spirit	20/20	1994	B61–7 × 10–360/-11 × 400/-12 × 50 B83–1 × low-1,200	288
Total	96/66ⁿ			788^o
Total strategic forces				
				3,508
Nonstrategic forces				
F-15E, F-16C/D, F-35A	n/a	1979	1–5 B61–3/-4/-12 bombs x 0.3–170 ^p	200
Total				200^q
Total stockpile				
Deployed				3,708
Reserve (hedge and spares)				1,770 ^r
Retired, awaiting dismantlement				1,938
				1,336
Total Inventory				
				5,044

Table 1. United States nuclear forces, 2024.

Type/Designation	No. of launchers	Year deployed	Warheads x yield (kilotons)	Warheads (total available) ^a
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1–3 W78 × 335 (MIRV)	600 ^b
Mk-21/SERV	200	2006 ^c	1 W87 × 300	200 ^d
Total	400^e			800^f
SLBMs				
UGM-133A Trident II D5/LE 14/280 ^g				
Mk-4A		2008 ^h	1–8 W76–1 × 90 (MIRV)	1,511 ⁱ
Mk-4A		2019	1–2 W76–2 × 8 (MIRV) ^j	25 ^k
Mk-5		1990	1–8 W88 × 455 (MIRV)	384
Total	14/280			1,920^l
Bombers				
B-52H Stratofortress	76/46 ^m	1961	ALCM/W80–1 × 5–150	500
B-2A Spirit	20/20	1994	B61–7 × 10–360/-11 × 400/-12 × 50 B83–1 × low-1,200	288
Total	96/66ⁿ			788^o
Total strategic forces				
Nonstrategic forces				
F-15E, F-16C/D, F-35A	n/a	1979	1–5 B61–3/-4/-12 bombs x 0.3–170 ^p	200
Total				200^q
Total stockpile				
Deployed				1,770 ^r
Reserve (hedge and spares)				1,938
Retired, awaiting dismantlement				1,336
Total Inventory				5,044

U.S. Nuclear Posture Review (2022)

- “U.S. nuclear weapons deter aggression, assure allies and partners, and allow us to achieve Presidential objectives if deterrence fails. In a dynamic security environment, a safe, secure, and effective nuclear deterrent is foundational to broader U.S. defense strategy and the extended deterrence commitments we have made to allies and partners.”



Role of Nuclear Weapons in U.S. National Security Strategy (2022 NPR)

- “Deter strategic attacks”
- “Assure Allies and partners” – extended deterrence
- “Achieve U.S. objectives if deterrence fails”



Logic of Nuclear Deterrence

- A policy that seeks to persuade an adversary, through the threat of nuclear retaliation, that the costs of an action will outweigh the benefits of that action

Requirements for Nuclear Deterrence



Cold War Nuclear Deterrence & Today

- ***Mutual Assured Destruction (MAD)***
 - Massive retaliation
 - Maximization of enemy's pain

Strategic Approaches to Nuclear Weapons

- ***Second-strike capability*** – ability to absorb a first-strike by an opponent and retain enough nuclear weapons to inflict a devastating retaliatory strike on an opponent
 - Requires invulnerable strategic forces
- ***First-strike capability*** – ability to use nuclear weapons to destroy an opponent before they can inflict unacceptable retaliatory costs on you

Separation of War-Making Powers: Congress & the President

- Congress has the authority to declare war, “raise and support armies”, “provide and maintain a navy”
- Article II of the Constitution says the: “President shall be Commander in Chief of the Army and Navy of the United States, and of the Militia of the several States.”
- As commander in chief, the president has “command of the forces and the conduct of military campaigns.”
 - Battlefield decisions
- Battle of the powers: War declaration vs. commander-in-chief



What Powers Does the President Have in the Use of Nuclear Weapons?

- U.S. law does not specifically address power to use nuclear weapons
- President as commander-in-chief has the authority to use nuclear weapons in defense of the United States
 - Nuclear sole
 - “Nuclear monarch”
 - Nuclear retaliation vs. nuclear first use



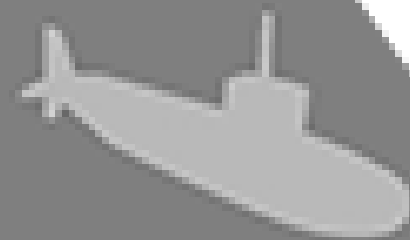
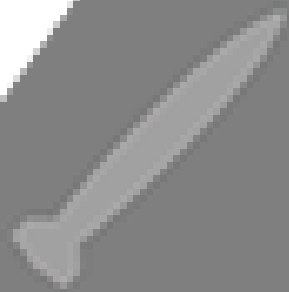
Strategic Logic for Presidential Nuclear Sole Authority

- Nuclear deterrence only works if an adversary cannot expect to destroy an American nuclear retaliation capability in a first strike
 - “Sucker punch” threat
- Danger is actually more powerful
 - What should the U.S. do if it fears that an adversary thinks it could win with a nuclear “sucker punch”?
 - Crisis escalation
- U.S. nuclear triad was an effort to solve this problem





U.S. Nuclear Triad

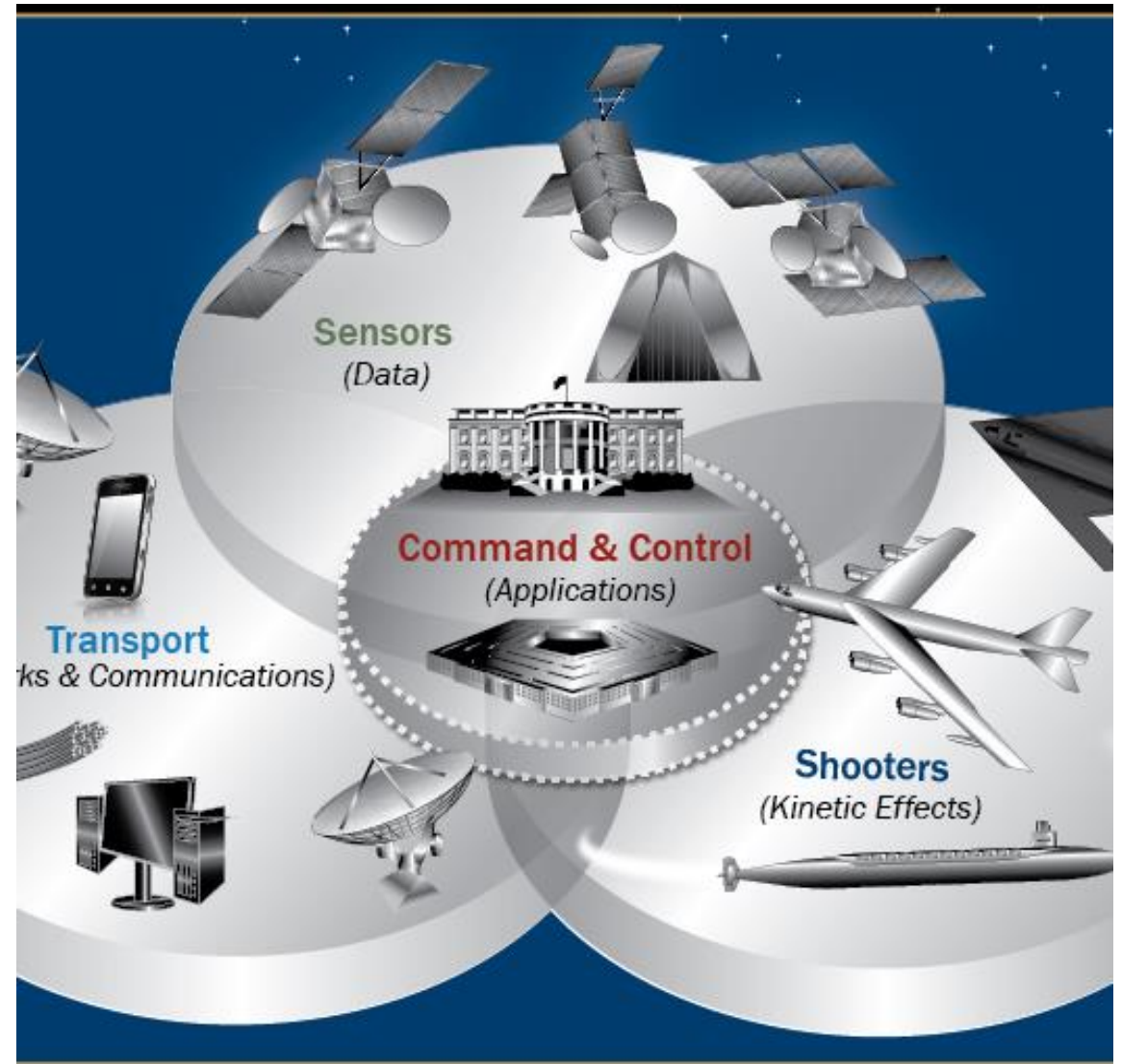


How Does a Presidential Order to Launch Nuclear Weapons Work?

- Executive branch authorities and procedures for nuclear weapons developed during the Cold War
 - Emphasized speed over deliberation
- Nuclear Command and Control System (NC2) – provides president with means to authorize use of nuclear weapons
 - Highly classified
 - 2 Phases:
 - Preplanning
 - Decision & execution

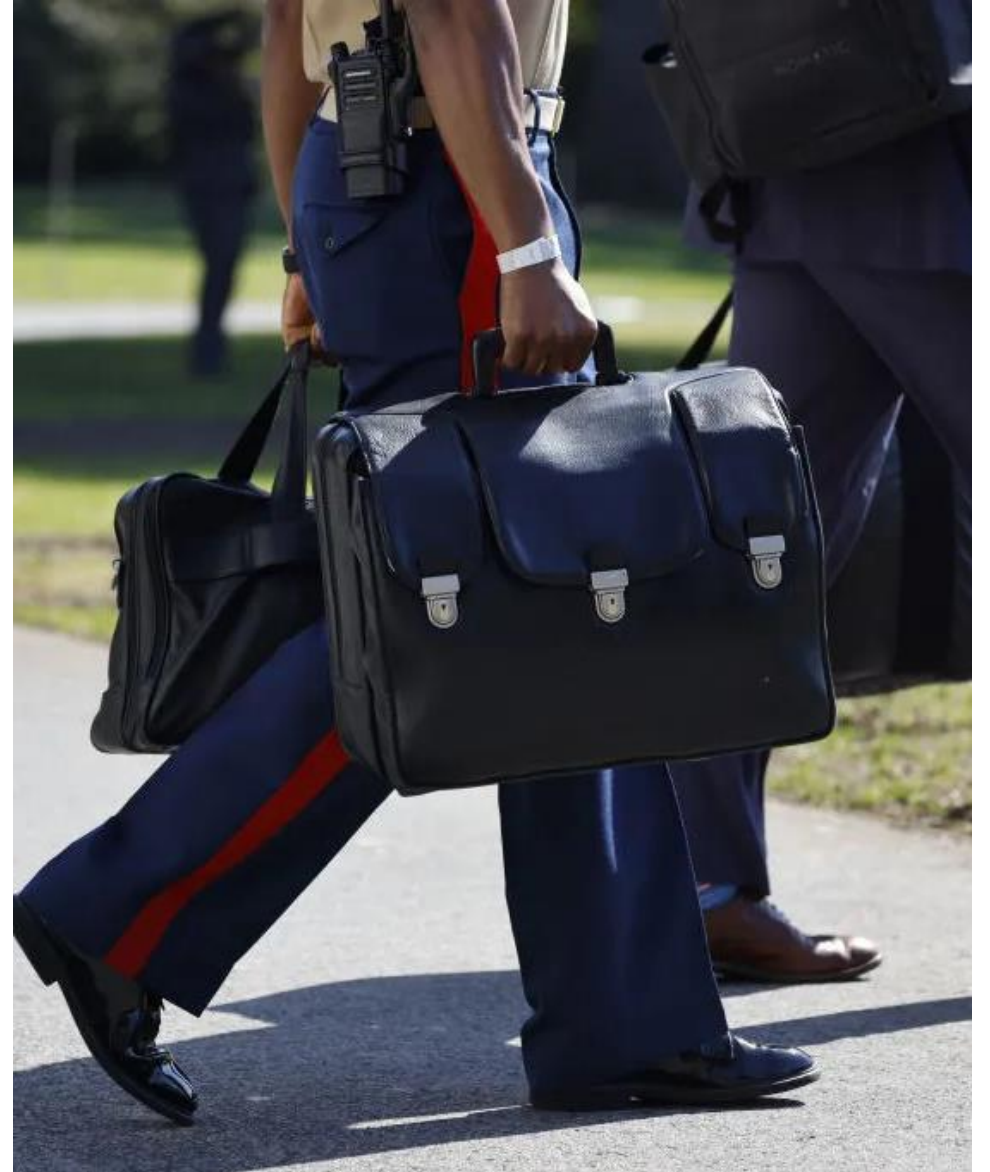
Nuclear Command, Control, Communications System (NC3S) – Decision & Execution Phase

- Before a nuclear launch, president **can** consult with advisors, but is not required to do so
 - No formal structure for consultations
- Decision to launch nuclear weapons is the president's alone
 - Cannot be overruled
- Once a president orders a nuclear launch, process becomes structured and automatic



Presidential Emergency Satchel: The Nuclear Football

- With the president at all times; carried by a military aide
- Effectively, a secure brief case that contains the “Black Book” written information on:
 - Nuclear targets around the world
 - Which U.S. nuclear weapons can destroy those targets
- President also carries the “biscuit”
 - Packet of authentication codes to authorize a nuclear attack



Scenario: Launch Under Attack

- U.S. early warning systems detect incoming enemy missiles or bombers toward the American homeland
 - U.S. early warning system designed to give “unambiguous, reliable, accurate, timely, survivable and enduring” warning of attack
- President notified if confidence in attack is medium or greater
- President would receive information on attack and options for response
 - Less than 10 minutes for decision
- If president chooses nuclear launch, order communicated to the Pentagon and Strategic Air Command



Communicating a Nuclear Launch Order

- President accesses information in the “nuclear football”
 - Carries nuclear command options
 - President chooses preferred option
- Once an option is chosen, order is communicated to the Emergency Action Team
 - Includes at least one senior military official
- Two members of the Emergency Action team verify order
 - Verification is not approval, simply verifies order came from the president
 - Translates presidential decision into a military order

From Verification to Nuclear Action

- Once Defense Department verifies the presidential order, it is communicated to the nuclear triad
 - Short message – “length of a tweet”
- Redundancy: A verified order goes to 5 land-based nuclear missile crews and at least 1 submarine crew
 - Land-based crews verify order as legitimate using sealed-authenticational system codes (SAS)
 - Crews enter launch plan, unlock missiles, two keys required to launch
 - Submarine crews require captain, executive officer, and two crew members
- Time to launch: Land-based – 2 minutes; Submarine-based – 15 minutes
- No ability to recall or disarm missiles once launched



Why Does the U.S. Do It This Way?

- **Redundancy** – If an adversary believes that a U.S. retaliatory order might go unfollowed, deterrence is undermined
 - Return to the nuclear “sucker punch” problem
- **Lack of recall** – If a nuclear launch could be recalled or disarmed, an adversary could think that it could prevent or significantly mitigate nuclear retaliation
 - Return to the nuclear “sucker punch” problem

Scenario: First Use

- U.S. president decides to launch a first nuclear strike
 - Preempt enemy nuclear strike
 - Retaliate against conventional attack
 - Crisis escalation
- National security decisions typically involve deliberation with the National Security Council, including Secretary of State, Secretary of Defense, Chair of the Joint Chiefs, DNI, National Security advisor
 - Legal advice
 - No requirement that a president use this structure for a nuclear first use
- U.S. does **NOT** have a “no first use” policy & has left vague when it might use nuclear weapons first
 - “Extreme circumstances to defend the vital interests of the United State, its allies, and partners”
 - “These approaches would result in an unacceptable level of risk in light of the range of non-nuclear capabilities being developed and fielded by competitors that could inflict strategic-level damage to the United States and its Allies and partners.”



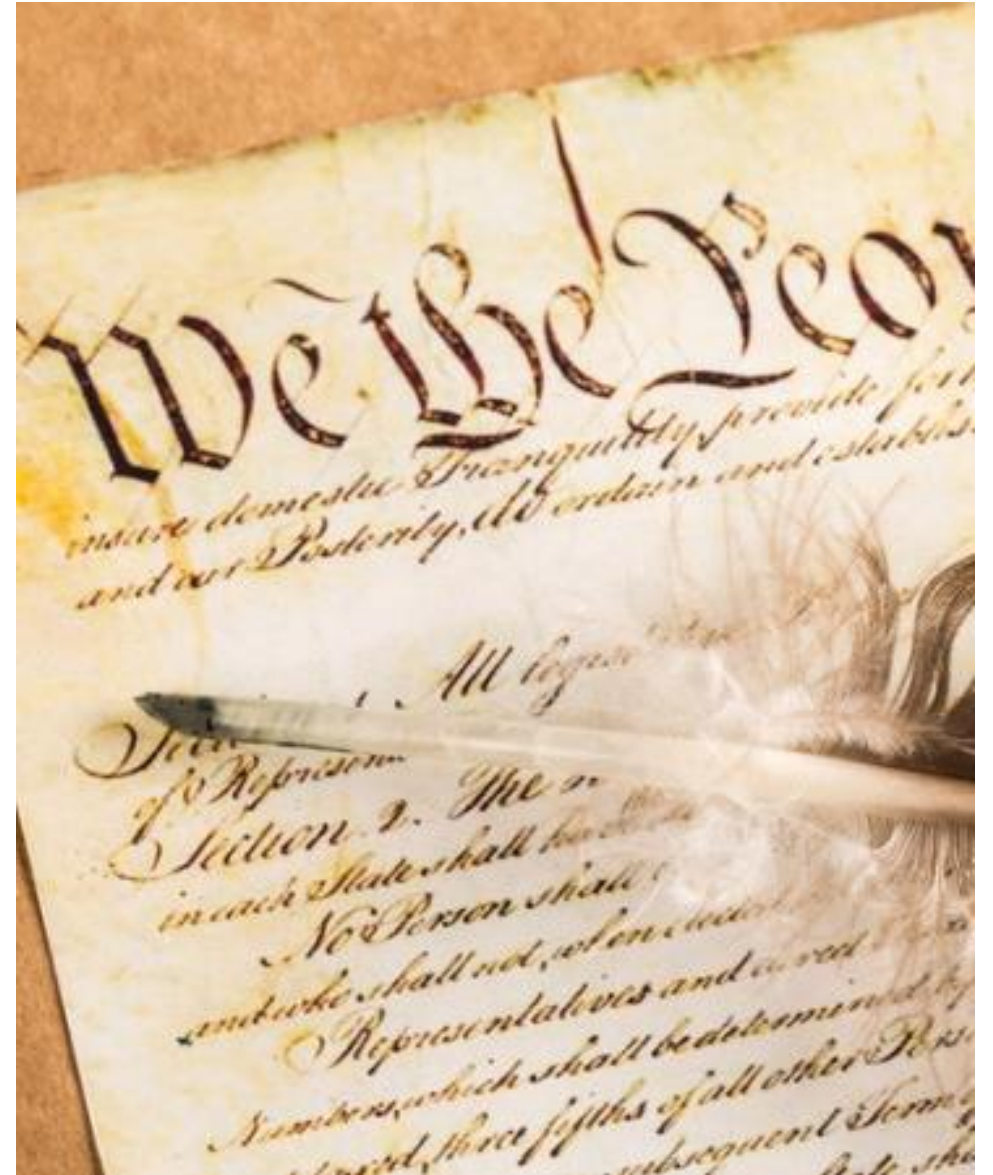
Why No “No First Use” Policy?

- Can limit potential for crisis initiation and escalation
 - If an adversary fears likelihood of a nuclear response, may avoid initiation
 - If an adversary fears likelihood of nuclear response after initiation, may avoid escalation
 - China vs. Taiwan; Russia vs. NATO
- Allows for “escalate to deescalate”
- Creates redline uncertainty
 - Conventional attack
 - Cyberattack



Potential Existing Checks on Presidential Power to Use Nuclear Weapons

- Congress
 - Launch Under Attack – Courts clear on president’s authority to use military force in response to attack (Prize Cases)
 - First Use – Not unreasonable to argue that Congressional authorization necessary
 - Key issue: Enforcement
- U.S. Military Personnel
 - Personnel obliged to follow lawful orders, obligated to refuse unlawful orders
 - How do you identify an unlawful order? – Not just debatable
- 25th Amendment – allows transfer of presidential power if “unable to discharge the powers and duties of his office”. No clear standard
 - President can contest charge of incapacity; Vice-president & cabinet can reassert
 - 2/3 vote of the House & Senate
 - Timing impractical



Proposed Limitations on Presidential Power to Use Nuclear Weapons

- Require Congressional declaration of war and express authorization for nuclear strike for a U.S. first use
- Procedural requirements - Secretary of Defense certifies that:
 - Order came from the president
 - Attorney General was involved in the decision
 - Order is legal
- First use requires concurrence from a Senate-confirmed official
 - Secretary of Defense
 - Chair of the Joint Chiefs of Staff OR
 - Speak of the House, President Pro Tempore of the Senate
- Nuclear football access → decision conference
 - Set of principals convene
 - Must vote to certify





American Nuclear Modernization

- \$750B nuclear modernization
- Land: \$96B overhaul of American land-based nuclear weapons
 - Replace 60-year old launch systems
 - Shift from hardwired, closed loop system to one with connections for those who maintain, support, operate, secure the Sentinel system
- Submarine: Columbia-class to replace Ohio-class
 - \$130B
 - 12 new submarines
 - 2027-2040; ~1 per year
- Bomber: B-21 Raider
 - 100 stealth bombers
 - First in 30 years

Most Significant Potential U.S. Nuclear Flashpoints

Russia:

Ukraine, Eastern Europe, Baltics

China:

Taiwan, South China Sea

North Korea

Where Does
this Leave
Us?

YOUR

 **OTE**

COUNTS