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AUTHORITY TO ORDER THE USE OF NUCLEAR WEAPONS

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AUTHORITY TO ORDER THE USE OF NUCLEAR WEAPONS

TUESDAY, NOVEMBER 14, 2017

U.S. SENATE,
COMMITTEE ON FOREIGN RELATIONS,
Washington, DC.

The committee met, pursuant to notice, at 10:16 a.m., in Room SD–419, Dirksen Senate Office Building, Hon. Bob Corker, chairman of the committee, presiding.

Present: Senators Corker [presiding], Risch, Rubio, Johnson, Gardner, Young, Barrasso, Flake, Cardin, Shaheen, Coons, Udall, Murphy, Kaine, Markey, and Merkley.

OPENING STATEMENT OF HON. BOB CORKER, U.S. SENATOR FROM TENNESSEE

The CHAIRMAN. The hearing itself will actually come to order. We thank General Kehler, Dr. Feaver, and Mr. McKeon for joining us today and for sitting through the business meeting over the last 15 minutes.

A number of members on both sides of the aisle on and off the committee have raised questions about the executive's authorities with respect to war-making, the use of nuclear weapons, and, from a diplomatic perspective, entering into and terminating agreements with other countries. As I have mentioned publicly, this is one in a series of hearings where our committee will examine all of these issues. But today, it is my hope that we will remain focused on the topic at hand, the authority and the process for the use of nuclear weapons.

The Congressional Research Service tells us this is the first time that the Foreign Relations Committee of the Senate or House has met on this topic since 1976, 41 years ago.

Making the decision to go to war of any sort is a heavy responsibility for our Nation's elected leaders, and the decision to use nuclear weapons is the most consequential of all. The Atomic Energy Act of 1946 and the subsequent practices recognize that the use of nuclear weapons must be subject to political control. This is why no general or admiral or Defense Secretary has the authority to order the use of nuclear weapons. Only the President, the elected political leader of the United States, has this authority.

The nuclear arms race between the United States and the Soviet Union during the Cold War dramatically elevated the risk of nuclear conflict. As the Soviets developed massive numbers of nuclear weapons and the systems to deliver them to the United States, we planned for the unthinkable: How to get our missiles in the air

within those few minutes before their warheads could hit us and possibly destroy our ability to respond.

In that kind of scenario, there is no time for debate. Having such forces at the ready has been successful in deterring such an attack. And for that, we are grateful.

But this process means the President has the sole authority to give that order, whether we are responding to a nuclear attack or not. Once that order is given and verified, there is no way to revoke it.

To be clear, I would not support changes that would reduce our deterrence of adversaries or reassurance of our allies, but I would like to explore, as our predecessors in the House did 41 years ago, the realities of this system.

I want to thank all of our distinguished witnesses and the members of this committee for the seriousness with which they approach this topic before us today, and hope that, together, we can have a productive and enlightening discussion about this sober issue.

With that, I would like to turn to my friend and our distinguished ranking member, Senator Cardin.

STATEMENT OF HON. BENJAMIN L. CARDIN, U.S. SENATOR FROM MARYLAND

Senator CARDIN. Mr. Chairman, thank you so much. I almost always, in a perfunctory way, thank you for holding hearings, but in this case, I really do believe this is a critically important discussion to have not just with ourselves in the United States Senate but with the American people.

I must tell you, I am always amazed as to what subjects come up at town hall meetings that I hold throughout Maryland. Most of the subjects deal with the local economic or domestic issues. We do not normally get a lot of foreign policy questions at town hall meetings. But of late, I have been getting more and more questions about, "Can the President really order a nuclear attack without any controls?" That question is asked more and more by the American people.

Of course, it is fueled by comments made by President Trump in regard to North Korea. Quoting the President in his August interview, "North Korea best not make any more threats to the United States. They will be met with fire and fury like the world has never seen," or the President's comments, "We will have no choice but to totally destroy North Korea."

Now, many interpret that to mean that the President is actively considering the use of nuclear weapons in order to deal with the threat of North Korea. That is frightening.

And as the chairman pointed out, based on my understanding of the nuclear command and control protocols, there are no checks—no checks—on the President's authority. The system as it is set up today provides the President with the sole and ultimate authority to use nuclear weapons.

And that was developed because of the realities of the security of our country. The nuclear command-and-control system we have in place is the result of three factors.

The first was the particular threat and challenge of the Cold War. For decades, the United States faced a nuclear-armed adversary in the Soviet Union with a large and capable nuclear force. The United States settled on a strategy of mutually assured destruction, which placed distinctive demands on our nuclear warfighting command-and-control system.

The second and related factor is the law of physics. An ICBM launch from Russia to the United States would have about a 30-minute flight time. There was not time to convene a special session of Congress or to have the type of consultations that would infringe upon our ability to have actually a deterrent. This means the President and his team have an incredibly short window to identify, assess, communicate, decide, and, if necessary, launch a nuclear force. There was no time for Cabinet meetings and no time for consultation.

The Cold War may be long behind us, but such a scenario based upon the need to deter a massive Soviet nuclear attack with little or no warning time remains the driving force behind the current command-and-control architecture even today.

The final factor behind the U.S. nuclear command-and-control system rests with the fact that nuclear weapons, ever since their development, have also always been considered unique, not like any other military weapon. Starting under President Truman, the point was made crystal clear that the White House was in charge of the atomic bomb and its uses, not the military.

Nuclear bombs were not a military weapon whose use would be controlled by the Armed Forces but a strategic weapon under the strict control of civilian and elected officials. The President as both our highest elected civilian official and Commander in Chief under the Constitution played a unique role with this unique weapon. The President and only the President assumed the sole and unchecked power to launch nuclear attacks.

As President Truman said, "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."

Nuclear weapons remain unique, but today, we face a different question than the one we faced during the Cold War. Given today's challenges, we need to revisit this question on whether a single individual should have the sole and unchecked authority to launch a nuclear attack under all circumstances, including the right to use it as a first strike.

The most likely attack we face is not a massive surprise nuclear attack by Russia or China but a nuclear conflict that springs from an escalating conflict with the smaller nuclear forces, such as North Korea. In this sort of circumstance, where the United States would not face the same sort of "use them or lose them" pressure we faced during the Cold War, it may be possible and certainly wise for the President to take the time to consult Congress before the profound and historic decision to use nuclear weapons is made.

I would like to be able to tell my constituents and the American people we have a system in place that prevents an impulsive and

irrational decision to use nuclear weapons. Unfortunately, I cannot make that assurance today.

I look forward to hearing from our three very distinguished witnesses.

I just would like to acknowledge Mr. McKeon's presence here as a former counsel to this committee under Senator Biden. It is nice to have him back before our committee.

The CHAIRMAN. Thank you so much.

Our first witness today is General Bob Kehler, commander of the United States Strategic Command from 2011 to 2013. Thank you for being back with us today, and thank you for your service to our country.

Our second witness is Dr. Peter Feaver, professor of political science at Duke University. Thank you so much for being here today.

Our third witness is Brian McKeon, the Acting Under Secretary of Defense for Policy during the Obama administration and once a staff member, as was mentioned, on this committee. Thank you for coming back.

All of you are very familiar. If you can summarize your comments in about 5 minutes, we would appreciate that. Any written materials you have, without objection, will be entered into the record. And if you could just begin and proceed in the order introduced, we would appreciate it.

STATEMENT OF GENERAL C. ROBERT KEHLER, U.S. AIR FORCE, RETIRED, FORMER COMMANDER, UNITED STATES STRATEGIC COMMAND, ALEXANDRIA, VIRGINIA

General KEHLER. Thank you and good morning, Mr. Chairman. Good morning, Senator Cardin, distinguished members of the committee.

It is my honor to appear today to discuss nuclear decision-making. I am also really pleased to appear with these two outstanding panelists and colleagues to my right.

Command and control is a critically important component of our nuclear deterrent, and I applaud you for taking the time to understand it better.

At the outset, I must say that the views I express this morning are mine. I no longer represent the department or Strategic Command or the U.S. Air Force. I will try to bring the perspective of almost 4 decades of military service in senior military command to my remarks today, and much of that was in nuclear-related duty.

Let me also add that some of the Nation's most closely guarded secrets are associated with nuclear weapons, with the plans associated with them, and with the processes as well. So there are limits on what I can say, even if some aspects of this matter are discussed openly by others.

In the interest of time, I would like to make just three brief opening remarks.

First, as this committee knows well, the U.S. now faces more complex security problems and greater uncertainty than it did during the Cold War. Nuclear weapons are not gone from world affairs, and it does not look to me like they are going to be gone from world affairs anytime soon. Russia and China are modernizing

their forces as the basis of strategies designed to expand their positions at our expense and the expense of our allies.

Russia frequently makes explicit nuclear threats to include the threat of nuclear first use. China will soon deploy ballistic missile submarines, opening a new chapter in their nuclear history. North Korea threatens our regional allies and forward-based forces, and is pursuing the capability to threaten the U.S. directly. North Korea has also threatened nuclear first use. Iran, of course, remains a country of interest.

Other strategic threats like long-range conventional weapons, cyber weapons, and threats against critical space assets have emerged and can arrive at our doorstep quickly. But nuclear weapons remain important in the strategies of our potential adversaries.

The second point, while the U.S. nuclear force is far smaller, postured less aggressively, and occupies a less prominent place in our defense strategy than it did during the Cold War, nuclear deterrence remains crucial to our defense and to strategic stability. There is an old saying that I have used many times over the years, that deterrence exists when an adversary believes they cannot achieve their objectives, will suffer unacceptable consequences if they try, or both.

U.S. nuclear weapons prevent the coercive or actual use of these weapons against us and our allies, which is their primary purpose, constrain the scope and scale of conflict, compel adversaries to ponder the consequences of their actions before they act, and obviate the need for additional allies to acquire their own. No other weapon can replace the deterrent value of nuclear weapons. And the ability to command and control our nuclear forces under all conditions of crisis and conflict remains central to the credibility of the deterrent.

Third, U.S. nuclear forces operate under strict civilian control. Only the President of the United States can order the employment of U.S. nuclear weapons. And the President's ability to exercise that authority and direction is ensured by people, processes, and capabilities that comprise the nuclear command-and-control system.

This is a system controlled by human beings. Nothing happens automatically. That system is designed to do two very important things. First, it is designed to enable the authorized use of nuclear weapons while preventing the unauthorized use or the accidental use or the inadvertent use of them; and two, to do so in the face of a wide variety of scenarios, including a nuclear attack.

The challenge of the Cold War, which is a short-notice, massive attack, while less likely today, I would agree, still exists. A colleague and mentor of mine has always said that when you are looking at an adversary, you have to look at capability and intent. The Russians may not have the intent of attacking us today with a short-notice, massive attack, but they retain the capability to do so. And so long as they do, we have to deter that capability.

The nuclear decision process includes assessment, review, and consultation between the President and key civilian and military leaders followed by transmission and implementation of any presidential decision by the forces themselves. All activity surrounding

nuclear weapons are characterized by layers of safeguards, tests, and reviews.

Finally, I think it is important to remember that the United States military does not blindly follow orders. A presidential order to employ U.S. nuclear weapons must be legal. The basic legal principles of military necessity, distinction, and proportionality apply to nuclear weapons just as they do to every other weapon.

It was my job and the job of other senior leaders like the Secretary of Defense and the chairman and the other combatant commanders to make sure these principles were applied to nuclear orders.

As I close, I want to urge caution as you consider these matters. Changes or conflicting signals can have profound implications for deterrence, for extended deterrence, and for the confidence of the men and the women in the nuclear forces.

Again, Mr. Chairman, thank you for inviting me. I appreciate being here today, and I look forward to your questions.

[General Kehler's prepared statement follows:]

PREPARED STATEMENT OF GENERAL C. ROBERT KEHLER, USAF (RET.)

Chairman Corker, Ranking Member Cardin, and distinguished members of the committee, I am pleased to join you today to offer my perspective on the authority to order the use of U.S. nuclear weapons. The views I express today are mine and do not represent the Department of Defense, United States Strategic Command, or the United States Air Force.

As I begin I want to thank the committee for helping to bring attention to these very important matters related to the credibility and effectiveness of the U.S. nuclear deterrent.

21st Century Security Environment

The United States now faces far more complex security problems and greater uncertainty than it did during the Cold War. Threats to our security are diverse, can arrive at our doorsteps quickly, and can range from small arms in the hands of extremists to nuclear weapons in the hands of hostile foreign leaders. Yesterday's regional battlefield is becoming tomorrow's global battle-space where conflicts may begin in cyberspace and quickly extend to space.most likely before traditional air, land, and sea forces are engaged. Violent extremists continue to threaten us, and we must remain vigilant to prevent the intersection of violent extremism with weapons of mass destruction.

Russia's and North Korea's explicit nuclear threats (to include the threat of nuclear first-use) remind us that nuclear weapons are not gone, and it appears they will not be eliminated from world affairs anytime soon. Russia and China are modernizing their nuclear forces as the basis of strategies designed to expand their positions at our expense and that of our allies. In addition, North Korea's nuclear capabilities now threaten our regional allies and eventually could threaten us directly. India and Pakistan threaten nuclear use in their disputes, and Iran will remain a country of interest as time passes.

Despite significant differences from the Cold War, the ultimate paradox of the nuclear age is still with us—to prevent the use of nuclear weapons, the U.S. must remain prepared to use them.

Deterrence and U.S. Nuclear Weapons

While the end of the Cold War allowed the U.S. to diminish the role and prominence of nuclear weapons in our defense planning and to dramatically reduce both the number of deployed weapons and the overall size of the stockpile, nuclear deterrence remains "crucial to our nation's defense and to strategic stability". Although no longer needed to deter a conventional attack from the massed armored formations of the now extinct Soviet Union and Warsaw Pact, nuclear weapons continue to prevent both the coercive and actual use of these weapons against the U.S. and its allies (their primary purpose), constrain the scope and scale of conflict, compel adversary leaders to consider the implications of their actions before they act, and (via extended deterrence) obviate the need for additional allies and partners to acquire their own. Nuclear weapons are only one of many important instruments that

must be orchestrated for maximum deterrent credibility and effect in the 21st Century; however, today no other weapon can replace their deterrent value.

To remain a credible deterrent tool, the U.S. nuclear force must present any would-be attacker with little confidence of success and the certainty of an assured response against his highest value targets. Therefore, the U.S. must continue to take the necessary steps to field a modern nuclear force that presents an adversary with insurmountable attack and defensive problems, demonstrates resolve and commitment to allied security guarantees, provides the president with a range of options to deal with crisis or conflict, and serves as an effective hedge against technical failures or geopolitical uncertainty. Central to this force is an upgraded nuclear command, control, and communications (NC3) system that ensures the president always remains linked to his critical advisors and the nuclear forces for positive control.

Nuclear Command and Control (NC2)

US nuclear forces operate under strict civilian control. Only the President of the United States can authorize the use of U.S. nuclear weapons, and the President's ability to exercise that authority and direction is ensured by the people, procedures, facilities, equipment, and communications capabilities that comprise the Nuclear Command and Control System (NCCS). The NCCS has been designed with resilience, redundancy, and survivability to ensure that an adversary cannot hope to neutralize our deterrent by successfully attacking any of its elements and thereby "disconnecting" the President and other civilian and military leaders from one another or from the nuclear forces—even in the most stressing scenarios. These features enhance deterrence and contribute to crisis stability.

NCCS capabilities and procedures are designed to enable the authorized use of nuclear weapons while also preventing their unauthorized, accidental, or inadvertent use. Operations and activities involving U.S. nuclear weapons are surrounded by layers of safeguards. While many of the specifics are highly classified, general methods range from personnel screening and monitoring to codes and use controls. In addition, sensors and communications links that contribute to nuclear decision making are specially certified, and tests and exercises are frequently held to validate the performance of both systems and people. Before I retired in late 2013, we had also begun to evaluate networks and systems for potential or actual cyber intrusions.

Other factors contribute to the prevention of unauthorized, inadvertent, or accidental use. "Today's triad of nuclear forces is far smaller and postured much less aggressively than its Cold War ancestor." Not only are the long-range bombers and supporting aerial tankers no longer loaded and poised to take off with nuclear weapons (unless ordered back into a nuclear alert configuration), but ballistic missiles are aimed at open areas of the ocean. Also, while the possibility of a massive surprise nuclear attack still exists (and must be deterred), decision time is longer in many other potential nuclear scenarios that may prove more likely in today's global security environment.

As I mentioned earlier, the decision to employ nuclear weapons is a political decision requiring an explicit order from the President. The process includes "assessment, review, and consultation (via) secure phone and video conferencing to enable the President to consult with his senior advisors, including the Secretary of Defense and other military commanders." Once a decision is reached, the order is prepared and transmitted to the forces using "procedures.equipment, and communications that ensure the President's nuclear control orders are received and properly implemented."

The law of war governs the use of U.S. nuclear weapons. Nuclear options and orders are no different in this regard than any other weapon. Here, U.S. policy as articulated in the 2010 Nuclear Posture Review (NPR) provided important context regarding the consideration of U.S. nuclear use (i.e., extreme circumstances when vital national interests are at stake). The 2010 NPR also restated the "negative security guarantee" (i.e., the U.S. will not consider using nuclear weapons against any nonnuclear weapons state that is party to the Nuclear Nonproliferation Treaty and in compliance with their nonproliferation obligations). In addition, the legal principles of military necessity, distinction, and proportionality also apply to nuclear plans, operations, and decisions. Legal advisors are deeply involved with commanders at all steps of the deliberate and crisis action processes to offer perspective on how force is to be used as well as the decision to use force.

The decision to use nuclear weapons is not an all or nothing decision. Over the years, successive Presidents have directed the military to prepare a range of options designed to provide flexibility and to improve the likelihood of controlling escalation

if deterrence fails. Options are clearly defined in scope and duration and the President retains the ability to terminate nuclear operations when necessary.

Military members are bound by the Uniform Code of Military Justice (UCMJ) to follow orders provided they are legal and come from appropriate command authority. They are equally bound to question (and ultimately refuse) illegal orders or those that do not come from appropriate authority. As the commander of U.S. Strategic Command, I shared the responsibility with the Secretary of Defense, Chairman of the Joint Chiefs of Staff, and other senior military and civilian leaders to address and resolve any concerns and potential legal issues on behalf of the men and women in the nuclear operating forces during the decision process. It was our duty to pose the hard questions, if any, before proceeding with our military advice. Nuclear crew members must have complete confidence that the highest legal standards have been enforced from target selection to an employment command by the President.

Conclusion

Mr. Chairman, I applaud your and the committee's interest in these matters. However, I urge Congress to carefully consider the potential impacts to deterrence and extended deterrence that any potential changes to nuclear command and control might have. I also urge you to consider that conflicting signals can result in loss of confidence, confusion, or paralysis in the operating forces at a critical moment. Some of the lapses in discipline and performance we saw in the nuclear forces several years ago were attributed to conflicting signals regarding the importance of and support for the nuclear deterrence mission.

Clarity and commitment regarding nuclear weapons, their continued foundational role in U.S. and allied defense strategy, and confidence in our nuclear command and control processes are as important now as they ever were during the Cold War. Deterrence credibility and national security demand it.

Again, thank you for inviting me to offer my perspectives on this important topic.

The CHAIRMAN. Thank you very much.

Dr. Feaver?

STATEMENT OF PETER D. FEAVER, PH.D., PROFESSOR OF POLITICAL SCIENCE AND PUBLIC POLICY, DUKE UNIVERSITY, DURHAM, NORTH CAROLINA

Dr. FEAVER. Chairman Corker, Ranking Member Cardin, and distinguished members of the committee, thank you for the opportunity to discuss this important topic, which I will refer to as nuclear command and control.

My bottom line is simple. In the past, Congress has played a vital role in pushing the executive branch to strengthen command and control, and the time may be ripe for another close look. However, we must proceed with some caution because the topic is complex and susceptible to unintended consequences.

I will make four points.

First, at the heart of nuclear command and control is what might be called the always-never dilemma. For nuclear deterrence to work, we must have a high assurance that the country will always be able to present a credible nuclear strike capability to our adversaries even in the most dire scenarios. However, because even a single nuclear detonation would be so consequential and might trigger an escalatory spiral that would lead to civilization-threatening outcomes, we must also have a high assurance that there will never be an accidental or unauthorized of nuclear weapons.

The challenge is that measures designed to improve the "always" side of the equation can compromise the negative side, and vice versa.

Pre-delegating the authority to use nuclear weapons and spreading that capability to do so to lower echelons may thwart an enemy's first-strike planning, for example, but it would increase the

risk that a weapon might be used in an unauthorized fashion or by someone confused in the fog of battle.

The history of nuclear command and control is a history of civilian and military leaders debating the proper balance between "always" and "never." It is a history of occasional discoveries that the risks on one side or the other side of the ledger were greater than originally understood. And it is a history of improvements.

Some, like permissive action links, PALs, which are coded locks that block detonation of a weapon without inserting the PIN code, and were pressed by far-seeing congressional advocates, these improvements may have helped forestall disaster.

This brings me to my second major point. We must be willing to invest the requisite funds to keep our technology up to date. But in the nuclear command and control business, hardware is trumped by software, and software is trumped by wetware. Hardware refers to the technologies like the PALs I just mentioned. Software refers to the rules and procedures that govern how the hardware is used; for instance, the code management system that determines who has the PAL codes and who is authorized to release them. Wetware refers to the human element, the reliability of people involved in enforcing the rules, and the civil-military relations that form the political context in which the software and hardware operate.

At the end of the day, what would matter most is the human element. Would the President's advisers be in a position to provide timely counsel? And would that counsel shape the President's decision? Would the various echelons in the chain of command recognize a valid authenticated nuclear use order as being legal, given the military's deeply ingrained training to refuse to implement any illegal order? Indeed, would subordinate elements of the command-and-control system do what they are supposed to do, no more and no less, but with appropriate judgment?

This last point cannot be overemphasized. For decades now, it has been technically possible to build a nuclear command-and-control system that would eliminate the human element altogether. Every generation of strategic leaders has understood that such a system would be foolhardy in the extreme. The human element introduces risks, to be sure, but it also introduces the opportunity to mitigate risks.

This brings me to my third major point. The best reforms to nuclear command and control would be ones that maximize the opportunity for the human element to mitigate risks by maximizing time for deliberation and assessment. Of course, efforts to extend decision times must not run afoul of the always-never dilemma.

I conclude with my fourth and final point. The time is ripe for a fresh look. Changes in communications technology and rapidly evolving cyber threats alone would justify a fresh examination. Threats that were warned about 5 years ago have become urgent realities today.

And finally, our divisive political environment has raised new doubts about the effectiveness of all our branches of government to wield the power they possess responsibly. In that context, a thoroughgoing review of nuclear command and control could help shore up nuclear confidence in this area.

Outside experts have suggested many possible improvements that are worth considering. For instance, there are a variety of proposals that involve requiring certifications by additional Cabinet officials of launch orders under certain circumstances. However, all of these proposals raise important constitutional questions about usurping the President's authorities.

Because the actual operations of the current system are exceedingly complex, I would recommend great caution before legislating any particular fix. Nevertheless, I would recommend diligence and perseverance in oversight of the system to reassure our friends and to warn our enemies that the nuclear arsenal will function as it is intended.

Thank you.

[Dr. Feaver's prepared statement follows:]

PREPARED STATEMENMT OF DR. PETER FEAVER

Chairman Corker, Ranking Member Cardin, and distinguished members of the committee: Thank you for the opportunity to discuss one of the most consequential issues this Committee could ever consider: The authorities and processes by which the United States might use its nuclear arsenal. For the sake of convenience, I will refer to this broad topic as "nuclear command and control."

Civilian and military leaders have wrestled with nuclear command and control for over 70 years—and it has been one of the issues I have focused on in 30-some years of studying the theory and practice of American civil-military relations.

My bottom line is simple: in the past Congress has played a vital role in pushing the Executive Branch to strengthen the nuclear command and control system and the time may be ripe for another close look. In the course of reviewing previous choices made, scrutinizing established procedures, and looking at old problems with fresh eyes, we may well identify areas for improvement.

However, we must proceed with some caution. The topic is highly classified and thus hard to discuss in open session. It is also highly complex, with de facto operations hinging on crucial details that are hard for outsiders to assess with confidence.

Above all, there are some fundamental dilemmas at the heart of nuclear command and control that mean there are no simple solutions. Context matters and every fix may have unintended second or third order effects that may only be understood after the system has been thoroughly exercised.

I will make four brief points in my opening remarks and then look forward to answering your questions as best I can.

First, at the heart of the nuclear command and control system is what might be called the always/never dilemma. For nuclear deterrence to work, we must have a high assurance that the country will always be able to present a credible nuclear strike capability to our adversaries, even in the most-dire scenarios. Otherwise, if others believe that some sort of massive or cleverly designed first strike could render our nuclear arsenal unusable, adversaries will have a powerful incentive to strike us first and early in any unfolding crisis.

A significant portion of the nuclear command and control system is thus dedicated to ensuring that the President would have a viable nuclear option, even under very demanding time constraints, or even after the United States has suffered a devastating attack. We spend enormous sums of money making communications systems as robust as they can be and training all echelons of command to be ready to present the national command authority with executable options under any conditions. Design features that increase the risk of failure—that would cause the system to fail impotent, rather than merely fail safe—could undermine deterrence.

However, because even a single nuclear detonation would be so consequential and might trigger an escalatory spiral that would lead to civilization-threatening outcomes, we must also have a high assurance that there would never be an accidental or unauthorized use of nuclear weapons.

A significant portion of the nuclear command and control system is devoted to safety and security measures designed to minimize these risks. U.S. nuclear weapons are equipped with environmental sensing devices that inhibit nuclear detonation unless the weapon experiences the exact sequence of physical effects—spin, gravity, change in altitude, etc.—that would be associated with an intended use,

thus ensuring that the warhead will not detonate simply because it is dropped or bumped. Launch control processes involve complex authentication measures designed to validate that an order is authentically emanating from the national command authority and not some rogue element. During the later period of the Cold War, weapons that were deployed in remote settings close to potential battlefields had protective devices known as Permissive Action Links (PALs) that rendered the weapon inert so that anyone stealing it or trying to use it without proper authorization would be stymied.

The challenge is that measures designed to improve the always side of the equation can compromise the never side and vice-versa. Pre-delegating the authority to use nuclear weapons and spreading the capability to do so to lower echelons may thwart an enemy's first-strike planning, for example, but it would raise the risk that a weapon might be used in an unauthorized fashion or by someone confused in the fog of battle.

The history of nuclear command and control is a history of civilian and military leaders debating the proper balance between always and never. It is a history of occasional discoveries that the risks on one side or the other side of the ledger were greater than originally understood. And it is a history of improvements—some, like Permissive Action Links, pressed by far-seeing congressional advocates—that may have helped forestall disaster. Even though we never had a truly catastrophic nuclear accident it is now publicly known that there were far too many close calls. Accordingly, our nuclear commanders are wise to be ever-vigilant and open to reexamining existing procedures with fresh eyes.

It is thus of vital national importance that our leaders, our adversaries, our allies, and our citizens have confidence that the nuclear command and control system continues to give due consideration to this always/never dilemma and that we have not inadvertently accepted too much risk of failure on either side. There is no single optimal solution. The right balance depends on the geostrategic context and advances in technology, among other factors, which is why we should never act as if the problem has been "solved." On the contrary, it is a problem that must be managed on an ongoing basis, adjusting as appropriate with other changes.

This brings me to my second major point: we must be willing to invest the requisite funds to keep our technology up to date, but in the nuclear command and control business hardware is trumped by software, and software is trumped by wetware. Hardware refers to the technology: for instance, permissive action links that block the firing mechanism until a proper code is inserted. Software refers to the rules and procedures that govern how the hardware is used: for instance, the code-management system that determines who has the PAL codes and who is authorized to disseminate them. Wetware refers to the human element: the reliability of people involved in enforcing the rules and the civil-military relations that form the political context in which the software and hardware operate.

In the past, reviews of the command and control system uncovered hardware flaws that needed to be corrected—for instance, gaps in communications that could be fixed with more modern technology. But more often reviews identified software and wetware problems—for instance, discovering that rules were interpreted in a way that produced unintended effects or discovering that bureaucracies had resorted to understandable "work-arounds" to get around cumbersome procedures and, in the process, introduced uncertainties that were not properly understood by higher authorities. This latter process has been called the "paradox of control:" the more the higher levels of command seek to assert restrictive control of subordinate elements, even at the risk of making those subordinate elements incapable of doing their jobs, the greater is the incentive of those subordinate elements to establish "work-arounds" that the higher authorities may not be aware of or, if they are, may not fully comprehend.

At the end of the day, what would matter most is the human element. Would the President properly understand his/her role and his/her options and wisely weigh the second and third order implications of any decision he/she made? Would the President's advisors be in a position to provide timely counsel and would that counsel shape the President's decisions? Would the various echelons in the chain of command recognize a valid authenticated nuclear use order as also being legal, given the military's deeply ingrained training to refuse to implement any illegal order? Would lower level operators, the proverbial "button pushers," carry out their fateful assignment in light of what is now known about the risks of nuclear war? Indeed, would subordinate elements of the command and control system do what they were supposed to—no more and no less—but with appropriate judgment?

This last point cannot be overemphasized. For decades now, it has been technologically possible to build a nuclear command and control system that would eliminate the human element in the launch sequence altogether. Every generation of

strategic leaders has understood that such a system would be foolhardy in the extreme. The human element introduces risks, to be sure, but it also introduces the opportunity to mitigate risks.

This brings me to my third major point. The best reforms to the nuclear command and control system would be ones that maximized the opportunity for the human element to mitigate risks by maximizing time for deliberation and assessment. The best reforms are ones that would increase the time that the President and his advisors would have available so as to make considered decisions incorporating the widest set of inputs, including, if possible, inputs from leaders in Congress. Of course, efforts to extend decision times must not run afoul of the always-never dilemma. Reforms that maximized decision time but rendered the nuclear arsenal unusable in a crisis or conventional conflict would undermine deterrence and could actually make a nuclear war more, not less, likely. Moreover, measures aimed at providing radical solutions at the hardware level risk being undone by workarounds at the software or wetware levels.

Nevertheless, investments—even costly investments—in systems that buy more decision time in crises are likely among the wisest expenditures we can make. For instance, enhanced missile defenses may be a prudent option in light of the growing threat from North Korea—one that gives the President more time to assess before reacting. And upgrading communications systems to ensure that the President will have immediate access to all of his/her relevant advisors even under demanding scenarios would be a prudent investment in national security.

Earlier generations of strategic leaders found ways to improve the nuclear command and control system without exacerbating the always/never dilemma and, speaking as a citizen, I would ask the current generation of strategic leaders to do the same. However, I would likewise caution that not every proposed reform would actually reduce nuclear risks.

This brings me to my fourth and final point: the time is ripe for a fresh look. The Trump Administration is going through a Nuclear Posture Review right now and, presumably, the adequacy of the nuclear command and control system is a priority focus of that review. Changes in communications technologies and rapidly evolving cyber threats alone would justify a fresh examination. It is likely that the command and control system is overdue for some major (and expensive) upgrades. At the same time, the geostrategic environment today is markedly different. Threats that were warned about five years ago have become urgent realities today.

North Korea is only the most vivid example of this; a confrontational Russia and an assertive China have dramatically changed our threat picture. The nuclear command and control system is likely facing new strains because of these developments. And, finally, our divisive political environment has raised new doubts about the effectiveness of all our branches of government to wield the power they possess responsibly. In that context, a thoroughgoing review of nuclear command and control could help shore up public confidence in this vital area.

Outside experts have suggested many possible improvements that are worth considering. One proposal calls for clarifying the chain of command to ensure that lower-echelons know that any order to use nuclear weapons has been adequately vetted. Another proposed approach recommends requiring certifications by additional cabinet officials of launch orders under certain circumstances. Still another proposal calls for specifying certain scenarios that would require prior consultation with Congress before a nuclear use order would be deemed legal. All of these proposals raise important constitutional questions about usurping the President's authorities; I am not a lawyer but I will point out that the precise distribution of powers among the branches related to military decision-making has never been entirely clear, and so reforms that raise the hoary war powers issue, particularly in the nuclear area, are especially fraught. But there may be reforms that pass constitutional muster while also enhancing the ability of the President to wield his/her commander-in-chief powers in the most effective and responsible way possible. Finding those should be an urgent priority for this and other responsible legislative and executive bodies.

Because the actual operations of the current system are exceedingly complex, I would recommend great caution before legislating any particular fix. Nevertheless, Congress can play an important role in strengthening nuclear command and control. Congress can stipulate that the NPR explicitly address these questions. Moreover, Congress will have multiple opportunities to give input through the authorization and appropriation process for the ongoing modernization of the nuclear arsenal.

Above all, I would recommend diligence and perseverance in oversight of the system, to reassure our friends and to warn our enemies that the nuclear arsenal will function as it is intended.

The CHAIRMAN. Thank you very much.

Mr. McKeon?

STATEMENT OF HON. BRIAN MCKEON, FORMER ACTING UNDER SECRETARY FOR POLICY, U.S. DEPARTMENT OF DEFENSE, WASHINGTON, DC.

Mr. MCKEON. Mr. Chairman, Senator Cardin, members of the committee, thank you for your invitation to be here today. It is nice to be back in this room after spending so many years of my professional life working on the staff of this committee.

I will digress briefly, Mr. Chairman, to say I am very impressed by how quickly you mustered a quorum, having spent numerous hours waiting and waiting and waiting for that magic 10th Senator to show up.

The CHAIRMAN. Thank you. It is one of the rare times that occurred.

Mr. MCKEON. Your efficiency is impressive.

The CHAIRMAN. Thank you.

Mr. MCKEON. I will briefly address three questions and try not to duplicate my colleagues.

First, who has the authority to employ nuclear weapons? In one respect, the answer is simple. The President does. As Commander in Chief of the Armed Forces under the Constitution, he has the sole authority within the executive branch for such a decision.

Some authority in military operations is delegated to the Secretary of Defense and then further delegated to appropriate combatant commanders. The authority to use nuclear weapons, however, remains with the President. That is as it should be in a republic, given the gravity of the decision and the consequences of any nuclear use.

It bears emphasis that the President would not make this decision by himself. The system for a decision is designed to ensure that the President consults with the National Security Council and his other senior civilian and military advisers, and I would expect that to occur in every case where the use of nuclear weapons is contemplated.

That is hardly the end of the inquiry. The authority to employ nuclear weapons is closely intertwined with an equally momentous question: Who has the authority to take the country to war? Article I of the Constitution gives Congress the power to declare war, grant letters of marque and reprisal, and several other powers with regard to supporting and regulating the Armed Forces. To the President, Article II provides that he is the Commander in Chief of the Army and the Navy.

The constitutional text structure and our history provide Congress with primacy in this sphere. This power is not merely limited to formal declarations of war, which Congress has not done since World War II, but to authorizing most uses of military force.

To be sure, the President possesses the constitutional authority to defend against sudden attack or to preempt an imminent attack. But Article II does not give him carte blanche to take the country to war.

In the modern era, Presidents of both parties have often made broad assertions of authority to take military action without prior

authorization by Congress in a manner that the Framers would not have recognized. Nonetheless, we need not resolve this general debate to answer the specific question presented in today's world.

In addition to the global terrorism challenge, our major potential adversaries today number on one hand: Russia, China, North Korea, and Iran. Three of these countries possess nuclear weapons, and the fourth has pursued such a capability. Therefore, conflict with these states could conceivably involve nuclear weapons use. Direct armed conflict with these countries would undoubtedly be war in the constitutional sense and, if initiated by the United States, would require authorization by the Congress.

A recent executive branch opinion on the war power by the Office of Legal Counsel in 2011 supports this conclusion. It indicated that analysis of whether congressional authorization for use of military force is required would turn on examination of "the nature, scope, and duration" of the conflict, and that specific congressional approval would be necessary in cases of "prolonged and substantial military engagements typically involving exposure of U.S. military personnel to significant risk over a substantial period of time." It is hard to imagine an armed conflict scenario with any of these countries that would not meet that test.

The rapid advances of North Korea's nuclear and missile program, and the escalating rhetoric between the President and the North Korean leader, are no doubt foremost in your minds. In the North Korean context, the view that Congress would need to authorize a war is buttressed by the recent letter to your House colleagues by the vice director of the Joint Staff, Rear Admiral Michael Dumont, where he stated that a ground invasion would be required in order to locate and destroy all components of North Korea's nuclear weapons program.

Given the high number of casualties that would occur in any conflict with North Korea, let alone during a ground invasion, no reasonable argument can be made that that would not be war in the constitutional sense.

The President and his senior administration officials have stated that time is running out to address the North Korean challenge. And in August, the National Security Advisor suggested the possibility of a preventive war. Such a war is distinct from a preemptive strike in the face of impending attack, and would also require congressional authorization.

For context on these two questions, I would answer a third: What is the current policy on use of nuclear weapons?

In my prepared statement, I highlight several elements of the results of the Nuclear Posture Review in 2010 and the presidential employment guidance issued in 2013, which remain in place while the Trump administration completes the Nuclear Posture Review ordered by the President in January. General Kehler has described some of these elements as well in his statement.

Most importantly, the 2010 NPR set forth a goal of reducing the role of nuclear weapons in the U.S. National Security Strategy, and it is important to understand there is nothing in the current guidance that compels the use of nuclear weapons in a high-end conflict.

Finally, I would note the Obama administration did not adopt a formal policy of no first-use of nuclear weapons, although, in the final month of the administration, Vice President Biden gave a speech in which he said that, given our nonnuclear capabilities and the nature of today's threats, it is hard to envision a plausible scenario in which the first use of nuclear weapons would be necessary. He went on to say that he and the President were confident that we can deter and defend ourselves and our allies against nonnuclear threats through other means.

In closing, thank you for the opportunity to be here, and I look forward to your questions.

[Mr. McKeon's prepared statement follows:]

PREPARED STATEMENT OF HON. BRIAN P. MCKEON

Mr. Chairman, Senator Cardin, members of the committee, thank you for inviting me to address important questions regarding the authority to employ nuclear weapons. I bring to this issue experience both as a lawyer—as chief counsel for the Democratic members of this committee for 12 years—and as a policymaker in the Executive Branch, with service in three different national security positions in the White House and the Defense Department during the Obama administration, where I was regularly engaged in nuclear weapons policy matters. My position in the Defense Department ended on January 20 of this year; I speak only for myself and not the Department.

I commend you for examining this issue, as well as the broader question of war powers, as you did last month with the Secretaries of State and Defense, and in June with outside witnesses.

I will briefly address three questions.

First, who has the authority to employ nuclear weapons? In one respect, the answer is simple: the President does. As Commander in Chief of the armed forces under the Constitution, he is the sole authority within the Executive Branch for such a decision. Some authority in military operations is delegated to the Secretary of Defense, and then further delegated to the appropriate combatant commanders. The authority to use nuclear weapons, however, remains with the President. That is as it should be in a republic, given the gravity of the decision and the consequences of any nuclear use.

It bears emphasis that the President would not make this decision by himself. The system for decision is designed to ensure that the President consults with the National Security Council and his other senior civilian and military advisers, and I would expect that to occur in every case where the use of nuclear weapons is contemplated. If the order is given, the chain of command runs from the President to the Secretary of Defense to the Commander of U.S. Strategic Command in the case of strategic weapons, and, in the case of non-strategic weapons in Europe, to the Commander of U.S. European Command; the Chairman of the Joint Chiefs is not in the chain of command. If time and circumstances permit, I would also expect any President to consult with leaders of key allies, particularly in the region of potential conflict.

That is hardly the end of the inquiry. The authority to employ nuclear weapons is intertwined with an equally momentous question: who has the authority to take the country to war?

The members of this committee well understand the basic constitutional framework, given your jurisdiction over the war power under the Senate rules. Article I of the Constitution gives Congress the power to declare war, grant letters of marque and reprisal, and several other powers with regard to supporting and regulating the armed forces. To the President, Article II provides that he is the Commander in Chief of the Army and Navy.

In my view, and the view of many respected scholars, the constitutional text, structure and our history provide Congress with primacy in this sphere. This power is not merely limited to formal declarations of war—which Congress has not done since World War II—but to authorizing most uses of military force. To be sure, the President possesses the constitutional authority to defend the country against sudden attack, or to pre-empt an imminent attack. But Article II does not give him carte blanche to take the country to war.

In the modern era, presidents of both parties have often made broad assertions of authority to take military action without prior authorization by Congress, and

have given a narrower reading to the Declaration of War clause, in a manner the Framers would not have recognized.

Nonetheless, we need not resolve that general debate to answer the specific question presented in today's world. In addition to the global terrorism challenge, our major potential adversaries today number on one hand: Russia, China, North Korea and Iran. Three of these countries possess nuclear weapons; the fourth has pursued such a capability. Therefore, conflict with these states could conceivably involve nuclear weapons use. Direct armed conflict with these countries would undoubtedly be "war" in the constitutional sense, and if initiated by the United States, would require authorization by the Congress. Quite apart from the legal requirement, as a matter of politics and policy, any President should want the Congress, as the body directly representative of the American people, to provide its support—to join in the decision and the responsibility for such a national commitment of blood and treasure.

A recent Executive Branch opinion on the war power—by the Office of Legal Counsel in 2011 regarding the military operation in Libya—supports this conclusion. It indicated that analysis of whether congressional authorization of a use of military force is required would turn on examination of the "nature, scope, and duration" of the conflict, and that specific congressional approval would be necessary in cases of "prolonged and substantial military engagements, typically involving exposure of U.S. military personnel to significant risk over a substantial period [of time]." It is hard to imagine an armed conflict scenario with any of these countries that would not meet this test.

The rapid advances of North Korea's nuclear and missile program, and the escalating rhetoric between the President and the North Korean leader, are no doubt foremost in your minds. In the North Korean context, the view that Congress would need to authorize a war is buttressed by the recent letter to your House colleagues from the Vice Director of Joint Staff, Rear Admiral Dumont, where he stated that a ground invasion would be required in order to locate and destroy all components of North Korea's nuclear weapons program. Given the high number of casualties that would occur in any conflict with North Korea—let alone during a ground invasion—no reasonable argument can be made that this would not be "war" in the constitutional sense.

The President and senior administration officials have stated that time is running out to address the North Korean challenge, and in August, the National Security Adviser suggested the possibility of a preventive war. Such a war—as distinct from a pre-emptive strike in the face of an impending attack against the United States—would also require congressional authorization.

For context on these two questions, I would answer a third: what is the current policy on use of nuclear weapons? The Trump administration is working on a Nuclear Posture Review ordered by the President last January. For now, my understanding is that the policy set by the Obama administration continues to obtain.

That policy is set forth in the report of the Nuclear Posture Review (NPR) in 2010 and presidential employment guidance issued in 2013. While the specific guidance to the commanders is classified, the NPR report is unclassified, and the Defense Department submitted an unclassified summary of the employment guidance to the Congress in 2013. A few elements of these documents bear highlighting.

The 2010 NPR set forth a goal of reducing the role of nuclear weapons in the U.S. national security strategy, and stated that, among other things:

- The United States would only consider use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners.
- The United States will continue to strengthen conventional capabilities and reduce the role of nuclear weapons in deterring non-nuclear attacks, with the objective of making deterrence of nuclear attack on the United States or our allies and partners the sole purpose of U.S. nuclear weapons.
- The United States updated the longstanding "negative security assurance" by stating that it will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the Nuclear Non-Proliferation Treaty and in compliance with their nuclear non-proliferation obligations.

Additionally, the employment guidance directed the Department of Defense to:

- Conduct deliberate planning for non-nuclear strike options to assess what objectives and effects could be achieved through such options.
- Examine further options to reduce the role that Launch Under Attack plays in U.S. planning, while retaining the ability to do so if directed.

Finally, the Obama administration did not adopt a formal policy of "no first use" of nuclear weapons, although in the final month of the administration, Vice Presi-

dent Biden gave a speech in which he said that given our "non-nuclear capabilities and the nature of today's threats, it's hard to envision a plausible scenario in which the first use of nuclear weapons would be necessary." He went on to say that he and President Obama were "confident we can deter—and defend ourselves and our Allies against—non-nuclear threats through other means."

In closing, I am grateful for this opportunity to appear before you today. I look forward to your questions.

The CHAIRMAN. I thank all three of you for that outstanding testimony. As usual, I am going to reserve my time for interjections and turn to our ranking member.

Senator CARDIN. Let me also thank all three of you not just for your appearance here today but for your service to our country on these very difficult issues.

I am going to preface my question with my strong belief that there is not a military solution to the crisis in North Korea, that any military option carries unbelievable risk factors, whether it be conventional or the use of nuclear weapons.

And I hope that the President's trip to Asia has produced the openings to urge a diplomatic surge that will recognize that both China and the United States should be looking for off-ramps to this crisis, and they have a lot in common, and China can change the equation in North Korea.

So I hope that is where we are heading, because the use of any military option has extreme risks.

So this is not a hypothetical discussion. What concerns me is that the President may be getting military options, and the use of conventional weapons could lead to an extreme number of casualties in Japan or in South Korea. So there may be a discussion about whether a nuclear first-strike could prevent that from occurring or have less of a chance of that occurring. So this is not a hypothetical discussion.

So, General, I was particularly impressed by your statement which says, in addition, the legal principles of military necessity, distinction, and proportionality also apply to nuclear plans, operations, and decisions.

So how is the President legally restrained, if at all, on the use of a nuclear first-strike as a result of the orders that are there under command that it must be proportional or that there is a distinction that requires this military necessity? Is there any real restraint on the President on choosing a nuclear first-strike in a circumstance in North Korea?

General KEHLER. Senator, I think there are. I think there are always legal constraints when any military option is being considered.

There has been a longstanding debate about nuclear weapons and morality and legality, and where nuclear weapons fit in all of that, given that things changed in August 1945. And there has been, I think, a longstanding policy view from the United States that nuclear weapons are not inherently illegal. They can be used illegally. The question is under what circumstances and situation.

And what I can tell you is that when I was involved as the commander of STRATCOM in preplanning options that we are ordered to do—every President has directed the military to preplan some options, more as time has passed for additional flexibility, et

cetera, et cetera—we involved our legal advisers in every step of that process.

Senator CARDIN. Let me interrupt you there.

So there is discussion taking place at the National Security Council level with legal advisers, with military advisers. And the advice is that, under the guidelines on proportionality and necessity, that this is not appropriate for use of a nuclear first-strike.

Is there action that can be taken by those advisers if the President overrules that decision and says, no, we are going with a nuclear attack?

General KEHLER. Other than to state their view about the legality of the move, the President retains constitutional authority to order some military action. The military, you would be in a very interesting constitutional situation, I believe, because, again, the military is obligated to follow legal orders but is not obligated to follow illegal orders.

The question about the legality——

Senator CARDIN. Who would make that judgment on behalf of the operational command under DOD?

General KEHLER. Well, that is one of the things that would be on the plate of the commander of Strategic Command. I always believed that that was on my plate, that ultimately it is very difficult——

Senator CARDIN. So let me just drill down on this. If you believe that this did not meet the legal test of proportionality, even if ordered by the President of the United States to use a nuclear first-strike, you believe that, because of legalities, you retain that decision to disobey the Commander in Chief?

General KEHLER. Yes. If there is an illegal order presented to the military, the military is obligated to refuse to follow it.

Now the question is just the one that you described. It is the process leading to that determination and how you arrive at that. I would concede to you that that would be a very difficult process and a very difficult conversation.

But in the scenario that you are painting here, I would also argue that there is time for that kind of a deliberate conversation on these matters.

Senator CARDIN. And just to complete this cycle, part of this is that the protocols that have been established under executive orders on the use of nuclear that require the proportionality that you are talking about. Another is the inherent responsibility of military command to follow only orders that are lawful. Am I reading that correctly?

General KEHLER. Yes, that is correct.

Senator CARDIN. So there are two different sets, because you may very well be getting opinions from the White House that this is legal, but you would have to make your own independent judgment based upon history and based upon following only legal orders.

General KEHLER. Yes.

Senator CARDIN. Thank you.

The CHAIRMAN. I am going to use my first interjection here.

So in the event someone in your former position received an order that you knew had not been vetted through the National Security Council, for instance, that discussions had not taken place,

that you just got a call out of the blue, things were tense in a particular area and you received that order, would you consider that to be legal or not legal?

General KEHLER. I never felt, Senator, that I had to vet orders through the National Security Council. I felt, as a military senior leader, that I had three obligations. One obligation was to provide my military advice. One obligation was to raise any concerns that I had; if they happened to be legal concerns, to raise those concerns. And then the third obligation that I had was related to the legality of the order, either follow a legal order or refuse to follow an illegal order.

I had legal advisers myself. I fully expected that we would involve the Secretary's legal advisers, the chairman's legal advisers. Where DOD took that from there was sort of their issue to take.

But this, I would certainly have been in consultation with the Secretary of Defense and the chairman.

The CHAIRMAN. Senator Johnson?

Senator JOHNSON. General, I want to continue down this line of questioning.

From my standpoint, there are really two basic scenarios, the scenario when we are under imminent attack, or there is an attack that is imminent, and then one where it is more preemptive, where there is time. You said there is always going to be time. There may not always be time, correct?

General KEHLER. I did not mean to suggest that there would always be time. I agree with that.

Senator JOHNSON. So when the President would determine that we are under the threat of almost an imminent attack, he has almost absolute authority, correct?

General KEHLER. Yes. Context matters here and—yes.

Senator JOHNSON. So is there any process to assess "imminent" at that moment?

General KEHLER. So I am a former commander, not a lawyer, so——

Senator JOHNSON. I am an accountant, so——

General KEHLER [continuing]. So let me just say this, to try to shed some light on this. Context matters here. If, in fact, in a range of scenarios where nuclear weapon use is possible, or there is a potential for nuclear weapons use, U.S. policy has helped us clarify over the years under what circumstances we might expect to use nuclear weapons.

So, for example, the 2010 Nuclear Posture Review said, "extreme circumstances when vital national interests are at stake." As a commander, I had that in my mind as a context for nuclear weapons.

And if we had tactical warning that an attack was underway, then we were into a playbook, basically, that had been vetted for its legal viability, et cetera, et cetera, et cetera.

Senator JOHNSON. So we somewhat defined "imminent." Obviously, if you see radar saying this is a launch, that is obviously imminent.

General KEHLER. Right.

Senator JOHNSON. What if it is right before?

General KEHLER. Well, there is also the conditions where you might have strategic warning, where we have solid warning that something will happen.

Senator JOHNSON. That is already game-planned out, in terms of what strategic warning is that would say it is imminent?

General KEHLER. Well, it is not precisely defined, but I think it would be certainly one of those matters under consideration.

Tactical warning, by the way, carries with it some amount of time urgency either for the survival of the decision-maker or for a decision about what to do in terms of responding. Strategic warning is not as time urgent. And so more time gets introduced into these scenarios as you go from the most extreme stressing scenario back to the left.

Senator JOHNSON. So that is the next scenario, where it is more strategic, and you have time.

Let's say you get a presidential order to launch, but you are in the position and you know that you have not followed the process. It has not been properly vetted. In that case, in your position, you believe that is an illegal order?

General KEHLER. No, I believe you have to determine whether that is a legal order.

Senator JOHNSON. But you believe that is your responsibility. You have the authority to say——

General KEHLER. Yes.

Senator JOHNSON.—this is not legal because we have not followed the steps. We have not gone through the process.

General KEHLER. I would have said, "I have a question about this," and I would have said, "I am not ready to proceed."

Senator JOHNSON. And then what happens?

General KEHLER. Well—[Laughter.]

General KEHLER. As I say, I do not know exactly. Fortunately, we have never—these are all hypothetical scenarios. I mean, they are real in terms of——

Senator JOHNSON. We are holding a hearing on this, so.

General KEHLER. Exactly. This is the human factor in our system. The human factor then kicks in. It is what Dr. Feaver said. There is a human element to this.

And at that point, I think, as with any military order—it does not matter, really. The consequences are higher if it is an order on nuclear weapons, but it is the same principle on any order.

Senator JOHNSON. So the point is there is a lot of human intervention between a presidential order when there is time, it is not imminent, to really ask the questions, to lay out the fact that we have not gone through this process, this is not well thought out, it is not proportional. So we can have a little comfort that even though the President has the authority, there are limits to that even within this context, when there is time.

General KEHLER. I believe that is true. And even if time is compressed, there are circumstances that I could envision where I would have said the same thing, which is, "Wait. Stop. We need to resolve these issues," or we need to address this question, or whatever.

And the process provides for that in that it is ultimately an interaction among human beings. The decision authority resides with the President, however.

Senator JOHNSON. Thank you for those answers. Thanks for your service.

General KEHLER. Yes, sir.

The CHAIRMAN. Let me just, before we move to the next, the person who is in your position, it is a Senate-confirmed position, is that correct?

General KEHLER. Yes, sir. That is right.

The CHAIRMAN. And typically, the person that is put in your position is recommended by the military? How does it typically work?

General KEHLER. Well, I can tell you how it worked for me. The Secretary of Defense, in my case, the Secretary of Defense interviewed a number of candidates, decided on a candidate to recommend to the President. There was a process that was gone through there at some level. And I became the President's nominee to the Senate. And then you all——

The CHAIRMAN. Most of the people who ended up being in these positions, are they people that have moved up through the defense mechanisms solely? This is not a political position, typically? It is a position that is based on merit?

General KEHLER. It is not a political position, and it is a position that is based on, I believe, experience, and I would like to think merit as well, but certainly experience. Certainly, there are a lot of factors that go into selection for senior command.

That is a great question I think for you to pose to other witnesses who have been in the position to select senior commanders. I was the beneficiary of that selection.

Mr. MCKEON. Mr. Chairman, I can tell you, at least from my vantage point in the Pentagon, but also as chief of staff to the National Security Council, the process General Kehler describes is the process. The Secretary and the chairman huddle and look at various candidates from the services for the four-star combatant commands.

Under President Obama, he personally interviewed most of the candidates who were recommended for selection.

General KEHLER. And typically, Mr. Chairman, in recent years, the commanders of some of the combatant commanders have been typically four-stars on their second or third assignment. So I was not a first-time four-star when I was nominated to take command of Strategic Command. That was my second four-star assignment.

The CHAIRMAN. Thank you.

Senator Udall?

Senator UDALL. Thank you, Mr. Chairman.

I thank all the witnesses for being here today.

The first use of U.S. nuclear weapons would appear to be a clear declaration of war. Certainly, the recipient of a U.S. nuclear attack would perceive it that way. Under the U.S. Constitution, only Congress can declare war.

Should Congress require the President to seek authorization for the first use of nuclear weapons? Why or why not?

Mr. McKeon, why don't we start with you?

Mr. MCKEON. Senator, as I laid out in my opening statement, it is my view, certainly, if the United States were to initiate a war with another nuclear state, and we conceive that the use of nuclear weapons might be possible, that is war in the constitutional sense that Congress should authorize.

If we are under attack from a nuclear state using nuclear weapons, that is a different question, and the President would have the authority under Article II to respond, whether with conventional or nuclear weapons.

The hardest question is the in-between question, and what Senator Johnson was getting at. Where do you define imminence on the continuum?

Senator UDALL. How do you define it?

Mr. MCKEON. Well, it would be very fact-specific, to give you a bit of a lawyer's dodge. But kind of the most obvious case is we see a missile on a launchpad or several missiles on several launchpads, and we have good intelligence that they intend to not test them but launch them at the United States. That seems like a pretty clear case of imminence.

Then you would move down a continuum away from that to where it becomes less imminent and looks more like a preventive attack.

Senator UDALL. Dr. Feaver and General?

Dr. FEAVER. What I would say is distinguish between scenarios where the military wake up the President versus scenarios where the President is waking up the military.

Where the military wakes up the President and warns him that there is about to be an attack or that we are experiencing attack, in those settings, the President has a very limited time window to make a decision. He would make a decision. He alone would have the authority to make the decision. And I think we all believe that the system would carry out the order that he gave. The electorate on Election Day chose him to make that decision.

But in the other context where the President is waking up the military, maybe in an extreme funk, saying, "I am angry, and I want something done," in that setting, he requires the cooperation of a lot of people who would be asking exactly the questions that General Kehler outlined. "What is the context? Why is this?" And the President alone could not affect the strike. He would require lots of people cooperating with him to make the strike happen, and they would be asking the questions that would slow down that process.

So the context matters greatly for this.

Our experience is that the President has asked for authorization when he is initiating a conflict. That is what President Bush did in 2002. And I believe that if there was that kind of context, the President would expect to go to Congress for authorization for something in that style.

Senator UDALL. Now per the U.S. Air Force instruction, the two-person concept is designed to prevent an accidental or malicious launch of nuclear weapons by a single individual. In the nuclear chain of command, the only exception to this rule is the President.

Would it not make sense to require at least one other person sign off on a decision to launch a first strike; for example, a constitutional officer such as the Vice President?

Mr. MCKEON. Senator, there is an adage in the law that you may be familiar with that hard cases make bad law, and this is a hard case. And I think taking away the President's authority as Commander in Chief or diluting it in some respect by requiring him to go to another constitutional officer in a formal sense, I am not sure that is a wise course.

I do think, as I said, it would be a rare case where the President would not consult with all of his senior advisers, to include the Vice President. It is just automatic in the system, whether there is considerable time or not, that that would occur. It would be very unusual if it did not.

Senator UDALL. Do you all disagree or agree with that?

Dr. FEAVER. I do not disagree. I think any law that you pass that raises constitutional questions will be very difficult, one, to get passed, and, two, very difficult to implement.

You want to make sure that you don't propose a legislative fix that undermines the nuclear deterrent and, thus, compromises the effectiveness of why we have nuclear weapons.

General KEHLER. And I agree with both of my colleagues. There are two different questions really at work here. One is a question of constitutional authority and what the Commander in Chief is allowed to do as the Commander in Chief. And the other is a principle, and a set of processes and procedures, that ensure that the authorized use remains at the most senior civilian authority, and that unauthorized or accidental use cannot occur.

Senator UDALL. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Young?

Senator YOUNG. Thank you, Mr. Chairman.

I thank all our panelists for being here today.

General Kehler, I just want to follow up on what has been much discussed here. In your written statement, you indicate, "The legal principles of military necessity, distinction, and proportionality also apply to nuclear plans, operations, and decisions. Legal advisers are deeply involved with commanders at all steps of the deliberate and crisis action processes to offer perspective on how force is to be used, as well as the decision to use force."

So a few observations, and I will give you, General, and you, Mr. McKeon, since you are the attorney on the panel, an opportunity to respond to any you like.

Number one, it is unclear to me what the legal standard is for a person to determine whether or not these legal principles have been satisfied. So is the standard that no reasonable person could conclude that the order was necessary or proportional? Or is there some other legal standard? Or is that left strategically vague?

The second observation is it is unclear what the Commander in Chief's recourse would be if, in fact, a military person decided not to move forward with these orders based on principled reasons that are grounded in the legal principles of military necessity and proportionality. That is, what if a military person regards the order as illegal, decides to do what we are taught in the military—make

known their decision and refuses to obey that order? What recourse does the Commander in Chief then have in the wake of such a decision?

And then the last observation is that I am unaware of, and perhaps most others are as well, but I am unaware of any sort of what I will call discernment training; that is, the training of our military personnel to be able to apply these legal principles to different circumstances, to different military contingencies.

Considering legal questions in advance, to me, seems distinct from making firm legal determinations in advance. And going through a series of wargames or contingencies could help sharpen one's ability to apply the facts of different complicated, global circumstances to these legal principles.

So with that, if you would like to comment on any of those observations, why don't I start with Mr. McKeon as the counselor present?

Mr. MCKEON. Senator Young, on the second question about the legal recourse, if you had a commander saying that he did not believe it was a legal order, the chain of command runs from the President to the Secretary to the combatant commander. The chairman of the Joint Chiefs is not in that chain of command.

I suppose probably the first recourse would be to call the Secretary of Defense to tell him to order the commander to do it. Then if the commander still resisted, you either get a new Secretary of Defense or get a new commander. But you would have a real constitutional crisis on your hands, if that occurred.

I am unaware that there is a strict legal standard like "no reasonable person" on the judgment of proportionality and distinction, because it is not an instance that would get litigated very often, although General Kehler may be more familiar with the UCMJ cases than I am, because I am not a DOD lawyer. I was a lawyer in this committee.

It would be a judgment based on senior military officers like the chairman who would be in the conversation, and the combatant commander, and their legal advisers, all of whom would have had between 30 and 40 years of military service and experience, and understand how to make these assessments.

I think that is the best answer I can give you on it.

Senator YOUNG. Thank you.

General, do you have anything to add? And also, perhaps you could answer the question—of course, these would be highly classified training regimens, and if you prefer, you could brief me in a classified setting—about our ability to train people to discern when proportional, necessary orders have been ordered.

General KEHLER. We certainly do train everyone in the military on what we collectively call the law of armed conflict, and that training occurs probably somewhere every day. It includes the nuclear forces. It includes everyone wearing a uniform. So this is not a foreign concept to people who wear our uniforms.

In terms of what is legal precedent here, I, frankly, cannot answer that off the top of my head. I don't know. And what the legal standard is for determining distinction, proportionality, and military necessity, I cannot describe that off the top of my head either.

What I can say is that, for nuclear decision-making at the highest level, it is a consultative process, and there are senior people involved in that process.

Where my expectation always was, if there was a question about the legality—first of all, if this was something we had planned, then those issues have been addressed and resolved prior to the time that the plan becomes part of a playbook that says, "Hey, you can pick this one," because we have already been through all of that for this or this or this. And there are many options that have been preplanned.

If we were doing crisis action planning, we would do the same thing. We would follow through. That happens faster, but we would follow through with the same thing. The same legal standards would be applied.

I always assumed that, if issues got raised at the most senior level, that we would be able to resolve those issues. And then as was described, the chain of command is operative here.

The CHAIRMAN. Thank you. Thank you both very much.

Senator Murphy?

Senator MURPHY. Thank you, Mr. Chairman, for convening this hearing. This is fascinating.

Thank you all for being here today.

Let me just pull back the cover for a minute from this hearing. We are concerned that the President of the United States is so unstable, is so volatile, has a decision-making process that is so quixotic, that he might order a nuclear weapons strike that is wildly out of step with U.S. national security interests. Let's just recognize the exceptional nature of this moment in the discussion that we are having today.

I want to maybe pin together some of the questions that have been asked here in a little bit more pointed form. We have been talking about the ways and the reasons that an individual in the chain of command may decide to refrain from carrying out a particular order because of its illegality. I think Senator Young raised some very good concerns around the difficulty of evaluating whether a particular order is necessary or proportional.

But let me just ask a simple question. Is one of the questions that is asked in determining whether an order is legal whether or not there is a declaration of war that allows for that military action to take place? Would there have to be an independent legal determination made by those in the chain of command that there was an operational declaration of war, in the absence of an attack or an imminent threat?

General KEHLER. Senator, you were looking at me. Are you asking me?

Senator MURPHY. Sure.

General KEHLER. Great. So the authority to use force and whether or not there is a declaration of war comes back to context here.

At least from my perspective, I always viewed the use of nuclear weapons as fitting in with our declaratory policy, which is that we would be in extreme circumstances. And it was described pretty well. It was described in the last Nuclear Posture Review. But subsequent to that, it was described in other various ways by the United States, various administrations over time, that we would be

in some kind of extraordinary or extreme circumstances, and we would be dealing with national interests that are at stake here.

I can't go back and recite authority that has been granted in the past to respond with nuclear weapons, but my belief, and I could be wrong here, was that this issue of strategic and tactical warning had been addressed in prior epochs, and that we were not on shaky legal ground if we were talking about response to strategic or tactical warning.

Senator MURPHY. But the question as to whether there is legal authority is part of the decision-making process regarding the legality of a particular order that the chain of command is being asked to carry out?

General KEHLER. Sure.

Senator MURPHY. Dr. Feaver, do you agree?

Dr. FEAVER. Right. One of the things that the officers will ask themselves is, under what authority are we conducting this operation? That would require referring back to, what are the authorities?

They could reach the judgment that it is the inherent authorities in Article II of the Commander in Chief clause. So you would require a legal judgment, and there are legal staffs throughout the chain of command.

What would be the case, though, is it would not be the President alone persuading a single military officer alone on the other side of the telephone. There would be a large group of advisers and legal advisers weighing in on this. And that is an important part of the context that is sometimes lost in the media coverage. There would be a lot of people under the scenario that you described, not imminent, not waking the President up, but we have time to decide this. Many, many people would be weighing in, including many lawyers.

Senator MURPHY. I think Mr. McKeon answered this to an extent, but I will ask you, Dr. Feaver. Would the possession of a nuclear weapon capable of reaching the United States constitute an imminent attack, in your opinion? The simple possession of a weapon, a nuclear weapon capable of hitting the United States, does that constitute an imminent attack?

Dr. FEAVER. I am not a lawyer, and so I could not judge whether that would meet the legal test. I think it would, in most people's minds, constitute a grave threat to U.S. national security. Particularly if it was a North Korean nuclear warhead atop a North Korean missile that was capable of reaching the United States, I think most Americans would view that as a grave threat to our national security. Whether that would meet the legal test of imminence would require a legal judgment. I will defer to counsel on my right.

Senator MURPHY. Mr. McKeon?

Mr. MCKEON. Senator, the mere possession of a nuclear weapon I do not think would meet that test. I think there would be time required for congressional authorization, if the decision were taken that the mere possession of a nuclear weapon by a state such as North Korea was unacceptable to U.S. national security interests.

They have a nuclear weapon today. We know that much.

Senator MURPHY. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Rubio?

Senator RUBIO. Thank you, Mr. Chairman.

Thank you all for being here. I want to say at the outset this is an important conversation, but one we should tread lightly on. Our allies who rely on U.S. defense assurances are watching, and if we create doubt in their minds about the capability or the willingness of the United States to live up to those commitments in any way, and I am not claiming that is what anyone is doing, I think it could have repercussions that are significant, including encouraging some of them to perhaps pursue their own deterrent capability. If they come to doubt our political ability and/or willingness to live up to our commitments, we are actually making the world more dangerous, not less dangerous.

I also think our adversaries are watching, and I will get to that part in a moment. But I think if anyone out there thinks they can somehow get away with something because the politics of the United States would prevent the Commander in Chief from acting expeditiously, that could also encourage miscalculation, particularly on behalf of people that are isolated from the world, don't get a lot of information, and have never had anyone tell them they are wrong or no. And I have one person, in particular, in North Korea that concerns me in that regard.

I don't think there is any debate about imminent attack or under attack. I think we would all agree that the President of the United States has to have the capability to quickly respond if we are under attack and/or under potential imminent attack. Obviously, there could be some debate about it.

I also think it is important for us, in the context of this new posture review, to know that the traditional Cold War threat of a massive exchange between the U.S. and the then-Soviet Union is probably not likely in the short term. I think the likelier threats remain the use of Russian tactical battlefield weapons to escalate in order to de-escalate a battlefield event, a terrorist organization that comes into possession of a nuclear device or some other weapon of mass destruction, and then a rogue regime that does not have any of these safeguards that we have talked about. It is basically one guy who has a bad night and gets up and decides he wants to do something about it. So these are things that it is important to understand.

I think this whole debate is about first use, and I want to touch on a topic that was first innovated during the Cold War in the context of an overwhelming conventional advantage the Warsaw Pact had, but we also saw it operative in the first Gulf War, and that is the notion of calculated ambiguity.

I believe it served us in both instances, particularly in 1991, when Saddam Hussein was perhaps tempted to use biological and/or chemical weapons. One of the reasons why perhaps he did not pursue it was that there was calculated ambiguity about whether or not that would trigger a U.S. nuclear response. And I think we could all foresee what that conflict would have looked like had he deployed biological and/or chemical agents that he had in his possession and could have potentially used.

Is calculated ambiguity still an important concept in the 21st century, the notion that adversaries should have doubt in their

mind about whether or not the United States retains the right to strike first should they either use a weapon of mass destruction and/or move in a dangerous direction? Is calculated ambiguity still useful and still operative in this set of threats that we now face?

General KEHLER. Senator, I believe that it enhances our deterrence to have some doubt in the mind of an adversary about under what conditions we would use a nuclear weapon.

Dr. FEAVER. Senator, I agree. And I would go further and say that President Obama, who was no fan of nuclear weapons and who moved us back on the nuclear threat index in his 2010 Nuclear Posture Review, nevertheless left in place calculated ambiguity in precisely these scenarios. And his rewriting of it was taken to mean we would not threaten countries who were attacking us with nonnuclear weapons. But a close reading of what he decided left in place enough ambiguity to achieve precisely the deterrent effect you described. And that was from a President who was openly hostile to nuclear weapons.

Mr. MCKEON. Yes, is the answer to your question.

Senator RUBIO. The last point in the 40 seconds I have left that I just wanted to touch on is this whole notion of, if it is legal, you have a right. And I think we all understand what that means. If military officials are ordered to go into a village full of civilians and kill everybody, that clearly violates the law that governs armed conflict.

I think there is also some danger in that regard here, and we have to be careful in how we talk about that as well. We cannot have a bunch of bunker lawyers that basically—or activists up and down the chain who decide that they are going to disobey any order that they disagree with. I mean, we can foresee where something like that can spin out of control.

And ultimately, in this Republic, we have elections. And one of the things that voters think about when they elect someone to the Office of President of the United States is whether or not they want to entrust them with this capability. So it is good that people are aware of this issue, but I think we need to be very careful when we talk about that component of it.

Thank you, Mr. Chairman.

The CHAIRMAN. I agree. I just want to say, I don't think you were here for my opening comments, I cannot agree more that both for our adversaries and those who are our friends, that we need to be careful in how we discuss this. We do not want any of them to fear that somehow the ability to make decisions that benefit our country and them, or disbenefit them if they are acting against us, is being taken away. I couldn't agree more.

Senator Markey?

Senator MARKEY. Thank you, Mr. Chairman, and thank you for having this very important hearing. I requested this several weeks ago, and I just think it is so important that you have such an important discussion, because few questions are as important to U.S. national security as the question of presidential authority to use nuclear weapons not only to deter or defend against a nuclear attack but also to start a nuclear war.

Nuclear weapons are for deterrence, not warfighting. Launching nuclear weapons first would be an unprecedented act of aggression

and war. Whether limited or massive, any first-use nuclear strike would devolve into retaliatory strikes and war, causing unimaginable deaths, suffering, and destruction.

Absent a nuclear attack upon the United States or our allies, no one human being should have the power to unilaterally unleash the most destructive forces ever devised by humankind. Yet, under existing laws, the President of the United States can start a nuclear war without provocation, without consultation, and without warning. It boggles the rational mind.

I fear that in the age of Trump, the cooler heads and strategic doctrine that we once relied upon as our last best hope against the unthinkable seem less reassuring than ever.

In other areas of government, our Constitution system of checks and balances ensures that the President does not have sole power to make extreme decisions without some level of national consensus. But on the President's sole authority to start a nuclear war, even in the absence of a nuclear attack against our country, no one can tell the President no, not Secretaries Mattis or Tillerson. Even General Kelly, the President's chief of staff, cannot control the President's Twitter tantrums.

As a result, many Americans share my fear that the President's bombastic words could turn into nuclear reality. The fact that any American President has the unilateral ability to start a nuclear war is why I have introduced legislation cosponsored by 13 of my Senate colleagues to restrict any President's authority to launch a first-use nuclear strike without congressional authorization.

The Founding Fathers believed that Congress has an integral role in any decision to start a war. And today more than ever, it is imperative that Congress reassert that constitutional authority.

Mr. McKeon, is the President legally required to consult with or receive approval from anyone else before ordering the launch of a nuclear weapon?

Mr. MCKEON. Senator Markey, in the context that you described, in the absence of an attack or an imminent attack, I think the Constitution requires him to come to Congress to get that authority.

Senator MARKEY. Does the protocol for the President to launch a nuclear weapon change if we are under nuclear attack or deciding to launch a first-use strike? It is different when we are not under attack?

Mr. MCKEON. Those are two different questions.

Senator MARKEY. Two different questions.

Mr. MCKEON. If we are under attack, the President would have that authority under Article II to defend the country, and there is no distinction between his authority to use conventional or nuclear weapons in response to such an attack.

Senator MARKEY. Is there a formal process by which anyone in the chain of command, from the Secretary of Defense down to the submariner or airman actually initiating the launch sequence, may object to or legally refuse to carry out a presidential order or launch a nuclear weapon?

Mr. MCKEON. Well, as General Kehler has described, the officers in the chain of command, the senior officers and the Secretary, could raise objections, if they believe the order is illegal.

I think the system is designed to protect the first or second lieutenant, 23-year-old Air Force officer sitting in the launch control center from having to make that grave decision. It is really the four-stars and the Secretary who need to bear that burden.

Senator MARKEY. Because disobeying such an order would be considered a violation of Federal law under the United States Uniform Code of Military Justice.

So in your testimony, Mr. McKeon, you say that, in August, the National Security Advisor, Mr. McMaster, suggested the possibility of a preventive war, which would require congressional authorization.

In other words, if there had been a decision that was being made by the President to use nuclear weapons, maybe small tactical nuclear weapons to hit the nuclear weapons system in known locations in North Korea as part of a preventative nuclear war, it is your opinion that the President would have to come to the United States Congress in order to receive congressional approval. Is that correct?

Mr. MCKEON. Yes, correct.

Senator MARKEY. So when General McMaster talks in those terms, "preventative war," and that is I think what most people are most concerned about, this question of the President actually using them as part of that kind of scenario, there is, in your opinion, a constitutional responsibility for Members of Congress to have to have voted on that before such a nuclear war is commenced by the United States.

Mr. MCKEON. Correct. And in my view, the President would lack the authority. We had hearings not on this committee but in the Judiciary Committee before the Gulf War in 1991 when I was working for Senator Biden, then the chairman of that committee. One of the witnesses, Harold Koh, who was later the legal adviser in the State Department, said something that stuck with me ever since, which is: Silence has a sound. If the sound from Congress is silence, then the answer is no.

Senator MARKEY. Well, the sound of silence has finally ended since 1976 to today on this issue. And I think, Mr. Chairman, that you deserve much praise for having this very important discussion. Thank you.

The CHAIRMAN. Thank you so much for your interest in the topic and for pursuing this for so many years.

Senator Kaine?

Senator KAINE. Thank you, Mr. Chair. I also want to thank you for having this hearing.

I have a strong belief that under administrations of both parties, and under Congresses of both parties' leadership, there has been a significant kind of creeping abdication of power in the war, peace, and diplomacy space from Congress to the President. There are Article II powers that are very important with respect to being the Commander in Chief, and also with respect to the conducting of diplomacy. But there is also very strong congressional prerogatives in the power to declare war, but also in the powers to oversee treaties and other diplomatic matters.

And in recent years, I think this committee has started to pull some of that power back to this end of Pennsylvania Avenue in im-

portant ways. That is what the Iran Review Act did. President Obama at that time was asserting an ability to do this deal with Iran on the nuclear program without seeking a vote of Congress, and we felt that no congressional imprimatur was very unwise, and we pulled that back.

We have done that with respect to Russian sanctions, and the current administration tried to pull back a little bit of the oversight responsibility.

I have been engaged in an effort with colleagues, and the chair has recently held a very important hearing on the question on the 9/11 authorization, whether it still applies to military operations against other nonstate terrorist organizations and Al Qaeda.

And I view this hearing as much the same way, trying to make sure we all share an understanding of what current protocols are, but then ask ourselves whether Congress is taking the steps we need to, to make sure that we are not abdicating the article and responsibilities that we were granted by Madison and the other Founders in 1787.

General Kehler, I was really interested in your testimony about, just from a military standpoint, as somebody who was the head of STRATCOM, as a leader, your thought about an order, if a President gives an order and you would grapple with whether or not you viewed it to be lawful.

The question of legality and lawfulness starts with the Constitution. You and we take oaths to the Constitution, not to a flag, not to a President, not to a party. We take an oath to the Constitution. So clearly, if you thought an order violated the Constitution, I assume that was incorporated in your testimony.

But I wonder about your thought about internal protocols. If it is more than just the Constitution, but you were to feel that an order to use a nuclear weapon, say, violated internal protocols that had been agreed upon in the military either with respect to proportionality or some procedural protocol, is that the kind of, just using it as a hypothetical, would that be the kind of thing that might make you decide, "No, I cannot execute on that order?"

And then I am interested in understanding whether there is a widely shared view of what this line between a lawful order and an unlawful order would be.

General KEHLER. Senator, this issue about legality of orders exists at every level of command no matter whether the order is to use nuclear weapons or whether to use some other kind of weapon, perform some other kind of operation.

The principle remains the same. In order for our military to follow the orders of the civilian leaders, then those orders have to be two things. There are a couple tests. One test is that it has to come from someone who has command authority. Second, it has to meet the legal tests of the law of armed conflict.

So issues about the extent of presidential authority, et cetera, et cetera, are really constitutional issues for all of you to hammer out and then provide to the military. That is the way I think that works.

And then second, though, when these issues are in military decision-making, I always had a legal adviser by my side. I think you would find that commanders across-the-board these days have legal

advisers by their sides. The Secretary of Defense and people who would be part of a conference having a conversation about nuclear decisions, legal advisers would be part of that conversation. And certainly, my experience with this has been that legal advisers are not reluctant to raise their hand and say, before we go further, here are the things that you need to consider about legality.

I think Brian's points about at what point do we need Congress to weigh in, et cetera, et cetera, while they might not be at the fingertips of every military commander, they are certainly discussed in the military legal profession.

So I was never concerned that I would not have the appropriate legal adviser at hand and that legal concerns would not be part of that conversation.

Senator KAINE. Dr. Feaver, I am about out of time, but if you would like to answer, that would help me.

Dr. FEAVER. So the military has an obligation to follow legal orders, and there is a presumption that the orders that come through the chain of command and from competent authority are legal. But those orders are simultaneously vetted by the legal advisers, as General Kehler said.

But as Senator Rubio pointed out, that does not mean that every order that comes down is an opportunity to discuss and debate between the chains of command. There is a presumption that the orders are legal.

And when there is an extraordinary order, like an order to launch a nuclear weapon, that would require a lot of attention and would galvanize attention.

The second point I would make is you may, Chairman, want to have lawyers back to talk about the legal authorities that are extant now regarding conflict on the Korean Peninsula. We are still under armed hostilities, just in an armistice, from the first Korean War, and there have been multiple U.N. Security Council resolutions, all of which provide some legal basis for U.S. action. And I am not a lawyer to adjudicate those, but I am sure that the DOD lawyers are looking at those issues.

Senator KAINE. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

General KEHLER. Sir, may I add one more thing? I know the Senator is out of time.

The CHAIRMAN. Yes.

General KEHLER. If I was not getting legal input, I was asking for it. And my obligation, my responsibility, as the commander of Strategic Command, was to clear up any of those concerns on behalf of the operating forces. They are not in a position really to make a legal determination with an order that is given to them.

So, for example, I spent a lot of time in a missile launch control center over my early parts of my career. I had no way to know whether the target that I was being told to strike was a legal target or not a legal target. I was relying on people above me in the chain of command to carry that out. And my view as the commander of Strategic Command was that was my responsibility to do.

The CHAIRMAN. If I could go back, Dr. Feaver, what was your last admonition to me?

Dr. FEAVER. It was not an admonition but a suggestion, sir.

The CHAIRMAN. I took it as an admonition. [Laughter.]

Dr. FEAVER. There have been many questions about what would be the legal authority for U.S. military action on North Korea, particularly with regard to nuclear weapons. While it would certainly be politically advisable that the President go to Congress to get new authorization for any new hostilities, it is at least possible, and I am not a lawyer, so I am suggesting that lawyers be consulted on what is the legal basis that is already existing because of prior U.N. Security Council resolutions that authorized the first Korean War, which is not over, it is just in a ceasefire, and then subsequent U.N. Security Council resolutions regarding North Korea's illegal nuclear program.

The CHAIRMAN. Very good.

Yes, sir?

Mr. MCKEON. Can I just comment briefly on Senator Kaine's issue? Four-star generals are not shrinking violets, and I can recall a circumstance, I will not identify the commander, and it was not a nuclear issue, where a combatant commander was looking down the road and seeing a scenario where he saw he was going to get some order, and he was wondering whether that would be a legal order. And he started asking questions months in advance of the Office of General Counsel in OSD.

So obviously, it is a human system, and the human system can break down, but people don't get to be four-star generals unless they are strong individuals.

The CHAIRMAN. Thank you.

Senator Risch?

Senator RISCH. Thank you, Mr. Chairman.

First of all, I want to thank all three of you for your thoughtful analysis of the issues here.

I do want to state for the record, however, that every single word that has been uttered here this morning in this hearing is going to be analyzed in Pyongyang. They are going to look very carefully at how we, the American people, view this.

And for those who are doing the analysis, I want to underscore that our discussion here today is not as practical as it is academic. We all have strong ideas about the power of the first branch, Congress, and the second branch, the President and the military.

The Constitution was written in a day when things were much different than they are today, moved much slower than they are today. Every time that the President has used force, he has been backed by the American people and by Congress.

So I want to make sure that Pyongyang understands that this talk about lawyers and this talk about standards and proportionality and all the other things that we all talk about is not a discussion that is going to take place in the heat of battle in today's world.

These decisions have to be made in moments. And it is not going to be made by courts or by lawyers or by Congress. It is going to be made by the Commander in Chief of the American forces. And he is going to do that, as you pointed out, in all likelihood, with the experts that he has surrounded himself with. But nonetheless, he will make that decision.

And Pyongyang needs to understand that they are dealing with a person who is Commander in Chief right now who is very focused on defending this country, and he will do what is necessary to defend this country.

So lest anyone be confused, as most people would be, and I have sat through scores of hours of arguments about the power of the Commander in Chief, the power of Congress, et cetera, from a very practical standpoint, the President of the United States is going to make this decision, and he is going to make it quite quickly, if he has to. So I want everyone to understand how this works.

And it isn't a gray situation. It isn't a situation where lawyers are going to get involved, and they are going to argue about proportionality and all these other standards we talk about. Unfortunately, we live in a world that is full of realistic decisions that have to be made, and they will be made.

Thank you, Mr. Chairman.

The CHAIRMAN. I think that is the reason we are having the hearing. Thank you. Thank you so much.

Senator Merkley?

Senator RISCH. Mr. Chairman, I have a few minutes left. Let me respond to that.

I agree with that, and I think we should have the hearing. But the problem you have with that is there are legitimate disputes over the power of the President and the power of Congress when it comes to this sort of thing. I want everyone to understand, particularly those in Pyongyang, that these are pragmatic decisions that have to be made and will be made, and they are not going to be clouded by arguments of an army of lawyers on each side arguing what is proportional and what isn't.

Now, you can argue whether that is right or wrong, but those are the facts on the ground.

The CHAIRMAN. I think that is correct. And I don't think there is any question. And one of the reasons we have passed some of the pieces of legislation that we have through the years, whether it is the Iran review act, or whether it is the Russian sanctions bill we just passed, is that, through the years, there is no question there has been a tremendous tilt to the executive branch, and certainly still is, as it relates to war, there is no question.

But that is the purpose of the hearing, and I think it has been a good one to ferret out some of these issues and cause us to think more fully about what happens during these periods of time.

Senator Merkley?

Senator MERKLEY. Thank you, Mr. Chairman.

Dr. Feaver, I believe you said something to the effect that, in the case where you have time to consider a response, the cooperation of many strategic commanders is required to execute an order. Is that more or less accurate?

Does that essentially sustain the vision that there has to be a person between the President and the nuclear briefcase who cooperates in order for that briefcase to be utilized?

Dr. FEAVER. I can't speak in open session about the particularities, but I will say that the system is not a button that the President can accidentally lean against on the desk and immediately cause missiles to fly, as some people in the public, I think, fear it

would be. It requires the President to work with military aides who are attending him and who have possession of the materials that he needs. And it requires personnel at all levels of echelon command all the way down to the missile silo to carry out an order.

The President by himself cannot press a button and cause missiles to fly. He can only give an authenticated order, which others would follow and then cause missiles to fly.

Senator MERKLEY. In the context, you put the condition "when you have time to consider a response." So when you do not have the time to consider a response, there has been a lot of conversation here today about reacting on short order to an assault, is it still the case that you have to have the cooperation of strategic commanders to execute an order?

Dr. FEAVER. Yes, but in those settings, that is where the military is waking up the President, because they are the ones who are monitoring the intelligence picture. They are the ones who are getting the warning that a missile launched against the United States is about to happen.

So they are already cooperating by waking up the President, advising him or her of the situation, and presenting them the range of options. So I would code that as cooperating with the President in order to give the President the options of making a decision.

Senator MERKLEY. Those are the types of scenarios that really give people nightmares. There have been over a dozen such scenarios of false alarms where there were folks on both sides, the Russian side and the American side, that have been extremely worried that a major attack was underway with minutes to spare.

I would like to enter in the record an article that details more than a dozen such events. There is the famous moonrise incident in 1960. There was the training video error of 1979. There is a case when Boris Yeltsin actually activated the nuclear briefcase in response to a nuclear research missile being launched by the Norwegians.

[The information referred to is located at the end of this transcript.]

Senator MERKLEY. And it is those cases that give people great worry.

And part of the point of a nuclear triad, and this has not been mentioned today, so I wanted to make sure it is mentioned, part of the point was to have forces that could survive an initial attack, submarines and bombers that carry weapons, so that you did not have to make a decision within a couple minutes. You had assured retaliation with at least two legs of the triad that were more survivable.

Can I just get a response as to whether that is a reasonable analysis?

Dr. FEAVER. I think that is, Senator. And that is precisely why no previous strategic leader decided to put in place an automated response. They always wanted a human in the loop.

And in the cases that you mentioned, and others, it was a human assessment that concluded this was not real, we have time to wait. And that is why I would support and advocate for anything that can be done to extend that time, whether through better missile de-

fense, more hardened communications technology so more people can be brought in, updating other aspects of the command-and-control system, so that there is time for the human element to make the assessments necessary to reach the right decision.

We have had too many close calls over the course of the Cold War, but they were avoided in the end by wise human decision.

Senator MERKLEY. In some cases, yes—well, I won't go into details.

So in the 2010 Nuclear Posture Review, is it not the position of the United States that we essentially are saying we would not use a nuclear first-strike against and a Non-Proliferation Treaty participant who does not have nuclear forces?

Dr. FEAVER. I had written an op-ed in the New York Times about this at the time. That is how it was covered in the media, but when you read it closely, I believe it still leaves wiggle room, in particular because it says those countries in compliance with their Non-Proliferation Treaty obligations. And it leaves opaque who determines whether they are in compliance.

I inferred from that opacity that the White House would determine whether they were in compliance, which is a loophole that gives the President the strategic ambiguity that he might wish for deterrence purposes.

Senator MERKLEY. Part of the reason for the discussion over no first use is because it creates more confidence among other nations that are nuclear-armed not to perceive a false attack by the United States, as occurred in the 1995 case in which Yeltsin activated their nuclear briefcase.

Do you see any value, or do any of you three see any value, in strengthening the perception that the U.S. by policy would not utilize nuclear weapons in a first strike?

Dr. FEAVER. I do see some value from such an assurance, but I also see some costs. And I think that is why every previous administration, including President Obama who might have been expected to adopt a no-first-use policy, chose not to at the end adopt a blanket no-first-use policy. I doubt that this administration would either.

If President Obama could not be convinced that it was worth the risks, I doubt that President Trump would be.

Senator MERKLEY. There is a longer conversation about the pros and cons of that, but I am out of time.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you so much.

Senator Shaheen?

Senator SHAHEEN. Thank you, Mr. Chairman. Thank you for holding the hearing.

And thank you, gentlemen, for being here today.

Dr. Feaver, in your written testimony, you said that even a single nuclear detonation would be so consequential, it might trigger an escalatory spiral that would lead to civilization-threatening outcomes.

Can I just ask if everybody on the panel agrees with that?

General KEHLER. I would agree with it in principle, I think. One of the deterrence features, of course, that has been with nuclear weapons since the beginning is the high risk that any nuclear use

will not be controlled or could not be controlled, although we have in place——

Senator SHAHEEN. Absolutely, and that is what helps contribute to the deterrence factor.

General KEHLER. It does. But we have in place means to try to control it, if deterrence ever fails.

Senator SHAHEEN. Mr. McKeon, do you agree with that?

Mr. MCKEON. I agree with Peter's statement.

Senator SHAHEEN. I think it is that statement that is so concerning and certainly gives me pause and others pause, and I think is one of the reasons for the hearing. When we have an administration where the National Security Advisor has suggested that we can have a preventative war on the Korean Peninsula, when the President has said that he has asked our military leadership to come up with plans to address the North Korean regime, it suggests that what we are talking about is a nuclear war, a first strike. And, certainly, the potential for that to escalate, as everyone has suggested, is very difficult to even contemplate.

And I think one of the challenges is that we are dealing with a President, as Senator Cardin has said, who has not seemed to be willing to accept advice on an issue, many issues affecting power. While I agree with Senator Risch's comment that if the United States is threatened, we want the President to act, I want the President to act in a way that acknowledges input from a lot of experts and not to act based on a Twitter post.

And the anxiety that that produces, I think, contributes to the concern about whether we are in a situation where we need to look at, in Congress, a first nuclear strike policy and banning that.

So you talked about the importance of calculated ambiguity, Senator Rubio raised that, and the importance of that in enhancing deterrence and making war less likely. Can you 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?

Mr. MCKEON. In thinking about this hearing, Senator Shaheen, I have struggled to come up with constructs that make sense, and it is hard to develop a principled way to constrain the Commander in Chief's power within the executive branch.

As I said earlier, I think hard cases make bad law, and I think if we were to change the decision-making process in some way because of a distrust of this President, I think that would be an unfortunate precedent for future Presidents. And I say that as somebody who worked in this chamber for 20 years and feels strongly about congressional powers in this sphere.

Senator SHAHEEN. Dr. Feaver?

Dr. FEAVER. I think that there are proposals that are floating out there that are worth looking at. There is a group of academics like myself who study this issue, and we have been kicking around various proposals that would delimit the scenarios, so it would set aside the reprisal, the launch-under-attack scenarios. And then just where there is plenty of time, then specifying various protocols for authenticating an order, for validating that the order is legal and things like that.

Each of these proposals raises important questions about Article II, and so they would have to be closely vetted. But I think there are proposals like that that could be examined, and it might improve.

However, there are some things that unambiguously would help, and that is modernizing the technology in the command-and-control system, which is overdue in some areas for upgrade. These are very expensive. But precisely for the reason you said, Senator, that an accident or unauthorized use would be so catastrophic, it is an investment worth making.

Senator SHAHEEN. General Kehler?

General KEHLER. Senator, we have talked about a lot of potential scenarios this morning. My view on this is it is not possible to envision all of the scenarios in advance. And when we try to come up with ways to place limits on various scenarios, my concern would be that we are creating some detriment to the overall deterrent.

As unfortunate as it is, the big paradox of the nuclear age is still here. I said that in my written testimony. In order to prevent their use, which is the objective here, we have to be prepared to use them.

And for us to presuppose all of the scenarios under which we would want to somehow limit the power of the Commander in Chief, I would just urge you to be very cautious here for all the reasons that were raised today.

It has implications for the deterrent. It has implications for extended deterrence. And it has some implications, if these just remain unresolved issues, it has implications for our own military men and women, and the confidence and trust that they place in the chain of command.

So certainly, I believe we always get better by having these conversations and debating and doing all the things that we have done throughout the Cold War and beyond. I would just urge you to be very cautious about suggesting changes to this particular system.

Again, my perspective from my view was that the process accounts for the kind of scenarios that we have been talking about today. It certainly accounts for tactical warning that an attack is underway, and we have preplanned options, and the vetting has been done. It accounts for the potential for using before an adversary weapon has been used.

Senator SHAHEEN. And I appreciate that, and certainly hear the caution that each of you are giving us. But doesn't it also suggest that it is important for the Commander in Chief to also be cautious in how he talks about this issue, so that there is not a miscalculation on the part of our aggressors who would do us harm about what the real intent here is?

Mr. MCKEON. I fully agree with you on that, Senator. The statements the President makes through his Twitter account no doubt cause concern and confusion on the other side of the Pacific.

They don't have a constellation of satellites to see where we are moving our forces. When he says an armada is coming, that obviously has to give them some pause.

And people may say, "What he says on his Twitter account does not matter. We have policies. We have leadership of the national command authority. The Secretary and the chairman, they will

take care of it." That does not compute in Kim Jong Un's mind, that what the President says does not matter.

So I would be very worried about a miscalculation based on continuing use of his Twitter account with regard to North Korea, as I understand you are.

Senator SHAHEEN. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

So, as I understand it—first of all, this has been, from my perspective, a great hearing, very balanced, I think, obviously, informative after 41 years of not having a hearing on this topic. And I appreciate all those, including CRS, that somewhat encouraged us to do so, if, in fact, you feel like you did.

I think Mr. McKeon and General Kehler, basically, you are saying you don't see any legislative changes that ought to be made at this time. I think that is where you both are.

And, Dr. Feaver, I think what you were saying was really not legislative changes as it relates to the power that the Commander in Chief has. You are talking about other types of more pragmatic changes as it relates to just the decision tree, is that correct, after the command has been given?

Dr. FEAVER. I would be very wary of legislative fixes, because there are second- and third-order effects that are hard to anticipate. And the history of the nuclear command-and-control system is discovering that changes that have been made and well-intentioned on one level producing an unexpected result in another aspect.

So I would be wary of legislative fixes, but that does not mean I would not review them. I think there are good proposals out there. And part of the value is reassuring the American public that they have a nuclear arsenal that is well-maintained and well-guarded against unauthorized use.

I think the Senators are channeling some concerns that the public has about this. And reviewing and then deciding not to make a change, a legislative fix, would go some distance to reassuring the public.

The CHAIRMAN. There is another component.

I will let you go ahead.

Mr. MCKEON. Just to comment on what you said, Mr. Chairman, I am wary of the legislative change on the decision-making process, but the larger conversation we have had in this hearing about the war power really falls on you and your colleagues here in this body to continue to step forward and make the case for the constitutional imperative.

In both the Gulf War in 1990–1991 and even the Iraq War in 2002, the executive branch was rather grudging in agreeing to, acceding to a congressional vote and authorization. George W. Bush either before or right after said something disparaging about: I don't need some old goat in Congress to go to war against Iraq.

So the institutional instinct in the executive branch will always be, "We can do this under Article II." And you will need, as a political body, to continue to assert your rights to make the case that we have discussed.

The CHAIRMAN. Thank you.

General KEHLER. Sir, I agree with the points that have been made. I would not recommend any legislative changes at this point as well, but I would recommend a couple of things that I know are being openly talked about by my colleagues who are still wearing uniforms.

And one of those is we can always do a better job, I think, in training our people who are involved in these processes in terms of where the safeguards are. And the point I was trying to make this morning about raising the legality issue is to remind everybody that the military does not blindly follow orders, and that is true with nuclear orders as well. I think that should be a reassuring piece for the American public, and it ought to be reassuring to our allies and our adversaries as well.

The final thing that I would do is, it is time to invest, I know this committee does not have jurisdiction, but it is time to invest in the nuclear command-and-control and communications system. It has suffered from a lack of investment for too long, and I think it is very important that Congress be on board to modernize that system as a high priority, as well as the forces.

The CHAIRMAN. If I could, that coincides with what I wanted to close with.

When we did the New START Treaty, I was part of a group on our side of the aisle that approved the treaty. And I am glad that I did, by the way. It was the right thing to do. As part of that, we pushed the administration toward modernization.

Would all three of you agree that to have—our nuclear arsenal is coming down. We want to make sure that these weapons, in many cases created 50, 60 years ago, we want to make sure that, if they are called upon to be used, they will actually do the things they are intended to do.

Would all three of you agree that continued modernization of our nuclear arsenal is something that protects our Nation and ensures that, in the terrible event they are ever necessary, we have the capability of delivering?

General KEHLER. Yes, I do.

Dr. FEAVER. Yes. People who are worried about a nuclear war should be in favor of reasonable modernization measures that will provide greater safety and security in our existing system.

Mr. MCKEON. Mr. Chairman, I would use the word "recapitalization" of both the warheads and the platforms of the triad.

On the latter, all the platforms of the triad are aging out simultaneously, and there are plans in place to replace them over the next decade, and I know that will be an expensive proposition that will be well-debated. But if the policy decision is made to maintain a triad, then those investments in those platforms will need to be made.

The CHAIRMAN. I would just say this for the American people. Many of us have visited the facilities where these are modernized and developed, and it is amazing that some of the guidance systems that have been in existence are not much more sophisticated than the tubes on a black and white television. And we need to continue to invest and make sure we are using the proper technology, so, in the unfortunate case of them being utilized, they will actu-

ally be there for us. And other countries are aware of our need to modernize also.

So with that——

Senator MARKEY. Mr. Chairman, may I just for a minute interject?

The CHAIRMAN. You may.

Senator MARKEY. Thank you. Thank you, Mr. Chairman.

Again, I want to divide this question for the committee between an imminent attack on the United States where the President has the authority to protect our country, that is and should be the case, from a President launching a preemptive nuclear war against another country. And I think that is really what is of the most concern to the American people, that no one human being should ever have that power.

So from my perspective right now, given what General McMaster said about the potential for a preventive war, that means that there could be plans in place right now in the White House given to the President to launch a preemptive war against North Korea using American nuclear weapons without consulting with, informing Congress whatsoever, by aggregating that power to the executive branch in clear violation of the United States Constitution—in clear violation of the United States Constitution.

And so to the extent to which we are having this discussion, and there is legislation that is pending before Congress to ensure that Congress reasserts its authority to ensure that a nuclear war has not begun in the name of the United States by this President or any President, I think that is a legitimate constitutional prerogative that we should be reasserting.

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. I don't think we should be relying upon a group of individuals to be resisting an illegal order when they have all pretty much been hired by the President to have the jobs they have.

There is going to be a homogeneity inside of that decision-making process, Mr. Chairman, that does not, in fact, offer real resistance if the President absolutely insists on his way. That is just the reality of it.

So I agree with Mr. McKeon that it should be the congressional prerogative to declare a nuclear war. I think that is something that we should just continue here to explore, given the assertions made by the National Security Advisor.

And I would think that our other two witnesses would agree, that if there is a preemptive nuclear war which is being considered, that Congress does have the constitutional responsibility, although it has been left, as Mr. McKeon said, in ambiguity. An atmosphere of ambiguity in President after President has been created around whether or not they are going to defer to our authority.

So this is the hearing. This is the place. I am glad that you are kicking it off. But I don't think that the assurances that I have received today will be satisfying to the American people. I think they can still realize that Donald Trump can launch nuclear codes just as easily as he can use his Twitter account without a check and

balance the United States Congress would be seeking and constitutionally responsible to exercise.

So I think this has been a historic hearing, and I hope there is more to follow.

Thank you, sir.

The CHAIRMAN. Thank you.

I thank each of you for being here. Again, I cannot imagine having a more balanced panel, a more sober panel. I think this was edifying for members of the committee but also the American public. We thank you for that. We thank you for your service to our country and being here and your previous service in other ways.

And I think you know there are typically follow-up questions.

First of all, I will say to committee members, we will close that process at the close of business on Thursday.

To the extent you could answer those fairly promptly, we would appreciate it.

The CHAIRMAN. I think you have contributed greatly to the national debate and dialogue today, and we thank you very much for that.

The CHAIRMAN. And with that, the meeting is adjourned.

[Whereupon, at 12:09 p.m., the hearing was adjourned.]

Additional Material Submitted for the Record

RESPONSES TO ADDITIONAL QUESTIONS FOR THE RECORD SUBMITTED TO GENERAL C. ROBERT KEHLER, USAF (RET.) BY SENATOR CORY A. BOOKER

Question 1. In a crisis the National Command Authority and the President are going to be under enormous pressure. The President is going to make a decision that depends on information from the military that comes from sensors and satellites. There are documented cases and I am sure many undocumented ones of incorrect information regarding the launch of missiles reaching White House officials.

- How reliable are the early warning systems and can they be hacked or fooled into giving false information?
- What is the process for interpreting the information and in what time frame?

Answer. The Integrated Tactical Warning and Attack Assessment (ITW/AA) system is composed of satellites and ground-based radars that monitor and report on missile launches and other events around the world every day. The system and its human operators are tested and certified to extremely high standards and I was always highly confident in the information being reported. Air-based threats such as bombers and cruise missiles are detected and reported via a separate system.

Warning information is presented to operators and command centers in real time as it is received. Senior commanders and civilian leaders are quickly brought into the discussion if a threat is indicated and, ultimately, a wide range of response options can be considered and implemented by the President. Response times can range from approximately 30–40 minutes for an ICBM from the Eurasian land mass, to less than 15 minutes for an SLBM from the Atlantic or Pacific oceans. Cruise missile threats pose additional problems.

Cases of "incorrect" information are extremely rare and always result in thorough investigation and corrective action. In those rare cases I'm familiar with, human operators recognized the problems and intervened with appropriate corrections long before the point where offensive actions were even considered. While the ITW/AA system is designed to operate through various kinds of deliberate attacks, adversaries are deploying new threats like cyber and anti-satellite weapons that must be considered. Assessments of these new threats were underway when I retired.

Question 2. During the hearing you emphasized that officers are taught not to obey any illegal order, and that a military response must be legal, necessary, and proportional.

- Can you cite specific instances in the past 50 years where American officers refused to carry out what they considered an unlawful order, and what were the results?

Answer. I am not personally aware of any specific instances in the past 50 years where American officers were intentionally issued unlawful orders. I am aware of many cases where legal discussions occurred, and issues were raised and resolved before orders were issued. The military planning and execution system includes legal review at all phases from planning through implementation. American forces derive their authority to act from a variety of sources including law (a collection of laws typically referred to as the Law of Armed Conflict), policy, and regulation. Commanders and civilian leaders take great care to ensure that orders are legal before they are issued, and military members are trained and re-trained on their responsibilities regarding those orders. It is essential that military members at every level understand the review process and have trust and confidence in the chain of command.

Question 3. In deciding whether to use nuclear weapons, either as a first strike or in response to an imminent or ongoing attack, my understanding is that the President will choose from a set of prepared options and responses. In terms of whether or not the response would be legal, you seemed to indicate that if the response option had been prepared in advance, then it would also have undergone legal review.

- If the president simply chooses one of these options, would there be any legal review at all?

Answer. Every scenario is different and context matters. All options either developed in advance of or during a crisis or conflict undergo legal review. However, in my view, additional legal discussion would be appropriate if the actual scenario is completely different than those considered during the planning process.

RESPONSES TO ADDITIONAL QUESTIONS FOR THE RECORD SUBMITTED TO DR. PETER FEAVER BY SENATOR CORY A. BOOKER

Question 1. Communications are key to the process if the United States is responding to an imminent threat or attack. At several points information or orders need to be communicated between the military authorities or between the White House and military authorities. You noted how important it is to keep the technology up to date.

- How secure is the communications network to ensure that accurate and reliable information is able to flow to and fromthe decision-makers and those carrying out the orders?

Answer. Ensuring the reliability and security of the communications network should be a top priority for both the executive-led Nuclear Posture Review as well as any congressionally led oversight and review of nuclear command and control. Of course, communications security and reliability have already been high priorities for nuclear operations for decades, but the advance of telecommunications technology and the emergence of cyber threats from a range of adversaries collectively justify a fresh look.

The communications network can be disaggregated into different stages for assessment purposes. One stage involves communications related to conveying indications and warnings of external threats as inputs to the decision-making team. The security and reliability of this part of the system can vary somewhat with geography and timing; if key principals are on travel or otherwise hard to reach, and if an attack is imminent, it may not be possible to reach all of the key advisors in time.

Another stage involves conveying the President's orders to the strategic headquarters responsible for nuclear operations. This stage is probably the most secure and most reliable.

A third stage involves conveying those orders from strategic headquarters to the various platforms that could carry out a nuclear strike. The security and reliability here varies somewhat with the platform involved. During the Cold War, one of the most demanding scenarios involved assuring communications with the submarine force even in the event that the United States suffered a devastating first strike.

A careful review may identify upgrades to the system to improve the security and reliability during any or all of these stages.

RESPONSES TO ADDITIONAL QUESTIONS FOR THE RECORD SUBMITTED TO HON. BRIAN P. MCKEON BY SENATOR JOHN BARRASSO

Question 1. It has now become clear that the executive branch had information pertaining to Russia's potential (now publicly-confirmed) INF violation during Senate consideration of New START.

- Did you participate in the decision-making process to not inform the U.S. Senate of that potential violation during Senate consideration of New START?
- If so, please describe that decision-making process and the rationale supporting that decision.

Answer. I respectfully disagree with the premise of your question. I was not part of, and would have opposed, any effort to withhold information from the Senate while it undertook its important responsibility to consider the New START Treaty.

The administration's commitment to ensuring that the Senate had relevant information about Russian activity was demonstrated in September 2010. A day or two prior to the consideration of the Treaty in the Committee on Foreign Relations, the intelligence community (IC) briefed me and other senior White House officials on an issue of concern related to Russia and arms control. We urged in the IC representatives to promptly brief the committee staff, which they did. As you may recall, Senator Risch made a general reference to the issue during the committee markup of the Treaty on September 16, 2010. Director of National Intelligence Clapper also addressed the issue during an all-senators briefing on the National Intelligence Estimate on the Treaty later that month.

The Obama administration formally declared the Russian Federation in violation of the INF Treaty in 2014. It made that declaration public in the annual report on "Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments," pursuant to section 403 of the Arms Control and Disarmament Act (22 U.S.C. 2593a), which was issued by the Department of State in July 2014. The report covered compliance in calendar year 2013 to such agreements and commitments.

The detailed bases for that determination, including when the Executive Branch first concluded that there may be a potential treaty violation, is classified. I am no longer a government official, and do not possess an active security clearance, so I am unable to provide that information to you. I would refer you to the Office of the Director of National Intelligence, and the Departments of State and Defense, for further information.

Question 2. In your prepared remarks you said, "the Obama administration did not adopt a formal policy of 'no first use' of nuclear weapons."

- Why wasn't a no-first-use policy adopted?

Answer. Department of Defense lawyers advise me that I am unable to answer this question, as it would reveal information that is considered to be internal deliberative process.

For a general statement of the policy, I refer you to the discussion of the negative security assurance set forth in the report of the 2010 Nuclear Posture Review, particularly pages viii and ix.

RESPONSES TO ADDITIONAL QUESTIONS FOR THE RECORD SUBMITTED TO HON. BRIAN P. MCKEON BY SENATOR CORY A. BOOKER

Question 1. The chain of command for information about an attack, the consideration of options, and the orders pertaining to the potential or actual use of American nuclear weapons, runs to and from the President. However, beyond this there are disagreements in the open literature as to how the chain of command functions and the role of key actors, such as the Secretary of Defense.

- Please outline for me the chain of command and advisory structure for me, starting with the first detection of a launch, through the U.S. launch of a weapon and tell me what DoD or other procedural or decision memos or documents contain this information.

Answer. The military chain of command is set forth in Title 10, United States Code, section 162(b). It reads:

"(b) Chain of Command. Unless otherwise directed by the President, the chain of command to a unified or specified combatant command runs—

"(1) from the President to the Secretary of Defense; and

"(2) from the Secretary of Defense to the commander of the combatant command."

By law, the Chairman of the Joint Chiefs of Staff is not in the chain of command, and does not exercise military command over the Joint Chiefs or any of the armed forces. (10 U.S.C. 153(c)). The Chairman is the principal military adviser to the President, the National Security Council, the Homeland Security Council and the Secretary of Defense (10 U.S.C. 151(b)(1)). In addition, the Joint Staff typically transmits detailed military orders to the combatant commander, consistent with 10 U.S.C. 163(a)(1).

For nuclear employment, the cognizant combatant commander for strategic weapons would be the Commander, U.S. Strategic Command. For use of U.S. non-strategic nuclear weapons based in Europe, it would be the Commander, U.S. European Command.

As I stated in my testimony, I would expect that in any scenario, the President will consult with the National Security Council, and his other senior civilian and military advisers, about nuclear employment. The membership of the Council is set forth in statute (section 101(c)(1) of the National Security Act of 1947, 50 U.S.C. 3021(c)(1)). At a minimum, I would expect the President to consult with his chief of staff, the National Security Adviser, the Secretaries of State and Defense, the Chairman of the Joint Chiefs of Staff, and the cognizant combatant commander.

I am unable to provide further information about the decision-making process and applicable directives or memoranda, as this information is classified. I am no longer a government official and do not possess an active security clearance. I would therefore refer you to the Department of Defense for further information. Some unclassified information about the Nuclear Command and Control System (NCCS) is available in the "Nuclear Matters Handbook 2016," published by the Deputy Assistant Secretary of Defense for Nuclear Matters, and available at this link (the information on the NCCS is contained in chapter 6):

https://www.acq.osd.mil/ncbdp/nm/nmhb/index.htm

UNION OF CONCERNED SCIENTISTS—FACT SHEET, "CLOSE CALLS WITH NUCLEAR WEAPONS" (2015)

Union of Concerned Scientists

FACT SHEET

Close Calls with Nuclear Weapons

HIGHLIGHTS

Both the United States and Russia keep nuclear-armed missiles on high alert, ready to launch within minutes. This posture increases the risk of an accidental, erroneous, or unauthorized launch. The fact that such a launch has not occurred so far suggests that safety measures work well enough to make the chance of such an incident small. But it is not zero.

There have been numerous incidents in both countries in which accidents and errors have eroded safety measures and increased the risk of a nuclear launch. The more of these close calls that occur, the greater the chance that an accident or error will lead to disaster. Taking nuclear missiles off "hair-trigger" alert is one critical step toward reducing this risk.

Despite the most elaborate precautions, it is conceivable that technical malfunction or human failure, a misinterpreted incident or unauthorized action, could trigger a nuclear disaster or nuclear war.

— U.S. –Soviet Accident Measures Agreement, September 1971

Since the beginning of the nuclear age, military and political leaders have faced the daunting challenge of controlling nuclear weapons. They want to ensure with high confidence that the weapons will detonate when their use is ordered, but that they will not do so by accident or without authorization.

Similarly, both the United States and Russia keep nuclear-armed missiles on high alert, primed for launch, to allow them to be launched within minutes on warning of an incoming attack. At the same time, they need to ensure that the missiles are not launched by mistake based on a false warning, without authorization, or by accident.

How secure are nuclear weapons against accidental, mistaken, and unauthorized nuclear explosions and missile launches?

Eroded Safety

The good news is that so far there have been no unintended nuclear explosions. The bad news is that there is a long list of past incidents when accidents and errors increased the risk of a nuclear explosion. In some of these incidents, the

U.S. Air Force photo/Staff Sgt. Jonathan Snyder

Numerous technical glitches and human errors have happened over the last few decades that could have led to a nuclear launch. With U.S. nuclear missiles on "hair-trigger" alert, military and political leaders have only a few minutes to make the critical decisions needed to identify these errors and call off retaliatory attacks.

high explosives surrounding the warhead's plutonium center detonated without triggering a nuclear chain reaction, but contaminated the surrounding area with radioactive material.

Nuclear weapons systems are designed so that several things would have to go wrong to result in an accidental or unauthorized missile launch or nuclear explosion. For most of the past incidents, only one or two things went wrong, so that in many cases the incident did not in itself pose a serious risk. However, these historical incidents show that system failures occur on a routine—even frequent—basis. Such system failures reduce the number of effective safety measures in the system. System failures also make it more likely that under the time pressure and confusion of a crisis, or under an unexpected confluence of circumstances, safety measures will be eroded to the point that an unintended detonation or launch can occur.

The fact that many dozens of incidents involving nuclear warheads are known to have occurred in the United States—and likely many more that have not been made public—indicates weaknesses exist in the chain of controls. There is presumably a similar list of Soviet and Russian incidents, only a few of which have been made public.

Moreover, there are some potential routes leading to a mistaken missile launch that require very few—or perhaps even a single—system failure to occur. For example, in 1983, Soviet early warning satellites were operating correctly but were fooled by sunlight reflected from clouds and sent data that erroneously reported an incoming attack by U.S. nuclear missiles. All the systems checked out in the short time available to make a decision. At that point, had the officer on duty followed procedures he would have recommended launching Soviet missiles. In this case the strongest, and one of the few, safety links in the chain was the judgment of the officer in command of the early warning center. Had a different officer been on duty, the situation could have ended very differently.

The fact that explosions of nuclear warheads have not occurred so far suggests that the safety measures put in place by the two countries work well enough that the probability of accidents and errors leading to a nuclear explosion is small.

But the probability is not zero. And the more of these incidents that occur, the greater is the chance that one of them will lead to a nuclear detonation.

Taking nuclear missiles off hair-trigger alert would be a significant additional safeguard that would reduce the dangers posed by unintentional launch.

Historical Examples

Below we discuss some of the incidents both in Russia and in the United States that have increased the risk of nuclear disaster. They are part of a much longer list of incidents in both nations that illustrate the kinds of things that can and do go wrong (Schlosser 2013).

NASA

Early warning sensors can give accurate but ambiguous data that suggest an attack, such as in 1995 when the launch of a Norwegian scientific rocket (similar to the one above) was interpreted by Russian radar as a U.S. submarine-launched ballistic missile.

INCIDENTS WITH NUCLEAR BOMBERS

There is a long list of accidents involving nuclear-armed bombers. In the 1950s and 1960s, the United States kept bombers armed with nuclear weapons on "airborne alert." Bombers were kept in the air 24 hours a day, every day, ready to respond to orders to fly to targets in the Soviet Union. Leaders feared that if the bombers were not already in the air when an attack came, they could be destroyed on the ground before they were able to take off, leaving the country with a reduced ability to retaliate.

During that period, there were numerous accidents involving nuclear-armed strategic aircraft. Bombs were dropped by mistake and planes crashed. Several close calls nearly resulted in nuclear explosions, but at least some of the safety systems worked and prevented a nuclear detonation. The United States ended its practice of airborne alert the day after a U.S. bomber carrying four nuclear bombs crashed near Thule, Greenland, in 1968, contaminating the surrounding area with plutonium. Instead, nuclear bombers were kept on high alert; they were kept armed and on runways ready to take off. In 1991, President George H.W. Bush finally removed U.S. strategic bombers from high alert. Their weapons were moved to storage; they are no longer ready to take off within 15 minutes, but can still take off within 24 hours.

INCIDENTS WITH BALLISTIC MISSILES

The United States and Russia continue to keep nuclear missiles on high alert, ready to be launched within minutes. Like bombers, missiles are also subject to accidents and errors. Unlike bombers, however, missiles cannot be called back or retargeted after they are launched. Nor do they carry self-destruct mechanisms to abort a mistaken launch. Once fired, the missiles will proceed to their targets. This fact, coupled with the pressure to launch vulnerable land-based missiles quickly after receiving warning, means that accidents, erroneous warning of attack, or other technical glitches could lead to nuclear war.

There are numerous examples of incidents involving nuclear missiles that could have led to catastrophe. Below are a few that illustrate the kinds of things that can go wrong. Relatively common are erroneous or ambiguous warnings from U.S. or Russian early warning sensors of an incoming nuclear attack. Unclear or inaccurate warnings are especially dangerous when coupled with policies that allow nuclear missiles to be launched quickly in response to warning of an attack, because officials have only minutes to determine if the warning is accurate and the attack is real.

Some incidents have involved early warning sensors giving accurate but ambiguous data that suggested an attack:

- **January 25, 1995.** A Russian early warning radar detected a missile launch off the coast of Norway with flight characteristics similar to those of a U.S. submarine-launched ballistic missile. Fearing that it could be the first move in a larger attack, Russian nuclear forces quickly went on full alert. Russian President Boris Yeltsin activated his "nuclear football" and retrieved launch codes, preparing for a retaliatory launch. Fortunately, Russian satellites monitoring U.S. missile fields did not show any additional launches, and Russian leaders declared the incident a false alarm. The event detected was actually the launch of a Norwegian scientific rocket on a mission to study the aurora borealis. Norway had notified countries, including Russia, in advance of the launch, but the information had failed to reach the correct Russian personnel (Schlosser 2013, p. 478).
- **March 15, 1980.** The Soviet Union launched four submarine-based missiles from near the Kuril Islands as part of a training exercise. Based on data from a U.S. early warning sensor, one of the launches appeared to have a trajectory aimed at the United States. This led the United States to convene officials for a threat assessment conference (Comptroller General of the United States 1981).

> ***Erroneous or ambiguous warnings from U.S. or Russian early warning sensors of an incoming nuclear attack are relatively common.***

In some cases, early warning sensors were fooled by natural phenomena that appeared to have the signature of a missile attack:

- **September 26, 1983.** A Soviet early warning satellite showed that the United States had launched five land-based missiles at the Soviet Union. The alert came at a time of high tension between the two countries, due in part to the U.S. military buildup in the early 1980s and President Ronald Reagan's anti-Soviet rhetoric. In addition, earlier in the month the Soviet Union shot down a Korean Airlines passenger plane that strayed into its airspace, killing almost 300 people. The Soviet officer on duty had only minutes to decide whether or not the satellite data were a false alarm. Since the satellite was found to be operating properly, following procedures would have led him to report an incoming attack. Going partly on gut instinct and believing the United States was unlikely to fire only five missiles, he told his commanders that it was a false alarm before he knew that to be true. Later investigations revealed that reflection of the sun on

> ***"False alerts of this kind are* not *a rare occurrence."***
>
> –Marshall Shulman,
> U.S. State Department adviser

the tops of clouds had fooled the satellite into thinking it was detecting missile launches (Schlosser 2013, p. 447; Hoffman 1999).

- **October 5, 1960.** The U.S. early warning radar at Thule, Greenland, reported to the North American Air Defense (NORAD) Command headquarters in Colorado Springs that it had detected dozens of Soviet missiles launched against the United States. NORAD went to its maximum alert level. The United States later determined that the radar had been fooled by the moonrise over Norway and computers misinterpreted this as an all-out attack on the United States. Fortunately, the Soviet leader Nikita Khrushchev was in New York at the time, raising doubts that the attack was real (Schlosser 2013, pp. 253–254).

Some incidents of erroneous warning of attack resulted from human errors. Two examples are notable because the supposed Soviet attacks that were erroneously detected looked just like what the American operators expected to see from their training:

- **November 9, 1979.** Computers at NORAD headquarters indicated a large-scale Soviet attack on the United States. NORAD relayed the information to the Strategic Air Command (SAC) and other high-level command posts, and top leaders convened to assess the threat. Within minutes, U.S. intercontinental ballistic missile (ICBM) crews were put on highest alert, nuclear bombers prepared for takeoff, and the National Emergency Airborne Command Post—the plane designed to allow the U.S. president to maintain control in case of an attack—took off (but without President Jimmy Carter on board). After six minutes, satellite data had not confirmed the attack, leading officials to decide no immediate action was necessary. Investigations later discovered that the incident was caused by a technician who had mistakenly inserted a training tape containing a scenario for a large-scale nuclear attack into an operational computer.

  In a comment about this incident in a letter designated Top Secret (since declassified), senior U.S. State Department adviser Marshall Shulman said that "false alerts of this kind are *not* a rare occurrence. There is a complacency about handling them that disturbs me" (Shulman 1979, emphasis in original).

- **October 28, 1962.** Just before 9:00 am, radar operators at Moorestown, NJ, reported to NORAD headquarters that a nuclear attack was under way, with impact expected at 9:02 near Tampa, FL. Tensions were high since this event happened during the Cuban Missile Crisis. All of NORAD was alerted, but before any action was taken, NORAD learned that no detonations had occurred at the expected time. The New Jersey radar operators discovered that a test tape simulating a missile launch from Cuba was being run at the Moorestown facility, when an actual satellite had unexpectedly appeared over the horizon, confusing the operators. While there should have been overlapping radars to confirm the appearance of missiles, the additional radars were not operating at the time. Moreover, the radar operators had not been informed of the passage of the satellite as they should have been, because the facility that would normally provide that notice had been assigned to other work during the crisis (Sagan 1993, pp. 130–131).

Other cases of false warning were caused by technical problems with the early warning system:

- **June 3 and 6, 1980.** Warnings of Soviet missile attack by the U.S. early warning system on both June 3 and 6 triggered activities at SAC and the National Military Command Center designed to increase survivability of U.S. strategic forces and command and control systems in the face of an attack. For example, bomber and tanker crews were ordered to their stations and started their engines, and the National Emergency Airborne Command Post at Andrews Air Force Base taxied into position for a rapid takeoff. The alerts were suspended when warning systems showed no further signs of an attack. The U.S. Department of Defense later attributed the false alerts to a failed computer chip (Comptroller General of the United States 1981).

Technical problems with the warning and launch systems, and with the weapons themselves, can cause other kinds of problems. For example:

- **October 23, 2010.** A launch control center at Warren Air Force Base, WY, lost contact with the 50 Minuteman III ICBMs under its control for nearly an hour in what is known as a "launch facilities down" incident. The missiles were on high alert and carrying nuclear warheads. According to at least one report, there may have been

U.S. Air Force

In 1961, two nuclear bombs fell to the ground in North Carolina when a bomber lost a wing. Neither bomb detonated, but multiple safety devices failed. According to Defense Secretary Robert McNamara, "By the slightest margin of chance, literally the failure of two wires to cross, a nuclear explosion was averted."

previous communication problems at the site. A spokesperson said the site was still able to monitor the security of the missiles but "We've never had something as big as this happen . . . we've never lost complete command and control functionality of 50 ICBMs" (Ambinder 2010). The cause of the problem was later found to be a circuit card in one of the computers that had been improperly installed during routine maintenance.

While much of the discussion of this incident focused on whether it had affected U.S. readiness, Bruce Blair—an analyst and former ICBM launch officer—noted that "the more important concern should be that for the better part of an hour, the safeguards that protect against unauthorized launch of America's missiles were compromised" since "the remote underground launch centers that control them lost their ability to detect and cancel any unauthorized launch attempts" (Blair 2010).

- **November 24, 1961.** SAC headquarters in Omaha lost contact with the early warning radar in Thule, Greenland. When an official at SAC tried to call NORAD headquarters in Colorado to find out what the problem was, the line was dead. The low probability of a simultaneous breakdown in communications with both locations led to concerns that an attack was taking place, so SAC's entire alert force was ordered to prepare for takeoff. Fortunately, a U.S. bomber circling over Thule made contact with the early warning radar facility and the alert was called off. An investigation found that a single AT&T switch in Colorado had failed, with surprisingly far-reaching ramifications. In addition to shutting down communications between SAC and NORAD, including the hotline linking the SAC commander to NORAD headquarters, it also shut down communication with the early warning radars. AT&T was supposed to provide redundant circuits for these communications, but had not done so, despite its assurance to the government that it had (Schlosser 2013, p. 286).
- **January 24, 1961.** Two nuclear bombs fell to the ground when a bomber lost a wing over Goldsboro, NC. The parachute on one bomb failed and the bomb broke apart on impact. The other bomb suffered little damage on impact, but five of the bomb's six safety devices failed during the crash. Expressing his concern about the incident, Defense Secretary Robert McNamara said that "by the slightest margin of chance, literally the failure of two wires to cross, a nuclear explosion was averted" (Center for Defense Information 1981; McNamara et al. 1963, p. 2).

Dangerous situations may arise from people not following proper procedures or from a lack of training:

- **August 29–30, 2007.** Six nuclear-armed cruise missiles were mistakenly loaded onto a B-52 bomber at Minot Air Force Base in North Dakota. Although there were multiple instances when the crew should have verified that the cruise missiles were not armed, no one followed required protocol to check for live weapons. The plane sat overnight on the tarmac at Minot, unguarded. It then flew 1,500 miles to a base in Louisiana where it sat unguarded for another nine hours until a maintenance crew there realized that the weapons were live. In total, there were 36 hours during which no one in the Air Force realized that six live nuclear weapons were missing (Schlosser 2013, p. 473).

  In response to the incident, retired Air Force General Eugene Habiger, commander of U.S. Strategic Command from 1996 to 1998, said, "I have been in the nuclear business since 1966 and am not aware of any incident more disturbing" (Warrick and Pincus 2007).
- **2003.** Half of U.S. Air Force units responsible for nuclear weapons failed their nuclear surety (safety and security) inspections despite the fact that they had advance warning of the inspections. An Air Force inspector general's report found that the pass rate for these inspections, which take place every 18 months, had hit an all-time low. Lieutenant Colonel Lynn Scott, deputy director of inspections at that time, said that while there were some outside factors that may have contributed to the failures, the bottom line is that each [of these factors] offers a convenient excuse to avoid accepting responsibility for failure—and

> ***Half of U.S. Air Force units responsible for nuclear weapons failed their nuclear surety (safety and security) inspections despite the fact that they had advance warning of the inspections.***

failure is not something that is acceptable when it comes to the safety, security, and reliability of our nuclear weapons" (Schlosser 2013, p. 472; Hoffman 2008).

Other types of human error can also lead to risks by compromising nuclear safety and security:

- **August 1974.** In his last weeks in office during the Watergate crisis, President Richard M. Nixon was clinically depressed, emotionally unstable, and drinking heavily. U.S. Secretary of Defense James R. Schlesinger instructed the Joint Chiefs of Staff to route "any emergency order coming from the president"—such as a nuclear launch order—through him first (Schlosser 2013, p. 360).

The bottom line is clear: Accidents happen. They shouldn't lead to nuclear war. Taking missiles off hair-trigger alert would reduce the chance of an accidental, mistaken, or unauthorized launch.

REFERENCES

All references were accessed in January 2015.

Ambinder, M. 2010. Failure shuts down squadron of nuclear missiles. *The Atlantic*, October 26. Online at *http://www.theatlantic.com/politics/archive/2010/10/failure-shuts-down-squadron-of-nuclear-missiles/65207/*.

Blair, B. 2010. Could terrorists launch America's nuclear missiles? *Time*, November 11. Online at *http://content.time.com/time/nation/article/0,8599,2030685,00.html*.

Center for Defense Information. 1981. U.S. nuclear weapons accidents: Danger in our midst. *The Defense Monitor* X(5). Online at *http://docs.nrdc.org/nuclear/files/nuc_81010001a_n22.pdf*.

Comptroller General of the United States. 1981. *NORAD's missile warning system: What went wrong?* Report to the Chairman. Committee on Government Operations. House of Representatives. MASAD-81-30. Washington, DC: U.S. General Accounting Office. May 15. Online at *http://www.gao.gov/assets/140/133240.pdf*.

Hoffman, D. 1999. "I had a funny feeling in my gut." *Washington Post*, February 10. Online at *http://www.washingtonpost.com/wp-srv/inatl/longterm/coldwar/shatter021099b.htm*.

Hoffman, M. 2008. Nuclear safety slipped for years before Minot. *Air Force Times*, February 25. Online at *http://archive.airforcetimes.com/article/20080225/NEWS/802250332/Nuclear-safety-slipped-years-before-Minot*.

McNamara, R.S., et al. 1963. State-Defense Meeting on Group I, II, and IV papers memorandum of conversation (uncleared), January 26. Online at *http://www2.gwu.edu/~nsarchiv/news/predelegation/pd15_01.htm*.

Sagan, S. 1993. *The limits of safety: Organizations, accidents, and nuclear weapons*. Princeton, NJ: Princeton University Press.

Schlosser, E. 2013. *Command and control: Nuclear weapons, the Damascus accident, and the illusion of safety*. New York, NY: Penguin Press.

Shulman, M. 1979. Memo to Secretary of State Cyrus Vance, November 16. Washington, DC: U.S. Department of State. Online at *http://www2.gwu.edu/~nsarchiv/nukevault/ebb371/docs/doc%205%20 11-16-79.PDF*.

U.S. Department of State. 1971. *Agreement on measures to reduce the risk of outbreak of nuclear war between the United States of America and the Union of Soviet Socialist Republics*. Treaty, entered into force September 30. Washington, DC. Online at *http://www.state.gov/t/isn/4692.htm*.

Warrick, J., and W. Pincus. 2007. Missteps in the bunker. *Washington Post*, September 23. Online at *http://www.washingtonpost.com/wp-dyn/content/article/2007/09/22/AR2007092201447.html*.

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NATIONAL HEADQUARTERS
Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

WASHINGTON, DC, OFFICE
1825 K St. NW, Suite 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

WEST COAST OFFICE
500 12th St., Suite 340
Oakland, CA 94607-4087
Phone: (510) 843-1872
Fax: (510) 843-3785

MIDWEST OFFICE
One N. LaSalle St., Suite 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751

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