

**Eliminate Launch on Warning**  
By Alan Phillips and Steven Starr

*Russian and US long-range nuclear weapons are still at "Launch on Warning", which makes a purely accidental war possible at any time. Their basic attitude of confrontation and deterrence, carried over from the Cold War, is dangerous but will not easily be changed. It is essential and urgent to rid the world of the additional danger of an accidental nuclear war between them. While "lowering the alert status" of their nuclear weapons would not be consistent with current deterrence theory, it would be relatively easy and quick to eliminate Launch on Warning without losing the alleged stability of deterrence.*

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As long as the United States and Russia retain their arsenals of nuclear-armed intercontinental ballistic missiles, some on high alert, the danger remains of a purely accidental nuclear war between the two countries. Neither side wants this: if it should happen, it would be an utter disaster for both countries and for the entire world -- no matter which adversary started it.

One of the most likely causes of an unintended nuclear war is "launch on warning" (LoW) -- the policy of launching a retaliatory nuclear strike while the opponent's missiles or warheads are believed to be in flight, but before any detonation from the perceived attack has occurred.<sup>1</sup> Each side has over 2,000 nuclear warheads ready to launch before the incoming rockets have arrived -- enough to destroy either USA or Russia many times over. Once launched, they cannot be recalled or neutralized. Launch-on-warning has exposed the world, for at least 30 years, to the danger of a nuclear war caused by nothing but a coincidence of radar, satellite sensor, or computer glitches, and a temporary failure of human alertness to appreciate that the message signalling attack is false.

The disaster of an accidental nuclear war has not happened yet, in spite of a large number of false warnings of which at least a few have had very dangerous features. This is a credit to the care and alertness of the military in both Russia and the U.S. It should not be taken as reassurance. A single launch of nuclear weapons on a false warning would result in nuclear war, and the end of civilization as we know it, just as surely as a nuclear war started by an actual attack. There would be no chance to review the system to make it safer after one failure of that kind.

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<sup>1</sup> Launch on Warning and the related term "Launch under Attack" (LUA) are not always used consistently, and this has caused confusion. In the US Defense Department Dictionary of Military Terms ([www.dtic.mil/doctrine/jel/doddict/](http://www.dtic.mil/doctrine/jel/doddict/)), LUA has a definition exactly the equivalent of our definition of LoW. Russian military experts use LUA to mean the delivery of a retaliatory nuclear strike "in response to an actually delivered strike", i.e. after nuclear detonations have been confirmed (see Valery Yarynich, C3: Nuclear Command, Control, Cooperation. Washington, D.C.: Center for Defense Information, 2003, pp. 28-30.) Also, a retired British military officer explained that "launch on warning" can mean to him the launch of a pre-emptive strike when there is convincing evidence from human sources that an enemy nuclear attack is imminent, but no enemy missiles have yet been launched.

Although the Cold War is considered over, both Russia and the United States have chosen to retain their launch-on-warning capabilities, and they are generally believed to be continuing their launch-on-warning policies. This is inexcusably dangerous.

Due to a lack of funds, Russia has to rely on warnings from only one system for much of the time. The Russian satellite fleet is incomplete and there are periods when segments of the country's periphery are not properly monitored<sup>2</sup>{2}. Decaying Russian technical systems must increase the likelihood of false warnings, as well as the possibility of overreaction in a confused situation.

### **The "threat conference"**

When warning systems detect a possible attack, there is at most a total of 20 minutes for human operators and commanders to call and conduct what the United States calls a "threat conference." If the warning were to be assessed as a nuclear attack, top U.S. or Russian military commanders (as the case might be) would contact their president to advise him, and the president would have only a few minutes to decide whether to retaliate, and would be under great pressure to do so.<sup>3</sup> The threat conferences require, and so far have achieved, the extraordinary standard of perfect accuracy.

The US government has kept information about false warnings secret ("classified") since 1985, and Russia has always kept that information secret, but it is clear that threat conferences have not been rare events. Most of the false warnings have probably been routine and easy to dismiss;<sup>4</sup> others have been serious enough that launch preparations have been started which would have been visible to Russian satellites.<sup>5</sup> In January 1995 a Russian false warning resulted from the launch of a rocket from a Norwegian island, for atmospheric research. It is reported that the Russian nuclear weapon forces went on full alert, and President Yeltsin was handed the "nuclear football" activated and ready to order launch. The event was the subject of a report to Congress. There is an article on it by U.S. experts von Hippel, Blair, and Feiveson, in *The Scientific American*.<sup>6</sup>

It is very dangerous to allow a small risk of a great disaster to continue for a long time. If the total risk of a wrong conclusion from any one of all the threat conferences in a year had been

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<sup>2</sup> Geoffrey Forden, "Reducing a Common Danger: Improving Russia's Early Warning System," *Cato Policy Analysis* No. 399, May 3, 2001.

<sup>3</sup> "The bias in favor of launch on electronic warning is so powerful that it would take enormously more presidential will to withhold an attack than to authorize it." Bruce G. Blair, president, Center for Defense Information, February 16, 2004.

<sup>4</sup> According to the Center for Defense Information, from 1977 through 1984, early warning systems generated 20,784 false indications of missile attacks on the United States. More than 1,000 of these were serious enough to require "a second look". "Accidental Nuclear War: A Rising Risk?" *The Defense Monitor*, vol. 15 no. 7 (1986).

<sup>5</sup> Alan Phillips: "20 Mishaps that might have started Accidental Nuclear War"

<sup>6</sup> "Taking Nuclear Weapons Off Hair-Trigger Alert", Bruce Blair, Harold Feiveson and Frank N. von Hippel, *Scientific American* (November 1997). See also: David Hoffman, "Cold War Doctrines Refuse to Die," *Washington Post*, March 15, 1998, p.A1.

as little as 1%, it is easy to calculate that the cumulative risk over 30 years was *a little greater* than the risk of death from one pull of the trigger at Russian roulette.<sup>7</sup>

### **No-LoW does not need verification**

Replacing LoW with a policy of "Retaliatory Launch Only After Detonation" (RLOAD) by both parties would, at a stroke, remove the danger of an accidental war caused by a false warning.

The proposed change would not require symmetry, nor verification, nor an agreement (much less a treaty); nor would it undermine "deterrence". "No launch-on-warning" (No-LoW) or RLOAD could be adopted quickly and unilaterally. If one side adopted it, the risk of accidental war would be immediately reduced by approximately one half. When the other side did the same the risk of war caused by a false warning would be zero.

From the point of view of preserving deterrence, verification of no-launch-on-warning is actually undesirable. Either side planning a preemptive attack would want to be absolutely certain that its opponent had changed to and remained under a policy of No-LoW. Without verification a potential attacker could not be certain, but if No-LoW were "verified" he might feel more confident of making a successful "First Strike".

"De-alerting" is a term commonly used in recommendations that nuclear weapons should be "taken off hair-trigger alert". What is usually meant by "de-alerting" is to make physical changes to the weapons system which impose a delay between a decision to launch and the irrevocable step that actually starts the launch. Separating the warheads from the rockets and storing them at a distance, or doing the same with any essential component, would be sure methods of introducing delay, and several others have been suggested. Obviously any unavoidable delay of that kind would make LoW impossible. But de-alerting is completely different from simply abandoning the policy of Launch on Warning.

To abandon LoW does not reduce the alert status of the nuclear force. Unfortunately, when this change of policy has been recommended by prestigious bodies (including the Canberra Commission and the Brookings Institution) it has not been clearly distinguishing from de-alerting. De-alerting would greatly reduce the risk of nuclear war started by an impetuous decision, as well as eliminating the risk of launch on a false warning, but it would be far more difficult to implement. RLOAD or NO-LoW is not to be regarded as an alternative to de-alerting, which is highly desirable. It is put forward as an essential measure to reduce immediately the risk of accidental war from a false warning, until more permanent and less easily reversible measures, like de-alerting, or better the total elimination of national nuclear arsenals, can be put in place.

On any rational view, it is essential to eliminate this risk of instant destruction of both these great countries, and the whole of our civilization, by a mere accident. We have been lucky to survive this long.

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<sup>7</sup> This is not an attempt to estimate an actual probability. The probability of a threat conference coming to the wrong conclusion cannot be determined. The numbers here are simply to illustrate the danger of continuing to accept any very small risk for a long period of time.

There seems to be no prospect of the US and Russian governments giving up "nuclear deterrence" in the near future, but 'RLOAD' is compatible with deterrence, as explained below, and is relatively easy to achieve. In contrast, it seems hardly possible to frame a *de-alerting* plan that would retain the essentials of deterrence. The enforced delays would have to be equal for the two adversaries, for all their types of long-range missiles including those in submarines. The actual delay times would have to be verifiable, and continually verified either by international observers or by observers from the opposite side. These conditions would be difficult or impossible to achieve. At the least it would require extensive study by experts, followed by a formal agreement or treaty. The process would take years, and perhaps end in failure. All that time, the world would still be at risk.

The elimination of launch-on-warning would not eliminate any other retaliatory options nor reduce the alert status. RLOAD would merely ensure that retaliation did not take place unless there had been a nuclear detonation. It would delay the retaliatory strike by only a few minutes. A false warning would be immediately revealed as such when the predicted time had passed for the first missiles to arrive and no detonation had been detected; and there would be no launch.

### **No-LoW is compatible with deterrence**

The purpose of deterrence is to prevent either side from making a nuclear attack. This is theoretically achieved by each side convincing the other that any attack will bring unacceptable retaliation. The theory of deterrence relies on the assumption that the ultimate decision makers on both sides act rationally, and can be persuaded that it would be folly to launch an attack. Deterrence only fails if one side believes it can launch such a rapid and massive surprise nuclear strike that it will prevent the other side from retaliating.

Launch-on-warning is a response to the fear that the enemy's first salvo, or a devastating electromagnetic pulse (EMP), might prevent a retaliatory strike. The military on both sides have planned as though it would be *essential* for retaliation to be achieved after a "first strike" has been launched. That is not so. Retaliation does nothing to stop the warheads that are already on the way to their targets, nor the second salvo which the enemy may launch when he sees retaliatory warheads on their way. Irreparable damage to the attacked country is already inevitable, once an attack has been launched.<sup>8</sup>

It is not a *risk* that retaliation *might fail* which would impair deterrence, but a *certainty* (or very near certainty) on the part of the potential attacker that it *will fail*. The following considerations show that, as things are at present, neither side can be certain that retaliation would fail.

First, as regards an EMP attack, it is known to both sides that great efforts have been made to screen military electrical equipment from the pulse. Therefore it is not possible to be

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<sup>8</sup> We intentionally take no account here of "Ballistic Missile Defense". No claim has been made that such defense could mitigate a full-scale attack by the US or Russia.

sure that EMP will be effective against land-based missiles. Submarines and the missiles they carry are known to be completely protected by sea water.

Neither can an attacker be sure that a "disarming first strike" will be successful, as the following discussion will show.

The United States uses the space-based Nuclear Detonation Detection System (NUDET) to detect, locate, and report to the Strategic Command Centers, any nuclear explosion in the earth's atmosphere or nearby space. NUDET either supplements or replaces the hundreds of ground-based "bomb-alarms" that were installed near military bases and big cities in 1974.<sup>9</sup>

Russia currently employs optical and seismic sensors to detect nuclear explosions. Their policy is believed to be Launch on Warning, which, as in the US system, would only be ordered by the National Command Authority. They also have a back-up system called "Perimetr" to ensure retaliation in the event of an attack that has disabled the National Command Authority before it can order retaliatory launch during flight of the incoming warheads. Positive signals from the sensors are a prerequisite to any launch ordered by the "Perimetr" system, activation of which is described in the footnote.<sup>10</sup> Thus Perimetr cannot effect a "launch on warning". In the event that LoW has failed, it can, if previously activated, effect launch *after detonation*.

A change from launch-on-warning to No-LoW would be accompanied, in the American system, by feeding any positive signals from the bomb detectors directly to the launch silos as well as to the command centers, so that the destruction of command centers would not prevent a retaliatory strike. In the Russian system the mechanism is already there. The National Command Authority would simply issue its authorization to Perimetr as soon as retaliation to the attack had been provisionally authorized. Perimetr would issue the launch codes by radio as soon as a detonation was detected.

On both sides, retaliation would be ensured (if already authorized) immediately upon a detonation, by having the launch silos carry out all steps toward launch except the final one during the flight of incoming missiles, just as they do under launch-on-warning. On receipt of a bomb signal at the predicted time of arrival of attack, retaliation would be launched immediately, from all silos not already destroyed by the attack. If no detonation was detected at the predicted time of arrival, the silos would revert to peacetime readiness.

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<sup>9</sup> Department of Defense Appropriations for 1974, Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 93rd Congress, 1st sess., part 7, p. 1,057.

<sup>10</sup> The operation of the Russian Perimetr system is described by Yarynich in "C3: Nuclear Command, Control Cooperation", pp. 157 -158. During a high-level alert, the National Command Authority issues preliminary authorization to a super hardened radio command and control center. The crew working at the center prepares to transmit a launch order by means of Perimetr command missiles which radio the launch codes to the silos. The launch order is transmitted only if three conditions are simultaneously met: the preliminary authorization has been received, there has been a complete loss of communications with the NCA, and positive signals of nuclear detonations are received from the different types of sensors. Obviously, Perimetr cannot order Launch on Warning. Its purpose is to order "Launch After Detonation", but only if first activated by the NCA and then NCA communication is lost.

Just 5% of the 2,000 warheads at LoW would be enough to destroy the attacking country. No head of state or commander-in-chief could be certain that an initial salvo could put more than 95 percent of the weapons of his adversary out of action within half a minute of the first detonation. Thus a massive disarming first strike could not in fact be relied upon to prevent retaliation.

These arguments should be sufficient to persuade the military on both sides that the policy of LoW, which they know to be dangerous, is *\*not\** essential and must be replaced by RLOAD -- Retaliatory Launch Only After Detonation.

If the military establishment on either side is not persuaded to abandon launch-on-warning, then the head of state must balance the elimination of a very definite risk of accidental war due to a false warning, against the hypothetical possibility of the enemy launching a first strike because he judged that RLOAD had weakened deterrence. He should refuse to authorize launch before a detonation has taken place.

There is no logical reason to maintain launch-on-warning. It is to the equal advantage of both sides even if only one changes its policy to No-LoW, and if both adopt No-LoW then one of the most likely causes of a nuclear war between Russia and the U.S. - an accidental war due to a false warning - will be eliminated.

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