All the King's Weapons

Nuclear Launch Authority in the United States

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The statements made and views expressed are solely the responsibility of the author. Please direct all inquiries to Mackenzie Knight-Boyle, Senior Research Associate for the Nuclear Information Project, Federation of American Scientists (mknight@fas.org).

Contents

Acronyms and Abbreviations

CJCS	chairman of the Joint Chiefs of Staff
BMD	ballistic missile defense
DOD	Department of Defense
EAM	Emergency Action Message
GOC	Global Operations Center
ICBM	intercontinental ballistic missile
LOAC	Law of Armed Conflict
LOW	launch on warning
LUA	launch under attack
NAOC	National Airborne Operations Center
NC3	nuclear command, control, and communications
NMCC	National Military Command Center
NORAD	North American Aerospace Defense Command
NSC	National Security Council
PEOC	Presidential Emergency Operations Center
SAC	Strategic Air Command
SAS	Sealed Authenticator System
SLBM	submarine-launched ballistic missile
SSBN	nuclear ballistic missile submarine
STRATCOM	Strategic Command

Introduction

The president of the United States is the only person in the country who can order the use of nuclear weapons, a power known as "sole authority." This power is granted to the president largely through policy tradition, but it is typically supported legally by the president's Constitutional role as Commander-in-Chief. Sole authority was first codified in 1948 when the National Security Council (NSC) adopted the conclusions of NSC-30, which read: "The decision as to the employment of atomic weapons in the event of war is to be made by the Chief Executive when he considers such decision to be required."[1] The policy has since been reaffirmed in numerous official documents, including, most recently, the Department of Defense's 2024 Report to Congress on the Nuclear Employment Strategy of the United States, which states, "the Guidance reaffirms that the President remains the sole authority to direct U.S. nuclear employment."[2]

Despite its foundational place in U.S. nuclear policy, sole authority has for years come under heavy scrutiny by experts, journalists, and American citizens. Experts put out pieces warning of the dangers of such a system, people take to social media to remind their networks that "this is the guy with the nuclear codes" whenever the president acts in a concerning manner, and lawmakers even introduce legislation to try to constrain the president's authority. Recent polling by the Chicago Council on Global Affairs and Carnegie Corporation of New York found that 61% of Americans are either somewhat or very uncomfortable with the president having sole authority over nuclear launch decisions. [3]

Sole authority appears like a dangerous toy in the hands of unstable, unreliable, or erratic presidents. President Bill Clinton reportedly lost his nuclear authorization codes for months during his presidency.[4] Jimmy Carter rumoredly sent his codes to the dry cleaners in the pocket of his suit jacket. Following the assassination attempt against Ronald Reagan in 1981, Reagan was separated from his military aide, and all of his clothes, including the pants in which the card carrying his nuclear codes sat, were stripped in the hospital and thrown away. His codes were later recovered by the FBI from a hospital trash can.[5] Further, the mental and intellectual reliability of presidents has been questioned, with Reagan's formal Alzheimer's diagnosis coming just five years after he left office, JFK's known use of strong pain medications, Nixon's heavy drinking and erratic behavior leading up to his resignation, and Donald Trump's history of making flippant remarks and threats of nuclear use, to name a few.

Other concerns with presidential sole authority include the immense time and psychological pressure placed on presidents in crisis scenarios that hinders rational thinking, the challenge to democratic values posed by a system that places ultimate power in one individual's hands, the ethical and legal burden

1 National Security Council, "Staff Study Prepared by Representatives of the Special Committee of the National Security Council on Atomic Energy" (11 June 1952), accessed via Department of State, Office of the Historian, G/PM files, lot 68 D 349, "Use policy 1950–1955," https://history.state.gov/historicaldocuments/frus1952-54v02p2/d37

2 U.S. Department of Defense, Report to Congress on the Nuclear Employment Strategy of the United States (7 November 2024). https://media.defense.gov/2024/Nov/15/2003584623/-1/-1/1/REPORT-ON-THE-NUCLEAR-EMPLOYMENT-STRATEGY-OF-THE-UNITED-STATES.PDF

3 Lama El Baz, "Most Americans Are Uncomfortable with the Policy of Nuclear Sole Authority," Chicago Council on Global Affairs (16 August 2023), https://globalaffairs.org/commentary-and-analysis/blogs/most-americans-are-uncomfortable-policy-nuclear-sole-authority

4 Christopher Woody, "Bill Clinton once lost the nuclear codes for months, and a 'comedy of errors' kept anyone from finding out," Business Insider (3 January 2018), https://www.businessinsider.com/bill-clinton-lost-president-nuclear-codes-and-nobody-found-out-2018-1

5 Michael Dobbs, "The Real Story of the 'Football' That Follows the President Everywhere" (October 2014), Smithsonian Magazine, https://www.smithsonianmag.com/history/real-story-football-follows-president-everywhere-180952779/

placed on lower level military officials, and more. But before we can attempt to solve the broad "problem" of sole authority, a more thorough understanding of it is needed.

This report investigates how we arrived at this system of launch authority in the United States today. It traces the origins of sole authority to the earliest days of the nuclear age and follows the history of trial and error — with new procedures and systems added or abandoned as vulnerabilities were detected and new technology emerged — culminating in an assumption that we have arrived today at the optimal system for nuclear launch authority. This report interrogates that assumption first by providing an in-depth understanding of how the policy of sole authority works today and how the nuclear enterprise in the United States is set up to enable it, then by evaluating the risks and vulnerabilities that remain. Finally, the report analyzes the merits and drawbacks of policy proposals that have been put forward by experts and lawmakers to answer a crucial question: is sole authority solvable, or is it truly the best system possible for nuclear launch authority? If the latter, should we accept that reality?

I How did we get here?

The history of nuclear launch authority in the U.S.

> *"From the point of view of logic there was no reason why the President of the United States should have the decision on whether to use nuclear weapons. History had given him this power."*
>
> **PRESIDENT JOHN F. KENNEDY, 1962**[6]

Presidential nuclear launch authority was dramatically different at the dawn of the nuclear age than it is today, in both its limitations and justification. As the first president to have a nuclear arsenal at his disposal, Harry Truman grappled throughout his presidency with authority and control over nuclear weapons and laid the foundation for the policy of sole authority that the United States continues to operate today. In returning to the earliest days of Truman's introduction to the atomic bomb project and tracing the ins and outs of his decision-making throughout the following years, much can be learned about the foundational rationale for nuclear launch authority in the United States. An understanding of launch authority origins and early development helps answer some significant questions, like how the policy, process, and limitations of launch authority have evolved over time, what lessons can be learned from what has been tried and failed, and whether the assumptions and justifications upon which the policy was first founded and upheld through the decades still hold true today.

Origins of Presidential Authority

It is widely known that Harry Truman was kept in the dark about the Manhattan Project while Vice President, and that it was not until he became president in April 1945 following President Roosevelt's sudden death that he first learned of the Project's existence. Less than four months before the United States would drop the first atomic weapons on Hiroshima and Nagasaki, on April 25, 1945, Secretary of War Henry Stimson and Manhattan Project Director Gen. Leslie Groves briefed the new president on the status of the effort to build "the most terrible weapon ever known in human history," as described by the two-page memorandum Stimson prepared for the meeting.[7]

During the 45-minute long meeting, President Truman read a memo prepared by Gen. Groves for Henry Stimson two days prior that detailed the development of the bomb and, notably, plans for using

6 U.S. Department of State, Memorandum of conversation between President Kennedy and the Foreign Minister of Denmark, "Memorandum of Conversation: Subject: NATO; Nuclear Matters" (4 December 1962), copy from the National Archives, accessed via William Burr, ed., "U.S. Presidents and the Nuclear Taboo," Electronic Briefing Book No. 611, National Security Archive (30 November 2017), https://nsarchive.gwu.edu/document/16069-document-08-memorandum-conversation-nato

7 Memorandum to President Truman from Secretary of War Henry Stimson, "Memorandum discussed with the President," (25 April 1945), copy from the Library of Congress, accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020). https://nsarchive.gwu.edu/document/28505-document-6b-memorandum-discussed-president-april-25-1945

it.[8] The implications of this document for analyzing Truman's decision to use the atomic bombs — more specifically, the degree to which the decision was truly his own — are significant. The content of the memo suggests that Truman's understanding of the bomb project was framed from the very beginning by two major assumptions: that the bomb would be used once ready, and that it would be used on Japan. The opening sentence of the memo establishes the first of these assumptions:

> *"The successful development of the Atomic Fission Bomb will provide the United States with a weapon of tremendous power which should be a decisive factor in winning the present war more quickly with a saving in American lives and treasure."*[9]

It is significant that the first sentence read by President Truman regarding the atomic bomb is one that not only assumes the bomb will be used, but also sells the bomb as a war-winning capability that will save American lives. Later in the document, under the section titled "Plan of Operations," Groves presents the second assumption:

> *"The target is and was always expected to be Japan. A composite group of the 20th Air Force has been organized and specially trained and equipped. The initial echelons are about to leave for the overseas base."*[10]

This section is particularly noteworthy in that it frames the decision to use the bomb on Japan as a foregone conclusion that had already been set in motion, leaving not even a suggestion of Truman's ability to influence the matter or come to a different decision. These sentences support the assertion by some historians that President Truman did not make a true decision to drop nuclear weapons on Hiroshima and Nagasaki; rather, he inherited the crucial assumptions that the bomb would be used, and it would be used on Japan.[11]

Truman being left out of both the development of the bomb and a significant part of the planning for its use was likely a major factor in his decision to seize authority over nuclear use in August of 1945, laying the groundwork for the policy of presidential sole authority that the United States has held ever since. The almost insecure way in which Truman himself recounts the decision to drop the bombs supports this assertion.

In his memoir, Truman makes a point of arguing his unequivocal role in the bombings: "The final decision of *where* and *when* to use the atomic bomb was up to me. Let there be no mistake about it [emphasis

8 Henry L. Stimson, Diary Entry, "Wednesday, April 25, 1945," (25 April 1945), copy from the Library of Congress, accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28507-document-6d-diary-entry-april-25-1945; Leslie R. Groves, Untitled Memorandum (25 April 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28506-document-6c-untitled-memorandum-general-lr-groves-april-25-1945; Leslie R. Groves, "Memorandum for the Secretary of War" (23 April 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28504-document-6a-memorandum-secretary-war-general-l-r-groves-atomic-fission-bombs-april

9 Groves, "Memorandum for the Secretary of War," 1.

10 Ibid, 7.

11 Barton J. Bernstein, "The Atomic Bombings Reconsidered" (1 January 1995), Foreign Affairs, https://www.foreignaffairs.com/articles/asia/1995-01-01/atomic-bombings-reconsidered; This point should not be interpreted as an absolution of Truman's role in the atomic bombings of Hiroshima and Nagasaki. As president, Truman could have prevented the bombings and chose not to. Not only did he allow the bombings to happen, but he celebrated them after the fact, saying upon learning of the bombing of Hiroshima, "This is the greatest thing in history" (Alex Wellerstein, "Truman never ordered the use of the atomic bombs—but he did order atomic bombings to be stopped," 10 August 2025, Bulletin of the Atomic Scientists).

added]."[12] On the very next page, however, Truman states: "General Spaatz, who commanded the Strategic Air Forces… was given some latitude as to *when* and on *which of the four targets* the bomb would be dropped [emphasis added]."[13] It is important to note that the limited technical capability at this time meant that the ability to drop a nuclear bomb on a target was dependent on weather and cloud coverage, so it would have been necessary to provide some operational leeway. That said, since-declassified documents reveal that, in addition to not being involved in the target-selection process, Truman was not responsible for initiating the process to create the execution order to bomb Hiroshima.[14]

Truman recounts in his memoir that, after learning from Stimson that the Trinity Test on July 16 had successfully demonstrated the achievement of an atomic bomb capability, "we were not ready to make use of this weapon against the Japanese."[15] Yet, on July 22, Army Chief of Staff George Marshall directed his deputy, Thomas Handy, to prepare a draft directive to General Spaatz on atomic bomb use "for submission to the Secretary of War and me [Marshall]."[16] A July 24 cable from Handy to Marshall includes the requested draft, written by General Groves. The directive to General Spaatz stated:

> *"The 509 Composite Group, 20th Air Force will deliver its first special bomb as soon as weather will permit visual bombing after about 3 August 1945 on one of the targets: Hiroshima, Kokura, Niigata, and Nagasaki. …Additional bombs will be delivered on the above targets as soon as made ready by the project staff."*[17]

Regarding authorization, the directive stated, "The foregoing directive is issued to you by direction and with the approval of the Secretary of War and of the Chief of Staff, USA."[18] The following day, after Marshall informed Handy that Secretary Stimson had approved the draft with no changes, Handy sent General Carl Spaatz the directive ordering the use of the atomic bomb on Japan.[19]

This series of documents strongly indicates Truman's lack of involvement in executing the order to drop the atomic bombs on Hiroshima, but perhaps the most revealing document is a letter to President Truman from Secretary of War Henry Stimson from July 31. In a letter regarding the statement Truman would make following the use of the "new weapon," Stimson states, "The reason for the haste is that I was informed only yesterday that, weather permitting, it is likely that the weapon will be used as early

12 Harry S. Truman, Year of Decisions, vol. 1 (The New American Library, 1955), 462, https://archive.org/details/yearofdecisionsv030151mbp/page/462/mode/2up
13 Ibid, 463.
14 William Burr, ed., "The Atomic Bomb and the End of World War II" (4 August 2020), Electronic Briefing Book No. 716, National Security Archive, https://nsarchive.gwu.edu/briefing-book/nuclear-vault/2020-08-04/atomic-bomb-end-world-war-ii#_edn18
15 Truman, Year of Decisions, 458.
16 George Marshall, Cable to Thomas Hardy, "VICTORY 213," (22 July 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28479-document-60a-cable-victory-213-marshall-handy-july-22-1945-top-secret
17 Thomas Handy, Cable to George Marshall, "WAR 37683," (24 July 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28481-document-60c-cable-war-37683-general-handy-general-marshal-enclosing-directive
18 Ibid.
19 George Marshall, Cable to Thomas Hardy, "VICTORY 261," (25 July 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28482-document-60d-cable-victory-261-marshall-general-handy-july-25-1945-25-july-1945-top; Thomas Handy, Directive to Carl Spaatz (25 July 1945), accessed via William Burr, ed., "The Atomic Bomb and the End of World War II," Electronic Briefing Book No. 716, National Security Archive (4 August 2020), https://nsarchive.gwu.edu/document/28483-document-60e-general-thomas-t-handy-general-carl-spaatz-july-26-1945-top-secret

as August 1st."[20] This line reveals that, while Truman may have broadly authorized the use of the bomb on a list of Japanese targets, the final authorization to execute the launch was not his. This is further characterized by Truman's telling of events on August 6, the day the United States dropped "Little Boy" on Hiroshima:

> *"On August 6, the fourth day of the journey home from Potsdam, came the historic news that shook the world: I was eating lunch with members of the Augusta's crew when Captain Frank Graham, White House Map Room watch officer, handed me the following message:*
>
> TO THE PRESIDENT
>
> FROM THE SECRETARY OF WAR
>
> Big bomb dropped on Hiroshima August 5 at 7:15 P.M. Washington time.… An order was issued to General Spaatz to continue operations as planned unless otherwise instructed."[21]

Indeed, in his 1962 memoir, Leslie Groves characterized Truman's role in the bombings of Hiroshima and Nagasaki as "one of noninterference." If Truman can be said to have made a decision, it was, according to Groves, "a decision not to upset the existing plans."[22]

Taking Control: The Emergence of Sole Authority

> *"The original rationale for presidential control over the use of nuclear weapons had nothing to do with the need to use them quickly, and everything to do with never using them again."*
>
> **WILLIAM PERRY AND TOM COLLINA IN THE BUTTON**[23]

President Truman quickly tightened his loose reins over atomic bomb authorization after the second bomb was detonated over Nagasaki on August 9th, 1945. The following day, General Groves sent a memo to General Marshall informing him that a third atomic bomb would be ready for use "on the first suitable weather after 17 or 18 August."[24] George Marshall's handwritten reply on the same day constituted the first invocation of presidential authority over nuclear employment that current policy is founded on today: "*It is not to be released over Japan without express authority from the President.*"

The immediate rationale likely had something to do with the fact that in the early hours of August 10th, the Japanese had sent an offer of surrender.[25] That morning, according to the diary of Truman's Secretary of Defense James Forrestal, Truman told his cabinet that the war with Japan would continue "at its

20 Henry Stimson, Letter to President Harry Truman (31 July 1945), accessed via National Archives Catalog, President's Secretary's Files (Truman Administration), Subject Files (1945-1953), National Security Council - Atomic File, 1945-1952: Atomic Bomb: Hiroshima and Nagasaki, https://catalog.archives.gov/id/310987031

21 Truman, Year of Decisions, 464-465.

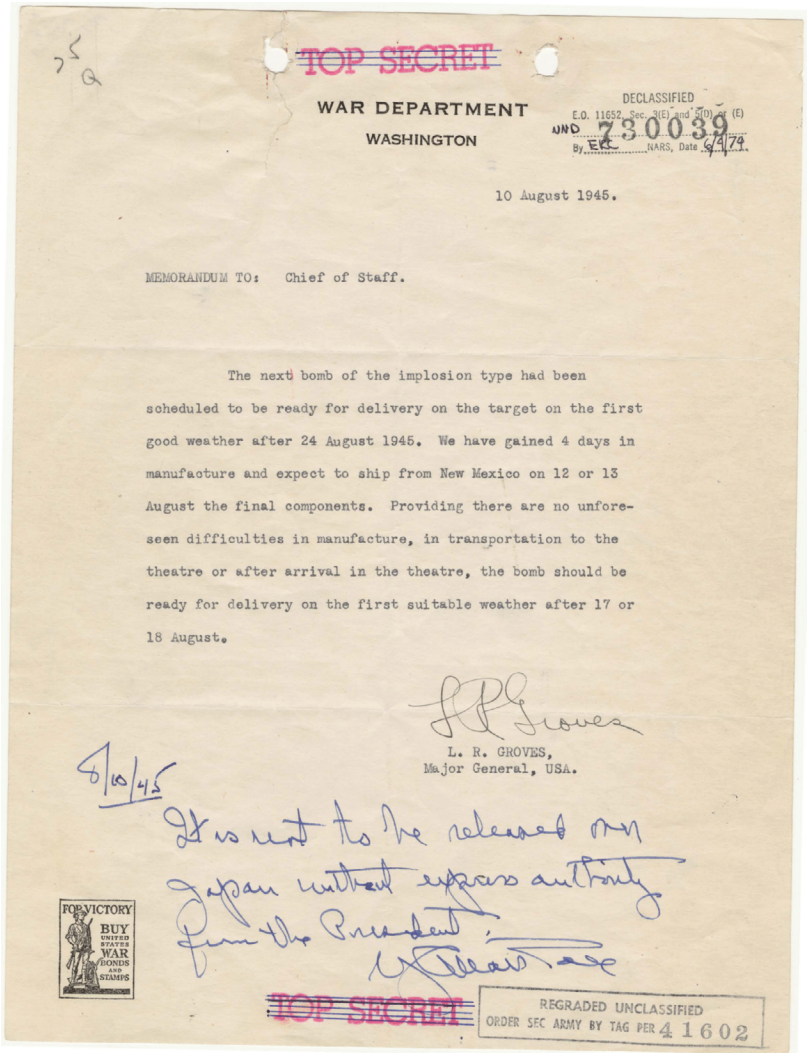
22 Leslie R. Groves, Now It Can Be Told (Harper & Row, 1962), 265.

23 William J. Perry and Tom Z. Collina, The Button: The New Nuclear Arms Race and Presidential Power from Truman to Trump (Dallas: BenBella Books, 2020), 12.

24 Leslie R. Groves, Memorandum to Army Chief of Staff (10 August 1945), accessed via National Archives Catalog, Records of the Office of the Chief of Engineers (1789-1999), General Correspondence (1940-1950), File 25 Q, https://catalog.archives.gov/id/6874336?objectPage=2

25 Alex Wellerstein, "Truman never ordered the use of the atomic bombs—but he did order atomic bombings to be stopped," Bulletin of the Atomic Scientists (10 August 2025), https://thebulletin.org/2025/08/truman-never-ordered-the-use-of-the-atomic-bombs-but-he-did-order-atomic-bombings-to-be-stopped/#post-heading

present intensity" until the Japanese agreed to the American terms of surrender, "with the limitation however that there would be no further dropping of the atomic bombs."[26] Truman's explanation for ordering the end of atomic operations is recounted in the diary of Henry Wallace, Secretary of Commerce. His entry from the same day reads, "Truman said he had given orders to stop atomic bombing. He said the thought of wiping out another 100,000 people was too horrible. He didn't like the idea of killing, as he said, 'all those kids.'"[27]


TOP SECRET

WAR DEPARTMENT
WASHINGTON

DECLASSIFIED
E.O. 11652, Sec. 3(E) and 5(D) or (E)
NND 730039
By EEC NARS, Date 6/4/79

10 August 1945.

MEMORANDUM TO: Chief of Staff.

The next bomb of the implosion type had been scheduled to be ready for delivery on the target on the first good weather after 24 August 1945. We have gained 4 days in manufacture and expect to ship from New Mexico on 12 or 13 August the final components. Providing there are no unforeseen difficulties in manufacture, in transportation to the theatre or after arrival in the theatre, the bomb should be ready for delivery on the first suitable weather after 17 or 18 August.

L. R. GROVES,
Major General, USA.

8/10/45
It is not to be released over Japan without express authority from the President.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

TOP SECRET

REGRADED UNCLASSIFIED
ORDER SEC ARMY BY TAG PER 41602

FIGURE 1. GEORGE MARSHALL'S HANDWRITTEN REPLY TO LESLIE GROVES, 10 AUGUST 1945. (SOURCE: NATIONAL ARCHIVES)

Establishing civilian control

One year later, in August 1946, Truman consolidated control over atomic energy, including research on, production, and custody of nuclear weapons, into civilian hands through the Atomic Energy Act of 1946, otherwise known as the McMahon Act.[28] The Act established that stewardship of the nation's atomic energy program would be transferred from the Army to the new Atomic Energy Commission (AEC): a five-member, civilian commission appointed entirely by the president.[29] In signing the Act, Truman not only took atomic weapons out of the hands of the military, but he also gave himself the power to determine who would manage the production and custody of the stockpile. Furthermore, Section 6 of the Act included a provision that gave the president sole authorization for military applications of atomic energy:

> *"The President from time to time may direct the Commission (1) to deliver such quantities of fissionable materials or weapons to the armed forces for such use as he deems necessary in the interest of national*

26 James Forrestal, diary entry (10 August 1945), accessed via James V. Forrestal Papers, Princeton University Library, Series 5, Subseries 5A, "Diaries, Originals," https://findingaids.princeton.edu/catalog/MC051_c05075
27 Wellerstein, "Truman."
28 US Department of Energy, "Civilian Control of Atomic Energy (1945-1946)," Office of History and Heritage Resources, "The Manhattan Project: An Interactive History," https://www.osti.gov/opennet/manhattan-project-history/Events/1945-present/civilian_control.htm
29 US Congress, Public Law 585, Atomic Energy Act of 1946, (79th Cong.), https://maint.loc.gov/law/help/statutes-at-large/79th-congress/session-2/c79s2ch724.pdf

> *defense or (2) to authorize the armed forces to manufacture, produce, or acquire any equipment or device utilizing fissionable material or atomic energy as a military weapon."*[30]

Truman more explicitly declared his authority over the employment of atomic bombs in a statement a few months later, on November 30, 1946: "...it should be emphasized that, by law, only the President can authorize the use of the atomic bomb, and no such authorization has been given."[31]

In the following years, as tensions rose with the Soviet Union and came to a head with the Soviet blockade of Berlin in June 1948, Truman's rationale for taking control over nuclear use became clear. During this time, a debate was raging within the government over custody of atomic weapons, with many arguing that the military needed to be prepared to engage in atomic warfare with the Soviet Union. Defense Secretary James Forrestal (who was in favor of giving the military custody of atomic weapons, believing atomic war with the USSR to be inevitable),[32] recorded that when he raised the custody issue with the president during a meeting on July 15, 1948, Truman responded that he "proposed to keep, in his own hands, the decision as to the use of the bomb," and that he "did not propose 'to have some dashing lieutenant colonel decide when would be the proper time to drop one.'"[33]

The 1946 Atomic Energy Act gave Truman broad authority to define the intended purpose of any atomic weapons transferred to the military, but did not necessitate his approval for every individual employment of nuclear weapons. Moreover, at the time, there was no physical safeguard against unauthorized use. Nuclear weapons did not yet have locking mechanisms (illustrating an important point about the influence of technological innovation on the justification for and risks posed by presidential sole authority). As historian Richard Rhodes wrote in 1995, "whoever possessed them — Truman's 'dashing lieutenant colonel' — could detonate them."[34] Thus, Truman desired to keep nuclear weapons out of the hands of the military unless absolutely necessary.

At Forrestal's suggestion, Truman convened a meeting on July 21 with members of the civilian Atomic Energy Commission and defense officials to hear both sides of the custody issue. After hearing arguments, Truman remained firm on his decision to keep atomic weapons in civilian control, starkly articulating his justification with an air of finality:

> *"I don't think we ought to use this thing unless we absolutely have to. It is a terrible thing to order the use of something like that that is so terribly destructive, destructive beyond anything we have ever had. You have got to understand that this isn't a military weapon... It is used to wipe out women and children and unarmed people, and not for military uses. So we have got to treat this differently from rifles and cannon and ordinary things like that... This is no time to be juggling an atom bomb around."*[35]

The formal policy codifying the president's explicit control over any employment of nuclear weapons — the premise of presidential sole authority as it is known today — came just two months later on September 16, 1948, when the National Security Council (NSC) adopted the conclusions of NSC-30, "United States Policy on Atomic Warfare," which stated: "*The decision as to the employment of atomic*

30 Ibid.
31 L. Wainstein, et al., "STUDY S-467: The Evolution of U.S. Strategic Command and Control and Warning, 1945-1972" (June 1975), Institute for Defense Analyses, https://nsarchive2.gwu.edu/nukevault/ebb403/docs/Doc%202%20-%20strategic%20command%20and%20control---%20evolution%20of.pdf
32 Richard Rhodes, Dark Sun: The Making of the Hydrogen Bomb (New York: Simon & Schuster, 1995), 327.
33 Wainstein, "STUDY S-467."
34 Rhodes, 326.
35 Ibid, 327.

weapons in the event of war is to be made by the Chief Executive when he considers such decision to be required."[36]

Presidential sole authority was thus born as a means of *preventing* unnecessary nuclear use and founded on the justification that the uniquely destructive power of nuclear weapons required that they be under civilian control. In conceiving presidential sole authority over nuclear use, "Truman's priority was to guard against overzealous generals,"[37] to limit the unique devastation of nuclear weapons only to situations in which it was absolutely necessary.

The rationale for sole authority has evolved drastically over the years. The prevailing argument for it today is based not on preventing nuclear use, but on enabling it to happen as quickly as possible when necessary. The first observable shift in reasoning for sole authority came with the start of the Korean War in 1950, as Truman grappled with the balance between alliance management and U.S. freedom to act unilaterally.

Consultation with allies

In 1943, President Roosevelt and British Prime Minister Winston Churchill signed the Quebec Agreement, which stipulated that the United States and United Kingdom would never use atomic weapons against each other, and, most significantly, that they would not use them against a third party "without each other's consent."[38] In the years following the atomic bombings of Japan, however, Truman repeatedly refused to relinquish his sole authority over nuclear use decisions by entering into any consultation agreement with allies. The Quebec Agreement was voided with the Atomic Energy Act of 1946, which effectively terminated all cooperation between the United States and the United Kingdom on nuclear matters.[39]

At the outset of the Korean War in 1950, the U.S. Air Force began delivering B-29 bombers to the British Bomber Command and atomic bomb shells to British bases. Senior British military officials thus felt that Britain should have a say in how those weapons would be used.[40] British Prime Minister Clement Atlee traveled to Washington to meet with Truman directly on the issue after Truman stated in a November 1950 press conference that there was "active consideration" of nuclear weapons use in Korea.[41] Atlee tried during the trip to get a written commitment by Truman that he would consult with the United Kingdom before considering the use of atomic weapons, but Truman repeatedly refused. Ultimately, he agreed only to the following broad, noncommittal language:

36 National Security Council, "Staff Study."
37 Perry and Collina, 12.
38 Articles of Agreement Governing Collaboration Between The Authorities of the U.S.A. and the U.K. in the Matter of Tube Alloys, U.S.A.-U.K., (19 August 1943), accessed via Atomic Archive, https://www.atomicarchive.com/resources/documents/manhattan-project/quebec-agreement.html
39 US Congress, Atomic Energy Act of 1946.
40 William Burr, "Consultation is Presidential Business" (1 July 2005), National Security Archive, Electronic Briefing Book no. 159, https://nsarchive2.gwu.edu/NSAEBB/NSAEBB159/#2
41 US Department of State, Foreign Relations of the United States: 1950, Korea, vol. II (Office of the Historian, 1976), 1261-1262, https://history.state.gov/historicaldocuments/frus1950v07/d909

> *"The President stated that it was his hope that world conditions would never call for the use of the atomic bomb. The President told the Prime Minister that it was also his desire to keep the Prime Minister at all times informed of developments which might bring about a change in the situation."*[42]

In a since-declassified State Department paper, the Truman administration specifically characterized its interest in avoiding a consultation agreement with allies as wanting to ensure that "the president's freedom to order the use of atomic weapons [emphasis added]" was not "limited."[43] The paper unequivocally presented Truman's nuclear authority as unchecked and unconstrained:

> *"There is unanimous agreement in this Government that the President's authority to order the use of atomic weapons whenever this action is considered necessary, should be in no way limited by commitments to others. By statute the power to decide on the use of atomic weapons rests with the President."*[44]

Even later when Britain and Canada sought more explicit assurances in 1952 that the United States would not order nuclear strikes from the bases in their countries without their consent, the Truman administration agreed only to language that included an escape clause allowing Truman the freedom to order nuclear strikes unilaterally if he deemed it necessary: "the use of these bases in an emergency would be a matter of joint decision by His Majesty's Government and the United States Government *in light of the circumstances prevailing at the time* [emphasis added]."[45]

President Eisenhower subsequently upheld the precedent set by Truman to refuse any consultation agreement limiting the president's freedom to order nuclear use. This, of course, has presented challenges for alliance management, particularly during periods of heightened security concern. As new nuclear weapons systems arrived on British territory later in Eisenhower's presidency and the Soviet Union successfully launched Sputnik in 1957, British leadership renewed the push for more formal consultation agreements. Eisenhower agreed eventually to formal agreements between the United States and United Kingdom that established processes for reaching a joint decision on nuclear use, enshrined in the "Murphy-Dean agreement" of 1958. Nevertheless, Eisenhower remained committed to preserving presidential freedom to order nuclear use. Thus, the agreement stipulated that consultation would depend on the "circumstances at the time" and that "every possible step" would be taken to consult prior to use.[46] Similar language was included in guidelines approved by the United States and NATO allies at the 1962 meeting of the North Atlantic Council. The Athens Guidelines included a U.S. and British declaration of their intention to consult with the Council on the use of nuclear weapons "if time permits."[47]

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42 Burr, "Consultation is Presidential Business.": Communiqué on Truman-Atlee Talks (8 December 1950), accessed via William Burr, "Consultation is Presidential Business" (1 July 2005), Electronic Briefing Book no. 159, National Security Archive, https://nsarchive2.gwu.edu/NSAEBB/NSAEBB159/#2: A declassified April 1951 paper prepared by the State Department's Policy Planning Staff titled, "Circumstances Under Which the United States Would Be at War With the Soviet Union: Use of Atomic Weapons," states that the intention expressed in the Truman-Atlee communiqué to inform the British of developments related to atomic use was "informally extended" to Canada as well.

43 US Department of State, Paper Prepared by Carlton Savage, Member of the Policy Planning Staff, "Circumstances Under Which the United States Would Be at War With the Soviet Union: Use of Atomic Weapons" (12 April 1951), accessed via Department of State, Office of the Historian, PPS Files, Lot 64 D 563, https://history.state.gov/historicaldocuments/frus1951v01/d290

44 Ibid.

45 Burr, "Consultation is Presidential Business."

46 Robert Murphy and Patrick Dean, Report to the President and the Prime Minister, "Procedures for the Committing to the Attack of Nuclear Retaliatory Forces in the United Kingdom" (7 June 1958), sanitized copy accessed via William Burr, "Consultation is Presidential Business," Electronic Briefing Book no. 159, National Security Archive (1 July 2005), https://nsarchive2.gwu.edu/NSAEBB/NSAEBB159/usukconsult-8.pdf

47 Burr, "Consultation is Presidential Business."

The form, scope, and details of consultative agreements with allies have varied over the years to reflect changing strategic environments and deployments. Nevertheless, successive presidents of the nuclear age, from John F. Kennedy to Richard Nixon and likely through the present day, have maintained the foundational position established by Truman that no agreement would be made that would limit the president's freedom to employ nuclear weapons in service of the national interest.[48]

Trial and Error: How Launch Authority Has Evolved Over Time

> *"The history of nuclear command and control is the history of discovering that certain measures were taken, and then we learned that there were second- and third-order effects that were not intended and required a shift back. It's an incremental, almost trial-and-error kind of approach."*
>
> **DR. PETER FEAVER, 2017**[49]

The history of nuclear launch authority and the command and control system it relies on is one of searching for a system that limits the trade-offs between making it harder to use nuclear weapons and making nuclear weapons an effective strategic deterrent. For nearly 80 years, the entirety of the nuclear age, the United States has operated a policy of presidential sole authority over nuclear launch decisions. The basic premise of the policy — the president retaining ultimate command over whether a nuclear weapon gets used — has remained constant. Throughout the years, though, presidents have interpreted, modified, and implemented sole authority in different ways.

Presidents have wielded their authority over nuclear use with varying degrees of strictness. Some loosened their control via practices like predelegating launch authority to subordinate military commanders; others tightened the reins on their power. Additionally, the evolution of technology and introduction of new nuclear capabilities, in combination with changing security contexts and strategic priorities, have raised new risks and challenges for nuclear decisionmaking that have sparked modifications to the system. It has been "an incremental, almost trial-and-error kind of approach," says Dr. Peter Feaver, a political scientist and former NSC official, to create a system "that doesn't undermine deterrence and does not create failure modes that would [make] the cure worse than the disease."[50] This begs the obvious question: Have we landed today on the "perfect" system for launch authority, or is there still room for improvement? Evaluating some of the major moments in this history of trial and error — cataloguing the unintended consequences and shifting security contexts that have molded the system over time and ultimately brought us to the one we operate today — may help answer that question.

Unconstrained power

The earliest interpretation and application of sole authority was extremely broad, placing effectively no constraints on the president's power. One explanation for this is the original rationale for sole authority: Truman wanted to prevent unnecessary devastation caused by a trigger-happy general, and taking full control over nuclear use was quite an effective way to do so (and, realistically, the only way to do so

48 Ibid.
49 John Mecklin, "Duke's Peter Feaver on the president and US nuclear command and control," (30 November 2017), Bulletin of the Atomic Scientists, https://thebulletin.org/2017/11/dukes-peter-feaver-on-the-president-and-us-nuclear-command-and-control/
50 Ibid.

before the existence of locking mechanisms for preventing unauthorized use). Another explanation that cannot be overlooked is that –– given the newness of nuclear weapons –– laws, regulations, and policies surrounding nuclear authority had simply not yet been created.

Moreover, the United States lacked detailed policies, plans, or doctrine for nuclear employment that might have placed boundaries, albeit artificial ones, on presidential action. This was in part because the dominant view held by military strategists from 1945-1947 was that the atomic bomb did not fundamentally alter war strategy, and there was broad skepticism as to the weapons' significance.[51] In its first nuclear training and employment plan dated 25 July, 1946, the newly established Strategic Air Command (SAC) noted, "No major strategic threat or requirement [for nuclear use] now exists nor, in the opinion of our country's best strategists, will such a requirement exist for the next three to five years."[52] The absence of detailed employment plans remained for the first decades of the nuclear age, and the broadness of the policies that did exist gave presidents extensive leeway for nuclear decisionmaking. Per military historian Dr. David Alan Rosenberg, "From 1945 to 1974... National Security Council (NSC) policies relating to nuclear weapons were so general as to place virtually no limitations on their use."[53]

At first, such limitless authority over nuclear use seemed to work fine. It was effective in preventing further nuclear use while posing relatively little risk or downside. In a security environment with no nuclear adversary (prior to the Soviet Union's first nuclear test explosion in August 1949) and little strategic requirement for nuclear use, with a nuclear arsenal limited in size and capability,[54] and in the hands of a seemingly stable, levelheaded president who wanted to avoid further nuclear use at all costs, unconstrained presidential power over nuclear employment decisions presented little concern. But as U.S. nuclear hegemony disappeared, the security context grew in complexity, and nuclear capabilities expanded, gaps and "failure modes" in the system were revealed.

Predelegation

One of the first major alterations to presidential sole authority was the practice of "predelegation." Declassified documents reveal that during the early decades of the Cold War, presidents gave advance authority to top military commanders to use nuclear weapons in certain circumstances. The eight years of Eisenhower's presidency, 1953-1961, constituted some of the most dangerous of the Cold War. Eisenhower's predelegation decisions were made in the context of the Soviet Union's first explosion of an atomic weapon in 1949, the outbreak of the Korean War in 1950, the Soviets' first thermonuclear explosion in 1953, and the growing concern throughout the 1950s among the U.S. military with the weakness of U.S. strategic forces and retaliatory capability. In this strategic environment, Eisenhower

51 L. Wainstein, et al., "STUDY S-467: The Evolution of U.S. Strategic Command and Control and Warning, 1945-1972" (June 1975), Institute for Defense Analyses, https://nsarchive2.gwu.edu/nukevault/ebb403/docs/Doc%202%20-%20strategic%20command%20and%20control---%20evolution%20of.pdf

52 Ibid, 83.

53 David Alan Rosenberg, "Constraining Overkill: Contending Approaches to Nuclear Strategy, 1955-1965," (12 July 1994), Naval History and Heritage Command, Colloquium on Contemporary History, "More Bang for the Buck:" U.S. Nuclear Strategy and Missile Development 1945-1965," https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/m/more-bang-buck.html#rosen

54 The U.S. nuclear weapons arsenal grew slowly after 1945, consisting of just 9 bombs in 1946 and 13 in 1947 (Robert S. Norris and Hans M. Kristensen, "Global nuclear weapons inventories, 1945–2010" (2010), Bulletin of the Atomic Scientists, 66(4), 77-83. https://doi.org/10.2968/066004008). At the same time, SAC was weak. The few nuclear-capable B-29s they possessed were not intercontinental, and their readiness and response time was slow. Reportedly, SAC planned for 40-45 days to mobilize for war at this time. In 1948, the commander of SAC stated that it would take up to 5 days for a single bomber to take off (Wainstein).

implemented instructions and plans that put nuclear weapons in a high state of readiness, including ceding control over some nuclear decisions to military officials.

The rationale for predelegation was based on improving response time in crises. The United States lacked a command and control system for efficiently communicating nuclear orders from the president to the forces and early warning capabilities were effectively nonexistent. The only way around these shortcomings, it seemed, was by giving military commanders the ability to act quickly to use nuclear weapons in an emergency. At a February 1956 meeting of the NSC regarding national security policy, Eisenhower raised the importance of military commanders being able to respond rapidly in crisis situations:

> *"[The President] asked that the Council imagine the position of a military commander in the field. His radar informs him that a flock of enemy bombers is on the point of attacking him. What does the military commander do in such a contingency? Does he not use every weapon at hand to defend himself and his forces?"*[55]

On March 15, Eisenhower adopted NSC 5602/1, amended from the base report (NSC 5602) to include an additional sentence:

> *"It is the policy of the United States to integrate nuclear weapons with other weapons in the arsenal of the United States. Nuclear weapons will be used in general war and in military operations short of general war as authorized by the President. Such authorization as may be given in advance will be determined by the President."*[56]

The first predelegation policy was narrow in scope (Eisenhower approved the "Authorization for the Expenditure of Atomic Weapons in Air Defense" on April 19, 1956, giving air defense forces permission to use nuclear weapons to defend against an enemy bomber attack on U.S. territory), but Eisenhower quickly established additional guidelines to allow for nuclear use in more situations.[57]

Declassified documents from this time period illustrate Eisenhower's grappling with how much authority over nuclear use he was willing to give up. While on one hand Eisenhower was motivated to disperse authority over nuclear use in certain cases to facilitate rapid response to Soviet attack, he wanted to avoid granting too much leeway to military commanders and thus remained centrally involved in the process of drafting and reviewing advance authorization instructions. Eisenhower met with senior State and Defense Department officials to discuss a draft of predelegation instructions on June 30, 1958. The consequent instructions, which Eisenhower approved in 1959, ultimately allowed certain military commanders to authorize the use of nuclear weapons in response to major attacks if there was not sufficient time to communicate with the president or if it was not possible to do so.[58]

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55 S. Everett Gleason, "Memorandum of Discussion at the 277th Meeting of the National Security Council" (27 February 1956), National Security Council, accessed via Department of State, Office of the Historian, Foreign Relations of the United States, 1955–1957, National Security Policy, Volume XIX, https://history.state.gov/historicaldocuments/frus1955-57v19/d61

56 National Security Council, NSC 5602/1, "Basic National Security Policy" (15 March 1956), accessed via Department of State, Office of the Historian, Foreign Relations of the United States, 1955–1957, National Security Policy, Volume XIX, https://history.state.gov/historicaldocuments/frus1955-57v19/d66

57 U.S. Department of State, "Instructions for the Expenditure of Nuclear Weapons," (17 January 1957), accessed via National Security Archive, "First documented evidence that U.S. presidents predelegated nuclear weapons release authority to the military," (20 March 1998), https://nsarchive2.gwu.edu/NSAEBB/NSAEBB45/doc3.pdf

58 William Burr, "First Declassification of Eisenhower's Instructions to Commanders Predelegating Nuclear Weapons Use, 1959-1960" Electronic Briefing Book No. 45, National Security Archive (18 May 2001), https://nsarchive2.gwu.edu/NSAEBB/NSAEBB45/

Eisenhower's conflictedness over predelegation is an illustrative example of the trial-and-error history of nuclear authority. In pursuit of speed given the worsening security situation, Eisenhower granted significant latitude to military commanders through broad predelegation instructions, but he worried about the risk of granting them too much liberty to resort to nuclear use. To address this concern, he included constraints in the guidance, allowing commanders to authorize nuclear use only in response to major attacks, and only if there was no time or ability to communicate with the president. Even more illuminating is the journey of predelegation through successive administrations, culminating eventually in the abandonment of predelegation altogether.

Although President Kennedy let Eisenhower's predelegation instructions remain in place, senior officials began raising concerns over the practice. In January 1961, Kennedy's Special Assistant for National Security Affairs, McGeorge Bundy, warned Kennedy in a memorandum titled "Policies previously approved in NSC which need review" that "decisions-in-advance," as he referred to predelegation, "have created a situation today in which a subordinate commander faced with a substantial Russian military action could start the thermonuclear holocaust on his own initiative if he could not reach you."[59]

According to the National Security Archive's analysis of declassified documents from the predelegation era, Presidents Eisenhower and Johnson understood this concern and "sought to avoid giving excessive leeway to military commanders to prevent their precipitously initiating a devastating U.S.-Soviet nuclear exchange," but it was Johnson who significantly rolled back advance authority for nuclear employment. From 1957 to 1968, standing nuclear use orders, referred to by the codename "Furtherance," included instructions to fire "an automatic 'full nuclear response' against both the Soviet Union and China in the event of the death or disappearance of the President in the course of an attack against the United States."[60] At an October 1968 meeting with top national security advisors, each one of Johnson's advisors in attendance recommended that the orders be significantly revised "to reduce the inherent risks involved."[61] Johnson heeded their advice, implementing several changes to Furtherance, including a policy that instructed commanders to respond to conventional attack with conventional forces only. Further amendments sought to remove elements of automatic nuclear use — "a perilous element of inflexibility," per the National Security Archive — which could too easily lead to all-out nuclear exchange with the USSR by mistake or miscalculation.[62]

Details of predelegation policies are still heavily shrouded in secrecy and classification, but as the Cold War went on, predelegated authority was reined in further and further until it was eliminated entirely.[63] Former Commander of U.S. Strategic Command (STRATCOM) Gen. C. Robert Kehler characterized the

59 McGeorge Bundy, Memorandum to President Kennedy, "Policies previously approved in NSC which need review," (30 January 1961). U.S. Department of State, Foreign Relations of the United States, 1961-1963. Vol. 8., accessed via National Security Archive, "First documented evidence that U.S. presidents predelegated nuclear weapons release authority to the military," (20 March 1998). https://nsarchive2.gwu.edu/news/predelegation/14.pdf

60 William Burr, ed., "U.S. Had Plans for "Full Nuclear Response" In Event President Killed or Disappeared during an Attack on the United States," Electronic Briefing Book No. 406, National Security Archive (12 December 2012). https://nsarchive2.gwu.edu/nukevault/ebb406/

61 Ibid.

62 Ibid.

63 The final such formal authority to be eliminated appears to have taken place in 1992. From the 1960s until that year, commander of the North American Aerospace Defense Command (NORAD) had predelegated authority to use low-yield nuclear weapons in defense of U.S. or Canadian territory "under severe restrictions and specific conditions of attack" and only after repeated attempts to contact civilian command authority (Jeffrey G. Lewis and Bruno Tertrais, "The Finger on the Button: The Authority to Use Nuclear Weapons in Nuclear-Armed States"). The capability of SSBN crews to launch SLBMs in situations where communication with the Nuclear Command Authority was lost was not technically completely removed until 1997, when DOD completed the implementation of the Trident Coded Control Device on all SLBMs (William J. Perry, Annual Report to the President and the Congress, Office of the Secretary of Defense [February 1995], https://history.defense.gov/Portals/70/Documents/annual_reports/1995_DoD_AR.pdf).

reasoning for the drawing back from predelegation throughout the Cold War as a gradual recognition that "the risks outweighed the benefits."[64] In other words, the trade-off for speedy response time — increased risk of catastrophic nuclear use — was too great, so nuclear launch authority was re-centralized and placed firmly back in the hands of the president.

It should be acknowledged that part of the reason this was possible was due to advancements in technical capability that allowed for increased readiness, improved command and control, and early warning. In the late 1940s, for example, "SAC was planning in terms of 40-45 days to go to war. By 1957 the time would be reduced to two hours," and readiness continued to improve in following years.[65] The Air Force also achieved a "rapid reaction force" with the deployment of solid-fueled Minuteman intercontinental ballistic missiles (ICBMs) beginning in the late 1950s.[66] Further, organizational advancements and improved nuclear planning during the 1960s, alongside the adoption of nuclear deterrence as national strategy, solidified and institutionalized presidential authority through the need for unambiguous command over nuclear use.[67]

Tracing the evolution of presidential authority from its earliest years through the early Cold War and after illustrates how the system was reshaped and altered over time as presidents and planners sought to meet security demands then solve for unacceptable risk when the trade-off between security and catastrophe became too high. The United States has arrived, decades later, at a complex architecture of planning, warning, and command, control, and communications (C3) still based at its core on enabling the president's ultimate authority over nuclear weapons use, supposedly striking the optimal balance between effective deterrence and avoiding nuclear disaster.

64 C. Robert Kehler, interview with author, 28 July 2025.
65 Wainstein.
66 William Burr, ed., "Launch on Warning: The Development of U.S. Capabilities, 1959-1979," Electronic Briefing Book No. 43, National Security Archive (April 2001), https://nsarchive2.gwu.edu/NSAEBB/NSAEBB43/#9
67 Wainstein.

II How does it work?
The nuclear launch system today

> *"[The launch system] is designed for speed and decisiveness. It's not designed to debate the decision."*[68]
>
> **FORMER CIA DIRECTOR GENERAL MICHAEL HAYDEN**

The president of the United States is the only person in the country who can legally order the use of nuclear weapons. No other U.S. official or military commander can order the launch of even just one of the nearly four thousand nuclear weapons in the U.S. stockpile without express authorization from the president, and the president is not legally required to consult with anyone or receive anyone else's approval before ordering nuclear use. At any point in time, the president can command the devastating power of the U.S. nuclear arsenal even if every advisor in the room objects.

Contrary to many media portrayals, however, executing this power is not as simple as the president pressing a big, red button on the Oval Office desk. Presidential sole authority relies on a system of policies, procedures, and technologies developed and adapted over decades that, together, provide the president with the ability to order nuclear use as quickly and efficiently as possible. Understanding and analyzing the entire enterprise connected to presidential launch authority requires differentiating between the two types of situations in which a presidential order would be given: as Dr. Peter Feaver puts it, "scenarios where the military wakes up the president versus scenarios where the president is waking up the military."[69]

Waking Up the President

Although the law since the late 1940s has not limited presidents' nuclear authority to cases of retaliation, presidential sole authority was cemented during the Cold War on the prevailing rationale that the U.S. president needed to be able to *respond* rapidly to a surprise nuclear attack from the Soviet Union. The systems and processes of strategic planning and nuclear command, control, and communications (NC3) that surround launch authority have thus been crafted for scenarios in which the military is "waking up the president." The process leading up to a president's nuclear launch order in these scenarios is a complex one including years of planning and preparation to provide the president with strike options.

Planning strike options

Planning for the employment of nuclear weapons begins as it ends: with the president. Each new president decides to either maintain the existing employment guidance issued by a previous president or to issue new guidance. The formal initiation of creating new nuclear guidance has to come from the White House, but there are various pathways that might prompt it. One example given by Greg Weaver,

68 Anya L. Fink, "Authority to Launch Nuclear Forces" (19 December 2024). Congressional Research Service. https://www.congress.gov/crs-product/IF10521

69 U.S. Congress. Authority to order the use of nuclear weapons: Hearing before the U.S. Senate Committee on Foreign Relations, 115th Cong. (2017). https://www.govinfo.gov/content/pkg/CHRG-115shrg34311/html/CHRG-115shrg34311.htm

former deputy director for strategic stability on the Joint Chiefs of Staff Directorate for Strategic Plans and Policy (J5), is via recommendation by the Secretary of Defense. According to Weaver, following the publication of the 2018 Nuclear Posture Review (NPR), the Secretary of Defense recommended to the National Security Advisor that new presidential guidance be created to address the differences in the new NPR from the previous one. The NSC typically initiates the process of crafting new presidential guidance by convening a working group involving staff from the Office of the Secretary of Defense (OSD), the Joint Staff, the Department of State, and the Department of Energy, to draft the document.[70]

The Nuclear Weapons Employment Planning Guidance contains the president's high-level strategic objectives and requirements for nuclear deterrence; Gen. Kehler described the employment guidance as the president essentially saying, "If deterrence fails, I want you to do the following things."[71] Every strike option that is available to the president is thus developed to meet the specific set of objectives in the document.[72] While the guidance document itself is classified, the Pentagon is required by law to submit an unclassified description of the new employment guidance to Congress, sometimes referred to as the 491 Report, after the section of U.S. Code that requires it.[73]

The presidential guidance then informs the Secretary of Defense's preparation of the Guidance for the Employment of the Force (GEF), previously known as the Nuclear Weapons Employment Policy (NUWEP). The GEF is sent to the Chairman of the Joint Chiefs of Staff (CJCS) to inform the development of more specific mission plans. The GEF includes "the relative priority of the plans, specific force levels, and supporting resource levels projected to be available for the period of time for which such plans are to be effective." This strategic guidance is then used by the CJCS to develop implementation guidance for combatant commanders via the Joint Strategic Capabilities Plan (JSCP). The JSCP guides the preparation of nuclear operations plans.[74]

All of these guidance documents culminate in target and force structure planning. Military planners follow the established guidance to engage in target selection to assess what adversary locations and assets should be targeted with nuclear weapons to achieve U.S. objectives. Once targets are selected, military planners assess which nuclear weapons systems should be delivered to which targets, considering the yield, range, and accuracy of the weapons systems as well as the size and vulnerability of the targets.

In force planning, military officials implement the targeting and weapons analyses into operational plans for employing U.S. nuclear forces, considering various factors like the number, types, yields, and limitations of the nuclear weapons available.[75] Lawyers are involved throughout the planning process to ensure that any options that will be provided to the president are compliant with the law of armed

70 Greg Weaver, interview with author, 30 July 2025.
71 Kehler, Interview with author.
72 U.S. Department of Defense, "Nuclear Weapons Employment Policy, Planning and NC3," in The Nuclear Matters Handbook 2020 [Revised], https://www.acq.osd.mil/ncbdp/nm/NMHB2020rev/docs/NMHB2020rev_Ch2.pdf ; The most recent update to the presidential nuclear employment strategy was issued by President Biden in 2024.
73 U.S. Department of Defense, "DOD Sends Report to Congress on the Nuclear Weapons Employment Strategy of the United States" (15 November 2024), https://www.defense.gov/News/Releases/Release/Article/3966543/dod-sends-report-to-congress-on-the-nuclear-weapons-employment-strategy-of-the/; Find the most recent 491 Report (at the time of this report's publication) at: https://media.defense.gov/2024/Nov/15/2003584623/-1/-1/1/REPORT-ON-THE-NUCLEAR-EMPLOYMENT-STRATEGY-OF-THE-UNITED-STATES.PDF
74 Patrick C. Sweeney, "Guidance for Employment of the Force (GEF), Joint Strategic Capabilities Plan (JSCP), the Adaptive Planning and Execution System, and Global Force Management (GFM)" (July 2013), United States Naval War College, https://ssl.armywarcollege.edu/DDE/learningmodules/jsps/terms/gef.cfm
75 U.S. Department of Defense, "Nuclear Weapons Employment Policy, Planning and NC3."

conflict (LOAC). Finally, according to General Kehler, the strike options are approved and briefed to the president through a process involving the CJCS and the Secretary of Defense and their teams.

The preceding planning effort ultimately yields a set of strike options for the president to choose from during a crisis, laid out in the "Black Book," which is kept near the president at all times. STRATCOM planners then regularly engage in plan maintenance to ensure the strike options are always in ready-to-use status. "It's not like you develop a concept plan and put it on the shelf," explains General Kehler. "That machine is turning all the time." According to Weaver, this regular maintenance involves updating the plans based on changes to the target set. Weaver gave an example using Russian ICBM silos: If one of the options in the black book was to target Russian silos, and Russia dismantles some silos in accordance with an arms control agreement, the strike plan would be adjusted to remove those targets. Conversely, new targets may be added to the existing plan if Russia were to build new silos.

Nuclear command, control & communications (NC3)

In partnership with the extensive planning process, a complex architecture of warning, tracking, and communications systems supports the president's nuclear decision authority by enabling him to authorize — and command centers to execute — nuclear use as quickly and efficiently as possible.

The first step in a crisis scenario in which the military would wake up the president is early warning. The United States operates a series of satellites, radars, and ground systems that together can detect and track incoming attacks. If an adversary launches ballistic missiles from anywhere on the globe, U.S. satellites orbiting the Earth would detect the launch almost instantaneously. The U.S. Space Force operates the Space-Based Infrared System (SBIRS), a constellation of satellites and ground sensors that provide a continuous view of the entire Earth's surface.[76] The satellites carry infrared sensors which detect the massive heat plumes emitted by the large ballistic missile rocket engines during launch. Upon spotting the heat signatures, the satellites instantly transfer data to ground-based systems for processing. The ground stations immediately send the information to North American Aerospace Defense Command

FIGURE 2. IMAGE RELEASED BY THE GEORGE W. BUSH PRESIDENTIAL LIBRARY OF MILITARY AIDE GEOFF GAGNIER CARRYING THE NUCLEAR FOOTBALL, 28 NOVEMBER 2006. PHOTOGRAPHER: ERIC DRAPER (SOURCE: NATIONAL SECURITY ARCHIVE)

76 Anya Fink, "Defense Primer: Nuclear Command, Control, and Communications (NC3)" (1 May 2025), Congressional Research Service, https://www.congress.gov/crs-product/IF11697

(NORAD) in Colorado Springs, U.S. Strategic Command (STRATCOM) in Omaha, and the National Military Command Center (NMCC) at the Pentagon.[77]

One of eleven combatant commands within the DOD, STRATCOM is responsible for the country's nuclear mission, including strategic nuclear deterrence, nuclear strike operations, and NC3. STRATCOM is integrated into the NC3 system through its Global Operations Center (GOC), through which the STRATCOM commander exercises command and control of U.S. strategic forces and monitors world events.[78] The NMCC is the primary command facility of the NC3 system. It is a command and communication center housed in the Pentagon that is responsible for monitoring and receiving warning of strategic nuclear activity and generating launch orders — Emergency Action Messages (EAMs) — to ICBM launch control centers, nuclear ballistic missile submarines (SSBNs), and other relevant commands when ordered by the president. If either of these fixed command centers are destroyed or otherwise inoperable during a crisis, NC3 operations can transfer to one of two survivable command centers: the National Airborne Operations Center (NAOC) aboard the E-4B Nightwatch (the "Doomsday Plane") or the the E-6B Take Charge and Move Out (TACAMO)/Airborne Command Post.[79] NAOC aircraft are deployed to random basing locations to ensure survivability, and there is always a NAOC aircraft ready to launch within minutes. As NAOCs are like a backup to the NMCC, the E-6B TACAMO is a backup to the GOC. The aircraft is able to launch Minuteman III ICBMs in the event that the land-based launch control facilities are incapacitated; additionally, it can transmit a president's nuclear launch order to ICBM or SLBM (submarine-launched ballistic missile) launch crews or bombers.[80]

Shortly after detecting a launch event that appears to be heading toward the United States, early-warning teams at STRATCOM and NORAD, an aerospace warning organization for the joint defense of the United States and Canada, report the launch information to their commanders and present an initial confidence assessment of an incoming ballistic missile attack based on the available data.[81] If the teams' confidence level is high enough, if their threat assessment is supported by additional intelligence information, and especially if the United States is already involved in a crisis or hostility with an adversary, the president would likely be notified. Thus, a president could be notified of a potential incoming missile attack just minutes after the missiles have launched.

Some accounts by people with experience in the nuclear command and control process say that the notification could be as informal as a direct call to the president's cell phone; according to General Kehler and Greg Weaver, however, there is a formalized process for notifying the president.[82] In an early warning situation, explains Kehler, there is a "graduated set of activities that occur from the bottom up." First, advisors are brought in to try to confirm what is happening based on the early warning information and any available intelligence, then increasingly more senior people are brought in until, eventually, if necessary, the president is added to the conference. That being said, how quickly the conference escalates to the point of adding in the president depends on the time constraint of the situation. In a massive, bolt-from-the-blue attack scenario, the STRATCOM commander or Deputy Director of

77 Bruce Blair, "The U.S. Nuclear Launch Decision Process" (October 2019), Global Zero, https://www.globalzero.org/wp-content/uploads/2020/11/Full-LOWTimeline.pdf
78 U.S. Department of Defense, Nuclear Matters Handbook 2020 [Revised], "Chapter 2: Nuclear Weapons Employment Policy, Planning, and NC3" (14 August 2024), Office of the Secretary of Defense, https://www.acq.osd.mil/ncbdp/nm/NMHB2020rev/docs/NMHB2020rev.pdf
79 Ibid. In 2024, the Sierra Nevada Corporation won a U.S. Air Force contract to develop the Survivable Airborne Operations Center (SAOC), a next-generation aircraft to replace the fleet of E-4B NAOC aircraft.
80 Ibid.
81 Blair, "The U.S. Nuclear Launch Decision Process."
82 Ibid.; Interviews with the author, 2025.

Operations (DDO) in charge of the NMCC would likely pull in the president immediately. Apart from that scenario, communications would likely escalate first to senior officials like the Secretary of Defense and/or Chairman of the Joint Chiefs of Staff, who would then ask for the president to be brought into the conversation if necessary. According to Weaver, the notification itself follows a formalized procedure: the NMCC contacts the White House Military Office (WHMO), who gets the president and connects him to the secure communications channel.

Upon notification of the incoming threat, the president would likely be ushered to a secure location. Depending on the president's whereabouts at the time of the notification and the estimated impact location of the incoming attack, he could be taken to various locations, including the secure bunker below the White House known as the Presidential Emergency Operations Center (PEOC), the conference room aboard Air Force One, aboard Marine One, or even simply his presidential motorcade, all of which have communications equipment.[83]

Military and civilian advisors would join the emergency conference to provide details on the situation and advise the president on his options. The STRATCOM commander would likely brief the president on the strike options, and other military officials like the Secretary of Defense and CJCS would provide additional input if solicited. In such an emergency situation, however, any of the president's top advisors could be unreachable or otherwise unable to join the emergency conference, and, of course, the president could choose not to solicit or heed their advice.

The U.S. military operates a network of five ground-based radar sites under the Solid State Phased Array Radar Systems (SSPARS) program that provide mid-flight missile warning and space surveillance.[84] The radar systems — located in Greenland, the United Kingdom, Alaska, California, and Massachusetts — detect ICBMs mid-flight and provide Integrated Tactical Warning/Attack Assessment (ITW/AA) by confirming detection of ballistic missiles that may be headed toward the United States and providing real-time tracking data of ballistic missiles in-flight to estimate launch and impact points.[85] The ITW/AA process integrates and compares data from two independent sources relying on different physical principles (e.g., ground radars and infrared satellites) to provide early warning teams a clearer operational understanding and most credible threat assessment possible.[86] With a detection range of 3,000 miles, the SSPARS radars could identify midcourse ICBMs approximately 10 minutes after launch, but the exact time of detection depends on the missiles' launch point of origin.[87]

The DOD's Missile Defense Agency also operates the Sea-Based X-Band (SBX) Radar, which "obtain[s] missile tracking information while an incoming threat missile is in flight, discriminates between the hostile missile warhead and any countermeasures, and provides that data to interceptor missiles so they can successfully intercept and destroy the threat missile before it can reach its target."[88] The SBX radar is mounted on a mobile, semi-submersible platform currently deployed in the Pacific Ocean to monitor for North Korean ICBM launches.[89] These systems can provide the president with a higher-confidence

83 Kehler, interview with author.
84 Curtis Stiles, "Upgraded Early Warning Radars (UEWR)" (December 2018), Missile Defense Advocacy Alliance, https://missiledefenseadvocacy.org/defense-systems/upgraded-early-warning-radars-uewr/
85 Missile Defense Agency, "Fact Sheet: Upgraded Early Warning Radars, AN/FPS-132" (23 July 2014), http://www.mda.mil/global/documents/pdf/uewr1.pdf
86 U.S. Department of Defense, Nuclear Matters Handbook.
87 Stiles, "Upgraded Early Warning Radars."; Blair, "The U.S. Nuclear Launch Decision Process."
88 Missile Defense Agency, "Fact Sheet: Sea-Based X-Band Radar" (25 January 2024), https://www.mda.mil/global/documents/pdf/sbx.pdf
89 Curtis Stiles, "Sea-Based X-Band Radar (SBX)" (March 2023), Missile Defense Advocacy Alliance, https://missiledefenseadvocacy.org/defense-systems/sea-based-x-band-radar-sbx/#_edn2

threat assessment, but under the severe time pressure of a potential incoming missile alert, the president may decide to launch a nuclear attack on warning before ground systems are able to provide more information.

Making and executing the president's decision

There is a difference between the emergency conference of advisors and officials that convenes when a potential incoming attack is detected and the formal conference convened to select, communicate and authenticate a president's nuclear launch order, which is formally called a nuclear decision conference. An emergency conference would likely transition to a formal decision conference only once it becomes apparent that the conversation could imminently result in a nuclear launch order. During the emergency conference, advisors and officials may discuss what to do and how to respond to the threat, but as soon as the president wants to discuss nuclear strike options, they would initiate a formal decision conference. The nuclear decision conference would be initiated and managed by the DDO at the NMCC.[90]

Wherever the president goes, he is shadowed at all times by an active duty military officer carrying an approximately 40-pound, aluminum-plated, leather briefcase known as the "Nuclear Football." The football serves as a portable doomsday machine, allowing the president to order the launch of nuclear weapons at any time from any location. The football is carried on a rotating basis by military aides who are specially selected, trained, and certified for the role. The aides are typically at the O-4 level (majors in the Army, Air Force, and Marine Corps and lieutenant commanders in the Navy and Coast Guard) but are occasionally O-5s (Lieutenant colonels and commanders).[91]

Contained within the emergency satchel is everything the president needs to make a launch order, including the "black book" of preplanned strike options. The black book originally comprised a heavy set of war plans, but after President Jimmy Carter complained that its contents were too dense and complicated for making speedy decisions, it was simplified into a simpler set of attack options for the president to choose from. The sanitized list of options was likened by a former military aide to President Clinton to a "Denny's breakfast menu."[92] The president is not obligated, however, to select from the strike options in the black book. It is, of course, an option for the president to do nothing — to wait for the incoming attack to land before deciding what to do in response. But what happens if the president wants to order a nuclear strike but doesn't like any of the preplanned options, or if none of the preplanned options are appropriate for the scenario? There is a plan for that, too, and it's called "adaptive planning."

STRATCOM maintains the ability to adaptively plan new strike options at the request of the president during a crisis. Regarding his experience with adaptive planning while STRATCOM commander, General Kehler explained:

> *"Occasionally, I would get my staff together and we would do a tabletop [exercise] on a scenario that wasn't anywhere in our planning guidance. The idea behind that wasn't to pose a question, 'What happens if Martians land?' It was to get people thinking about how you deal with surprise... Even though it was a decade prior, [the 9/11 attack] still sticks with me. People said it was a failure of imagination. I agree. It was a failure of imagination, but it was also, I think, a comfort in planning for things that we thought were going to happen as opposed to planning for things that actually happen. So it isn't that you're ever going to get it*

90 Weaver, interview with author.
91 Kehler, interview with author.
92 Dobbs, "The Real Story of the 'Football.'"

> *right; I don't think you will. But what you have to train yourself to do is react when you didn't get it right, or when something happens that you didn't anticipate."*

That said, adaptive planning is limited by time. STRATCOM planners can adaptively build a new strike option involving a low number of weapons relatively quickly, according to those with experience in the planning process. But in a crisis, time would not permit the development of large strikes requiring, say, hundreds of weapons for entirely new objectives. One reason is because adapted plans still undergo legal review, albeit expedited. New plans developed during a crisis would be reviewed by lawyers and planning teams at STRATCOM, OSD, and the Joint Staff before being presented to the president for execution.[93] According to General Kehler, there has been an effort at STRATCOM over the decades to reduce the amount of time adaptive planning requires.

Alongside the strike menu, the Football holds secure communications equipment that allows the president to communicate with the nuclear command center to relay the order. The president must verify his identity to the command center (likely the NMCC) using the "biscuit." The biscuit is reportedly a plastic, index-size card, inscribed upon which is a random code generated daily by a code machine at the National Security Agency. It is a common misconception that the president holds "the nuclear codes." The code held by the president is simply used to confirm that he is, in fact, the president of the United States and therefore has the authority to order nuclear strikes. The biscuit can be carried within the Nuclear Football, but some presidents elect to carry it on their person.[94] Once the president's identity is confirmed and he relays his launch order, the NMCC converts the order into an encrypted format called an Emergency Action Message (EAM) for broadcast to launch crews. The EAM is reportedly only about 150 characters long and includes the chosen strike plan, time to launch, special authentication codes, and codes to unlock the missiles and warheads and enable launch.[95]

The NMCC could execute these steps to transmit the launch order in just one minute from the time the president communicates his order. Launch crews would receive the order within seconds and open locked safes containing a Sealed Authenticator System (SAS) card — similar to the president's biscuit — containing codes that they would compare with the authentication codes from the launch order to verify its authenticity.

For SLBMs, the captain of the SSBN and his executive officer would open a safe to retrieve the "fire-control" key required to launch the missiles. SLBM launch reportedly requires participation of four individuals: the captain, the navigation officer, the missile officer, and the launch control officer.[96] SLBMs would be ready for launch about 15 minutes after the order is received.

The launch of ICBMs relies on a voting system of launch crews. There are five launch crews per squadron of 50 missiles, and each crew is made up of two officers. Each individual crew would receive and authenticate the launch order then enter the strike plan number into their launch computers to target the missiles according to the plan.[97] The crews would unlock the missiles using codes provided in the EAM, and, at the designated time of launch, simultaneously turn launch keys obtained from a safe to "vote" to

93 Weaver.
94 Jeffrey G. Lewis and Bruno Tertrais, "The Finger on the Button: The Authority to Use Nuclear Weapons in Nuclear-Armed States" (February 2019), James Martin Center for Nonproliferation Studies, https://nonproliferation.org/wp-content/uploads/2019/02/Finger-on-the-Nuclear-Button.pdf#page=12
95 Dave Merrill, et al., "To Launch a Nuclear Strike, President Trump Would Take These Steps" (20 January 2017), Bloomberg, https://www.bloomberg.com/politics/graphics/2016-nuclear-weapon-launch/
96 Lewis, "The Finger on the Button."
97 Merrill, "To Launch a Nuclear Strike."; During peacetime, ICBMs are targeted at the open ocean.

launch. Out of the five launch crews per squadron, just two votes are needed to launch the missiles. In other words, even if six launch officers refused to carry out the order, the launch would commence.[98] ICBMs could fire in as little as two minutes after receiving a launch order.[99] Once fired, ICBMs and SLBMs cannot be disarmed or recalled.

From the time that a president is notified of a potential incoming attack, experts estimate that he would have less than ten minutes to consider his options and make a decision before the ability to respond at all was at risk.[100]

Waking Up the Military

> *"You can't just start a nuclear war because you feel like it if you're the President of the United States."*
>
> **GREG WEAVER**

Circumstances and limitations

The declaratory policy of the United States is that nuclear weapons employment will only be considered "in extreme circumstances to defend the vital interests of the United States or its Allies and partners."[101] If the military is waking up the president, so to speak, the initial "extreme circumstance" criteria has almost certainly been met. But the president's power over nuclear launch decisions is not limited to cases of an incoming or realized attack on the United States. The president retains the authority to order the first use of nuclear weapons as long as certain conditions and criteria are met. Determining whether such conditions have been met, however, is not always simple. To understand the process for executing presidential orders for nuclear first-use, we must first understand the applicable and most likely scenarios. To do so, we can differentiate between first-use during wartime and peacetime.

If the United States is already involved in a declared war, the president's authority is clear. As Commander-in-Chief, the president holds the power to order any action with U.S. military force — including nuclear weapons — as long as it is legal under the law of armed conflict. A declared war would also more easily meet the domestic standards of extreme circumstance and vital national interest laid out in U.S. declaratory policy. That being said, being in a declared war does not automatically grant the president the legal authority to order any first-use nuclear strike. The strike would still have to meet the LOAC standards of necessity, distinction, and proportionality and the national policy of taking place during extreme circumstances when vital national or allied interests are at stake.

Absent a declared war, there's considerable legal ambiguity over the limitations of the president's authority to order nuclear first-use (For further legal discussion, see Chapter III). The most likely scenarios in which a president might "wake up the military" and initiate a conversation on nuclear use, argues Kehler, are "we are in a crisis of some kind with a nuclear adversary, or we are in a regional conflict with a nuclear

98 Ibid.
99 Blair, "The U.S. Nuclear Launch Decision Process."
100 Anya L. Fink, "Authority to Launch Nuclear Forces" (19 December 2024), Congressional Research Service, https://www.congress.gov/crs-product/IF10521
101 U.S. Department of Defense, "Nuclear Posture Review 2022" (27 October 2022), https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.pdf

adversary, or we are in a regional conflict that has grown beyond where anybody thought it was going to go and we are considering using nuclear weapons."[102] In these circumstances, there already exists what Kehler calls an "entering argument" to be considering nuclear use.

But the question that many Americans raise concerning presidential sole authority is: Could an irrational or unstable president wake up one day and decide to start a nuclear war? Multiple senior officials with experience in the nuclear launch system say no. "I think that is the most unlikely of the most unlikely scenarios," General Kehler said.[103] "You can't just start a nuclear war because you feel like it if you're the President of the United States," Greg Weaver assured.[104] *Legally*, the president could not just "[go] nuts on any given Thursday"[105] and decide to order a nuclear strike absent an imminent or realized threat. But could he *logistically*? Fortunately, the system is safeguarded against such an occurrence.

The process

If the president, unprompted, contacted a command center to make a launch order, the process would, according to General Kehler, look very similar. If the president wanted to order a nuclear launch absent an imminent attack on the United States or some other crisis situation, he would still have to convey the order to a nuclear command center like the NMCC, which would have to go through the same steps outlined in Section A to execute the launch order. A crucial difference between the two launch scenarios, however, is time.

There is no time constraint in a situation where the president is waking up the military to order a nuclear strike, contrary to the time pressure present if an attack against the United States is imminent. Thus, the NMCC can — and, according to General Kehler, likely would — take the time to ask the president questions in response to his order and engage appropriate processes like initiating an emergency conference with top officials and advisors. As Dr. Peter Feaver testified to the Senate Foreign Relations Committee in 2017, "[The president] would require lots of people cooperating with him to make the strike happen, and they would be asking questions that would slow down that process."[106]

Imagining himself in such a scenario as commander of STRATCOM, General Kehler explained the questions he would ask:

> *"My initial filter here for distinction, proportionality and necessity was going to be, is this extreme circumstances and are vital national interests involved? If the case there was no, then that was cause to pause and make sure that we were then having a conversation with the commander-in-chief about what's happening. My first conversation before I joined that would've been a conversation with my own ops center: What's going on here? Why am I being awakened by the president asking about nuclear weapons?"*[107]

The goal of these questions, explains Kehler, would be to see if there was an entering argument to be having a conversation about nuclear strike options. "If there's an entering argument here that is clear about why we're even talking about nuclear weapons, then we have ways to make that happen for the president." If there isn't, it is the responsibility of whoever receives the president's order "to raise [their]

102 Kehler, interview with author.
103 Ibid.
104 Weaver, interview with author.
105 Ibid.
106 U.S. Congress, Authority to order.
107 Kehler, Interview with author.

hand and not say 'no,' but to say, 'we need more information. Mr. President, we need to understand better what's happening here and why we are having this conversation.'"[108] If the president calls, say, the NMCC, and says he wants to use nuclear weapons, it is the obligation of those working at the command center, particularly the flag officer in charge, to ask questions, engage proper procedure by convening a conference of other experts and advisors, and, ultimately, refuse to carry out an illegal order, which military servicemembers are legally obligated to do.

108 Ibid.

III What's the issue?

Shortcomings, risks and vulnerabilities of the current system

> *"We had many contingency plans for responding to a nuclear attack. But everything would happen so fast that I wondered how much planning or reason could be applied in such a crisis... Six minutes to decide how to respond to a blip on a radar scope and decide whether to unleash Armageddon! How could anyone apply reason at a time like that?"*
>
> **PRESIDENT RONALD REAGAN**[109]

As we've discussed, today's system for nuclear launch in the United States is the culmination of decades of trial and error. In reviewing the ins and outs of the system, it is clear that officials and planners have attempted to prevent failure modes through procedures, trainings, and other safeguards. Nevertheless, the system is not without vulnerabilities and shortcomings, and it is crucial to understand the ways in which it can go wrong and what new challenges may be posed by emerging threats.

Uncertainty and Emerging Threats

The first and perhaps most damning vulnerability in the launch system is the impossibility of certainty in early warning. "You can have very, very high confidence that the warning you're seeing is real," says Greg Weaver, but "there is almost no such thing as absolute certainty."[110]

False warnings of nuclear attack have occurred on numerous occasions in the United States. While most occurred during the Cold War and the warning technology and communication system have since evolved, the current system is still fallible to technical and human error. As recently as 2018, an employee of Hawaii's Emergency Management Agency pushed the wrong button, resulting in an emergency broadcast on television, radio, and to Hawaiian residents' mobile phones that read, "Ballistic missile threat inbound to Hawaii. Seek immediate shelter. This is not a drill."[111] It took the agency 18 minutes to correct the alert via email and 38 minutes to send a text message dispelling the alert.[112] While in this scenario the military confirmed that they had not detected a missile threat, it demonstrates the possibility for human error or technical glitch to disrupt the system. Additionally, it raises the question: what may have happened if such a mistake took place during a crisis, a period of heightened tension or conventional conflict with a nuclear adversary? Would everyone assume for 18 or 38 minutes that the alert was a mistake, or would they wonder if the adversary somehow disrupted the early warning system through cyber attack?

As cyber capbilities continue to advance around the globe, they pose a serious potential threat to U.S. early warning and NC3. There are safeguards within the existing system to protect it against cyber

109 Ronald Reagan, An American Life: Ronald Reagan, (New York: Simon and Schuster, 1990), 257.
110 Weaver, interview with author.
111 BBC News, "Hawaii missile alert: False alarm sparks panic in US state," (13 January 2018), https://www.bbc.com/news/world-us-canada-42677604?itid=lk_inline_enhanced-template
112 Honolulu Star-Advertiser, "'Wrong button' sends out false missile alert," (13 January 2018), https://www.staradvertiser.com/2018/01/13/breaking-news/emergency-officials-mistakenly-send-out-missile-threat-alert/

threats, but they are not impenetrable, and as people continue to innovate new cyber capabilities, unknown vulnerabilities in the system will likely emerge. Additionally, as NC3 in the United States is modernized, it will become more vulnerable to cyber threats. Legacy NC3 was largely invulnerable to cyberattack due to not being connected to the internet, but as NC3 and nuclear systems are upgraded to modern cyber standards, cyber vulnerability will grow.[113] Furthermore, added uncertainties in early warning and NC3 will emerge as countries develop new disruptive technologies and capabilities.

For example, as countries pursue dual-capable missile systems, early warning systems will have no way of discriminating between missiles carrying nuclear warheads and missiles carrying conventional warheads. One might argue that a nuclear-armed country likely would not hide the fact that they were launching a conventional weapon for fear of nuclear retaliation, but such an argument rests on a belief that leaders always make rational decisions, or that mistakes never happen. Another concerning technology that some nuclear-armed countries are developing is hypersonic glide vehicles (HGVs). Missiles armed with ballistic reentry vehicles have a predictable trajectory, allowing early warning teams and systems to anticipate the missile's flight path and impact area. HGVs, on the other hand, can maneuver and change course after they release from the rocket booster.[114] This capability would mean that early warning teams would likely be unable to predict the targets of launched missiles. Again, the logical or rational course of action if such a launch were detected would likely be to wait and verify where the missiles strike, but a leader may be tempted to act based on the worst-case scenario or make dangerous assumptions, particularly during a crisis or conflict with the country from which the launch was detected. Moreover, individual leaders cannot be relied upon in perpetuity to always make the most rational choice under pressure.

Finally, in 2024, U.S. lawmakers raised alarm over intelligence that indicated Russia's development of a nuclear anti-satellite weapon.[115] Satellites play an integral role in U.S. early warning and NC3; the emergence of anti-satellite capabilities introduces significant uncertainty and instability into the nuclear launch command system by threatening the systems that enable clarity and confidence in threat assessment and secure, efficient communications.

It would be impossible to think through every "what if" scenario and to predict every single threat, current and future, to the nuclear launch enterprise, which is itself a major problem. We will never know every single way in which the system could fail or be compromised. It will be impossible to plug every hole, so to speak, to account for every failure mode. When it comes to nuclear weapons, even just one unforeseen "leak" in the system can be catastrophic.

Such unknowns and uncertainties are particularly risky in a system designed to enable the president to make a decision quickly, based on incomplete information. The modern launch system still functions as it was set up to function during the Cold War, when it was believed that the most effective way to deter a massive surprise attack from the Soviet Union was to convince them that the U.S. president could respond in kind before their attack landed. The entire logistical system supporting a president's nuclear launch decision enables such rapid response, but it's further enabled by accompanying policies and postures like first-use and launch-on-warning (LOW). "American nuclear policy is 'structured to drive the

113 U.S. Department of Defense, "Nuclear Weapons Employment," 19.
114 Kelley M. Sayler, "Defense Primer: Hypersonic Boost-Glide Weapons," (1 November 2024), Congressional Research Service, https://sgp.fas.org/crs/natsec/IF11459.pdf
115 U.S. Congress, House Permanent Select Committee on Intelligence, Press Release, "
Turner Warns of Russia's Nuclear Anti-Satellite Weapons Program During Speech at CSIS," (20 June 2024), https://intelligence.house.gov/news/documentsingle.aspx?DocumentID=1425

president invariably toward a decision to launch under attack,'" write William Perry and Tom Collina in *The Button*. "Current U.S. policy–the option to shoot first, with weapons on high alert, under pressure to launch on warning of attack or lose weapons on the ground–could force the president into a dangerous corner."[116] Indeed, one could argue that the sitting-duck vulnerability of ICBMs in the United States invites a devastating strike on U.S. soil, and creates a predicament in which the only way to preserve them in the event of an incoming attack is to launch them. This posture reinforces a use-it-or-lose-it mindset that may predispose the president to launch, a decision that can't be reversed once ICBMs take off, which can happen as soon as just two minutes after the order is made due to their high-alert status.[117]

Humans, Legality, and the Danger of Ambiguity

> *"I don't think that we should be trusting the generals to be a check on the President. I don't think we should be trusting a set of protocols to be protecting the American people from having a nuclear war launched on their behalf."*
>
> **SENATOR ED MARKEY, 2017**[118]

To the credit of NC3 and nuclear security architects, the U.S. nuclear launch system is safeguarded strongly against accidental or unauthorized nuclear use. Through measures like locking mechanisms on weapons; requiring simultaneous, multi-person key turning to carry out launches; SAS codes for identity verification and access; and more, the possibility of nuclear weapons launching unintentionally, absent an order from the president, is extremely low. Preventing the illegal use of nuclear weapons, however, or the use of nuclear weapons based on miscalculation or misunderstanding, or the use of nuclear weapons in contravention of the national interest, or any nuclear weapons use that is not absolutely necessary, relies on humans, their adherence to proper protocol and the law, and their willingness to stand firm against the president's wishes if necessary.

In 1974, President Nixon's Secretary of Defense, James Schlesinger, became so concerned by Nixon's erratic and unstable behavior that he instructed military officials to come to himself or Secretary of State Henry Kissinger for approval if Nixon gave them a nuclear launch order.[119] In 2020 and early 2021, reacting to concerns over outgoing President Trump's behavior, particularly following the January 6, 2021, attack on the Capitol, then-CJCS Gen. Mark Milley called his Chinese counterpart to provide reassurance that the United States was not planning a nuclear attack and advised U.S. military officials involved in the nuclear command and control system to call him in the event of a nuclear order from the president.[120] One might be reassured by the presence of seemingly rational, level-headed people in

116 Perry and Collina, The Button, 6-7.
117 Thomas C. Schelling, "Abolition of Ballistic Missiles," International Security 12, no. 1 (1987): 179–83. https://doi.org/10.2307/2538923
118 U.S. Congress, Authority to order.
119 Robert McFadden, "James R. Schlesinger, Willful Aide to Three Presidents, Is Dead at 85," (27 March 2014), The New York Times, https://www.nytimes.com/2014/03/28/us/politics/james-r-schlesinger-cold-war-hard-liner-dies-at-85.html
120 U.S. Congress, Gen. Mark Milley testimony before the House Armed Services Committee, video recording accessed via C-SPAN, "General Milley Defends Calls to Chinese Counterpart and Review on Nuclear Launch Protocols," (29 September 2021), https://www.c-span.org/clip/house-committee/general-milley-defends-calls-to-chinese-counterpart-and-review-on-nuclear-launch-protocols/4979441; PBS News, "Why Milley checked nuclear procedures, called China in final days of Trump presidency," (14 September 2021), https://www.pbs.org/newshour/show/why-milley-secretly-secured-nuclear-codes-called-china-in-final-days-of-trump-presidency#transcript

senior positions around the president, but in both of these examples, subordinates in the launch chain would not have been obligated to follow Schlesinger or Milley's orders, and, depending on the scenario, there may have been little legally or logistically they could have done to stop a nuclear order from the president even once they were alerted of it. Most importantly, as Betts and Waxman argue in The Lawfare Institute, "A solution that requires military disobedience without clear legal backing is both unreliable and fraught with bad constitutional and policy implications."[121]

The U.S. Uniform Code of Military Justice (UCMJ) — the foundation of the U.S. military justice system — obligates military servicemembers to obey legal orders and disobey illegal orders. The punishment for disobeying legal orders ranges from dishonorable discharge, forfeiture of pay, and up to five years of confinement if done during peacetime, up to death if done during wartime. At the same time, servicemembers are legally bound to disobey illegal orders.[122] This may provide some reassurance — indeed, a common refrain in response to expressions of fear over the president's power assures that the president can't just do whatever he wants. If the president tried to give an unlawful nuclear launch order, we need not worry, because subordinates in the chain of command would disobey it. While it is true that the military would be obligated to refuse an unlawful order from the president, and that they are trained in LOAC in order to make that determination, the only people who would be in the position to do so would be those at the command center to which the president communicates his order, and likely the STRATCOM commander.

Once a nuclear launch order is disseminated to the forces from the command center and STRATCOM, subordinates in the chain of command — especially missile launch officers sitting deep in underground bunkers — will have effectively no context about the order, particularly why it was issued or whether it is in response to an incoming attack against the United States. Therefore, they will have no basis for determining whether the order is lawful or not. Moreover, as Dr. Feaver explained in his Senate testimony, "There is a presumption that the orders that come through the chain of command and from competent authority are legal."[123] The most subordinate members of the chain of command have to trust that their superiors did their jobs properly. Because of this, preventing the execution of an unlawful nuclear order from the president relies on the senior officers at the command center and the STRATCOM commander, who would be tapped into the early warning system and thus would have enough information to question the order. According to Kehler, it is their responsibility to ask questions and engage other senior officials and advisors, and it is their legal obligation to refuse an order that would be illegal. "I can't imagine that they would just say, 'You got it, boss,'" said Kehler regarding the possibility of these officers carrying out an illegal order from the president. "I can't imagine it. Now, is it possible? I don't know. I guess it is, theoretically. I think it's implausible."[124] The chances of the president being able to carry out an illegal nuclear launch order on a random day, absent extreme circumstances, are thus very low. But it is possible, because preventing it relies on humans, and even highly trained, senior military officers are fallible.

Although the conversation around presidential nuclear launch authority tends to focus on such a scenario of an unstable president ordering nuclear use unprompted on a random day (which is certainly an important scenario, even if unlikely, for defense officials and the American public to think about), greater concern should be placed on the president's ability to act erratically during a war or other national

121 Richard K. Betts and Matthew Waxman, "Safeguarding Nuclear Launch Procedures: A Proposal," The Lawfare Insitute (19 November 2017). https://www.lawfaremedia.org/article/safeguarding-nuclear-launch-procedures-proposal
122 Uniform Code of Military Justice, Punitive Articles, 10 U.S.C. § 890. Art. 90 (2023).
123 U.S. Congress, Authority.
124 Kehler.

security crisis. "I'm not very worried that there would be an unauthorized launch because the president went crazy," Weaver said. "Now, what you don't have much protection against is the president being erratic in a war."[125] In wartime, the president's Constitutionally-granted authority as commander-in-chief gives him significant leeway to order the use of U.S. military force in the manner he deems necessary to achieve U.S. objectives. Wartime also expands the ability to argue that a nuclear strike complies with LOAC. Weaver presents an example to explain this:

> *"You can go pretty far without overdoing it and still be legal [if] the objective is to prevent horrific civil damage on the United States. If you can show that, 'If I execute this option… I'll kill 7 million Russian civilians, but I'll save 170 million American civilians,' that's proportionate. That amount of civilian damage to Russia is proportionate to the objective. Now, you have to demonstrate to the lawyer that the option will actually have that effect. You can't just say it'll save 170 million Americans, you have to demonstrate it."*[126]

Weaver's final thought introduces an important point about who, exactly, has to accept the legal justification in order for a nuclear order to be carried out. The president doesn't have to get a nuclear order approved in the moment by lawyers at the International Criminal Court or the International Court of Justice, or by the U.S. Supreme Court, or by any Judge Advocate General (JAG). The legality of a nuclear strike may, of course, be challenged by the ICC, ICJ, UN Security Council, or other entity after the fact, but in practice, nuclear launch orders have only to pass the legal scrutiny of the officers in the chain of command, who are not lawyers themselves. Lawyers at the DOD, Joint Staff, or STRATCOM would almost certainly provide their legal opinion, and military officers are trained in LOAC to aid such decisions, but it is worth noting that while legal protections against nuclear use are strong, they are not airtight. Legal protections are limited by nature of their enforceability only after the fact. The weakness of law as a safeguard against the president's nuclear authority is further characterized by its varying interpretability; there exists an entire scholarship dedicated to interpreting Constitutional law and LOAC in relation to nuclear weapons use and debating the legality of various nuclear use scenarios.[127] Brad Clark, a retired Army Reserve Judge Advocate and former principal director for Nuclear and Missile Defense Policy in OSD, aptly conveys the issue in discussing the legality of nuclear reprisal under international law: "To be sure, whether an attack is lawful or not for reprisal purposes may be in the eye of the beholder."[128]

The Fragility of Norms

Over the decades, the nuclear launch enterprise has evolved and adapted to account for new threats and vulnerabilities. It has held firm even through intense crises of the Cold War and arguably unstable or erratic presidents. One constant it has had throughout this time is a functioning democracy that values

125 Weaver.
126 Ibid.
127 For example: John M.A. DiPippa, "Nuclear Weapons, the War Powers, and the Constitution: Mutually Assured Destruction?" in the South Carolina Law Review, Vol. 71, Issue 4 (September 2019). https://sclawreview.org/article/nuclear-weapons-the-war-powers-and-the-constitution-mutually-assured-destruction/; David M. Corwin, "The Legality of Nuclear Arms Under International Law," Penn State International Law Review, Vol. 5, Issue 2 (1987). https://insight.dickinsonlaw.psu.edu/cgi/viewcontent.cgi?article=1057&context=psilr; Christopher Vail, "The Legality of Nuclear Weapons for Use and Deterrence," Georgetown Journal of International Law, Vol. 48 (2017). https://www.law.georgetown.edu/international-law-journal/wp-content/uploads/sites/21/2018/05/48-3-The-Legality-of-Nuclear-Weapons-for-Use-and-Deterrence.pdf; Newell L. Highsmith, "On the Legality of Nuclear Deterrence," Lawrence Livermore National Laboratory, Center for Global Security Research, Papers on Global Security No. 6 (April 2019). https://cgsr.llnl.gov/sites/cgsr/files/2024-08/CGSR-LivermorePaper6.pdf
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and respects systems and laws. How fragile is the current system in the face of domestic instability? Of an administration that chooses to ignore or consciously dismantle procedures, norms, systems, and safeguards put in place by the administrations before it?

"Our divisive political environment has raised new doubts about the effectiveness of all our branches of government to wield the power they possess responsibly," said Dr. Feaver in his Senate testimony.[129] Following the 2020 presidential election, Donald Trump engaged in a premeditated strategy to challenge the election results, taking to social media and state and Federal courts with charges of fraudulent voting activity. Trump continuously invoked the Constitution incorrectly, convincing his supporters that the country and its democracy was under attack, ultimately inciting a violent attack on the nation's Capitol on January 6, 2021 when then-Vice President Mike Pence refused Trump's demands to not count some of the Electoral College votes.[130] On his first day back in office on January 20, 2025, President Trump granted pardons to the approximately 1,500 defendants involved in the January 6, 2021 attack, referring to them as "patriots."[131]

More recently, President Trump federalized and deployed 2,000 California National Guard forces to Los Angeles, along with 700 Marines, in response to protests over the administration's immigration raids.[132] The legality of these orders is still being determined in the courts, but it reveals a continued effort by the current president to push legal boundaries and precedent. Similarly, on August 11, 2025, President Trump declared a "crime emergency" in Washington DC, invoking the Home Rule Act to federalize DC's police force and deploy National Guard to the city.[133] DC's Attorney General filed a lawsuit on August 15 to block the federal takeover of DC's police force, arguing that the move is an unlawful abuse of the administration's limited authority under the Home Rule Act.[134]

Beyond law enforcement, the Trump administration has engaged in numerous unlawful actions and actions that seek to dismantle government agencies and processes, from the firing of countless federal employees including federal prosecutors and inspectors general, to allowing Elon Musk and DOGE staff to access sensitive data on millions of Americans, to the initiation of plans to gut entire units of the Department of Justice.[135] Fortunately, as far as we know, none of these actions have directly impacted the nuclear launch system, but they raise a serious concern. Does the current system and the safeguards built into it rely on norms and procedures that could be too easily dismantled by an administration that wanted to? Or on laws that could be too easily challenged or ignored? Does the current system rely on a stable, functioning democracy, and if so, what happens if the United States can no longer be considered

129 U.S. Congress, Authority.
130 U.S. House of Representatives, Final Report of the Select Committee to Investigate the January 6th Attack on the United States Capitol (22 December 2022), 117th Congress, 2nd Session, Report 117-663, https://www.govinfo.gov/content/pkg/GPO-J6-REPORT/pdf/GPO-J6-REPORT.pdf
131 Carrie Johnson, "Trump offers long-promised pardons to some 1,500 January 6 rioters," NPR (20 January 2025), https://www.npr.org/2025/01/20/g-s1-36809/trump-pardons-january-6-riot
132 Elizabeth Goitein, "What to Know About the Los Angeles Military Deployment," Brennan Center for Justice (20 June 2025), https://www.brennancenter.org/our-work/research-reports/what-know-about-los-angeles-military-deployment
133 The White House, Executive Order, "Declaring a Crime Emergency in the District of Columbia," (11 August 2025), https://www.whitehouse.gov/presidential-actions/2025/08/declaring-a-crime-emergency-in-the-district-of-columbia/
134 "DC Attorney General Schwalb Sues to Stop Federal Government Takeover of Metropolitan Police Department," Office of the Attorney General for the District of Columbia (15 August 2025), https://oag.dc.gov/release/dc-attorney-general-schwalb-sues-stop-federal
135 House Appropriations Committee Democrats, "Press Release: President Trump Actively Destroys the Rule of Law He Claims to Be Restoring," (14 March 2025), https://democrats-appropriations.house.gov/news/press-releases/president-trump-actively-destroys-rule-law-he-claims-be-restoring

IV Can we solve it?

A discussion of policy approaches

Experts and lawmakers have put forward several proposals for altering nuclear launch authority in the United States to prevent a president from being able to use nuclear weapons in contravention of the national interest; notably, however, each proposal seeks to address a different issue or risk area of the current system that supports sole authority. A central challenge to solving the problem of sole authority is that expert opinions vary on what problem needs to be solved. Moreover, a review of some proposed solutions makes clear that they come with tradeoffs that raise difficult considerations for decisionmakers.

In January 2025, Senator Ed Markey and Rep. Ted Lieu reintroduced the "Restricting First Use of Nuclear Weapons Act," legislation that would require the president to receive congressional approval to launch a nuclear first strike.[136] This proposal by Markey and Lieu rests on the argument that launching a nuclear weapon first is "an obvious act of war" and thus should require congressional approval.[137] Such legislation would certainly limit the president's ability to start a nuclear war, but it presents some legislative difficulties. While distinguishing between first use and retaliatory use seems quite simple, scholars and lawmakers have debated the legal gray zone of the president's war powers for decades, and the existence of such gray zones presents significant uncertainty for legal applications. Additionally, this proposal fails to account for situations in which the United States is already in a war and the president feels nuclear use is necessary to achieve some objective, or for the behavioral pattern of U.S. presidents to carry out military operations absent congressional approval or a formal declaration of war. On the former point, it could present serious Constitutional problems to propose limiting the president's authority as commander-in-chief to employ U.S. forces during wartime.

Rep. Scott Peters introduced the "Nuclear First Strike Security Act of 2025" in May, which would require the Secretary of Defense to certify to Congress the validity and legality of any nuclear first strike order from the president.[138] A similar proposal by national security experts Richard Betts and Matthew Waxman calls for requiring certifications from the Secretary of Defense (or designee) that a president's order is valid as well as from the Attorney General (or designee) that it is legal, but the requirements would not apply "under conditions of enemy attack."[139] Although these proposals attempt to solve for the possibility of a president issuing an illegal nuclear order, they raise new challenges that must be considered. First, such proposals would necessarily introduce a legal dispute to determine whether the appropriate conditions have been met for their applicability. How will Congress or the Pentagon determine whether there exist "conditions of enemy attack," or what the threshold is between first use of nuclear weapons and nuclear use under imminent attack? Such deliberation could lengthen the authorization process in a way that undermines deterrence or causes confusion in the chain of command. Additionally, providing unelected officials what would, in practice, amount to veto power over the president's decision is Constitutionally and democratically problematic.

136 U.S. Congress, H.R.669, "Restricting First Use of Nuclear Weapons Act of 2025," 119th Congress, 1st Session (23 January 2025), https://www.congress.gov/bill/119th-congress/house-bill/669/text

137 "Rep. Lieu and Sen. Markey reintroduce bill to limit president's ability to launch nuclear first strike," (29 January 2019), https://lieu.house.gov/media-center/press-releases/rep-lieu-and-sen-markey-reintroduce-bill-limit-president-s-ability

138 Chris Jennewein, "Rep. Peters introduces bill to limit President's ability to launch a nuclear strike," (27 May 2025), https://scottpeters.house.gov/2025/5/rep-peters-introduces-bill-to-limit-president-s-ability-to-launch-a-nuclear-strike

139 Betts and Waxman.

There are numerous shortcomings with legislative solutions to the issues raised by presidential sole authority, but primarily, sole authority is not a black-and-white issue, and thus cannot be solved through black-and-white solutions. When asked during a Senate hearing on nuclear launch authority whether he could "imagine a policy that would both limit the president's authority to use nuclear weapons and, at the same time, not weaken the deterrence value of our nuclear arsenal," Brian McKeon, U.S. attorney and former acting Under Secretary for Policy at DOD, answered: "I think hard cases make bad law."[140]

Other proposals similarly present dilemmas. Some experts, like William Perry and Tom Collina, recommend taking ICBMs off alert and ending the option to launch on warning.[141] These rapid response postures, they argue, predispose a president to launch nuclear weapons before an attack can be confirmed. Removing the capability of ICBMs to launch within mere minutes of a presidential order would prevent the president from starting nuclear war based on a false alarm, miscalculation, or rash decision. "It is not necessary for deterrence that a U.S. response to a nuclear attack be immediate," Perry and Collina posit in *The Button*. "And if we want to avoid blundering into nuclear war, the more decision time we can give the president, the better."[142] Perry and Collina's proposal is supported by strong arguments and would certainly lower the chances of blundering into nuclear war. Some critics contend, however, that it may not be that simple.

According to Greg Weaver, there are two problems with de-alerting ICBMs: technical difficulties and escalation dynamics. "The Minuteman [ICBM] guidance system was designed to be on all the time," he explains. "When you take it off alert, like to do maintenance… fairly frequently when we go to turn the guidance system back on, it doesn't start right up. It either breaks and then we have to fix it, or it doesn't go on and we have to figure out why, or it goes on and then it stops. Because it wasn't designed to be turned on and off all the time… You don't want to de-alert these things because we don't know what proportion of the force will come back up… and how long it'll take."[143]

The other consideration for de-alerting ICBMs, according to Weaver, is escalation control. If both the United States and Russia de-alerted their ICBMs, "you're going to have a race to re-alert in a crisis," says Weaver. "If someone gets there first, they're going to have a potential incentive to strike before the other guy gets there. Whereas if you just keep them all on alert all the time, it's stable."[144] Whether or not one agrees with Weaver's assessment, it illustrates the challenge of identifying solutions that do not raise concerns among defense officials of the impact on deterrence.

Regarding LOW, Weaver argues that it only applies in large-scale, surprise attack scenarios in which much of the strategic force has not been generated or put on alert, and therefore can be largely avoided through increased force generation. "If you're in your day-to-day posture where you only have a certain number of submarines at sea all the time and none of the bombers are on alert, but the ICBMs are on alert, well, losing the ICBM force has a much bigger effect on the president's options downstream than if you're in a crisis and you've generated the force. You put bombers on alert, you put more submarines at sea, you have way more weapons available that can survive an attack," he asserts.[145] Herein lies a

140 U.S. Congress, Authority.
141 William J. Perry and Tom Z. Collina, Statement before the Senate Armed Services Committee, "A New Nuclear Policy for the Biden Administration," (16 June 2021). https://www.armed-services.senate.gov/imo/media/doc/Perry-Collina%20statement%20to%20SASC%206-16.pdf
142 Perry and Collina, The Button, 20.
143 Weaver, Interview.
144 Ibid.
145 Ibid.

conundrum. Weaver's position that *increasing* the alert posture of the rest of the nuclear force reduces the need to launch ICBMs on warning makes sense. But in an effort to improve the survivability of the force and thus enhance deterrence, force generation and increased alert posture could be seen by an adversary as escalatory, could be destabilizing and dangerous in a crisis, and could increase the risk of accidental, unauthorized, or miscalculated nuclear use.

Dr. Peter Feaver argues that the worrisome time constraint on the president's decision in a crisis could be solved through effective ballistic missile defense (BMD). If the United States invested in achieving an effective BMD capability, Feaver posits, the president wouldn't have to respond rapidly while the attack was inbound. The BMD system would shoot down the incoming missiles, giving the president time to consult with advisors and decide how to respond.[146] In addition to the financial and logistical challenges to achieving a BMD system capable of thwarting a large-scale, sophisticated ballistic missile attack on the U.S. homeland, however, pursuit of BMD capability threatens strategic stability. Both Russia and China have cited U.S. missile defense capabilities as the reason for their pursuit of new nuclear capabilities, like HGVs.[147] But adversaries don't have to go as far as developing new capabilities; the development of missile defense incentivizes adversaries to simply build more launchers to overwhelm interceptors, creating the conditions for an arms race.

Generic proposals for two-person control (i.e., requiring the approval of a second senior official in addition to the president for nuclear launch) don't hold up under scrutiny. As mentioned previously, providing another official with a de facto veto power over the president's force employment authority is unlikely to pass constitutional muster. More simply, however, such a proposal fails to offer a practical recommendation for who that second authority should be. A common option given is the Secretary of Defense. Not only is the Secretary of Defense an unelected official, but if the goal is to provide a check and balance on the president's power, it is unlikely to be achieved through an official appointed by the president (particularly the current Secretary of Defense, Pete Hegseth, whose lack of qualifications and relevant experience is in stark contrast to his predecessors and who has revealed classified war plans via insecure communications channels and to people without proper security clearance[148]). No matter who is proffered for the role, however, if the designated official is killed, indisposed, or otherwise unable to be reached in a crisis, or if they and the president simply can't come to agreement, the United States could be left unable to act in the event of an attack by an adversary.

146 Mecklin, "Duke's Peter Feaver."
147 Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, "Russian nuclear weapons, 2025," Bulletin of the Atomic Scientists (2025), Vol. 85, No. 3, 208-237, https://www.tandfonline.com/doi/epdf/10.1080/00963402.2025.2494386?needAccess=true
148 Quil Lawrence and Tom Bowman, "Hegseth is in hot water again over sharing attack plans. But this time it may be worse," NPR (22 April 2025), https://www.npr.org/2025/04/22/nx-s1-5372348/signal-pete-hegseth-defense-department

Conclusion

So where does that leave us? Attempts to solve presidential sole authority by getting rid of it (e.g., through two-person control, or by constraining the scenarios in which it's applicable) are confronted with constitutional and legal dilemmas, tradeoffs for deterrence that are unlikely to be accepted by decisionmakers in either Congress or the executive branch, and the impossibility of accounting for every possible scenario that prevents unambiguous, absolute solutions. Moreover, solutions requiring Congressional mandate or legal remedy are unlikely to pass both houses of Congress even under the most favorable political conditions. Short of legislative reform, the executive branch could adopt new procedures or requirements, but these could be easily overturned by a new administration. At the end of the day, no president is likely to constrain their own authority.

Proposals that fall short of altering presidential sole authority and instead focus on limiting the risks it poses for nuclear use (e.g., de-alerting ICBMs or investing in ballistic missile defense) face feasibility challenges and present dilemmas for deterrence and stability. There are some unambiguous actions that U.S. decisionmakers and planners can and should take that pose no obvious downside, like investing in upgrades to NC3 systems to enable fast, uninterrupted communications and bolster cyber defenses and continuously red-teaming cyber threats to the early warning and NC3 systems to detect unknown vulnerabilities as cyber capabilities evolve.

Beyond these simple patches, however, it appears we have yet to conceptualize an alternative to the current system of nuclear launch authority that further reduces the chances of nuclear use while presenting no drawbacks — or, more accurately, acceptable drawbacks. We must consider that perhaps, after 80 years, we *have* landed on the most ideal system for nuclear launch authority in the United States. Crucially, however, this point should not be misconstrued as a plaudit of presidential sole authority. Rather, it should be seen as a condemnation of the choice policymakers have made to accept the risks inherent to nuclear weapons — to relegate us to a world in which we are forced to accept a "minimal" level of risk of annihilation for the fragile promise of our perpetual security. In a world where nuclear weapons exist, presidential sole authority may be the best option for controlling their use. If that is the case, then the only solution to the risks posed by the nuclear launch system today is the elimination of nuclear weapons. Presidential sole authority, upheld by its weapons, is a precarious foundation upon which we rest our security. We are thus forced to either trust that the system can hold forever or else dismantle the system entirely, because nothing can repair the broken world that would result from nuclear use — accidental, miscalculated, or otherwise.

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