

Reducing the Risk of Accidental Launch Time for a New Approach?

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Ten years ago, on January 25, 1995, a sounding rocket launched from a test site in Norway was detected by radars of the Russian early-warning network. The details of what followed have never been officially disclosed, but the detection seems to have generated an alarm that made its way all the way up the chain of command by the time the military identified the rocket as a benign target. The Russian military insisted the accident showed that the command and control system worked exactly as it was supposed to, stopping the alarm at the right time. For most of the world, however, the accident was one more demonstration of the dangers inherent to operations of nuclear forces and to the launch-on-warning posture in particular.

The Soviet Union and the United States were the only nuclear states that created the infrastructure required to implement launch-on-warning, early warning systems to detect a missile attack and command and control systems to ensure that the decision to launch a retaliatory attack is made in time. The United States and Russia have preserved the technical capability to launch-on-warning and seem to rely on this option for operations of their strategic forces. Moreover, Russia is widely believed to have been increasing its reliance on launch-on-warning in an attempt to compensate for the decline in its strategic forces and for deployment of the U.S. missile defense system. Concerns about the possibility of a catastrophic accident are exacerbated by the decline of the Russian early-warning system and the reports about problems questioning the ability of the command and control system to prevent an accidental launch of strategic missiles.

Despite an almost universal recognition of the dangers associated with keeping strategic forces in a high degree of readiness, the issue of reducing the level of readiness, known as de-alerting, has never come to the forefront of the U.S.-Russian arms control and disarmament agenda. In large part, this is a result of the changed nature of the U.S.-Russian relationship, which effectively removed incentives to enter into any bilateral arms control agreements. In general, this change should be considered positive, for it indicates that Russia and the United States no longer consider each other adversaries of the Cold War days. The problem is, however, that it now prevents our countries from eliminating the relics of the past adversarial relationship. The launch-on-warning posture is admittedly one of the most dangerous of these.

This memo examines the practical problems of de-alerting and suggests that the current approach to the problem should be reconsidered. First, the U.S. launch-on-warning posture may represent a bigger problem than that of Russia. Second, the efforts to repair or augment the Russian early-warning system should not be pursued as part of the de-alerting agenda, since they probably increase risk of an accidental launch. Finally, the notion of transparency in de-alerting should be reconsidered, for verification prevents de-alerting from being effective.

Which Side is a Bigger Problem?

The discussion of dangers associated with the launch-on-warning posture usually concentrates on the decline of the Russian early-warning and command and control systems. As a result, the efforts to reduce these dangers tend to center on finding ways to convince Russia to reduce the level of readiness of its nuclear forces. Any specific de-alerting measures that are proposed on the U.S. side are seen primarily as a way to create incentives for Russia to reciprocate.

This line of argument, however, seems to overestimate the degree to which the Russian strategic forces rely on launch-on-warning as the primary response to a possible attack in their day-to-day operations. The history of the Russian early-warning system shows that although the Soviet military strived to achieve the capability to launch a retaliatory strike on warning, this goal has never been reached. The space-based early warning system built by the Soviet Union was not designed to detect launches of sea-based missiles and the Soviet radar network had serious gaps in coverage. As a result, the Soviet strategic forces could never rely on its early-warning system to provide a complete and accurate assessment of an incoming attack, so their response procedures favored measures that would ensure survivability of the command and control structure over those that would launch missiles immediately in response to the attack. The Soviet military never seemed to have high enough confidence in its early warning system to allow launch-on-warning based solely on the information provided by its satellites and radars. Launch-on-warning would become the primary response option only when additional information was available, as would be the case in a serious crisis when the probability of an attack was considered to be higher than in peacetime.

The United States built an early-warning system that was much more capable than its Soviet counterpart; it provided global coverage and very high probability of detection of a missile launch. This allowed the United States to have a very high degree of confidence in the information provided by its early warning system. Paradoxically, this potentially makes a catastrophic technical malfunction of the system (should it ever occur) more dangerous than in the Russian case, since operators may be less likely to question the data provided by the early-warning system.

Historical data on false alarm incidents in the U.S. and Soviet/Russian early warning systems seem to support the assumption about relative importance of technical and human factors. For example, in the November 1979 training tape incident in the United States it was information from satellites that helped recognize the alarm as false. In similar incidents in the Soviet Union it was mainly actions of operators who questioned accuracy of the data provided by the early warning sensors that prevented escalation.

It is very difficult to quantify relative contribution of various factors into overall vulnerability of systems to a possible technical malfunction. However, the less sophisticated system operated by the Russian strategic forces does not necessarily present substantially greater risk of a catastrophic accident than its U.S. counterpart. The efforts to reduce the risks associated with the launch-on-warning postures of Russian and U.S. strategic forces should therefore treat measures that reduce the level of readiness on either side as net benefit regardless of whether these measures have a chance of being reciprocated.

The Russian Early-Warning System is Broken, So Don't Fix it.

The concerns about the deterioration of the Russian early warning system are very well founded. The breakup of the Soviet Union left most radars outside of the Russian territory and made it impossible to complete construction of large phased-array radars that were to constitute the core of the early-warning network. As a result, Russia today has only three operational phased-array early-warning radars two of which are located outside of Russia (in Azerbaijan and Belarus). The older Hen House early-warning radars built during the early 1970s provide some additional coverage, as does the battle management radar of the Moscow missile defense system, but overall the radar network cannot ensure that any missile approaching the Russian territory will be detected.

The situation with the space-based tier of the early-warning system is hardly better. Russia is currently operating only three early-warning satellites of its first-generation system, which can only detect missiles launched from the U.S. territory. A complete constellation would include ten satellites and five are necessary to provide minimum reliable coverage. The program to deploy second-generation satellites, which would expand coverage to the oceans, has been plagued by problems and right now there are no second-generation satellites in orbit.

Although the decline of the early-warning system is indeed serious, it does not necessarily increase dangers associated with launch on warning posture. A loss of early-warning capability would have an adverse effect on the likelihood of an accident only if that loss was sudden and unexpected or discovered at the time of an attack. But this is not the case in Russia; the deterioration of the early-warning network is gradual and at every point in time process the Russian military has complete understanding of the system's limits and capabilities.

Since the early warning system is an essential element of a launch-on-warning posture, it is understandable that a number of proposals that aim at reducing the risks of accidental launch suggest helping Russia to repair or upgrade its early-warning system. These proposals included assistance in bringing into operation the radar in Irkutsk or helping Russia to complete deployment of its early-warning satellites. Neither of these projects were implemented, but if they were, they would most likely have increased the risk of an accident by introducing new elements into the already complex system and increasing confidence in its performance.

Other projects that were discussed in the context of reducing risk of an accidental launch suggested providing Russia with independent early-warning information, which was supposed to complement the data received by the Russian system. The most

advanced of these proposals called for establishment of a Joint Data Exchange Center (JDEC), which would provide both sides with access to their counterpart's early-warning information. The logic of the project was that in a case of conflicting information from early-warning satellites and radars, the United States and Russia could demonstrate to each other that no attack is underway. Cooperation like this would probably have helped to determine what happened during the January 1995 incident, but it is not certain if it would be of any help in a serious crisis, when each side would have reasons to doubt information provided by its counterpart.

To sum it up, the goal of reducing the risks of launch-on-warning postures seems incompatible with the efforts to repair or augment the deteriorating Russian early-warning system. Instead, the efforts should be directed at helping Russia change the command and control procedures to accommodate the loss of early-warning capability. These changes would almost certainly result in a shift away from the launch-on-warning posture, reducing the risk of an accidental launch.

Trust and Do Not Verify

One of the reasons why Russia and the United States have not yet implemented any de-alerting measures is that most of them are thought to require very intrusive verification procedures. For example, some de-alerting proposals called for removal of nuclear warheads from missiles or for limiting strategic submarine patrol areas. It is not difficult to see that measures like these are very difficult to implement in a transparent and verifiable manner, even if the United States and Russia were willing to commit to this kind of verification.

Transparency, however, is not required to achieve the main goal of de-alerting, reduction of the risk associated with the launch-on-warning postures. The benefit of de-alerting, which is the reduction of that risk, does not depend on the ability to verify the readiness status of the affected systems. Verification would be necessary only if de-alerting is considered a substitute for elimination of delivery platforms, but this is exactly the role de-alerting should avoid.

For example, if strategic submarines are restricted to the areas from which they cannot reach their targets, they would not be able to take part in a launch-on-warning strike regardless of whether the other side is able to verify their locations. Of course, without verification the other side would not be able to count these submarines as non-operational and use it in its strike plans, but this was never the problem de-alerting was supposed to address. These types of problems require disarmament solutions and should be dealt with accordingly.

Not only does transparency makes de-alerting harder to implement, it makes it potentially dangerous. If measures that reduce the readiness level of a missile are visible and verifiable, an attempt to bring that missile back into operation could create instability in a crisis situation when countries could find themselves in a rush to re-alert their forces. The dangers associated with this kind of instability could well outweigh any benefits created by de-alerting.

This means that ideal de-alerting measures should be designed in a way that would make them undetectable by the other side. This would allow each side to keep the benefits of de-alerting, since missiles would not be available for launch-on-warning, but at the same time avoid the instabilities associated with returning missiles from a de-alerted state. Verification provisions should be avoided altogether, although some information about measures that both sides undertake could probably be made public, as long as it does not reveal specifics of the de-alerting process that would allow one side to monitor it. In the example considered earlier, there is no harm in disclosing that submarines stay out of range of their targets if the disclosure does not specify their actual patrol area. In the case of land-based ballistic missiles, measures like this would be somewhat harder to design, but not impossible.

The Last Arms Control Issue?

The most difficult part of de-alerting is not devising technical proposals but rather finding ways to convince both the United States and Russia to implement them. However, the difficulty of this should not be overestimated. Most of the skepticism about U.S.-Russian arms control in the recent years stems from the unwillingness of these countries to get involved in negotiated agreements that would impose limits on their strategic forces. However, as we have seen, to be successful in achieving its goals, de-alerting does not have to be either reciprocal or verifiable. In fact, it seems to be ideally suited for unilateral non-binding declarations that might work in the current situation.

Practically speaking, Russia and the United States could begin with a public commitment to de-alert a portion of their strategic arsenals. Of course, there will be plenty of questions about the value of a commitment that is neither enforceable nor verifiable. But this value would be quite real if both sides follow with their commitment and change their practices and procedures to exclude at least part of their arsenals from the launch-on-warning arrangements. The risk of a catastrophic accident will be reduced and these practices could then be extended to a larger part of the arsenal, reducing the risk further.

We cannot, of course, realistically expect a proposal like this to be implemented without strong institutional support behind it, which is clearly lacking today. At the same time, the idea of de-alerting enjoys political and public support as probably no other arms-control related issue in U.S.-Russian relations. This certainly creates an opportunity for action.