

Prepared Statement before the:

House Committee on Armed Services,
Subcommittee on Strategic Forces

Adapting U.S. Missile Defense for Future Threats: Russia, China and Modernizing the NMD
Act.

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Chairman Rogers, Ranking Member Cooper, and Distinguished Members of the Strategic Forces Subcommittee, I very much appreciate your invitation to appear before you today to support your study of Adapting U.S. Missile Defense for Future Threats.

I am a Senior Fellow at the non-profit Center for Arms Control and Non-Proliferation, a Washington, D.C.-based national security study center. To help ensure our independence, the Center does not accept any funding from the Federal government, nor from any defense contractors.

I have considered it an honor to serve four U.S. Presidents. Most recently I served as the Associate Director for National Security and International Affairs in President Obama's White House Office of Science and Technology Policy.

In 2005 I was appointed by President George W. Bush to the nine-member Base Realignment and Closure Commission (BRAC).

For seven years during the Clinton administration, I served in the Pentagon as Assistant Secretary of Defense and Director, Operational Test and Evaluation. In this capacity, I was principal advisor to the Secretary of Defense and the Undersecretary of Defense for Acquisition, Technology and Logistics on test and evaluation in the DOD. I had OSD OT&E responsibility for over 200 major defense acquisition systems.

And during the Carter administration, I served as Principal Deputy Assistant Secretary for Defense Programs in the Department of Energy with responsibility for the nuclear weapons research, development, production and testing programs of the Department.

From 1959 to 1979, and again from 1981 to 1993, I worked at the Lawrence Livermore National Laboratory. Over those 33 years I worked on a variety of high technology programs, and retired from the Laboratory in 1993 as Laboratory Associate Director and deputy to the Director.

Opening Statement

In my opening remarks I want to describe why it would be unwise for the United States to pursue a missile defense against Russia and China. Here I'm referring to the strategic Intercontinental Ballistic Missile forces of those two countries. There are basically three important reasons. First, U.S. missile defenses, especially U.S. defenses against ICBMs can at best deal only with limited attacks, and even that goal remains a major technological challenge. All missile defense systems can be overwhelmed. All missile defense systems have limitations and those limitations can be exploited by the offense. By definition, it is only if the attack is limited that the defense can have a hope of not being overwhelmed. If the enemy also employs countermeasures such as stealth, radar jamming, decoys, and chaff, as Russia and China do, U.S. defenses are even more vulnerable. The technology simply is not in hand to deal with an all-out Russian or Chinese ICBM attack. The U.S. has experimented with many different ideas for decades hoping to find a way. A few examples are the nuclear-bomb pumped x-ray laser, "Brilliant Pebbles" (a constellation of perhaps as many as 1,000 orbiting interceptors), and the Safeguard ABM system deployed in North Dakota that the U.S. Congress canceled because Russian ICBMs could overwhelm it. These and other systems were canceled as unworkable, ineffective, or too costly as when Secretary of Defense Robert Gates ended the Airborne Laser program.

The second reason is cost. In 2002 the Congressional Budget Office estimated the cost of several different DOD missile defense programs, assuming they all would continue through 2025 as parts of a layered missile defense system.¹ The CBO estimated that a system of ground-based interceptors, analogous to the current Ground-based Midcourse Defense (GMD) system would cost between \$26 and \$74 billion. A system of interceptors launched from ships, similar to the Navy Aegis system would cost \$50 to \$64 billion, and a Space-Based Laser system would cost \$82 to \$100 billion. Inflated to today's dollars, the 2002 CBO estimate for the Space-Based Laser could be as high as \$132 billion. CBO cautioned against adding all these numbers together because the systems might share some common elements such as early-warning satellite systems, and CBO did not estimate the cost of a full, layered system. Of course the GMD system and the Navy Aegis system are ongoing today. The Space-Based Laser program office was shut down in 2002 and its research transferred to the MDA Laser Technologies Directorate. All of these systems were for a "limited" defense. CBO didn't estimate the costs of a massive system designed to stop all of Russia's and China's ICBMs, as there was no such program in 2002.

The third reason is strategic stability. If the U.S. had missile defenses that could handle the ICBM arsenals of Russia and China, a kind of Maginot Line against ICBMs, and if - unlike the Maginot Line - those defenses could not be defeated, it would be strategically destabilizing. Russia and China would need to respond with all manner of new forces, perhaps even more attacking missiles, perhaps extensive deployment of cruise missiles against which our ballistic missile defense systems are useless, or perhaps deployment of large numbers of troops in regions that are currently stable and peaceful. Then our missile defenses would have upset the strategic balance and provoked new military responses from Russia and China.

Of course, under such conditions, Russia would certainly not agree to further reductions in their strategic nuclear arsenals, as the U.S. and Russia have been doing under START, the Strategic Offensive Reductions Treaty, and New START. Russia might consider aggressive new U.S.

missile defense programs as justification to withdraw from New START and other agreements that have significantly reduced the threat from nuclear weapons.

In his May 28 talk at the Atlantic Council, Vice Chairman of the Joint Chiefs of Staff Admiral James A. Winnefeld, Jr. summarized why limited defenses are in the best U.S. interest.² “As you know,” he said, “we’ve told Russia and the world that we will not rely on missile defense for strategic deterrence of Russia because it would simply be too hard and too expensive and too strategically destabilizing to even try.” Later the Admiral reiterated this point, saying, “And let me be clear once again: it’s not the policy of the United States to build a ballistic missile defense system to counter Russian ballistic missiles.”

The National Missile Defense Act of 1999

The discussion above explains why the word “limited” is necessary in the National Missile Defense Act of 1999. As this Committee well knows that Act reads, “It is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate) with funding subject to the annual authorization of appropriations and the annual appropriation of funds for National Missile Defense.” In the Clinton years the emphasis was on stopping an accidental or unauthorized launch from Russia or China, and was not intended to effect global strategic stability with Russia and China. In the Bush years the emphasis shifted to North Korea and Iran, and to the threat those countries pose to their neighbors in the region. But we were still talking about a limited attack. One or two missiles.

President Obama continued the policies of his predecessors, sustaining the Ground-based Midcourse Defense System (GMD) deployed in Alaska and California, still focusing on North Korea and Iran, while also to have the capability of stopping an accidental or unauthorized launch from Russia or China. In addition, President Obama announced September 17, 2009, the Phased Adaptive Approach in Europe that was focused first on near term threats to Europe from the Middle East, shorter-range threats first, longer range threats later. At first, the shorter-range of these missiles would be slower-moving missiles capable of reaching only the southernmost part of Europe, certainly not ICBMs which Iran didn’t have then or now. The EPAA consists of interceptors, such as THAAD and SM-3, with ranges too short for ICBMs and is not aimed at Russia or China.

For the EPAA, President Obama also set a goal of hopefully being able to handle “raids” that is, more than one or two incoming ballistic missiles, but say 20 incoming missiles at once. That capability has not been developed, let alone demonstrated. And the EPAA is not intended to, nor capable of defending against Russian ICBMs in any number.

Five important questions

In the balance of this testimony I address each of the five important questions the Committee posed for today’s hearing, and take each one in turn.

1) How do you see this threat emerging? What will it look like in 2020? 2025?

In 2020 or 2025, how we will see the threat from Russia and China will depend on our relations with those countries. At the end of the Cold War, it appeared to many observers that the prospect of all-out nuclear war had faded; after all, the specter of possible nuclear conflict had loomed for many years between the Soviet Union and the United States or, less likely, China and the United States, and all sides had worked successfully to avoid it. With Russia and China nuclear deterrence still works, and is a more dependable factor in sustaining the peace than missile defenses. In 2020 or 2025 I expect the strategic situation will be much the same as it is today unless something arises to upset today's strategic stability, such as dramatic changes to U.S. missile defense policy.

The conflicts that have developed over the Russian seizure of Crimea, Russia's interference in Eastern Ukraine, the situation in Syria and other places have undermined relations between the United States and Russia, but do not make a nuclear confrontation any more likely than since the end of the Cold War.

However, five or ten years from now, the threat from terrorism may still be growing. As this Committee well knows, there is much unrest in the world today. We need only to look at the situation in Syria and Iraq to imagine further turmoil in that region. If terrorist groups acquire more of the usual rockets and missiles, U.S. missile defenses may need to focus on short-range conventional rocket threats, not on ICBMs from Russia or China.

2) Does a policy of limited missile defenses against limited threats continue to make sense in today's threat environment?

The current articulation of the "threat" does not meet the test of common sense. From time to time the Missile Defense Agency (MDA) produces a map showing the countries it considers a threat because those countries possess short or medium range missiles. The list has included Libya, Egypt, Iran, Yemen, Pakistan, India, Belarus, Ukraine, Syria, Turkmenistan, Kazakhstan, Vietnam, and North Korea. While some of these countries, like Belarus, Ukraine, Turkmenistan and Kazakhstan possess Scud missiles, these countries are hardly a threat to the United States or Europe. Pakistan and India may be a threat to each other, but not to Europe or the United States. Libya, Egypt, Syria, and Yemen have experienced internal political turmoil, but again they are not a missile threat to Europe or the United States in the near term. To the extent that MDA buys into the notion that any country with short or medium range missiles is a threat to Europe and the United States, MDA clouds its thinking about the nature of the missile defense systems we need and where we need them.

While the North Korean and Iranian missile programs are certainly of great concern, it can be asked whether either country would be so suicidal as to attack the United States, whether Iran would be so suicidal as to attack Europe, or North Korea so suicidal as to attack Japan. In each case, such an attack would justify massive retaliation by the U.S. military and others. Iran and North Korea have done some reckless things, but they are not so reckless as to bring about their own destruction and an end to their regimes.

I am not suggesting that North Korea or Iran is NOT a threat, only that things can change and that U.S. policies need to be responsive to those changes. Recall the 1998 Rumsfeld Commission report that said North Korea and Iran would have nuclear-armed ICBMs that “would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability.”³ That was 16 years ago.

A new look at the threat is warranted, and whether the U.S. needs to consider every nation that possesses even short-range missiles a threat to America. The proliferation of missiles of all sizes around the world is a growing problem, but expecting U.S. missile defenses to deal with all those missiles everywhere is unrealistic.

The proliferation of offensive missiles should be fought and is being fought in many ways. However, the idea that say, Russia or China will give up or relax their offensive capabilities because of U.S. missile defenses is not supported by the facts. Those countries use U.S. missile defenses as justification for building more and more capable offensive missiles; and from the results of U.S. missile defense tests they can see that the easiest way to defeat those defenses is by building more and more offensive missiles to overwhelm U.S. defenses.

There is now a worldwide arms race in missile defense. Russia, China, India, Pakistan, South Korea, Japan, and Israel all claim to have effective missile defenses, and these claims push military planning by their adversaries in unwanted directions as they in turn build more and more offensive systems and/or new decoys and countermeasures to defeat those defenses. At the same time, there are serious questions whether any of these countries have an effective defense against long-range missiles.

3) Does this “limited” policy impact the programs we develop and deploy?

Today, America has missile defense systems deployed all around the world. This includes the Ground-based Midcourse Defense (GMD) system in Alaska and California, the Phased Adaptive Approach in Europe (EPA), and regional systems in the Middle East to protect Iran’s neighbors from Iran, and in Asia to protect North Korea’s neighbors from North Korea. At the Atlantic Council Adm. Winnefeld explained that “Going forward, we will continue to emphasize the importance of developing regional ballistic missile defense systems.” I expect that emphasis on regional missile defense systems to continue for the next five or ten years, and note that these regional systems - THAAD, Aegis SM-3, and PATRIOT – now have a much better track record in successful flight intercept tests than does the Ground-based Midcourse Defense (GMD) system. However, as Adm. Winnefeld noted, the deployment of regional U.S. missile defense systems “is a very politically sensitive topic for several of our regional allies.” Accordingly, deployment of regional U.S. missile defense systems is being undertaken on a case-by-case basis with the support of our friends and allies who may be affected by such decisions.

4) Does this policy need to evolve or change? Why? If so, how?

The missile defense systems the U.S. deploys will be first and foremost a function of the threat, which might go up or down depending on geo-political developments. If, for example, negotiations with Iran to reduce the scope of its nuclear program to clearly peaceful civil purposes are successful, then – depending on the details of what is agreed - the emphasis on the

European Phased Adaptive Approach (EPAA) could be reduced. Similarly, the argument for an East Coast missile defense site could be weakened.

If on the other hand, North Korea becomes more aggressive towards its neighbors, increased U.S. missile defenses in that region may be part of the response.

If tensions break out in new parts of the world, our government will need to respond to those circumstances as well.

Here it is also worth noting that there have been significant reductions in Scud inventories. These have come about for a variety of reasons but the net effect has been a reduction in SRBM missiles. International Traffic in Arms Regulations and Missile Technology Control Regime restrictions also have made an important difference, as they are observed by reputable vendors and nations alike; and so today, with the exception of Russia, China, and the U.S., there is no other demonstrated, current ICBM capability, and SRBM/MRBM numbers are not increasing.⁴

5) How does the U.S. deal with the Russian Federation and the People's Republic of China, in particular, which are both developing missile defenses and nuclear weapons targeting the U.S.? What programs and policies need to be in place to deal with these potential threats and adversaries?

All missile defense systems can be overwhelmed. Russia and China could overwhelm the missile defense systems we have today even if they worked as intended. That's why Vice Chairman of the Joint Chiefs of Staff Admiral James A. Winnefeld, Jr. made a special point in saying in his May 28 talk at the Atlantic Council that U.S. missile defenses are not aimed at Russia. To quote the Admiral, he said, "As you know, we've told Russia and the world that we will not rely on missile defense for strategic deterrence of Russia because it would simply be too hard and too expensive and too strategically destabilizing to even try." Later the Admiral reiterated this point, "And let me be clear once again: it's not the policy of the United States to build a ballistic missile defense system to counter Russian ballistic missiles."

Similarly the U.S. can overwhelm the missile defenses of Russia and China. Both countries make announcements about their missile defenses but they know, as we do, how difficult missile defense is, and that their missile defenses can be overwhelmed also.

It is very difficult for Americans not to want to rely on technology. Technology has produced some amazing advances, such as personal computers and the Internet that have changed our lives at home and at work. But too often America relies on technology as the last, best hope to save us from our problems. We see this in defense, in health, and in the environment. By appealing to a single-point technological fix, we hope we can avoid dealing with a long-term problem. In defense, as in other fields, we use our hope for technological relief as an excuse to avoid accommodating or dealing with our adversaries in the global environment in which we all exist.

Moving Forward

Going forward, here are some important considerations:

The existing U.S. missile defense systems have many important needs. These include the Ground-based Midcourse Defense (GMD) system in Alaska and California, the Phased Adaptive Approach in Europe (EPAA), and regional systems in the Middle East and Asia. Unfortunately these systems lack workable architectures, and many of the required elements either don't work or are missing. Notwithstanding the recent test success, GMD performance in tests has gotten worse with time, when it ought to be getting better. The latest GMD test did not involve an ICBM-range target and the MDA has never tried to defend against an ICBM-range target in a missile defense flight intercept test. I would hope that both sides of the aisle would work together to address these needs.

America's missile defenses face an enduring set of issues, especially target discrimination in the face of even limited attacks designed to overwhelm the defenses, such as stage separation debris, chaff, decoys, and stealth. Dealing with target discrimination while also replacing, upgrading, or adding to the many needed elements of U.S. missile defenses will present new budget challenges. Adding to this burden, America's allies overseas expect a substantial commitment in U.S. defense dollars. They see the United States as well able to afford missile defenses, and in good measure hold the U.S. responsible for the defense of its friends and allies. In fact, the capability to defend America's friends and allies is a declared objective for U.S. missile defense systems. This work will produce better results than trying to build an impregnable defense against Russian and Chinese ICBMs.

The biggest challenge facing both the GMD and EPAA systems is target discrimination; that is, the ability of the interceptors and the sensors that guide them being able to tell the difference between debris from stage separations, and/or chaff and decoys made to resemble the target reentry vehicle. The National Academy of Sciences/National Research Council (NAS/NRC) commented on threat discrimination in a April 30, 2012 letter to Congress before the full report "Making Sense of Ballistic Missile Defense" was released, saying, "There is no effective ballistic missile area defense that does not require dealing with midcourse discrimination (or shooting at all potential threat objects!)."⁵ The NAS/NRC comment about shooting at all potential threat objects related to the limited number of interceptors that could quickly be exhausted by the defense trying to shoot down everything whether threatening or not. "Moreover," the NAS/NRC panel explained, "early" intercept, even if achievable from a forward-based interceptor system, cannot obviate the need for midcourse discrimination, because countermeasures and payload deployment can be achieved very rapidly (as historical experience shows) after threat booster burnout."

In a March 9, 2013 hearing before the Senate Armed Services Committee, J. Michael Gilmore, the DOD Director, Operational Test and Evaluation, put it plainly, "If we can't discriminate what the real threatening objects are, it doesn't matter how many ground-based interceptors we have. We won't be able to hit what needs to be hit."⁶

The Defense Science Board was the first official DOD entity to break the ice on the need for target discrimination, even though independent scientists have been pointing out the need for decades. As the DSB Task Force explained in its September 2011 report, "Science and Technology Issues of Early Intercept Ballistic Missile Defense Feasibility,"⁷ "These analyses ... did not account for interceptors launched at non-warhead bodies." "If the defense should find

itself in a situation where it is shooting at missile junk or decoys, the impact on the regional interceptor inventory would be dramatic and devastating.” The DSB Task Force was pointing out that if the defense must shoot at non-threatening objects, the supply of interceptors would soon be exhausted.

For this reason, both the DSB and the NAS/NRC panel discussed the doctrine of “Shoot-Look-Shoot.” The current doctrine might be called, “Shoot-Shoot-Shoot;” that is, just keep shooting hoping that the defense will hit all the incoming enemy missiles in the midst of confusing chaff or decoys. Just to overcome the poor test record of the GMD system could require firing five, six, or seven interceptors at each incoming missile, quickly exhausting the available interceptors.⁸ Unfortunately, while “Shoot-Look-Shoot” is an appealing concept, it is still an impractical dream. Shoot-Look-Shoot requires “Looking”, that is kill assessment, knowing whether or not a target has been hit and killed. That kill assessment must be done between each attempt to bring down an enemy missile, and it must be done rapidly. This would require sensors, discrimination, and communication systems we don’t have, or yet know how to build.

The Ground-Based Midcourse (GMD) system with interceptors in silos based at Fort Greely, Alaska, and at Vandenberg AFB in California has never had a complete architecture. For example, the Sea-Based X-Band Radar intended to be deployed at Adak, Alaska, is often put in for repairs and maintenance in Hawaii or Seattle, and has proven to be so unreliable that the MDA considered mothballing the system to reduce costs. Also, the satellite systems required for early detection, tracking, and characterization of enemy targets, and to provide that information to the GMD system, have never been completed.

Much work is needed on the GMD system. In particular, the Pentagon has yet to decide whether to take the advice of the 2012 National Academy of Sciences/National Research Council study and develop a new bigger and more capable Exo-atmospheric Kill Vehicle and a new faster two-stage booster for the GMD interceptors.

The Missile Defense Agency has announced that it will make improvement to the existing kill vehicle; but as Defense Undersecretary for Acquisition, Technology, and Logistics, Frank Kendall put it so well, "Just patching the things we've got is probably not going to be adequate. So we're going to have to go beyond that."⁹

In the wake of the successful June 22 flight intercept test, the Agency should build on that accomplishment to develop the next generation kill vehicle as recommended by the National Research Council. But the United States should not be blinded by one good test every five and one-half years to deploy more flawed interceptors. In pursuing a redesigned kill vehicle, it only makes sense to avoid past mistakes by taking the time to get it right.

¹ “Estimated Costs and Technical Characteristics of Selected National Missile Defense Systems,” The Congressional Budget Office, January 31, 2002. Available at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/32xx/doc3281/nmd.pdf>

² Transcript: Admiral James A. Winnefeld, Jr. at Global Missile Defense Conference, The Atlantic Council. Available at <http://www.atlanticcouncil.org/news/transcripts/transcript-admiral-james-a-winnefeld-jr-at-global-missile-defense-conference>

³ The Report of the Commission to Assess the Ballistic Missile Threat to the United States, July 15, 1998. Available at <http://fas.org/irp/threat/bm-threat.htm>

⁴ “Characterizing the North Korean Nuclear Missile Threat”, RAND TR-1268, Marcus Schiller, ISBN: 978-0-8330-7621-2, available at http://www.rand.org/pubs/technical_reports/TR1268.html

⁵ Letter to Representatives Michael R. Turner and Loretta Sanchez, House Armed Services Committee, from L. David Montague and Walter B. Slocombe, Committee on an Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison to Other Alternatives, April 30, 2012.

Committee on an Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison to Other Alternatives, National Research Council, “Making Sense of Ballistic Missile Defense,” National Academy of Sciences, 2012, http://www.nap.edu/catalog.php?record_id=13189.

⁶ Hearing, Ballistic Missile Defense Policies and Programs, Senate Armed Services Committee, Subcommittee on Strategic Forces, May 9, 2013. Available at <http://www.armed-services.senate.gov/hearings/oversight-ballistic-missile-defense-policies-and-programs>

⁷ Defense Science Board (DSB), “Task Force Report on Science and Technology Issues of Early Intercept Ballistic Missile Defense Feasibility,” September 2011, <http://handle.dtic.mil/100.2/ADA552472>.

⁸ See Edward Aldridge Jr., Statement before the House Armed Services Committee, March 20, 2003, http://www.archive.org/stream/hearingsonnation2004unit/hearingsonnation2004unit_djvu.txt; Lt. Gen. Henry A. Obering, Statement before the Subcommittee on National Security and Foreign Affairs, House Committee on Oversight and Government Reform, April 30, 2008, <http://www.gpo.gov/fdsys/pkg/CHRG-110hrg48813/html/CHRG-110hrg48813.htm>.

⁹ “Pentagon plans work on new missile defense interceptor,” Andrea Shalal, *Reuters*