"A Rebuttal of the U.S. Statement on the Alert Status of U.S. Nuclear Forces"
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Introduction

The statement by Christina Rocca, Permanent Representative of the United States to the Conference on Disarmament, in the general debate of the First Committee on October 9, 2007, is highly inaccurate in its characterization of the U.S. nuclear posture. Its assertions about the alert posture of the U.S. nuclear forces are contradicted by an overwhelming body of evidence and knowledge.

The statement contains three key sentences about the U.S. alert posture in the opening paragraphs, quoted verbatim below:

(1) The fact is that U.S. nuclear forces are not and have never been on "hair-trigger alert."

(2) U.S. nuclear forces are planned and postured to provide the President with maximum decision time and flexibility.

(3) Multiple, rigorous procedural and technical safeguards exist to guard against accidental or unauthorized launch.

Key Rebuttal Points

The first two claims are patently wrong and the third is misleading.

Both the United States and Russia today maintain about one-third of their total strategic arsenals on launch-ready alert. Hundreds of missiles armed with thousands of nuclear warheads – the equivalent of about 100,000 Hiroshima bombs -- can be launched within a very few minutes. *The end of the Cold War did not lead the United States and Russia to significantly change their nuclear strategies or the way they operate their nuclear forces.*

As they have been configured for several decades, their command and early warning systems are geared to launch on warning – firing friendly forces en masse before the anticipated arrival of incoming enemy missiles with flight times of 12-30 minutes. **The Presidents of both countries would come under enormous pressure to make quick launch decisions** in the event of an apparent missile strike by the other side. Much of this decision process has been designed to be quasi-automatic. It can reasonably be described as going to war by checklist, enacting a prepared script, with little margin for human error or technical malfunction. **The nuclear war machinery has a hair-trigger quality. And that quality has been a constant in the nuclear equation for decades.** Comparable pressures and deadlines apply to Russia. Both of the traditional nuclear rivals still stand ready, despite the Cold War's end, to inflict apocalyptic devastation on one another in a first or second strike whose essential course would be run in less than one hour.

The procedural and technical safeguards against unauthorized or accidental launch are inadequate in today's circumstances. Although both sides impose very strict safeguards on their strategic nuclear forces to prevent an unauthorized launch, the actual level of protection against unauthorized launch defies precise estimation due to the complexity of the nuclear command-control systems and of the threats to them. Serious deficiencies are routinely discovered. *There is reason to believe that state and non-state actors including terrorists may be able to exploit weaknesses in these systems of control by physical or informational means, heightening the risks of unauthorized or accidental launch.*

As for mistaken launch, the effectiveness of current safeguards is certainly far less than one-hundred percent. The Russian early warning system has been decaying since the breakup of the Soviet Union and despite some recent upgrades it is more

prone today to cause false alarms than it was during the Cold War. Despite this technical degradation, both the Russian and U.S. postures normally run a somewhat lower risk of launching on false warning due to their improved political relationship and higher propensity to discount tactical warning indications of enemy missile attack. But the *risk remains non-negligible in peacetime, and would spike upwards in the unlikely event of a nuclear confrontation between them*.

Major benefits would accrue from standing down ("de-alerting") the legacy postures. Keeping thousands of weapons ready to fly upon their receipt of a short sequence of simple computer signals is inherently risky. De-alerting would increase warning and decision time far beyond the short fuse inherent in current command systems, thereby reducing the risk of mistaken launch to negligible proportions. De-alerting would also greatly strengthen safeguards against unauthorized launch and terrorist exploitation. In an era of terrorism and information warfare, staking the survival of humanity on the assumption that imperfect human and technical systems of nuclear command and control will forever prevent a disastrous breakdown of safeguards against mistaken or unauthorized use of nuclear weapons is simply imprudent in the extreme.[1]

No President has articulated this concern better than President Bush did during his first presidential campaign. In a major campaign speech on nuclear weapons policy that he delivered in May 2000, then-presidential candidate Bush addressed concerns about the instant-reaction status of U.S. strategic nuclear forces. Declaring that "the United States should remove as many weapons as possible from high-alert, **hair-trigger status**," Bush argued that the capability for a "quick launch within minutes of warning" was an "unnecessary vestige of cold-war confrontation." Not only was the quick-launch posture outdated, it was dangerous: "**keeping so many weapons on high alert may create unacceptable risks of accidental or unauthorized launch**."[2]

A More Detailed Description of the U.S. Nuclear Posture[3]

The nuclear superpowers manage their strategic arsenals today in almost exactly the same manner as they did during the Cold War. Many hundreds of missiles on land and sea are fully armed, fueled, and targeted. The land-based missiles in silos will fly as soon as they receive a few short computer signals whose transmission is as simple as stroking a few keys on a keyboard, hitting 'enter,' repeating the sequence once more, and then turning two keys in unison. The sea-based missiles on submarines will pop out of their tubes as soon as their gyroscopes are spun up, the onboard computer uploads their wartime targets and arms their warheads, and additional computer signals open the hatches and ignite the steam generators that propel the missiles to the surface.

If the Kremlin and the White House ordered the launch of their alert strategic missiles right now, this minute, without any prior notice and advance preparation, the amount of firepower unleashed and the speed of its release would be astonishingly large and rapid. U.S. land-based launch crews would receive the order almost instantaneously, remove launch keys and codes from their safes, compare the authorization codes in the launch order with those in their safes, insert their launch keys, punch in the number of the selected war plan that automatically instructs their missiles which specific target file to pull from their computer files and what trajectory to fly,[4] key in the 'enabling code' contained in the launch order that arms the warheads on the missiles, and turn the launch keys that transmit the 'fire' command to the dispersed unmanned missiles in underground silos.

The time needed to execute all of these steps in the Minuteman fields of central plains America: one to two minutes. (They are called Minuteman for a reason.) At sea, analogous steps taken by submarine crews include retrieving a special firing key from a safe inside a safe, the access code to which is provided by the launch order from higher authority. **The time needed to launch submarine missiles on alert patrol: 12 minutes**.

Very similar procedures and timelines apply in Russia. Extremely high launch readiness for large numbers of alert missiles prevails on both sides. About one-third of their total strategic forces are poised for immediate launch under normal conditions. **The combined firepower that could be unleashed within these short time frames measured in minutes is approximately 2,654 high-yield nuclear warheads (1,382 U.S. and 1,272 Russian) – the equivalent of approximately 100,000 Hiroshima bombs** (assuming the Hiroshima bomb yielded 15 kilotons of explosive power).[5]

A high degree of vigilance suffuses the entire U.S. and Russian chains of nuclear command and warning, from the bottom all the way to the top. In the warning centers, such as the hub of the U.S. early warning network in Colorado, crews labor under the pressure of **tight deadlines to assess and report whether a satellite or land radar sensor indicating a**

possible threat to North America is real or false. Events happen almost daily, sometimes more than once daily, which trigger this assessment drill that is**supposed to yield a preliminary assessment within three minutes after the arrival of the initial sensor data**.[6] Analogous drills take place under comparable deadlines in Russia. A rush of adrenalin and rote processing of checklists, often accompanied by confusion, characterizes the process.[7]

If their early warning assessment determines that a nuclear missile attack is possibly underway, the entire chain of nuclear command in the United States or Russia would immediately kick into high gear with thousands of duty crews and nuclear support personnel involved. The same rush of adrenalin and rote decision-making by checklist drive a process whose intensity and deadlines practically rule out any chance for careful deliberation. An emergency conference involving the presidents and their top nuclear advisors would be convened, whereupon on the U.S. side **the commanding duty officer at Strategic Command headquarters in Omaha would brief the U.S. president on the nature of the apparent attack, the wide array of response options, and their anticipated consequences for Russian physical and human resources. The time allocated for this briefing is about 30 seconds depending on the nature of the attack. The U.S. president then would come under intense pressure to absorb this complex set of data, weigh the consequences of the various options, and choose a course of action. His decision window is typically twelve minutes, although under certain extreme conditions it can be much shorter.**

The extraordinarily brief time for such a momentous decision is driven by four factors: the 30 minute flight time for an intercontinental missile, and about one-half that for an submarine-launched missile; the time required to validate and characterize the attack, using two separate sources of warning data to ensure high confidence; the time required to convene a phone conference of the principals involved in the decision process, and the time required following presidential decision to encode and transmit that decision worldwide to the strategic nuclear forces. The importance of the latter seemingly mundane factor cannot be overstated. Any delay in transmitting the response order runs the risk of losing retaliatory forces to the Russian attack, thus undermining the calculus of expected damage for the response option chosen by the president. This risk is compounded in the event of a so-called "decapitation strike," that is, an opening attack on the National Command Authority (the president and the secretary of defense), most likely mounted by Russian missile submarines operating close to U.S. shores. Under this circumstance, the integrity of the U.S. retaliatory response is greatly compromised, thus calling into question the very calculus upon which nuclear deterrence is based.

Minimal Decision Time and Flexibility for the President

Contrary to the U.S. Statement by Christina Rocca in which it is asserted that the President is provided maximum decision time and flexibility, the President in a real nuclear crisis would come under extreme pressure to make quick execution decisions before an apparent incoming strike could disrupt command and control and invalidate the nuclear response options under consideration. As Gen. (ret.) George Lee Butler, the former commander of U.S. strategic forces during the 1990s, put it bluntly, the U.S. command system is geared to launch on warning which not only "**powerfully biased the president's decision process toward launch before the arrival of the first enemy warhead**," but also would "**drive the president inevitably toward [such] a decision.**"[8]

Another senior general went so far as to say that the need to make quick execution decisions and launch on warning might still exist even after taking steps to de-alert U.S. nuclear forces, because of the vulnerability of command and control. **As Gen. (ret.) Joseph Ralston**, the former Vice Chairman of the Joint Chiefs of Staff, explained to me and former Senator Sam Nunn: "**De-alerting forces does not necessarily eliminate the need to make quick execution decisions….De-alerting extends launch time, but does not reduce need to 'launch on warning'** since the C3 for launch execution become much less reliable after absorbing a first strike,**i.e. there would still be strong pressures to get an execution order out before impact** and degradation of the C3I system (which may include "incapacitation" of the key decision makers authorized to execute nuclear weapons)."[9]

Given these acute conditions, it is no wonder that as much of the response process as possible is designed to be quasi-automatic. The U.S. Statement by Christina Rocca may reject the phrase "hair-trigger alert" as an apt characterization of the past and current nuclear posture of the United States, but the fact remains that the U.S. posture is still geared for firing thousands of weapons within a few minutes of pressure-packed checklist-driven deliberation and a few minutes of intense implementation in the field.

[1] For an elaboration of this thesis, see Sam Nunn and Bruce Blair, “From Nuclear Deterrence to Mutual Safety”, Washington Post, June 22, 1997, p. C1.

[2] "Excerpts from Bush's Remarks on National Security and Arms Policy," The New York Times, 24 May 2000.

[3] For detailed discussions of U.S. and Russian nuclear postures, including their historical reliance on launch on warning, see Bruce G. Blair, Strategic Command and Control (Brookings, 1985); Bruce G. Blair, The Logic of Accidental Nuclear War (Brookings, 1993); and Bruce G. Blair, Global Zero Alert for Nuclear Forces (Brookings, 1995). For a rich trove of de-classified U.S. documents that clearly trace the U.S. development of launch on warning and our growing reliance on this response option, see the fascinating collection of materials and introduction by William Burr, Launch on Warning: The Development of U.S. Capabilities, 1959-1979 (National Security Archive, April 2001); http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB43/#1.

[4] Presidents Clinton and Yeltsin pledged in 1994 to stop aiming strategic missiles at each other's country. The gyroscopes on U.S. land-based missiles were oriented to ocean areas in the far northern latitudes, and Russia switched its land-based rockets to a "zero flight plan." These adjustments of the primary target settings, though a welcome gesture, can be reversed in seconds and had negligible military significance. This de-targeting in fact did not extend the launch time by a single second because previously the launch procedures also involved dialing in a war plan in the launch center computer that provides target instructions to every missile to be fired. For detailed discussions of all aspects of ‘de-targeting’, see Bruce Blair, "Where Would All the Missiles Go?," Washington Post, October 15, 1996, p. A15; Bruce Blair, Global Zero Alert for Nuclear Forces (Brookings, 1995); and Bruce Blair, "Russian Nuclear Policy and the Status of De-targeting," Testimony before the House Committee on National Security, March 13, 1997.

[5] Assumptions for alert rates: U.S.: Minuteman III (95%); Trident (4 boats launch-ready); all others (0%); Russian: SS-18 (80%); SS-19 (66.6%); Delta IV (1 boat launch-ready at sea; 1 boat launch-ready on pierside alert); all others (0%). Other assumptions on payloads and yields are available from author.

[6] These frequent occurrences involve diverse events – e.g., nations launching rockets to place satellites in space; developmental tests of military and civilian rockets; combat use of rockets of all kinds (including short- and medium-range rockets as well as intercontinental range); and airplanes using after-burners. Assessment drills are also triggered by natural phenomena – sunlight reflected from clouds, for instance, and even wildfires may be detected by infrared heat sensors on surveillance satellites designed to detect the hot plumes of rockets during their 2-4 minute first-stage burn.

[7] On the occasions of the two major false alarms in U.S. history (caused by human error and computer malfunction, respectively), it took the crews 8 minutes instead of 3 to resolve the confusing contradictory indications, resulting in their being immediately relieved of duty (“fired”) both times. Cases in Russia were similarly fraught with confusion.

[8] Jonathan Schell, The Gift of Time: The Case for Abolishing Nuclear Weapons Now, Henry Holt, 1998, pp. 191-194.

[9] VCJCS Talking Paper, July 8, 1997, p. 7.

“A Rebuttal of the U.S. Statement on the Alert Status of U.S. Nuclear Forces,” *Bruce Blair’s Nuclear Column*, Center for Defense Information, November 6, 2007, **http://lcnp.org/disarmament/opstatus-blair.htm.**