

# Outline of PowerPoint presentation: “De-Alerting Nuclear Weapons” by Steven Starr

## What Are High-Alert Nuclear Weapons?

- Launch-ready ballistic missiles armed with one or more nuclear warheads whose launch can be ordered and executed (via a nuclear command and control system) within 15 minutes or less
- Missiles that cannot be recalled and require 30 minutes or less to reach their targets

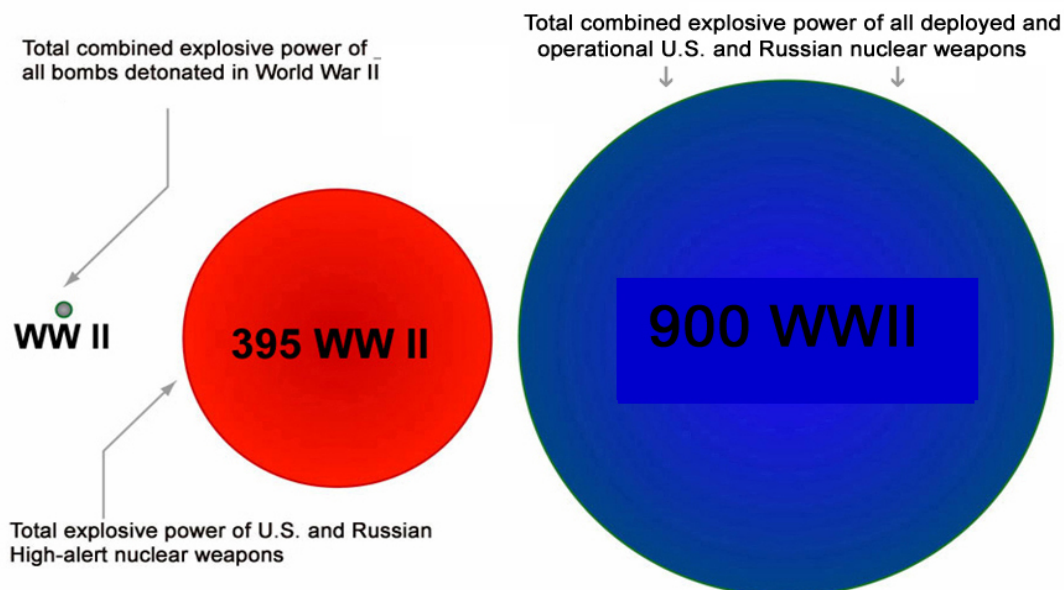
## Who has High-Alert Nuclear Weapons?

- Virtually all high-alert nuclear weapons belong to the U.S. and Russia
- Most *land-based* U.S. and Russian Intercontinental Ballistic Missiles (ICBMs) are on high-alert, along with some submarine-launched missiles (SLBMs)
- Approximately 900 missiles armed with 2581 nuclear warheads. Total explosive power equals 1185 MT (million tons TNT): this equals 45% of the total U.S.-Russian deployed nuclear forces

**Table 3 - Total high-alert forces**

	Missile numbers	Warhead numbers	Total yield (MT)
USA	560	1302	315
Russia	340	1279	870
<i>Total</i>	<i>900</i>	<i>2581</i>	<i>1185<sup>h</sup></i>

<sup>h</sup> Total yield of US and Russian operational nuclear arsenals is approximately 2657 MT<sup>25</sup>, thus about 45% of the yield is on high alert.



<b>Largest U.S. conventional bomb</b>	<b>=</b>	<b>11 tons TNT</b>
<b>Hiroshima-size nuclear weapon</b>	<b>=</b>	<b>15,000 tons TNT</b>
<b>Average strategic nuclear weapon</b>	<b>=</b>	<b>300,000 tons TNT</b>
<b>Large U.S. strategic nuclear weapon</b>	<b>=</b>	<b>1,300,000 tons TNT</b>
<b>Largest known strategic nuclear weapon</b>	<b>=</b>	<b>100,000,000 tons TNT</b>

### **Why are Nuclear Weapons on High-Alert?**

- No defense exists against a massive ICBM nuclear first-strike
- Military “solution” was/is to launch missiles *before* they are destroyed
- High-alert status permits the launch of a retaliatory nuclear strike before a *perceived* nuclear attack arrives (Launch-on-Warning)

### **Launch-on-Warning (LoW)**

- The launch of a retaliatory nuclear strike while the opponent's nuclear-armed missiles are believed to be in flight, but before nuclear detonations confirm the perceived attack occurred
- LoW requires high-alert nuclear weapons able to launch on a 30 minute (or less) tactical warning, the nominal flight time of ICBMs traveling to and from the U.S. to Russia
- Under LoW, the attack is *not* confirmed by nuclear detonations before the retaliatory launch. The decision to launch is made *exclusively on the basis of electronic Early Warning System data*

### **Dangers of Launch-on-Warning**

- President is given 30 second briefing and allowed at most 12 minutes to decide if retaliation is to be launched (maybe 1 or 2 minutes for decisions if it is a submarine-launched ballistic missile)
- False warning believed to be real attack could cause a retaliatory launch = accidental nuclear war
- False warning due to human error, technical error or terrorist sabotage

### **Terrorist acts which could start a nuclear war**

#### **CREATE A FALSE WARNING OF ATTACK:**

- Spoof radar or satellite sensors of early warning systems to imitate nuclear attack
- Introduce computer viruses or software into early warning and/or nuclear command and control systems that mimic a full-scale nuclear attack

#### **GAIN ACCESS TO HIGH-ALERT NUCLEAR WEAPONS:**

- Terrorists can launch weapons if they obtain launch codes and access to the command and control systems, or physical control of a weapon system

### **Steps to Eliminate High-Alert Nuclear Weapons**

- De-Alert Nuclear Weapon Systems
- Eliminate Launch-on-Warning Policy

### **De-Alerting Nuclear Weapons**

- De-alerting is the introduction of reversible physical changes to nuclear weapon systems to slow down the launch process; can be used to implement already existing arms control agreements
- Many ways to implement de-alerting: block silo lids, pin back firing switches, remove warheads from missiles. More than a 30 minute delay prevents Launch-on-Warning.
- Global Zero Alert would prevent Launch-on-Warning and eliminate the possibility of accidental nuclear war based upon a false warning. Allows time for some diplomatic processes to occur.

### De-alerting as a diplomatic tool

- De-alerting could be used as a confidence building measure as part of revived START process
- De-alerting can be used to rapidly implement existing arms control agreements ahead of schedule
- Bush-Gorbachev 1991 Presidential Nuclear Initiatives (PNI) de-alerted 503 ICBMs scheduled for elimination under START
- 1991 PNI led to a reduction of 17,000 tactical nuclear weapons = largest reductions to date

### End Launch-on-Warning Policy

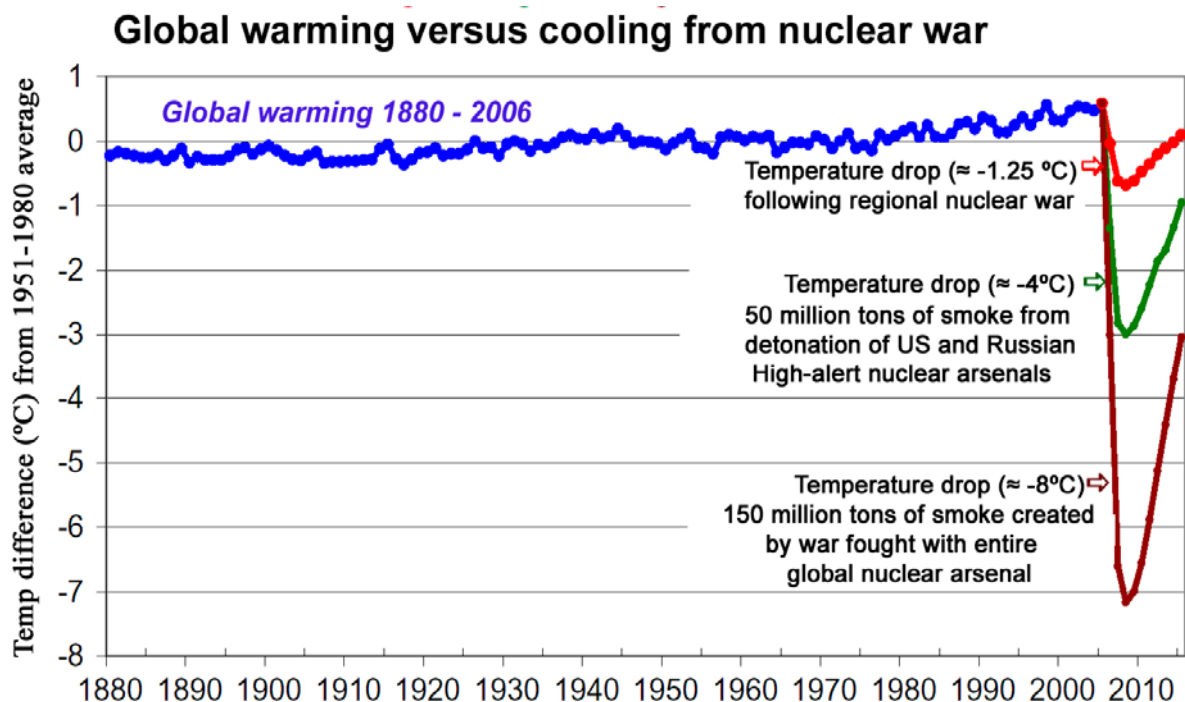
- Launch-on-Warning policy can be eliminated by Presidential decree
- Launch-on-Warning options can be removed from strategic nuclear strike plans
- Substitute the policy of RLOAD = Retaliatory Launch Only After Detonation would prevent accidental nuclear war based upon a false warning

### What if deterrence fails?

- Deterrence requires rational behavior and rational opponents who fear death
- Leaders must remain rational in crisis situations which permit them only a few minutes to make world-ending decisions
- Only a single failure of deterrence is required to start nuclear war

### War fought with High-alert and Deployed Weapons

- 150 million tons of smoke rise above cloud level
- Minimum daily temperatures drop below freezing for 1 to 3 years. Nightly killing frosts eliminate growing seasons. Massive destruction of the protective ozone layer (allowing huge increase in UV light to reach Earth). Ecosystems collapse.
- Most humans starve. Mass extinction event, similar to when the dinosaurs were wiped out following a large asteroid impact with Earth 65 million years ago (70% of species became extinct, including all animals greater than 25 kilograms in weight)



### Latest Scientific Findings

- Less than 1% of the global nuclear arsenal detonated in large cities will cause catastrophic disruptions of global climate and massive destruction of Earth's protective ozone layer. For example: A war between India and Pakistan fought 100 Hiroshima-size nuclear weapons (which they already possess)
- Deadly climate change caused by a large nuclear war – or even a pre-emptive nuclear strike – would make the Earth uninhabitable for humans

### Questions we must ask:

- What political or national goals are worth risking the destruction of the human race?
- Can we guarantee that high-alert nuclear arsenals will never be used in conflict?
- If a nuclear war or even a nuclear first-strike will make the Earth uninhabitable, then isn't nuclear war a form of global suicide?

### Political Goals

- Remove all nuclear weapons from high-alert, launch-ready status
- Renounce dangerous policies for the pre-emptive or first use of nuclear weapons: Eliminate Launch-on-Warning and First-Use policy
- Honor NPT obligations to act "in good faith" to eliminate nuclear weapons
- Adopt the Model Nuclear Weapons Convention as a pathway to abolition
- Redirect the resources devoted to nuclear arsenals to address basic human needs

See also "Catastrophic Climatic Consequences of Nuclear Conflict" by Steven Starr at [http://www.inesap.org/bulletin28/IB28\\_Starr.pdf](http://www.inesap.org/bulletin28/IB28_Starr.pdf)

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[http://en.wikipedia.org/wiki/High-alert\\_nuclear\\_weapon](http://en.wikipedia.org/wiki/High-alert_nuclear_weapon)

## High-alert nuclear weapon

### From Wikipedia, the free encyclopedia

**High-alert nuclear weapon(s)** commonly refers to a launch-ready [ballistic missile\(s\)](#) armed with a nuclear warhead(s) whose launch can be ordered (through the [National Command Authority](#)) and executed (via a nuclear command and control system) within 15 minutes or less. Can include any weapon system capable of delivering a nuclear warhead in this time frame.

Virtually all *high-alert nuclear weapons* are possessed by the U.S. and Russia. Both nations use automated command and control systems in conjunction with their early warning radar and/or satellites to facilitate the rapid launch of their land-based [Intercontinental Ballistic Missiles \(ICBMs\)](#) and some [Submarine Launched Ballistic Missiles \(SLBMs\)](#).<sup>[1]</sup> Fear of a "disarming" nuclear first-strike that would destroy their command and control systems and nuclear forces led

both nations to develop "launch-on-warning" capability, which requires high-alert nuclear weapons able to launch on a 30 minute (or less) tactical warning, the nominal flight time of ICBMs traveling to and from the U.S. to Russia.

A definition of "high-alert" requires no specific explosive power of the weapon carried by the missile or weapon system, but in general, most high-alert missiles are armed with strategic nuclear weapons with yields equal to or greater than 100 kilotons.<sup>[2]</sup> The U.S.<sup>[3]</sup> and Russia<sup>[4]</sup> have for decades possessed ICBMs and SLBMs capable of being launched in only a few minutes. The [U.S. "Minuteman" ICBM](#) earned its name for its quick-launch capability.

The U.S. and Russia currently have a total of 900 missiles and 2581 strategic nuclear warheads on high-alert, launch-ready status. The total explosive power of these weapons is about 1185 Mt (megatons, or million tons of TNT equivalent explosive power).<sup>[5]</sup>

## Notes and References

1. Blair, Bruce. "The Logic of Accidental Nuclear War". © The Brookings Institution 1993.
2. Starr, Steven. ["An Explanation of Nuclear Weapons Terminology"](#). © Nuclear Age Peace Foundation 2008.
3. Correll, J. [How the Air Force Got the ICBM](#)". © Air Force Magazine Online (Journal of the Air Force Association) 2005, July, Vol. 88, No. 7.
4. NTI online database. ["Russia: History of Soviet/Russian ICBMs"](#).
5. Starr, Steven. "High-alert nuclear weapons: examining the risks". SGR Newsletter, No. 26, Autumn 2008, in press.

<http://en.wikipedia.org/wiki/De-alerting>

# De-alerting

## From Wikipedia, the free encyclopedia

**De-alerting** introduces some reversible physical change(s) to nuclear weapons or weapon systems in order to lengthen the time required to use nuclear weapons in combat.<sup>[1]</sup> Because thousands of strategic nuclear warheads mounted upon ballistic missiles remain on high-alert, launch-ready status, capable of being launched in only a few minutes<sup>[2]</sup>, de-alerting has been proposed as a means to reduce likelihood that these forces will be used deliberately or accidentally.<sup>[3]</sup>

## De-alerting

De-alerting can be used to rapidly implement existing nuclear arms control agreements ahead of schedule.<sup>[4]</sup> Arms control agreements create a timetable to introduce irreversible changes to weapon systems (designed to reduce or eliminate the total numbers of these systems), but these changes generally occur incrementally over the course of a number of years. De-alerting can quickly implement the entire range of negotiated reductions in a reversible fashion (which over time are then made irreversible), thereby bringing the benefits of the negotiated reductions into being much more rapidly.

It has been proposed that de-alerted nuclear weapon systems be classified into at least two categories or stages<sup>[5]</sup>. Stage I de-alerted weapons would require 24 hours to bring the weapon system back to high-alert status, and would preclude Launch-on-Warning capability and policy, thereby making impossible an accidental nuclear war caused by a false warning generated by Early Warning Systems.<sup>[6]</sup>

## Examples of De-alerting

(1) Placing large, visible barriers on top of missile silo lids which would be difficult to rapidly remove and could be easily monitored by on-site observers or national technical means (satellites)<sup>[7]</sup>, (2) Removing or altering firing switches of missiles to prevent rapid launch, (3) removing batteries, gyroscopes, or guidance mechanisms from rockets or re-entry vehicles, and (4) Removing warheads from missiles and storing them in a separate, monitored location. Technical means could be engineered to provide frequent checks that nuclear missiles posed no immediate threat.<sup>[8]</sup>

## Limitations

De-alerting may require negotiations and verification procedures in order to accomplish symmetrical force reductions on both sides.<sup>[9]</sup> However, de-alerting can occur rapidly if sufficient political will exists, e.g., in 1991, the Bush and Gorbachev Presidential Nuclear Initiatives resulted in the de-alerting of U.S. and Soviet strategic bombers and the storage of their nuclear weapons, as well as the early retirement of 503 ICBMs, including 134 with multiple warheads scheduled for elimination under START. The process eventually led to a reduction of 17,000 deployed tactical nuclear weapons, the deepest reductions in nuclear arsenals to date.<sup>[10]</sup>

## Notes and References

1. Starr, Steven. "[An Explanation of Nuclear Weapons Terminology](#)". © Nuclear Age Peace Foundation 2008.
2. Blair, Bruce G. "[A Rebuttal of the U.S. Statement on the Alert Status of U.S. Nuclear Forces](#)". © The Lawyers' Committee on Nuclear Policy 2007.
3. Blair, Bruce G. "Global Zero Alert for Nuclear Forces". © Brookings 1995
4. Blair, Bruce G., Feivieson, Harold A., von Hippel, Frank. "Taking Nuclear Weapons off Hair-Trigger Alert". Scientific American, November 1997, pp. 42-49.
5. Starr, Steven. "[An Explanation of Nuclear Weapons Terminology](#)". © Nuclear Age Peace Foundation 2008.
6. Phillips, Alan and Starr, Steven. "[Change Launch on Warning Policy](#)". Moscow Institute of Physics and Technology Center for Arms Control, Energy and Environmental Studies © 2006.
7. Starr, Steven. "[An Explanation of Nuclear Weapons Terminology](#)". © Nuclear Age Peace Foundation 2008.
8. Blair, Bruce G., Feivieson, Harold A., von Hippel, Frank. "Taking Nuclear Weapons off Hair-Trigger Alert". Scientific American, November 1997, pp. 42-49.
9. Phillips, Alan and Starr, Steven. "[Eliminate Launch on Warning Policy](#)". © Nuclear Age Peace Foundation 2004
10. NTI Issue Brief: Presidential Nuclear Initiatives: An Alternative Paradigm for Arms Control, 2004; [http://www.nti.org/e\\_research/e3\\_41a.html](http://www.nti.org/e_research/e3_41a.html)