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Nuclear Force Posture and Alert Rates: Issues and Options*

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Nuclear Force Posture and Alert Rates: Issues and Options

By

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During the Cold War, the United States and Soviet Union both maintained a portion of their deployed nuclear weapons “on alert.” The nations could launch alert weapons promptly, within minutes of receiving warning of an incoming attack and before the attacking weapons detonated at their targets. For the United States, this alert posture ensured that it could launch its retaliatory attack before its own weapons were destroyed or its command and control systems were disrupted by a large incoming attack. Analysts also argued that the U.S. ability to launch promptly enhanced deterrence and crisis stability, because the Soviet Union would know it could not launch a disarming surprise attack.

This alert posture did not, however, mean that the United States would automatically or inevitably launch its nuclear weapons promptly. Because a portion of the U.S. submarines fleet is deployed at sea, where it could survive a surprise attack, the President of the United States could choose to wait for further information about the attack, wait until weapons started to detonate on U.S. soil, or even wait until the attack was over, before ordering a retaliatory strike. Nevertheless, many analysts concluded that, if the President had faced a massive Soviet attack, he almost certainly would have chosen to launch promptly, to ensure that the United States could mount an effective response.

After the Soviet Union dissolved in 1991, some analysts began to weigh the risk and benefits of this alert posture. They noted that, with the positive changes in the U.S.-Russian relationship, the two nations no longer needed to be poised to respond to a surprise attack from the other. Yet, by maintaining their weapons on alert, they created risks of accidental, unauthorized, or inadvertent launch.

UN General Assembly (UNGA) resolution A/RES/63/41 echoes these points. It notes that that “the maintenance of nuclear weapons on high alert was a feature of Cold War nuclear postures.” The implication is that if the conditions that made it useful no longer exist, this alert posture may no longer be necessary. But the resolution may overestimate the effect that the end of the Cold War has had on the U.S.-Russian relationship. It seems to assume that the relationship has changed enough for the nations to alter their deterrence relationship, and, by extension, the force posture that supports that relationship. Yet, the two nations may have chosen to retain their force postures, and to keep nuclear weapons on alert, because their relationship has not evolved enough for them to comfortably step back from their deterrent relationship. If this is the case, then, instead of simply taking their weapons off alert, the nations may need to pursue policies and develop mechanisms that will

¹ The views expressed here are those of the author, and do not necessarily represent the Library of Congress or the Congressional Research Service.

allow them to transform their political and security relationship so that they can comfortably alter their nuclear force postures.

The resolution also argues that “a high level of readiness increases the risk of ... unintentional or accidental use...” However, as is discussed in more detail below, this statement is based on an inaccurate characterization of the U.S. nuclear posture. Therefore, it has not only caused some to push back against the goals of the resolution, but has also failed to engage the U.S. military establishment in a constructive discussion of nuclear alert rates.

“Hair-trigger” alert: reality or fallacy?

The United States maintains around 1,000 warheads on missiles that the President could launch promptly after receiving warning of an impending attack. This number includes the warheads on all 450 Minuteman III ICBMs and those on perhaps four Trident submarines on station at sea. According to some estimates the time to launch these missiles could be as short as 4 minutes for ICBMs and 12 minutes for SLBMs.²

According to Bruce Blair, one of the first analysts to raise concerns about nuclear alert rates, U.S. (and Russian) “forces remain configured to launch on warning – firing friendly forces en masse before the anticipated arrival of incoming missiles” He has called this is a “hair trigger quality.”³ This phrase has become a familiar feature of the debate over alert rates, evoking an image of weapons poised to launch automatically, in response to a pre-determined event or provocation. With this image in mind, many analysts and observers have called on the United States and Russia to “de-alert” their nuclear weapons. Their case seems almost self-evident, if the missiles are poised so close to the precipice, then the stepping back from the edge would eliminate the risk of an inadvertent launch.

Others, however, note that there is nothing automatic or inevitable about the launch of alert missiles. As the Chief of Staff of the Air Force, General Norton Schwartz has said, “there is a rigorous discipline and process involved, and it is anything but hair trigger.”⁴ The President must decide to launch the missiles and must transmit authorization codes to U.S. launch crews. U.S. missile crews cannot launch their missiles until they receive authorization codes and confirm their authenticity. Completing the launch sequence then requires the simultaneous actions of two crew officers; they must each turn a manual key at the precise same time. The combination of physical locks, technical safeguards, and procedures that require human decision-making and participation means that the missiles could not launch as the result of random transmitted data or a computer malfunction.⁵ Hence,

² Wade Boese. “Nuclear Weapons Alert Status Debated.” *Arms Control Today*. December 2007.

³ Ibid.

⁴ Elaine M. Grossman. “Top U.S. General Spurns Obama Pledge to Reduce Nuclear Alert Posture.” *Global Security Newswire*. February 27, 2009.

⁵ According to one U.S. official, there are “multiple rigorous procedural and technical safeguards to guard against accidental or unauthorized launch.” Wade Boese. “Nuclear Weapons Alert Status Debated.” *Arms Control Today*. December 2007

although the alert posture provides the President with the flexibility to respond promptly, it does not mean the response would be automatic.

Reducing alert: What's the problem and is this the solution?

Concerns about unauthorized launch

The debate over nuclear alert rates began after the collapse of the Soviet Union when some analysts questioned whether Russia's President Yeltsin had control over Russia's entire nuclear force. Many Soviet weapons were located in Ukraine, Belarus, and Kazakhstan. While, officially, control over the launch of these weapons remained in Moscow, some analysts feared that the leaders in these republics might eventually be able to launch the weapons themselves. Some also noted that the Soviet Union may not have the most modern use-control devices (PALs, or permission action links) on all of its weapons, and, when they were on alert and poised to launch, commanders in the field might have been able to launch them without authorization from the central command authority. Moreover, Russia maintained thousands of non-strategic nuclear weapons, some possibly deployed with units in the field, and analysts feared these weapons might not only be employed by rogue commanders but also could be lost or sold to other nations or sub-national groups.

The United States did not have similar weaknesses in its command structure for nuclear weapons. But some argued that the United States could still set an example by taking its weapons off alert. They hoped that, in response, Russia might not only withdraw from deployment its most vulnerable weapons, but also remove its strategic forces from alert to reduce the risk that they could be launched without authorization from the central command.

Those who opposed changing the alert rate for nuclear forces argued that there was little reason to believe that Russia would follow the U.S. example. Not only did Russian officials deny that the central command authority lacked control over Russia's nuclear weapons, some Russian officials argued that de-alerting, even if it were mutual, would essentially disarm Russia and leave it vulnerable to attack. Moreover, concerns about the lack of control over Russian nuclear weapons ebbed as Ukraine, Belarus, and Kazakhstan agreed to return the nuclear weapons on their territory to Russia and as the central government in Russia consolidated its control over the Russian military. Further, some argued that, instead of changing the U.S. force posture to address perceived problems with Russia's command and control system, the United States should encourage, and, if possible, assist Russia in enhancing the technical and operational controls over its nuclear weapons.

Concerns about inadvertent launch

In 1995, according to press reports, Russia came within minutes of launching its nuclear weapons after its early warning satellites detected the launch of a rocket off the coast of Norway. Russian officials were unable to identify the source of the

launch or distinguish it from a U.S. submarine-launched Trident missile.⁶ This incident highlighted growing weaknesses in Russia's early warning system and raised concerns about the possibility of an inadvertent launch of nuclear weapons. In response, analysts again called for the United States and Russia to remove their nuclear weapons from alert. They argued that, even though the United States did not have gaps in its early warning system, it was also vulnerable to ambiguous warning and misunderstandings because of the short time lines associated with the decision process and the resulting pressure to launch promptly in the face of an incoming attack.

Moreover, analysts argued that, if the United States removed its weapons from alert, and Russia could confirm that change in status, then Russia might feel less pressure to launch its own weapons promptly when it received incomplete or ambiguous warning data. Specifically, if Russia detected evidence of a missile launch, but it knew that U.S. missiles were not on alert and it had observed no efforts by the United States to restore their alert status, then Russia would be less likely to conclude it was under attack and respond in kind. Further, the pressure might be reduced enough to convince Russia to remove its weapons from alert, too. Some, however, questioned the credibility of this scenario. They argued that Russia would be unlikely to respond with a massive attack if it detected one or only a few incoming warheads. It would have little reason to believe this was the beginning of a broader war.

Those who support de-alerting have outlined several different measures, from storing warheads separately from deployed missiles, to removing launch keys from control centers or removing critical data from launch computers, to reduce the alert status of U.S. missiles. Others, however, argue that these steps could undermine stability. Warheads held in a few storage depots may be far more vulnerable to a preemptive attack than warheads deployed on hundreds of missiles in hardened silos. Each side might also feel compelled to "re-alert" its forces quickly if it suspected that the other side had done so, and that this could lead to a destabilizing "alert" race, with each trying to gain an advantage over the other.

Some also argue that taking missiles off alert would be unnecessary if the two sides adopted measures that responded directly to the risk that Russia's early warning assets would provide it with ambiguous or incomplete information about a potential attack. Such measures would seek to strengthen Russia's ability to monitor U.S. missile forces and identify the presence, or absence, of a U.S. missile launch. They might include U.S. financial and technical support for Russia's early warning satellites or the creation of a joint center where the two sides could use both nations' early warning assets to monitor missile forces and where they could consult to resolve concerns or ambiguities.⁷ Some have also suggested that the United States

⁶ Bruce G. Blair, Harold A. Feiveson, and Frank N. von Hippel. "Taking Nuclear Weapons off Hair-Trigger Alert," *Scientific American*. November 1997.

⁷ The United States and Russia have agreed to establish such a center in a building outside of Moscow, but the effort has stalled due to disputes over contracts and liability. For a detailed review of measures that might improve nuclear safety, including measures that might support Russia's early warning network, see: David E. Mosher, David R. Howell, Lowell H. Schwartz, and Lynn E. Davis. *Beyond the Nuclear Shadow*. Rand Corporation, 2003.

and Russia install sensors that could quickly detect a missile launch, or confirm the absence of a missile launch, around their land-based systems.⁸ This might not only address potential weaknesses in Russia's early warning systems, it would provide additional data about the status of U.S. (and Russian missiles), and, possibly, provide a few more minutes of warning time if there were evidence of a missile launch.

Concerns about a hurried response

In recent years, analysts have identified a third problem that they believe could be solved if the United States and Russia were to remove their nuclear weapons from alert. They argue that a President (of either the United States or Russia), when faced with both evidence of a potential attack and the pressure to respond promptly to ensure an effective retaliatory attack, might choose to launch his missiles even if the evidence of the attack were ambiguous or misleading. In other words, a President might be too quick on the nuclear trigger, even if he wasn't certain about the size, scope, or source of the incoming attack. As a result many of the proponents of changes in nuclear alert postures have begun to call on the United States and Russia to adopt measures that could "increase warning and decision time."⁹ For example, if the weapons were not on alert and could not launch promptly, the President would have to wait for additional, and, possibly, more accurate information, before he decided to launch them.

The proponents and opponents of changes in alert status agree that, in the current environment, there is virtually no chance that Russia would launch a disarming surprise attack against the United States and that no other nation has the capability to launch a massive attack. The opponents of changes in alert status argue, therefore, that, even with some weapons on alert, the President almost certainly would not order a launch if the evidence of an attack were ambiguous. He already can delay his response while waiting for additional information. The proponents of change, however, see the extremely low probability of a surprise attack as proof that neither nation needs to maintain weapons on alert to ensure an effective retaliatory strike. They argue that both can afford to step back from this brink and extend the amount of warning and decision time.

Proponents of change have identified a number of possible measures that might increase warning and decision time and, therefore, reduce the pressure for a quick decision. For example, many analysts have noted that Russia may be particularly concerned about the threat from U.S. Trident submarines, both because Russia's early warning system may not be able to detect sea-based launches and because the flight times for these missiles could be as short as 15 minutes. They have, therefore, suggested that the United States alter the deployment patterns for U.S. submarines so that they patrol farther from Russian territory.¹⁰ In this circumstance, Russia might conclude that it would have more than 15 minutes of warning and

⁸ Ibid.

⁹ This characterization appears on the White House web site, in the section describing the Obama Administration's agenda for Homeland Security. http://www.whitehouse.gov/agenda/homeland_security/

¹⁰ See, for example, David E. Mosher, David R. Howell, Lowell H. Schwartz, and Lynn E. Davis. *Beyond the Nuclear Shadow*. Rand Corporation, 2003.

decision time, and could afford to wait for additional data and information, if it detected evidence of a sea-based missile launch. In a similar vein, some have suggested that the United States could delay the launch of Trident missiles by operating them in a “modified alert” posture. According to open sources, this is the posture the missiles are in when they are in port, when a critical component is removed from each missile so that the crew cannot launch it under any circumstances. Since it would take a few hours to begin to replace the components, and several days to restore them to all the missiles at sea, the United States could not launch its missiles immediately after the President decided to use them. It could take hours or days, depending on the size of the planned attack.¹¹

Unless the United States and Russia devised complex, and probably intrusive, monitoring regimes for these measures, Russia would not be able to confirm that the United States had altered the deployment patterns or the alert status of its Trident missiles. Some argue, therefore, that if it employed these measures, the United States would pay the cost of reduced readiness without gaining the benefits of expanding the decision time for Russia and convincing Russia to stand back from its own prompt-launch posture. Others, however, note, that, over time and with further improvements in the U.S.-Russian relationship, Russia may accept that these changes have occurred and, if presented with ambiguous information about a possible launch of U.S. missiles, take more time to collect and evaluate the data.

On the other hand, if the goal is slow down the decision process, and provide a greater amount of time for political leaders to gather and evaluate information, then the two nations might address changes to the decision process itself, rather than the posture of the weapons. For example, each nation could indicate that it intended to review and consider incoming information for a specified minimum amount of time, before it responded to the perceived threat. Or the nations could devise organizational procedures that would require them to consult more broadly, either within their own command structures or with each other, to acquire more information before they could reach and implement a decision. Finally, many have suggested that the two nations develop additional facilities that would allow them to monitor missile launches together, exchange data on a regular basis, and communicate easily when questions arose. Enhanced communications would not necessarily extend the amount of warning and decision time, but they could provide additional avenues for the collection of data. And they might help build confidence between the two nations as they gathered more experience cooperating on monitoring missile launches.

Reducing Alert Rates: A Symbol of Change

During the Cold War, the United States and Russia maintained nuclear weapons on alert because each feared that the other might launch an attack without warning, in a “bolt from the blue.” There is little doubt that, with the end of the Cold War, this scenario is probably not a concern for either the United States or Russia. Therefore, according to some observers, the current alert postures are relics of the Cold War that serve no purpose in maintaining deterrence or stability. They are a symbol of a

¹¹ Ibid.

relationship that no longer exists, and a reminder of the value each nation attached to their nuclear arsenals.

In this vein, by taking their nuclear weapons off alert, some believe the United States and Russia could demonstrate to other nations that nuclear weapons now play a reduced role in their national security strategies. They add that this might further nonproliferation goals by convincing others that they, too, can ensure their security without nuclear weapons. Moreover this could be seen as a step on the path towards a world free of nuclear weapons; it would be easier to deactivate and eventually eliminate nuclear weapons if they were no longer viewed as a critical element of U.S. and Russian security strategies.¹²

Many analysts question whether changes in the U.S. or Russian nuclear postures would affect the plans of other nations seeking their own nuclear weapons. They note that these nations seek nuclear weapons to address their own security concerns, not to mimic the United States or Russia. Nevertheless, there is a growing volume of literature that argues that nations who may not want their own nuclear weapons are more likely to support U.S. nonproliferation policies if the United States demonstrates, with its own policies and programs, that it is reducing the role and value of its own nuclear weapons.

Measures that might symbolize a change in the role and perceived value of nuclear weapons do not necessarily have to alter the technical characteristics of alert weapons. As was mentioned above, they could address the short time frames in the decision process, with the promise of “extending warning and decision time.” These changes may seem more symbolic than real, but if goal is to eliminate a practice because it is a symbol of a relationship that no longer exists, then symbolic changes in practices, with promised changes in outcomes, may also be seen as a step in the right direction.

At the same time, it is worth asking whether the relationship between the United States and Russia has really changed enough for them to step back from their Cold War nuclear postures. While both can be virtually certain that neither would launch a disarming surprise attack in the current environment, their relationship is still evolving. And the changes are not always positive. Russia’s reaction to the U.S. intervention in Kosovo and U.S. reaction to the Russian excursion in Georgia both provide reminders that the two nations still have competing interests. While the tensions generated by these events did not rise to the level of tension evident during the Cold War, neither nation may yet feel comfortable with proposals to alter their nuclear postures in ways that might undermine their confidence in deterrence and stability.

As a result, instead of seeking ways to alter the alert status of nuclear weapons because that posture is a symbol of their Cold War relationship, the two nations may seek ways to alter their relationship, and to ensure that it continues to evolve in a positive direction. As this evolution proceeds, they may then become less resistant

¹² Bruce G. Blair. “De-alerting Strategic Forces.” In Reykjavik Revisited: Steps Toward a World Free of Nuclear Weapons—Complete Report of 2007 Hoover Institution Conference, Stanford University Press. 2008.

to changes in their nuclear postures. Some of the measures mentioned above, such as enhanced communications channels and shared early warning data, may serve this longer-term purpose by easing suspicions about nuclear plans and programs, reducing pressures to respond promptly to ambiguous warnings, and building confidence between the two nations.