Union of Concerned Scientists

POLICY BRIEF

Taking Nuclear Missiles Off Hair-Trigger Alert

The United States and Russia each maintain roughly 900 nuclear weapons on prompt-launch status—commonly called high alert or hair-trigger alert—so they can be launched in minutes. Prompt-launch status, however, increases the risk that weapons could be launched by accident, without authorization, or by mistake in response to a false warning of an incoming attack.

Current tensions with Russia make it even more important to ensure that a crisis—with its attendant increase in opportunities for misunderstandings and time pressure on decision makers—does not lead to a mistake that triggers an unintended nuclear exchange.

As a first step to increasing security, the United States and Russia should remove their silo-based missiles from hair-trigger alert. But even without Russian reciprocation, the United States would enhance its own security—and that of the world—if it took this action. U.S. land-based missiles can be removed from hair-trigger alert by utilizing an existing safety switch in the silos that is routinely used to prevent launches during maintenance.

The Cold War and Hair-Trigger Alert

During the Cold War, U.S. and Soviet military strategists feared a first strike involving hundreds or thousands of nuclear weapons. The two countries kept their land-based nuclear missiles on high alert to allow them to be launched quickly on warning of attack before they were destroyed by incoming warheads. The decision to launch on warning would be based on information from radars and satellites. Military strategists believed such a prompt-launch option was important for deterring a first strike by the other country because it would make clear that a successful first strike that eliminated the ability to retaliate was impossible.

But warning systems are not perfect, creating the risk of a mistaken launch based on false or misinterpreted warning. Even worse, launching weapons on warning of an attack rushes decision making. After launch, a land-based missile takes only about 25 minutes to reach the other country; the time is even shorter for a missile launched from a submarine. Thus, after receiving warning of an attack, political and military leaders in either nation would have very little time to assess the credibility of the warning and decide whether to launch in response.

Policies that enable the immediate use of nuclear weapons increase the odds of irrational or misinformed decisions. They also increase the risk of accidental or unauthorized launches.

During the Cold War, U.S. and Soviet leaders believed the risk of a deliberate first strike by the other country was large enough that the security benefits of keeping weapons on high alert outweighed the security risks. Whether or not that policy made sense at the time, it does not make sense today. Despite current tensions between the United States and Russia, experts agree that a deliberate nuclear first strike by either country is implausible. Today, the risk of an accidental, unauthorized, or mistaken launch is greater than that of a deliberate attack—thus, the risks of keeping weapons on hair-trigger alert clearly outweigh any potential benefits.

Policies that enable the immediate use of nuclear weapons increase the odds of irrational or misinformed decisions.

Past Errors and Close Calls

These risks are not just theoretical. Over the past decades, both countries have received erroneous information from early warning sensors or have misinterpreted warning data. These human and technical errors significantly increased the possibility of nuclear use (UCS 2015a). For example:

- In 1979, a technician mistakenly inserted a training tape into a computer at NORAD (then called the North American Air Defense Command)—the U.S. missile warning center—causing the computer to broadcast warnings of a massive incoming Soviet nuclear attack to key U.S. nuclear command centers.
- In 1980, a defective computer chip at NORAD caused a computer to again broadcast warnings of an attack by thousands of Soviet missiles at a time of considerable tension between the two countries.
- In 1983, Soviet early warning satellites, fooled by sunlight reflected from clouds, indicated a U.S. missile attack, nearly leading to a Soviet launch.
- In 1995, Russian radars detected a Norwegian scientific rocket and misinterpreted it as a U.S. nuclear missile,

leading Russian leaders to begin preparations for a retaliatory launch.

In all those cases, disaster was averted. But the close calls clearly demonstrate the ongoing risk of hair-trigger alert. The consequences of nuclear use are too devastating to simply maintain the status quo and hope for continued good luck.

Ending Launch on Warning and Removing Missiles from Hair-Trigger Alert

Former military leaders in the United States and Russia have called on both countries to remove the option of launch-on-warning from their nuclear plans. Moreover, they argue this step is most important in times of heightened tensions when "the likelihood of human and technical error in control systems increases," in part because leaders may be more likely to interpret an ambiguous warning as real (Cartwright and Dvorkin 2015).

The only reason for keeping missiles on hair-trigger alert is to allow them to be launched on warning of an attack. A decision to eliminate the launch-on-warning option would eliminate the reason for keeping missiles on hair-trigger alert.

Taking silo-based intercontinental ballistic missiles (ICBMs) off high alert is an important step to reduce the risk of nuclear use. (All U.S. ICBMs are in silos; Russia also deploys some mobile ICBMs.) Since silo-based missiles are at known, fixed locations and are thus vulnerable to attack by nuclear weapons, if sensors detected an incoming attack, military and political leaders would be under extreme time pressure to make a decision whether to launch these missiles before they could be destroyed.

Even if ICBMs were taken off high alert, both countries would still retain a strong deterrent because both have nuclear forces on submarines that cannot be attacked when they are hidden at sea.

There are many ways to prevent the rapid launch of silo-based missiles. Our recommendation for U.S. missiles is a particularly simple one. U.S. ICBM silos contain a "safety control switch" that is used to prevent missile launches when maintenance work is being done on the silos. The switch can be used to "safe" U.S. ICBMs so they cannot be fired until a worker physically enters the silo and returns the switch to its operational position (UCS 2015b).

Some argue that taking missiles off high alert could be destabilizing: If one country put its missiles back onto hair-trigger alert in a visible way during a crisis, that could lead to a "re-alerting race" between the two countries that could further increase tensions. However, removing the option of launch-on-warning from war plans means there would be no reason to have missiles on prompt-launch status, and therefore no reason to return them to high alert during a crisis. With no need to re-alert, there would be no re-alerting race.

Moving Forward

Ending launch-on-warning and taking missiles off hair-trigger alert would eliminate the risk of a mistaken launch based on erroneous or misinterpreted warning. It would also essentially eliminate the risk of accidental or unauthorized launches.

While security would be most enhanced if both the United States and Russia removed their silo-based missiles from hair-trigger alert, the United States should not wait for Russia to act. Taking U.S. land-based missiles off alert would be in the best interest of the United States: it would reduce the risk of unintended or mistaken U.S. launches, which could lead to a retaliatory strike against the United States. And a U.S. decision to take this step could encourage Russia to reciprocate.

References

Cartwright, J.E. and V. Dvorkin. 2015. How to avert a nuclear war. Op-Ed. ***The New York Times.*** April 19. Online at ***http://www.nytimes.com/2015/04/20/opinion/how-to-avert-a-nuclear-war.html?ref=international&_r=1.***

Union of Concerned Scientists. 2015a. ***Close calls with nuclear weapons.*** Fact sheet. April. Online at ***www.ucsusa.org/sites/default/files/attach/2015/04/Close Calls with Nuclear Weapons.pdf.***

Union of Concerned Scientists. 2015b. ***A simple method for taking U.S. land-based nuclear missiles off high alert.*** Fact sheet. April. Online at ***http://www.ucsusa.org/sites/default/files/attach/2015/04/safing-us-nuclear-missiles.pdf.***

Union of Concerned Scientists

For more information:
David Wright (617-301-8060) or Stephen Young (202-331-5429).